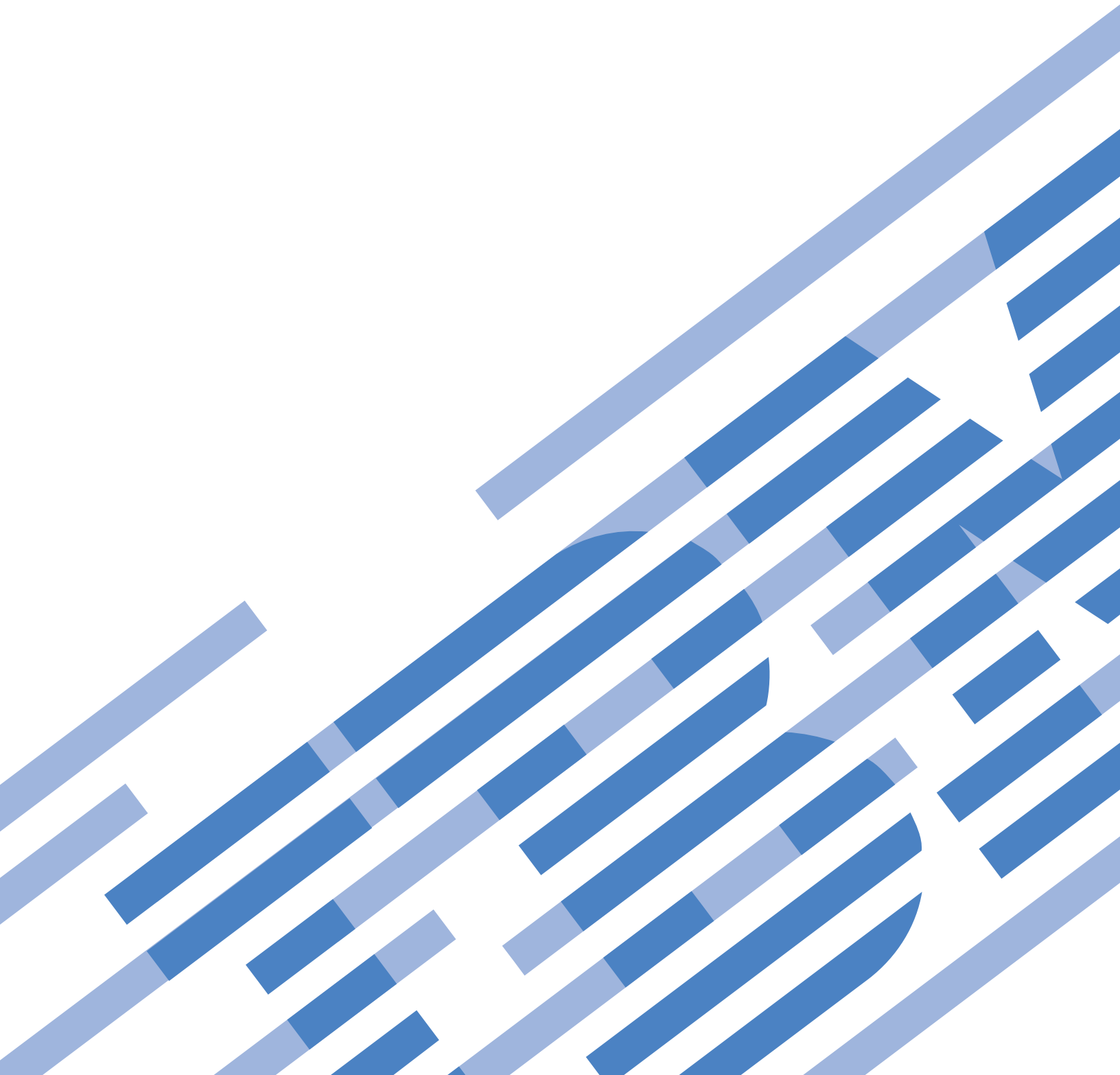




System i and System p

Service provider information

Beginning problem analysis and isolation





System i and System p

Service provider information

Beginning problem analysis and isolation

Note

Before using this information and the product it supports, read the information in “Notices,” on page 785 and the manual *IBM Systems Safety Information*, G229-9054.

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Contents

Safety notices xi

Laser safety information	xi
Laser compliance	xi

Service provider information 1

What's new	1
Start of call procedure	2
Diagnosing a problem on a 7037-A50 or a 7047-185	7
Symptom index	10
i5/OS server or i5/OS partition symptoms	10
AIX server or AIX partition symptoms	14
Linux server or Linux partition symptoms	23
Detecting problems	32
i5/OS Problem determination procedures	32
Using the Service Action Log	32
Using the product activity log	34
Using the problem log	34
Problem determination procedure for AIX or Linux servers or partitions	35
System unit problem determination	36
HMC machine code problems	39
Launching an xterm shell	39
Viewing the HMC console logs	39
View a particular event	40
Disk-drive-enclosure problem-determination procedures	40
Disk drive module power-on self-tests	40
SCSI interface card power-on self-tests	41
7031-D24 or 7031-T24 Disk-drive enclosure LEDs	41
7031-D24 or 7031-T24 Maintenance analysis procedures	45
MAP 2010: 7031-D24 or 7031-T24 START	45
MAP 2020: 7031-D24 or 7031-T24 Power	48
MAP 2022: 7031-D24 or 7031-T24 Power-on	50
MAP 2030: 7031-D24 or 7031-T24 power control	52
MAP 2340: 7031-D24 or 7031-T24 SCSI bus	53
MAP 2410: 7031-D24 or 7031-T24 repair verification	54
Analyzing problems	55
Problems with loading and starting the operating system (AIX and Linux)	55
PFW1540: Problem isolation procedures	58
PFW1542: I/O Problem Isolation Procedure	59
PFW1543: Model 590 and model 595 MCM problem isolation procedure	60
PFW1546: Model 590 and model 595 memory problem isolation procedure	63
PFW1548: Memory and processor subsystem problem isolation procedure	69
Problems with noncritical resources	71
Intermittent problems	71
About intermittent problems	72

General intermittent problem checklist	73
Analyzing intermittent problems	75
Intermittent symptoms	75
Failing area intermittent isolation procedures	75
IPL problems	76
Cannot perform IPL from the control panel (no SRC)	76
Cannot perform IPL at a specified time (no SRC).	77
Cannot automatically perform an IPL after a power failure	80
Power problems	81
Cannot power on system unit	81
Cannot power on SPCN-controlled I/O expansion unit	85
Cannot power off system or SPCN-controlled I/O expansion unit	91
Isolating problems	93
Isolation procedures	93
Bus, high-speed link (HSL or RIO) isolation procedures	93
Breaking down a RIO/HSL or PCI bus reference code	95
DSA translation	96
Card positions	98
Converting the loop number to NIC port location labels	108
PCI bus isolation using AIX, Linux, or the HMC	111
Verifying a high-speed link, system PCI bus, or a multi-adapter bridge repair	111
HSL loop configuration and status form	113
HSL loop configuration and status form	114
Installed features in a PCI bridge set form	115
Installed features in a PCI bridge set form	115
RIO/HSL link status diagnosis form	115
RIO/HSL link status diagnosis form	116
CONSL01	117
RIOIP01	118
RIOIP02	123
RIOIP03	125
RIOIP04	126
RIOIP06	128
RIOIP07	128
RIOIP08	129
RIOIP09	130
RIOIP10	131
RIOIP11	132
RIOIP12	133
RIOIP50	134
RIOIP55	135
MABIP05	135
MABIP06	136
MABIP07	138
MABIP50	141
MABIP51	142

MABIP52	143	LICIP14	233
MABIP53	145	LICIP15	233
MABIP54	147	LICIP16	236
MABIP55	150	Logical partition (LPAR) isolation procedure	236
MABIP02	153	LPRIP01	237
MABIP03	153	Operations Console isolation procedures	240
MABIP04	155	OPCIP03	241
Communication isolation procedure	157	Power isolation procedures	243
COMIP01	158	PWR1900	244
Disk unit isolation procedure	160	PWR1902	245
DSKIP03	160	PWR1903	247
High performance switch (HPS) isolation		PWR1904	250
procedures	162	PWR1906	252
HPS0000	163	PWR1907	255
HPSA001	164	PWR1908	256
HPSB001	164	PWR1909	258
HPSS001	164	PWR1911	260
Intermittent isolation procedures	165	PWR1912	265
INTIP03	165	PWR1915	267
INTIP05	167	PWR1917	268
INTIP07	167	PWR1918	270
INTIP08	168	PWR1920	274
INTIP09	169	PWR2402	274
INTIP14	171	Router isolation procedures	276
INTIP16	171	RTRIP01	277
INTIP18	171	RTRIP02	277
INTIP20	172	RTRIP03	277
INTIP24	172	RTRIP04	277
I/O processor (IOP) isolation procedures	173	RTRIP05	277
IOPIP01	174	RTRIP06	278
IOPIP13	177	RTRIP07	279
IOPIP16	179	RTRIP08	279
IOPIP17	182	Service processor isolation procedures	280
IOPIP18	184	FSPSP01	280
IOPIP19	185	FSPSP02	282
IOPIP20	186	FSPSP03	283
IOPIP21	188	FSPSP04	283
IOPIP22	189	FSPSP05	283
IOPIP23	190	FSPSP06	283
IOPIP25	190	FSPSP07	283
IOPIP26	191	FSPSP08	283
IOPIP27	194	FSPSP09	284
IOPIP28	196	FSPSP10	284
IOPIP29	196	FSPSP11	284
IOPIP30	196	FSPSP12	284
IOPIP31	199	FSPSP14	285
IOPIP32	201	FSPSP16	285
IOPIP33	201	FSPSP17	285
IOPIP34	202	FSPSP18	286
IOPIP40	203	FSPSP19	286
IOPIP41	203	FSPSP20	286
Licensed internal code (LIC) isolation		FSPSP21	287
procedures	204	FSPSP22	287
LICIP01	205	FSPSP23	288
LICIP03	207	FSPSP24	288
LICIP04	207	FSPSP25	288
LICIP07	208	FSPSP26	289
LICIP08	210	FSPSP27	289
LICIP11	211	FSPSP28	290
LICIP12	223	FSPSP29	290
LICIP13	228	FSPSP30	290

FSPSP31	291	MAP 0290: Missing Resource Problem Resolution	416
FSPSP32	292	MAP 0291: Missing Device or Bus Problem Resolution	417
FSPSP33	293	MAP 0410: Repair checkout	419
FSPSP34	293	MAP 0420: System checkout	422
FSPSP35	294	Installation Checkout	424
FSPSP36	294	MAP 1240: xxxxx	426
FSPSP37	294	PFW1540: Problem isolation procedures	426
FSPSP38	297	PFW1542: I/O Problem Isolation Procedure	427
FSPSP39	298	PFW1542-520: I/O problem isolation procedure for model 520, 52A, and 285	428
FSPSP40	299	PFW1542-550: I/O problem isolation procedure for model 550, 55A, and OpenPower 720	437
FSPSP41	299	PFW1542-570: I/O problem isolation procedure for model 561 and 570	450
FSPSP42	327	PFW1542-575: I/O problem isolation procedure for model 575	462
FSPSP43	328	PFW1542-590: I/O problem isolation procedure for model 590, and 595	471
FSPSP44	328	PFW1543: Model 590 and model 595 MCM problem isolation procedure	480
FSPSP45	333	PFW1546: Model 590 and model 595 memory problem isolation procedure	482
FSPSPB1	334	PFW1548: Memory and processor subsystem problem isolation procedure	488
FSPSPC1	335	PFW1548-185: Processor subsystem problem isolation procedure for model 185 and A50	490
FSPSPD1	337	PFW1548-505: Processor subsystem problem isolation procedure for model 505 with an HMC attached	497
Tape unit isolation procedures	339	PFW1548-505: Processor subsystem problem isolation procedure for model 505 without an HMC attached	505
TUPIP02	340	PFW1548-510: Processor subsystem problem isolation procedure for model 510, 51A, and OpenPower 710 with an HMC attached	512
TUPIP03	342	PFW1548-510: Processor subsystem problem isolation procedure for model 510, 51A, and OpenPower 710 without an HMC attached	519
TUPIP04	344	PFW1548-520: Processor subsystem problem isolation procedure for the model 520, 52A, and 285 with an HMC	526
TUPIP06	348	PFW1548-520: Processor subsystem problem isolation procedure for the model 520, 52A, and 285 without an HMC	536
Tape unit self-test procedure	349	PFW1548-550: Processor subsystem problem isolation procedure for models 550, 55A, and OpenPower 720 with an HMC	544
Tape device ready conditions	351	PFW1548-550: Processor subsystem problem isolation procedure for models 550, 55A, and OpenPower 720 without an HMC attached	554
Twinaxial workstation I/O processor isolation procedure	352	PFW1548-570: Processor subsystem problem isolation procedure for models 561 and 570	563
TWSIP01	352	PFW1548-575: Processor subsystem problem isolation procedure for model 575	574
Workstation adapter isolation procedure	358	PFW1549: Model 561 and Model 570 multiple-drawer server problem isolation	576
WSAIP01	359	SCSI service hints	577
Workstation adapter console isolation procedure	361	General SCSI Configuration Checks	577
Collect serviceable events in IVM.	363		
AIX fast-path problem isolation	364		
AIX fast path table	366		
MAP 0020: Problem determination procedure	373		
MAP 0030: Additional Problem Determination	380		
MAP 0040: Intermittent Problem Isolation	381		
MAP 0050: SCSI bus problems.	383		
After hot-plug SCSI device or cable deconfiguration.	388		
Preparing for hot-plug SCSI device or cable deconfiguration.	388		
MAP 0054: PCI-X SCSI Bus Problems	389		
MAP 0070: 888 sequence in operator panel display	391		
MAP 0080: System Bus Problem Isolation	393		
General problem resolution.	394		
Hot-Swap FRU problem resolution	394		
MAP 0230: Platform error problem resolution	399		
MAP 0235: System Array Self-Repair Problem Resolution	404		
MAP 0260: System hangs during resource configuration	405		
MAP 0270: SCSI RAID problem resolution and verification.	407		
MAP 0280: Console and Keyboard Problem Resolution	411		
MAP 0285: Multipath I/O (MPIO) Problem Resolution	412		

High Availability or Multiple SCSI System Checks	578	BKPLEXT	623
SCSI-2 Single-Ended Adapter PTC Failure Isolation Procedure	578	BRDGSET	623
Determining Where to Start	578	BRDGST1	625
External SCSI-2 Single-Ended Bus PTC Isolation Procedure	579	BRDGST2	626
External SCSI-2 Single-Ended Bus Probable Tripped PTC Causes	579	BRDGST3	628
Internal SCSI-2 Single-Ended Bus PTC Isolation Procedure	580	BPC	630
Internal SCSI-2 Single-Ended Bus Probable Tripped PTC Resistor Causes	581	BPCHANG	630
SCSI-2 Differential Adapter PTC Failure Isolation Procedure	581	BSTWRPL	630
External SCSI-2 Differential Adapter Bus PTC Isolation Procedure	582	BUSVPD	630
SCSI-2 Differential Adapter Probable Tripped PTC Causes	584	CABLEH	631
Dual-Channel Ultra SCSI Adapter PTC Failure Isolation Procedure	584	CACHBAT	633
64-bit PCI-X Dual Channel SCSI Adapter PTC Failure Isolation Procedure	584	CACHE	634
Linux fast-path problem isolation	585	CAPACTY	634
Linux problem isolation procedure	588	CARDFLT	634
HMC isolation procedures	597	CARDTMP	635
Using failing item codes	598	CBLALL	635
Symbolic FRUs	613	CBLCONT	637
ACMODUL	613	CDAWKLD	637
AIRMOVR	615	CDTRAY	637
AJDGP01	617	CHECK	638
AJDG301	617	CLCKMOD	638
AJEDA00	617	CLRNVRM	639
AJEGP01	617	CMPRES1	639
AJEQU00	617	CNVTCRD	639
AJGAM01	617	CRYPBAT	640
AJGDF01	617	CRYPTLP	640
AJGFN00	617	CTLPNCD	640
AJGJQ01	617	CTLPNL	640
AJGLD01	617	DASDBP	641
AJGJ601	618	DCA	641
AJGW701	618	DEVBPLN	641
AJLAF01	618	DEVICE	642
AJLAG01	618	DEVTERM	642
AJLYC01	618	DIMM 0	643
AJLYD01	618	DIMM0_1	644
AJSDJ01	618	DIMM 1	644
ALTMANL	618	DIMM 2	645
AMBTMP	619	DIMM2_3	646
AMBTMP1	620	DIMM 3	647
AMBTMP2	620	DISKDRV	647
ANYBRDG	620	DISKFAN	648
ANYBUS	620	DISKIMG	649
ANYFC	620	DISKPWR	649
ANYPROC	620	DPAC	649
AS4NTDD	621	DRVSWCH	649
AUXCBL	621	DSKTRY	649
AUXIOA	622	DSKUNIT	649
BACKPLN	622	EACODE	650
BATCHGR	623	EXTREMD	650
BATRY	623	EXTSCSI	650
		FCCABLE	652
		FCCODE	652
		FCDEV	652
		FCGATE	652
		FCINTF	652
		FCIOA	652
		FCPORT	652
		FRPORT	654
		Finding the failing RIO/HSL node using i5/OS	654

Finding the failing RIO/HSL node using AIX or Linux	655	Breaking down a reference code for a switch	682
Finding the failing RIO/HSL node using the HMC	655	Breaking down a reference code for an SNI.	682
FWADIPL	656	Before you proceed	682
FWCD1	656	HPSSSW	683
FWCD2	656	Breaking down a reference code for a switch	685
FWCONS.	657	Breaking down a reference code for an SNI.	685
FWENET.	657	Before you proceed	685
FWFLASH	657	HSLH	686
FWFWPBL	658	HSLH_xx.	686
FWHANG	658	HSLH_06.	686
FWHOST.	658	HSLH_15.	686
FWIDE1	658	HSL_I.	686
FWIDE2	659	HSL_Ix	687
FWIPIPL	659	HSL_I2	687
FWLPAR	659	HSL_I3	687
FWMBOOT	660	HSL_I4	687
FWNIM	660	HSL_LNK	687
FWNVR1.	660	Additional RIO/HSL FRUs.	690
FWNVR2.	660	HSL_OPT	691
FWNVR3.	660	HSL1	691
FWPCI1	661	HSL1_UN	691
FWPCI2	661	HSL2	691
FWPCI3	662	HSL2_xx	691
FWPCI4	662	HSL2_01	692
FWPCI5	663	HSL2_03	692
FWPCI6	663	HSL2_08	692
FWPTR	663	HSL2_10	692
FWPWD	664	HSL2_15	692
FWRIPL	664	HSL2_17	692
FWSCSI1.	664	HSL2_25	692
FWSCSI2.	665	I2CBUS	692
FWSCSI3.	665	Instructions for Models 285, 505, 51x, 52x, 55x, 561 , 570, OpenPower 710, and OpenPower 720	693
FWSCSI4.	666	Instructions for 5095, 0595, 5790, 7311-D10, D11, and D20 I/O expansion units	693
FWSCSI5.	666	Instructions for all I/O expansion units except 5095, 0595, 5790, 7311-D10, D11, and D20	694
FWSCSIH	666	IDPART	695
FWVTHMC	667	IOA	696
HCA	667	IOACNFG	696
HMCLIC	667	IOADPTR	696
HMCMTWK	667	IOBRDG	699
HMCNTWK.	668	IO_DEV	699
HMUX	668	IO_HUB	700
HEA	670	IOP.	701
HPSA575.	670	LBSADP1.	701
Breaking down a reference code for an SNI.	672	LBSADP2.	701
Before you proceed	673	LBSADP3.	701
HPSA590.	673	LBSADP4.	701
Breaking down a reference code for an SNI.	675	LBSADP5.	702
Before you proceed	675	LBUSADP	702
HPSASNI	675	LICCODE	702
Breaking down a reference code for an SNI.	678	LITSTRP	703
Before you proceed	678	LOADCY1	704
HPSCCAB	678	LOC_SYS.	704
HPSCCOP	679		
HPSCFIB	679		
HPSSPCC	679		

LPARCFG	704	SI_PHB	745
LPARSUP	705	SIRGCBP	747
LSERROR	705	SIRGCFG	747
MA_BRDG	705	SIRSTAT	747
MABRCFG	706	SLOTERR	754
MAILBOX	708	SLOTUSE	755
MASBUS	708	SNSDATA	756
MEDIA	709	SPBUS	756
MEDIABP	710	SPNETWK	756
MEMBRD	710	SPNLCRD	757
MEMCTLR	711	SRCTB1X	757
MEMORY	712	STORIOA	757
MEMDIMM	714	SVCDOCS	757
MESSAGE	716	SVCPROC	757
MOVEIOA	717	SYSBKPL	758
MSGxxxx	717	SYSBKP2	759
MSG0001	717	SYSNTWK	760
MSG0002	717	TAPCLN	760
MSG0003	717	TAPCNFG	760
MSG0005	718	TOD	760
NETSERV	718	TOD_BAT	760
NEXTLVL	718	TOPORT	761
NODEPL	718	Finding the failing RIO/HSL adapter	
NOFRUS	719	using i5/OS	762
NO_PNUM	719	Finding the failing RIO/HSL adapter	
NSCABLE	720	using AIX or Linux	762
NTDEVDR	720	Finding the failing RIO/HSL adapter	
NTLANDD	720	using the HMC	763
NTOPSYS	720	TWRBKPL	763
NTUSER	720	TWRCARD	763
NTVSCSI	720	TWRPLNR	765
OPT_CLN	720	UC235	766
OPTLCBL	721	UC236	766
OPTLDRV	721	UG3AS	766
OPUSER	721	UJ0E2	766
OSLIC	721	UJ0E3	766
OSTERM	721	UJ0E6	767
PGDPART	721	UJ0E7	767
PIOCARD	722	UJ0E9	767
PLDUMP	726	UJ6P3	767
PLUS	727	UJ9GC	768
PPCIMIN	727	UJA32, UJC38	768
PPCISYS	727	UJA33, UJP37	768
PPCITWR	727	UJA34	768
PRMIOA	727	UJA35	769
PRI_PCI	727	UJA36	769
PTFSRCH	729	UJB35	769
PTNNTWK	729	UJB36	770
PWRCBL	729	UJC35	770
PWROC	730	UJC36	771
PWRSPLY	730	UJE31	771
QDCCRLS	733	UJE32	771
QSYSOPR	733	UJE33	771
REFER	734	UJE34	771
REM_NIC	734	UJE35	771
REM_SYS	734	UJE36	772
SIADPCD	734	UJE37	772
SI_CARD	735	UJE38	772
SICNTRL	736	UJE39	773
SIIOADP	736	UJE40	773
SIIOADP: RIO loop location information	740	UJJ35	773

UJJ36	774
UJJ37	774
UJJ38	774
UJJ39	774
ULNZ3	775
ULNZ4	775
UNM31	775
UNM32	775
UNM35	776
UNM36	776
UNM38	776
UNP20	776
UNU01	776
UNU02	776
UNU31	777
UNU32	777
UPLF1	778
UPSUNIT	778
USER	778
UX201	778
UX202	778
UY1Z1	779

UY1Z2	779
UY1Z3	779
UY1Z4	779
UY1Z5	779
VPDPART	780
VRMOD	781
Failing Function Codes (FFCs)	782
Machine Types	782
Failing Function Code list	784

Appendix. Notices 785

Trademarks	786
Regulatory notices.	786
Class A Notices.	786
Class B Notices.	789
Terms and conditions.	791
Product recycling and disposal	791
Battery return program	792
IBM Cryptographic Coprocessor Card Return Program	792

Safety notices

Safety notices may be printed throughout this guide:

- **DANGER** notices call attention to a situation that is potentially lethal or extremely hazardous to people.
- **CAUTION** notices call attention to a situation that is potentially hazardous to people because of some existing condition.
- **Attention** notices call attention to the possibility of damage to a program, device, system, or data.

Laser safety information

IBM System i and System p models can use I/O cards or features that are fiber-optic based and that utilize lasers or LEDs.

Laser compliance

All lasers are certified in the U.S. to conform to the requirements of DHHS 21 CFR Subchapter J for class 1 laser products. Outside the U.S., they are certified to be in compliance with IEC 60825 as a class 1 laser product. Consult the label on each part for laser certification numbers and approval information.

CAUTION:

This product might contain one or more of the following devices: CD-ROM drive, DVD-ROM drive, DVD-RAM drive, or laser module, which are Class 1 laser products. Note the following information:

- Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.
- Use of the controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.

(C026)

CAUTION:

Data processing environments can contain equipment transmitting on system links with laser modules that operate at greater than Class 1 power levels. For this reason, never look into the end of an optical fiber cable or open receptacle. (C027)

CAUTION:

This product contains a Class 1M laser. Do not view directly with optical instruments. (C028)

CAUTION:

Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following information: laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam. (C030)

Service provider information

This topic is intended to provide IBM® service providers with complete instructions for diagnosing and isolating problems on IBM eServer™ hardware.

Before using this information and the products it supports, be sure to read Safety notices.

What's new

Highlights changes and improvements to the Service provider information.

What's new as of August 2006

Technical updates to the InfiniBand host channel adapter switch

FRU part number updates to the 7310-CR3.

Numerous technical updates that were needed to satisfy various difficulties found in the field

Revamping of the parts catalog and the updates of numerous FRU part numbers.

Several new 571F/575B card set cache directory card procedures.

Reworked the SRC files with extensive changes and updates to the SRC.

Added new symbolic FRUs and reworked others.

What's new as of April 2006

The Start of Call Procedure has been expanded.

Support for the following hardware has been added:

7310-C05 HMC.

9115-505 server

7037-A50 server

7047-185 server

OpenPower® 720 server

9110-51A server

9131-52A server

9133-55A server

7031-T24

7031-D24

What's new as of 8 February 2005

Support for the following hardware has been added:

OpenPower 710 system models.

510 system models.

575 system models.

7310-C04 and 7310-CR3 HMC models.

What's new as of 1 October 2004

Support for the following hardware has been added:

590 and 595 system models.

5790, 5791, 5794, and 7040-61D expansion units.

What's new as of 30 August 2004

Updates have been made throughout the topic to direct AIX® and Linux® users through the appropriate service path.

Card positions Missing card position information for some expansion units was added.

Service processor isolation procedures A number of the service processor isolation procedures were enhanced and revised.

Addresses New address information has been added for the model 550.

What's new as of 30 July 2004

Support for new hardware

- Information for servicing the following system units has been added: 550 and OpenPower 720.
- Information has also been added for the following expansion units: 7311-D10, 7311-D11, and 7311-D20.
- Information for servicing the model 570 has been updated to account for the optional secondary units.

Support for AIX and Linux

- Isolation procedures have been added for servers running the AIX and Linux operating systems.
- The Start of call procedure has been updated to direct AIX and Linux users through the correct service path.
- Working with AIX diagnostics has been updated in the Reference information topic.

Start of call procedure

Provides a starting point for analyzing problems. You should begin all service actions with this procedure.

About this task

This is the starting point for diagnosing and repairing servers. From this point, you will be guided to the appropriate information to help you diagnose server problems, determine the appropriate repair action, and then perform the necessary steps to repair the server. A system attention light indicates there is a serviceable event (an SRC in the control panel or in one of the serviceable event views) on the system. This procedure will guide you through finding the serviceable event.

Note: In this topic, **control panel** and **operator panel** are synonymous.

Before beginning, perform as many of the following tasks as possible:

Note: Ask the customer for the Using the problem reporting forms (available in the Customer service, support, and troubleshooting topic) that they should have completed when working with the support center.

- Verify the symptoms and service call data, including:
 - The server machine type, model number, and serial number.
 - The customer problem number.
 - A reference code (SRC, SRN or progress code). If you do not have a reference code, ask the customer for the date and time of the problem.

- Any available location code information
- Any data stored in:
 - the service action event log in Service Focal Point
 - the Service Action Log (i5/OS® servers)
 - other operating system-specific logs as directed
- Symptoms reported to you by the customer.
- Symptoms reported to you by the service support center.
- Symptoms reported to you by an attached input/output (I/O) device, for example, a disk drive enclosure expansion drawer.
- Record information to help you return the server to the same state that the customer typically uses, such as:
 - The IPL type that the customer typically uses for the server. (See Function 01: Display selected IPL type, system operating mode, and IPL speed for more information.)
 - The IPL mode that is used by the customer on this server.
 - The way in which the server is configured or partitioned.
- Ensure that the customer has put the server into a state in which you can perform service tasks.
 1. Is the failing component a monitor (display) or keyboard?
 - No:** Continue with the next step.
 - Yes:** Is the monitor or keyboard attached to a keyboard, video, mouse (KVM) switch?
 - No:** Continue with the next step.
 - Yes:** Go to Troubleshooting the keyboard, video, and mouse (KVM) switch for the 1x8 and 2x8 console manager.
 2. Is the failing unit a 7037-A50 or a 7047-185?
 - No:** Continue with the next step.
 - Yes:** Go to “Diagnosing a problem on a 7037-A50 or a 7047-185” on page 7.
 3. Is the failing server an xSeries or a BladeCenter blade server attached to an System i® server through an iSCSI Host Bus Adapter (HBA)?
 - No:** Continue with the next step.
 - Yes:** Go to the System i integrated xSeries troubleshooting procedure.
 4. Is there a Hardware Management Console (HMC) attached to the failing unit?
 - No:** Continue with the next step.
 - Yes:** Continue with step 7 on page 4.
 5. Does the customer intend for this system to be an HMC-managed system?
 - No:** Go to step 9 on page 4.
 - Yes:** Continue with the next step.

Attention: See the following considerations to help determine if the server was set up to be an HMC-managed server:

- Ask the customer.
- If the server does not have a control panel, then there should be an HMC connection, and the server is considered an HMC-managed system.
- Look for HMC= x displayed in the control panel. The x represents a 0, 1, or 2 to show the quantity of HMCs that are currently connected to the server.

Note: If the control panel displays HMC=0, the server was once connected to an HMC and now the HMC is disconnected. Although the HMC is disconnected, the server is configured to be an HMC-managed system. If the customer does not want the system to be HMC-managed, then the customer can go to Restoring your server to factory settings and follow the procedure to restore the server to the factory default settings.

If the server has been restored to factory settings and the server is still displaying error symptoms, continue with 9.

6. Inform the customer that an HMC is required to continue servicing the system, and ask the customer to reattach the HMC to the server. When the HMC is reattached to the managed system, continue with the next step.
7. Is the HMC functional?
 - No:** Go to HMC problem isolation procedures. Once the HMC is functional, return here and continue with the next step.
 - Yes:** Continue with the next step.
8. Perform the following steps from the HMC that is used to manage the server. During these steps, refer to the service data that was gathered earlier:
 - a. In the Navigation Area, open **Service Applications**.
 - b. Select **Service Focal Point**.
 - c. Select **Repair Serviceable Event**.
 - d. On the Select Failing System window, select the managed system that has the problem, and click **OK**.
 - e. Scroll through the log and verify that there is a problem with the status of **Open** to correspond with the customer's reported problem.

Note: If you are unable to locate the reported problem, and there is more than one open problem near the time of the reported failure, use the earliest problem in the log.

Do you find the reported problem, or an open problem near the time of the reported problem?

- **No:** Continue with the next step.
- **Yes:** Select the serviceable event you want to repair, and select **Repair** from the **Selected** menu. This launches a series of windows that guides you through the steps to repair the serviceable event. The system guides you through one of the two following methods of repair, depending on the type of FRU you need to exchange:
 - An interactive step-by-step process that provides illustrations and video presentations to help you exchange the FRU.
 - A link to the appropriate information center topic that provides instructions to help you exchange the FRU.

After you complete the repair procedure, the system automatically closes the serviceable event. **This ends the procedure.**

Note: If the **Repair** procedures are not available, continue with the next step.

9. Is there an eight-digit reference code (except Cxxxxxxx) displayed in function 11 on the control panel, or if applicable on the HMC?

Note: If the control panel is blank and nothing is displayed in the upper left corner (for example 01) suspect a power problem, go to the “Power problems” on page 81.

No: Continue with the next step.

Yes: Record all reference code data, including the values for functions 11 through 20 (see Collecting reference codes and system information), and note the failing partition. Then, go to the Reference codes topic to further isolate the problem. **This ends the procedure.**

Notes: If you are working at an HMC, check the HMC for operator panel values by performing the following steps:

- a. In the Navigation Area, expand **Server and Partition** → **Server Management**.
- b. Choose from the following options:
 - To view managed system reference codes:
 - 1) In the right pane, right-click the system and select **Properties**.
 - 2) Select the Reference Code tab to view the codes.
 - 3) When finished, click **Cancel**.
 - To view logical partition reference codes:
 - 1) In the right pane expand the system that contains the partition.
 - 2) Open **Partitions**.
 - 3) Right-click the logical partition and select **Properties**.
 - 4) Select the **Reference Code** tab to view the codes.
 - 5) When finished, click **Cancel**.

10. Is the system managed by the Integrated Virtualization Manager (IVM)?

Note: For information about the IVM, refer to Managing the Integrated Virtualization Manager

Yes: Go to step 13.

No: Continue with the next step.

11. Is an operating system console session available and can you log into the session?

Notes:

- a. For servers with logical partitions, the console session must be available for the **failing partition**.
- b. If you suspect a problem is on a device (a disk drive enclosure expansion drawer for example) that is attached to a server or a partition, the console session must be available for the partition to which the device is attached.
- c. See 5250 Console in the Managing your server topic for details on accessing a 5250 console session on the HMC.

Yes: Go to step 14 on page 6.

No: Continue with the next step.

12. Work with the customer to open an operating system console session. Can you successfully open an operating system console session?

Yes: Go to step 14 on page 6.

No: Go to step 16 on page 6.

13. Work with the customer to access the IVM web interface if it is not already running. Refer to Connecting to Integrated Virtualization Manager. Can you successfully open the console session for IVM?

Yes: Continue with the next step.

No: Go to step 16 on page 6.

14. Use the operating system-specific, the IVM-specific, or the Virtual I/O server (VIOS)-specific service tools and system logs to locate a “serviceable event” in the logs, or if there is no serviceable event, use the customer-reported symptom in step 14b.
 - a. Ask the customer for the date and time of the problem.

Note: If you are unable to locate the reported problem and there is more than one open problem near the time of the reported failure, use the earliest failure.

- b. Go to the appropriate procedure depending on the operating system, IVM, or VIOS that is reporting a problem.
 - If your server is managed by IVM, go to “Collect serviceable events in IVM” on page 363, and then return here and continue on step 15.
 - If your server or partition is running **AIX**, go to “AIX fast-path problem isolation” on page 364.
 - If your server or partition is running **Linux**, go to “Linux fast-path problem isolation” on page 585.
 - If your server or partition is running **i5/OS**, go to “Using the Service Action Log” on page 32.
 - If your server or partition is running a Virtual I/O Server partition, go to Virtual I/O Server troubleshooting.
15. Did you find a reference code associated with this failure near the time of the reported problem?

No: Continue with the next step.

Yes: Collect all reference code data and note the failing partition. Go to the Reference codes topic to further isolate the problem. **This ends the procedure.**
16. Use the HMC or a web browser to access the Advanced System Management Interface (ASMI). See Accessing the Advanced System Management Interface for details. Then, perform the following steps:
 - a. Log into the ASMI.
 - b. Click the plus sign next to **System Service Aids**.
 - c. Select **Error/Event Logs** to view the service processor error log.

Note: For more information on using the ASMI, see Managing your server using the Advanced System Management Interface.

Were you able to access ASMI and is there a reference code in the service processor error log that requires service?

No: Continue with the next step.

Yes: Collect all reference code data and note the failing partition. Go to the Reference codes topic to further isolate the problem. **This ends the procedure.**

17. The following examples show the possible formats of reference codes that display during the power-on process:
 - C1xx xxxx codes are displayed during the time after power is connected to the server until the service processor initial power-on process completes (indicated by “01” in the upper-left corner of the physical or logical control panel).
 - C2xx xxxx and C7xx xxxx codes are displayed after the power-on sequence is initiated.
 - CAxx xxxx codes are displayed while an AIX or Linux partition is initializing its resources.
 - xxx, 0xxx, 2xxxx, or C6xx xxxx, C9xx xxxx codes are displayed during the time that the operating system boots and configures resources.
 - 888-xxx code

Does the power-on process for the server appear to be stopped, and does function 11 display a reference code of a format shown in the list above?

No: Go to the “Symptom index” on page 10. **This ends the procedure.**

Yes: Collect all reference code data and note the failing partition. Go to the List of progress codes topic to further isolate the problem. **This ends the procedure.**

Diagnosing a problem on a 7037-A50 or a 7047-185

This is the entry procedure for diagnosing problems on a 7037-A50 or a 7047-185

Before you begin

If possible, leave the server in the state that it was in when the problem first occurred. Before you begin, visually check the system for symptoms, damage, or obvious problems such as unplugged or damaged power cables, correct external device cabling, or external devices that are powered off. Correct any problems that you find. Make a note of any symptoms that your server displays, such as:

- the system-attention light emitting diode (LED) is continuously illuminated.
- a reference code is displayed in the control (operator) panel display.
- you are having a problem with an adapter or an attached device.

About this task

Note: Because your server stores information about system operations even after the system unit is powered off, do not unplug the power cord from the system unit (or the power source) until you are instructed to do so later in these procedures.

1. Is the system-attention LED on the control panel illuminated continuously?

No: When the server is running, the system-attention LED is normally in the off state. However, you can manually put the LED in a blinking state to help identify the system unit. These states are normal and do not indicate a problem. To continue diagnosing a potential problem with your server, go to additional diagnostic procedures.

Yes: A continuously illuminated system-attention LED means that the server has stored some information about a problem, and that you need to take an action to correct the problem. Continue with the next step.

2. Using care to not remove the power cord from the system unit or from the power source, remove the side cover from the system unit. See Remove and replace model 7037-A50 or 7047-185 covers and doors. After the side cover is removed, continue with the next step.
3. Locate the light-path-diagnostic card which is located on the disk drive cage. Is there a fault-indicator LED that is continuously illuminated on the light-path-diagnostic card?

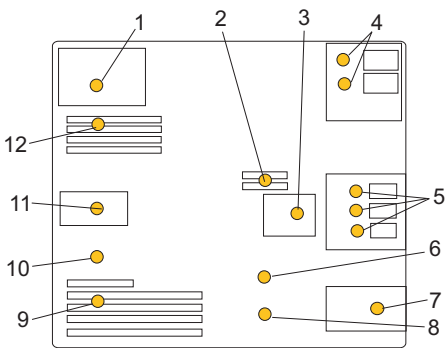


Figure 1. 7037-A50 or 7047-185 light-path-diagnostic card

Table 1. 7037-A50 or 7047-185 Fault-indicator LEDs

1 Power supply fault-indicator LED	7 Front fan fault-indicator LED
2 Voltage-regulator module fault-indicator LED	8 Battery fault-indicator LED
3 Disk-drive bay fan fault-indicator LED	9 PCI adapter fault-indicator LED

Table 1. 7037-A50 or 7047-185 Fault-indicator LEDs (continued)

4 Optical-media bay fault-indicator LEDs	10 Thermal fault-indicator LED
5 Disk-drive bay fault-indicator LEDs	11 Rear fan fault-indicator LED
6 System backplane fault-indicator LED	12 Memory fault-indicator LED

No: To continue diagnosing a potential problem with your server, go to the additional diagnostic procedures in step 8 on page 9.

Yes: A continuously illuminated LED on the light-path-diagnostic card means that the server has detected a problem in the area of the server that is represented by the LED's position on the card. Continue with the next step.

4. Do one of the following actions:

Note: If you need to remove the air baffle, do not unplug the power cord from the server or the power source.

- If the thermal fault-indicator LED on the light-path-diagnostic card is illuminated and there are no other fault indicator LEDs illuminated, ensure that the air vents in the front and rear of the server are not blocked and that the room temperature is within the operational specifications.
- If the light-path-diagnostic card indicates that you have a problem with a component that is located under the air baffle, such as a memory module or a voltage-regulator module, you must open the door on the air baffle to see the component-identification LEDs, see , then continue with step 5.
- If the light-path-diagnostic card indicates that you have a problem with the battery, power supply, front fan, rear fan, disk-drive fan, disk drive in one of the bays, or a PCI adapter in a PCI slot, go to step 6.

5. After the air baffle door is opened, you can see components such as memory modules and voltage-regulator modules and the component-identification LEDs that identify which module has a problem. Using the position of the fault-indicator LED from the previous step and the flashing component-identification LED, determine which module in your server is failing. Continue with the next step.

6. Call your service organization and report that one of the parts from the following list has a problem:

- memory module (DIMM)
- voltage-regulator module
- system backplane
- battery, Non-Volatile Random Access Memory (NVRAM)
- power supply
- PCI adapter fan
- processor fan
- disk drive enclosure fan
- media device in one of the bays
- disk drive in one of the bays
- PCI adapter in a PCI slot

Note: The preceding parts are listed with their part numbers in the *Part number catalog*, which is found in the IBM Systems Hardware Information Center.

When you receive the replacement part, continue with the next step.

7. Replace the part that was indicated by the fault-indicator LED. For removal and replacement instructions for the part, see *Installing features and replacing parts* in the IBM Systems Hardware Information Center.. **This ends the procedure.**

8. You are here because your server has a problem that cannot be identified by the system-attention LED and fault-indicator LEDs. From the following table, find a symptom that describes your server's symptoms and do the related action:

Option	Description
Symptom	Action
The control (operator) panel is not illuminated.	Go to the "Memory and processor subsystem problem isolation procedure" in the IBM Systems Hardware Information Center.
The control (operator) panel is blank except for a dot moving across the control panel display.	<p>The dot moving across the control panel display indicates that the control panel is hung in a reset state. This symptom might occur if a control panel cable is incorrectly seated or plugged, if a control panel or cable is damaged, or if the wrong control panel is installed. Do the following:</p> <ul style="list-style-type: none"> • Check and reconnect the control panel and cable connections. Refer to Model 7037-A50 and 7047-185 control panel • If reconnecting the control panel cable did not fix the problem, replace the control panel. For control panel removal and installation instructions go to Model 7037-A50 and 7047-185 control panel. <p>Note: After checking the above mentioned cables, plugs and control panel, and the symptom still has not been cleared, suspect the system backplane. Call your next level of support.</p>
There is a five, six, or eight character code displayed in the control (operator) panel.	Go to "Using system reference codes" in the IBM Systems Hardware Information Center.
The server appears to have stopped. There is a three or four character code continuously displayed in the control (operator) panel for an unusually long period.	Go to "Using progress codes" in the IBM Systems Hardware Information Center.
There is a code with a hyphen (xxx-xxx) displayed in the control (operator) panel.	You have a Service Request Number (SRN); go to "AIX problem analysis" in the IBM Systems Hardware Information Center.
The server appears to be looping. There is a series of three or four character codes repeatedly displaying in the control (operator) panel.	Go to Problems with loading and starting the operating system.
The AIX operating system is available but you still have a problem.	You have a problem with an AIX server; go to "AIX problem analysis" in the IBM Systems Hardware Information Center.
The Linux operating system is available but you still have a problem.	You have a problem with a Linux server; go to "Linux problem analysis" in the IBM Systems Hardware Information Center.
The replacement part does not fix the problem.	<p>After the part is replaced, complete the procedures for verifying your system in the IBM Systems Hardware Information Center. If your server shows the same symptoms, call your next level of support.</p> <p>If your server shows different symptoms than before, diagnose the new symptoms. Return to the first step of this procedure.</p>
Find a System Reference Code (SRC) using the Operator Panel functions	Go to "Control panel functions" in the IBM Systems Hardware Information Center.

Option	Description
Find an SRC using the System Management Services	Go to "Managing the system management services" in the IBM Systems Hardware Information Center.
AIX diagnostics	Go to "Working with AIX diagnostics" in the IBM Systems Hardware Information Center.
Linux tool kit Web page	Go to "Obtaining service and productivity tools for Linux" in the IBM Systems Hardware Information Center
Firmware update procedures	Go to "Getting fixes and upgrades" in the IBM Systems Hardware Information Center

What to do next

Symptom index

Use this symptom index only when you are guided here by the Start of call procedure.

Note: If you were not guided here from the "Start of call procedure" on page 2, return there and follow the instructions given in that procedure.

Review the symptoms in the left column. Look for the symptom that most closely matches the symptoms on the server that you are troubleshooting. When you find the matching symptom, perform the appropriate action as described in the right column.

Table 2. Determining symptom types

Symptom	What you should do:
You do not have a symptom.	Go to the "Start of call procedure" on page 2.
The symptom or problem is on a server or a partition running i5/OS	Go to "i5/OS server or i5/OS partition symptoms."
The symptom or problem is on a server or a partition running AIX.	Go to "AIX server or AIX partition symptoms" on page 14.
The symptom or problem is on a server or a partition running Linux.	Go to "Linux server or Linux partition symptoms" on page 23.

i5/OS server or i5/OS partition symptoms

Use the following tables to find the symptom you are experiencing. If you cannot find your symptom, contact your next level of support.

- General symptoms
- Symptoms occurring when the system is not operational
- Symptoms related to a logical partition on a server that has multiple logical partitions
- Obvious physical symptoms
- Time-of-day symptoms

Table 3. General i5/OS server or i5/OS partition symptoms

Symptom	Service action
You have an intermittent problem or you suspect that the problem is intermittent.	Go to "Intermittent problems" on page 71.

Table 3. General i5/OS server or i5/OS partition symptoms (continued)

Symptom	Service action
DST/SST functions are available on the logical partition console and: <ul style="list-style-type: none"> The customer reports reduced system function. There is a server performance problem. There are failing, missing, or inoperable server resources. 	On most servers with logical partitions, it is common to have one or more missing or non-reporting system bus resource's under Hardware Service Manager (see Hardware Service Manager in Service functions for more information).
Operations Console, or the remote control panel is not working properly.	Contact Software Support.
The system has a processor or memory problem.	Use the Service action log to check for a reference code or any failing items. See "Using the Service Action Log" on page 32 for instructions, replacing any hardware FRUs if necessary.
The system has detected a bus problem. An SRC of the form B600 69xx or B700 69xx will be displayed on the control panel or HMC.	Go to "Using the Service Action Log" on page 32.

Table 4. Symptoms occurring when the system is not operational

Symptom	Service action
A bouncing or scrolling ball (moving row of dots) remains on the operator panel display, or the operator panel display is filled with dashes or blocks.	<p>Verify that the operator panel connections to the system backplane are connected and properly seated. Also, reseal the Service Processor card.</p> <p>If a client computer (such as a PC with Ethernet capability and a Web browser) is available, connect it to the service processor in the server that is displaying the symptom.</p> <p>To connect a personal computer with Ethernet capability and a Web browser, or an ASCII terminal, to access the Advanced System Management Interface (ASMI), go to Managing your server using the Advanced System Management Interface.</p> <ul style="list-style-type: none"> If you can successfully access the ASMI, replace the operator panel assembly. Refer to Finding part locations to determine the part number and correct exchange procedure. If you cannot successfully access the ASMI, replace the service processor. Refer to Finding part locations to determine the part number and correct exchange procedure. <p>If you do not have a PC or ASCII terminal, replace the following one at a time (go to Finding part locations to determine the part number and correct exchange procedure):</p> <ol style="list-style-type: none"> Operator panel assembly. Service processor.

Table 4. Symptoms occurring when the system is not operational (continued)

Symptom	Service action
You have a blank display on the operator panel. Other LEDs on the operator panel appear to behave normally.	<p>Verify that the operator panel connections to the system backplane are connected and properly seated.</p> <p>If a client computer (such as a PC with Ethernet capability and a Web browser) is available, connect it to the service processor in the server that is displaying the symptom.</p> <p>To connect a personal computer with Ethernet capability and a Web browser, or an ASCII terminal, to access the Advanced System Management Interface (ASMI), go to Managing your server using the Advanced System Management Interface.</p> <ul style="list-style-type: none"> • If you can successfully access the ASMI, replace the operator panel assembly. Refer to Finding part locations to determine the part number and correct exchange procedure. • If you cannot successfully access the ASMI, replace the service processor. Refer to Finding part locations to determine the part number and correct exchange procedure. <p>If you do not have a PC or ASCII terminal, replace the following one at a time (go to Finding part locations to determine the part number and correct exchange procedure):</p> <ol style="list-style-type: none"> 1. Control (operator) panel assembly. 2. Service processor.
There is an IPL problem, the system attention light is on, and blocks of data appear for 5 seconds at a time before moving to the next block of data for 5 seconds, and so on until 5 seconds of a blank control panel is displayed at which time the cycle repeats.	These blocks of data are functions 11 through 20. The first data block after the blank screen is function 11, the second block is function 12, and so on. Use this information to fill out the Problem reporting forms. Then go to Reference codes.
You have a power problem, the system or an attached unit will not power on or will not power off, or there is a 1xxx-xxxx reference code.	Go to "Power problems" on page 81.
There is an SRC in function 11.	Look up the reference code (see Reference codes).
There is an IPL problem.	Go to "IPL problems" on page 76.
There is a Device Not Found message during an installation from an alternate installation device.	Go to "TUPIP06" on page 348.

Table 5. Symptoms related to a logical partition on a server that has multiple logical partitions

Symptom	Service action
The console is not working for a logical partition.	See Recovering when the console does not show a sign-on display or a menu with a command line.

Table 5. Symptoms related to a logical partition on a server that has multiple logical partitions (continued)

Symptom	Service action
<ul style="list-style-type: none"> There is an SRC on the panel of an I/O expansion unit owned by a logical partition. You suspect a power problem with resources owned by a logical partition. There is an IPL problem with a logical partition and there is an SRC on the HMC. The logical partition's operations have stopped or the partition is in a loop and there is an SRC on the HMC. <p>The logical partition's console is functioning, but the state of the partition in the HMC is "Failed" or "Unit Attn" and there is an SRC.</p>	<ul style="list-style-type: none"> Search Service Focal Point (see Using Service Focal Point) for a serviceable event. If you do not find a serviceable event in Service Focal Point, then record the partition's SRC from the Operator Panel Values field in the HMC: <ol style="list-style-type: none"> In the Navigation Area, expand Server and Partition → Server Management. In the right pane, expand or select your system or partition. Use that SRC and look up the reference code (see Reference codes). <p>Use the logical partition's SRC. From the partition's console search for that SRC in the partition's Service Action Log. See "Using the Service Action Log" on page 32.</p>
<p>There is an IPL problem with a logical partition and there is no SRC displayed in the HMC.</p>	<p>Perform the following to look for the panel value for the partition in the HMC:</p> <ol style="list-style-type: none"> In the Navigation Area, expand Server and Partition → Server Management. In the right pane expand the system that contains the partition. Open Partitions. Right-click the logical partition and select Properties. Select the Reference Code tab to view the codes. When finished, click Cancel. <p>Go to Reference codes. If no reference code could be found, contact your next level of support.</p>
<p>The partition's operations have stopped or the partition is in a loop and there is no SRC displayed on the HMC.</p>	<p>Perform function 21 from the HMC (see Control panel functions). If this fails to resolve the problem, contact your next level of support.</p>
<p>One or more of the following was reported:</p> <ul style="list-style-type: none"> There is a system reference code or message on the logical partition's console. The customer reports reduced function in the partition. There is a logical partition performance problem. There are failing, missing, or inoperable resources. 	<p>From the partition's console search the partition's Service Action Log. Go to "Using the Service Action Log" on page 32. Note: On most systems with logical partitions, it is common to have one or more "Missing or Non-reporting" system bus resource's under Hardware Service Manager. See Hardware Service Manager in Service functions for details.</p>
<p>There is a Device Not Found message during an installation from an alternate installation device.</p>	<p>Go to "TUPIP06" on page 348.</p>

Table 5. Symptoms related to a logical partition on a server that has multiple logical partitions (continued)

Symptom	Service action
<p>There is a problem with a guest partition.</p> <p>Note: These are problems reported from the operating system (other than i5/OS) running in a guest partition or reported from the hosting partition of a guest partition.</p> <p>Is the problem appearing from a guest partition (to determine if the system has guest partitions, see Determining if the system has guest partitions).</p> <p>Is the problem appearing in the hosting partition of a guest partition? To determine if a partition is a guest partition, see Determining if the system has guest partitions or ask the customer if the problem is appearing in the hosting partition for a guest partition.</p>	<p>If there are serviceable events in the logical partition or hosting partition, work on these problems first.</p> <p>To determine the hosting partition for a guest partition see Determining if the system has guest partitions. If there are no SAL entries in the logical partition and no SAL entries in the hosting partition, contact your next level of support.</p>

Table 6. Obvious physical symptoms

Symptom	Service action
A power indicator light or display on the system unit control panel or an attached I/O unit is not working correctly.	Perform "PWR1920" on page 274.
<p>One or more of the following was reported:</p> <ul style="list-style-type: none"> Noise Smoke Odor 	Go to System safety inspection.
A part is broken or damaged.	Go to the Part number catalog to get the part number. Then go to Removing and replacing parts to exchange the part.

Table 7. Time-of-day problems

Symptom	Service action
System clock loses or gains more than 1 second per day when the system is connected to utility power.	Replace the service processor. See symbolic FRU "SVCPROC" on page 757.
System clock loses or gains more than 1 second per day when the system is disconnected from utility power.	Replace the time-of-day battery on the service processor. Go to symbolic FRU "TOD_BAT" on page 760.

AIX server or AIX partition symptoms

Use the following tables to find the symptom you are experiencing. If you cannot find your symptom, contact your next level of support.

Choose the description that best describes your situation:

- You have a service action to perform
- Integrated Virtualization Manager (IVM) Problem
- An LED is not operating as expected
- Control (operator) panel problems
- Reference codes
- Hardware Management Console (HMC) Problem
- There is a display or monitor problem (for example, distortion or blurring)

- Power and cooling problems
- Other symptoms or problems

You have a service action to perform

Symptom	What you should do:
You have an open service event in the service action event log.	Go to “Start of call procedure” on page 2.
You have parts to exchange or a corrective action to perform.	<ol style="list-style-type: none"> 1. Go to Removing and replacing parts. 2. Go to End-of-call procedure.
You need to verify that a part exchange or corrective action corrected the problem.	<ol style="list-style-type: none"> 1. Go to Verifying the repair. 2. Go to the End-of-call procedure.
You need to verify correct system operation.	<ol style="list-style-type: none"> 1. Go to Verifying the repair. 2. Go to End-of-call procedure.

Integrated Virtualization Manager (IVM) Problem

Symptom	What you should do:
The partitions do not activate - partition configuration is damaged	Restore the partition configuration data using IVM. See Backing up and restoring partition data
Other partition problems when the server is managed by IVM	Perform Troubleshooting with the Integrated Virtualization Manager

An LED is not operating as expected

Symptom	What you should do:
The system attention LED on the control panel is on.	Go to “Start of call procedure” on page 2.
The rack identify LED does not operate properly.	Go to “AIX fast-path problem isolation” on page 364.
The rack indicator LED does not turn on, but a drawer identify LED is on.	<ol style="list-style-type: none"> 1. Make sure the rack indicator LED is properly mounted to the rack. 2. Make sure that the rack identify LED is properly cabled to the bus bar on the rack and to the drawer identify LED connector. 3. Replace the following parts one at a time: <ul style="list-style-type: none"> • Rack LED to bus bar cable • LED bus bar to drawer cable • LED bus bar 4. Contact your next level of support

Control (operator) panel problems

Symptom	What you should do:
01 does not appear in the upper-left corner of the operator panel display after the power is connected and before pressing the power-on button. Other symptoms appear in the operator panel display or LEDs before the power on button is pressed.	Go to “Power problems” on page 81.

Symptom	What you should do:
<p>A bouncing or scrolling ball (moving row of dots) remains on the operator panel display, or the operator panel display is filled with dashes or blocks.</p>	<p>Verify that the operator panel connections to the system backplane are connected and properly seated. Also, reseal the Service Processor card.</p> <p>If a client computer (such as a PC with Ethernet capability and a Web browser) is available, connect it to the service processor in the server that is displaying the symptom.</p> <p>To connect a personal computer with Ethernet capability and a Web browser, or an ASCII terminal, to access the Advanced System Management Interface (ASMI), go to Managing your server using the Advanced System Management Interface.</p> <ul style="list-style-type: none"> • If you can successfully access the ASMI, replace the operator panel assembly. Refer to Finding part locations to determine the part number and correct exchange procedure. • If you cannot successfully access the ASMI, replace the service processor. Refer to Finding part locations to determine the part number and correct exchange procedure. <p>If you do not have a PC or ASCII terminal, replace the following one at a time (go to Finding part locations to determine the part number and correct exchange procedure):</p> <ol style="list-style-type: none"> 1. Operator panel assembly. 2. Service processor.
<p>You have a blank display on the operator panel. Other LEDs on the operator panel appear to behave normally.</p>	<p>Verify that the operator panel connections to the system backplane are connected and properly seated.</p> <p>If a client computer (such as a PC with Ethernet capability and a Web browser) is available, connect it to the service processor in the server that is displaying the symptom.</p> <p>To connect a personal computer with Ethernet capability and a Web browser, or an ASCII terminal, to access the Advanced System Management Interface (ASMI), go to Managing your server using the Advanced System Management Interface.</p> <ul style="list-style-type: none"> • If you can successfully access the ASMI, replace the operator panel assembly. Refer to Finding part locations to determine the part number and correct exchange procedure. • If you cannot successfully access the ASMI, replace the service processor. Refer to Finding part locations to determine the part number and correct exchange procedure. <p>If you do not have a PC or ASCII terminal, replace the following one at a time (go to Finding part locations to determine the part number and correct exchange procedure):</p> <ol style="list-style-type: none"> 1. Control (operator) panel assembly. 2. Service processor.

Symptom	What you should do:
You have a blank display on the operator panel. Other LEDs on the operator panel are off.	Go to “Power problems” on page 81.
An 888 sequence is displayed in the operator panel display.	Go to “AIX fast-path problem isolation” on page 364.

Reference codes

Symptom	What you should do:
You have an 8-digit error code displayed.	<p>Look up the reference code in the Reference codes section of the Information Center.</p> <p>Note: If the repair for this code does not involve replacing a FRU (for instance, running an AIX command that fixes the problem or changing a hot-pluggable FRU), then update the AIX error log after the problem is resolved by performing the following steps:</p> <ol style="list-style-type: none"> 1. In the online diagnostics, select Task Selection → Log Repair Action. 2. Select resource sysplanar0. <p>On systems with a fault indicator LED, this changes the fault indicator LED from the fault state to the normal state.</p>
The system stops with an 8-digit error code displayed when booting.	Look up the reference code in the Reference codes section of the information center.
The system stops and a 4-digit code displays on the control panel that does not begin with 0 or 2.	Look up the reference code in the Reference codes section of the information center.
The system stops and a 4-digit code displays on the control panel that begins with 0 or 2 is displayed in the operator panel display.	Record SRN 101-xxxx where xxxx is the 4-digit code displayed in the control panel, then look up this reference code in the Reference codes section of the information center. Follow the instructions given in the Description and Action column for your SRN.
The system stops and a 3-digit number displays on the control panel.	<p>Add 101- to the left of the three digits to create an SRN, then look up this reference code in the Reference codes section of the information center. Follow the instructions given in the Description and Action column for your SRN.</p> <p>If there is a location code displayed under the 3-digit error code, look at the location to see if it matches the failing component that the SRN pointed to. If they do not match, perform the action given in the error code table. If the problem still exists, replace the failing component from the location code.</p> <p>If there is a location code displayed under the 3-digit error code, record the location code.</p> <p>Record SRN 101-xxx, where xxx is the 3-digit number displayed in the operator panel display, then look up this reference code in the Reference codes section of the information center. Follow the instructions given in the Description and Action column for your SRN.</p>

Hardware Management Console (HMC) Problem

Symptom	What you should do:
Hardware Management Console (HMC) cannot be used to manage a managed system, or the connection to the managed system is failing.	<p>If the managed system is operating normally (no error codes or other symptoms), the HMC might have a problem, or the connection to the managed system might be damaged or incorrectly cabled. Do the following:</p> <ol style="list-style-type: none"> 1. Check the connections between the HMC and the managed system. Correct any cabling errors if found. If another cable is available, connect it in place of the existing cable and refresh the HMC interface. You may have to wait up to 30 seconds for the managed system to reconnect. 2. Verify that any connected HMC is connected to the managed system by checking the Management Environment of the HMC. Note: The managed system must have power connected, and either be waiting for a power-on instruction (01 is in the upper-left corner of the operator panel), or be running. If the managed system does not appear in the Navigation area of the HMC Management Environment, the HMC or the connection to the managed system might be failing. 3. Go to the Entry MAP in the Managing your server using the Hardware Management Console section. 4. There might be a problem with the service processor card or the system backplane. If you cannot fix the problem using the HMC tests in the Managing your server using the Hardware Management Console section: <ol style="list-style-type: none"> a. Replace the service processor card. Refer to Removing and replacing parts. b. Replace the system backplane if not already replaced in substep "a" above. Refer to Removing and replacing parts.
Hardware Management Console (HMC) cannot call out using the attached modem and the customer's telephone line.	<p>If the managed system is operating normally (no error codes or other symptoms), the HMC might have a problem, or the connection to the modem and telephone line might have a problem. Do the following:</p> <ol style="list-style-type: none"> 1. Check the connections between the HMC and the modem and telephone line. Correct any cabling errors if found. 2. Go to the Entry MAP in the Managing your server using the Hardware Management Console section.

There is a display problem (for example, distortion or blurring)

Symptom	What you should do:
All display problems.	<ol style="list-style-type: none">1. If you are using the Hardware Management Console, go to the Managing your server using the Hardware Management Console section.2. If you are using a graphics display:<ol style="list-style-type: none">a. Go to the problem determination procedures for the display.b. If you do not find a problem:<ul style="list-style-type: none">• Replace the graphics display adapter. Refer to Removing and replacing parts.• Replace the backplane into which the card is plugged. Refer to Removing and replacing parts.3. If you are using an ASCII terminal:<ol style="list-style-type: none">a. Make sure that the ASCII terminal is connected to S1.b. If problems persist, go to the problem determination procedures for the terminal.c. If you do not find a problem, replace the service processor. Refer to Removing and replacing parts.
There appears to be a display problem (distortion, blurring, and so on)	Go to the problem determination procedures for the display.

Power and cooling problems

Symptom	What you should do:
The system will not power on and no error codes are available.	Go to "Power problems" on page 81.
The power LEDs on the operator panel and the power supply do not come on or stay on.	<ol style="list-style-type: none">1. Check the service processor error log.2. Go to "Power problems" on page 81.
The power LEDs on the operator panel and the power supply come on and stay on, but the system does not power on.	<ol style="list-style-type: none">1. Check the service processor error log.2. Go to "Power problems" on page 81.
A rack or a rack-mounted unit will not power on.	<ol style="list-style-type: none">1. Check the service processor error log.2. Go to "Power problems" on page 81.
The cooling fan(s) do not come on, or come on but do not stay on.	<ol style="list-style-type: none">1. Check the service processor error log.2. Go to "Power problems" on page 81.
The system attention LED on the operator panel is on and there is no error code displayed.	<ol style="list-style-type: none">1. Check the service processor error log.2. Go to "Power problems" on page 81.

Other symptoms or problems

Symptom	What you should do:
The system stopped and a code is displayed on the operator panel.	Go to "Start of call procedure" on page 2.

Symptom	What you should do:
01 is displayed in the upper-left corner of the operator panel and the fans are off.	The service processor is ready. The system is waiting for power-on. Boot the system. If the boot is unsuccessful, and the system returns to the default display (indicated by 01 in the upper-left corner of the operator panel), go to “MAP 0020: Problem determination procedure” on page 373.
The operator panel displays STBY.	The service processor is ready. The server was shut down by the operating system and is still powered on. This condition can be requested by a privileged system user with no faults. Go to “Start of call procedure” on page 2. Note: See the service processor error log for possible operating system fault indications.
All of the system POST indicators are displayed on the firmware console, the system pauses and then restarts. The term <i>POST indicators</i> refers to the device mnemonics (the words memory, keyboard, network, scsi, and speaker) that appear on the firmware console during the power-on self-test (POST).	Go to Problems with loading and starting the operating system.
The system stops and all of the POST indicators are displayed on the firmware console. The term <i>POST indicators</i> refers to the device mnemonics (the words memory, keyboard, network, scsi, and speaker) that appear on the firmware console during the power-on self-test (POST).	Go to Problems with loading and starting the operating system.
The system stops and the message starting software please wait...is displayed on the firmware console.	Go to Problems with loading and starting the operating system.
The system does not respond to the password being entered or the system login prompt is displayed when booting in service mode.	<ol style="list-style-type: none"> 1. If the password is being entered from the Hardware Management Console (HMC), go to the Managing your server using the Hardware Management Console. 2. If the password is being entered from a keyboard attached to the system, the keyboard or its controller may be faulty. In this case, replace these parts in the following order: <ol style="list-style-type: none"> a. Keyboard b. Service processor 3. If the password is being entered from an ASCII terminal, use the problem determination procedures for the ASCII terminal. Make sure the ASCII terminal is connected to S1. If the problem persists, replace the service processor. <p>If the problem is fixed, go to “MAP 0410: Repair checkout” on page 419.</p>
The system stops with a prompt to enter a password.	Enter the password. You cannot continue until a correct password has been entered. When you have entered a valid password, go to the beginning of this table and wait for one of the other conditions to occur.
The system does not respond when the password is entered.	Go to Step 1020-2.

Symptom	What you should do:
No codes are displayed on the operator panel within a few seconds of turning on the system. The operator panel is blank before the system is powered on.	<p>Reseat the operator panel cable. If the problem is not resolved, replace in the following order:</p> <ol style="list-style-type: none"> 1. Operator panel assembly. Refer to Removing and replacing parts 2. Service processor. Refer to Removing and replacing parts. <p>If the problem is fixed, go to “MAP 0410: Repair checkout” on page 419.</p> <p>If the problem is still not corrected, go to “MAP 0020: Problem determination procedure” on page 373.</p>
The SMS configuration list or boot sequence selection menu shows more SCSI devices attached to a controller/adaptor than are actually attached.	<p>A device may be set to use the same SCSI bus ID as the control adapter. Note the ID being used by the controller/adaptor (this can be checked and/or changed through an SMS utility), and verify that no device attached to the controller is set to use that ID.</p> <p>If settings do not appear to be in conflict:</p> <ol style="list-style-type: none"> 1. Go to “MAP 0020: Problem determination procedure” on page 373. 2. Replace the SCSI cable. 3. Replace the device. 4. Replace the SCSI adapter <p>Note: In a “twin-tailed” configuration where there is more than one initiator device (normally another system) attached to the SCSI bus, it may be necessary to use SMS utilities to change the ID of the SCSI controller or adapter.</p>
You suspect a cable problem.	<p>Go to Adapters, Devices and Cables for Multiple Bus Systems.</p> <p>Note: The above link will take you to the home page of the pSeries® and AIX Information Center. To access the document mentioned above, do the following:</p> <ol style="list-style-type: none"> 1. Select the continent (for example, North America) 2. Select one of the three languages listed from the AIX listing (for example, English) 3. Select “Hardware Documentation” from the navigation bar, located on the left side of the screen. 4. In the “Hardware Documentation” window, go to the “general service documentation” section and select “Adapters, Devices, and Cable”. 5. Select “Adapters, Devices and Cable Information for Multiple Bus Systems.”
You have a problem that does not prevent the system from booting. The operator panel is functional and the rack indicator LED operates as expected.	Go to “MAP 0020: Problem determination procedure” on page 373.
All other symptoms.	Go to “MAP 0020: Problem determination procedure” on page 373.
All other problems.	Go to “MAP 0020: Problem determination procedure” on page 373.
You do not have a symptom.	Go to “MAP 0020: Problem determination procedure” on page 373.

Symptom	What you should do:
You have parts to exchange or a corrective action to perform.	<ol style="list-style-type: none"> 1. Go to "Start of call procedure" on page 2. 2. Go to End of call procedure.
You need to verify that a part exchange or corrective action corrected the problem.	Go to "MAP 0410: Repair checkout" on page 419.
You need to verify correct system operation.	Go to "MAP 0410: Repair checkout" on page 419.
The system stopped. A POST indicator is displayed on the system console and an eight-digit error code is not displayed.	<p>If the POST indicator represents:</p> <ol style="list-style-type: none"> 1. Memory, go to "PFW1548: Memory and processor subsystem problem isolation procedure" on page 69. 2. Keyboard <ol style="list-style-type: none"> a. Replace the keyboard. b. Replace the service processor, location: model dependent. c. Go to "PFW1548: Memory and processor subsystem problem isolation procedure" on page 69. 3. Network, go to "PFW1548: Memory and processor subsystem problem isolation procedure" on page 69. 4. SCSI, go to "PFW1548: Memory and processor subsystem problem isolation procedure" on page 69. 5. Speaker <ol style="list-style-type: none"> a. Replace the control panel. The location is model dependent; refer to Installing features b. Replace the service processor. The location is model dependent. c. Go to "PFW1548: Memory and processor subsystem problem isolation procedure" on page 69.
The diagnostic operating instructions are displayed.	Go to "MAP 0020: Problem determination procedure" on page 373.
The system login prompt is displayed.	<p>If you are loading the diagnostics from a CD-ROM, you may not have pressed the correct key or you may not have pressed the key soon enough when you were trying to indicate a service mode IPL of the diagnostic programs. If this is the case, try to boot the CD-ROM again and press the correct key. Note: Perform the system shutdown procedure before turning off the system.</p> <p>If you are sure you pressed the correct key in a timely manner, go to Step 1020-2.</p> <p>If you are loading diagnostics from a Network Installation Management (NIM) server, check for the following:</p> <ul style="list-style-type: none"> • The bootlist on the client may be incorrect. • Cstate on the NIM server may be incorrect. • There may be network problems preventing you from connecting to the NIM server. <p>Verify the settings and the status of the network. If you continue to have problems refer to Problems with loading and starting the operating system and follow the steps for network boot problems.</p>

Symptom	What you should do:
The System Management Services (SMS) menu is displayed when you were trying to boot standalone AIX diagnostics.	<p>If you are loading diagnostics from the CD-ROM, you may not have pressed the correct key when you were trying to indicate a service mode IPL of the diagnostic programs. If this is the case, try to boot the CD-ROM again and press the correct key.</p> <p>If you are sure you pressed the correct key, the device or media you are attempting to boot from may be faulty.</p> <ol style="list-style-type: none"> 1. Try to boot from an alternate boot device connected to the same controller as the original boot device. If the boot succeeds, replace the original boot device (for removable media devices, try the media first). If the boot fails, go to Problems with loading and starting the operating system. 2. Go to "PFW1548: Memory and processor subsystem problem isolation procedure" on page 69.
The SMS boot sequence selection menu or remote IPL menu does not show all of the bootable devices in the partition or system.	If an AIX or Linux partition is being booted, verify that the devices that you expect to see in the list are assigned to this partition. If they are not, use the HMC to reassign the required resources. If they are assigned to this partition, go to Problems with loading and starting the operating system to resolve the problem.

Linux server or Linux partition symptoms

Use the following tables to find the symptom you are experiencing. If you cannot find your symptom, contact your next level of support.

Choose the description that best describes your situation:

- You have a service action to perform
- Integrated Virtualization Manager (IVM) Problem
- An LED is not operating as expected
- Control (operator) panel problems
- Reference codes
- Hardware Management Console (HMC) Problem
- There is a display or monitor problem (for example, distortion or blurring)
- Power and cooling problems
- Other symptoms or problems

You have a service action to perform

Symptom	What you should do:
You have an open service event in the service action event log.	Go to "Start of call procedure" on page 2.
You have parts to exchange or a corrective action to perform.	<ol style="list-style-type: none"> 1. Go to Removing and replacing parts. 2. Go to the End-of-call procedure.
You need to verify that a part exchange or corrective action corrected the problem.	<ol style="list-style-type: none"> 1. Go to Verifying the repair. 2. Go to the End-of-call procedure.
You need to verify correct system operation.	<ol style="list-style-type: none"> 1. Go to Verifying the repair. 2. Go to the End-of-call procedure.

Integrated Virtualization Manager (IVM) Problem

Symptom	What you should do:
The partitions do not activate - partition configuration is damaged	Restore the partition configuration data using IVM. See Backing up and restoring partition data
Other partition problems when the server is managed by IVM	Perform Troubleshooting with the Integrated Virtualization Manager

An LED is not operating as expected

Symptom	What you should do:
The system attention LED on the control panel is on.	Go to “Linux fast-path problem isolation” on page 585.
The rack identify LED does not operate properly.	Go to the “Linux fast-path problem isolation” on page 585.
The rack indicator LED does not turn on, but a drawer identify LED is on.	<ol style="list-style-type: none">1. Make sure the rack indicator LED is properly mounted to the rack.2. Make sure that the rack identify LED is properly cabled to the bus bar on the rack and to the drawer identify LED connector.3. Replace the following parts one at a time:<ul style="list-style-type: none">• Rack LED to bus bar cable• LED bus bar to drawer cable• LED bus bar4. Contact your next level of support

Control (operator) panel problems

Symptom	What you should do:
01 does not appear in the upper-left corner of the operator panel display after the power is connected and before pressing the power-on button. Other symptoms appear in the operator panel display or LEDs before the power on button is pressed.	Go to “Power problems” on page 81.

Symptom	What you should do:
<p>A bouncing or scrolling ball (moving row of dots) remains on the operator panel display, or the operator panel display is filled with dashes or blocks.</p>	<p>Verify that the operator panel connections to the system backplane are connected and properly seated. Also, reseal the Service Processor card.</p> <p>If a client computer (such as a PC with Ethernet capability and a Web browser) is available, connect it to the service processor in the server that is displaying the symptom.</p> <p>To connect a personal computer with Ethernet capability and a Web browser, or an ASCII terminal, to access the Advanced System Management Interface (ASMI), go to Managing your server using the Advanced System Management Interface.</p> <ul style="list-style-type: none"> • If you can successfully access the ASMI, replace the operator panel assembly. Refer to Finding part locations to determine the part number and correct exchange procedure. • If you cannot successfully access the ASMI, replace the service processor. Refer to Finding part locations to determine the part number and correct exchange procedure. <p>If you do not have a PC or ASCII terminal, replace the following one at a time (go to Finding part locations to determine the part number and correct exchange procedure):</p> <ol style="list-style-type: none"> 1. Operator panel assembly. 2. Service processor.
<p>You have a blank display on the operator panel. Other LEDs on the operator panel appear to behave normally.</p>	<p>Verify that the operator panel connections to the system backplane are connected and properly seated.</p> <p>If a client computer (such as a PC with Ethernet capability and a Web browser) is available, connect it to the service processor in the server that is displaying the symptom.</p> <p>To connect a personal computer with Ethernet capability and a Web browser, or an ASCII terminal, to access the Advanced System Management Interface (ASMI), go to Managing your server using the Advanced System Management Interface.</p> <ul style="list-style-type: none"> • If you can successfully access the ASMI, replace the operator panel assembly. Refer to Finding part locations to determine the part number and correct exchange procedure. • If you cannot successfully access the ASMI, replace the service processor. Refer to Finding part locations to determine the part number and correct exchange procedure. <p>If you do not have a PC or ASCII terminal, replace the following one at a time (go to Finding part locations to determine the part number and correct exchange procedure):</p> <ol style="list-style-type: none"> 1. Control (operator) panel assembly. 2. Service processor.

Symptom	What you should do:
You have a blank display on the operator panel. Other LEDs on the operator panel are off.	Go to "Power problems" on page 81.

Reference codes

Symptom	What you should do:
You have an 8-digit error code displayed.	<p>Look up the reference code in the Reference codes section of the information center.</p> <p>Note: If the repair for this code does not involve replacing a FRU (for instance, running an AIX command that fixes the problem or changing a hot-pluggable FRU), then update the AIX error log after the problem is resolved by performing the following steps:</p> <ol style="list-style-type: none"> 1. In the online diagnostics, select Task SelectionLog Repair Action. 2. Select resource sysplanar0. <p>On systems with a fault indicator LED, this changes the "fault indicator" LED from the "fault" state to the "normal" state.</p>
The system stops with an 8-digit error code displayed when booting.	Look up the reference code in the Reference codes section of the information center.
The system stops and a 4-digit code displays on the control panel that does not begin with 0 or 2.	Look up the reference code in the Reference codes section of the information center.
The system stops and a 4-digit code displays on the control panel that begins with 0 or 2 is displayed in the operator panel display.	Record SRN 101-xxxx where xxxx is the 4-digit code displayed in the control panel, then look up this reference code in the Reference codes section of the information center. Follow the instructions given in the Description and Action column for your SRN.
The system stops and a 3-digit number displays on the control panel.	<p>Add 101- to the left of the three digits to create an SRN, then look up this reference code in the Reference codes section of the information center. Follow the instructions given in the Description and Action column for your SRN.</p> <p>If there is a location code displayed under the 3-digit error code, look at the location to see if it matches the failing component that the SRN pointed to. If they do not match, perform the action given in the error code table. If the problem still exists, then replace the failing component from the location code.</p> <p>If there is a location code displayed under the 3-digit error code, record the location code.</p> <p>Record SRN 101-xxx, where xxx is the 3-digit number displayed in the operator panel display, then look up this reference code in the Reference codes section of the information center. Follow the instructions given in the Description and Action column for your SRN.</p>

Hardware Management Console (HMC) Problem

Symptom	What you should do:
Hardware Management Console (HMC) cannot be used to manage a managed system, or the connection to the managed system is failing.	<p>If the managed system is operating normally (no error codes or other symptoms), the HMC might have a problem, or the connection to the managed system might be damaged or incorrectly cabled. Do the following:</p> <ol style="list-style-type: none"> 1. Check the connections between the HMC and the managed system. Correct any cabling errors if found. If another cable is available, connect it in place of the existing cables and refresh the HMC interface. You may have to wait up to 30 seconds for the managed system to reconnect. 2. Verify that any connected HMC is connected to the managed system by checking the Management Environment of the HMC. Note: The managed system must have power connected and the system running, or waiting for a power-on instruction (01 is in the upper-left corner of the operator panel.) If the managed system does not appear in the Navigation area of the HMC Management Environment, the HMC or the connection to the managed system might be failing. 3. Go to the Managing your server using the Hardware Management Console section. 4. There might be a problem with the service processor card or the HMC system backplane. If you cannot fix the problem using the HMC tests in the Managing your server using the Hardware Management Console section: <ol style="list-style-type: none"> a. Replace the service processor card. Refer to Removing and replacing parts. b. Replace the HMC system backplane. Refer to Removing and replacing parts.
Hardware Management Console (HMC) cannot call out using the attached modem and the customer's telephone line.	<p>If the managed system is operating normally (no error codes or other symptoms), the HMC might have a problem, or the connection to the modem and telephone line might have a problem. Do the following:</p> <ol style="list-style-type: none"> 1. Check the connections between the HMC and the modem and telephone line. Correct any cabling errors if found. 2. Go to the Managing your server using the Hardware Management Console for information about the HMC.

There is a display problem (for example, distortion or blurring)

Symptom	What you should do:
All display problems.	<ol style="list-style-type: none">1. If you are using the Hardware Management Console, go to the Managing your server using the Hardware Management Console section.2. If you are using a graphics display:<ol style="list-style-type: none">a. Go to the problem determination procedures for the display.b. If you do not find a problem:<ul style="list-style-type: none">• Replace the graphics display adapter. Refer to Removing and replacing parts.• Replace the backplane into which the graphics display adapter is plugged. Refer to Removing and replacing parts.
There appears to be a display problem (distortion, blurring, and so on)	Go to the problem determination procedures for the display.

Power and cooling problems

Symptom	What you should do:
The system will not power on and no error codes are available.	Go to "Power problems" on page 81.
The power LEDs on the operator panel and the power supply do not come on or stay on.	<ol style="list-style-type: none">1. Check the service processor error log.2. Go to "Power problems" on page 81.
The power LEDs on the operator panel and the power supply come on and stay on, but the system does not power on.	<ol style="list-style-type: none">1. Check the service processor error log.2. Go to "Power problems" on page 81.
A rack or a rack-mounted unit will not power on.	<ol style="list-style-type: none">1. Check the service processor error log.2. Go to "Power problems" on page 81.
The cooling fan(s) do not come on, or come on but do not stay on.	<ol style="list-style-type: none">1. Check the service processor error log.2. Go to "Power problems" on page 81.
The system attention LED on the operator panel is on and there is no error code displayed.	<ol style="list-style-type: none">1. Check the service processor error log.2. Go to "Power problems" on page 81.

Other symptoms or problems

Symptom	What you should do:
The system stopped and a code is displayed on the operator panel.	Go to "Start of call procedure" on page 2.
01 is displayed in the upper-left corner of the operator panel and the fans are off.	The service processor is ready. The system is waiting for power-on. Boot the system. If the boot is unsuccessful, and the system returns to the default display (indicated by 01 in the upper-left corner of the operator panel), go to "MAP 0020: Problem determination procedure" on page 373.

Symptom	What you should do:
The operator panel displays STBY.	<p>The service processor is ready. The server was shut down by the operating system and is still powered on. This condition can be requested by a privileged system user with no faults. Go to Start-of-call.</p> <p>Note: See the service processor error log for possible operating system fault indications.</p>
All of the system POST indicators are displayed on the firmware console, the system pauses and then restarts. The term <i>POST indicators</i> refers to the device mnemonics (the words memory, keyboard, network, scsi, and speaker) that appear on the firmware console during the power-on self-test (POST).	Go to Problems with loading and starting the operating system.
The system stops and all of the POST indicators are displayed on the firmware console. The term <i>POST indicators</i> refers to the device mnemonics (the words memory, keyboard, network, scsi, and speaker) that appear on the firmware console during the power-on self-test (POST).	Go to Problems with loading and starting the operating system.
The system stops and the message starting software please wait...is displayed on the firmware console.	Go to Problems with loading and starting the operating system.
The system does not respond to the password being entered or the system login prompt is displayed when booting in service mode.	<ol style="list-style-type: none"> 1. If the password is being entered from the Hardware Management Console (HMC), go to the Managing your server using the Hardware Management Console. 2. If the password is being entered from a keyboard attached to the system, the keyboard or its controller may be faulty. In this case, replace these parts in the following order: <ol style="list-style-type: none"> a. Keyboard b. Service processor <p>If the problem is fixed, go to "MAP 0410: Repair checkout" on page 419.</p>
The system stops with a prompt to enter a password.	Enter the password. You cannot continue until a correct password has been entered. When you have entered a valid password, go to the beginning of this table and wait for one of the other conditions to occur.
The system does not respond when the password is entered.	Go to Step 1020-2.
No codes are displayed on the operator panel within a few seconds of turning on the system. The operator panel is blank before the system is powered on.	<p>Reseat the operator panel cable. If the problem is not resolved, replace in the following order:</p> <ol style="list-style-type: none"> 1. Operator panel assembly. Refer to Removing and replacing parts 2. Service processor. Refer to Removing and replacing parts. <p>If the problem is fixed, go to "MAP 0410: Repair checkout" on page 419.</p> <p>If the problem is still not corrected, go to "MAP 0020: Problem determination procedure" on page 373.</p>

Symptom	What you should do:
The SMS configuration list or boot sequence selection menu shows more SCSI devices attached to a controller/adaptor than are actually attached.	<p>A device may be set to use the same SCSI bus ID as the control adapter. Note the ID being used by the controller/adaptor (this can be checked and/or changed through an SMS utility), and verify that no device attached to the controller is set to use that ID.</p> <p>If settings do not appear to be in conflict:</p> <ol style="list-style-type: none"> 1. Go to "MAP 0020: Problem determination procedure" on page 373. 2. Replace the SCSI cable. 3. Replace the device. 4. Replace the SCSI adapter <p>Note: In a "twin-tailed" configuration where there is more than one initiator device (normally another system) attached to the SCSI bus, it may be necessary to use SMS utilities to change the ID of the SCSI controller or adapter.</p>
You suspect a cable problem.	Go to Adapters, Devices and Cables for Multiple Bus Systems.
You have a problem that does not prevent the system from booting. The operator panel is functional and the rack indicator LED operates as expected.	Go to "MAP 0020: Problem determination procedure" on page 373.
All other symptoms.	Go to "MAP 0020: Problem determination procedure" on page 373.
All other problems.	Go to "MAP 0020: Problem determination procedure" on page 373.
You do not have a symptom.	Go to "MAP 0020: Problem determination procedure" on page 373.
You have parts to exchange or a corrective action to perform.	<ol style="list-style-type: none"> 1. Go to "Start of call procedure" on page 2. 2. Go to End of call procedure.
You need to verify that a part exchange or corrective action corrected the problem.	Go to "MAP 0410: Repair checkout" on page 419.
You need to verify correct system operation.	Go to "MAP 0410: Repair checkout" on page 419.

Symptom	What you should do:
The system stopped. A POST indicator is displayed on the system console and an eight-digit error code is not displayed.	<p>If the POST indicator represents:</p> <ol style="list-style-type: none"> 1. Memory, go to "PFW1548: Memory and processor subsystem problem isolation procedure" on page 69. 2. Keyboard <ol style="list-style-type: none"> a. Replace the keyboard. b. Replace the service processor, location: model dependent. c. Go to "PFW1548: Memory and processor subsystem problem isolation procedure" on page 69. 3. Network, go to "PFW1548: Memory and processor subsystem problem isolation procedure" on page 69. 4. SCSI, go to "PFW1548: Memory and processor subsystem problem isolation procedure" on page 69. 5. Speaker <ol style="list-style-type: none"> a. Replace the control panel. The location is model dependent; refer to Installing features b. Replace the service processor. The location is model dependent. c. Go to "PFW1548: Memory and processor subsystem problem isolation procedure" on page 69.
The diagnostic operating instructions are displayed.	Go to "MAP 0020: Problem determination procedure" on page 373.
The system login prompt is displayed.	<p>If you are loading the diagnostics from a CD-ROM, you may not have pressed the correct key or you may not have pressed the key soon enough when you were trying to indicate a service mode IPL of the diagnostic programs. If this is the case, start again at the beginning of this step.</p> <p>Note: Perform the system shutdown procedure before turning off the system.</p> <p>If you are sure you pressed the correct key in a timely manner, go to Step 1020-2.</p> <p>If you are loading diagnostics from a Network Installation Management (NIM) server, check for the following:</p> <ul style="list-style-type: none"> • The bootlist on the client may be incorrect. • Cstate on the NIM server may be incorrect. • There may be network problems preventing you from connecting to the NIM server. <p>Verify the settings and the status of the network. If you continue to have problems refer to Problems with loading and starting the operating system and follow the steps for network boot problems.</p>

Symptom	What you should do:
The System Management Services (SMS) menu is displayed when you were trying to boot standalone diagnostics.	<p>If you are loading diagnostics from the CD-ROM, you may not have pressed the correct key when you were trying to indicate a service mode IPL of the diagnostic programs. If this is the case, try to boot the CD-ROM again and press the correct key.</p> <p>If you are sure you pressed the correct key, the device or media you are attempting to boot from may be faulty.</p> <ol style="list-style-type: none"> 1. Try to boot from an alternate boot device connected to the same controller as the original boot device. If the boot succeeds, replace the original boot device (for removable media devices, try the media first). If the boot fails, go to problems with loading and starting the operating system. 2. Go to "PFW1548: Memory and processor subsystem problem isolation procedure" on page 69.
The SMS boot sequence selection menu or remote IPL menu does not show all of the bootable devices in the partition or system.	If an AIX or Linux partition is being booted, verify that the devices that you expect to see in the list are assigned to this partition. If they are not, use the HMC to reassign the required resources. If they are assigned to this partition, go to Problems with loading and starting the operating system to resolve the problem.

Detecting problems

Provides information on using various tools and techniques to detect and identify problems.

i5/OS Problem determination procedures

There are several tools you can use to determine a problem with an i5/OS system or partition.

These include:

Using the Service Action Log

Use this procedure to search for an entry in the Service Action Log (SAL) that matches the time, reference code, or resource of the reported problem.

1. On the command line, enter the Start System Service Tools command (STRSST). If you cannot get to SST, use function 21 to get to DST (see Dedicated Service Tools (DST)).
2. On the Start Service Tools Sign On display, type in a user ID with QSRV authority and password.
3. Select **Start a Service Tool** → **Hardware Service Manager** → **Work with service action log**.
4. On the Select Timeframe display, change the From: Date and Time to a date and time prior to when the customer reported having the problem.
5. Search for an entry that matches one or more conditions of the problem:
 - Reference code
 - Resource
 - Time
 - Failing item list
6. Perform the following:
 - Choose **Display the failing item information** to display the SAL entry.
 - Use the **Display details** option to display part location information.

All new entries in the SAL represent problems that require a service action. It may be necessary to handle any problem in the log even if it does not match the original problem symptom.

The information displayed in the date and time fields are the date and time for the first occurrence of the specific reference code for the resource displayed during the time range selected.

7. Did you find an entry in the SAL?

- **Yes:** Continue with the next step.
- **No:** Is i5/OS available?

Yes: Go to "Using the problem log" on page 34. **This ends the procedure.**

No: Go to "Problems with noncritical resources" on page 71. **This ends the procedure.**

8. Does "See the service information system reference code tables for further problem isolation" appear near the top of the display or are there procedures in the FRU list?

- **Yes:** Perform the following steps:
 - a. Go to the List of reference codes and use the reference code that is indicated in the log to find the correct reference code table and unit reference code.
 - b. Perform all actions in the **Description/Action** column before exchanging failing items.

Note: When exchanging failing items, the part numbers and locations found in the SAL entry should be used.

This ends the procedure.

- **No:** Display the failing item information for the SAL entry. Items at the top of the failing item list are more likely to fix the problem than items at the bottom of the list. Continue with the next step.

Notes:

- a. Some failing items are required to be exchanged in groups until the problem is solved.
- b. Other failing items are flagged as mandatory exchange and must be exchanged before the service action is complete, even if the problem appears to have been repaired.
- c. Use the "Part Action Code" field in the SAL display to determine if failing items are to be replaced in groups or as mandatory exchanges.
- d. Unless the "Part Action Code" of a FRU indicates group or mandatory exchange, exchange the failing items one at a time until the problem is repaired. Use the help function to determine the meaning of Part Action Codes.

9. Perform the following steps to help resolve the problem:

- a. For failing items, refer to "Using failing item codes" on page 598.
- b. For symbolic FRUs, see "Symbolic FRUs" on page 613.
- c. To display location information, choose the function key for **Additional details**. If location information is available, go to Finding part locations for the model you are working on to determine what removal and replacement procedure to perform. To turn on the failing item's identify light, use the "indicator on" option.

Note: In some cases where the failing item does not contain a physical identify light, a higher level identify light will be activated (for example, the planar or unit containing the failing item). The location information should then be used to locate the actual failing item.

- d. If the failing item is Licensed Internal Code, contact your next level of support for the correct PTF to apply.

10. After exchanging an item, perform the following:

- a. Go to Verifying the repair and return here.
- b. If the failing item indicator was turned on during the removal and replacement procedure, use the "indicator off" option to turn off the indicator.
- c. If all problems have been resolved for the partition, use the "Acknowledge all errors" function at the bottom of the SAL display.

- d. Close the log entry by selecting **Close a NEW entry** on the SAL Report display. **This ends the procedure.**

Using the product activity log

This procedure can help you learn how to use the Product Activity Log (PAL).

1. To locate a problem, find an entry in the product activity log for the symptom you are seeing.
 - a. On the command line, enter the Start System Service Tools command:
STRSST
If you cannot get to SST, select DST. See Dedicated Service Tools (DST) for details.

Note: Do not IPL the system or partition to get to DST.
 - b. On the Start Service Tools Sign On display, type in a User ID with service authority and password.
 - c. From the System Service Tools display, select **Start a Service Tool → Product activity log → Analyze log.**
 - d. On the Select Subsystem Data display, select the option to view **All Logs.**

Note: You can change the From: and To: Dates and Times from the 24-hour default if the time that the customer reported having the problem was more than 24 hours ago.

- e. Use the defaults on the Select Analysis Report Options display by pressing the Enter key.
- f. Search the entries on the Log Analysis Report display.

Note: For example, a 6380 Tape Unit error would be identified as follows:

System Reference Code: 6380CC5F

Class: Perm

Resource Name: TAP01

2. Find an SRC from the product activity log that best matches the time and type of the problem the customer reported.

Did you find an SRC that matches the time and type of problem the customer reported?

Yes: Go to Reference codes and use the SRC information to correct the problem. **This ends the procedure.**

No: Contact your next level of support. **This ends the procedure.**

Using the problem log

Use this procedure to find and analyze a problem log entry that relates to the problem reported.

About this task

Note: For on-line problem analysis (WRKPRB), ensure that you are logged on with QSRV authority. During problem isolation, this will allow access to test procedures that are not available under any other log-on.

1. On the command line, enter the Work with Problems command:

WRKPRB

Note: Use F4 to change the WRKPRB parameters to select and sort on specific problem log entries that match the problem. Also, F11 displays the dates and times the problems were logged by the system.

Was an entry that relates to the problem found?

Note: If the WRKPRB function was not available answer NO.

Yes: Continue with the next step.

No: Go to "Problems with noncritical resources" on page 71. **This ends the procedure.**

2. Select the problem entry by moving the cursor to the problem entry option field and entering option 8 to work with the problem.

Is Analyze Problem (option 1) available on the Work with Problem display?

No: Perform the following:

- a. Return to the initial problem log display (F12).
- b. Select the problem entry by moving the cursor to the problem entry option field and selecting the option to display details.
- c. Select the function key to display possible causes.

Note: If this function key is not available, use the customer reported symptom string for customer perceived information about this problem. Then, go to “Using the product activity log” on page 34.

- d. Use the list of possible causes as the FRU list and go to step 5.

Yes: Run Analyze Problem (option 1) from the Work with Problem display.

Notes:

- a. For SRCs starting with 6112 or 9337, use the SRC and go to the Reference codes topic.
- b. If the message on the display directs you to use SST (System Service Tools), go to “COMIP01” on page 158.

Was the problem corrected by the analysis procedure?

No: Continue with the next step.

Yes: This ends the procedure.

3. Did problem analysis send you to another entry point in the service information?

No: Continue with the next step.

Yes: Go to the entry point indicated by problem analysis. **This ends the procedure.**

4. Was the problem isolated to a list of failing items?

Yes: Continue with the next step.

No: Go to “Problems with noncritical resources” on page 71. **This ends the procedure.**

5. Exchange the failing items one at a time until the problem is repaired.

Notes:

- a. For failing items, see “Using failing item codes” on page 598, and symbolic FRUs, see “Symbolic FRUs” on page 613.
- b. When exchanging FRUs, go to Removing and replacing parts.

Has the problem been resolved?

No: Contact your next level of support. **This ends the procedure.**

Yes: This ends the procedure.

Problem determination procedure for AIX or Linux servers or partitions

This procedure helps to produce or retrieve a service request number (SRN) if the customer or a previous procedure did not provide one.

If your server is running AIX or Linux, use one of the following procedures to test the server or partition resources to help you determine where a problem might exist.

If you are servicing a server running the AIX operating system, go to MAP 0020: Problem determination procedure.

If you are servicing a server running the Linux operating system, go to the Linux problem isolation procedure.

System unit problem determination

Use this procedure to obtain a reference code if the customer did not provide you with one, or you are unable to load server diagnostics.

If you are able to load the diagnostics, go to AIX partition problem determination.

The service processor may have recorded one or more symptoms in its error log. Examine this error log before proceeding (see the Advanced System Management Interface for details). The server may have been set up by using the HMC. Check the Service Action Event (SAE) log in the Service Focal Point. The SAE log may have recorded one or more symptoms in the Service Focal Point. To avoid unnecessary replacement of the same FRU for the same problem, it is necessary to check the SAE log for evidence of prior service activity on the same subsystem.

The service processor may have been set by the user to monitor system operations and to attempt recoveries. You can disable these actions while you diagnose and service the system. If the system maintenance policies were saved using the "save/restore hardware maintenance policies", all the settings of the service processor (except language) were saved and you can use the same service aid to restore the settings at the conclusion of your service action.

If you disable the service processor settings, note their current settings so that you can restore when you are done.

If the system is set to power on using one of the parameters in the following table, disconnect the modem to prevent incoming signals that could cause the system to power on.

Following are the service processor settings. See the Advanced System Management Interface information for more information about the service processor settings.

Table 8. Service processor settings

Setting	Description
Monitoring (also called surveillance)	From the ASMI menu, expand the System Configuration menu, then click on Monitoring. Disable both types of surveillance.
Auto power restart (also called unattended start mode)	From the ASMI menu, expand Power/Restart Control, then click on Auto Power Restart, and set it to disabled.
Wake on LAN®	From the ASMI menu, expand Wake on LAN, and set it to disabled
Call out	From the ASMI menu, expand the Service Aids menu, then click on Call-Home/Call-In Setup. Set the call-home system port and the call-in system port to disabled.

Step 1020-1

Be prepared to record code numbers to help analyze a problem.

Analyze a failure to load the diagnostic programs

Follow these steps to analyze a failure to load the diagnostic programs.

Note: Be prepared to answer questions regarding the control panel and to perform certain actions based on displayed POST indicators. Please be observant of these conditions.

1. Run diagnostics on any partition. Find your symptom in the following table, then follow the instructions given in the Action column. If no fault is identified, continue to the next step.
2. Run diagnostics on the failing partition. Find your symptom in the following table, then follow the instructions given in the Action column. If no fault is identified, continue to the next step.
3. Power off the system. Refer to Stop the system.
4. Load the standalone diagnostics in service mode to test the full system partition; refer to Using AIX online and standalone diagnostics
5. Wait until the diagnostics are loaded or the system appears to stop. If you receive an error code or if the system stops before diagnostics are loaded, find your symptom in the following table, then follow the instructions given in the Action column. If no fault is identified, continue to the next step.
6. Run the standalone diagnostics on the entire system. Find your symptom in the following table, then follow the instructions given in the Action column. If no fault is identified, call service support for assistance.

Symptom	Action
One or more logical partitions does not boot.	<ol style="list-style-type: none"> 1. Check service processor error log. If an error is indicated, go to "Start of call procedure" on page 2. 2. Check the Serviceable action event log, go to "Start of call procedure" on page 2. 3. Go to Problems with loading and starting the operating system.
The rack identify LED does not operate properly.	Go to "Start of call procedure" on page 2.
The system stopped and a system reference code is displayed on the operator panel.	Go to "Start of call procedure" on page 2.
The system stops with a prompt to enter a password.	Enter the password. You cannot continue until a correct password has been entered. When you have entered a valid password, go to the beginning of this table and wait for one of the other conditions to occur.
The diagnostic operating instructions are displayed.	Go to MAP 0020: AIX or Linux problem determination procedure.
The power good LED does not come on or does not stay on, or you have a power problem.	Go to Power problems.
The system login prompt is displayed.	<p>You may not have pressed the correct key or you may not have pressed the key soon enough when you were trying to indicate a service mode IPL of the diagnostic programs. If this is the case, start again at the beginning of this step.</p> <p>Note: Perform the system shutdown procedure before turning off the system.</p> <p>If you are sure you pressed the correct key in a timely manner, go to Step 1020-2.</p>
The system does not respond when the password is entered.	Go to Step 1020-2.

Symptom	Action
The system stopped. A POST indicator is displayed on the system console and an eight-digit error code is not displayed.	<p>If the POST indicator represents:</p> <ol style="list-style-type: none"> 1. Memory, go to PFW1548: Memory and processor subsystem problem isolation procedure. 2. Keyboard <ol style="list-style-type: none"> a. Replace the keyboard cable. b. Replace the keyboard. c. Replace the service processor. Location is model dependent. d. Go to PFW1542: I/O problem isolation procedure. 3. Network, go to PFW1542: I/O problem isolation procedure. 4. SCSI, go to PFW1542: I/O problem isolation procedure. 5. Speaker <ol style="list-style-type: none"> a. Replace the operator panel. Location is model dependent. b. Replace the service processor. Location is model dependent. c. Go to PFW1542: I/O problem isolation procedure
The System Management Services menu is displayed.	Go to PFW1542: I/O problem isolation procedure.
All other symptoms.	If you were directed here from the Entry MAP, go to PFW1542: I/O problem isolation procedure. Otherwise, find the symptom in the Start of call procedure.

Step 1020-2

Use this procedure to analyze a keyboard problem.

Find the type of keyboard you are using in the following table; then follow the instructions given in the Action column.

Keyboard Type	Action
Type 101 keyboard (U.S.). Identified by the size of the Enter key. The Enter key is in only one horizontal row of keys.	Record error code M0KB D001; then go to Step 1020-3.
Type 102 keyboard (W.T.). Identified by the size of the Enter key. The Enter key extends into two horizontal rows.	Record error code M0KB D002; then go to Step 1020-3.
Type 106 keyboard. (Identified by the Japanese characters.)	Record error code M0KB D003; then go to Step 1020-3.
ASCII terminal keyboard	Go to the documentation for this type of ASCII terminal and continue with problem determination.

Step 1020-3

Perform the following steps:

1. Find the 8-digit error code in Reference codes.

Note: If you do not locate the 8-digit code, look for it in one of the following places:

- Any supplemental service manuals for attached devices
- The diagnostic problem report screen for additional information
- The Service Hints service aid

- The CERADME file (by using the Display service hints service aid)
2. Perform the action listed.

HMC machine code problems

The support organization uses the *pesh* command to look at the HMC's internal machine code to determine how to fix a machine code problem. Only a service representative or support representative can access this feature.

About this task

The support organization uses the *pesh* command to look at the HMC's internal machine code to determine how to fix a machine code problem. Only a service representative or support representative can access this feature.

Launching an xterm shell

About this task

You may need to launch an xterm shell to perform directed support from the support center. This may be required if the support center needs to analyze a system dump in order to better understand machine code operations at the time of a failure. To launch an xterm shell, perform the following:

1. Open a terminal by right-clicking the background and selecting **Terminals** → **rshterm**.
2. Type the *pesh* command followed by the serial number of the HMC and press Enter.
3. You will be prompted for a password, which you must obtain from your next level of support.

Results

Additional information: "Viewing the HMC console logs."

Viewing the HMC console logs

The console logs display error and information messages that the console has logged while running commands.

About this task

The service representative can use this information to learn more about what caused an error and how to resolve it. The HMC classifies log entries as either an informational message or an error message. Log entries are identified with an *I* or *E*, respectively. The HMC lists these log entries chronologically, with the most recent shown at the top of the list.

Use the HMC Console Log to view a record of HMC system events. System events are activities that indicate when processes begin and end. These events also indicate whether the attempted action was successful.

To view the HMC log, perform the following:

1. Launch an xterm shell (Refer to "Launching an xterm shell").
2. Once you have entered the password, use the *showLog* command to launch the HMC log window.

Results

The log includes the following information:

- The event's unique ID code
- The date the event occurred
- The time the event occurred

- The log's type
- The name of the attempted action
- The log's reference code
- The status of the log

View a particular event: About this task

To view a particular event, perform the following:

1. Select an event by clicking once on it.
2. Press Enter to get to a summary of the log you selected. From here, you must select a Block ID to display. The blocks are listed next to the buttons and include the following options:
 - Standard Data Block
 - Secondary Data Block
 - Microcode Reason / ID Error Information
3. Select the data block you want to view.
4. Press Enter. The extended information shown for the data block you selected includes the following:
 - Program name
 - Current process ID
 - Parent process ID
 - Current thread priority
 - Current thread ID
 - Screen group
 - Subscreen group
 - Current foreground screen process group
 - Current background screen process group

Results

For information about error messages displayed and recovery for these messages, see the Troubleshooting topic.

Disk-drive-enclosure problem-determination procedures

Problem determination procedures are provided by power-on self-tests (POSTs), service request numbers, and maintenance analysis procedures (MAPs). Some of these procedures use the service aids that are described in the user or maintenance information for your system SCSI attachment.

Disk drive module power-on self-tests

The disk drive module Power-on Self-Tests (POSTs) start each time that the module is switched on, or when a Send Diagnostic command is received. They check whether the disk drive module is working correctly. The POSTs also help verify a repair after a Field Replaceable Unit (FRU) has been exchanged.

The tests are POST-1 and POST-2.

POST-1 runs immediately after the power-on reset line goes inactive, and before the disk drive module motor starts. POST-1 includes the following tests:

- Microprocessor
- ROM
- Checking circuits

If POST-1 completes successfully, POST-2 is enabled.

If POST-1 fails, the disk drive module is not configured into the system.

POST-2 runs after the disk drive module motor has started. POST-2 includes the following tests:

- Motor control
- Servo control
- Read and write on the diagnostic cylinder (repeated for all heads)
- Error checking and correction (ECC).

If POST-2 completes successfully, the disk drive module is ready for use with the system.

If POST-2 fails, the disk drive module is not configured into the system.

SCSI interface card power-on self-tests

The SCSI interface card Power-On Self Tests (POSTs) start each time power is switched on, or when a Reset command is sent from the using system SCSI attachment. They check only the internal components of the SCSI interface card; they do not check any interfaces to other FRUs.

If the POSTs complete successfully, control passes to the functional microcode of the SCSI interface card. This microcode checks all the internal interfaces of the 7031-D24 or 7031-T24, and report failures to the host system.

If the POSTs fail, one of the following events occur:

- The SCSI interface card check LED and the 7031-D24 or 7031-T24 check LED come on.
- If the SCSI interface was configured for high availability using a Dual initiator card the error will be reported. The functional operation of the 7031-D24 or 7031-T24 is not affected. For example, the customer still has access to all the disk drive modules.
- The functional operation of the 7031-D24 or 7031-T24 is not affected. For example, the customer still has access to all the disk drive modules.
- The failure is reported:
 - If the failure occurs at system bring-up time, the host system might detect that the 7031-D24 or 7031-T24 is missing, and reports an error.
 - If the failure occurs at any time other than system bring-up time, the hourly health check reports the failure.

7031-D24 or 7031-T24 Disk-drive enclosure LEDs

Disk drive enclosure LED positions and definitions.

The 7031-D24 and 7031-T24 use a series of green and amber LEDs. The Light Emitting Diodes (LED)s are located on the front and the back of the disk-drive enclosure and are used to indicate disk drive enclosure and component activity, fault, and power status. The following definition list identifies, defines, and explains the on and off state of each LED. Following the definition list are two illustrations that show the location of each LED.

Disk drive enclosure status LEDs

The two disk drive enclosure status LEDs indicate the following:

- Power good LED - (solid, not blinking) when lit this green colored LED indicates that the disk-drive enclosure is receiving dc electrical power.
- Cage Fault LED - (solid, not blinking) when lit this amber colored LED indicates that one of the components located in the disk-drive enclosure has failed.

Note:

- The failing component can be located either on the front or the rear of the subsystem.
- The disk-drive enclosure might be able to continue operating satisfactorily although the failure of a particular part has been detected.

Disk drive LEDs

Up to twenty four disk drives can be installed into the front and back of the disk-drive enclosure (twelve disk drives per side). Each disk drive contains three LEDs that are visible via light pipes. The light pipes are attached to the disk-drive carrier and extend out the left side of each disk drive.

- Disk drive activity LED (green) - The disk drive activity LED is controlled by the disk. For most disk drives the green LED is lit when the disk is processing a command. However, for some disk drives a different mode page setting allows the green LED to be lit when the disk drive motor is spinning and the LED blinks toward an off state when a command is in progress.
- Disk drive fault LED (amber) - The disk fault LED is controlled by the SES processor on the SCSI interface card. The disk drive fault LED can be viewed in one of the following three states:
 - Off - This is the normal state for the disk-drive fault LED
 - On - (solid, not blinking) indicates one of the following:
 - A drive is to be removed
 - The disk drive is faulty
 - Appears on an empty slot where a drive is to be installed
 - Blinking - The disk drive is rebuilding
- Disk drive identify (green) - The light pipe for this LED is located on the lower left side of the disk drive and is used for the identify function by disk-drive enclosures that are connected to an iSeries systems.

Power supply LEDs

This disk drive enclosure contains two power supplies and they are located on the back lower third portion of the chassis. The power supply located on the left of the chassis is power supply 1. The power supply located on the right side of the chassis is power supply 2. Each power supply contains four LEDs located on the lower right side. The following list identifies and defines each of the power supply LEDs.

- Cage fault LED - This is an amber colored LED and is labeled C/F. The power supply cage fault LED provides the same information as the cage fault indicator located on the front of the enclosure.
- AC good LED - This a green colored LED and is labeled I/G
- DC power good LED - This green colored LED is labeled D/G. Indicates that the enclosure is getting good dc power. It is on when +1.8 V, +3.3 V, +5 V, and +12 V are good. It goes off when any of the mentioned voltages are not good.
- Power supply fault LED - This amber colored LED is labeled FLT and comes on solid when there is a fault with the power supply.

The following table explains the fault condition or power supply state indicated by each power supply LED:

Table 9. Power supply fault condition

LED name	Normal operation state	Input not present state	Input present state	Fault state
Cage fault LED	OFF	OFF	ON	
AC good LED	ON	OFF	ON	ON
DC power good LED	ON	OFF	OFF	OFF

Table 9. Power supply fault condition (continued)

LED name	Normal operation state	Input not present state	Input present state	Fault state
Power supply fault LED	OFF	OFF	ON	OFF

Fan assembly LEDs

The three disk-drive enclosure fan assemblies are located on the front lower third of the enclosure chassis. There are two LEDs located on each fan. The green colored LED is lit when power to the fan is present. The second LED is amber colored when lit and comes on when the fan needs to be replaced.

Note:

- The fan does not need to be completely dead before the fan fault LED is lit. The fan can be turning either to slow or to fast indicating to the system that it is having a problem.
- The fans green LED will remain lit even when the amber LED is indicating a fan fault.

SCSI interface card LEDs

Each SCSI interface card has a green and amber colored LED. The green colored LED indicates that activity is taking place through the interface card. The amber colored LED is used as an identify LED and indicates which one of the SCSI interface cards needs to be replaced.

The following two figures show the location of each LEDs found on the 7031-D24 or 7031-T24.

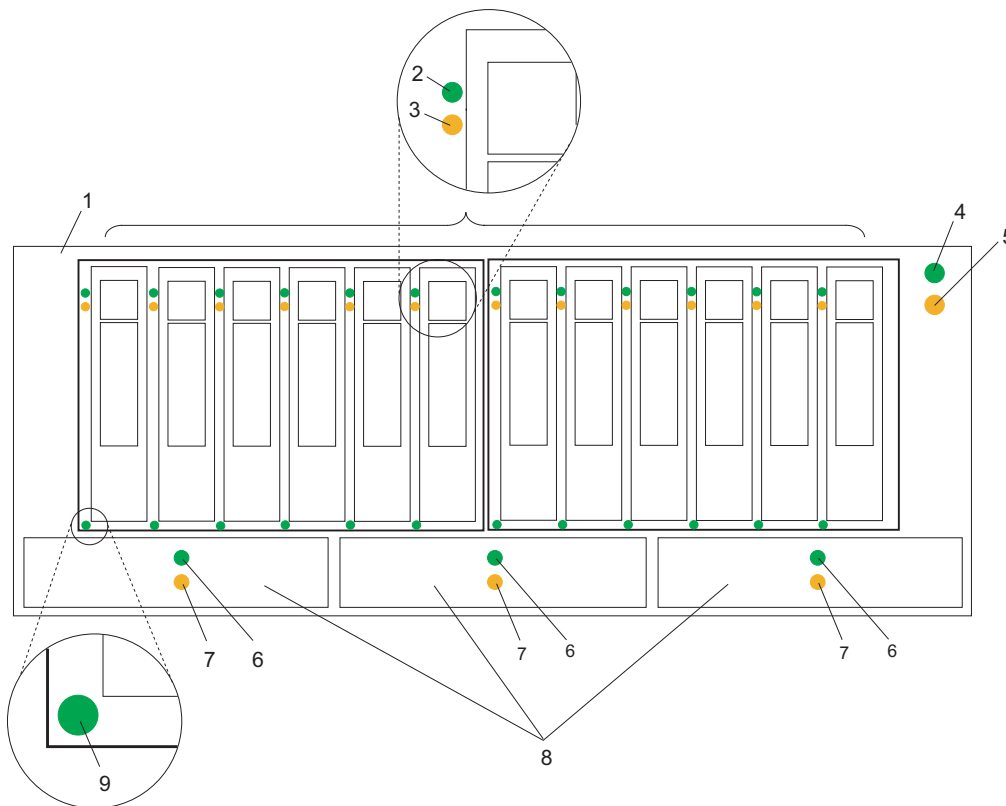


Figure 2. Front view showing maintenance LEDs on the 7031-D24 and 7031-T24

Index Number	Component LED	Index Number	Component LED
1	7031-D24 or 7031-T24	6	Fan power LED
2	Disk drive activity LED	7	Fan fault LED
3	Disk drive fault LED	8	Fan assembly
4	Status panel power good LED	9	Disk drive identify LED (activated on iSeries models only)
5	Status panel cage fault LED		

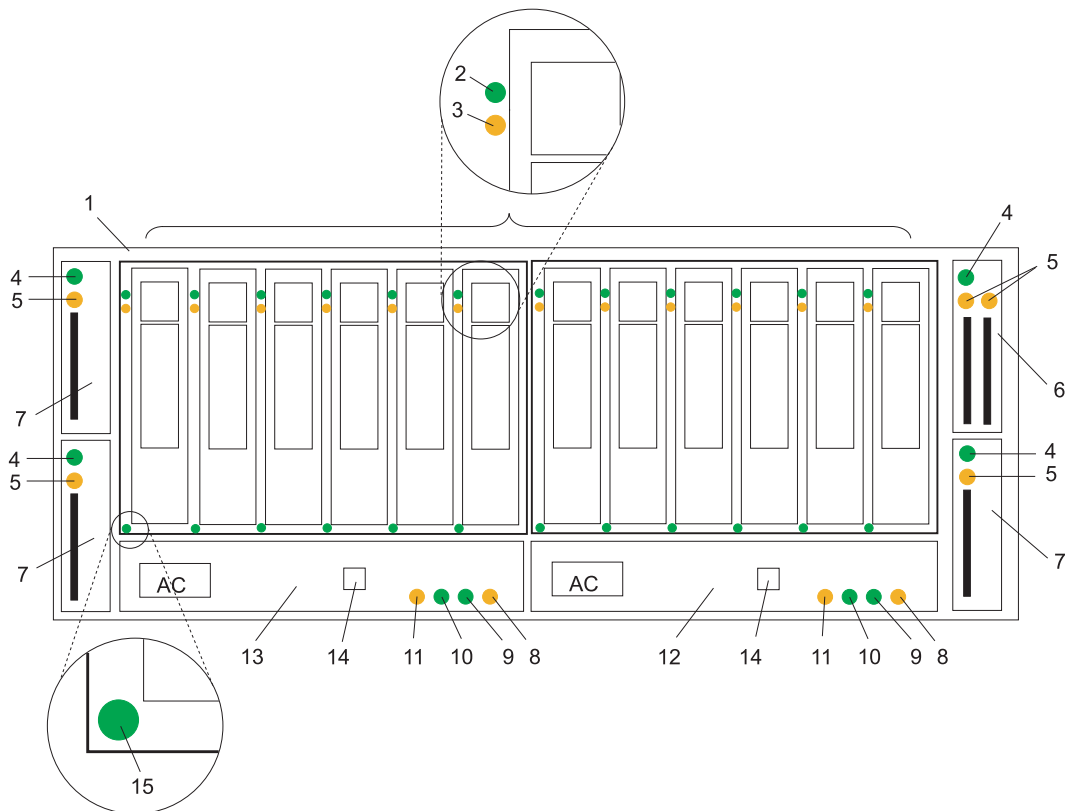


Figure 3. Rear view showing maintenance LEDs on the 7031-D24 and 7031-T24

Index Number	Component LED	Index Number	Component LED
1	7031-D24 or 7031-T24	9	Power supply dc power good LED
2	Disk drive activity LED	10	Power supply ac power good LED
3	Disk drive fault LED	11	Cage fault LED
4	SCSI interface card fault LED	12	Power supply 2
5	SCSI interface card activity LED	13	Power supply 1
6	Dual initiator SCSI interface card	14	Rack indicator connector
7	Single initiator SCSI interface card	15	Disk drive identify LED (activated on iSeries models only)
8	Power supply fault LED		

7031-D24 or 7031-T24 Maintenance analysis procedures

These maintenance analysis procedures (MAPs) describe how to analyze a continuous failure that has occurred in a 7031-D24 or 7031-T24 that contains one or more SCSI disk drive modules. Failing FRUs of the 7031-D24 or 7031-T24 can be isolated with these MAPs.

For more information on additional tools to identify missing resources on Linux, go to “Linux tools.”

Using the MAPs

Attention: Do not remove power from the host system or 7031-D24 or 7031-T24 unless you are told to in the instructions that you are following. Power cables and external SCSI cables that connect the 7031-D24 or 7031-T24 to the host system can be disconnected while that system is running.

To isolate the FRUs in the failing 7031-D24 or 7031-T24, perform the following actions and answer the questions given in these MAPs:

1. When instructed to exchange two or more FRUs in sequence:
 - a. Exchange the first FRU in the list for a new one.
 - b. Verify that the problem is solved. For some problems, verification means running the diagnostic programs (see the using system service procedures).
 - c. If the problem remains:
 - 1) Reinstall the original FRU.
 - 2) Exchange the next FRU in the list for a new one.
 - d. Repeat steps 1b and 1c until either the problem is solved, or all the related FRUs have been exchanged.
 - e. Perform the next action that the MAP indicates.
2. See “7031-D24 or 7031-T24 Disk-drive enclosure LEDs” on page 41 for locations and descriptions of the LEDs and switches.

Attention: Disk drive modules are fragile. Handle them with care, and keep them well away from strong magnetic fields.

Linux tools

Use the `lscfg` command to list all the resources that are available at start up. This information is also saved at each start up and you can use it to identify any missing resources.

To determine if any devices or adapters are missing, compare the list of found resources and partition assignments to the customer’s known configuration. Record the location of any missing devices. You can also compare this list of found resources to a prior version of the device tree as the following example shows.

When the partition is restarted, the update device tree command is run and the device tree is stored in the `/var/lib/lsvpd/` directory in a file with the file name device tree YYYY-MM-DDHH:MM:SS, where YYYY is the year, MM is the month, DD is the day, and HH, MM, and SS are the hour, minute and second, respectively of the date of creation.

Type the following command at the command line: `cd /var/lib/lsvpd/`, then type the following command: `lscfg -vpd device-tree-2003-03-31-12:26:31`. This command displays the device tree that was created on 03/31/2003 at 12:26:31.

MAP 2010: 7031-D24 or 7031-T24 START:

This MAP is the entry point to the MAPs for the 7031-D24 or 7031-T24.

If you are not familiar with these MAPs, read "Using the MAPs" on page 45 first.

You might have been directed to this section because:

- The system problem determination procedures sent you here.
- Action from an SRN list sent you here.
- A problem occurred during the installation of a 7031-D24 or 7031-T24 or a disk drive module.
- Another MAP sent you here.
- A customer observed a problem that was not detected by the system problem determination procedures.

Attention: Do not remove power from the host system or 7031-D24 or 7031-T24 unless you are told to in the instructions that you are following. Power cables and external SCSI cables that connect the 7031-D24 or 7031-T24 to the host system can be disconnected while that system is running.

1. Does the 7031-D24 or 7031-T24 emit smoke or is there a burning smell?

NO Go to step 2.

YES Go to "MAP 2022: 7031-D24 or 7031-T24 Power-on" on page 50.

2. Are you at this MAP because power is not removed completely from the 7031-D24 or 7031-T24 when the host systems are switched off?

Note: Power will remain on the 7031 for approximately 30 seconds after the last system is powered off.

NO Go to step 3.

YES Go to "MAP 2030: 7031-D24 or 7031-T24 power control" on page 52.

3. Have you been sent to this MAP from an SRN?

NO Go to step 4.

YES Go to step 7 on page 47.

4. Have the system diagnostics or problem determination procedures given you an SRN for the 7031-D24 or 7031-T24?

NO

- If the system diagnostics for the 7031-D24 or 7031-T24 are available, go to step 5.
- If the system diagnostics for the 7031-D24 or 7031-T24 are not available, but the stand-alone diagnostics are available, do the following:
 - a. Run the stand-alone diagnostics.
 - b. Go to step 6.
- If neither the system diagnostics nor the stand-alone diagnostics are available, go to step 7 on page 47.

YES Go to the List of service request numbers which is available in the *IBM Systems Hardware Information Center*.

5.

- a. Run the concurrent diagnostics to the 7031-D24 or 7031-T24. For information about how to run concurrent diagnostics, see Loading and Using the AIX online diagnostics or the AIX standalone diagnostics which is available in the *IBM Systems Hardware Information Center*.
- b. When the concurrent diagnostics are complete, go to step 6.

6. Did the diagnostics give you an SRN for the 7031-D24 or 7031-T24?

NO Go to step 7 on page 47.

YES Go to the List of service request numbers which are available in the *IBM Systems Hardware Information Center*.

7. Is the subsystem check LED flashing?

NO Go to step 8.

YES A device is in Identify mode. A power supply, SCSI card, or disk drive module is to be added or installed.

8. Is the subsystem check LED on continuously?

NO Go to step 12 on page 48.

YES Go to step 9.

9. Does the power-supply assembly have its FLT LED on because its DC On/Off switch is set to Off?

NO Go to step 10.

YES

a. Set the DC On/Off switch to On.

b. If you still have a problem, return to step 2 on page 46. Otherwise, go to "MAP 2410: 7031-D24 or 7031-T24 repair verification" on page 54 to verify the repair.

10. Does any FRU have its Check or Fault LED on?

Note: The check LED might be on any of the following parts:

- A SCSI interface card assembly (CARD FAULT LED)
- A power-supply assembly (FLT LED)
- A fan assembly (CHK LED)
- A disk drive module (CHK LED)

NO In the following sequence, exchange the following FRUs for new FRUs. Ensure that for *each* FRU exchange, you go to "MAP 2410: 7031-D24 or 7031-T24 repair verification" on page 54 to verify the repair.

- a. SCSI interface card assembly (see the removal and replacement procedures for 7031-D24 or 7031-T24 SCSI disk drive enclosure features and parts), and select the appropriate part.
- b. Power supply (see the removal and replacement procedures for 7031-D24 or 7031-T24 SCSI disk drive enclosure features and parts), and select the appropriate part.
- c. Fan assembly (see the removal and replacement procedures for 7031-D24 or 7031-T24 SCSI disk drive enclosure features and parts), and select the appropriate part.
- d. Frame assembly (see the removal and replacement procedures for 7031-D24 or 7031-T24 SCSI disk drive enclosure features and parts), and select the appropriate part.

YES

- a. If the FRU is a fan-and-power-supply assembly, go to step 11. Otherwise, exchange the FRU whose Check LED is on.
- b. Go to "MAP 2410: 7031-D24 or 7031-T24 repair verification" on page 54 to verify the repair.

11. Is the enclosure set up for remote power control (that is, is the power control switch of the SCSI interface card assembly set to Off)?

NO

- a. Exchange, for a new one, the power supply whose FLT LED is on, see the removing/replacing information for 7031-D24 or 7031-T24 SCSI disk drive enclosure features and parts), and select Power supply.
- b. Go to "MAP 2410: 7031-D24 or 7031-T24 repair verification" on page 54 to verify the repair.

YES

- a. Ensure that:
 - The DC On/Off switch is set to On.
 - Both ends of the SCSI cable are correctly connected.
 - The host system is switched on.
- b. If the FLT LED of a power supply is still on, pull out the power supply to disconnect it from the 7031-D24 or 7031-T24, then push it back to reseat its connectors (see the removal and replacement procedures for 7031-D24 or 7031-T24 SCSI disk drive enclosure features and parts).
- c. If the FLT LED is still on, exchange, in the sequence shown, the following FRUs for new FRUs. Ensure that for *each* FRU exchange, you go to “MAP 2410: 7031-D24 or 7031-T24 repair verification” on page 54 to verify the repair.
 - 1) Power supply whose FLT LED is NOT on, (see the removal and replacement procedures for 7031-D24 or 7031-T24 SCSI disk drive enclosure features and parts), and select Power supply.
 - 2) SCSI interface card
 - 3) Frame assembly

12. Is the subsystem power LED on?

NO Go to “MAP 2020: 7031-D24 or 7031-T24 Power.”

YES Go to step 13.

13. Does either power supply assembly have its DC PWR LED off when it should be on?

NO Go to step 14.

YES

- a. Exchange the power-supply assembly whose LED is off.
- b. Go to “MAP 2410: 7031-D24 or 7031-T24 repair verification” on page 54 to verify the repair.

14. Are you here because access to all the SCSI devices that are in the 7031-D24 or 7031-T24 has been lost?

NO No problem has been found on the 7031-D24 or 7031-T24. For a final check, go to “MAP 2410: 7031-D24 or 7031-T24 repair verification” on page 54.

YES Go to “MAP 2340: 7031-D24 or 7031-T24 SCSI bus” on page 53.

MAP 2020: 7031-D24 or 7031-T24 Power:

This MAP helps you to isolate FRUs that are causing a power problem on a 7031-D24 or 7031-T24. This MAP assumes that the disk subsystem is connected to a system that is powered on.

Attention: Do not remove power from the host system or the disk subsystem unless you are directed to in the following procedures. Power cables and external SCSI cables that connect the disk subsystem to the host system can be disconnected while that system is running.

1. You are here because the subsystem’s power Light Emitting Diode (LED) is off.

Are the 2 middle green LEDs illuminated (AC and DC) on either power supply?

NO Go to step 2 on page 49.

YES In the sequence shown, exchange the following FRUs for new FRUs. Ensure that for *each* FRU exchange, you go to “MAP 2410: 7031-D24 or 7031-T24 repair verification” on page 54 to verify the repair.

- a. Power supply (or power supplies if two are present)
- b. Frame assembly

2. Observe the power supply (or power supplies, if two are present).
Does at least one power supply have its AC PWR LED on?
NO Go to step 3.
YES Go to step 4.
3. Observe the power supplies.
Are the power supplies switched on?
NO
 - a. Set the On/Off switch to On.
 - b. If the problem is still not solved, go to “MAP 2010: 7031-D24 or 7031-T24 START” on page 45.**YES** Go to step 4.
4. **Does either of the power supplies have its DC PWR LED on or flashing?**
NO
 - a. Set the DC On/Off switch to Off, then to On again.
 - b. Go to step 5.**YES** In the sequence shown, exchange the following FRUs for new FRUs. Ensure that for *each* FRU exchange, you go to “MAP 2410: 7031-D24 or 7031-T24 repair verification” on page 54 to verify the repair.
 - a. Power supply (or power supplies if two are present)
 - b. Frame assemblyIf the DC PWR LED is flashing, replace the SCSI interface card assembly. Go to 5.
5. **Does the power supply have its DC PWR LED on now?**
NO Replace the power supply (or power supplies, if two are present).
YES Go to 6.
6. **Is the subsystem power LED on continuously?**
NO In the sequence shown, exchange the following FRUs for new FRUs. Ensure that for *each* FRU exchange, you go to “MAP 2410: 7031-D24 or 7031-T24 repair verification” on page 54 to verify the repair.
 - a. Fan assembly
 - b. SCSI interface card assembly
 - c. Frame assembly**YES** Go to step “MAP 2410: 7031-D24 or 7031-T24 repair verification” on page 54 to verify the repair.
7. (from step 6)
Observe the SCSI interface card assemblies.
Does either SCSI interface card have its TERM POWER LED illuminated?
NO Go to step 8 on page 50.
YES In the sequence shown, exchange the following FRUs for new FRUs. Ensure that for *each* FRU exchange, you go to “MAP 2410: 7031-D24 or 7031-T24 repair verification” on page 54 to verify the repair.
 - a. Power-supply 7031-D24 or 7031-T24 SCSI disk drive enclosure features and parts
 - b. Fan (see 7031-D24 or 7031-T24 SCSI disk drive enclosure features and parts)
 - c. SCSI interface card assembly (see 7031-D24 or 7031-T24 SCSI disk drive enclosure features and parts)

8. (from step 7 on page 49)

Is the host system switched on?

NO Switch on the host system (see the host system-service information). The 2104 Model DS4 or Model TS4 should switch on when the host system switches on.

If the problem is still not solved, go to “MAP 2010: 7031-D24 or 7031-T24 START” on page 45.

YES In the sequence shown, exchange the following FRUs for new FRUs. Ensure that for *each* FRU exchange, you go to “MAP 2410: 7031-D24 or 7031-T24 repair verification” on page 54 to verify the repair.

- a. External SCSI cables
- b. SCSI interface card assembly (see 7031-D24 or 7031-T24 SCSI disk drive enclosure features and parts)

Note: If the TERM POWER LED is still off, you might have a problem with the SCSI attachment that is in the host system (see the using system service information).

MAP 2022: 7031-D24 or 7031-T24 Power-on:

This MAP helps you to isolate FRUs that are causing a power problem on a 7031-D24 or 7031-T24 disk subsystem.

Attention: Do not remove power from the host system or the disk subsystem unless you are directed to in the following procedures. Power cables and external SCSI cables that connect the disk subsystem to the host system can be disconnected while that system is running.

1. In this step you remove most of the FRUs from the 7031-D24 or 7031-T24 disk subsystem.
 - a. Remove both power supply assemblies, if two are present.
 - b. Remove the fan assemblies.
 - c. Remove the SCSI interface card assemblies. If your disk subsystem has only one SCSI interface card assembly, you do not need to remove the dummy assembly.
 - d. Disconnect all the disk drive modules from the backplane.

Note: You do not need to completely remove the disk drive modules.

- e. Go to step 2.
2. Do the following procedure to check the disk subsystem as you reinstall parts.
 - a. Reinstall a power supply into position 1.
 - b. Reinstall the fan assemblies.
 - c. Connect a power cable to the power supply.
 - d. Set the DC On/Off switch of the power supply to On.
 - e. Reinstall one SCSI interface card and connect the appropriate cables to a powered-on system.

Note: Unless a procedure needs you to switch off the disk subsystem, leave it switched on for the remainder of this MAP.

Does the disk subsystem emit smoke or is there a burning smell?

NO Go to step 3 on page 51.

YES

- a. In the sequence shown, exchange the following FRUs for new FRUs. Ensure that for each FRU exchange, you go to “MAP 2410: 7031-D24 or 7031-T24 repair verification” on page 54 to verify the repair.
 - 1) Power supply that you just reinstalled
 - 2) Fan assemblies

- 3) SCSI interface card
 - 4) Frame assembly
- b. Go to step 3.
- 3. Reinstall the other power supply into position 2.
 - a. Connect a power cable to the power supply.
 - b. Set the DC On/Off switch of the power supply assembly to On.

Note: Unless a procedure needs you to switch off the disk subsystem, leave it switched on for the remainder of this MAP.

Does the disk subsystem emit smoke or is there a burning smell?

NO Go to step 4.

YES Replace the power supplies.

- 4. Reinstall a SCSI interface card assembly into position 1.

Does the disk subsystem emit smoke or is there a burning smell?

NO If the disk subsystem has 2, 3, or 4 SCSI interface cards, go to step 5. Otherwise, go to step 6.

YES

- a. Exchange, for a new one, the SCSI interface card assembly that you have just reinstalled.
- b. If the disk subsystem has two SCSI interface cards, go to step 5. Otherwise, go to step 6.

- 5. Reinstall the other SCSI interface card assembly into position 2.

Does the disk subsystem emit smoke or is there a burning smell?

NO Go to step 6.

YES

- a. Exchange, for a new one, the SCSI interface card assembly that you just reinstalled.
- b. Go to step 6.

- 6. Reconnect a disk drive.

Note: To engage the disk drive you must close its handle.

Does the disk subsystem emit smoke or is there a burning smell?

NO Go to step 7.

YES

- a. Exchange, for a new one, the disk drive module that you just reconnected.
- b. Go to step 7.

- 7. Reconnect the next disk drive module.

Note: To engage the disk drive you must close its handle.

Does the disk subsystem emit smoke or is there a burning smell?

NO Go to step 8.

YES

- a. Exchange, for a new one, the disk drive module that you just reconnected.
- b. Go to step 8.

- 8. Have you reconnected all the disk drive modules?

NO Return to step 7.

YES Go to step 9.

9. Have you solved the problem?

NO Remove all power from the disk subsystem, and call for assistance.

YES Go to step “MAP 2410: 7031-D24 or 7031-T24 repair verification” on page 54 to verify the repair.

MAP 2030: 7031-D24 or 7031-T24 power control:

This MAP helps isolate FRUs that are causing a power problem that do not allow the 7031-D24 or 7031-T24 disk subsystem to power off when it should.

Attention: Do not remove power from the host system or the disk subsystem unless you are directed to in the following procedures. Power cables and external SCSI cables that connect the disk subsystem to the host system can be disconnected while that system is running.

You are here because power is still present at the disk subsystem although the host system is switched off.

1. Observe the cards.

Does the disk subsystem remain powered on for more than 30 seconds after the last connected system powers off?

NO Go to “MAP 2410: 7031-D24 or 7031-T24 repair verification” on page 54 to verify the repair.

YES Go to step 2.

2. Disconnect all SCSI cables and wait 30 seconds.

Is the disk subsystem still powered on?

NO Go to step 3.

YES Suspect an adapter problem in the host system.

3. Remove all SCSI initiator cards.

Is the disk subsystem still powered on?

NO

- a. Replug the SCSI interface cards one at a time to determine which one is bad.
- b. If the disk subsystem powers on after replacing a SCSI interface card, replace that SCSI interface card.
- c. Go to “MAP 2410: 7031-D24 or 7031-T24 repair verification” on page 54 to verify the repair.

YES Go to step 4.

4. Does the disk subsystem have two power supplies?

NO

- a. In the sequence shown, exchange the following FRUs for new FRUs:
 - 1) Power supply assemblies
 - 2) Frame assembly
- b. Go to step 7 on page 53.

YES Go to step 5.

5. Do both power supplies have their DC PWR LEDs on?

NO Go to step 6 on page 53.

YES In the sequence shown, exchange the following FRUs for new FRUs. Ensure that for *each* FRU exchange, you go to “MAP 2410: 7031-D24 or 7031-T24 repair verification” on page 54 to verify the repair.

- a. Power supplies
- b. Frame assembly

6. Does only one power supply have its DC PWR LED on?

NO Go to step 7.

YES

- a. Exchange, for a new one, the power supply whose DC PWR LED remains illuminated.
- b. Go to step 7.

7. Is the disk subsystem still powered on?

NO The problem is solved.

YES Call for assistance.

MAP 2340: 7031-D24 or 7031-T24 SCSI bus:

You are here because the host system cannot access any SCSI device (disk drive module or enclosure services) in a 7031-D24 or 7031-T24 disk subsystem.

Attention: Do not remove power from the host system or the disk subsystem unless you are directed to in the following procedures. Power cables and external SCSI cables that connect the disk subsystem to the host system can be disconnected while that system is running.

1. Observe the SCSI Bus Split switch.

Is the disk subsystem powered on?

NO Ensure that a SCSI cable is attached to a powered system, and the disk subsystem is powered on. Go to step 2.

YES Go to step 2.

2. Is the yellow LED illuminated on the SCSI repeater card?

NO Go to step 3.

YES Replace the SCSI interface card. Go to step 3.

3. Is the green power LED illuminated on the SCSI repeater card?

NO Go to “MAP 2020: 7031-D24 or 7031-T24 Power” on page 48.

YES Go to step 4.

4. Is the SCSI interface card a dual SCSI interface card?

NO Go to step 5.

YES Disconnect one of the SCSI cables, go to step 5.

5. Note the positions of all the disk drive modules and the dummy disk drive modules so that you can reinstall the modules into their correct slots later.

- a. Remove all of the disk drive modules.
- b. Go to step 6.

6. Can the host system access enclosure services?

NO In the sequence shown, exchange the following FRUs for new FRUs. Ensure that for each FRU exchange, you check whether you can access the disk drive module, to verify the repair.

- a. External SCSI cable
- b. SCSI interface card assembly

- c. Frame assembly
- d. Power supplies
- e. If the repair is successful, reinstall all of the disk drive modules and cables that were removed in a previous steps.
- f. Go to "MAP 2410: 7031-D24 or 7031-T24 repair verification" to verify the repair.

YES Go to step 7.

7. Reinsert the disk drive modules that you just removed, one at a time, checking for accessibility.

Can the host system access this disk drive module?

NO

- a. In the sequence shown, exchange the following FRUs for new FRUs. Ensure that for *each* FRU exchange, you check whether you can access the disk drive module, to verify the repair.
 - 1) Exchange the disk drive module for a new one.
 - 2) External SCSI cable
 - 3) SCSI interface card assembly
 - 4) Power supply
 - 5) Frame assembly
- b. If the repair is successful, reinstall all the disk drive modules and if removed, the SCSI interface card assembly.
- c. Go to "MAP 2410: 7031-D24 or 7031-T24 repair verification" to verify the repair.

YES Go to step 8.

8. **Have you reinstalled all the disk drive modules?**

NO Go to step 7

YES Go to step 9.

9. (from step 8)

Can the host system get access to all of the plugged disk drive module and enclosure services?

NO Call your support center for assistance.

- a. Exchange the disk drive module for a new one.
- b. Return to step 8.

YES Go to "MAP 2410: 7031-D24 or 7031-T24 repair verification" to verify the repair.

MAP 2410: 7031-D24 or 7031-T24 repair verification:

Use this MAP to help you verify a repair after a FRU is exchanged for a new one on a 7031-D24 or 7031-T24 disk subsystem.

Attention: Do not remove power from the host system or the disk subsystem unless you are directed to in the following procedures. Power cables and external SCSI cables that connect the disk subsystem to the host system can be disconnected while that system is running.

1. Ensure that the DC On/Off switch of each power supply assembly is set to On.

Are all Check LEDs off?

NO Go to "MAP 2010: 7031-D24 or 7031-T24 START" on page 45.

YES Go to step 2.

2. **Can the host system access all SCSI devices?**

NO Go to "MAP 2010: 7031-D24 or 7031-T24 START" on page 45.

YES The repair is complete.

Go to “MAP 0410: Repair checkout” on page 419 for system level repair verification.

Analyzing problems

Use these instructions and procedures to help you determine the cause of the problem.

Problems with loading and starting the operating system (AIX and Linux)

If the system is running partitions from partition standby (LPAR), the following procedure addresses the problem in which one partition will not boot AIX or Linux while other partitions boot successfully and run the operating system successfully.

About this task

It is the customer's responsibility to move devices between partitions. If a device must be moved to another partition to run standalone diagnostics, contact the customer or system administrator. (If the optical drive must be moved to another partition, all SCSI devices connected to that SCSI adapter must be moved because moves are done at the slot level, not at the device level.)

Depending on the boot device, a checkpoint may be displayed on the operator panel for an extended period of time while the boot image is retrieved from the device. This is particularly true for tape and network boot attempts. If booting from an optical drive or tape drive, watch for activity on the drive's LED indicator. A blinking LED indicates that the loading of either the boot image or additional information required by the operating system being booted is still in progress. If the checkpoint is displayed for an extended period of time and the drive LED is not indicating any activity, there might be a problem loading the boot image from the device.

Notes:

1. For network boot attempts, if the system is not connected to an active network or if the target server is inaccessible (which can also result from incorrect IP parameters being supplied), the system will still attempt to boot. Because time-out durations are necessarily long to accommodate retries, the system may appear to be hung. Refer to checkpoint CA00 E174.
2. If the partition hangs with a 4-character checkpoint in the display, the partition must be deactivated, then reactivated before attempting to reboot.
3. If a BA06 000x error code (or a 20EE xxxx error code on a 7037-A50 or a 7047-185) is reported, the partition is already deactivated and in the error state. Reboot by activating the partition. If the reboot is still not successful, go to step 3 on page 56.

This procedure assumes that a diagnostic CD-ROM and an optical drive from which it can be booted are available, or that diagnostics can be run from a NIM (network installation management) server. Booting the diagnostic image from an optical drive or a NIM server is referred to as running standalone diagnostics.

1. Is a Hardware Management Console attached to the managed system?

Yes: Continue with the next step.

No: Go to step 3 on page 56.

2. Look at the service action event error log in the Service Focal Point on the HMC. Perform the actions necessary to resolve any open entries that affect devices in the boot path of the partition or that indicate problems with I/O cabling. Then try to reboot the partition. Does the partition reboot successfully?

Yes: This ends the procedure.

No: Continue with the next step.

3. Boot to the SMS main menu:

- If you are rebooting a partition from partition standby (LPAR), go to the properties of the partition and select **Boot to SMS**, then activate the partition.
- If you are rebooting from platform standby, access the ASMI (see Accessing the Advanced System Management Interface). Select **Power/Restart Control**, then **Power On/Off System**. In the AIX/Linux partition mode boot box, select **Boot to SMS menu** → **Save Settings and Power On**.

At the SMS main menu, select **Select Boot Options** and check to see if the intended boot device is correctly specified in the boot list. Is the intended load device correctly specified in the boot list?

- **Yes:** Perform the following:
 - a. Remove all removable media from devices in the boot list from which you do not want to load the operating system.
 - b. If you are attempting to load the operating system from a network, go to step 4.
 - c. If you are attempting to load the operating system from a disk drive or an optical drive, go to step 7.
 - d. **No:** Go to step 5.
4. If you are attempting to load the operating system from the network, perform the following:
- Verify that the IP parameters are correct.
 - Use the SMS ping utility to attempt to ping the target server. If the ping is not successful, have the network administrator verify the server configuration for this client.
 - Check with the network administrator to ensure that the network is up. Also ask the network administrator to verify the settings on the server from which you are trying to load the operating system.
 - Check the network cabling to the adapter.

Restart the partition and try loading the operating system. Does the operating system load successfully?

Yes: This ends the procedure.

No: Go to step 7.

5. Use the SMS menus to add the intended boot device to the boot sequence. Can you add the device to the boot sequence?

Yes: Restart the partition. **This ends the procedure.**

No: Continue with the next step.

6. Ask the customer or system administrator to verify that the device you are trying to load from is assigned to the correct partition. Then select **List All Devices** and record the list of bootable devices that displays. Is the device from which you want to load the operating system in the list?

Yes: Go to step 7.

No: Go to step 10 on page 57.

7. Try to load and run standalone diagnostics against the devices in the partition, particularly against the boot device from which you want to load the operating system. You can run standalone diagnostics from an optical drive or a NIM server. To boot standalone diagnostics, follow the detailed procedures in Running the online and standalone diagnostics.

Note: When attempting to load diagnostics on a partition from partition standby, the device from which you are loading standalone diagnostics must be made available to the partition that is not able to load the operating system, if it is not already in that partition. Contact the customer or system administrator if a device must be moved between partitions in order to load standalone diagnostics.

Did standalone diagnostics load and start successfully?

Yes: Go to step 8 on page 57.

No: Go to step 14 on page 58.

8. Was the intended boot device present in the output of the Display Configuration and Resource List option (which is run from the Task Selection menu)?
 - **Yes:** Continue with the next step.
 - **No:** Go to step 10.
9. Did running diagnostics against the intended boot device result in a "No Trouble Found" message?
 - Yes:** Go to step 12.
 - No:** Go to the List of service request numbers and perform the repair actions for the SRN reported by the diagnostics. When you have completed the repair actions, go to step 13.
10. Perform the following actions:
 - a. Perform the first item in the action list below. In the list of actions below, choose SCSI or IDE based on the type of device from which you are trying to boot the operating system.
 - b. Restart the system or partition.
 - c. Stop at the SMS menus and select **Select Boot Options**.
 - d. Is the device that was not appearing previously in the boot list now present?
 - Yes:** Go to MAP 0410: Repair checkout. **This ends the procedure.**
 - No:** Perform the next item in the action list and then return to step 10b. If there are no more items in the action list, go to step 11.

Action list:

Note: See Finding part locations for part numbers and links to exchange procedures.

- a. Verify that the SCSI or IDE cables are properly connected. Also verify that the device configuration and address jumpers are set correctly.
 - b. Do one of the following:
 - **SCSI boot device:** If you are attempting to boot from a SCSI device, remove all hot-swap disk drives (except the intended boot device, if the boot device is a hot-swap drive). If the boot device is present in the boot list after you boot the system to the SMS menus, add the hot-swap disk drives back in one at a time, until you isolate the failing device.
 - **IDE boot device:** If you are attempting to boot from an IDE device, disconnect all other internal SCSI or IDE devices. If the boot device is present in the boot list after you boot the system to the SMS menus, reconnect the internal SCSI or IDE devices one at a time, until you isolate the failing device or cable.
 - c. Replace the SCSI or IDE cables.
 - d. Replace the SCSI backplane (or IDE backplane, if present) to which the boot device is connected.
 - e. Replace the intended boot device.
 - f. Replace the system backplane.
11. Choose from the following:
 - If the intended boot device is not listed, go to Processor and Subsystem Problem Isolation. **This ends the procedure.**
 - If an SRN is reported by the diagnostics, go to List of service request numbers and follow the action listed. **This ends the procedure.**
 12. Have you disconnected any other devices?
 - Yes:** Reinstall each device that you disconnected, one at a time. After you reinstall each device, reboot the system. Continue this procedure until you isolate the failing device. Replace the failing device, then go to step 13.
 - No:** Perform an operating system-specific recovery process or reinstall the operating system. **This ends the procedure.**
 13. Is the problem corrected?
 - Yes:** Go to MAP 0410: Repair checkout. **This ends the procedure.**

No: If replacing the indicated FRUs did not correct the problem, or if the previous steps did not address your situation, go to PFW1548: Processor subsystem problem isolation. **This ends the procedure.**

14. Is a SCSI boot failure (where you cannot boot from a SCSI-attached device) also occurring?
 - **Yes:** Go to PFW1548: Processor subsystem problem isolation. **This ends the procedure.**
 - **No:** Continue to the next step.
15. Perform the following actions to determine if another adapter is causing the problem:
 - a. Remove all adapters except the one to which the optical drive is attached and the one used for the console.
 - b. Reload the standalone diagnostics. Can you successfully reload the standalone diagnostics?
 - **Yes:** Perform the following:
 - 1) Reinstall the adapters that you removed (and attach devices as applicable) one at a time. After you reinstall each adapter, retry the boot operation until the problem reoccurs.
 - 2) Replace the adapter or device that caused the problem.
 - 3) Go to MAP 0410: Repair checkout. **This ends the procedure.**
 - **No:** Continue with the next step.
16. The graphics adapter (if installed), optical drive, IDE or SCSI cable, or system board is most likely defective. Does your system have a PCI graphics adapter installed?

Yes: Continue with the next step.

No: Go to step 18
17. Perform the following to determine if the graphics adapter is causing the problem:
 - a. Remove the graphics adapter.
 - b. Attach a TTY terminal to the system port.
 - c. Try to reload standalone diagnostics. Do the standalone diagnostics load successfully?

Yes: Replace the graphics adapter. **This ends the procedure.**

No: Continue with the next step.
18. Replace the following (if not already replaced), one at a time, until the problem is resolved:
 - a. Optical drive
 - b. IDE or SCSI cable that goes to the optical drive
 - c. System board that contains the integrated SCSI or IDE adapters.

If this resolves the problem, go to MAP 0410: Repair Checkout. If the problem still persists or if the previous descriptions did not address your particular situation, go to PFW1548: Processor subsystem problem isolation.

This ends the procedure.

PFW1540: Problem isolation procedures

The PFW1540 procedures are used to locate problems in the processor subsystem or I/O subsystem(s).

If a problem is detected, these procedures help you isolate the problem to a failing unit. Find the symptom in the following table; then follow the instructions given in the Action column.

Problem Isolation Procedures	
Symptom/Reference Code/Checkpoint	Action
You have or suspect an I/O card or I/O subsystem failure.You received one of the following SRNs or reference codes: 101-000, 101-517, 101-521, 101-538, 101-551 to 101-557, 101-559 to 101-599, 101-662, 101-727, 101-c32, 101-c33, 101-c70	Go to PFW1542: I/O problem isolation procedure.

Problem Isolation Procedures	
Symptom/Reference Code/Checkpoint	Action
The service processor on your Model 590 or Model 595 posts a failure and halts the IPL before the server firmware standby is reached. The server logs an error code indicating a problem with one of the MCMs.	Go to PFW1543: Model 590 and model 595 MCM problem isolation procedure.
The service processor on your Model 590 or Model 595 posts a failure and halts the IPL before the server firmware standby is reached. The server logs an error code indicating a memory subsystem failure.	Go to PFW1546: Model 590 and model 595 Memory problem isolation procedure.
You have or suspect a memory or processor subsystem problem on a server other than a Model 590 or Model 595. You received the following SRN or reference code: 101-185	Go to PFW1548: Memory and Processor Problem Isolation Procedure.
If you were directed to the PFW1540 procedure by an SRN and that SRN is not listed in this table.	Go to PFW1542: I/O problem isolation procedure.

FRU identify LEDs

Your system is configured with an arrangement of LEDs that help identify various components of the system. These include but are not limited to:

- Rack identify beacon LED (optional rack status beacon)
- Processor subsystem drawer identify LED
- I/O drawer identify LED
- RIO port identify LED
- FRU identify LED
- Power subsystem FRUs
- Processor subsystem FRUs
- I/O subsystem FRUs
- I/O adapter identify LED
- DASD identify LED

The identify LEDs are arranged hierarchically with the FRU identify LED at the bottom of the hierarchy, followed by the corresponding processor subsystem or I/O drawer identify LED, and the corresponding rack identify LED to locate the failing FRU more easily. Any identify LED in the system may be flashed; refer to Managing your server using the Advanced System Management Interface.

Any identify LED in the system may also be flashed by using the “Identify and Attention Indicators” task through the AIX diagnostic programs. The procedure to use the Identify and Attention Indicators task in the AIX diagnostics is outlined in “Tasks and Service Aids” in Working with AIX diagnostics.

PFW1542: I/O Problem Isolation Procedure

This I/O problem-determination procedure isolates I/O card and I/O subsystem failures. When I/O problem isolation is complete, all cables and cards that are failing will have been replaced or reseated.

Notes:

1. Be sure to unplug the power cords before removing or installing any part to avoid damage to it or the system or subsystem.
2. This MAP assumes that either:
 - An optical drive is installed and connected to the integrated EIDE adapter, and an AIX diagnostic CD-ROM is available.

OR

- AIX standalone diagnostics can be booted from a NIM server.
- 3. If a power-on password or privileged-access password is set, you are prompted to enter the password before the AIX diagnostic CD-ROM can load.
- 4. The term POST indicators refers to the device mnemonics that appear during the power-on self-test (POST).
- 5. The service processor might have been set by the user to monitor system operations and to attempt recoveries. You might want to disable these options while you diagnose and service the system. If these settings are disabled, make notes of their current settings so that they can be restored before the system is turned back over to the customer.

The following settings may be of interest.

Monitoring

(also called surveillance) From the ASMI menu, expand the System Configuration menu, then click on Monitoring. Disable both types of surveillance.

Auto power restart

(also called unattended start mode) From the ASMI menu, expand Power/Restart Control, then click on Auto Power Restart, and set it to disabled.

Wake on LAN

From the ASMI menu, expand Wake on LAN, and set it to disabled. Call Out From the ASMI menu, expand the Service Aids menu, then click on Call-Home/Call-In Setup. Set the call-home system port and the call-in system port to disabled.

- 6. If this is a pSeries system, verify that the system has not been set to boot to the SMS menus or to the open firmware prompt. From the ASMI menu, expand Power/Restart Control to view the menu, then click on Power On/Off System. The AIX/Linux partition mode boot should say "Continue to Operating System".

Select the model number you are servicing from the following list:

"PFW1548-185: Processor subsystem problem isolation procedure for model 185 and A50" on page 490

"PFW1548-505: Processor subsystem problem isolation procedure for model 505 with an HMC attached" on page 497

"PFW1548-505: Processor subsystem problem isolation procedure for model 505 without an HMC attached" on page 505

"PFW1548-510: Processor subsystem problem isolation procedure for model 510, 51A, and OpenPower 710 with an HMC attached" on page 512

"PFW1548-510: Processor subsystem problem isolation procedure for model 510, 51A, and OpenPower 710 without an HMC attached" on page 519

"PFW1542-520: I/O problem isolation procedure for model 520, 52A, and 285" on page 428

"PFW1542-550: I/O problem isolation procedure for model 550, 55A, and OpenPower 720" on page 437

"PFW1542-570: I/O problem isolation procedure for model 561 and 570" on page 450

"PFW1542-575: I/O problem isolation procedure for model 575" on page 462

"PFW1542-590: I/O problem isolation procedure for model 590, and 595" on page 471

PFW1543: Model 590 and model 595 MCM problem isolation procedure

Use this procedure to locate defective FRUs not found by normal diagnostics.

Purpose of this procedure

This procedure is used to locate defective FRUs not found by normal diagnostics. It should be used when the service processor posts a failure and halts the IPL before server firmware standby is reached.

To perform this procedure, run diagnostics on a minimally configured system. If a failure is detected on the minimally configured system, the remaining FRUs are exchanged one at a time until the failing FRU is identified. If a failure is not detected, FRUs are added back until the failure occurs. The failure is then isolated to the failing FRU.

This MCM problem-determination procedure isolates processor subsystem failures.

Notes:

1. The service processor might have recorded one or more symptoms in its error/event log. Use the Advanced System Management Interface (ASMI) menus to view the error/event log.
 - If you arrived here after performing a slow boot, look for a possible new error that occurred during the slow boot. If there is a new error, and its actions call for a FRU replacement, perform those actions. If this does not resolve the problem, go to PFW1543-1.
 - If an additional slow boot has not been performed, or if the slow boot did not yield a new error code, look at the error that occurred prior to the original error. Perform the actions associated with that error. If the problem is not resolved, go to PFW1543-1.
 - If a slow boot results in the same error code, and there are no error codes before the original error code, go to PFW1543-1.
2. The service processor might have been set by the user to monitor system operations and to attempt recoveries. You might want to disable these options while you diagnose and service the system. If these settings are disabled, make notes of their current settings so that they can be restored before the system is turned back over to the customer. The following settings may be of interest.

Setting	Description
Monitoring (also called surveillance)	From the ASMI menu, expand the System Configuration menu, then click on Monitoring. Disable both types of surveillance.
Auto power restart (also called unattended start mode)	From the ASMI menu, expand Power/Restart Control, then click on Auto Power Restart, and set it to disabled.
Wake on LAN	From the ASMI menu, expand Wake on LAN, and set it to disabled.
Call Out	From the ASMI menu, expand the Service Aids menu, then click on Call-Home/Call-In Setup. Set the call-home system port and the call-in system port to disabled.

3. If this is a pSeries system, verify that the system has not been set to boot to the SMS menus or to the open firmware prompt. From the ASMI menu, expand Power/Restart Control to view the menu, then click on Power On/Off System. The AIX/Linux partition mode boot should say "Continue to Operating System".
- **PFW1543-1**
Record the error code(s) and location codes(s) that sent you to this procedure.
 - **PFW1543-2**
Use the HMC to power off the system.
Examine the amber logic-power LEDs on all of the processor subsystem DCAs.
 - **PFW1543-3**
Are all of the amber logic-power LEDs on all of the processor subsystem DCAs off?
NO Contact service support.
YES Continue to step 1543-4.
 - **PFW1543-4**
Attention: Some of the parts in the following lists have a limit of xxx plug cycles.

You may be asked to replace one or more of the following cards and MCM modules. Before replacing any of the listed MCM modules, call for support.

- MCM module 0 at location Un-Px-??
- MCM module 0 at location Un-Px-??
- System clock card(s) at location Un-P1-C3 and Un -P1-C4

Replace, in the order listed, the following modules or cards, if present, one at a time:

1. Clock cards, Un-P1-C3 and Un-P1-C2.
2. First location code, if any, recorded in PFW1543-1.
3. Second location code, if any, recorded in PFW1543-1.
4. Third location code, if any, recorded in PFW1543-1.
5. Fourth location code, if any, recorded in PFW1543-1.
6. Fifth location code, if any, recorded in PFW1543-1.
7. Sixth location code, if any, recorded in PFW1543-1.
8. MCM 0 at Un-Pn-?? if not recorded in PFW1543-1.
9. MCM 1 at Un-Pn-?? if not recorded in PFW1543-1.

• **PFW1543-5**

Turn on the power.

• **PFW1543-6**

Does the system stop with the same error code as recorded in step 1543-1?

NO The module just replace was defective. Return the system to its original configuration. Go to MAP 0410: Repair Checkout. This ends the procedure.

YES Go to PFW1543-7.

• **PFW1543-7**

Have all of the modules listed in step 1543-4 been replaced?

NO Go to PFW1543-2.

YES Go to PFW1543-8.

• **PFW1543-8**

Turn off the power.

• **PFW1543-9**

Examine the amber logic-power LEDs on all of the processor subsystem DCAs.

• **PFW1543-10**

Are all of the amber logic-power LEDs on all of the processor subsystem DCAs off?

NO Contact service support.

YES Continue to PFW1543-11.

• **PFW1543-11**

Attention: Before replacing the node's backplane, call service support.

Replace the node's backplane and chassis, Un-Px.

• **PFW1543-12**

Turn on the power.

• **PFW1543-13**

Does the system stop with the same error code as recorded in step 1543-1?

NO The part just replaced was defective. Return the system to its original configuration. Go to MAP 0410: Repair Checkout. This ends the procedure.

YES Go to PFW1543-14.

- **PFW1543-14**

Turn off the power.

Make sure that all of the amber logic-power LEDs on all of the processor subsystem DCAs are off.

- **PFW1543-15**

Call service support.

PFW1546: Model 590 and model 595 memory problem isolation procedure

Use this procedure to locate defective FRUs not found by normal diagnostics.

Purpose of this procedure

Use this procedure to locate defective FRUs not found by normal diagnostics. It should be used when the service processor posts a failure and halts the IPL before server firmware standby is reached.

To perform this procedure, run diagnostics on a minimally configured system. If a failure is detected on the minimally configured system, the remaining FRUs are exchanged one at a time until the failing FRU is identified. If a failure is not detected, FRUs are added back until the failure occurs. The failure is then isolated to the failing FRU.

This memory problem-determination procedure isolates memory subsystem failures. When memory problem isolation is complete, memory cards exhibiting a failure will have been reseated or replaced.

Notes:

1. The service processor might have recorded one or more symptoms in its error/event log. Use the Advanced System Management Interface (ASMI) menus to view the error/event log.
 - If you arrived here after performing a slow boot, look for a possible new error that occurred during the slow boot. If there is a new error, and its actions call for a FRU replacement, perform those actions. If this does not resolve the problem, go to PFW1546-1.
 - If an additional slow boot has not been performed, or if the slow boot did not yield a new error code, look at the error that occurred prior to the original error. Perform the actions associated with that error. If the problem is not resolved, go to PFW1546-1.
 - If a slow boot results in the same error code, and there are no error codes before the original error code, go to PFW1546-1.
2. The service processor might have been set by the user to monitor system operations and to attempt recoveries. You might want to disable these options while you diagnose and service the system. If these settings are disabled, make notes of their current settings so that they can be restored before the system is turned back over to the customer. The following settings may be of interest.

Setting	Description
Monitoring (also called surveillance)	From the ASMI menu, expand the System Configuration menu, then click on Monitoring. Disable both types of surveillance.
Auto power restart (also called unattended start mode)	From the ASMI menu, expand Power/Restart Control, then click on Auto Power Restart, and set it to disabled.
Wake on LAN	From the ASMI menu, expand Wake on LAN, and set it to disabled.
Call Out	From the ASMI menu, expand the Service Aids menu, then click on Call-Home/Call-In Setup. Set the call-home system port and the call-in system port to disabled.

3. If this is a pSeries system, verify that the system has not been set to boot to the SMS menus or to the open firmware prompt. From the ASMI menu, expand Power/Restart Control to view the menu, then click on Power On/Off System. The AIX/Linux partition mode boot should say "Continue to Operating System".
- **PFW1546-1**
Record the error code(s) and location codes(s) that sent you to this procedure.
 - **PFW1546-2**
Use the HMC to power off the system.
Examine the amber logic-power LEDs on all of the processor subsystem DCAs.
 - **PFW1546-3**
Are all of the amber logic-power LEDs on all of the processor subsystem DCAs off?
NO Contact service support.
YES Continue to PFW1546-4.
 - **PFW1546-4**
Attention: Some of the parts in the following lists have a limit of three plugging cycles.
Replace the following memory cards, one at a time, in the order listed, if present.
 1. The device at the first location code recorded in PFW1546-1 .
 2. The device at the second location code recorded in PFW1546-1.
 3. The device at the third location code recorded in PFW1546-1.
 4. The device at the fourth location code recorded in PFW1546-1.
 5. The device at the fifth location code recorded in PFW1546-1.
 6. The device at the sixth location code recorded in PFW1546-1.
 - **PFW1546-5**
Turn on the power.
 - **PFW1546-6**
Did the system stop with the same error code as recorded in step 1546-1?
NO The memory card just replace was defective. Return the system to its original configuration. Go to MAP 0410: Repair Checkout. This ends the procedure.
YES Go to PFW1546-7.
 - **PFW1546-7**
Have all of the memory cards listed in step 1546-4 been replaced?
NO Go to PFW1546-2.
YES Go to PFW1546-8.
 - **PFW1546-8**
Turn off the power.
 - **PFW1546-9**
Examine the amber logic-power LEDs on all of the processor subsystem DCAs.
 - **PFW1546-10**
Are all of the amber logic-power LEDs on all of the processor subsystem DCAs off?
NO Contact service support.
YES Continue to PFW1546-11.
 - **PFW1546-11**
Using the memory card plugging sequence table shown below, depopulate the memory cards in the system according to the following.

Note: As each node is removed, record the configuration of memory cards before removing any.

- In a one-node system with only one MCM active (in a model 595 only), leave the first two memory cards in the table installed.
- In a one-node system with both MCMs active, leave the first four memory cards in the table installed.
- In a two-node system, leave the first eight memory cards in the table installed.
- In a three-node system, leave the first twelve memory cards in the table installed.
- In a four-node system, leave the first sixteen memory cards in the table installed.

•

Table 10. Memory card plugging sequences for multi-node systems

16W System	32W System	48W System	64W System
Node 0 MC01	Node 0 MC01	Node 0 MC01	Node 0 MC01
Node 0 MC02	Node 0 MC02	Node 0 MC02	Node 0 MC02
Node 0 MC03	Node 1 MC01	Node 1 MC01	Node 1 MC01
Node 0 MC04	Node 1 MC02	Node 1 MC02	Node 1 MC02
Node 0 MC05	Node 0 MC03	Node 2 MC01	Node 2 MC01
Node 0 MC06	Node 0 MC04	Node 2 MC02	Node 2 MC02
Node 0 MC15	Node 1 MC03	Node 0 MC03	Node 3 MC01
Node 0 MC16	Node 1 MC04	Node 0 MC04	Node 3 MC02
Node 0 MC08	Node 0 MC05	Node 1 MC03	Node 0 MC03
Node 0 MC09	Node 0 MC06	Node 1 MC04	Node 0 MC04
Node 0 MC12	Node 1 MC05	Node 2 MC03	Node 1 MC03
Node 0 MC13	Node 1 MC06	Node 2 MC04	Node 1 MC04
Node 0 MC07	Node 0 MC15	Node 0 MC05	Node 2 MC03
Node 0 MC10	Node 0 MC16	Node 0 MC06	Node 2 MC04
Node 0 MC11	Node 1 MC15	Node 1 MC05	Node 3 MC03
Node 0 MC14	Node 1 MC16	Node 1 MC06	Node 3 MC04
	Node 0 MC08	Node 2 MC05	Node 0 MC05
	Node 0 MC09	Node 2 MC06	Node 0 MC06
	Node 1 MC08	Node 0 MC15	Node 1 MC05
	Node 1 MC09	Node 0 MC16	Node 1 MC06
	Node 0 MC12	Node 1 MC15	Node 2 MC05
	Node 0 MC13	Node 1 MC16	Node 2 MC06
	Node 1 MC12	Node 2 MC15	Node 3 MC05
	Node 1 MC13	Node 2 MC16	Node 3 MC06
	Node 0 MC07	Node 0 MC08	Node 0 MC15
	Node 0 MC10	Node 0 MC09	Node 0 MC16
	Node 1 MC07	Node 1 MC08	Node 1 MC15
	Node 1 MC10	Node 1 MC09	Node 1 MC16
	Node 0 MC11	Node 2 MC08	Node 2 MC15
	Node 0 MC14	Node 2 MC09	Node 2 MC16
	Node 1 MC11	Node 0 MC12	Node 3 MC15

Table 10. Memory card plugging sequences for multi-node systems (continued)

16W System	32W System	48W System	64W System
	Node 1 MC14	Node 0 MC13	Node 3 MC16
		Node 1 MC12	Node 0 MC08
		Node 1 MC13	Node 0 MC09
		Node 2 MC12	Node 1 MC08
		Node 2 MC13	Node 1 MC09
		Node 0 MC07	Node 2 MC08
		Node 0 MC10	Node 2 MC09
		Node 1 MC07	Node 3 MC08
		Node 1 MC10	Node 3 MC09
		Node 2 MC07	Node 0 MC12
		Node 2 MC10	Node 0 MC13
		Node 0 MC11	Node 1 MC12
		Node 0 MC14	Node 1 MC13
		Node 1 MC11	Node 2 MC12
		Node 1 MC14	Node 2 MC13
		Node 2 MC11	Node 3 MC12
		Node 2 MC14	Node 3 MC13
			Node 0 MC07
			Node 0 MC10
			Node 1 MC07
			Node 1 MC10
			Node 2 MC07
			Node 2 MC10
			Node 3 MC07
			Node 3 MC10
			Node 0 MC11
			Node 0 MC14
			Node 1 MC11
			Node 1 MC14
			Node 2 MC11
			Node 2 MC14
			Node 3 MC11
			Node 3 MC14

Reinstall the nodes into the system.

After the system has been taken down to the minimum memory for the number of nodes in the system, power on the system using the HMC.

Does the system boot to server firmware standby with no error codes on the control panel?

NO Go to PFW1546-12.

YES Go to PFW1546-18.

- **PFW1546-12**

The following steps will isolate the failing node. The nodes will be removed, repopulated with memory, and added back to the system one at a time.

Use the HMC to power down the system.

Remove all nodes from the system.

Reconfigure the memory in the first node according to the first column in the table in PFW1546-11.

Reinstall the first node, then use the HMC to power on the system.

Does the system boot to server firmware standby with no error codes on the control panel?

NO Go to PFW1546-13.

YES Go to PFW1546-14.

- **PFW1546-13**

The failure has been isolated to the node that was just reinstalled. Do the following in the order listed:

1. Use the HMC to power down the system.
2. Remove the last node that was reinstalled. Replace the eight memory cards in the node with eight known-good cards, or eight cards from the ones that were removed in PFW1546-11.
3. Reinstall the node.
4. Use the HMC to power up the system.

Does the system boot to server firmware standby with no error codes on the control panel?

NO Before replacing the node's backplane and chassis, or one of the MCMs, call the support center. This ends the procedure.

YES One of the eight memory cards originally in this node is bad. Isolate to the failing quad first, then isolate the failing memory card. Replace the failing card, then go to MAP 0410: Repair Checkout. This ends the procedure.

- **PFW1546-14**

Use the HMC to power down the system.

Is there a second node in the system?

NO Go to PFW1546-17.

YES Do the following:

1. Reconfigure the minimum memory in the first node and the second node according to the second column in the table in PFW1546-11.
2. Reinstall the second node, then use the HMC to power on the system.

Does the system boot to server firmware standby with no error codes on the control panel?

NO Go to PFW1546-13.

YES Go to PFW1546-15.

- **PFW1546-15**

Use the HMC to power down the system.

Is there a third node in the system?

NO Go to PFW1546-17.

YES Do the following:

1. Reconfigure the minimum memory in the first node, the second node, and the third node according to the second column in the table in PFW1546-11.
2. Reinstall the third node, then use the HMC to power on the system.

Does the system boot to server firmware standby with no error codes on the control panel?

NO Go to PFW1546-13.

YES Go to PFW1546-16.

- **PFW1546-16**

Use the HMC to power down the system.

Is there a fourth node in the system?

NO Go to PFW1546-17.

YES Do the following:

1. Reconfigure the minimum memory in the first node, the second node, the third node, and the fourth node according to the second column in the table in PFW1546-11.
2. Reinstall the third node, then use the HMC to power on the system.

Does the system boot to server firmware standby with no error codes on the control panel?

NO Go to PFW1546-13.

YES Go to PFW1546-17.

- **PFW1546-17**

The system now boots to server firmware standby with the minimum configuration of memory cards. Go to PFW1546-18 to start adding back in the additional memory in the system.

- **PFW1546-18**

Power off the system using the HMC.

Add another set of four memory cards back in order, one set a time, according to the table in PFW1546-11.

After each set of four is added, reinstall the node into the system.

Does the system boot to server firmware standby with no error codes on the control panel?

NO Go to PFW1546-20.

YES Go to PFW1546-19.

- **PFW1546-19**

Has the last set of four memory cards been installed (so the system has been returned to its original configuration)?

NO Go to PFW1546-18.

YES The system is now booting to server firmware standby with all of the memory cards installed. Go to MAP 0410: Repair Checkout. This ends the procedure.

- **PFW1546-20**

The set of four memory cards that was reinstalled in step 18, or the slots into which they were installed, are causing the failure.

Do the following:

1. Power down the system using the HMC.
2. Remove the node into which the last set of memory cards was installed.
3. Replace the last set of memory cards that was installed with a known-good set.
4. Reinstall the node in the system.
5. Using the HMC, power on the system.

Does the system boot to server firmware standby with no error codes on the control panel?

NO One or more of the memory slots is bad. Before replacing the chassis, contact the support center. This ends the procedure.

YES Go to PFW1546-21.

- **PFW1546-21**

One or more of the memory cards in the last set installed is bad. Using the known good set, swap out the memory cards one at a time until the failing card is isolated. Replace it. Return the system to its original configuration, then go to MAP 0410: Repair Checkout. This ends the procedure.

PFW1548: Memory and processor subsystem problem isolation procedure

Use MAP to locate defective FRUs not found by normal diagnostics.

Attention: This procedure is not applicable to an iSeries-branded system that is not managed by an HMC.

Purpose of this procedure

This MAP is used to locate defective FRUs not found by normal diagnostics. For this procedure, diagnostics are run on a minimally configured system. If a failure is detected on the minimally configured system, the remaining FRUs are exchanged one at a time until the failing FRU is identified. If a failure is not detected, FRUs are added back until the failure occurs. The failure is then isolated to the failing FRU.

Note: This MAP assumes that either:

- An optical drive is installed and connected to the integrated EIDE adapter, and an AIX diagnostic CD-ROM is available.
- OR
- AIX standalone diagnostics can be booted from a NIM server.

Do the following:

1. Be sure to unplug the power cords before removing or installing any part to avoid damage to it.
2. If a power-on password or privileged-access password is set, you are prompted to enter the password before the AIX diagnostic CD-ROM can load.
3. The term POST indicators refers to the device mnemonics that appear during the power-on self-test (POST).
4. If your system is a model A50 or 185, go to step 8 on page 70. Otherwise, continue to the next step.
5. The service processor might have recorded one or more symptoms in its error/event log. Use the Advanced System Management Interface (ASMI) menus to view the error/event log.
 - If you arrived here after performing a slow boot, look for a possible new error that occurred during the slow boot. If there is a new error, and its actions call for a FRU replacement, perform those actions. If this does not resolve the problem, select one of the files listed below according to the system model you are servicing, then go to PFW1548-xxx-1 in that procedure.
 - If an additional slow boot has not been performed, or if the slow boot did not yield a new error code, look at the error that occurred just before the original error. Perform the actions associated with that error. If the problem is not resolved, select one of the files listed below according to the system model you are servicing, then go to PFW1548-xxx-1 in that procedure.
 - If a slow boot results in the same error code, and there are no error codes before the original error code, select one of the files listed below according to the system model you are servicing, then go to PFW1548-xxx-1 in that procedure.
6. The service processor might have been set by the user to monitor system operations and to attempt recoveries. You might want to disable these options while you diagnose and service the system. If these settings are disabled, make notes of their current settings so that they can be restored before the system is turned back over to the customer. The following settings may be of interest.

Monitoring

(also called surveillance) From the ASMI menu, expand the System Configuration menu, then click on Monitoring. Disable both types of surveillance.

Auto power restart

(also called unattended start mode) From the ASMI menu, expand Power/Restart Control, then click on Auto Power Restart, and set it to disabled.

Wake on LAN

From the ASMI menu, expand Wake on LAN, and set it to disabled.

Call Out

From the ASMI menu, expand the Service Aids menu, then click on Call-Home/Call-In Setup. Set the call-home system port and the call-in system port to disabled.

7. If this is a pSeries system, verify that the system has not been set to boot to the System Management Services (SMS) menus or to the open firmware prompt. From the ASMI menu, expand Power/Restart Control to view the menu, then click on Power On/Off System. The AIX/Linux partition mode boot should say "Continue to Operating System". Go to step 10.
8. On a model A50 or 185 system, the SMS menus might have been used by the customer to enable auto power restart and wake-on-LAN. You might want to disable these options while you diagnose and service the system. Before you disable these settings, make notes of their current values so that you can restore them before turning the system back over to the customer. The following settings may be of interest.

Auto power restart

(also called unattended start mode) On the SMS main menu, expand Power/Restart Control, then click on Auto Power Restart, and set it to disabled.

Wake on LAN

On the SMS main menu, expand Power/Restart Control, then click on Auto Power Restart, and set it to disabled.

9. On a model A50 or 185 system, the SMS menus may have been used by the customer to enable multiboot at startup. You can disable multiboot starting the the main SMS menu by selecting **Select Boot Options** → **Multiboot Startup**.
 - To have the system boot to the SMS menus automatically each time it reboots, enable this flag.
 - To have the system boot to the operating system each time it reboots, disable this flag.

In either case, record the customer's setting and return it to that setting after you complete the service actions.

10. To continue with this procedure select one of the following files according to the model system you are servicing.
 - "PFW1548-185: Processor subsystem problem isolation procedure for model 185 and A50" on page 490
 - "PFW1548-505: Processor subsystem problem isolation procedure for model 505 with an HMC attached" on page 497
 - "PFW1548-505: Processor subsystem problem isolation procedure for model 505 without an HMC attached" on page 505
 - "PFW1548-510: Processor subsystem problem isolation procedure for model 510, 51A, and OpenPower 710 with an HMC attached" on page 512
 - "PFW1548-510: Processor subsystem problem isolation procedure for model 510, 51A, and OpenPower 710 without an HMC attached" on page 519
 - "PFW1548-520: Processor subsystem problem isolation procedure for the model 520, 52A, and 285 with an HMC" on page 526
 - "PFW1548-520: Processor subsystem problem isolation procedure for the model 520, 52A, and 285 without an HMC" on page 536
 - "PFW1548-550: Processor subsystem problem isolation procedure for models 550, 55A, and OpenPower 720 with an HMC" on page 544
 - "PFW1548-550: Processor subsystem problem isolation procedure for models 550, 55A, and OpenPower 720 without an HMC attached" on page 554

“PFW1548-570: Processor subsystem problem isolation procedure for models 561 and 570” on page 563

“PFW1548-575: Processor subsystem problem isolation procedure for model 575” on page 574

“PFW1543: Model 590 and model 595 MCM problem isolation procedure” on page 60

Problems with noncritical resources

Use this procedure to help you determine the cause of problems with noncritical resources.

1. Is there an SRC in an 8-character format available on the Problem Summary form?

Note: If the operator has not filled out the problem summary form, go to the problem reporting procedure for the operating system in use.

No: Continue with the next step.

Yes: Go to the Reference codes topic. **This ends the procedure.**

2. Does the problem involve a workstation resource?

- **No:** Continue with the next step.

- **Yes:** Perform the following steps:

- Check that the workstation is operational.
- Verify that the cabling and addressing for the workstation is correct.
- Perform any actions indicated in the system operator message.

If you need further assistance, contact your next level of support. **This ends the procedure.**

3. Does the problem involve a removable media resource?

No: Continue with the next step.

Yes: Go to “Using the product activity log” on page 34 to resolve the problem. **This ends the procedure.**

4. Does the problem involve a communications resource?

- **No:** Contact your next level of support. **This ends the procedure.**

- **Yes:** Are there any system operator messages that indicate a communications-related problem has occurred?

- **No:** Contact your next level of support. **This ends the procedure.**

- **Yes:** Perform any actions indicated in the system operator message. If you need further assistance, contact your next level of support. **This ends the procedure.**

Intermittent problems

An intermittent problem is a problem that occurs for a short time, and then goes away.

About this task

The problem may not occur again until some time in the future, if at all. Intermittent problems cannot be made to appear again easily.

Some examples of intermittent problems are:

- A reference code appears on the control panel (the system attention light is on) but disappears when you power off, then power on the system. An entry does not appear in the Product Activity Log.
- An entry appears in the problem log when you use the Work with Problems (WRKPRB) command. For example, the 5094 expansion unit becomes powered off, but starts working again when you power it on.
- The workstation adapter is in a hang condition but starts working normally when it gets reset.

Note: You can get equipment for the following conditions from your branch office or installation planning representative:

- If you suspect that the air at the system site is too hot or too cold, you need a thermometer to check the temperature.
- If you suspect the moisture content of the air at the system site is too low or too high, use a wet/dry bulb to check the humidity. See “General intermittent problem checklist” on page 73 for more information.
- If you need to check ac receptacles for correct wiring, you need an ECOS tester, Model 1023-100, or equivalent tester. The tester lets you quickly check the receptacles. If you cannot find a tester, use an analog multimeter instead. Do not use a digital multimeter.

Follow the steps below to correct an intermittent problem:

1. Read the information in “About intermittent problems” before you attempt to correct an intermittent problem. Then continue with the next step of this procedure.
2. Perform *all* steps in the “General intermittent problem checklist” on page 73. Then continue with the next step of this procedure.
3. Did you correct the intermittent problem?

Yes: This ends the procedure.

No: Go to “Analyzing intermittent problems” on page 75. **This ends the procedure.**

About intermittent problems

An intermittent problem can show many different symptoms, so it might be difficult for you to determine the real cause without completely analyzing the failure.

To help with this analysis, you should determine as many symptoms as possible.

- The complete reference code is necessary to determine the exact failing area and the probable cause.
- Product Activity Log (PAL) information can provide time and device relationships.
- Information about environmental conditions when the failure occurred can be helpful (for example, an electrical storm occurring when the failure happened).

Note: If you suspect that an intermittent problem is occurring, increase the log sizes to the largest sizes possible. Select the PAL option on the Start a Service Tool display (see Product Activity Log for details).

Types of intermittent problems

Following are the major types of intermittent problems:

- Code (PTFs):
 - Licensed internal code
 - i5/OS
 - Licensed program products
 - Other application software
- Configuration:
 - Non-supported hardware that is used on the system
 - Non-supported system configurations
 - Non-supported communication networks
 - Model and feature upgrades that are not performed correctly
 - Incorrectly configured or incorrectly cabled devices
- Environment:

- Power line disturbance (for example, reduced voltage, a pulse, a surge, or total loss of voltage on the incoming ac voltage line)
- Power line transient (for example, lightning strike)
- Electrical noise (constant or intermittent)
- Defective grounding or a ground potential difference
- Mechanical vibration
- Intermittent hardware failure

General intermittent problem checklist

Use the following procedure to correct intermittent problems.

About this task

Performing these steps removes the known causes of most intermittent problems.

1. Discuss the problem with the customer. Look for the following symptoms:
 - A reference code that goes away when you power off and then power on the system.
 - Repeated failure patterns that you cannot explain. For example, the problem occurs at the same time of day or on the same day of the week.
 - Failures that started after system relocation.
 - Failures that occurred during the time specific jobs or software were running.
 - Failures that started after recent service or customer actions, system upgrade, addition of I/O devices, new software, or program temporary fix (PTF) installation.
 - Failures occurring only during high system usage.
 - Failures occur when people are close to the system or machines are attached to the system.
2. Recommend that the customer install the latest cumulative PTF package, since code PTFs have corrected many problems that seem to be hardware failures. The customer can order the latest cumulative PTF package electronically through Electronic Customer Support or by calling the Software Support Center.
3. If you have not already done so, use the maintenance package to see the indicated actions for the symptom described by the customer. Attempt to perform the on-line problem analysis procedure first. If this is not possible, such as when the system is down, go to the “Start of call procedure” on page 2.

Use additional diagnostic tools, if necessary, and attempt to recreate the problem.

Note: Ensure that the service information you are using is at the same level as the operating system.

4. Check the site for the following environmental conditions:
 - a. Any electrical noise that matches the start of the intermittent problems. Ask the customer such questions as:
 - Have any external changes or additions, such as building wiring, air conditioning, or elevators been made to the site?
 - Has any arc welding occurred in the area?
 - Has any heavy industrial equipment, such as cranes, been operating in the area?
 - Have there been any thunderstorms in the area?
 - Have the building lights become dim?
 - Has any equipment been relocated, especially computer equipment?
 If there was any electrical noise, find its source and prevent the noise from getting into the system.
 - b. Site temperature and humidity conditions that are within the system specifications. See Temperature and humidity design criteria in the Planning topic.

- c. Poor air quality in the computer room:
 - Look for dust on top of objects. Dust particles in the air cause poor electrical connections and may cause disk unit failures.
 - Smell for unusual odors in the air. Some gases can corrode electrical connections.
- d. Any large vibration (caused by thunder, an earthquake, an explosion, or road construction) that occurred in the area at the time of the failure.

Note: A failure that is caused by vibration is more probable if the server is on a raised floor.

5. Ensure that all ground connections are tight. These items reduce the effects of electrical noise. Check the ground connections by measuring the resistance between a conductive place on the frame to building ground or to earth ground. The resistance must be 1.0 ohm or less.
6. Ensure proper cable retention is used, as provided. If no retention is provided, the cable should be strapped to the frame to release tension on cable connections.

Ensure that you pull the cable ties tight enough to fasten the cable to the frame bar tightly. A loose cable can be accidentally pulled with enough force to unseat the logic card in the frame to which the cable is attached. If the system is powered on, the logic card could be destroyed.

7. Ensure that all workstation and communications cables meet hardware specifications:
 - All connections are tight.
 - Any twinaxial cables that are not attached to devices must be removed.
 - The lengths and numbers of connections in the cables must be correct.
 - Ensure that lightning protection is installed on any twinaxial cables that enter or leave the building.
8. Perform the following:
 - a. Review recent service calls. Contact your next level of support for assistance.
 - b. Review entries in the problem log (WRKPRB). Look for problems that were reported to the user.
 - c. Review entries in the PAL, SAL, and service processor log. Look for a pattern:
 - SRCs on multiple adapters occurring at the same time
 - SRCs that have a common time-of-day or day-of-week pattern
 - Log is wrapping (hundreds of recent entries and no older entries)
 Check the PAL sizes and increase them if they are smaller than recommended.
 - d. Review entries in the history log (Display Log (DSPLLOG)). Look for a change that matches the start of the intermittent problems.
 - e. Ensure that the latest engineering changes are installed on the system and on all system I/O devices.
9. Ensure that the hardware configuration is correct and that the model configuration rules have been followed. Use the **Display hardware configuration** service function (under SST or DST) to check for any missing or failed hardware.
10. Was a system upgrade, feature, or any other field bill of material or feature field bill of material installed just before the intermittent problems started occurring?

No: Continue with the next step.

Yes: Review the installation instructions to ensure that each step was performed correctly. Then continue with the next step of this procedure.

11. Is the problem associated with a removable media storage device?

No: Continue with the next step.

Yes: Ensure that the customer is using the correct removable media storage device cleaning procedures and good storage media. Then continue with the next step of this procedure.

12. Perform the following to help prevent intermittent thermal checks:
 - Ensure that the AMDs are working.

- Exchange all air filters as recommended.
13. If necessary, review the intermittent problems with your next level of support and installation planning representative. Ensure that all installation planning checks were made on the system. Because external conditions are constantly changing, the site may need to be checked again. **This ends the procedure.**

Analyzing intermittent problems

This procedure enables you to begin analyzing an intermittent problem.

About this task

Use this procedure only after you have first reviewed the information in “About intermittent problems” on page 72 and gone through the “General intermittent problem checklist” on page 73.

1. Is a reference code associated with the intermittent problem?
No: Continue with the next step.
Yes: Go to Reference codes. If the actions in the reference code tables do not correct the intermittent problem, return here and continue with the next step.
2. Is a symptom associated with the intermittent problem?
No: Continue with the next step.
Yes: Go to “Intermittent symptoms.” If the information there does not help to correct the intermittent problem, return here and continue with the next step.
3. Go to “Failing area intermittent isolation procedures.” If the information there does not help to correct the intermittent problem, return here and continue with the next step.
4. Send the data you have collected to your next level of support so that an Authorized Program Analysis Report (APAR) can be written. **This ends the procedure.**

Intermittent symptoms

Use the table below to find the symptom and description of the intermittent problem. Then perform the corresponding intermittent isolation procedures.

Although an isolation procedure may correct the intermittent problem, use your best judgment to determine if you should perform the remainder of the procedure shown for the symptom.

Note: If the symptom for the intermittent problem you have is not listed, go to “Failing area intermittent isolation procedures.”

Table 11. Intermittent symptoms

Symptom	Description	Isolation procedure
System powered off.	The system was operating correctly, then the system powered off. A 1xxx SRC may occur when this happens, and this SRC info should be logged in the service processor log.	“INTIP09” on page 169
System stops.	The system is powered on but is not operating correctly. No SRC is displayed. The system attention light is off and the processor activity lights may be on or off. Noise on the power-on reset line can cause the processor to stop.	“INTIP18” on page 171
System or subsystem runs slow.	The system or the subsystem is not processing at its normal speed.	“INTIP20” on page 172

Failing area intermittent isolation procedures

This procedure helps you determine how to resolve intermittent problems when you do not have a system reference code (SRC) or cannot determine the symptom.

About this task

Use this table only if you do not have a system reference code (SRC), or cannot find your symptom in “Intermittent symptoms” on page 75.

1. Perform all of the steps in “General intermittent problem checklist” on page 73 for all failing areas. Then continue with the next step.
2. Refer to the table below, and perform the following:
 - a. Find the specific area of failure under **Failing area**.
 - b. Look down the column of the area of failure until you find an X.
 - c. Look across to the **Isolation procedure** column and perform the procedure indicated.
 - d. If the isolation procedure does not correct the intermittent problem, continue down the column of the area of failure until you have performed all of the procedures shown for the failing area.
3. Although an isolation procedure may correct the intermittent problem, use your best judgment to determine if you should perform the remainder of the procedures shown for the failing area.

Results

Table 12. Failing area intermittent isolation procedures

Failing area						Isolation procedure to perform:
Power	Work station I/O processor	Disk unit adapter	Comm	Processor bus	Tape optical	Perform all steps in:
X	X	X	X	X	X	“General intermittent problem checklist” on page 73
X	X			X		“INTIP05” on page 167
	X	X	X	X	X	“INTIP07” on page 167
X						“INTIP09” on page 169
X						“INTIP14” on page 171
		X				“INTIP16” on page 171
X	X	X	X	X	X	“INTIP18” on page 171
	X	X	X	X	X	“INTIP20” on page 172

IPL problems

Use these scenarios to help you diagnose your IPL problem:

Cannot perform IPL from the control panel (no SRC)

Use this procedure when you cannot perform an i5/OS IPL from the control panel (no SRC).

About this task

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (D004)

1. Perform the following:
 - a. Verify that the power cable is plugged into the power outlet.
 - b. Verify that power is available at the customer’s power outlet.
2. Start an IPL by doing the following:

a. Select Manual mode and IPL type A or B on the control panel. See Control panel functions for details.

b. Power on the system. See Powering on and powering off.

Does the IPL complete successfully?

No: Continue with the next step.

Yes: This ends the procedure.

3. Have all the units in the system become powered on that you expected to become powered on?

Yes: Continue with the next step.

No: Go to “Power problems” on page 81 and find the symptom that matches the problem. **This ends the procedure.**

4. Is an SRC displayed on the control panel?

- **Yes:** Go to “Power problems” on page 81 and use the displayed SRC to correct the problem. **This ends the procedure.**

- **No:** For all models, exchange the following FRUs, one at a time. Refer to the Removing and replacing parts for additional information.

a. SPCN card unit. See symbolic FRU “TWRCARD” on page 763.

b. Power Supply. See symbolic FRU “PWRSPPLY” on page 730. **This ends the procedure.**

Cannot perform IPL at a specified time (no SRC)

Use this procedure when you cannot perform an i5/OS IPL at a specified time (no SRC). To correct the IPL problem, perform this procedure until you determine the problem and can perform an IPL at a specified time.

About this task

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock. (D004)

1. Verify the following:

a. The power cable is plugged into the power outlet.

b. That power is available at the customer’s power outlet.

2. Power on the system in normal mode. See Powering on and powering off.

Does the IPL complete successfully?

Yes: Continue with the next step.

No: Go to the “Start of call procedure” on page 2 procedure. **This ends the procedure.**

3. Have all the units in the system become powered on that you expected to become powered on?

Yes: Continue with the next step.

No: Go to “Start of call procedure” on page 2 and find the symptom that matches the problem. **This ends the procedure.**

4. Verify the requested system IPL date and time by doing the following:

a. On the command line, enter the Display System Value command:

DSPSYSVAL QIPLDATTIM

Observe the system value parameters.

Note: The system value parameters are the date and time the system operator requested a timed IPL.

```

+-----+
|Display System Value
|System: S0000000
|System value . . . . . : QIPLDATTIM
|
|Description . . . . . : Date and time to automatically IPL
|
|IPL date . . . . . : MM/DD/YY
|IPL time . . . . . : HH:MM:SS
+-----+

```

Figure 4. Display for QIPLDATTIM

- b. Verify the system date. On the command line, enter the Display System Value command:
 DSPSYSVAL QDATE
 Check the system values for the date.

```

+-----+
|Display System Value
|System: S0000000
|System value . . . . . : QDATE
|
|Description . . . . . : System date
|
|Date . . . . . : MM/DD/YY
+-----+

```

Figure 5. Display for QDATE

Does the operating system have the correct date?

- **Yes:** Continue with this step.
- **No:** Set the correct date by doing the following:
 - 1) On the command line, enter the Change System Value command (CHGSYSVAL QDATE VALUE('mmdyy')).
 - 2) Set the date by entering
 - mm=month
 - dd=day
 - yy=year
 - 3) Press **Enter**.

- c. Verify the system time. On the command line, enter the Display System Value command:
 DSPSYSVAL QTIME
 Check the system values for the time.

```

+-----+
|Display System Value
|System: S0000000
|System value . . . . . : QTIME
|
|Description . . . . . : Time of day
|
|Time . . . . . : HH:MM:SS
+-----+

```

Figure 6. Display for QTIME

Does the operating system have the correct time?

- **Yes:** Continue with this step.
- **No:** Set the correct time by doing the following:

- 1) On the command line, enter the Change System Value command (CHGSYSVAL QTIME VALUE('hhmmss')).
 - 2) Set the time by entering
 - hh=24 hour time clock
 - mm=minutes
 - ss=seconds
 - 3) Press **Enter** and continue with the next step.
5. Verify that the system can perform an IPL at a specified time by doing the following:
- a. Set the IPL time to 5 minutes past the present time by entering the Change System Value command (CHGSYSVAL SYSVAL(QIPLDATTIM) VALUE('mmdyy hhmmss')) on the command line.
 - mm = month to power on
 - dd = day to power on
 - yy = year to power on
 - hh = hour to power on
 - mm = minute to power on
 - ss = second to power on
 - b. Power off the system by entering the Power Down System Immediate command (PWRDWN SYS *IMMED) on the command line.
 - c. Wait 5 minutes.

Does the IPL start at the time you specified?

No: Continue with the next step.

Yes: This ends the procedure.
6. Power on the system in normal mode. See Powering on and powering off.
- Does the IPL complete successfully?
- Yes:** Continue with the next step.
- No:** Go to "Start of call procedure" on page 2. **This ends the procedure.**
7. Find an entry in the Service Action Log that matches the time, SRC, and/or resource that compares to the reported problem.
- a. On the command line, enter the Start System Service Tools command:

STRSST

If you cannot get to SST, select DST. See Dedicated Service Tools (DST) for details.

Note: Do not IPL the system or partition to get to DST.
 - b. On the Start Service Tools Sign On display, type in a user ID with service authority and password.
 - c. Select **Start a Service Tool** → **Hardware Service Manager** → **Work with service action log**.
 - d. On the Select Timeframe display, change the From: Date and Time to a date and time prior to when the customer reported having the problem.
 - e. Find an entry that matches one or more conditions of the problem:
 - SRC
 - Resource
 - Time
 - FRU list (choose **Display the failing item information** to display the FRU list).

Notes:

- a. All entries in the service action log represent problems that require a service action. It may be necessary to handle any problem in the log even if it does not match the original problem symptom.

- b. The information displayed in the date and time fields are the time and date for the first occurrence of the specific system reference code (SRC) for the resource displayed during the time range selected.

Did you find an entry in the Service Action Log?

No: Continue with the next step.

Yes: Go to step 9.

8. Exchange the following parts one at a time. See Removing and replacing parts. After exchanging each part, return to step 5 on page 79 to verify that the system can perform an IPL at a specified time.

Note: If you exchange the control panel or the system backplane, you must set the correct date and time by performing step 4 on page 77.

Attention: Before exchanging any part, power off the system. See Powering on and powering off.

- System unit backplane (see symbolic FRU “SYSBKPL” on page 758).
- System control panel
- System control panel cable

Did the IPL complete successfully after you exchanged all of the parts listed above?

No: Contact your next level of support. **This ends the procedure.**

Yes: Continue with the next step.

9. Was the entry isolated (is there a Y in the Isolated column)?

- **No:** Go to the List of system reference codes and use the SRC indicated in the log. **This ends the procedure.**

- **Yes:** Display the failing item information for the Service Action Log entry. Items at the top of the failing item list are more likely to fix the problem than items at the bottom of the list.

Exchange the failing items one at a time until the problem is repaired. After exchanging each one of the items, verify that the item exchanged repaired the problem.

Notes:

- a. For failing items see “Using failing item codes” on page 598.
- b. For symbolic FRUs see “Symbolic FRUs” on page 613.
- c. When exchanging FRUs, refer to the Removing and replacing parts procedures. If you are exchanging a disk unit, go to Disk unit recovery procedures.
- d. After exchanging an item, go to Verifying the repair.

After the problem has been resolved, close the log entry by selecting **Close a NEW entry** on the Service Actions Log Report display. **This ends the procedure.**

Cannot automatically perform an IPL after a power failure

Use this procedure when you cannot automatically perform an i5/OS IPL after a power failure.

1. Normal or Auto mode on the control panel must be selected when power is returned to the system.

Is Normal or Auto mode on the control panel selected?

Yes: Continue with the next step.

No: Select **Normal** or **Auto** mode on the control panel. **This ends the procedure.**

2. Use the Display System Value command (DSPSYSVAL) to verify that the system value under QPWRRSTIPL on the Display System Value display is equal to 1.

Is QPWRRSTIPL equal to 1?

Yes: Continue with the next step.

No: Use the Change System Value command (CHGSYSVAL) to set QPWRRSTIPL equal to 1. **This ends the procedure.**

- For Models 520 and 570, exchange the Tower card. See symbolic FRU “TWRCARD” on page 763. Refer to Removing and replacing parts for the model you are working on. Also, before exchanging any part, power off the system. See Powering on and powering off.

Note: If you exchange the tower card or the system unit backplane, you must set the system date (QDATE) and time (QTIME). **This ends the procedure.**

Power problems

Use the following table to find out how to begin analyzing a power problem.

Table 13. Analyzing power problems

Symptom	What you should do
<p>There may or may not be a reference code displayed on the control panel, the Hardware Management Console (HMC, or on the Advanced System Management Interface (ASMI).</p> <p>Perform the following steps to check the HMC for codes:</p> <ol style="list-style-type: none">In the Navigation Area, expand Server and Partition → Server Management.In the right pane, expand or select your system or partition. View the associated value in the Operator Panel Value column. <p>To check the ASMI for codes, select Error/Event Logs from the menu.</p>	<p>Record the reference code shown. Go to (1xxx) System power control network (SPCN) reference codes and find the reference code.</p> <p>Integrated xSeries® Server for iSeries® frames will only have the frame number flashing on the failing unit's SPCN card assembly, which is visible after removing the cover.</p>
System unit does not power on.	See “Cannot power on system unit.”
The system or expansion unit does not power off.	See “Cannot power off system or SPCN-controlled I/O expansion unit” on page 91.
The system does not remain powered on during a loss of incoming ac voltage and has an Uninterruptible Power Supply (UPS) installed.	Refer to the UPS user's guide that came with your unit.
An I/O expansion unit does not power on.	See “Cannot power on SPCN-controlled I/O expansion unit” on page 85.

Cannot power on system unit

Perform this procedure until you correct the problem and you can power on the system.

About this task

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

1. Are you working with a model 575, 590, or 595

No: Continue with the next step.

Yes: Go to "PWR1912" on page 265. **This ends the procedure.**

2. Attempt to power on the system (see Powering on and powering off). Does the system power on, and is the system power status indicator light on continuously?

Note: The system power status indicator blinks at the slower rate (one blink per two seconds) while powered off, and at the faster rate (one blink per second) during a normal power-on sequence.

No: Continue with the next step.

Yes: Go to step 16 on page 84.

3. Are there any characters displayed on the control panel (a scrolling dot may be visible as a character)?

No: Continue with the next step.

Yes: Go to step 6 on page 83.

4. Are the mainline ac power cables from the power supply, power distribution unit, or external uninterruptible power supply (UPS) to the customer's ac power outlet connected and seated correctly at both ends?

Yes: Continue with the next step.

No: Connect the mainline ac power cables correctly at both ends and go to step 2 on page 82.

5. Perform the following:

- Verify that the UPS is powered on (if it is installed). If the UPS will not power on, follow the service procedures for the UPS to ensure proper line voltage and UPS operation.
- Disconnect the mainline ac power cable or ac power jumper cable from the system's ac power connector at the system.
- Use a multimeter to measure the ac voltage at the system end of the mainline ac power cable or ac power jumper cable.

Note: Some system models have more than one mainline ac power cable or ac power jumper cable. For these models, disconnect all the mainline ac power cables or ac power jumper cables and measure the ac voltage at each cable before continuing with the next step.

Is the ac voltage from 200 V ac to 240 V ac, or from 100 V ac to 127 V ac?

No: Go to step 9.

Yes: Continue with the next step.

6. Perform the following:

- Disconnect the mainline ac power cable(s) from the power outlet.
- Exchange the system unit control panel (see symbolic FRU "CTLPNL" on page 640).
- Reconnect the mainline ac power cables to the power outlet.
- Attempt to power on the system.

Does the system power on?

No: Continue with the next step.

Yes: The system unit control panel was the failing item. **This ends the procedure.**

7. Perform the following:

- Disconnect the mainline ac power cable(s) from the power outlet.
- Exchange the power supply or supplies (see Finding part locations).
- Reconnect the mainline ac power cables to the power outlet.
- Attempt to power on the system.

Does the system power on?

No: Continue with the next step.

Yes: The power supply was the failing item. **This ends the procedure.**

8. Perform the following:

- Disconnect the mainline ac power cable(s).
- Exchange the SPCN card. See symbolic FRU "TWRCARD" on page 763.
- Reconnect the mainline ac power cables to the power outlet.
- Attempt to power on the system.

Does the system power on?

No: Call your next level of assistance. **This ends the procedure.**

Yes: The SPCN card was the failing item. **This ends the procedure.**

9. Are you working on a system unit with a power distribution unit with tripped breakers?

- **No:** Continue with the next step.
- **Yes:** Perform the following:
 - Reset the tripped power distribution breaker.

- b. Verify that the removable ac power cable is not the problem. Replace the cord, as installed, if it is defective.
 - c. If the breaker continues to trip, install a new power supply (as installed) in each location until the defective one is found. **This ends the procedure.**
- 10. Does the system have an external UPS installed?
 - Yes:** Continue with the next step.
 - No:** Go to step 12.
- 11. Use a multimeter to measure the ac voltage at the external UPS outlets. Is the ac voltage from 200 V ac to 240 V ac or from 100 V ac to 127 V ac?
 - No:** The UPS needs service. For 9910 type UPS, call IBM Service Support. For all other UPS types, have the customer call the UPS provider. In the meantime, go to step 13 to bypass the UPS.
 - Yes:** Exchange the ac power cable, as installed (see the Part number catalog). **This ends the procedure.**
- 12. Perform the following:
 - a. Disconnect the mainline ac power cable from the customer's ac power outlet.
 - b. Use a multimeter to measure the ac voltage at the customer's ac power outlet.

Note: Some system models have more than one mainline ac power cable. For these models, disconnect all the mainline ac power cables and measure the ac voltage at all ac power outlets before continuing with this step.

Is the ac voltage from 200 V ac to 240 V ac, or from 100 V ac to 127 V ac?

 - Yes:** Exchange the mainline ac power cable. See the Part number catalog. Then go to step 2 on page 82.
 - No:** Inform the customer that the ac voltage at the power outlet is not correct. When the ac voltage at the power outlet is correct, reconnect the mainline ac power cables to the power outlet. **This ends the procedure.**
- 13. Perform the following to bypass the UPS unit:
 - a. Power off your system and the UPS unit.
 - b. Remove the signal cable (see Part number catalog) used between the UPS and the system.
 - c. Remove any power jumper cords used between the UPS and the attached devices.
 - d. Remove the country or region specific power cord used from the UPS to the wall outlet.
 - e. Use the correct power cord (the original country or region specific power cord shipped with your system) and connect it to the power inlet on the system. Plug the other end of this cord into a compatible wall outlet.
 - f. Attempt to power on the system.

Does the power-on standby sequence complete successfully?

 - Yes:** Go to Verifying the repair. **This ends the procedure.**
 - No:** Go to step 6 on page 83.
- 14. Display the selected IPL mode on the system unit control panel (see IPL information in the Service functions). Is the selected mode the same mode that the customer was using when the power-on failure occurred?
 - No:** Go to step 16.
 - Yes:** Continue with the next step.
- 15. Is a function 11 reference code displayed on the system unit control panel?
 - No:** Go to step 17 on page 85.
 - Yes:** Return to "Start of call procedure" on page 2. **This ends the procedure.**
- 16. Perform the following:
 - a. Power off the system.

- b. Select the mode on the system unit control panel that the customer was using when the power-on failure occurred.
- c. Attempt to power on the system.

Does the system power on?

Yes: Continue with the next step.

No: Exchange the system unit control panel. See symbolic FRU "CTLPNL" on page 640. **This ends the procedure.**

17. Continue the IPL. Does the IPL complete successfully?

Yes: **This ends the procedure.**

No: Return to "Start of call procedure" on page 2. **This ends the procedure.**

Cannot power on SPCN-controlled I/O expansion unit

You are here because an SPCN-controlled I/O expansion unit cannot be powered on, and might be displaying a 1xxx-C62E reference code.

About this task

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

1. Is the unit that is not powering on a shared unit that is switched to a system unit that does not have an SPCN frame-to-frame cable attached to it?

No: Continue with the next step.

Yes: The shared unit *must* be switched to a system unit with an SPCN frame-to-frame cable attached to it to service it. Do this and continue with the next step.

2. Power on the system.
3. Starting from SPCN 0 or SPCN 1 on the system unit, go to the first unit in the SPCN frame-to-frame cable sequence that does not power on. Is the Data display background light on, or is the power-on LED blinking, or are there any characters displayed on the I/O expansion unit display panel?

Note: The background light is a dim (yellow) light in the Data area of the display panel.

Yes: Go to step 13 on page 88.

No: Continue with the next step.

4. Use a multimeter to measure the ac voltage at the customer's ac power outlet.
Is the ac voltage from 200 V ac to 240 V ac, or from 100 V ac to 127 V ac?

- **Yes:** Continue with the next step.
- **No:** Inform the customer that the ac voltage at the power outlet is not correct.

This ends the procedure.

5. Is the mainline ac power cable from the ac module, battery charger, power supply, or power distribution unit to the customer's ac power outlet connected and seated correctly at both ends?

- **Yes:** Continue with the next step.
- **No:** Connect the mainline ac power cable correctly at both ends.

This ends the procedure.

6. Perform the following:

- a. Disconnect the mainline ac power cable from the ac module, battery charger, power supply, or power distribution unit.
- b. Use a multimeter to measure the ac voltage at the ac module, battery charger, power supply, or power distribution unit end of the mainline ac power cable.

Is the ac voltage from 200 V ac to 240 V ac, or from 100 V ac to 127 V ac?

No: Continue with the next step.

Yes: Go to step 8.

7. Are you working on a power distribution unit with tripped breakers?

- **No:** Exchange the mainline ac power cable or power distribution unit (as installed).

This ends the procedure.

- **Yes:** Perform the following:

- a. Reset the tripped power distribution breaker.
- b. Verify that the removeable ac line cord is not the problem. Replace the cord, as installed, if it is defective.
- c. Install a new power supply (as installed) in all power locations until the defective one is found.

This ends the procedure.

8. Does the unit you are working on have ac power jumper cables installed?

Note: The ac power jumper cables connect from the ac module, battery charger unit, or the power distribution unit to the power supplies.

Yes: Continue with the next step.

No: Go to step 12 on page 88.

9. Are the ac power jumper cables connected and seated correctly at both ends?

- **Yes:** Continue with the next step.
- **No:** Connect the ac power jumper cables correctly at both ends.

This ends the procedure.

10. Perform the following:

- a. Disconnect the ac power jumper cables from the battery charger unit, ac module, or power distribution unit.
- b. Use a multimeter to measure the dc voltage at the battery charger unit outlets or ac voltage at the ac module and power distribution unit (that goes to the power supplies).

Is the dc voltage at the battery charger unit from 145 V dc to 259 V dc, or is the ac voltage at the ac module and power distribution unit from 200 V ac to 240 V ac?

- **Yes:** Continue with the next step.
- **No:** Exchange the following as they are installed (see Part number catalog):
 - Battery charger unit
 - AC module

- Power distribution unit

This ends the procedure.

11. Perform the following:
 - a. Connect the ac power jumper cables to the ac module, battery charger unit, or power distribution unit.
 - b. Disconnect the ac power jumper cable at the power supplies.
 - c. Use a multimeter to measure the voltage of the power jumper cables input to the power supplies. Is the dc voltage from 145 V dc to 259 V dc (200 V ac to 240 V ac for dual line cord units and power distribution units) for each power jumper cable?

- **No:** Exchange the power jumper cable.

This ends the procedure.

- **Yes:** Exchange the following parts one at a time:
 - a. SPCN card unit (see “TWRCARD” on page 763).
 - b. Display unit (see “CTLPNL” on page 640).
 - c. Power supply 1 (see Part number catalog)
 - d. Power supply 2 (see Part number catalog)
 - e. Power supply 3 (see Part number catalog)

This ends the procedure.

12. Perform the following:
 - a. Disconnect the mainline ac power cable (to the expansion unit) from the customer’s ac power outlet.
 - b. Exchange one of the following FRUs:
 - SPCN card (see “TWRCARD” on page 763).
 - Power supply (see Finding part locations).
 - c. Reconnect the mainline ac power cables (from the expansion unit) into the power outlet.
 - d. Attempt to power on the system.

Does the expansion unit power on?

- **Yes:** The unit you exchanged was the failing item.

This ends the procedure.

- **No:** Repeat this step and exchange the next FRU in the list. If you have exchanged all of the FRUs in the list, ask your next level of support for assistance.

This ends the procedure.

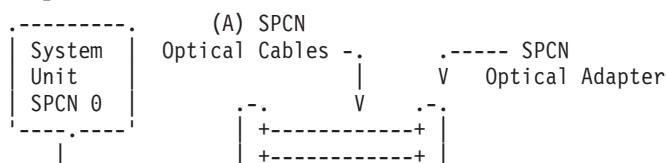
13. Is there a reference code displayed on the display panel for the I/O unit that does not power on?
 - **Yes:** Continue with the next step.
 - **No:** Replace the SPCN card (see “TWRCARD” on page 763).

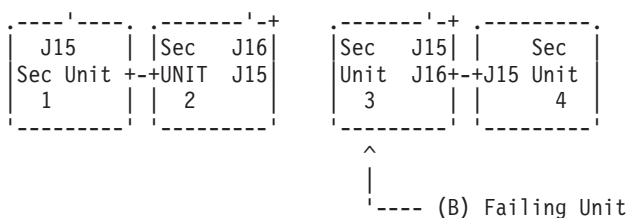
This ends the procedure.

14. Is the reference code 1xxx xx2E?
 - **Yes:** Continue with the next step.
 - **No:** Use the new reference code and return to “Start of call procedure” on page 2.

This ends the procedure.

15. Do the SPCN optical cables (A) connect the failing unit (B) to the preceding unit in the string or loop?

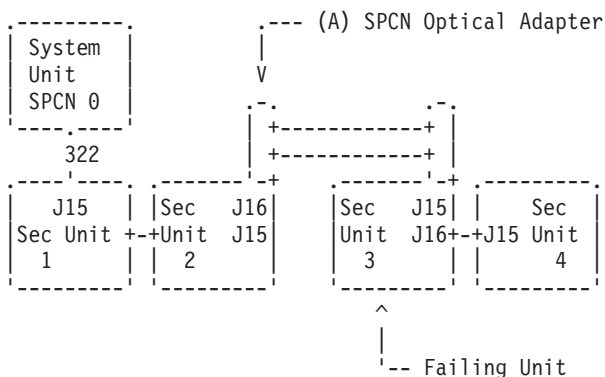




Yes: Continue with the next step.

No: Go to step 19 on page 90.

16. Remove the SPCN optical adapter (A) from the preceding frame in the string that cannot become powered on (see Removing and replacing parts).



17. Perform the following:

Notes:

- The cable may be connected to either J15 or J16.
- Use an insulated probe or jumper when performing the voltage readings.
- Connect the negative lead of a multimeter to the system frame ground.
- Connect the positive lead of a multimeter to pin 2 of the connector from which you removed the SPCN optical adapter in the previous step of this procedure.
- Note the voltage reading on pin 2.
- Move the positive lead of the multimeter to pin 3 of the connector or SPCN card.
- Note the voltage reading on pin 3.

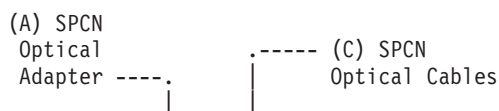
Is the voltage on both pin 2 and pin 3 from 1.5 V dc to 5.5 V dc?

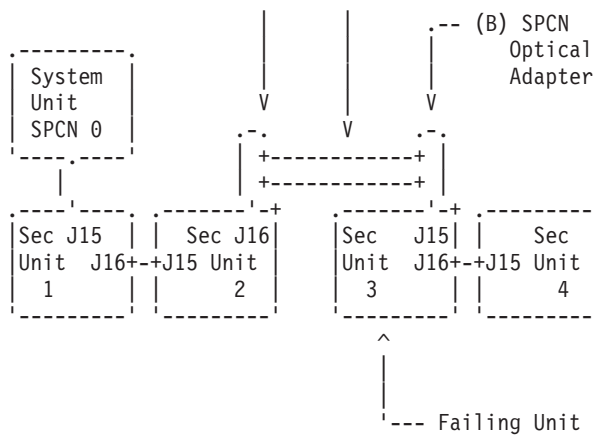
- Yes:** Continue with the next step.
- No:** Exchange the SPCN card (see "TWRCARD" on page 763) in the unit from which you removed the SPCN optical adapter (see Removing and replacing parts).

This ends the procedure.

18. Exchange the following FRUs, one at a time (see Removing and replacing parts):
- SPCN card (see "TWRCARD" on page 763) in the failing unit (first frame with a failure indication).
 - SPCN card (see "TWRCARD" on page 763) in the preceding unit in the string.
 - SPCN optical adapter (A) in the preceding unit in the string.
 - SPCN optical adapter (B) in the failing unit.
 - SPCN optical cables (C) between the preceding unit in the string and the failing unit.

This ends the procedure.





19. Perform the following:
 - a. Power off the system.
 - b. Disconnect the SPCN frame-to-frame cable from the connector of the first unit that cannot be powered on.
 - c. Connect the negative lead of a multimeter to the system frame ground.
 - d. Connect the positive lead of the multimeter to pin 2 of the SPCN cable.

Note: Use an insulated probe or jumper when performing the voltage readings.

- e. Note the voltage reading on pin 2.
- f. Move the positive lead of the multimeter to pin 3 of the SPCN cable.
- g. Note the voltage reading on pin 3.

Is the voltage on both pin 2 and pin 3 from 1.5 V dc to 5.5 V dc?

- **No:** Continue with the next step.
- **Yes:** Exchange the following FRUs one at a time (see Removing and replacing parts):
 - a. SPCN card (see "TWRCARD" on page 763) in the failing unit.
 - b. SPCN card (see "TWRCARD" on page 763) in the preceding unit in the unit string.
 - c. SPCN frame-to-frame cable.

This ends the procedure.

20. Perform the following:
 - a. Follow the SPCN frame-to-frame cable back to the preceding unit in the string.
 - b. Disconnect the SPCN cable from the connector.
 - c. Connect the negative lead of a multimeter to the system frame ground.
 - d. Connect the positive lead of a multimeter to pin 2 of the connector.

Note: Use an insulated probe or jumper when performing the voltage readings.

- e. Note the voltage reading on pin 2.
- f. Move the positive lead of the multimeter to pin 3 of the connector.
- g. Note the voltage reading on pin 3.

Is the voltage on both pin 2 and pin 3 from 1.5 V dc to 5.5 V dc?

- **Yes:** Exchange the following FRUs one at a time (see Removing and replacing parts):
 - a. SPCN frame-to-frame cable.
 - b. SPCN card (see "TWRCARD" on page 763) in the failing unit.
 - c. SPCN card (see "TWRCARD" on page 763) in the preceding unit of the string.

This ends the procedure.

- **No:** Exchange the SPCN card (see “TWRCARD” on page 763) from the unit from which you disconnected the SPCN cable in the previous step of this procedure. See Removing and replacing parts.

This ends the procedure.

Cannot power off system or SPCN-controlled I/O expansion unit

Use this procedure to analyze a failure of the normal command and control panel procedures to power off the system unit or an SPCN-controlled I/O expansion unit.

About this task

Attention: To prevent loss of data, ask the customer to verify that no interactive jobs are running before you perform this procedure.

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

1. Is the power off problem on the system unit?

No: Continue with the next step.

Yes: Go to step 3 on page 92.

2. Ensure that the SPCN cables that connect the units are connected and seated correctly at both ends. Does the unit power off, and is the power indicator light blinking slowly?
Yes: This ends the procedure.
No: Go to step 7.
3. Attempt to power off the system (see Stopping the system in the Installing hardware topic). Does the system unit power off, and is the power indicator light blinking slowly?
No: Continue with the next step.
Yes: This ends the procedure.
4. Attempt to power off the system using ASMI (see Powering the system on and off in the Advanced System Management Interface (ASMI) topic). Does the system power off?
Yes: Continue with the next step.
No: Go to step 10.
5. Attempt to power off the system using the control panel power button (see Using the control panel power button). Does the system power off?
Yes: Go to step 6.
No: Continue with the next step.
6. Is the system HMC-managed?
Yes: Go to the HMC isolation procedures. **This ends the procedure.**
No: Use ASMI to display error logs (see Displaying error and event logs in the Advanced System Management Interface (ASMI) topic) and service any errors you find. If you find no errors, or if you cannot access ASMI, then contact your next level of support. **This ends the procedure.**
7. Is the I/O expansion unit that will not power off part of a shared I/O tower loop?
Yes: Go to step 9.
No: Continue with the next step.
8. Attempt to power off the I/O expansion unit (see Powering off an expansion unit). Were you able to power off the expansion unit?
Yes: This ends the procedure.
No: Go to step 10.
9. The unit will only power off under certain conditions:
 - If the unit is in private mode, it should power off with the system unit that is connected by the SPCN frame-to-frame cable.
 - If the unit is in switchable mode, it should power off if the "owning" system is powered off or is powering off, and the system unit that is connected by the SPCN frame-to-frame cable is powered off or is powering off.Does the I/O expansion unit power off?
No: Continue with the next step.
Yes: This ends the procedure.
10. Ensure there are no jobs running on the system or partition, and verify that the battery power unit or uninterruptible power supply (UPS) is not powering the system or I/O expansion unit. Then continue with the next step.
11. Perform the following:
 - a. Remove the system or I/O expansion unit ac power cord from the external UPS or, if an external UPS is not installed, from the customer's ac power outlet. If the system or I/O expansion unit has more than one ac line cord, disconnect all the ac line cords.
 - b. Exchange the following FRUs one at a time (see Removing and replacing parts and Part number catalog).
If the system unit is failing:
 - 1) Power supply (see symbolic FRU "PWRSPLY" on page 730)

- 2) System SPCN card (see symbolic FRU “TWRCARD” on page 763)
- 3) System control panel (see symbolic FRU “CTLPNL” on page 640)
- 4) Control panel cable

If an I/O expansion unit is failing:

- 1) Power supply (see symbolic FRU “PWRSPPLY” on page 730)
- 2) Expansion SPCN card (see symbolic FRU “TWRCARD” on page 763)
- 3) SPCN card (see symbolic FRU “TWRCARD” on page 763) in the unit preceding the unit that will not power off
- 4) Battery charger unit (see symbolic FRU “BATCHGR” on page 623), if installed
- 5) SPCN frame-to-frame cable

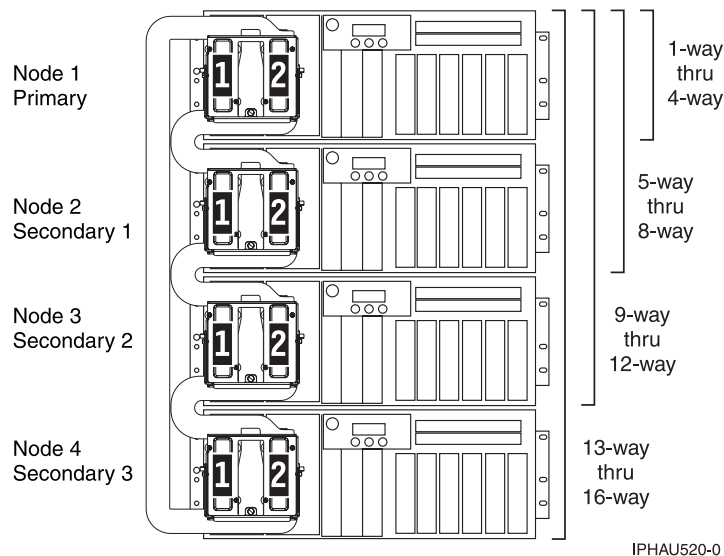
This ends the procedure.

Isolating problems

Provides procedures for determining which part or assembly is failing.

This topic will help you identify and isolate the problem the server is experiencing. You will be directed to information about how to resolve the issue.

Note: To simplify this information, secondary units on the 570 server are numbered 1 through 3-secondary unit 1 being nearest to the primary unit and secondary unit 3 being furthest.



Isolation procedures

Use the procedures in this topic to isolate the problem.

Bus, high-speed link (HSL or RIO) isolation procedures

Symbolic FRUs, failing items (FIs), and bus isolation procedures use the terms “partition” and “logical partition” to indicate any single partition in a system that has multiple partitions. If the system you are working on does not have multiple partitions, then the terms refer to the primary partition.

Please read all safety notices below before servicing the system and while performing a procedure.

Note: Unless instructed otherwise, always power off the system before removing, exchanging, or installing a field-replaceable unit (FRU).

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

The following information provides tools and background needed to work through the isolation procedures:

- “Breaking down a RIO/HSL or PCI bus reference code” on page 95
- “DSA translation” on page 96
- “Card positions” on page 98
- “Converting the loop number to NIC port location labels” on page 108
- “PCI bus isolation using AIX, Linux, or the HMC” on page 111
- “Verifying a high-speed link, system PCI bus, or a multi-adapter bridge repair” on page 111
- “HSL loop configuration and status form” on page 113
- “Installed features in a PCI bridge set form” on page 115
- “RIO/HSL link status diagnosis form” on page 115

“CONSL01” on page 117

HSL/RIO isolation procedures

"RIOIP01" on page 118

"RIOIP02" on page 123

"RIOIP03" on page 125

"RIOIP04" on page 126

"RIOIP06" on page 128

"RIOIP07" on page 128

"RIOIP08" on page 129

"RIOIP09" on page 130

"RIOIP10" on page 131

"RIOIP11" on page 132

"RIOIP12" on page 133

"RIOIP50" on page 134

"RIOIP55" on page 135

IOP bus isolation procedures

"MABIP05" on page 135

"MABIP06" on page 136

"MABIP07" on page 138

"MABIP50" on page 141

"MABIP51" on page 142

"MABIP52" on page 143

"MABIP53" on page 145

"MABIP54" on page 147

"MABIP55" on page 150

Multi-adapter bridge (MAB) isolation procedures

"MABIP02" on page 153

"MABIP03" on page 153

"MABIP04" on page 155

Breaking down a RIO/HSL or PCI bus reference code:

Word 7 of the reference code allows you to determine the correct bus number, bus type, multi-adapter bridge number, multi-adapter bridge function number, and logical card number from the Direct Select Address (DSA).

Physical card slot labels and card positions for PCI buses are determined by using the DSA and the appropriate system unit or I/O unit card positions. See "Card positions" on page 98 for details.

Table 14. RIO/HSL and PCI reference code breakdown

Word of the reference code	Control panel function	Panel function characters	Format	Description
1	11	1–8	B600 uuuu or B700 uuuu	uuuu = unit reference code (69xx)
1 – extended reference code information	11	9–16	iiii	Frame ID of the failing resource

Table 14. RIO/HSL and PCI reference code breakdown (continued)

Word of the reference code	Control panel function	Panel function characters	Format	Description
1 – extended reference code information	11	17–24	ffff	Frame location
1 – extended reference code information	11	25–32	bbbb	Board position
2	12	1–8	MIGVEP62 or MIGVEP63	See Hardware SRC formats.
3	12	9–16	cccc cccc	Component reference code
4	12	17–24	pppp pppp	Programming reference code
5	12	25–32	qqqq qqqq	Program reference code high order qualifier
6	13	1–8	qqqq qqqq	Program reference code low order qualifier
7	13	9–16	BBBB Ccbb	See “DSA translation”
8	13	17–24	TTTT MMMM	Type (TTTT) and model (MMMM) of the failing item (if not zero)
9	13	25–32	uuuu uuuu	Unit address (if not zero)

DSA translation:

The Direct Select Address (DSA) may be coded in word 7 of the reference code.

About this task

This is either a PCI system bus number or a RIO loop number, depending on the type of error. With the information obtained here, and the information in either the card position table (for PCI bus numbers) or the information in the loop-number-to-NIC-port table (for RIO loop numbers), you should be able to isolate a failing PCI bus or RIO loop. Follow the instructions below to translate the DSA:

- Break down the DSA into the bus number, multi-adapter bridge number, and multi-adapter bridge function number as shown in tables below. The DSA is of the form BBBB Ccxx, and breaks down into the following parts:
 - BBBB = bus number
 - C = multi-adapter bridge number
 - c = multi-adapter bridge function number
 - xx = not used
- Is the bus number less than 0684?

Yes: The bus number is a PCI bus number. Refer to PCI bus numbers to convert the number to decimal, and then continue with the next step.

No: The bus number is a RIO loop number. Refer to RIO loop numbers to convert the number to decimal, and then continue with the next step.
- Use one of the following guides to determine if the bus is located in the system unit or expansion unit:

- If you are using an i5/OS interface, use the System Configuration List or Hardware Service Manager (HSM).
 - If you are using a Hardware Management Console (HMC) interface, view the managed system's properties on the HMC.
4. Perform one of the following:
- Refer to "Card positions" on page 98 to search for the bus number, the multi-adapter bridge number, and the multi-adapter bridge function number that matches the system unit or I/O tower type where the bus is located. **This ends the procedure.**
 - Refer to "Converting the loop number to NIC port location labels" on page 108 to determine the starting ports for the RIO loop with the failed link. **This ends the procedure.**

Results

Table 15. PCI bus numbers

Bus number in hexadecimal (BBBB)	Bus number in decimal	Multi-adapter bridge number (C)	Multi-adapter bridge function number (c)
0001	1	1	0 through 7
0001	1	2	0 through 7
0001	1	7	0
0002 - 0007	2 - 7	1	0 through 7
0002 - 0007	2 - 7	2	0 through 7
0008 and 0009	8 through 9 (not used)		
0010 through 03FF	16 through 1023	1	0 through 7
0010 through 03FF	16 through 1023	2	0 through 7

Table 16. RIO loop numbers

Bus number in hexadecimal (BBBB)	RIO loop number in decimal	RIO loop number as seen in i5/OS HSM
0684 through 0689	1668 through 1673	668 through 673
068A through 068F	1674 through 1679	674 through 679
0690 through 0699	1680 through 1689	680 through 689
069A through 069F	1690 through 1695	690 through 695
06A0 through 06A9	1696 through 1705	696 through 705
06AA through 06AF	1706 through 1711	706 through 711
06B0 through 06B9	1712 through 1721	712 through 721
06BA through 06BF	1722 through 1727	722 through 727
06C0 through 06C9	1728 through 1737	728 through 737
06CA through 06CF	1738 through 1743	738 through 743
06D0 through 06D9	1744 through 1753	744 through 753
06DA through 06DF	1754 through 1759	754 through 759
06E0 through 06E9	1760 through 1769	760 through 769
06EA through 06EF	1770 through 1775	770 through 775
06F0 through 06F9	1776 through 1785	776 through 785
06FA through 06FF	1786 through 1791	786 through 791
0700 through 0709	1792 through 1801	792 through 801

Table 16. RIO loop numbers (continued)

Bus number in hexadecimal (BBBB)	RIO loop number in decimal	RIO loop number as seen in i5/OS HSM
070A through 070F	1802 through 1807	802 through 807
0710 through 0719	1808 through 1817	808 through 817
071A through 071F	1818 through 1823	818 through 823
0720 through 0729	1824 through 1833	824 through 833
072A through 072F	1834 through 1839	834 through 839
0730 through 0739	1840 through 1849	840 through 849
073A through 073F	1850 through 1855	850 through 855
0740 through 0749	1856 through 1865	856 through 865
074A through 074F	1866 through 1871	866 through 871
0750 through 0759	1872 through 1881	872 through 881
075A through 075F	1882 through 1887	882 through 887
0760 through 0769	1888 through 1897	888 through 897
076A through 076F	1898 through 1903	898 through 903
0770 through 0779	1904 through 1913	904 through 913
077A through 077F	1914 through 1919	914 through 919
0780 through 0789	1920 through 1929	920 through 929
078A through 078F	1930 through 1935	930 through 935
0790 through 0799	1936 through 1945	936 through 945
079A through 079F	1946 through 1951	946 through 951
07A0 through 07A9	1952 through 1961	952 through 961
07AA through 07AF	1962 through 1967	962 through 967
07B0 through 07B9	1968 through 1977	968 through 977
07BA through 07BF	1978 through 1983	978 through 983
07C0 through 07C9	1984 through 1993	984 through 993
07CA through 07CF	1994 through 1999	994 through 999
07D0 through 07D9	2000 through 2009	000 through 009
07DA through 07DF	2010 through 2015	010 through 015
07E0 through 07E9	2016 through 2025	016 through 025
07EA through 07EF	2026 through 2031	026 through 031
07F0 through 07F9	2032 through 2041	032 through 041
07FA through 07FE	2042 through 2046	042 through 046

Card positions:

The following information specifies card positions for the various server models.

Use the table for the model you are working on:

Card positions for 9111-520, 9405-520, and 9406-520 with integrated HSL ports

Card positions for 9111-285, 9407-515, 9131-52A, 9405-520, and 9406-520 9406-525 with HSL ports located on the HSL card

Model 550 and OpenPower 720

Model 570
Model 575
5074, 5079, 8079-002, and 8093-002 expansion units
5088, 0588, 5094, 5294, and 8094-002
5095, 0595, and 7311-D20 expansion units
External xSeries server, IBM eServer i5 adapter (machine type 1519)
7311-D10 and 7311-D11 expansion units
7040-61D expansion unit

Notes:

1. Service 5079 expansion units as two independent 5074 units.
2. Service 5294 expansion units as two independent 5094 units.

Table 17. Card positions for 9111-520, 9405-520, and 9406-520 with integrated HSL ports

Bus number in DSA (hexadecimal)	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to	Position label and PCI data width
0001	7	0	Service processor	-P1-C7
0002	2	0	PCI IOP or IOA card	-P1-C1 (64 bit)
	2	1		
	2	2		-P1-C2 (32 bit)
	2	3	Embedded USB controller	-P1 (32 bit)
	2	4	Embedded Ethernet controller	-P1 (64 bit)
	2	5		
	2	6	PCI IOA card	-P1-C4 (64 bit)
	2	7		-P1-C4 (64 bit)
	2	F	Multi-adapter bridge	-P1
0003	2	0	PCI IOP or IOA card	-P1-C6 (64 bit)
	2	1		
	2	2	PCI IOP or IOA card	-P1-C3 (32 bit)
	2	3	Embedded IDE controller	-P1 (32 bit)
	2	4	Embedded SCSI controller	-P1 (64 bit)
	2	5		
	2	6	PCI IOA card	-P1-C5 (64 bit)
	2	7		
	2	F	Multi-adapter bridge	-P1

Table 18. Card positions for 9111-285, 9407-515, 9131-52A, 9405-520, 9406-520, and 9406-525 with HSL ports located on the HSL card

Bus number in DSA (hexadecimal)	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to	Position label and PCI data width
0001	7	0	Service processor	-P1-C7

Table 18. Card positions for 9111-285, 9407-515, 9131-52A, 9405-520, 9406-520, and 9406-525 with HSL ports located on the HSL card (continued)

Bus number in DSA (hexadecimal)	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to	Position label and PCI data width
0002	1	0	PCI IOA card	-P1-C4 (64 bit)
	1	1		
	1	F	Multi-adapter bridge	-P1
0003	2	0	PCI IOP or IOA card	-P1-C6 (64 bit)
	2	1		
	2	2	PCI IOA card	-P1-C3 (32 bit)
	2	3	Embedded IDE controller	-P1 (32 bit)
	2	4	Embedded SCSI controller	-P1 (64 bit)
	2	5		
	2	6	PCI IOA card	-P1-C5 (64 bit)
	2	7		
	2	F	Multi-adapter bridge	-P1
0004	2	0	PCI IOP or IOA card	-P1-C1 (64 bit)
	2	1		
	2	2	PCI IOA card	-P1-C2 (32 bit)
	2	3	Embedded USB controller	-P1 (32 bit)
	2	4	Embedded Ethernet controller	-P1 (64 bit)
	2	5		
	2	F	Multi-adapter bridge	-P1

Table 19. Card positions for model 550 and OpenPower 720

Bus number in DSA (hexadecimal)	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to	Position label and PCI data width
0001	7	0	Service processor	-P1
0002	2	0	PCI IOP or IOA card	-P1-C3 (64 bit)
	2	1		
	2	2	Embedded USB controller	-P1 (32 bit)
	2	3	Embedded IDE controller	-P1 (32 bit)
	2	4	PCI IOP or IOA card	-P1-C4 (64 bit)
	2	5		
	2	6	PCI IOA card	-P1-C5 (64 bit)
	2	7		
	2	F	Multi-adapter bridge	-P1

Table 19. Card positions for model 550 and OpenPower 720 (continued)

Bus number in DSA (hexadecimal)	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to	Position label and PCI data width
0003	2	0	PCI IOP or IOA card	-P1-C1 (64 bit)
	2	1		
	2	2	Embedded Ethernet controller	-P1 (64 bit)
	2	3		
	2	4	Embedded SCSI controller	-P1 (64 bit)
	2	5		
	2	6	PCI IOA card	-P1-C2 (64 bit)
	2	7		
	2	F	Multi-adapter bridge	-P1

Note: The following table contains card position information that applies to each enclosure of a single or multiple enclosure 570 server.

Table 20. Card positions for model 570

Bus number in DSA (hexadecimal)	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to	Position label and PCI data width
0001	7	0	Service processor	-P1-C8
	2	0	Embedded SCSI controller	-P1 (64 bit)
	2	1		
	2	2	Embedded USB controller	-P1 (32 bit)
	2	3	Embedded serial adapter	-P1 (32 bit)
	2	4	Embedded ethernet controller	-P1 (64 bit)
	2	5		
	2	6	Unused	-P1-T10 (64 bit)
	2	7		
	2	F	Multi-adapter bridge	-P1
0002	2	0	PCI IOP or IOA card	-P1-C3 (64 bit)
	2	1		
	2	2		-P1-C4 (64 bit)
	2	3		
	2	4		-P1-C5 (64 bit)
	2	5		
	2	6	PCI IOA card	-P1-C6 (64 bit)
	2	7		
	2	F	Multi-adapter bridge	-P1

Table 20. Card positions for model 570 (continued)

Bus number in DSA (hexadecimal)	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to	Position label and PCI data width
0003	2	0	PCI IOP or IOA card	-P1-C1 (64 bit)
	2	1		
	2	2	Embedded SCSI controller	-P1 (64 bit)
	2	3		
	2	4	Embedded IDE controller	-P1 (32 bit)
	2	5	Unused	-P1 (32 bit)
	2	6	PCI IOA card	-P1-C2 (64 bit)
	2	7		
	2	F	Multi-adapter bridge	-P1

Table 21. Card positions for model 575

Bus number	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to	Position label and PCI data width
0001	7	0	Service processor	-P1
0001	2	0	Unused	-P1 (64 bit)
0001	2	1		
0001	2	2	Embedded Ethernet controller	-P1 (64 bit)
0001	2	3		
0001	2	4	Embedded Ethernet controller	-P1 (64 bit)
0001	2	5		
0001	2	6	Embedded SCSI controller	-P1 (64 bit)
0001	2	7		
0001	2	F	Multi-adapter bridge	-P1
0002	2	0	PCI IOA card	-P1-C1 (64 bit)
0002	2	1		
0002	2	2	Unused	-P1 (64 bit)
0002	2	3		
0002	2	4	Unused	-P1 (64 bit)
0002	2	5		
0002	2	6	PCI IOA card	-P1-C2 (64 bit)
0002	2	7		
0002	2	F	Multi-adapter bridge	-P1
0003	2	0	PCI IOA card	-P1-C3 (64 bit)
0003	2	1		
0003	2	2	Unused	-P1 (64 bit)
0003	2	3		

Table 21. Card positions for model 575 (continued)

Bus number	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to	Position label and PCI data width
0003	2	4	Unused	-P1 (64 bit)
0003	2	5		
0003	2	6	PCI IOA card	-P1-C4 (64 bit)
0003	2	7		
0003	2	F	Multi-adapter bridge	-P1

Table 22. Card positions for 5074, 5079, 8079-002, and 8093-002 expansion units

Bus number	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to:	Position label and PCI data width
xxxx (assigned by LIC)	1	0	PCI IOP or IOA card	C01 (64 bit)
xxxx (assigned by LIC)	1	2	PCI IOP or IOA card	C02 (64 bit)
xxxx (assigned by LIC)	1	4	PCI IOP or IOA card	C03 (64 bit)
xxxx (assigned by LIC)	1	6	PCI IOP or IOA card	C04 (64 bit)
xxxx (assigned by LIC)	1	F	PCI IOP or IOA card	CB1
xxxx (assigned by LIC)	1	0	PCI IOP or IOA card	C05 (64 bit/INS)
xxxx (assigned by LIC)	1	2	PCI IOP or IOA card	C06 (32 bit)
xxxx (assigned by LIC)	1	3	PCI IOP or IOA card	C07 (32 bit)
xxxx (assigned by LIC)	1	4	PCI IOP or IOA card	C09 (64 bit)
xxxx (assigned by LIC)	1	6	PCI IOP or IOA card	C10 (64 bit)
xxxx (assigned by LIC)	1	F	Multi-adapter bridge	CB1
xxxx (assigned by LIC)	2	0	PCI IOP or IOA card	C11 (64 bit/INS)
xxxx (assigned by LIC)	2	2	PCI IOP or IOA card	C12 (32 bit)
xxxx (assigned by LIC)	2	3	PCI IOP or IOA card	C13 (32 bit)
xxxx (assigned by LIC)	2	4	PCI IOP or IOA card	C14 (64 bit)
xxxx (assigned by LIC)	2	6	PCI IOP or IOA card	C15 (64 bit)
xxxx (assigned by LIC)	2	F	PCI IOP or IOA card	CB1

Table 23. Card positions for 5088, 0588, 5094, 5294, and 8094-002 expansion units

Bus number	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to:	Position label and PCI data width
xxxx (assigned by LIC)	2	0 and 1	PCI IOP or IOA card	C01
xxxx (assigned by LIC)	2	2 and 3	PCI IOP or IOA card	C02
xxxx (assigned by LIC)	2	4 and 5	PCI IOP or IOA card	C03
xxxx (assigned by LIC)	2	6 and 7	IOA card	C04

Table 23. Card positions for 5088, 0588, 5094, 5294, and 8094-002 expansion units (continued)

Bus number	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to:	Position label and PCI data width
xxxx (assigned by LIC)	2	F	Multi-adapter bridge	CB1
xxxx (assigned by LIC)	2	0 and 1	PCI IOP or IOA card	C05
xxxx (assigned by LIC)	2	2	PCI IOP or IOA card	C06
xxxx (assigned by LIC)	2	3	PCI IOP or IOA card	C07
xxxx (assigned by LIC)	2	4 and 5	PCI IOP or IOA card	C08
xxxx (assigned by LIC)	2	6 and 7	IOA card	C09
xxxx (assigned by LIC)	2	F	Multi-adapter bridge	CB1
xxxx (assigned by LIC)	2	0 and 1	PCI IOP or IOA card	C11
xxxx (assigned by LIC)	2	2	PCI IOP or IOA card	C12
xxxx (assigned by LIC)	2	3	PCI IOP or IOA card	C13
xxxx (assigned by LIC)	2	4 and 5	PCI IOP or IOA card	C14
xxxx (assigned by LIC)	2	6 and 7	IOA card	C15
xxxx (assigned by LIC)	2	F	Multi-adapter bridge	CB1

Table 24. Card positions for 5095, 0595, and 7311-D20 expansion units

Bus number	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to:	Position label and PCI data width
xxxx (assigned by LIC)	2	0 and 1	PCI IOP	C01
xxxx (assigned by LIC)	2	2 and 3	PCI IOP or IOA card	C02
xxxx (assigned by LIC)	2	4 and 5	PCI IOP or IOA card	C03
xxxx (assigned by LIC)	2	6 and 7	IOA card	C04
xxxx (assigned by LIC)	2	F	Multi-adapter bridge	CB1
xxxx (assigned by LIC)	2	Not used	Not used	C05
xxxx (assigned by LIC)	2	0 and 1	PCI IOP	C06
xxxx (assigned by LIC)	2	2 and 3	PCI IOP or IOA card	C07
xxxx (assigned by LIC)	2	6 and 7	IOA card	C08
xxxx (assigned by LIC)	2	F	Multi-adapter bridge	CB1

Table 25. Card positions for external xSeries server, IBM eServer i5 adapter (machine type 1519)

Bus number	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to:	Position
xxxx	1	Other than F	Embedded IOP	Follow the HSL cables
xxxx	1	F	Multi-adapter bridge	Follow the HSL cables

Table 26. Card positions for 7040-61D expansion unit

Bus number in DSA (hexadecimal)	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to	Position label and PCI data width
LEFT SIDE I/O PLANAR (-P1)				
Lower PCI bus number	2	0	PCI IOA card	-P1-I1 (64 bit)
Lower PCI bus number	2	1		
Lower PCI bus number	2	2	PCI IOA card	-P1-I2 (64 bit)
Lower PCI bus number	2	3		
Lower PCI bus number	2	4	PCI IOA card	-P1-I3 (64 bit)
Lower PCI bus number	2	5		
Lower PCI bus number	2	6	PCI IOA card	-P1-I4 (64 bit)
Lower PCI bus number	2	7		
Lower PCI bus number	2	F	Multi-adapter bridge	-P1
Middle PCI bus number	2	0	PCI IOA card	-P1-I5 (64 bit)
Middle PCI bus number	2	1		
Middle PCI bus number	2	2	PCI IOA card	-P1-I6 (64 bit)
Middle PCI bus number	2	3		
Middle PCI bus number	2	4	Embedded SCSI controller 1	n/a
Middle PCI bus number	2	5		
Middle PCI bus number	2	6	PCI IOA card	-P1-I7 (64 bit)
Middle PCI bus number	2	7		
Middle PCI bus number	2	F	Multi-adapter bridge	-P1

Table 26. Card positions for 7040-61D expansion unit (continued)

Bus number in DSA (hexadecimal)	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to	Position label and PCI data width
Higher PCI bus number	2	0	PCI IOA card	-P1-I8 (64 bit)
Higher PCI bus number	2	1		
Higher PCI bus number	2	2	PCI IOA card	-P1-I9 (64 bit)
Higher PCI bus number	2	3		
Higher PCI bus number	2	4	Embedded SCSI controller 2	n/a
Higher PCI bus number	2	5		
Higher PCI bus number	2	6	PCI IOA card	-P1-I10 (64 bit)
Higher PCI bus number	2	7		
Higher PCI bus number	2	F	Multi-adapter bridge	-P1
RIGHT SIDE I/O PLANAR (-P2)				
Lower PCI bus number	2	0	PCI IOA card	-P2-I1 (64 bit)
Lower PCI bus number	2	1		
Lower PCI bus number	2	2	PCI IOA card	-P2-I2 (64 bit)
Lower PCI bus number	2	3		
Lower PCI bus number	2	4	PCI IOA card	-P2-I3 (64 bit)
Lower PCI bus number	2	5		
Lower PCI bus number	2	6	PCI IOA card	-P2-I4 (64 bit)
Lower PCI bus number	2	7		
Lower PCI bus number	2	F	Multi-adapter bridge	-P2
Middle PCI bus number	2	0	PCI IOA card	-P2-I5 (64 bit)
Middle PCI bus number	2	1		
Middle PCI bus number	2	2	PCI IOA card	-P2-I6 (64 bit)
Middle PCI bus number	2	3		

Table 26. Card positions for 7040-61D expansion unit (continued)

Bus number in DSA (hexadecimal)	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to	Position label and PCI data width
Middle PCI bus number	2	4	Embedded SCSI controller 1	n/a
Middle PCI bus number	2	5		
Middle PCI bus number	2	6	PCI IOA card	-P2-I7 (64 bit)
Middle PCI bus number	2	7		
Middle PCI bus number	2	F	Multi-adapter bridge	-P2
Higher PCI bus number	2	0	PCI IOA card	-P2-I8 (64 bit)
Higher PCI bus number	2	1		
Higher PCI bus number	2	2	PCI IOA card	-P2-I9 (64 bit)
Higher PCI bus number	2	3		
Higher PCI bus number	2	4	Embedded SCSI controller 2	n/a
Higher PCI bus number	2	5		
Higher PCI bus number	2	6	PCI IOA card	-P2-I10 (64 bit)
Higher PCI bus number	2	7		
Higher PCI bus number	2	F	Multi-adapter bridge	-P2

Table 27. Card positions for 7311-D10, 7311-D11, and 5790 expansion units

Bus number in DSA (hexadecimal)	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to	Position label and PCI data width
Lower PCI bus number	2	0	PCI IOA card	-P1-C1 (64 bit)
Lower PCI bus number	2	1		
Lower PCI bus number	2	2	PCI IOA card	-P1-C2 (64 bit)
Lower PCI bus number	2	3		
Lower PCI bus number	2	4	Unused	n/a
Lower PCI bus number	2	5		

Table 27. Card positions for 7311-D10, 7311-D11, and 5790 expansion units (continued)

Bus number in DSA (hexadecimal)	Multi-adapter bridge number in DSA	Multi-adapter bridge function number in DSA	Item DSA points to	Position label and PCI data width
Lower PCI bus number	2	6	PCI IOA card	-P1-C3 (64 bit)
Lower PCI bus number	2	7		
Lower PCI bus number	2	F	Multi-adapter bridge	-P1
Higher PCI bus number	2	0	PCI IOA card	-P1-C4 (64 bit)
Higher PCI bus number	2	1		
Higher PCI bus number	2	2	PCI IOA card	-P1-C5 (64 bit)
Higher PCI bus number	2	3		
Higher PCI bus number	2	4	Unused	n/a
Higher PCI bus number	2	5		
Higher PCI bus number	2	6	PCI IOA card	-P1-C6 (64 bit)
Higher PCI bus number	2	7		
Higher PCI bus number	2	F	Multi-adapter bridge	-P1

Converting the loop number to NIC port location labels:

Use the following table to convert the HSL/RIO loop number to NIC port location labels.

Note: If you are working on a 570, exchange the FRU on the correct unit (primary or secondary) by matching the serial number (if available in the FRU list on the serviceable event view) or by matching the loop number to the correct unit.

Note: To simplify this information, secondary units on the 570 server are numbered 1 through 3-secondary unit 1 being nearest to the primary unit and secondary unit 3 being furthest.

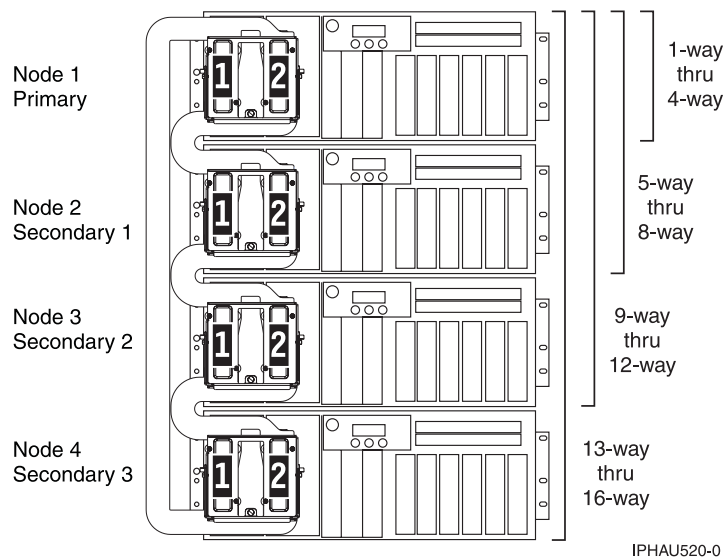


Table 28. Converting the loop number to NIC port location labels

Loop number (hex / dec)	Model	NIC's FRU position	HSL port labels on system unit or processor tower
0684 / 1668	515,520, 525, 550, OpenPower 720, 570, primary unit, 575	-P1	Internal
	Node 0 on 590 or 595	-P2	Internal Note: The normal loop status is <i>OPEN</i> because the internal links are not joined to form a loop.
0685 / 1669	515,520, 525	-P1	-P1-T3-P1-T4
	550, OpenPower 720	-P1	-P1-T11-P1-T12
	570 primary unit	-P1	-P1-T8-P1-T9
	575	-P1	-P1-T7-P1-T8
	Node 0 on 590 or 595	-P2-C1	-P2-C1-T1-P2-C1-T2
0686 / 1670	550, OpenPower 720	-P1-C6	-P1-C6-T1-P1-C6-T2
	570 primary unit	-P1-C7	-P1-C7-T1-P1-C7-T2
	Node 0 on 590 or 595	-P2	Internal
0687 / 1671	570 secondary unit 1	-P1	Internal (see note above)
	Node 0 on 590 or 595	-P2-C3	-P2-C3-T1-P2-C3-T2
0688 / 1672	570 secondary unit 1	-P1	-P1-T8-P1-T9 (see note above)
	Node 0 on 590 or 595	-P2-C5	-P2-C5-T1-P2-C5-T2
0689 / 1673	570 secondary unit 1	-P1-C7	-P1-C7-T1-P1-C7-T2 (see note above)
068A / 1674	570 secondary unit 2	-P1	Internal (see note above)
	Node 0 on 590 or 595	-P2-C6	-P2-C6-T1-P2-C6-T2
068B / 1675	570 secondary unit 2	-P1	-P1-T8-P1-T9 (see note above)

Table 28. Converting the loop number to NIC port location labels (continued)

Loop number (hex / dec)	Model	NIC's FRU position	HSL port labels on system unit or processor tower
068C / 1676	570 secondary unit 2	-P1-C7	-P1-C7-T1-P1-C7-T2 (see note above)
	Node 0 on 590 or 595	-P2-C8	-P2-C8-T1-P2-C8-T2
068D / 1677	570 secondary unit 3	-P1	Internal (see note above)
068E / 1678	570 secondary unit 3	-P1	-P1-T8-P1-T9 (see note above)
	Node 0 on 590 or 595	-P2-C9	-P2-C9-T1-P2-C9-T2
068F / 1679	570 secondary unit 3	-P1-C7	-P1-C7-T1-P1-C7-T2 (see note above)
0690 / 1680	Node 0 on 590 or 595	-P2-C11	-P2-C11-T1-P2-C11-T2
0692 / 1682	Node 0 on 590 or 595	-P2-C13	-P2-C13-T1-P2-C13-T2
0694 / 1684	Node 1 on 590 or 595	-P3	Internal Note: The normal loop status is <i>OPEN</i> because the internal links are not joined to form a loop.
0695 / 1685	Node 1 on 590 or 595	-P3-C1	-P3-C1-T1-P3-C1-T2
0696 / 1686	Node 1 on 590 or 595	-P3	Internal
0697 / 1687	Node 1 on 590 or 595	-P3-C3	-P3-C3-T1-P3-C3-T2
0698 / 1688	Node 1 on 590 or 595	-P3-C5	-P3-C5-T1-P3-C5-T2
069A / 1690	Node 1 on 590 or 595	-P3-C6	-P3-C6-T1-P3-C6-T2
069C / 1692	Node 1 on 590 or 595	-P3-C8	-P3-C8-T1-P3-C8-T2
069E / 1694	Node 1 on 590 or 595	-P3-C9	-P3-C9-T1-P3-C9-T2
06A0 / 1696	Node 1 on 590 or 595	-P3-C11	-P3-C11-T1-P3-C11-T2
06A2 / 1698	Node 1 on 590 or 595	-P3-C13	-P3-C13-T1-P3-C13-T2
06A4 / 1700	Node 2 on 590 or 595	-P4-C1	-P4-C1-T1-P4-C1-T2
06A6 / 1702	Node 2 on 590 or 595	-P4-C3	-P4-C3-T1-P4-C3-T2
06A8 / 1704	Node 2 on 590 or 595	-P4-C5	-P4-C5-T1-P4-C5-T2
06AA / 1706	Node 2 on 590 or 595	-P4-C6	-P4-C6-T1-P4-C6-T2
06AC / 1708	Node 2 on 590 or 595	-P4-C8	-P4-C8-T1-P4-C8-T2
06AE / 1710	Node 2 on 590 or 595	-P4-C9	-P4-C9-T1-P4-C9-T2
06B0 / 1712	Node 2 on 590 or 595	-P4-C11	-P4-C11-T1-P4-C11-T2
06B2 / 1714	Node 2 on 590 or 595	-P4-C13	-P4-C13-T1-P4-C13-T2
06B4 / 1716	Node 3 on 590 or 595	-P5-C1	-P5-C1-T1-P5-C1-T2
06B6 / 1718	Node 3 on 590 or 595	-P5-C3	-P5-C3-T1-P5-C3-T2
06B8 / 1720	Node 3 on 590 or 595	-P5-C5	-P5-C5-T1-P5-C5-T2
06BA / 1722	Node 3 on 590 or 595	-P5-C6	-P5-C6-T1-P5-C6-T2
06BC / 1724	Node 3 on 590 or 595	-P5-C8	-P5-C8-T1-P5-C8-T2
06BE / 1726	Node 3 on 590 or 595	-P5-C9	-P5-C9-T1-P5-C9-T2
06C0 / 1728	Node 3 on 590 or 595	-P5-C11	-P5-C11-T1-P5-C11-T2
06C2 / 1730	Node 3 on 590 or 595	-P5-C13	-P5-C13-T1-P5-C13-T2

PCI bus isolation using AIX, Linux, or the HMC:

Use this procedure if you are isolating a PCI bus problem from the HMC or while running AIX or Linux.

Isolating a PCI bus problem while running AIX or Linux:

Can the operating system be IPLed?

- **No:** Perform “MABIP52” on page 143. **This ends the procedure.**
- **Yes:** Choose from the following:
 - If you are running AIX, go to Running the online and eServer stand-alone diagnostics to isolate the PCI bus failure with online diagnostics in concurrent mode.
 - If you are running Linux, go to Running the online and eServer stand-alone diagnostics to isolate the PCI bus failure with stand-alone diagnostics.

This ends the procedure.

Isolating a PCI bus problem from the HMC:

About this task

If you have locations for the FRUs given in the serviceable event view of the error log, use those locations and exchange:

1. Did the serviceable event view provide the location(s) for the failing FRU(s)?
 - Yes:** Use those locations to exchange the given FRUs one at a time until the problem is resolved. **This ends the procedure.**
 - No:** Continue with the next step.
2. Go to “DSA translation” on page 96 to determine the Direct Select Address (DSA).
3. Perform the following:
 - a. Record the bus number value (BBBB) from the DSA and convert it to decimal format.
 - b. Search for the decimal system bus number in the partition resources screens on the HMC.
 - c. Record the frame or unit type and continue with the next step.
4. Record the Cc value from the DSA. Is the Cc value greater than 00?
 - Yes:** Continue with the next step.
 - No:** The multi-adapter bridge number and the multi-adapter function number have not been identified, and so the card slot cannot be identified using the DSA. Look in the HMC partition resources for non-reporting or non-operational hardware. That will indicate which cards in which positions need to be replaced. Refer to Finding part locations for the model you are working on for information about the multi-adapter bridge that controls those card slots. That multi-adapter bridge is also a FRU. **This ends the procedure.**
5. Is the right-most character (c) F?
 - No:** Continue with the next step.
 - Yes:** Only the multi-adapter bridge number has been identified. Record the multi-adapter bridge number (left-most character of Cc) for later use. Since the card slot cannot be identified with the DSA, refer to Finding part locations for the model you are working on for information about the multi-adapter bridge that controls the card slots. Consider all card slots controlled by the multi-adapter bridge to be FRUs. **This ends the procedure.**
6. Refer to “Card positions” on page 98 and use the BBBB and Cc values that you recorded to identify the card position. Then return to the procedure that sent you here. **This ends the procedure.**

Verifying a high-speed link, system PCI bus, or a multi-adapter bridge repair:

Use this procedure to verify a repair for the high-speed link, a system PCI bus, or for a multi-adapter bridge.

About this task

Within this procedure, the terms "system" and "logical partition" are interchangeable when used individually.

1. Perform this procedure from the logical partition you were in when you were sent to this procedure, or from the HMC if this error was worked from the HMC.
2. If you previously powered off a system or logical partition, or an expansion unit during this service action, then you need to power it off again.
3. Install all cards, cables, and hardware, ensuring that all connections are tight. You can use the system configuration list to verify that the cards are installed correctly.
4. Power on any expansion unit, logical partition or system unit that was powered off during the service action. Is one of the following true?
 - If the system or a logical partition was powered off during the service action, does the IPL complete successfully to the IPL or does Install the System display?
 - If an expansion tower was powered off during the service action, does the expansion tower power on complete successfully?
 - If any IOP or IOA card locations were powered off using concurrent maintenance during the service action, do the slots power on successfully?
 - If you exchanged a FRU that should appear as a resource or resources to the system, such as an IOA, or I/O bridge, does the new FRU's resource appear in HSM as operational?

Yes: Continue with the next step.

No: Verify that you have followed the power off, remove and replace, and power-on procedures correctly. When you are sure that you have followed the procedures correctly, then exchange the next FRU in the list. If there are no more FRUs to exchange, then contact your next level of support. **This ends the procedure.**

5. Does the system or logical partition have mirrored protection? Select Yes if you are not sure.

No: Continue with the next step.

Yes: From the Dedicated Service Tools (DST) display, select **Work with disk units**, and resume mirrored protection for all units that have a suspended status.

6. Choose from the following options:

- If you are working from a partition, from the Start a Service Tool display, select **Hardware service manager** and look for the I/O processors that have a failed or missing status.
- If you are working from a HMC, look at the CEC properties.

a. Choose the I/O tab.

b. Look for IOAs or IOPs that have a failed or missing status.

Are all I/O processor cards operational?

Note: Ignore any IOPs that are listed with a status of not connected.

Yes: Go to step 10 on page 113.

No: Display the logical hardware resource information for the non-operational I/O processors. For all I/O processors and I/O adapters that are failing; record the bus number (BBBB), board (bb) and card information (Cc). Continue with the next step.

7. Perform the following:

a. Return to the Dedicated Service Tools (DST) display.

b. Display the Product Activity Log.

c. Select **All logs** and search for an entry with the same bus, board, and card address information as the non-operational I/O processor. Do not include informational or statistical entries in your search. Use only entries that occurred during the last IPL.

Did you find an entry for the SRC that sent you to this procedure?

No: Continue with the next step.

Yes: Ask your next level of support for assistance. **This ends the procedure.**

8. Did you find a B600 6944 SRC that occurred during the last IPL?

Yes: Continue with the next step.

No: A different SRC is associated with the non-operational I/O processor. Go to the System reference code list and look up the new SRC to correct the problem. **This ends the procedure.**

9. Is there a B600 xxxx SRC that occurred during the last IPL other than the B600 6944 and informational SRCs?

Yes: Use the other B600 xxxx SRC to determine the problem. Go to the System reference code list and look up the new SRC to correct the problem. **This ends the procedure.**

No: You connected an I/O processor in the wrong card position. Use the system configuration list to compare the cards. When you have corrected the configuration, go to the start of this procedure to verify the bus repair. **This ends the procedure.**

10. If in a partition, use the hardware service manager function to print the system configuration list. Are there any configuration mismatches?

No: Continue with the next step.

Yes: Ask your next level of support for assistance. **This ends the procedure.**

11. You have verified the repair of the system bus.

- If for this service action only an expansion unit was powered off or only the concurrent maintenance function was used for an IOP or IOA, then continue with the next step.
- Otherwise, perform the following to return the system to the customer:
 - Power off the system or logical partition. See Powering on and powering off for details.
 - Select the operating mode with which the customer was originally running.
 - Power on the system or logical partition.

12. If the system has logical partitions and the entry point SRC was B600 xxxx, then check for related problems in other logical partitions that could have been caused by the failing part. **This ends the procedure.**

HSL loop configuration and status form:

Use this HSL loop configuration and status form to record the status of the HSL ports in the loop.

Note: You may copy this form as necessary.

HSL loop configuration and status worksheet for system _____, Loop number _____

Table 29. HSL loop configuration and status form

HSL resource information			Leading port information		Trailing port information	
Resource type	Resource name	Frame ID	Port number (or "internal")	Link status ("operational" or "failed")	Port number (or "internal")	Link status ("operational" or "failed")

Installed features in a PCI bridge set form:

Use this form to record the "PCI Bridge Set" card positions, and multi-adapter bridge function numbers.

Note: You may copy this form as necessary.

Table 31. Installed features in a PCI bridge set

PCI bridge set card positions	Multi-adapter bridge function number	Record if "IOP" or "IOA" is installed.
	0	
	1	
	2	
	3	
	4	
	5	
	6	
	7	

Installed features in a PCI bridge set form:

Use this form to record the "PCI Bridge Set" card positions, and multi-adapter bridge function numbers.

Note: You may copy this form as necessary.

Table 32. Installed features in a PCI bridge set

PCI bridge set card positions	Multi-adapter bridge function number	Record if "IOP" or "IOA" is installed.
	0	
	1	
	2	
	3	
	4	
	5	
	6	
	7	

RIO/HSL link status diagnosis form:

Use this form to record the status of the RIO/HSL links.

	Column A (starting status)		Column B	Column C (column A is failed and column B is failed)	Column D	Column E (column B is failed and column D is failed)
Resource with failing link	Port info	Port status	Port status		Port status	
First	Frame ID _____	Port _0 (or internal) _____	Port _0 (or internal) _____		Port _0 (or internal) _____	
	Card Position _____					
	Port # _____	Port _1 (or internal) _____	Port _1 (or internal) _____		Port _1 (or internal) _____	
Second	Frame ID _____	Port _0 (or internal) _____	Port _0 (or internal) _____		Port _0 (or internal) _____	
	Card Position _____					
	Port # _____	Port _1 (or internal) _____	Port _1 (or internal) _____		Port _1 (or internal) _____	

RIO/HSL link status diagnosis form:

Use this form to record the status of the RIO/HSL links.

	Column A (starting status)		Column B	Column C (column A is failed and column B is failed)	Column D	Column E (column B is failed and column D is failed)
Resource with failing link	Port info	Port status	Port status		Port status	
First	Frame ID _____	Port _0 (or internal) _____	Port _0 (or internal) _____		Port _0 (or internal) _____	
	Card Position _____					
	Port # _____	Port _1 (or internal) _____	Port _1 (or internal) _____		Port _1 (or internal) _____	

	Column A (starting status)		Column B	Column C (column A is failed and column B is failed)	Column D	Column E (column B is failed and column D is failed)
Resource with failing link	Port info	Port status	Port status		Port status	
Second	Frame ID	Port _0 (or internal)	Port _0 (or internal)		Port _0 (or internal)	

	Card Position	_____	_____		_____	

	Port #	Port _1 (or internal)	Port _1 (or internal)		Port _1 (or internal)	
	_____	_____	_____		_____	

CONSL01:

Use this procedure to exchange the I/O processor (IOP) for the system or partition console of i5/OS.

1. Is the system managed by an HMC?

No: Go to step 6 on page 118.

Yes: The HMC will be required for this procedure. Move to the HMC and continue with the next step only if the HMC is functional.

2. Can the customer power off the partition at this time?

Yes: Power off the partition from the operating system console or the HMC. Then, continue with the next step.

No: The IOP controlling the partition's console may be controlling other critical resources. The partition must be powered off to exchange this IOP. Perform this procedure when the customer is able to power off the partition. Then, continue with the next step.

3. Perform the following to determine the unit machine type, model, and serial number where the console IOP is located and the location of the console IOP:

- From the *Navigation Area* of the HMC, select the **Management Environment**.
- Select and expand the HMC environment for this HMC.
- Select and expand **Server and Partition**.
- Select **Server Management**.
- Double-click the i5/OS partition you are working on.
- Select the **Settings** tab.
- Record the location of the load source IOP. The unit type, model, and serial number are the first three parts of the location code and are separated by periods.
- Continue with the next step.

4. Record the frame type or feature by using the frame ID and system configuration listing or by locating the frame with that ID and recording the frame type or feature.

5. Perform the following to exchange the IOP in that card position:

- Go to Finding part locations and select the unit type and model that you recorded.
- Locate the card position in the FRU locations table and use the exchange procedure that is identified.
- Power on the partition.

This ends the procedure.

6. The problem is in the i5/OS partition of a system with one or more partitions that is not managed by an HMC. Use the table below to determine the location of the load source IOP and the appropriate exchange procedure.

Model	Load source IOP location	Load source IOA location	Link to locations information.
515, 520, and 525	-P1-C5	embedded SCSI in -P1	Locations — Models 515, 520, and 525
550, OpenPower 720	-P1-C1	embedded SCSI in -P1	Locations — models 550 and OpenPower 720
570	-P1-C1	embedded SCSI in -P1	Locations — Model 570

This ends the procedure.

RIOIP01:

Use this procedure to isolate a failure in a high-speed link (HSL) loop using i5/OS service tools.

About this task

Follow the steps in the “Main task” and you will be directed to the proper subtasks.

Note: During this procedure, you will be disconnecting and reconnecting cables. If errors concerning missing resources (such as disk units and HSL failures) occur, ignore them. Missing resources will report in again when the loop reinitializes.

Main task:

1. Were you directed here while working on a B700 xxxx reference code?
Yes: Go to step 4.
No: Continue with the next step.
2. Are you work on an 520 or 570?
No: Go to step 4.
Yes: Continue with the next step.
3. Were you sent here from a B600 xxxx reference code?
No: Continue with the next step.
Yes: Use the serviceable event view and the system service documentation to search for a B700 xxxx reference code with the same last four characters reported at approximately the same time. If you find one, perform service on that reference code first, and when you close that problem, close this one as well. If you do not find one, continue with the next step.
4. Before powering down any system unit or expansion unit, work with the customer to end all subsystems in all of the partitions using each partition’s console.
5. From the partition control panel, IPL the system or partition to Dedicated Service Tools (DST).
Attention: Do not use function 21!
6. Are all system and expansion units on the loop powered on?
Yes: Go to step 8 on page 119.
No: Continue with the next step.
7. Perform the following:
 - a. Power on all system and expansion units on the loop. If a frame cannot be powered on, perform the “Cannot power on unit” on page 122 subtask below, and then continue with step 8 on page 119.

- b. Was the HSL link error cleared up when the frames were powered back on?

- **No:** Continue with the next step.
- **Yes:** Go to Verifying the repair.

This ends the procedure.

8. Perform the following:

- a. Access the Service Action Log (SAL) entry for this error; the field replaceable units (FRUs) should be listed there. Look for part numbers and descriptions for the FRUs containing the HSL port for two frames. There should also be a FRU for the cable between them. The locations information for the FRUs is the location of the failed ports on the failed link.
- b. Record the loop number from the SAL (if it is displayed there in one of the FRU descriptions) or from the first four characters of word 7 of the reference code. Go to "Converting the loop number to NIC port location labels" on page 108 to determine which HSL/RIO cables on the system you are working with.

Is this information in the SAL?

Yes: Continue with the next step.

No: Perform "Manually detecting the failed link" on page 122 below, and then continue with the next step of the main task.

9. Is the cable connecting the failed ports an optical cable?

No: Go to step 11.

Yes: Continue with the next step.

10. Perform the following:

- a. Clean the HSL cable connectors and ports using the tools and procedures in symbolic FRU "OPT_CLN" on page 720.
- b. To determine if cleaning the connectors and ports solved the problem, perform "Manually detecting the failed link" on page 122 below and return to this point. Did the ports you were working on have a status of "failed"?

No: Then the problem is fixed, go to Verifying the repair. **This ends the procedure.**

Yes: Continue with the next step.

11. There are now three cases to consider. Continue with the appropriate subtask of this procedure:

- "The ports on both ends of the failed link are in different system units on the loop."
- "The port on one end of the failed link is in a system unit and the port on the other end is in an I/O unit" on page 120.
- "The ports on both ends of the failed link are in an I/O unit" on page 121.

The ports on both ends of the failed link are in different system units on the loop:

1. There may be failed hardware that will report a different error on the other system units. Perform the following:

- a. Work any other HSL/RIO problems in the serviceable event view on the other system units.
- b. Perform "Manually detecting the failed link" on page 122 below and return to this point. Did the ports you were working on have a status of "failed"?

No: Then the problem is fixed, go to Verifying the repair. **This ends the procedure.**

Yes: Continue with the next step.

2. Is the cable an optical HSL/RIO cable?

Yes: Go to step 4 on page 120.

No: Continue with the next step.

3. Perform the following:

- a. Check the thumb screws on the cable connectors at both ends of the cable to be sure they are tight. For any thumb screw that was loose, disconnect the cable at that end, wait 30 seconds, reconnect the cable, and tighten the thumb screws. You must tighten both thumb screws within 30 seconds of when the cable makes contact with the port.
- b. If you disconnected and reconnected the cable at either end, perform “Manually detecting the failed link” on page 122 below and return to this point. Did the ports you were working on have a status of “failed”?

No: Then the problem is fixed, go to Verifying the repair. **This ends the procedure.**

Yes: Continue with the next step.

4. Replace the cable between the two system unit ports on the failed link. To determine if replacing the cable resolved the problem, perform “Manually detecting the failed link” on page 122 below and return to this point. Did the ports you were working on have a status of “failed”?

No: Then the problem is fixed, go to Verifying the repair. **This ends the procedure.**

Yes: Continue with the next step.

5. Exchange the FRU with the HSL/RIO port in one of the system units. If you are working with a serviceable event view and the HSL FRUs are listed, exchange the FRU corresponding to the first HSL/RIO cable port listed. Otherwise, exchange the FRU that is quickest and easiest to replace). To determine if replacing the FRU resolved the problem, perform “Manually detecting the failed link” on page 122 below and return to this point. Did the ports you were working on have a status of “failed”?

No: Then the problem is fixed, go to Verifying the repair. **This ends the procedure.**

Yes: Continue with the next step.

6. Exchange the remaining FRU with the HSL/RIO port on the other system unit. To determine if replacing the FRU resolved the problem, perform “Manually detecting the failed link” on page 122 below and return to this point. Did the ports you were working on have a status of “failed”?

No: Then the problem is fixed, go to Verifying the repair. **This ends the procedure.**

Yes: Continue with the next step.

7. Use symbolic FRU “HSL_LNK” on page 687 to determine if there are any additional HSL/RIO cable-related FRUs, such as interposer cards and internal ribbon cables, that may be on either unit. Did you exchange any additional HSL/RIO FRUs?

No: Call your next level of support for further instruction. **This ends the procedure.**

Yes: Continue with the next step.

8. To determine if replacing the FRU resolved the problem, perform “Manually detecting the failed link” on page 122 below and return to this point. Did the ports you were working on have a status of “failed”?

No: Then the problem is fixed, go to Verifying the repair. **This ends the procedure.**

Yes: Call your next level of support for further instruction. **This ends the procedure.**

The port on one end of the failed link is in a system unit and the port on the other end is in an I/O unit:

1. Switch the two HSL/RIO cables on the I/O unit with the failed port, so that each cable is connected to the port where the other cable was previously connected. Disconnect both cables at the same time, wait 30 seconds, and then reconnect the cables one at a time.

Attention: For copper cables, you must fully connect the cable and tighten the connector’s screws within 30 seconds of when the cable makes contact with the port. Otherwise, the link will fail and you must disconnect and reconnect again. Also, if the connector screws are not tightened, errors will occur on the link and it will fail.

2. Refresh the port status for the first failing resource by performing “Refresh the port status” on page 123 below. Then continue with the next step.
3. Is the port on the system unit that was failed now working?

No: Continue with the next step.

Yes: Perform symbolic FRU "SIIOADP" on page 736 to exchange the HSL I/O bridge FRU in the I/O unit. Go to Verifying the repair. **This ends the procedure.**

4. Switch the cables back to their original positions by disconnecting both cables at the same time, waiting 30 seconds, and then reconnecting the cables one at a time.

Attention: For copper cables, you must fully connect the cable and tighten the connector's screws within 30 seconds of when the cable makes contact with the port. Otherwise, the link will fail and you must disconnect and reconnect again. Also, if the connector screws are not tightened, errors will occur on the link and it will fail.

5. Refresh the port status for the first failing resource by performing "Refresh the port status" on page 123 below. Then continue with the next step.
6. Exchange the cable between the two ports on the failed link. To determine if replacing the cable resolved the problem, perform "Manually detecting the failed link" on page 122 below and return to this point. Did the ports you were working on have a status of "failed"?

No: Then the problem is fixed, go to Verifying the repair. **This ends the procedure.**

Yes: Continue with the next step.

7. Exchange the HSL/RIO FRU that contains the failing port in the system unit. To determine if replacing the FRU resolved the problem, perform "Manually detecting the failed link" on page 122 below and return to this point. Did the ports you were working on have a status of "failed"?

No: Then the problem is fixed, go to Verifying the repair. **This ends the procedure.**

Yes: Continue with the next step.

8. Use symbolic FRU "HSL_LNK" on page 687 to determine if there are any additional HSL/RIO cable-related FRUs, such as interposer cards and internal ribbon cables, that may be on either unit. Did you exchange any additional HSL/RIO FRUs?

No: Call your next level of support for further instruction. **This ends the procedure.**

Yes: Continue with the next step.

9. To determine if replacing the FRU resolved the problem, perform "Manually detecting the failed link" on page 122 below and return to this point. Did the ports you were working on have a status of "failed"?

No: Then the problem is fixed, go to Verifying the repair. **This ends the procedure.**

Yes: Call your next level of support for further instruction. **This ends the procedure.**

The ports on both ends of the failed link are in an I/O unit:

1. Switch the two HSL/RIO cables on the first (or "From") cable's I/O unit with the failed port so that each cable is connected to the port where the other cable was previously connected.

Attention: For copper cables, you must fully connect the cable and tighten the connector's screws within 30 seconds of when the cable makes contact with the port. Otherwise, the link will fail and you must disconnect and reconnect again. Also, if the connector screws are not tightened, errors will occur on the link and it will fail.

2. Refresh the port status for the first failing resource by performing "Refresh the port status" on page 123 below. Then continue with the next step.

3. Is the port on the I/O unit on which you did not switch the cables now working?

No: Go to step 5

Yes: Use symbolic FRU "SIIOADP" on page 736 to exchange the HSL/RIO I/O bridge card in the I/O unit where you just switched the cables. The continue with the next step.

4. To determine if replacing the FRU resolved the problem, perform "Manually detecting the failed link" on page 122 and return to this point. Did the ports you were working on have a status of "failed"?

No: Then the problem is fixed, go to Verifying the repair. **This ends the procedure.**

Yes: Continue with the next step.

5. Switch the cables back to their original positions.

Attention: For copper cables, you must fully connect the cable and tighten the connector's screws within 30 seconds of when the cable makes contact with the port. Otherwise, the link will fail and you must disconnect and reconnect again. Also, if the connector screws are not tightened, errors will occur on the link and it will fail.

6. Switch the two HSL/RIO cables on the second (or "To") I/O unit with the failed port so that each cable is connected to the port where the other cable was previously connected.

Attention: For copper cables, you must fully connect the cable and tighten the connector's screws within 30 seconds of when the cable makes contact with the port. Otherwise, the link will fail and you must disconnect and reconnect again. Also, if the connector screws are not tightened, errors will occur on the link and it will fail.

7. Refresh the port status for the first failing resource by performing "Refresh the port status" on page 123. Then continue with the next step.

8. Is the port on the I/O unit on which you did not switch cables now working?

No: Go to step 10.

Yes: Use symbolic FRU "SIIOADP" on page 736 to exchange the HSL/RIO I/O bridge card in the I/O unit where you just switched the cables. Then continue with the next step.

9. To determine if replacing the FRU resolved the problem, perform "Manually detecting the failed link" below and return to this point. Did the ports you were working on have a status of "failed"?

No: Then the problem is fixed, go to Verifying the repair. **This ends the procedure.**

Yes: Continue with the next step.

10. Switch the cables back to their original positions.

Attention: For copper cables, you must fully connect the cable and tighten the connector's screws within 30 seconds of when the cable makes contact with the port. Otherwise, the link will fail and you must disconnect and reconnect again. Also, if the connector screws are not tightened, errors will occur on the link and it will fail.

11. Exchange the HSL/RIO cable between the two ports on the failed link. To determine if replacing the cable resolved the problem, perform "Manually detecting the failed link," then return to this point.

Did the ports you were working on have a status of "failed"?

No: Then the problem is fixed, go to Verifying the repair. **This ends the procedure.**

Yes: Continue with the next step.

12. Use symbolic FRU "HSL_LNK" on page 687 to determine if there are any additional HSL/RIO cable-related FRUs, such as interposer cards and internal ribbon cables, that may be on either unit. Did you exchange any additional HSL/RIO FRUs?

No: Call your next level of support for further instruction. **This ends the procedure.**

Yes: Continue with the next step.

13. To determine if replacing the FRU resolved the problem, perform "Manually detecting the failed link" below and return to this point. Did the ports you were working on have a status of "failed"?

No: Then the problem is fixed, go to Verifying the repair. **This ends the procedure.**

Yes: Call your next level of support for further instruction. **This ends the procedure.**

Cannot power on unit:

1. Work the errors related to powering on the unit(s), and then continue with the next step. If a unit still cannot be powered on, re-cable the HSL/RIO loop without the I/O units and system units that cannot be powered on, allowing the loop to be complete (no disconnected cables).
2. To determine if re-cabling the loop resolved the problem, perform "Manually detecting the failed link" below and return to this point.

Manually detecting the failed link:

1. Get the loop number from the reference code if you do not already have it. The loop number is a hexadecimal number in word 7 of the reference code.

- If you are working from the Product Activity Log (PAL), then the loop number is the 4 leftmost characters of the DSA in word 7 (BBBB). Use the "DSA translation" on page 96 to convert the hexadecimal loop number to decimal format before continuing with this procedure.
 - If you are working from the Service Action Log (SAL), the loop number should be displayed in the FRU description area in decimal format.
2. Sign on to SST or DST (if you have not already done so). Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **High-speed link (HSL) resources**.
 3. Select **Resources associated with loop** for the HSL loop with the failed link. The HSL bridges will be displayed under the loop.
 4. Select **Display detail** for the loop with the failed link.
 5. Record the name of the NIC/RIO controller resource you are starting from on the display. You will need to know this name to determine if you have followed the loop around and back to this resource.
 6. If the leading port does not have a status of "failed", select **Follow leading port** until a leading port with a "failed" status is found, or the display is showing information for the starting NIC/RIO resource you recorded. Did you find a leading port with a status of "failed"?
 - No:** The loop is functioning properly. Return to the subtask that sent you here.
 - Yes:** Record the resource name at the leading port with a "failed" status, and the type, model, and serial number for the resource with the failed status. Continue with the next step.
 7. Select **Follow leading port** one more time and note all the information for the resource name with a failed trailing port.
 8. Select **Display system information** and note the power controlling system's type, model, and serial number (and name, if available). This info may be needed for FRU replacement at a later time.
 9. Select **Cancel** twice to return to the previous screen.
 10. Go to each resource name (found above) and select **Associated packaging resource(s)**. This gives the description of the failing item and the frame ID.
 11. Select **Display detail** to find the part number and location associated with the possible failing item. Then return to the step that sent you here.

Refresh the port status:

1. Wait one minute, and then sign on to SST or DST (if you have not already done so).
2. Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **High-speed link (HSL) resources**.
3. Move the cursor to the HSL loop that you want to examine and select **Display detail** → **Include non-reporting resources**.
4. If the display is not already showing the ports for one of the units you are working on, then select **Follow leading port**. Continue to select **Follow leading port** until the display is showing the ports for one of the units you are working on. Note the status of the port you were working on. Select **Follow leading port** until the display is showing the ports for the other unit you are working on, and note the status of the port you were working on.
5. Select **Cancel** → **Refresh** → **Display detail** for the failing resource you are checking. Note any change in the status for the resource. Then return to the step that sent you here.

RIOIP02:

Use this procedure to determine the status of HSL/RIO ports in the loop and to identify failing resources.

1. Sign on to SST or DST (if you have not already done so).
2. Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **High-speed link (HSL) resources**.
3. Select **Include non-reporting resources**. Move the cursor to the HSL loop that you want to examine and select **Display detail**.

4. The display that appears shows the port status of the Network Interface Controller (NIC) for the loop that you selected. Record the resource name, type-model, and serial number, if it has not been previously recorded.
5. Is the status of the "*Leading port to next resource*" operational?
 - Yes:** Select **Follow Leading Port**. Then continue with the next step.
 - No:** You have found the first "*failed*" link. You will be directed to find the other "*failed*" link. Go to step 7.
6. Is the resource name the same name that you recorded for the NIC in step 4?
 - No:** The display that appears shows the status of the HSL ports for the next I/O bridge resource on the loop. Go to step 5.
 - Yes:** You have followed the HSL links around the loop and back to the NIC on the system, but did not find a failed link. Return to the procedure that sent you here. **This ends the procedure.**
7. Find the information for the first failing resource using the following steps:
 - a. Record the information as the *first* failing resource on the link.
 - b. Record the resource name, card type-model, and part number.
 - c. Record the link status of each port. Record 'Internal' if the port is designated as internal.
 - d. Select **Cancel** to return to the Work with High-speed link (HSL) resources display.
 - e. For the loop with the failure, select **Resources associated with loop**.
 - f. For the HSL I/O bridge with the resource name that you recorded, select **Associated packaging resources**.
 - g. Record the frame ID for the *first* failing link.
 - h. Select **Display detail**, and record the card position for the *first* failing resource.
8. Find the information for the other (second) failing resource by following these steps:
 - a. Record this information as the *second* failing resource on the link.
 - b. Select **Cancel** → **Cancel** to return to the Logical hardware associated with HSL loops display.
 - c. Move the cursor to the HSL I/O bridge with the name of the first failing resource, and select **Display detail** → **Include non-reporting resources**.
 - d. Follow the failed port by doing one of the following:
 - If the leading port is failed, select **Follow leading port**.
 - If the trailing port is failed, select **Follow trailing port**.
 - e. You have located the second failing resource on the link.
 - f. Record the resource name, card type-model, and part number.
 - g. Record the link status of each port for the second failing link. Record 'Internal' if the port is designated as internal.
 - h. Select **Cancel** to return to the Logical hardware associated with HSL loops display.
 - i. Select **Include non-reporting resources** → **Associated packaging resources** for the HSL I/O bridge or Network Interface Controller (NIC) with the resource name that you recorded for the second failed resource.
 - j. Record the frame ID (if present) and port for the second failing link.
 - k. Select **Display detail** and record the card position for the second failing resource.
9. Have you repeated steps 1 on page 123 through 8 for a second time during this procedure?
 - No:** Continue with the next step.
 - Yes:** Return to the procedure that sent you here. **This ends the procedure.**
10. Do the *first* failing link and the *second* failing link have the same frame ID?
 - No:** Continue with the next step to determine if the HSL cable connectors between the first and second failing resources are properly seated and cleaned.
 - Yes:** Return to the procedure that sent you here. **This ends the procedure.**

11. Disconnect the cable at the frame ID, card position, and port that you recorded for the first failing resource.
12. Is the connection an optical link?
 - No:** Wait at least 30 seconds, and then continue with the next step.
 - Yes:** Clean the HSL cable connector and port using the tools and procedures listed in symbolic FRU "OPT_CLN" on page 720. Then continue with the next step.
13. Reconnect the cable to the port.
 - Attention:** For copper cables you must fully connect the cable and tighten the connector's screws within 30 seconds of when the cable makes contact with the port. If you do not, the link will fail and you must disconnect and reconnect it again. If the connector screws are not tightened errors will occur on the link and it will fail.
14. Disconnect the cable at the frame ID, card position, and port that you recorded for the second failing resource.
15. Is the connection an optical link?
 - No:** Wait at least 30 seconds and then continue with the next step.
 - Yes:** Clean the HSL cable connector and port using the tools and procedures listed in symbolic FRU "OPT_CLN" on page 720. Then continue with the next step.
16. Reconnect the cable to the port.
 - Attention:** For copper cables you must fully connect the cable and tighten the connector's screws within 30 seconds of when the cable makes contact with the port. If you do not, the link will fail and you must disconnect and reconnect it again. If the connector screws are not tightened errors will occur on the link and it will fail.
17. Wait one minute to allow the changes to be detected by LIC.
18. Determine if the link has become "*operational*" by repeating steps 1 on page 123 through 8 on page 124 for a second time. There is no need to duplicate any information you have already recorded. Return to the procedure that sent you here, when you are directed to do so in steps 1 on page 123 through 8 on page 124. **This ends the procedure.**

RIOIP03:

Use HSM to examine the HSL Loop to find *failing* items.

About this task

Use this procedure to determine the status of HSL links in the loop.

1. Sign on to SST or DST.
2. Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **High-speed link resources**.
3. Move the cursor to the HSL loop that you want to examine, and select **Display detail** > **Include non-reporting resources**. The display that appears shows the port status of the HSL controller for the loop that you selected.
4. Record the resource name, type-model, and serial number, if it has not been previously recorded.
5. Is the status of the "*Leading port to next resource*" "*operational*?
 - Yes:** Select **Follow leading port**. Then, continue with the next step.
 - No:** You have found the first "*failed*" resource in the link. You will be directed to find the other "*failed*" resource on this link. Go to step 8 on page 126.
6. Record the HSL resource name, type-model, part number, and port.
7. Is the resource name the same name that you recorded for the HSL controller in step 4?
 - No:** The display that appears is showing the status of the HSL ports for the next I/O adapter resource on the loop. Go to step 5.

Yes: You have followed the HSL links around the loop and back to the HSL controller on the system. You did not find a *"failed"* link. Return to the procedure that sent you here. **This ends the procedure.**

8. Find and record the information for the *"first"* failing resource using the following steps:
 - a. Record the resource name, card type-model, part number, and port.
 - b. Select **Cancel** to return to the Work with system interconnect resources display.
 - c. Select **Resources associated with ring** for the loop with the failure.
 - d. Select **Associated packaging resources** for the HSL I/O adapter with the resource name that you recorded.
 - e. Record the frame ID, card position, and port. Record this information for the *"first"* failing link in (diagnosis form).
 - f. Select **Display detail** and record the card position for the *"first"* failing resource.
9. Find and record the information for the other (*second*) failing resource using the following steps:
 - a. Select **Cancel** to return to the Logical hardware associated with HSL ring display.
 - b. For the HSL I/O adapter with the name of the *"first"* failing resource, select **Display detail** → **Follow leading port**. You have located the *"second"* failing resource on the link.
 - c. Record the resource name, card type-model, part number, port.
 - d. Select **Cancel** to return to the Logical hardware associated HSL rings display.
 - e. Select **Associated packaging resources** for the HSL I/O adapter with the resource name that you recorded for the *"second"* failed resource.
 - f. Record the frame ID, card position, and port. Record this information for the *"second"* failing link in (diagnosis form).
 - g. Select **Display detail**, and record the card position for the *"second"* failing resource.
10. Have you repeated steps 1 on page 125 through 9 for a **second** time during this procedure?
 - **Yes:** Return to the procedure that sent you here. **This ends the procedure.**
 - **No:** Does the *"first"* failing resource and the *"second"* failing resource have the same frame ID?
 - **Yes:** Return to the procedure that sent you here. **This ends the procedure.**
 - **No:** Perform the following to determine if the HSL cable connectors between the *first* and *second* failing resources are properly seated and clean:
 - a. Disconnect the cable at the frame ID, card position, and port that you recorded for the *"first"* failing resource, then wait 30 seconds and reconnect it.
Attention: You must fully connect the cable and tighten the connector's screws within **30 seconds** of when the cable makes contact with the port. Otherwise, the link will fail and you must disconnect and reconnect the cable again. If the connector screws are not tightened, errors will occur on the link and it will fail.
 - b. Disconnect the cable at the frame ID, card position, and port that you recorded for the *"second"* failing resource, then wait 30 seconds and reconnect it. See the 30 second attention notice in step 10a.
 - c. Refresh the port status by doing the following:
 - 1) Wait 1 minute.
 - 2) Select **Cancel** → **Refresh**.

Determine if the link has become *"operational"* by repeating steps 1 on page 125 through 9 for a **second** time, returning to the procedure that sent you here when directed.

You **may** see a 6982 indicating that the loop went open and then a 6985 indicating that the loop recovered. **This ends the procedure.**

RIOIP04:

Use HSM to examine the HSL Loop to find a failing I/O bridge resource.

1. Sign on to SST or DST.
2. Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **High-speed link (HSL) resources**.
3. Select **Include non-reporting resources**. Move the cursor to the HSL loop that you want to examine and select **Display detail**. The display that appears shows the port status of the Network Interface Controller (NIC) for the loop that you selected.
4. Record the resource name, type-model, and serial number, if it has not been previously recorded.
5. Is the status of the *Leading port to next resource* operational?
 - **Yes:** Select **Follow Leading Port**. Then continue with the next step.
 - **No:** You have found the first half of a "failing" link. Choose from the following options:
 - If this is your first time through steps 1 through 7, go to step 8.
 - If this is your second time through steps 1 through 7, go to step 9.
6. Record the HSL resource name, type-model, part number, and port.
7. Is the resource name the same name that you recorded for the NIC in step 4?
 - No:** The display that appears is showing the status of the HSL ports for the next I/O bridge resource on the loop. Go to step 5.
 - Yes:** You have followed the HSL links around the loop and back to the NIC on the system. You did not find a failed link. Return to the procedure that sent you here. **This ends the procedure.**
8. Follow the steps in "Clean and properly seat the cables" below.
9. Choose from the following options:
 - If the status of the *Leading port to next resource* has become "operational", the problem has been corrected. Return to the procedure that sent you here. **This ends the procedure.**
 - If the status is still not "operational", continue with the next step.
10. If the resource type (shown near the top of the screen, just below the bus number) is an HSL I/O bridge, then perform "Collect the resource information" below. Then continue with the next step.
11. Select **Follow leading port** to move to the resource with the failed link on the trailing port. If that resource is an HSL I/O bridge, then perform "Collect the resource information" below. Then return to the procedure that sent you here. **This ends the procedure.**

Collect the resource information:

About this task

Find the information for the failing HSL I/O bridge using the following steps:

1. Record the resource name, card type-model, part number, and port.
2. Select **Cancel** to return to the Work with high-speed link (HSL) resources display.
3. Select **Resources associated with loop** for the loop with the failure.
4. Select **Associated packaging resources** for the HSL I/O bridge with the resource name that you recorded.
5. Record the frame ID.
6. Select **Display detail** and record the card position.
7. Go to step 11.

Clean and properly seat the cables:

About this task

Determine if the HSL cable connectors for this HSL I/O bridge are properly seated and clean

1. Disconnect one of the cables at the frame ID/unit of the *HSL I/O bridge*.
2. Is the connection an optical link?

No: Wait at least 30 seconds, and then continue with the next step.

Yes: Clean the HSL cable connector and port using the tools and procedures listed in symbolic FRU "OPT_CLN" on page 720. Then continue with the next step.

3. Reconnect the cable to the port.

Attention: For copper HSL/RIO cables, you must fully connect the cable and tighten the connector's screws within 30 seconds of when the cable makes contact with the port. Otherwise, the link will fail and you must disconnect and reconnect the cable again. If the connector screws are not tightened, errors will occur on the link and it will fail.

4. Disconnect the other cable at the frame ID/unit of the *HSL I/O Bridge*.

5. Is the connection an optical link?

No: Wait at least 30 seconds, and then continue with the next step.

Yes: Clean the HSL cable connector and port using the tools and procedures listed in symbolic FRU "OPT_CLN" on page 720. Then continue with the next step.

6. Reconnect the cable to the port.

Attention: For copper HSL/RIO cables, you must fully connect the cable and tighten the connector's screws within 30 seconds of when the cable makes contact with the port. Otherwise, the link will fail and you must disconnect and reconnect the cable again. If the connector screws are not tightened, errors will occur on the link and it will fail.

7. Refresh the port status by doing the following:

- a. Wait 1 minute.
- b. Select **Cancel** → **Refresh** → **Display detail for the failing resource**.
- c. Determine if the link has become 'operational' by repeating steps 1 on page 127 through 7 on page 127 of the main procedure a second time.

RIOIP06:

Use HSM to examine the HSL Loop to determine if other systems are connected to the loop.

1. Sign on to SST or DST (if you have not already done so).
2. Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **High-speed link (HSL) resources**.
3. Move the cursor to the HSL loop that you want to examine, and select **Resources associated with loop**.
4. Search for Remote HSL NICs on the loop.

Are there any Remote HSL NICs on the loop?

Yes: You have determined that there **are** other systems connected to this loop. **This ends the procedure.**

No: You have determined that there are **not** any other systems connected to this loop. **This ends the procedure.**

RIOIP07:

Starting with a frame ID, for a frame connected to an HSL loop, use this procedure to determine if there is another frame with the same frame ID on the loop. This is possible when more than one system is connected to an HSL loop.

1. Sign on to SST or to DST if you have not already done so.
2. Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **High-speed link (HSL) resources**.
3. Move the cursor to the HSL loop that you want to examine, and select **Resources associated with loop** → **Include non-reporting resources**. The display that appears shows the loop resource and all the "HSL I/O Bridge" and all the "Remote HSL NIC" resources connected to the loop.
4. Perform the following for each HSL I/O bridge resource on the display:

- a. Move the cursor to the HSL I/O bridge resource and select **Associated packaging resource(s)**.
- b. Compare the frame ID on the display with the frame ID (in hexadecimal format) that you are looking to find (Ignore leading zeros).
- c. Are the frame IDs the same?
 - **No:** Select **Cancel** to return to the Logical Hardware Associated With HSL Loops display. Continue with the next step.
 - **Yes:** Perform the following steps:
 - 1) Record the resource name and the Type-Model of the HSL I/O Bridge with the frame ID for possible use later.
 - 2) Select **Display Detail** and record the "SPCN system serial number". The SPCN system serial number is the serial number of the system unit that controls the power subsystem on the frame (it connects to the frame with an SPCN cable).
 - 3) Select **Cancel** to return to the Packaging Resources Associated with a Logical Resource display.
 - 4) Select **Cancel** to return to the Logical Hardware Associated With HSL Loops display. Continue with the next step.
5. Repeat step 4 on page 128 for each HSL I/O bridge under the loop. Then, continue with the next step in this procedure.
6. Did you find more than one HSL I/O bridge with the same frame ID?

No: There is only one frame on the loop with the frame ID you are working with. Return to the procedure that sent you here. **This ends the procedure.**

Yes: You have recorded the resource name, the Type-Model, and the Power Controlling system of every frame on the loop that matches the frame ID that you are looking to find. **This ends the procedure.**

RIOIP08:

Starting with the frame ID and HSL port location label for one end of an HSL cable, determine the frame ID and port location label for the other end.

1. Sign on to SST or to DST if you have not already done so.
2. Select **Start a Service Tool** → **Hardware Service Manager** → **Logical Hardware Resources** → **High Speed Link (HSL) Resources**.
3. Move the cursor to the HSL loop that you want to examine, and select **Resources associated with loop** → **Include non-reporting resources**. The display that appears shows the loop resource and all the "HSL I/O Bridge" and all the "Remote HSL NIC" resources connected to the loop.
4. Perform the following for each of the HSL I/O Bridge resources listed until you are directed to do otherwise.
 - a. Move the cursor to the HSL I/O Bridge resource and select **Associated packaging resource(s)**.
 - b. Compare the frame ID on the display with the frame ID (in hexadecimal format) that you are looking to find (Ignore leading zeros).
Are the frame IDs the same?

Yes: Continue with the next step.

No: Select **Cancel** to return to the Logical Hardware Associated with HSL Loops display. Continue with the next step, repeating it for each HSL I/O Bridge under the loop, until you are directed to do otherwise.
5. Perform the following:
 - a. Select **Associated logical resource(s)**.
 - b. Move the cursor to the HSL I/O Bridge resource and select **Display detail**.

- c. Examine the *Leading port* and *Trailing port* information. Search the display for the HSL port location label that you recorded prior to starting this procedure. If the label is part of the information for the *Leading port*, then select **Follow leading port**. If the label is part of the information for the *Trailing port*, then select **Follow trailing port**.
- d. Perform the step below that matches the function you selected in the previous step:
 - If you selected **Follow leading port**, then examine the display for the *Trailing port* information. Record, on the worksheet that you are using, the HSL port location label shown on the "*Trailing port from previous resource*" line. Record this information as the "*To HSL Port Label*".
 - If you selected **Follow trailing port**, then examine the display for the *Leading port* information. Record, on the worksheet that you are using, the HSL port location label on the "*Leading port to next resource*" line. Record this information as the "*To HSL Port Label*".
- e. Record the "*Link type*" (Copper or Optical) on the worksheet that you are using in the field describing the cable type.
- f. Select **Cancel** → **Cancel** → **Cancel** to return to the *Logical Hardware Associated With HSL Loops* display.
- g. Record the resource name on the display.
- h. Move the cursor to the resource with the resource name you recorded in step 5g.
- i. Select **Associated packaging resource(s)**.
- j. Record the frame ID on the worksheet that you are using for the "*To Frame ID*".
- k. Return to the procedure that sent you here. **This ends the procedure.**

RIOIP09:

This procedure offers a description and service action for HSL reference code B600 6982.

About this task

Note: A fiber optic cleaning kit may be required for optical HSL connections.

Note: This reference code can occur on an HSL loop when an I/O expansion unit on the loop is powered off for a concurrent maintenance action.

1. Is the reference code in the Service Action Log (SAL) or serviceable event view you are using?

Yes: There is a connection failure on an HSL link. A B600 6984 reference code may also appear in the Product Activity Log (PAL) or error log view you are using. Both reference codes are reporting the same problem. Continue with the next step.

No: The reference code is only informational, and requires no service action. **This ends the procedure.**
2. Multiple B600 6982 errors may occur due to retry and recovery activity. Is there a B600 6985 with "xxxx 3206" in word 4 logged after all B600 6982 errors for the same HSL loop in the PAL?

Yes: The recovery efforts were successful. Close all of the B600 6982 entries for the same loop in the SAL. No service is required. **This ends the procedure.**

No: Continue with the next step.
3. Is there a B600 6987 reference code in the SAL, or serviceable event view you are using, logged at about the same time?

Yes: Close this problem and work the B600 6987. **This ends the procedure.**

No: Continue with the next step.
4. Is there a B600 6981 reference code in the SAL, or serviceable event view you are using, logged at approximately the same time?

Yes: Go to step 9 on page 131.

No: Continue with the next step.

5. Perform “RIOIP06” on page 128 to determine if this loop connects to any other systems and then return here.

Note: The loop number can be found in the SAL in the description for the HSL_LNK FRU.

Is this loop connected to other systems?

Yes: Continue with the next step.

No: Go to step 9.

6. Check for HSL failures in the serviceable event views on the other systems. HSL failures are indicated by entries with HSL I/O bridge and Network Interface Controller (NIC) resources. Ignore B600 6982 and B600 6984 entries.

Are there HSL failures on other systems?

Yes: Continue with the next step.

No: Go to step 9.

7. Repair the problems on the other systems and return to this step. After making repairs on the other systems check the PAL of this system. Is there a B600 6985 reference code, with this loop’s resource name, that was logged after the repairs you made on the other systems?

Yes: Continue with the next step.

No: Go to step 9.

8. For the B600 6985 reference code you found, use “SIRSTAT” on page 747 to determine if the loop is now complete.

Is the loop complete?

Yes: The problem has been resolved. Use “RIOIP01” on page 118 to verify that the loop is now working properly. **This ends the procedure.**

No: Continue with the next step.

9. The FRU list displayed in the SAL, or serviceable event view you are using, may be different from the failing item list given here. Use the FRU list in the serviceable event view if it is available.

Does the reference code appear in the serviceable event view with HSL_LNK or HSLxxxx listed as a symbolic FRU?

Yes: Perform “RIOIP01” on page 118. **This ends the procedure.**

No: Exchange the FRUs in the serviceable event view according to their part action codes. **This ends the procedure.**

RIOIP10:

Use this procedure to determine if the RIO/HSL loop is complete (with both primary and redundant paths functioning for each unit on the loop).

1. Search for a B700 6985 SRC informational log (not in the serviceable event view) logged after the RIO/HSL SRC you were working on. You can find informational logs in ASMI, the i5/OS Product Activity Log, the AIX error log, or the Linux error log. Compare the first half of word 7 in the B700 6985 informational log to the value that caused you to be sent to this procedure. Are the two values the same?

No: Continue with the next step.

Yes: Use the informational log and SIRSTAT to determine if the loop has recovered. **This ends the procedure.**

2. Is this system in an RIO/HSL loop with other systems, where any of the systems on the loop is running i5/OS Opticonnect?

- **No:** The loop did not recover. Return to the procedure that sent you here. **This ends the procedure.**
- **Yes:** Use the Hardware Service Manager (HSM) in i5/OS to examine the RIO/HSL loop number that caused you to be sent to this procedure.

- a. Use SST (on an i5/OS partition in the system with the error) to start the HSM and display the logical resources for HSL loops.
- b. See "DSA translation" on page 96 and use the RIO loop numbers table to convert the hexadecimal HSL loop number to the decimal loop number. Locate the decimal loop number in the HSM display and determine the status of the loop number. Is "Operational" the status of the loop number?

No: The loop did not recover. Return to the procedure that sent you here. **This ends the procedure.**

Yes: The loop has recovered. **This ends the procedure.**

RIOIP11:

Use this procedure to recover from a B7xx 6982 high speed link (HSL) failure.

1. Record the RIO/HSL loop number in the first four characters of word 7 of this SRC and perform "RIOIP10" on page 131.
2. Did the RIO loop recover?

No: Continue with the next step

Yes: Close the problem. **This ends the procedure.**
3. Is SRC word 7 "0686 xxxx" or "0684 xxxx" or "0694 xxxx" or "0696 xxxx" and did this error occur on a Model 590 or 595?

No: Continue with the next step

Yes: Look for and correct errors with SRCs of the form B1xx xxxx in the Serviceable Event View that were logged at approximately the same time this SRC occurred. This ends the procedure. If there are no B1xx xxxx SRCs, then continue with the next step.
4. Work with the customer to determine if a system or I/O unit on the RIO loop has powered down normally.
5. Was a system or I/O unit on the loop powered down normally?

No: Go to 7.

Yes: The loop remains in a failed state until all systems and I/O units on the loop are powered on and functioning. Work with the customer to determine if all the powered down systems and units on the loop can be powered on. After all system and units on the loop are powered on, continue with the next step.
6. Did the RIO loop recover?

No: Continue with the next step.

Yes: Close the problem. **This ends the procedure.**
7. Search for a serviceable event with a 1xxx xxx SRC logged at approximately the same time and with one or more FRUs in the same unit as those in the FRU list for the SRC you are currently working.
8. Did you find a serviceable event with a 1xxx xxx SRC?

No: Go to 3

Yes: Work that problem. After you have repaired that error, the RIO/HSL loop may be recovered. After you complete working that problem, return to this procedure and check to determine if correcting that problem also corrected the RIO/HSL error. To determine if the RIO/HSL loop has recovered, record the RIO/HSL loop number in the first four characters of word 7 of this SRC and perform "RIOIP10" on page 131.
9. Did the RIO loop recover?

No: Continue with the next step.

Yes: Close the problem. **This ends the procedure.**
10. In the serviceable event view, search for a B700 6981 error logged at approximately the same time and on the same RIO loop (the first four characters of word 7 are the same).

11. Did you find a serviceable event with a B700 6981 SRC at approximately the same time and on the same RIO loop?
No: Go to 13.
Yes: Work that problem. After you have repaired that error, the RIO/HSL loop may be recovered. After you complete working that problem, return to this procedure and check to determine if correcting that problem also corrected the HSL/RIO error. To determine if the RIO/HSL loop has recovered, record the RIO/HSL loop number in the first four characters of word 7 of this SRC and perform "RIOIP10" on page 131.
12. Did the RIO loop recover?
No: Continue with the next step.
Yes: Close the problem. **This ends the procedure.**
13. Using the FRU list that you are working with for this SRC, exchange one FRU at a time. After you exchange each FRU, determine if the loop has recovered. To determine if the RIO/HSL loop has recovered, record the RIO/HSL loop number in the first four characters of word 7 of this SRC and perform "RIOIP10" on page 131. After the loop recovers or after you have exchanged all the FRUs, continue with the next step.
14. Did the RIO loop recover?
No: Contact your next level of support. **This ends the procedure.**
Yes: Close the problem. **This ends the procedure.**

RIOIP12:

Use this procedure to recover from a B7xx 6985 high speed link (HSL) failure.

1. Work with the customer to determine if a system or I/O unit on the RIO loop has powered down normally.
2. Was a system or I/O unit on the loop powered down normally?
No: Go to 4.
Yes: The loop remains in a failed state until all systems and I/O units on the loop are powered on and functioning. Work with the customer to determine if all the powered down systems and units on the loop can be powered on. After all system and units on the loop are powered on, check to determine if the RIO loop is complete. To determine if the RIO/HSL loop has recovered, record the RIO/HSL loop number in the first four characters of word 7 of this SRC and perform "RIOIP10" on page 131.
3. Did the RIO loop recover?
No: Continue with the next step.
Yes: Close the problem. **This ends the procedure.**
4. In the serviceable event view, search for a B700 6981 or a B700 6986 error logged at approximately the same time and on the same RIO loop (the first four characters of word 7 are the same).
5. Did you find a serviceable event with a 1xxx xxxx SRC?
No: Go to 7
Yes: Work that problem. After you have repaired that error, the RIO/HSL loop may be recovered. After you complete working that problem, return to this procedure and check to determine if correcting that problem also corrected the RIO/HSL error. To determine if the HSL/RIO loop has recovered, record the RIO/HSL loop number in the first four characters of word 7 of this SRC and perform "RIOIP10" on page 131.
6. Did the RIO loop recover?
No: Continue with the next step.
Yes: Close the problem. **This ends the procedure.**
7. In the serviceable event view, search for a B700 6981 or B700 6986 error logged at approximately the same time and on the same RIO loop (the first four characters of word 7 are the same).

8. Did you find a B700 6981 or a B700 6986 error logged at approximately the same time and on the same RIO loop?

No: Go to 10.

Yes: Work that problem. After you have repaired that error, the RIO/HSL loop may be recovered. After you complete working that problem, return to this procedure and check to determine if correcting that problem also corrected the RIO/HSL error. To determine if the RIO/HSL loop has recovered, record the RIO/HSL loop number in the first four characters of word 7 of this SRC and perform "RIOIP10" on page 131.

9. Did the RIO loop recover?

No: Continue with the next step.

Yes: Close the problem. **This ends the procedure.**

10. Search for a system or IO unit on the RIO loop that has not powered up as expected.

11. Did you find a system or IO unit on the RIO loop that has not powered up as expected?

No: Go to 13.

Yes: Go to "Cannot power on SPCN-controlled I/O expansion unit" on page 85 and work that power symptom. Use the first half of word 7 to determine the loop number for later use. After you have repaired that error, the RIO/HSL loop may be recovered. After you complete working that power symptom, return to this procedure and check to determine if correcting that problem also corrected the RIO/HSL error. To determine if the RIO/HSL loop has recovered, record the RIO/HSL loop number in the first four characters of word 7 of this SRC and perform "RIOIP10" on page 131.

12. Did the RIO loop recover?

No: Continue with the next step.

Yes: Close the problem. **This ends the procedure.**

13. Using the FRU list that you are working with for this SRC, exchange one FRU at a time. After you exchange each FRU, determine if the loop has recovered. To determine if the RIO/HSL loop has recovered, record the RIO/HSL loop number in the first four characters of word 7 of this SRC and perform "RIOIP10" on page 131. After the loop recovers or after you have exchanged all the FRUs, continue with the next step.

14. Did the RIO loop recover?

No: Contact your next level of support. **This ends the procedure.**

Yes: Close the problem. **This ends the procedure.**

RIOIP50:

If the system you are working on has an HMC, service this error using the HMC's interfaces.

About this task

This procedure will help you isolate failing items for HSL/RIO link errors. The basic FRU list for such errors is one RIO hub (NIC, bridge, or remote NIC), a cable, and the RIO hub on the other end of the cable. There are two initial conditions. Choose the scenario you are dealing with:

- You are working the problem from service documentation or from a Service Action Log (SAL) entry without complete part number and location information for each RIO hub. Start with the "Preliminary task" to determine which segment of the HSL/RIO loop has failed.
- You are working this problem from the SAL with complete part number and location information for each RIO hub. Perform "RIOIP01" on page 118.

Preliminary task:

About this task

Perform the following to determine which segment of the HSL/RIO loop has failed:

1. Get the loop number from the reference code if you do not already have it. The hexadecimal loop number is the 4 leftmost characters of the DSA in word 7 of the reference code. Before continuing to the next step, use "DSA translation" on page 96 to find the loop number and translate it into decimal format.
2. Sign on to SST or DST (if you have not already done so). Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **High-speed link (HSL) resources**.
3. Select **Resources associated with loop** for the loop with the failed link. The HSL bridges will be displayed under the loop.
4. Select **Display detail** for the loop with the failed link.
5. Select **Follow leading port** until a port with a status of "failed" is found. Note the resource name, type-model, and serial number for the resource with the failed status.
6. Select **Follow leading port** one more time and note all the information for the resource name with a failed trailing port.
7. Select **Display system information** and note the power controlling system. This information may be needed for concurrent replacement at a later time.
8. Select **Cancel** twice to return to the previous screen.
9. Go to each resource name (found above) and select **Associated packaging resource(s)**. This gives the description of the failing item and the frame ID.
10. Select **Display detail** to find the part number and location associated with the possible failing item.
11. Now you have the same information you would have if the SAL had complete part number and location information. Perform "RIOIP01" on page 118.

RIOIP55:

There is an open RIO/HSL loop at IPL time.

About this task

The system may have tried multiple times to establish a complete RIO/HSL loop. This could result in multiple permanent B700 6985 errors for the same RIO/HSL loop. Check the following:

1. Look in the informational logs for a B700 6985 occurring on the same RIO/HSL loop with a value of xxxx 3206 or xxxx 3208 in word 4. These indicate a retry attempt was successful and the permanent B700 6985 errors for that loop can be closed with no further action necessary.
2. If there is a clustered system on the RIO/HSL loop that had not finished its IPL at the time of the error, you should check for a similar error on that system. These errors will occur until all systems on the loop have been completed their IPL. If there is a similar error on the last system to complete its IPL, work the error from that system. Otherwise you can close this error.
3. Check cable seating for the cable indicated in the locations given in the serviceable event view. If no locations are given, check the RIO/HSL Loop Status in the view on the operating system or on the HMC. Find the failed link and check cable connections there. If the cable is an optical cable, use "OPT_CLN" on page 720 for direction on cleaning the optical connections.
4. If the error persists after steps 1 and 2 above, continue working the error with the FRUs given in the serviceable event view or service documentation. **This ends the procedure.**

MABIP05:

Use this procedure to reset an IOP.

About this task

Attention: When the IOP reset is performed, all resources controlled by the IOP will be reset. Perform this procedure only if the customer has verified that the IOP reset can be performed at this time.

1. Go to the SST/DST display in the partition which reported the problem. Use STRSST if i5/OS is running; use function 21 if STRSST does not work; or IPL the partition to DST.
2. On the Start Service Tools Sign On display, type in a user ID with service authority and password.
3. Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **System bus resources**.
4. Page forward until you find the IOP that you want to reset. For help in identifying the IOP from the Direct Select Address (DSA) in the reference code, see “DSA translation” on page 96.
5. Verify that the IOP are correct by matching the resource name(s) on the display with the resource name(s) in the Service Action Log (SAL) for the problem you are working on.
6. Move the cursor to the IOP that you want to reset, and select **I/O Debug** → **Reset IOP** → **IPL IOP**. **This ends the procedure.**

MABIP06:

Use this procedure to isolate a failing I/O adapter under an IOP.

About this task

The procedure will iterate through each IOA under the IOP, powering each one off, and then resetting the IOP. This process will be repeated until the failing IOA is isolated.

1. If the system is not IPLed, will it IPL to DST?
No: Perform “MABIP07” on page 138. **This ends the procedure.**
Yes: From the SAL display for the SRC, record the count. Continue with the next step.
2. Go to the SST/DST display in the partition which reported the problem:
 - If is i5/OS running, use STRSST.
 - If STRSST does not work, use function 21.
 - Or IPL the partition to DST.
 Continue with the next step.
3. On the Start Service Tools Sign On display, type in a user ID with service authority and password.
4. Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **System bus resources**.
5. Is there a resource name logged in the SAL entry?
No: Continue with the next step.
Yes: Go to step 11 on page 137.
6. Do you have a location for the I/O processor?
No: Record the Direct Select Address (DSA) of the SRC (word 7) from the SAL display (see “DSA translation” on page 96). Then continue with the next step.
Yes: Go to step 9 on page 137.
7. Return to the HSM System bus resources display. Locate the I/O processor by performing the following:
 - a. Select **Display detail**.
 - b. Compare the DSA from word 7 with the bus, card, and board information for the IOP.

Note: The card information on the HSM display is in decimal format. You must convert the decimal card information in to hexadecimal format to match the DSA format.

Decimal format	Hexadecimal format
16	10
17	11

Decimal format	Hexadecimal format
18	12
19	13
20	14
21	15
22	16
23	17
32	20
33	21
34	22
35	23
36	24
37	25
38	26
39	27

- c. Repeat this step until you find the IOP with the same DSA. Then continue with the next step.
8. Select **Cancel**, and then go to step 12.
9. Locate the I/O processor in HSM by performing the following for each IOP:
 - a. Select **Associated packaging resource(s) → Display detail**.
 - b. Repeat until you find the IOP with the same location. Then continue with the next step.
10. Select **Cancel → Cancel** and go to step 12.
11. Page forward until you find the multi-adapter bridge and IOP where the problem exists. Verify that the multi-adapter bridge and IOP are correct by matching the resource name(s) on the display with the resource name(s) in the SAL for the problem that you are working on.
12. For the IOP that you are working on, select **Resources associated with IOP** (if the I/O adapters are not already displayed), and then **Include non-reporting resources**.
13. If there is an IOA that is listed in any state other than *operational*, then perform steps 14 through 17 on page 138, starting with the disabled IOA by moving the cursor to the disabled IOA. Otherwise, move the cursor to the first IOA that is assigned to the IOP.
14. Select **Associated packaging resource(s) → Concurrent maintenance → Power off domain**. Record the Frame ID and Location of the slot you are powering off. Did the domain power off successfully?
 - **Yes:** Perform “MABIP05” on page 135, and then return here and continue with the next step.
 - **No:** Choose from the following options:
 - If only one IOA was listed as failing, power down the system and replace the IOA. Re-IPL the system. If a different SRC occurs, go to “Start of call procedure” on page 2 and service that SRC. If there was no SRC, go to Verifying the repair. **This ends the procedure.**
 - If there were multiple failed IOAs and concurrent maintenance did not work on one, then move to the next failed IOA and repeat steps 14 through 17 on page 138.
 - If concurrent maintenance does not work for multiple failed IOAs, this procedure will not be able to identify a failing I/O adapter. Return to the procedure that sent you here. **This ends the procedure.**
15. Did the IOP reset and IPL successfully?

No: You will not be able to identify a *failing* I/O adapter with this procedure. Return to the procedure that sent you here. **This ends the procedure.**

Yes: Check for the same failure that sent you to this procedure. Check the system control panel, the SAL for the partition that reported the problem, or the Work with partition status display for the partition that reported the problem. In the SAL, the count will increase if the SRC occurred again. Continue with the next step.

16. Did the same SRC occur after the IOP was reset and IPL'd?
 - **No:** Go to step 18.
 - **Yes:** Perform the following steps:
 - a. Go to the Hardware Service Manager display.
 - b. Go to Packaging Hardware Resources.
 - c. Power on the IOA by selecting **Power on domain**.
 - d. Reassign the IOA to the IOP.
 - e. Return to the HSL resource display, showing the IOP and associated resources.
 - f. Continue with the next step.
17. Are there any other IOA, assigned to the IOP, that you have not already powered off and on?
 - No:** Go to step 20.
 - Yes:** Move the cursor to another IOA assigned to the IOP, choosing IOAs with a status of *unknown* or *disabled* before moving on to IOAs with a status of *operational*. Go to step 14 on page 137.
18. You have located the failing IOA. Exchange the I/O adapter that you just powered off. Use the location you recorded in step 14 to locate the IOA.
19. Power on the IOA that you just exchanged. Does the same SRC that sent you to this procedure still occur?
 - Yes:** The IOA is **not** the failing item. Remove the IOA and reinstall the original IOA. Continue with the next step.
 - No:** You have exchanged the failing IOA. Go to "Verifying a high-speed link, system PCI bus, or a multi-adapter bridge repair" on page 111. **This ends the procedure.**
20. No failing IOAs were identified. Return to the procedure that sent you here. **This ends the procedure.**

MABIP07:

Use this procedure to isolate a failing PCI I/O adapter card from an SRC.

About this task

Attention: The removal and replacement of all FRUs in this procedure must be performed using dedicated maintenance.

1. Determine the "PCI bridge set" (multi-adapter bridge domain) by performing the following:
 - a. Record the bus number (BBBB), the multi-adapter bridge number (C) and the multi-adapter bridge function number (c) from the Direct Select Address (DSA). See "Breaking down a RIO/HSL or PCI bus reference code" on page 95 for help in determining these values.
 - b. Use the bus number that you recorded and the "System Configuration Listing" or ask the customer to determine what frame the bus is in.
 - c. Record the frame type where the bus is located.
 - d. The **PCI bridge set** is the group of card positions controlled by the same multi-adapter bridge on the bus that you recorded. Use the "System Configuration Listing", the card position table for the frame type that you recorded, the bus number, and the multi-adapter bridge number to determine the PCI bridge set where the failure occurred. Refer to the "Card positions" on page 98 to locate the card position table for the frame type that you recorded.
 - e. Print out the Installed features in a PCI bridge set form.

- f. Using the card position table, record the PCI bridge set card positions, and multi-adapter bridge function numbers on the form.
 - g. Examine the PCI bridge set in the frame and record the information on the form for all of the positions with IOP and IOA cards installed in them.
 - h. The IOP with a failing IOA is in the card position that matches the multi-adapter bridge function number that you recorded in the DSA. In the "IOP" or "IOA" column of the form, write the word "DSA" next to the IOP that is identified in the DSA.
 - i. Using the form, start at the card position for the IOP in the DSA and search down the "IOP" or "IOA" column (increasing multi-adapter bridge function numbers) and mark each IOA with an "X" until you hit the next IOP or the bottom of the column. The IOAs that you marked with "X" are all under the control of the IOP that is indicated in the DSA.
2. Did the SRC appear on the system control panel or the system console?
No: Continue with the next step.
Yes: This procedure will instruct you to power off and power on the system or partition with the problem. Perform that function as you would normally power off and power on the system. Continue with step 4.
 3. When this procedure instructs you to power on the system or partition, power off or power on **only** the partition that reported the problem by selecting **Work with system partitions** under SST/DST. Then, from the Primary partition, use HSM concurrent maintenance to power off the card positions that you are instructed to work with. The remove and replace procedures for those positions will guide you through the HSM concurrent maintenance functions. Use this procedure to find the correct remove and replace procedure for each card position that you are instructed to work with.
 4. Power off the system or partition.
 5. Remove all of the IOAs that you marked with an "X" in Installed features in a PCI bridge set form. Be sure to record the card position of each IOA so that you can reinstall it in the same position later. To determine the remove and replace procedures for the IOAs, locate the IOA card positions in the FRU locations and failing items table for the frame type that you recorded. See Finding part locations for details.
 6. Power on the system or partition.
 Does the SRC or failure that sent you to this procedure occur?
Yes: Continue with the next step.
No: Power off the system or partition. Go to step 12 on page 140.
 7. Perform the following steps:
 - a. Power off the system or partition.
 - b. Exchange the IOP that is indicated in the DSA. Be sure to record the card position of the IOPs so that you can reinstall it in the same position later. To determine the remove and replace procedure for the IOP, locate the IOP's card position in the FRU locations and failing items table for the frame type you recorded. Refer to Finding part locations for details.
 - c. Power on the system or partition.
 Does the SRC or failure that sent you to this procedure occur?
No: Power off the system or partition and continue with the next step.
Yes: Go to step 18 on page 140.
 8. Install all of the IOAs that you removed in step 5. Be sure to install them in their original positions.
 9. Power on the system or partition.
 Does the SRC or failure that sent you to this procedure occur?
Yes: Power off the system or partition. Then, continue with the next step.
No: Perform "Verifying a high-speed link, system PCI bus, or a multi-adapter bridge repair" on page 111. **This ends the procedure.**

10. Remove all of the IOAs that you marked with an "X" in Installed features in a PCI bridge set form. Be sure to record the card position of each IOA so that you can reinstall it in the same position later.
11. Remove the IOP that you exchanged and install the original IOP in its original position.
12. Reinstall, in its original position, one of the IOA adapters that you removed.
13. Power on the system or partition.
Does the SRC or failure that sent you to this procedure occur?
 - **Yes:** The I/O adapter card that you just installed is the failing FRU. Continue with the next step.
 - **No:** Power off the system or partition. Repeat step 12 for another one of the I/O adapter cards that you removed.

If you have reconnected all of the I/O adapters and the SRC or failure that sent you to this procedure does not occur, the problem is intermittent. **This ends the procedure.**
14. Power off the system or partition.
15. Exchange the I/O adapter card that you last installed. Be sure to install the new I/O adapter card in the same position.
16. Power on the system or partition.
Does the SRC or failure that sent you to this procedure occur?
 - No:** Power off the system or partition. Then, continue with the next step.
 - Yes:** Call your next level of support. **This ends the procedure.**
17. Reinstall, in their original positions, the remaining I/O adapter cards that you removed.
Does the SRC or failure that sent you to this procedure occur?
 - **Yes:** Call your next level of support. **This ends the procedure.**
 - **No:** Does a different SRC occur?
 - Yes:** Go to "Start of call procedure" on page 2 and follow the service procedures for the new SRC. **This ends the procedure.**
 - No:** Perform "Verifying a high-speed link, system PCI bus, or a multi-adapter bridge repair" on page 111. **This ends the procedure.**
18. The problem is the multi-adapter bridge. Power off the system or partition.
19. Determine which FRU contains the multi-adapter bridge which controls the IOP in the DSA by performing the following:
 - a. Locate the card position table for the frame type that you recorded. Refer to the "Card positions" on page 98 to locate the card position table for the frame type that you recorded.
 - b. Using the multi-adapter bridge number that you recorded, search for the multi-adapter bridge function number "F" in the card position table to determine the card position of the multi-adapter bridge's FRU.
20. Is the multi-adapter bridge's FRU, a FRU that you have already exchanged?
 - No:** Remove the IOP that you exchanged. You will be reinstalling the original IOP later in this procedure. Then, continue with the next step.
 - Yes:** Call your next level of support. **This ends the procedure.**
21. Exchange the card multi-adapter bridge's FRU at the card position that you determined for it. To determine the remove and replace procedure for the multi-adapter bridge's FRU, locate the FRU's card position in the FRU locations and failing items table for the frame type that you recorded. FRU locations and failing items tables are in Finding part locations.
22. Install the original IOP in its original position.
23. Install all of the other IOPs and IOAs in to their original positions. Do **not** install the IOAs that you were instructed to remove in step 5 on page 139.
24. Power on the system or partition.
Does the SRC or failure that sent you to this procedure occur?

No: Install all of the IOAs that you removed in step 5 on page 139. Be sure to install them in their original positions. Then, continue with the next step.

Yes: Call your next level of support. **This ends the procedure.**

25. Power on the system or partition.

Does the SRC or failure that sent you to this procedure occur?

- **No: This ends the procedure.**
- **Yes:** Call your next level of support. **This ends the procedure.**

MABIP50:

Use this procedure to isolate a failing PCI card (either an IOA or IOP) under a multi-adapter bridge.

About this task

Attention: This procedure is for use with i5/OS only. Go to “PCI bus isolation using AIX, Linux, or the HMC” on page 111 to isolate a PCI bus problem from AIX, Linux, or the HMC.

This procedure iterates through any IOPs under the multi-adapter bridge and any PCI cards operating without an IOP. It powers off each one, and then resets the multi-adapter bridge. This process repeats until it isolates the failing part.

1. Does the partition IPL to DST?

Yes: Go to the SST/DST display in the partition that reported the problem. If i5/OS is running, use STRSST; if STRSST does not work, use function 21. If i5/OS is not running, IPL the partition to DST. Then, continue with the next step.

No: Perform “MABIP52” on page 143. **This ends the procedure.**

2. On the Start Service Tools Sign On display, type in a user ID with QSRV authority and password.
3. Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **System bus resources**.
4. Page forward until you find the multi-adapter bridge where the problem was reported. For help in identifying the multi-adapter bridge from the Direct Select Address (DSA) in the reference code, see “DSA translation” on page 96. Verify that the multi-adapter bridge is the correct one by matching the resource name on the display with the resource name in the Service Action Log (SAL) for the problem that you are working on.
5. Select **Include non-reporting resources**.
6. Move the cursor to the first IOP under the multi-adapter bridge.
7. For each IOP that is under the multi-adapter bridge that you are working on, select **Associated packaging resource(s)** → **Display detail**.
8. Record the location of the IOP, except for virtual IOPs.
9. Select **Cancel** → **Cancel**.
10. Select **Resources associated with IOP**.
11. For each I/O adapter under the IOP, perform the following:
 - a. Select **Associated packaging resource(s)** → **Display detail**.
 - b. Record the location.

Note: There will be one IOA resource under each virtual IOP.

12. Perform the following:
 - a. Power off the frame or tower (see Powering on and powering off).
 - b. Remove one of the IOPs and all of its IOAs, or the one IOA resource under a virtual IOP.
 - c. Power on the frame or tower (see Powering on and powering off). Continue with the next step.

13. Check for the same failure that brought you to this procedure. Check the system control panel, the SAL for the partition that reported the problem, or the Work with partition status display for the partition that reported the problem.

Did the same reference code appear?

Yes: Power on the frame or tower. Then continue with the next step.

No: Go to step 15.

14. Return to the System bus resources display showing the multi-adapter bridge and the associated resources. Is there another IOP under the multi-adapter bridge?

No: Go to step 17.

Yes: Return to step 12 on page 141.

15. The failing item is either the IOP or one of the I/O adapters that it controls. Reinstall the IOP and I/O adapters that you just removed. Perform “MABIP55” on page 150. If this procedure does not help you to identify a failing I/O adapter, then return here and continue with the next step in this procedure.

16. Perform the following:

- a. Exchange the IOP that you identified in step 15.
- b. Power on the frame or tower.

Does the same reference code that sent you to this procedure occur?

No: The failing item was the IOP that you just exchanged. Reinstall all of the other IOPs and I/O adapters that you removed during this procedure. Go to Verifying the repair. **This ends the procedure.**

Yes: Continue with the next step.

17. The failing item is the FRU containing the multi-adapter bridge which controls this IOP, or an IOA that is not under an IOP. Perform the following:

- a. Power off the unit that you are working on.
- b. Exchange the FRU containing the multi-adapter bridge using symbolic FRU “MA_BRDG” on page 705.
- c. Power on the unit that you are working on.

Does the same reference code that sent you to this procedure occur?

No: The failing item was the multi-adapter bridge FRU that you just exchanged. Reinstall all of the other IOPs and I/O adapters that you removed during this procedure. Go to Verifying the repair. **This ends the procedure.**

Yes: Contact your next level of support. **This ends the procedure.**

MABIP51:

Use this procedure to resolve a problem with a multi-adapter bridge.

About this task

Attention: This procedure is for use with i5/OS only. Go to “PCI bus isolation using AIX, Linux, or the HMC” on page 111 to isolate a PCI bus problem from AIX, Linux, or the HMC.

This procedure will determine if the multi-adapter bridge is failing when the symbolic FRU PIOCARD is in the failing item list. It will also determine if the symbolic FRU PIOCARD can be removed from the FRU list.

Use the Service Action Log (SAL) to check for other errors under the same multi-adapter bridge using the following steps:

1. Were you able to obtain a location for the PIOCARD FRU from the SAL?

No: Find the reference code in the SAL and record the Direct Select Address (DSA), which is in word 7 (see "DSA translation" on page 96). Then, continue with the next step.

Yes: Go to step 5.

2. Record the bus number (BBBB) and the multi-adapter bridge number (C) of the DSA (see "DSA translation" on page 96).
3. Go to "MABIP53" on page 145 to determine the location of the PCI I/O card in the failing item list. Then return here and continue with the next step.
4. Using the card position table for the frame or I/O tower type that you recorded in "MABIP53" on page 145, determine which of the card positions within the frame or I/O tower are controlled by the same multi-adapter bridge that is controlling the PCI I/O card for which you determined the location in step 3. A card position is controlled by the same multi-adapter bridge if it has the same bus number and multi-adapter bridge number as the PCI I/O Card that you located in step 3. Record the card position and the DSA from the card position table for each card position that is controlled by the same multi-adapter bridge.
5. Look in the SAL (see "Using the Service Action Log" on page 32) for other failures in the same frame that are either located in any of the card positions that you recorded in step 4 or are listed with the PIOCARD FRU.

Are any such failures listed in the SAL?

No: Use the failing item list that you were using when you started this procedure. **This ends the procedure.**

Yes: The multi-adapter bridge is failing. Remove symbolic FRU PIOCARD from the list of failing items, as it is not the failing FRU. **This ends the procedure.**

MABIP52:

This procedure will isolate a failing PCI card from a reference code when the system or logical partition will not IPL.

About this task

Attention: The remove and replace procedure of all FRUs in this procedure must be performed using "Dedicated Maintenance".

1. Determine the PCI bridge set (multi-adapter bridge domain) by performing the following:
 - a. Record the bus number (BBBB), the multi-adapter bridge number (C) and the multi-adapter bridge function number (c) from the Direct Select Address (DSA) in word 7 of the reference code in the SAL entry. See "DSA translation" on page 96 for help in determining these values.
 - b. Use the bus number that you recorded and the System Configuration Listing (or ask the customer) to determine what frame the bus is in.
 - c. Record the frame type where the bus is located.
 - d. The PCI bridge set is the group of card positions controlled by the same multi-adapter bridge on the bus that you recorded. Use the System Configuration Listing, the card position table for the frame type that you recorded, the bus number, and the multi-adapter bridge number to determine the PCI bridge set where the failure occurred.
 - e. Print out the Installed features in a PCI bridge set form to use in the following steps.
 - f. Using the card position table, write the PCI bridge set card positions and multi-adapter bridge function numbers into the form.
 - g. Examine the PCI bridge set in the frame, and record the information in the form for all of the positions with IOP and IOA cards installed in them.
 - h. In the form, start at the top row and search down the "IOP" or "IOA" column (increasing multi-adapter bridge function numbers) and mark each IOP with an "X" until you hit the bottom of the column. The IOPs that you marked with "X" are all under the control of the multi-adapter bridge indicated in the DSA.

2. Did the reference code appear on the system control panel or the system console (this would happen if the system does not have multiple partitions or if the failure occurred in the Primary partition of a system with multiple partitions)?

No: When this procedure instructs you to power off and power on the system or partition, power off or power on **only** the partition that reported the problem by selecting **Work with system partitions** under SST/DST. Then, from the Primary partition, use HSM concurrent maintenance to power off the card positions that you are instructed to work with. The remove and replace procedures for those positions will guide you through the HSM concurrent maintenance functions. This procedure will guide you to the correct remove and replace procedure for each card position that you are instructed to work with. Continue with the next step.

Yes: This procedure instructs you to power off and power on the system or partition with the problem. Perform that function as you would normally power off and power on the system. Continue with the next step.

3. Perform the following:
 - a. Power off the system or partition.
 - b. Remove all the IOPs you marked with an "X" and all the IOAs on the form. Be sure to record the card position of each IOP and IOA so that you can reinstall it in the same position later. To determine the remove and replace procedures for the IOPs and IOAs, go to Finding part locations.
 - c. Power on the system or partition.

Does the reference code or failure that sent you to this procedure occur?

No: Continue with the next step.

Yes: The problem is the multi-adapter bridge. Continue with step 9 on page 145.

4. Starting at the empty card position with the lowest multi-adapter bridge function number from the form, reinstall (in their original positions) one of the IOPs and all of the IOAs between it and the next IOP.
5. Power on the system or partition. Does the reference code or failure that sent you to this procedure occur?

Yes: The I/O processor card that you just installed is the failing FRU. Continue with the next step.

No: Power off the system or partition. Repeat step 4 for another one of the I/O processor cards that you removed. If you have reconnected all of the IOPs and the reference code or failure that sent you to this procedure does not occur, the problem is intermittent; contact your next level of support. **This ends the procedure.**

6. Perform the following:
 - a. Power off the system or partition.
 - b. Exchange the I/O processor card you last installed. Be sure to install the new I/O processor card in the same position.
 - c. Power on the system or partition.

Does the reference code or failure that sent you to this procedure occur?

No: Power off the system or partition. Then, continue with the next step.

Yes: Remove the IOP that you just installed and reinstall the original IOP in its original position. Then perform "MABIP54" on page 147. **This ends the procedure.**

7. Reinstall, in their original positions, the remaining IOP and IOA cards that you removed.

Does the reference code or failure that sent you to this procedure occur?

Yes: Call your next level of support. **This ends the procedure.**

No: Continue with the next step.

8. Does a different reference code occur?

Yes: Return to “Start of call procedure” on page 2 and follow the service procedures for the new reference code. **This ends the procedure.**

No: Go to Verifying the repair. **This ends the procedure.**

9. Power off the system or partition.
10. Determine which FRU contains the multi-adapter bridge that controls the IOP in the DSA by performing the following:
 - a. Locate the card position table for the frame type that you recorded.
 - b. Using the multi-adapter bridge number that you recorded, search for the multi-adapter bridge function number “F” in the card position table to determine the card position of the multi-adapter bridge’s FRU.

Is the multi-adapter bridge’s FRU a FRU that you have already exchanged?

No: Remove the IOP that you exchanged. You will be reinstalling the original IOP later in this procedure. Then, continue with the next step.

Yes: Call you next level of support. **This ends the procedure.**

11. Perform the following:
 - a. Exchange the multi-adapter bridge’s FRU at the card position that you determined for it. See Finding part locations to determine the correct remove and replace procedure.
 - b. Install all IOPs and IOAs in their original positions.
 - c. Power on the system or partition.

Does the reference code or failure that sent you to this procedure occur?

No: Go to Verifying the repair. **This ends the procedure.**

Yes: Call your next level of support. **This ends the procedure.**

MABIP53:

Use this procedure to determine a card position when no location is given for a PCI adapter FRU.

About this task

Attention: This procedure is for use with i5/OS and B7xx reference codes only. Go to “PCI bus isolation using AIX, Linux, or the HMC” on page 111 to isolate a PCI bus problem from AIX, Linux, or the HMC.

This procedure uses the Direct Select Address given in the reference code because no location was given for a PCI adapter FRU.

1. If you were sent to this procedure with a specific Direct Select Address (DSA), then use it. Otherwise, use the DSA in the reference code. Refer to “DSA translation” on page 96 to find the DSA in the reference code and translate it into the BBBB Cc values that you use in later steps of this procedure.
2. Perform the following:
 - a. Record the bus number value, BBBB, in the DSA and convert it to decimal format.
 - b. Search for the decimal bus number in HSM or the System Configuration Listing to determine which frame or I/O unit contains the failing item. From the HSM screen select **Logical Hardware Resources** → **System Bus resources**. Move the cursor to a system bus object and select **Display Detail**. Do this for each bus until you find the bus on which you are working.
 - c. Record the frame or unit type.
3. Record the Cc value in the DSA. Is the Cc value greater than 00?

No: The multi-adapter bridge and the multi-adapter function number are not identified. Record that the multi-adapter bridge is not identified in the DSA. The card slot cannot be identified using the DSA. Go to step 8 on page 146.

Yes: Continue with the next step.

4. Is the right-most character of the Cc value 'F'?
 - No:** Continue with the next step.
 - Yes:** Only the multi-adapter bridge number is identified. Record the multi-adapter bridge number (the leftmost character of the Cc value) for later use. The card slot cannot be identified using the DSA. Go to step 8.
5. Are you working with a B7xx reference code?
 - No:** Go to step 7.
 - Yes:** Continue with the next step.
6. Is SST/DST available?
 - No:** Continue with the next step.
 - Yes:** Go to step 12 on page 147.
7. Use the card position tables with the BBBB and Cc values that you recorded to identify the card position. Then return to the procedure, failing item, or symbolic FRU that sent you here. **This ends the procedure.**
8. Perform the following:
 - a. Sign onto SST or DST if you have not already done so.
 - b. Select **Start a service tool** → **Hardware service manager** → **Logical Hardware Resources** → **System bus resources**.
 - c. Put the bus number in the System bus(es) to work with field. Then select **Include non-reporting resources** and examine the display.

Is there more than one multi-adapter bridge connected to the bus resource you are working with?

 - Yes:** Continue with the next step.
 - No:** Go to step 11.
9. Was there a multi-adapter bridge number identified in the Cc value of the DSA?
 - **Yes:** Continue with the next step.
 - **No:** From the Logical Hardware Resources on System Bus display, examine the status of all the resources under the bus, looking for a "failed" resource.
 - To examine the status of the IOAs, select **Resources associated with IOP** for each IOP under the bus.
 - To determine the card position of a failed resource, select **Associated packaging resource(s)** → **Display detail** and record the frame ID, card position, and part number.

Return to the procedure that sent you here. **This ends the procedure.**
10. Search for the multi-adapter bridge number that is identified in the DSA by moving the cursor to each multi-adapter bridge resource and selecting **Display detail**. Convert the system card value to hexadecimal (it is displayed in decimal format). The hexadecimal system card value is the Cc address of the multi-adapter bridge. When you find the multi-adapter bridge resource, where the multi-adapter bridge number (the leftmost character of the hexadecimal Cc value) matches the multi-adapter bridge number that you recorded from the DSA, then you have located the multi-adapter bridge identified in the DSA.
11. From the Logical Hardware Resources on System Bus display, examine the status of all the resources under the multi-adapter bridge, looking for a "failed" resource.
 - To examine the status of the IOAs, select **Resources associated with IOP** for each IOP under the multi-adapter bridge.
 - To determine the card position of a failed resource, select **Associated packaging resource(s)** → **Display detail** and record the frame ID, card position, and part number.

Did you find any failed resources?

 - Yes:** One of the failing resources that you located is the problem. Return to the procedure that sent you here. **This ends the procedure.**

No: Use the System Configuration Listing and the card position tables for the frame type that you recorded to determine which card positions may have the failing card. If you recorded that the multi-adapter bridge was identified in the leftmost character of the Cc value, then the card position tables will help you identify which card slots (PCI bridge set) are controlled by the multi-adapter bridge that is identified in the Cc value. If the multi-adapter bridge was not identified in the Cc value (indicated by a value of '0' in the leftmost character) then the card position tables will identify which card slots are controlled by the bus (BBBB) that is identified in the DSA. Return to the procedure that sent you here. **This ends the procedure.**

12. Perform the following:
 - a. Convert the hexadecimal Cc value in the DSA into a decimal value. You will be searching for the decimal value in HSM where it will be called "*System card*".
 - b. Sign on to SST or DST if you have not already done so.
 - c. Select **Start a Service Tool** → **Hardware Service Manager** → **Logical Hardware Resources** → **System Bus Resources**.
 - d. Search for the "*System Bus*" resource identified in BBBB of the DSA by moving the cursor to each system bus resource and selecting **Display detail**. Do this until you locate the bus number that matches the decimal bus number value that you recorded from the DSA. Record the resource name of the bus for later use.
 - e. From the Logical Hardware Resources on System Bus display, select **Include non-reporting resources**.
13. From the Logical Hardware Resources on System Bus display, examine all of the IOP and IOA resources under the bus. Look for a "*System card*" value that matches the decimal value of the Cc that you converted to decimal in step 12. Perform the following to display the "*System card*" value for each of the IOP and IOA resources:
 - **To examine the IOP resources:**
 - a. Select **Associated packaging resource(s)** → **Display detail**. The "*System card*" value of the IOP will be shown on the display.
 - b. If the "*System card*" value matches the decimal value of the Cc, then you have located the failing resource. Record the frame ID, card position, and part number, and then return to the procedure that sent you here. Otherwise, continue to examine all the IOP and IOA resources on the bus.
 - **To examine the IOA resources:**
 - a. Move the cursor to an IOP resource and select **Resources associated with IOP** → **Associated packaging resource(s)** → **Display detail**. The "*System card*" value of the IOA will be shown on the display.
 - b. If the "*System card*" value matches the decimal value of the Cc, then you have located the failing resource. Record the frame ID, card position, and part number, and then return to the procedure that sent you here. Otherwise, continue to examine all the IOP and IOA resources on the bus.

Have you examined all the IOP and IOA resources under the bus?

No: Repeat step 13.

Yes: Continue with the next step.

14. Did you locate a resource with a "*System card*" value that matches the decimal Cc value from step 12?

Yes: Record the frame ID, card position, and part number of the resource. Return to the procedure that sent you here. **This ends the procedure.**

No: You will not be able to locate the card using DST. Go to step 7 on page 146 to locate the card.

MABIP54:

Use this procedure to isolate the failing PCI I/O adapter card from a reference code with a Direct Select Address when the serviceable event view does not indicate a location for the PCI card.

About this task

Attention:

- This procedure is for use with i5/OS only. Go to "PCI bus isolation using AIX, Linux, or the HMC" on page 111 to isolate a PCI bus problem from AIX, Linux, or the HMC.
- The removal and replacement of all FRUs in this procedure must be performed using dedicated maintenance.

1. Determine the PCI bridge set (multi-adapter bridge domain) by performing the following:
 - a. Record the bus number (BBBB), the multi-adapter bridge number (C), and the multi-adapter bridge function number (c) from the Direct Select Address (DSA) (see "Breaking down a RIO/HSL or PCI bus reference code" on page 95 for help in determining these values).
 - b. Using the bus number and the System Configuration Listing, or by asking the customer, determine which unit the bus is located in and record that unit type.
 - c. The PCI bridge set is the group of card positions controlled by the same multi-adapter bridge on the bus that you recorded. Use the System Configuration Listing, the card position table for the unit type that you recorded, the bus number, and the multi-adapter bridge number to determine in which PCI bridge set the failure occurred.
 - d. Print out the Installed features in a PCI bridge set form.
 - e. Using the card position table, record the PCI bridge set card positions, and the multi-adapter bridge function numbers on the form.
 - f. Examine the PCI bridge set and record the information on the form for all of the positions with IOP and IOA cards installed in them.
 - g. The IOP with a failing IOA is in the card position that matches the multi-adapter bridge function number that you recorded in the DSA. In the "IOP" or "IOA" column of the form, write the word "DSA" next to the IOP that is identified in the DSA.
 - h. Using the form, start at the card position for the IOP in the DSA and search down the "IOP" or "IOA" column (increasing multi-adapter bridge function numbers) and mark each IOA with an "X" until you hit the next IOP or the bottom of the column. The IOAs that you marked with "X" are all under the control of the IOP that is indicated in the DSA.

2. Did the reference code appear on the system control panel or the system console?

No: When this procedure instructs you to power on the system or partition, power off or power on only the partition that reported the problem. On a multiple partition system, use interfaces on the HMC to power on or power off the partition or to perform concurrent maintenance. On a single partition system use the operating system interface to power on or power off the system. Use this procedure to find the correct remove and replace procedure for each card position that you are instructed to work with. Continue with the next step.

Yes: This procedure will instruct you to power off and power on the system or partition with the problem. Perform that function as you would normally power off and power on the system. Continue with the next step.

3. Perform the following:
 - a. Power off the system or partition.
 - b. Remove all of the IOAs that you marked with an "X" on the Installed features in a PCI bridge set form. Be sure to record the card position of each IOA so that you can reinstall it in the same position later. To determine the remove and replace procedures for the IOAs, locate the IOA card positions in the FRU locations and failing items table for the frame type that you recorded.
 - c. Power on the system or partition.

Does the reference code or failure that sent you to this procedure occur?

Yes: Continue with the next step.

No: Power off the system or partition. Go to step 7 on page 149.

4. Perform the following:

- a. Power off the system or partition.
- b. Exchange the IOP that is indicated in the DSA. Be sure to record the card position of the IOP so that you can reinstall it in the same position later. To determine the exchange procedure for the IOP, locate the IOP's card position in the FRU locations and failing items table for the frame type you recorded.
- c. Power on the system or partition.

Does the reference code or failure that sent you to this procedure occur?

No: Continue with the next step.

Yes: Go to step 11 on page 150.

5. Perform the following:

- a. Power off the system or partition.
- b. Install all of the IOAs that you removed in step 3 on page 148. Be sure to install them in their original positions.
- c. Power on the system or partition.

Does the reference code or failure that sent you to this procedure occur?

- **Yes:** Continue with the next step.
- **No:** Perform "Verifying a high-speed link, system PCI bus, or a multi-adapter bridge repair" on page 111.

This ends the procedure.

6. Perform the following:

- a. Power off the system or partition.
- b. Remove all of the IOAs that you marked with an "X" on the Installed features in a PCI bridge set form. Be sure to record the card position of each IOA so that you can reinstall it in the same position later.
- c. Remove the IOP that you exchanged and install the original IOP in its original position. Continue with the next step.

7. Perform the following:

- a. Reinstall, in its original position, one of the IOAs that you removed.
- b. Power on the system or partition.

Does the reference code or failure that sent you to this procedure occur?

- **Yes:** The IOA that you just installed is the failing FRU. Continue with the next step.
- **No:** Power off the system or partition. Repeat step 7 for another one of the IOAs that you removed. If you have reconnected all of the IOAs and the reference code or failure that sent you to this procedure does not occur, the problem is intermittent; contact your next level of support.

This ends the procedure.

8. Perform the following:

- a. Power off the system or partition.
- b. Exchange the I/O adapter card that you last installed. Be sure to install the new I/O adapter card in the same position.
- c. Power on the system or partition.

Does the reference code or failure that sent you to this procedure occur?

- **No:** Continue with the next step.
- **Yes:** Call your next level of support.

This ends the procedure.

9. Perform the following:

- a. Power off the system or partition.
- b. Reinstall, in their original positions, the remaining I/O adapter cards that you removed.

Does the reference code or failure that sent you to this procedure occur?

- **Yes:** Call your next level of support.

This ends the procedure.

- **No:** Continue with the next step.

10. Does a different reference code occur?

- **Yes:** Return to “Start of call procedure” on page 2 and follow the service procedures for the new reference code.

This ends the procedure.

- **No:** Perform “Verifying a high-speed link, system PCI bus, or a multi-adapter bridge repair” on page 111.

This ends the procedure.

11. The problem is the multi-adapter bridge. Perform the following to determine which FRU contains the multi-adapter bridge that controls the IOP in the DSA:

- a. Power off the system or partition.
- b. Locate the card position table for the frame type that you recorded.
- c. Using the multi-adapter bridge number that you recorded, search for the multi-adapter bridge function number “F” in the card position table to determine the card position of the multi-adapter bridge’s FRU.

Have you already exchanged the multi-adapter bridge’s FRU?

- **No:** Continue with the next step.
- **Yes:** Call your next level of support.

This ends the procedure.

12. Perform the following:

- a. Remove the IOP that you exchanged.
- b. Exchange the multi-adapter bridge’s FRU at the card position that you determined for it. To determine the exchange procedure for the multi-adapter bridge’s FRU, locate the FRU’s card position in the FRU locations and failing items table for the frame type that you recorded.
- c. Install the original IOP in its original position.
- d. Install all of the other IOPs and IOAs into their original positions. Do not install the IOAs that you were instructed to remove in step 3 on page 148.
- e. Power on the system or partition.

Does the reference code or failure that sent you to this procedure occur?

- **No:** Continue with the next step.
- **Yes:** Call your next level of support.

This ends the procedure.

13. Perform the following:

- a. Install all of the IOAs that you removed in step 3 on page 148. Be sure to install them in their original positions.
- b. Power on the system or partition.

Does the reference code or failure that sent you to this procedure occur?

- **No:** The problem has been resolved.
- **Yes:** Call your next level of support.

This ends the procedure.

MABIP55:

Use this procedure to isolate a failing I/O adapter.

About this task

Attention: This procedure is for use with i5/OS only. Go to “PCI bus isolation using AIX, Linux, or the HMC” on page 111 to isolate a PCI bus problem from AIX, Linux, or the HMC.

This procedure iterates through each IOA without an IOP, then each IOA under the IOP, powers each one off, and then resets the IOP. This process repeats until it isolates the failing IOA.

1. If the system is not IPLed, will it IPL to DST?

No: Perform “MABIP54” on page 147. **This ends the procedure.**

Yes: From the SAL display for the reference code, record the count. Continue with the next step.

2. Go to the SST/DST display in the partition which reported the problem. Use STRSST if i5/OS is running; use function 21 if STRSST does not work; or IPL the partition to DST.
3. On the Start Service Tools Sign On display, type in a user ID with QSRV authority and password.
4. Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **System bus resources**.
5. Is there a resource name logged in the SAL entry?

No: Continue with the next step.

Yes: Go to step 12 on page 152.

6. Do you have a location for the I/O processor?

No: Record the Direct Select Address (DSA), word 7 of the reference code, from the SAL display. Then continue with the next step.

Yes: Go to step 10.

7. Return to the HSM System bus resources display.
8. Locate the I/O processor by performing the following:
 - a. Select **Display detail**.
 - b. Compare the DSA with the bus, card, and board information for the IOP.

Note: The card information on the HSM display is in decimal format. You must convert the decimal card information to hexadecimal format to match the DSA format.

Decimal format	Hexadecimal format
16	10
17	11
18	12
19	13
20	14
21	15
22	16
23	17

- c. Repeat this step until you find the IOP with the same DSA.
9. Select **Cancel**, and then go to step 13 on page 152.
 10. Locate the I/O processor in HSM by performing the following for each IOP:
 - a. Select **Associated packaging resource(s)** → **Display detail**.
 - b. Repeat until you find the IOP with the same location.
 11. Select **Cancel** → **Cancel** and go to step 13 on page 152.

12. Page forward until you find the multi-adapter bridge and IOP where the problem exists. Verify that the multi-adapter bridge and IOP are correct by matching the resource name(s) on the display with the resource name(s) in the SAL for the problem you are working on.
13. For the IOP you are working on, select **Resources associated with IOP** (if the I/O adapters are not already displayed).
14. If there is an IOA that is listed in any state other than "*operational*", then perform steps 15 through 18, starting with the disabled IOA by moving the cursor to the disabled IOA. Otherwise, move the cursor to the first IOA that is assigned to the IOP.
15. Select **Associated packaging resource(s) → Concurrent maintenance → Power off domain**.
Record the frame ID and location of the slot you are powering off. Did the domain power off successfully?
 - **No:** Choose from the following options:
 - If only one IOA was listed as failing, power down the system and replace the IOA. Re-IPL the system. If a different reference code occurred, go to "Start of call procedure" on page 2 and work that reference code. If there was no reference code, go to Verifying the repair. **This ends the procedure.**
 - If there were multiple failed IOAs and concurrent maintenance did not work on one, then move to the next failed IOA and repeat steps 15 through 18.
 - If concurrent maintenance does not work for multiple failed IOAs, this procedure will not be able to identify a failing I/O adapter. Return to the procedure that sent you here. **This ends the procedure.**
 - **Yes:** Perform "MABIP05" on page 135 and then return here and continue with the next step.
16. Did the IOP reset and IPL successfully?

No: This procedure will not be able to identify a *failing* I/O adapter. Return to the procedure that sent you here. **This ends the procedure.**

Yes: Check for the same failure that sent you to this procedure. Check the system control panel, the SAL for the partition that reported the problem, or the Work with partition status display for the partition that reported the problem. In the SAL, the count will increase if the reference code occurred again. Continue with the next step.
17. Did the same reference code occur after the IOP was reset and IPL'd?
 - **No:** Go to step 19.
 - **Yes:** Perform the following:
 - a. Go to the Hardware Service Manager display.
 - b. Go to Packaging Hardware Resources.
 - c. Power on the IOA by selecting **Power on domain**.
 - d. Reassign the IOA to the IOP.
 - e. Return to the HSL resource display, showing the IOP and associated resources.
 - f. Continue with the next step.
18. Are there any other IOA, assigned to the IOP, that you have not already powered off and on?

No: Go to step 21 on page 153.

Yes: Move the cursor to another IOA assigned to the IOP, choosing IOAs with a status of "*unknown*" or "*disabled*" before moving on to IOAs with a status of "*operational*". Go to step 15.
19. The failing IOA is located. Exchange the I/O adapter that you just powered off. Use the location you recorded in step 15 to locate the IOA.
20. Power on the IOA that you just exchanged. Does the same reference code that sent you to this procedure still occur?

Yes: The IOA is **not** the failing item. Remove the IOA and reinstall the original IOA. Continue with the next step.

No: You have exchanged the failing IOA. Go to “Verifying a high-speed link, system PCI bus, or a multi-adapter bridge repair” on page 111. **This ends the procedure.**

21. No failing IOAs were identified. Return to the procedure that sent you here. **This ends the procedure.**

MABIP02:

Use this procedure to determine if the multi-adapter bridge is failing when the symbolic FRU PIOCARD is in the failing item list, with other failing items that have a multi-adapter bridge as a component.

About this task

The procedure will start with the failing item list for the SRC that sent you here. It will determine if PIOCARD should be removed from the failing item list that you are working in.

Use the Service Action Log (SAL) to check for other errors under the same multi-adapter bridge. See “Using the Service Action Log” on page 32 for details.

1. Were you able to obtain a location for the PIOCARD FRU from the SAL?

Yes: Go to step 5.

No: Find the SRC in the SAL and record the Direct Select Address (DSA) in word 7. See “Breaking down a RIO/HSL or PCI bus reference code” on page 95 to find the DSA in the SRC. Then continue with the next step.

2. Record the Bus number (**BBBB** part) of the DSA and the Multi-adapter bridge number of the DSA. The multi-adapter bridge number is the first character of the card identifier part (**Cc**) in the DSA. See “Breaking down a RIO/HSL or PCI bus reference code” on page 95 to find the DSA in the SRC.
3. Go to “MABIP53” on page 145 to determine the location of the PCI I/O Card in the failing item list. Return here and continue with the next step.
4. Using the card position table for the frame or I/O unit type that you recorded in “MABIP53” on page 145, determine which of the card positions within the frame or I/O unit are controlled by the same multi-adapter bridge that is controlling the PCI I/O card for which you determined the location in step 3. See “Card positions” on page 98. A card position is controlled by the same multi-adapter bridge if it has the same bus number and multi-adapter bridge number as the PCI I/O Card that you located in step 3. Record the card position and the DSA from the card position table for each card position that is controlled by the same multi-adapter bridge.
5. Look in the SAL for other failures in the same I/O unit that are located in any of the card positions that either you recorded in step 4 or that are listed in the SAL with the PIOCARD FRU.
6. Are there any other failures within the same I/O unit that correspond with any of the card positions that you recorded in step 4 or that are listed in the SAL with the PIOCARD FRU?

No: Use the failing item list that you were using when you started this procedure.

Yes: The multi-adapter bridge is failing. Remove symbolic FRU PIOCARD from the list of failing items, it is not the failing FRU.

MABIP03:

Use this procedure to isolate a failing I/O processor or I/O adapter under a multi-adapter bridge.

About this task

The PCI cards will all be in a PCI bridge set. The serviceable event view you are working with may have all the PCI adapter locations for the PCI bridge set listed. The procedure will iterate through each IOP under the multi-adapter bridge, powering each one off, and then resetting the multi-adapter bridge. This process will be repeated until the failing part is isolated.

1. Does the system IPL to DST?

- **Yes:** Go to the SST/DST display in the partition which reported the problem:
 - If i5/OS is running, use STRSST.
 - If STRSST does not work, use function 21.
 - Or IPL the partition to DST.

Then, continue with the next step.

- **No:** Perform “MABIP04” on page 155. **This ends the procedure.**
2. On the Start Service Tools Sign On display, type in a user ID with service authority and password.
 3. Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **System bus resources**.
 4. The resource name may be in the serviceable event view or you may have determined the resource name already in another procedure. Do you have the resource name where the problem was reported?
 - **Yes:** Continue with the next step.
 - **No:** Perform the following:
 - a. Record the bus number, which is the first four characters of word 7 in the SRC.
 - b. Convert the bus number from hexadecimal to decimal format using a calculator or similar tool that provides a conversion function.
 - c. Select **Display Details** for each system bus until you locate the bus with a matching decimal bus number. The multi-adapter bridge that reported the problem is a resource on that bus. Continue with the next step.
 5. Page forward until you find the multi-adapter bridge where the problem was reported (for help with identifying the multi-adapter bridge from reference code, see “DSA translation” on page 96). Verify that the multi-adapter bridge is the correct one by matching the resource name on the display with the resource name in the Service Action Log (SAL) for the problem that you are working on.
 6. Select **Include non-reporting resources**.
 7. Move the cursor to the first IOP under the multi-adapter bridge.
 8. For each IOP that is under the multi-adapter bridge that you are working on, select **Associated packaging resource(s)** → **Display detail**.
 9. Record the location of the I/O processor (IOP).
 10. Select **Cancel** → **Cancel**.
 11. Select **Resources associated with IOP**.
 12. For each I/O adapter under the IOP, perform the following:
 - a. Select **Associated packaging resource(s)** → **Display detail**.
 - b. Record the location. Then continue with the next step.
 13. Perform the following:
 - a. Power off the frame or expansion unit (see Powering on and powering off).
 - b. Remove one of the IOPs and all of its IOAs.
 - c. Power on the frame or expansion unit (see Powering on and powering off).

Check for the same failure that brought you to this procedure. Check the system control panel, the Service Action Log (SAL) for the partition which reported the problem, or the Work with partition status display for the partition that reported the problem. Did the same SRC appear after the frame or expansion unit was powered on?

 - Yes:** Continue with the next step.
 - No:** Go to step 15 on page 155.
 14. Perform the following:
 - a. Power on the frame or expansion unit (see Powering on and powering off).
 - b. Return to the System bus resources display showing the multi-adapter bridge and the associated resources.

Is there another IOP under the multi-adapter bridge?

No: Go to step 17.

Yes: Go to step 13 on page 154.

15. The failing item is either the I/O processor or one of the I/O adapters that it controls. Perform the following:
 - a. Reinstall the IOP and I/O adapters that you just removed.
 - b. Perform “MABIP06” on page 136.
 - c. If you are unable to identify a failing I/O adapter with “MABIP06” on page 136, then return here and continue with the next step in this procedure.
16. Perform the following:
 - a. Exchange the I/O processor that you identified in step 15.
 - b. Power on the frame or expansion unit (see Powering on and powering off).

Does the same SRC that sent you to this procedure occur?

No: The failing item was the IOP that you just exchanged. Reinstall all of the other IOPs and I/O adapters that you removed during this procedure. Go to “Verifying a high-speed link, system PCI bus, or a multi-adapter bridge repair” on page 111. **This ends the procedure.**

Yes: The failing item is the FRU containing the multi-adapter bridge which controls this IOP. Continue with the next step.

17. There are no failing IOPs. The failing item is the FRU containing the multi-adapter bridge that controls this IOP. Perform the following:
 - a. Power off the system or expansion unit that you are working in (see Powering on and powering off).
 - b. Exchange the FRU containing the multi-adapter bridge using symbolic FRU “MA_BRDG” on page 705.
 - c. Power on the system or expansion unit that you are working in (see Powering on and powering off).

Does the same SRC that sent you to this procedure occur?

No: The failing item was the multi-adapter bridge FRU that you just exchanged. Reinstall all of the other IOPs and I/O adapters that you removed during this procedure. Go to “Verifying a high-speed link, system PCI bus, or a multi-adapter bridge repair” on page 111. **This ends the procedure.**

Yes: Contact your next level of support. **This ends the procedure.**

MABIP04:

Use this procedure to isolate a failing PCI I/O processor (IOP) card from a reference code, when the system or logical partition will not IPL.

About this task

Attention: The exchange procedure of all FRUs in this procedure must be performed using dedicated maintenance.

1. Determine the PCI bridge set by performing the following:
 - a. Record the bus number (BBBB), the multi-adapter bridge number (C), and the multi-adapter bridge function number (c) from the Direct Select Address (DSA) in word 7 of the reference code in the SAL entry (see “DSA translation” on page 96 for help in determining these values).
 - b. Use the bus number that you recorded and the System Configuration Listing, or ask the customer, to determine what frame the bus is in. Record the frame type where the bus is located.
 - c. The PCI bridge set is the group of card positions controlled by the same multi-adapter bridge on the bus that you recorded. Use the System Configuration Listing, the card position table for the

frame type that you recorded, the bus number, and the multi-adapter bridge number to determine the PCI bridge set where the failure occurred.

- d. Print out the Installed features in a PCI bridge set form to use in the following steps.
 - e. Using the card position table, record the PCI bridge set card positions and multi-adapter bridge function numbers in the form.
 - f. Examine the PCI bridge set in the frame, and record the information in the form for all of the positions with IOP and IOA cards installed in them.
 - g. In the form, start at the top row and search down the "IOP" or "IOA" column (increasing multi-adapter bridge function numbers) and mark each IOP with an "X" until you hit the bottom of the column. The IOPs that you marked with "X" are all under the control of the multi-adapter bridge indicated in the DSA.
2. Did the reference code appear on the system control panel (this would happen if the system does not have multiple partitions)?

No: When this procedure instructs you to power off and power on the system or partition, power off or power on **only** the partition that reported the problem. Then use HSM concurrent maintenance to power off the card positions that you are instructed to work with. The exchange procedures for those positions will guide you through the HSM concurrent maintenance functions. This procedure will guide you to the correct exchange procedure for each card position that you are instructed to work with. Continue with the next step.

Yes: This procedure instructs you to power off and power on the system or partition with the problem. Perform that function as you would normally power off and power on the system. Continue with the next step.

3. Power off the system or partition.
4. Remove all the IOPs you marked with an "X" and all the IOAs in the form. Be sure to record the card position of each IOP and IOA so that you can reinstall it in the same position later. To determine the exchange procedures for the IOPs and IOAs, locate the card positions in the FRU locations and failing items table for the frame type you recorded (see Finding part locations).

5. Power on the system or partition.

Does the reference code or failure that sent you to this procedure occur?

No: Continue with the next step.

Yes: The problem is the multi-adapter bridge. Continue with step 13 on page 157.

6. Starting at the empty card position with the lowest multi-adapter bridge function number from the form, reinstall, in their original positions, one of the IOPs and all the IOAs between it and the next IOP.

7. Power on the system or partition. Does the reference code or failure that sent you to this procedure occur?

Yes: The IOP that you just installed is the failing FRU. Continue with the next step.

No: Power off the system or partition. Repeat step 6 for another one of the I/O processor cards that you removed. If you have reconnected all of the IOPs and the reference code or failure that sent you to this procedure does not occur, the problem is intermittent (see "Intermittent problems" on page 71). **This ends the procedure.**

8. Power off the system or partition.

9. Exchange the I/O processor card you last installed. Be sure to install the new I/O processor card in the same position.

10. Power on the system or partition.

Does the reference code or failure that sent you to this procedure occur?

No: Power off the system or partition. Then continue with the next step.

Yes: Remove the IOP that you just installed and replace the original IOP in its original position. Perform "MABIP07" on page 138. **This ends the procedure.**

11. Reinstall, in their original positions, the remaining IOP and IOA cards that you removed.

Does the reference code or failure that sent you to this procedure occur?

Yes: Call your next level of support. **This ends the procedure.**

No: Continue with the next step.

12. Does a different reference code occur?

Yes: Follow the service procedures for the new reference code (go to “Start of call procedure” on page 2). **This ends the procedure.**

No: Perform “Verifying a high-speed link, system PCI bus, or a multi-adapter bridge repair” on page 111. **This ends the procedure.**

13. Power off the system or partition.

14. Determine which FRU contains the multi-adapter bridge that controls the IOP in the DSA by locating the card position table for the frame type that you recorded. Using the multi-adapter bridge number that you recorded, search for the multi-adapter bridge function number “F” in the card position table to determine the card position of the multi-adapter bridge’s FRU.

15. Have you already exchanged the multi-adapter bridge’s FRU?

No: Remove the IOP that you exchanged. You will be reinstalling the original IOP later in this procedure. Then continue with the next step.

Yes: Call you next level of support. **This ends the procedure.**

16. Exchange the card multi-adapter bridge’s FRU at the card position that you determined for it. To determine the exchange procedure for the multi-adapter bridge’s FRU, locate the FRU’s card position in the FRU locations and failing items table for the frame type that you recorded (see Finding part locations).

17. Install all IOPs and IOAs in their original positions.

18. Power on the system or partition.

Does the reference code or failure that sent you to this procedure occur?

No: Perform “Verifying a high-speed link, system PCI bus, or a multi-adapter bridge repair” on page 111. **This ends the procedure.**

Yes: Call your next level of support. **This ends the procedure.**

Communication isolation procedure

This topic contains the procedure necessary to isolate a communications failure. Please read and observe the following warnings when using this procedure.

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

COMIP01:

This procedure helps you to isolate problems with the communications input/output adapter (IOA) or input/output processor (IOP).

About this task

Please read and observe the danger notices in “Communication isolation procedure” on page 157 before proceeding with this procedure.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions.
2. To determine which communications hardware to test, use the SRC from the problem summary form, or problem log. For details on line description information, see the Starting a Trace section of Work with communications trace.
3. Perform the following:
 - a. Vary off the resources.

- b. On the Start a Service Tool display, select **Hardware service manager** → **Logical hardware resources** → **System bus resources** → **Resources associated with IOP** for the attached IOPs in the list until you display the suspected failing hardware.
 - c. Select **Verify** on the hardware you want to test. The **Verify** option may be valid on the IOP, IOA, or port resource. When it is valid on the IOP resource, any replaceable memory will be tested. Communications IOAs are tested by using the **Verify** option on the port resource.
4. Run the IOA/IOP test(s). This may include any of the following:
- Adapter internal test
 - Adapter wrap test (requires adapter wrap plug - available from your hardware service provider).
 - Processor internal test
 - Memory test
 - System port test

Does the IOA/IOP test(s) complete successfully?

No: The problem is in the IOA or IOP. If a verify test identified a failing memory module, replace the memory module. On multiple card combinations, exchange the IOA card before exchanging the IOP card. Exchange the failing hardware. See Removing and replacing parts. **This ends the procedure.**

Yes: The IOA/IOP is good. Do NOT replace the IOA/IOP. Continue with the next step.

5. Before running tests on modems or network equipment, the remaining local hardware should be verified. Since the IOA/IOP test(s) have completed successfully, the remaining local hardware to be tested is the external cable.

Is the IOA adapter type 2838, with a UTP (unshielded twisted pair) external cable?

Yes: Continue with the next step.

No: Go to step 8.

6. Is the RJ-45 connector on the external cable correctly wired according to the EIA/TIA-568A standard? That is,

- Pins 1 and 2 using the same twisted pair,
- Pins 3 and 6 using the same twisted pair,
- Pins 4 and 5 using the same twisted pair,
- Pins 7 and 8 using the same twisted pair.

Yes: Continue with the next step.

No: Replace the external cable with correctly wired cable. **This ends the procedure.**

7. Do the Line Speed and Duplex values of the line description (DSPLINETH) match the corresponding values for the network device (router, hub or switch) port?

No: Change the Line Speed and/or Duplex value for either the line description or the network device (router, hub or switch) port. **This ends the procedure.**

Yes: Go to step 9 on page 160.

8. Is the cable wrap test option available as a *Verify* test option for the hardware you are testing?

- **Yes:** Verify the external cable by running the cable wrap test. A wrap plug is required to perform the test. This plug is available from your hardware service provider. Wrap plug part numbers can be found in Miscellaneous parts.

Does the cable wrap test complete successfully?

Yes: Continue with the next step.

No: The problem is in the cable. Exchange the cable. **This ends the procedure.**

- **No:** The communications IOA/IOP is not the failing item. One of the following could be causing the problem.
 - External cable.
 - The network.
 - Any system or device on the network

- The configuration of any system or device on the network.
- Intermittent problems on the network.
- A new SRC - go to “Start of call procedure” on page 2 or ask your next level of support for assistance.

Work with the customer or your next level of support to correct the problem. **This ends the procedure.**

9. All the local hardware is good. This completes the local hardware verification. The communications IOA/IOP and/or external cable is not the failing item.

One of the following could be causing the problem:

- The network
- Any system or device on the network
- The configuration of any system or device on the network
- Intermittent problems on the network
- A new SRC - go to “Start of call procedure” on page 2 or ask your next level of support for assistance

Work with the customer or your next level of support to correct the problem. **This ends the procedure.**

Disk unit isolation procedure

This topic contains the procedure to isolate a failure in a disk unit.

Please read and observe all safety procedures before servicing the system and while performing the disk unit isolation procedure.

Attention: Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see Powering on and powering off) before removing, exchanging, or installing a field-replaceable unit (FRU).

DSKIP03:

Use this procedure to determine the reference code, which is used to isolate a problem and to determine the failing device.

About this task

Note: When exchanging a disk unit, go to the Disk unit recovery procedures.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions.
2. Look in the Service action log (see The Service Action Log (SAL)) for other errors logged at or around the same time as the 310x SRC. If no entries appear in the service action log, use the product activity log (see Product activity log). Use the other SRCs to correct the problem (see List of system reference codes) before performing an IPL. Contact your next level of support as necessary for assistance with SCSI bus problem isolation. If the problem is not corrected, continue with the next step.
3. Perform an IPL to dedicated service tool (DST). See Dedicated Service Tools (DST).

Does an SRC appear on the control panel?

- **Yes:** Go to step 6 on page 161.
- **No:** Does either the Disk Configuration Error Report, the Disk Configuration Attention Report, or the Disk Configuration Warning Report display appear?

Yes: Continue with the next step.

- No:** Go to step 5.
4. Does one of the following messages appear in the list?
- Missing disk units in the configuration
 - Missing mirror protection disk units in the configuration
 - Device parity protected units in exposed mode
 - **No:** Continue with the next step.
 - **Yes:** Select option 5, press **F11**, and then press **Enter** to display the details.
If all of the reference codes are 0000, go to “LICIP11” on page 211 and use cause code 0002. If any of the reference codes are not 0000, go to step 6 and use the reference code that is not 0000.
- Note:** Use the characters in the *Type* column to find the correct reference code table.
5. Does the Display Failing System Bus display appear?
- **No:** Look at all the Product activity logs by selecting **Product activity log** under DST (see Dedicated Service Tools (DST)). If there is more than one SRC logged, use an SRC that is logged against the IOP or IOA.
Is an SRC logged as a result of this IPL?
Yes: Continue with the next step.
No: You cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure. See the failing item list for this reference code in the List of system reference codes. If the failing item list contains FI codes, see “Using failing item codes” on page 598 to help determine part numbers and location in the system. **This ends the procedure.**
 - **Yes:** Use the reference code that is displayed under *Reference Code* to correct the problem. **This ends the procedure.**
6. Record the SRC on the Problem summary form (see Problem reporting forms).
Is the SRC the same one that sent you to this procedure?
Yes: Continue with the next step.
No: Go to “Start of call procedure” on page 2 to correct the problem. **This ends the procedure.**
7. Perform the following:
- a. Power off the system or expansion tower. See Powering on and powering off.
 - b. See “Using failing item codes” on page 598 to find the devices identified by FI code FI01106.
 - c. Disconnect one of the disk units, (other than the load-source disk unit), the tape units, or the optical storage units that are identified by FI code FI01106. Slide it partially out of the system.
- Note:** Do not disconnect the load-source disk unit, although FI code FI01106 may identify it.
8. Power on the system or the expansion tower that you powered off.
Does an SRC appear on the control panel?
No: Continue with the next step.
Yes: Go to step 12 on page 162.
9. Does either the Disk Configuration Error Report, the Disk Configuration Attention Report, or the Disk Configuration Warning Report display appear with one of the following listed?
- Missing disk units in the configuration
 - Missing mirror protection disk units in the configuration
 - Device parity protected units in exposed mode
 - Yes:** Continue with the next step.
 - No:** Go to step 11 on page 162.
10. Select option 5, press **F11**, and then press **Enter** to display details.
Does an SRC appear in the Reference Code column?

No: Continue with the next step.

Yes: Go to step 12.

11. Look at all the Product activity logs by selecting **Product activity log** under DST.

Is an SRC logged as a result of this IPL?

- **Yes:** Continue with the next step.
- **No:** The last device you disconnected is the failing item. Exchange the failing device and reconnect the devices that were disconnected previously.

Note: Before exchanging a disk drive, you should attempt to save customer data. See the i5/OS data recovery information.

This ends the procedure.

12. Record the SRC on the Problem summary form. See Problem reporting forms.

Is the SRC the same one that sent you to this procedure?

- **No:** Continue with the next step.
- **Yes:** The last device you disconnected is not the failing item.
 - a. Leave the device disconnected and go to step 7 on page 161 to continue isolation.
 - b. If you have disconnected all devices that are identified by FI code FI01106 except the load-source disk unit, reconnect all devices. Then, go to step 15.

13. Does the Disk Configuration Error Report, the Disk Configuration Attention Report, or the Disk Configuration Warning Report display appear with one of the following listed?

- Missing disk units in the configuration
- Missing mirror protection disk units in the configuration
- Device parity protected units in exposed mode

Yes: Continue with the next step.

No: Use the reference code to correct the problem. **This ends the procedure.**

14. Select option 5, press **F11**, and then press **Enter** to display details.

Are all the reference codes 0000?

- **No:** Use the reference code to correct the problem. **This ends the procedure.**
- **Yes:** The last device you disconnected is the failing item.
 - a. Reconnect all devices except the failing item.
 - b. Before exchanging a disk unit, go to the disk unit go to the Removing and replacing parts for the model you are working on. **This ends the procedure.**

15. Was disk unit 1 (the load-source disk unit) a failing item that FI code FI01106 identified?

Yes: The failing items that FI code FI01106 identified are not failing. The load-source disk unit may be failing. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in the List of system reference codes. If the failing item list contains FI codes, see "Using failing item codes" on page 598 to help determine part numbers and location in the system. **This ends the procedure.**

No: The failing items that FI code FI01106 identified are not failing. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure. See the failing item list for this reference code in the List of system reference codes. If the failing item list contains FI codes, see "Using failing item codes" on page 598 to help determine part numbers and location in the system. **This ends the procedure.**

High performance switch (HPS) isolation procedures

Contains the procedures necessary to isolate a high performance switch (HPS) failure.

Please read and observe the following warnings when using these procedures.

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

These procedures will help you isolate problems with a high performance switch.

HPS0000:

Use this procedure to isolate high performance switch (HPS) network device problems.

1. Have you been directed here because you are isolating a Serviceable Event reported in Service Focal Point?
No: Go to step 3 on page 164.
Yes: Continue with step 2.
2. **Service Focal Point isolation:** If you have come to this procedure while trying to repair a Serviceable Event presented in Service Focal Point, perform the following actions:
 - a. From Service Focal Point, record the 8 digit reference code that begins with BB.
 - b. Look up the recorded reference code and follow the procedure in Appendix A, section "BBXXXXXX FRU identification codes" in the *High Performance Switch Planning, Installation, and Service for eServer p5 servers* manual.

- c. After you have fixed the problem, be sure that you provide comments and information regarding FRU replacements for the Serviceable Event in Service Focal Point before you close it. **This ends the procedure.**
3. **Non-Service Focal Point isolation:** If you have come to this procedure while trying to isolate a problem that was reported outside of Service Focal Point, perform the following actions:
 - a. Follow the procedure in Chapter 7. Maintenance Analysis Procedures (MAPs) in the *High Performance Switch Planning, Installation, and Service for eServer p5 servers* manual. **This ends the procedure.**
 - b. Follow the procedures for Starting a Service Call in the *High Performance Switch Planning, Installation, and Service for eServer p5 servers* manual. **This ends the procedure.**

HPSA001:

Use this procedure to isolate High Performance Switch SNI reported faults.

1. From Service Focal Point, record the 8 digit reference code that begins with BB.
2. Look up the recorded reference code and follow the procedure in Appendix A, section "BBXXXXXX FRU identification codes" in the *High Performance Switch Planning, Installation, and Service for eServer p5 servers* manual. **This ends the procedure.**

HPSB001:

Use this procedure to isolate power subsystem problems reported through the HPS Network Management path.

1. Does the 8 digit reference code begin with 101F?
Yes: Refer to Appendix A, section "101FXXXX FRU identification codes" in the *High Performance Switch Planning, Installation, and Service for eServer p5 servers* manual. **This ends the procedure.**
No: Go to 2.
2. Does the 8 digit reference code begin with 101A or 101B?
Yes: Go to MAP 1520 Power in the *High Performance Switch Planning, Installation, and Service for eServer p5 servers* manual. **This ends the procedure.**
No: Go to Starting a Service Call in the *High Performance Switch Planning, Installation, and Service for eServer p5 servers* manual. **This ends the procedure.**

HPSS001:

Use this procedure to isolate High Performance Switch-reported faults.

1. From Service Focal Point, record the 8 digit reference code that begins with BB.
2. Look up the recorded reference code and follow the *High Performance Switch Planning, Installation, and Service for eServer p5 servers* manual. **This ends the procedure.**

Intermittent isolation procedures

These procedures help you to correct an intermittent problem.

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

Use these procedures to correct an intermittent problem, if other problem analysis steps or tables sent you here. Only perform the procedures that apply to your system.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion unit where the FRU is located. See Powering on and powering off before removing, exchanging, or installing a field-replaceable unit (FRU).

Use the procedure below to identify intermittent problems and the associated corrective actions.

INTIP03:

Use this procedure to isolate problems with external noise on AC voltage lines.

About this task

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

Electrical noise on incoming ac voltage lines can cause various system failures. The most common source of electrical noise is lightning.

1. Ask the customer if an electrical storm was occurring at the time of the failure to determine if lightning could have caused the failure.

Could lightning have caused the failure?

No: Go to step 3 on page 167.

Yes: Continue with the next step.

2. Determine if lightning protection devices are installed on the incoming ac voltage lines where they enter the building. There must be a dedicated ground wire from the lightning protection devices to earth ground.

Are lightning protection devices installed?

Yes: Continue with the next step.

No: Lightning may have caused the intermittent problem. Recommend that the customer install lightning protection devices to prevent this problem from recurring. **This ends the procedure.**

3. Have an installation planning representative perform the following:
 - a. Connect a recording ac voltage monitor to the incoming ac voltage lines of the units that contain the failing devices with reference to ground.
 - b. Set the voltage monitor to start recording at a voltage slightly higher than the normal incoming ac voltage.

Does the system fail again with the same symptoms?

No: This ends the procedure.

Yes: Continue with the next step.

4. Look at the recording and see if the voltage monitor recorded any noise when the failure occurred.
Did the monitor record any noise when the failure occurred?

Yes: Review with the customer what was happening external to the system when the failure occurred. This may help you to determine the source of the noise. Discuss with the customer what to do to remove the noise or to prevent it from affecting the server. **This ends the procedure.**

No: Perform the next intermittent isolation procedure listed in the *Isolation procedure* column. **This ends the procedure.**

INTIP05:

Use this procedure to isolate problems with external noise on twinaxial cables.

About this task

Electrical noise on twinaxial cables that are not installed correctly may affect the twinaxial workstation I/O processor card.

Examples of this include open shields on twinaxial cables, and station protectors that are not being installed where necessary.

Check for the following on the system:

- There must be no more than 11 connector breaks in a twinaxial cable run.
- Station protectors must be installed (in pairs) where a cable enters or leaves a building.
- There can only be two station protectors for each twinaxial run.
- There is a maximum of seven devices (with addresses 0-6) for each cable run.
- There is a maximum cable length of 1524 meters (5000 feet) for each port.
- All cable runs must be ended (terminated).
- Disconnect all twinaxial cables that are not used.
- Remove any cause of electrical noise in the twinaxial cables.
- All workstations must be grounded.

This ends the procedure.

INTIP07:

Use this procedure to lessen the effects of electrical noise (electromagnetic interference, or EMI) on the system.

1. Ensure that air flow cards are installed in all adapter card slots that are not used.
2. Keep all cables away from sources of electrical interference, such as ac voltage lines, fluorescent lights, arc welding equipment, and radio frequency (RF) induction heaters. These sources of electrical noise can cause the system to become powered off.
3. If you have an expansion unit, ensure that the cables that attach the system unit to the expansion unit are seated correctly.

Note: If the failures occur when people are close to the system or machines that are attached to the system, the problem may be electrostatic discharge (ESD).

4. Have an **installation planning representative** use a radio frequency (RF) field intensity meter to determine if there is an unusual amount of RF noise near the server. You also can use it to help determine the source of the noise. **This ends the procedure.**

INTIP08:

Use this procedure to ensure that the system is electrically grounded correctly.

1. Have an **installation planning representative** or an electrician (when necessary), perform the following steps.
2. Power off the server and the power network branch circuits before performing this procedure.
3. Ensure the safety of personnel by making sure that all electrical wiring in the United States meets National Electrical Code requirements.
4. Check *all* system receptacles to ensure that each one is wired correctly. This includes receptacles for the server and all equipment that attaches to the server, including workstations. Do this to determine if a wire with primary voltage on it is swapped with the ground wire, causing an electrical shock hazard.
5. For each unit, check continuity from a conductive area on the frame to the ground pin on the plug. Do this at the end of the mainline ac power cable. The resistance must be 0.1 ohm or less.
6. Ground continuity must be present from each unit receptacle to an effective ground. Therefore, check the following:
 - The ac voltage receptacle for each unit must have a ground wire connected from the ground terminal on the receptacle to the ground bar in the power panel.
 - The ground bars in all branch circuit panels must be connected with an insulated ground wire to a **ground point**, which is defined as follows:
 - The nearest available metal cold water pipe, only if the pipe is effectively grounded to the earth (see *National Electric Code* Section 250-81, in the United States).
 - The nearest available steel beams in the building structure, only if the beam is effectively grounded to the earth.
 - Steel bars in the base of the building or a metal ground ring that is around the building under the surface of the earth.
 - A ground rod in the earth (see *National Electric Code* Section 250-83, in the United States).

Note: For installations in the United States only, by National Electrical Code standard, if more than one of the preceding grounding methods are used, they must be connected together electrically. See *National Electric Code* Section 250, for more information on grounding.

- The grounds of all separately derived sources (uninterruptable power supply, service entrance transformer, system power module, motor generator) must be connected to a **ground point** as defined above.
- The service entrance ground bar must connect to a **ground point** as defined above.
- All ground connections **must be tight**.
- Check continuity of the ground path for each unit that is using an ECOS tester, Model 1023-100. Check continuity at each unit receptacle, and measure to the **ground point** as defined above. The total resistance of each ground path must be 1.0 ohm or less. If you cannot meet this requirement, check for faults in the ground path.
- Conduit is sometimes used to meet wiring code requirements. If conduit is used, the branch circuits must still have a green (or green and yellow) wire for grounding as stated above.

Note: The ground bar and the neutral bar must never be connected together in branch circuit power panels.

The ground bar and the neutral bar in the power panels that make up the electrical power network for the server must be connected together. This applies to the first electrically isolating unit that is found in the path of electrical wiring from the server to the service entrance power panel. This isolating unit is sometimes referred to as a **separately derived source**. It can be an uninterruptible power supply, the system power module for the system, or the service entrance transformer. If the building has none of the above isolating units, the ground bar and the neutral bar must be connected together in the service entrance power panel.

7. Look inside all power panels to ensure the following:
 - There is a separate ground wire for each unit.
 - The green (or green and yellow) ground wires are connected only to the ground bar.
 - The ground bar inside each power panel is connected to the frame of the panel.
 - The neutral wires are connected only to the neutral bar.
 - The ground bar and the neutral bar are not connected together, except as stated in step 6 on page 168.
8. For systems with more than one unit, ensure that the ground wire for each unit is not connected from one receptacle to the next in a string. Each unit must have its own ground wire, which goes to the power source.
9. Ensure that the grounding wires are insulated with green (or green and yellow) wire at least equal in size to the phase wires. The grounding wires also should be as short as possible.
10. If extension-mainline power cables or multiple-outlet power strips are used, make sure that they must have a three-wire cable. One of the wires must be a ground conductor. The ground connector on the plug must not be removed. This applies to any extension mainline power cables or multiple-outlet power strips that are used on the server. It also applies for attaching devices such as personal computers, workstations, and modems.

Note: Check all extension-mainline power cables and multiple-outlet power strips with an ECOS tester and with power that is applied. Ensure that no wires are crossed (for example, a ground wire crossed with a wire that has voltage on it).

11. For more information on grounding, see Power quality in the Planning topic. **This ends the procedure.**

INTIP09:

Use this procedure to check the AC electrical power for the system.

1. Have an **installation planning representative** or an electrician (when necessary), perform the following steps.
2. Power off the server and the power network branch circuits before performing this procedure (see Powering on and powering off).
3. To ensure the safety of personnel, all electrical wiring in the United States must meet National Electrical Code requirements.
4. Check **ALL** system receptacles to ensure that each is wired correctly. This includes receptacles for the server and all equipment that attaches to the server, including workstations. Do this to determine if a wire with primary voltage on it has been swapped with the ground wire, causing an electrical shock hazard.
5. When three-phase voltage is used to provide power to the server, correct balancing of the load on each phase is important. The units should be connected so that all three phases are used equally.
6. The power distribution neutral must return to the "separately derived source" (uninterruptible power supply, service entrance transformer, system power module, motor generator) through an insulated wire that is the same size as the phase wire or larger.
7. The server and its attached equipment should be the only units that are connected to the power distribution network that the server gets its power.

8. The equipment that is attached to the server, such as workstations and printers, must be attached to the power distribution network for the server when possible.
9. Check all circuit breakers in the network that supply ac power to the server as follows:
 - Ensure that the circuit breakers are installed tightly in the power panel and are not loose.
 - Feel the front surface of each circuit breaker to detect if it is warm. A warm circuit breaker may be caused by:
 - The circuit breaker that is not installed tightly in the power panel.
 - The contacts on the circuit breaker that is not making a good electrical connection with the contacts in the power panel.
 - A defective circuit breaker.
 - A circuit breaker of a smaller current rating than the current load which is going through it.
 - Devices on the branch circuit which are using more current than their rating.
10. Equipment that uses a large amount of current, such as: Air conditioners, copiers, and FAX machines, should not receive power from the same branch circuits as the system or its workstations. Also, the wiring that provides ac voltage for this equipment should not be placed in the same conduit as the ac voltage wiring for the server. The reason for this is that this equipment generates ac noise pulses. These pulses can get into the ac voltage for the server and cause intermittent problems.
11. Measure the ac voltage to each unit to ensure that it is in the normal range.
Is the voltage outside the normal range?
No: Continue with the next step.
Yes: Contact the customer to have the voltage source returned to within the normal voltage range.
12. *The remainder of this procedure is only for a server that is attached to a separately derived source.*
 Some examples of separately derived sources are an uninterruptable power supply, a motor generator, a service entrance transformer, and a system power module.
 The ac voltage system must meet all the requirements that are stated in this procedure and also all of the following:

Notes:

- a. The following applies to an uninterruptable power supply, but it can be used for any separately derived source.
- b. System upgrades **must not** exceed the power requirements of your derived source.

The uninterruptable power supply must be able to supply the peak repetitive current that is used by the system and the devices that attach to it. The uninterruptable power supply can be used over its maximum capacity if it has a low peak repetitive current specification, and the uninterruptable power supply is already fully loaded. Therefore, a de-rating factor for the uninterruptable power supply must be calculated to allow for the peak-repetitive current of the complete system. To help you determine the de-rating factor for an uninterruptable power supply, use the following:

Note: The peak-repetitive current is different from the "surge" current that occurs when the server is powered on.

The de-rating factor equals the crest factor multiplied by the RMS load current divided by the peak load current where the:

- Crest factor is the peak-repetitive current rating of the uninterruptable power supply that is divided by the RMS current rating of the uninterruptable power supply. If you do not know the crest factor of the uninterruptable power supply, assume that it is 1.414.
- RMS load current is the steady state RMS current of the server as determined by the power profile.

- Peak load current is the steady state peak current of the server as determined by the power profile.

For example, if the de-rating factor of the uninterruptable power supply is calculated to be 0.707, then the uninterruptable power supply must not be used more than 70.7% of its kVA-rated capacity. If the kVA rating of the uninterruptable power supply is 50 kVA, then the maximum allowable load on it is 35.35 kVA (50 kVA multiplied by 0.707).

When a three-phase separately derived source is used, correct balancing of the load as specified in step 5 on page 169 is *critical*. If the load on any one phase of an uninterruptable power supply is more than the load on the other phases, the voltage on all phases may be reduced.

13. If the system is attached to an uninterruptable power supply or motor generator, then check for the following:
 - The system and the attached equipment should be the only items that are attached to the uninterruptable power supply or motor generator. Equipment such as air conditioners, copiers, and FAX machines should not be attached to the same uninterruptable power supply, or motor generator that the system is attached.
 - The system unit console and the Electronic Customer Support modem must get ac voltage from the same uninterruptable power supply or motor generator to which the system is attached. **This ends the procedure.**

INTIP14:

Use this procedure to isolate problems with station protectors.

About this task

Station protectors must be installed on all twinaxial cables that leave the building in which the server is located. This applies even if the cables go underground, through a tunnel, through a covered outside hallway, or through a skyway. Station protectors help prevent electrical noise on these cables from affecting the server.

1. Look at the Product Activity Log to determine what workstations are associated with the failure.
2. Determine if station protectors are installed on the twinaxial cables to the failing workstations.

Are station protectors installed on the twinaxial cables to the failing workstations?

Yes: Perform the next intermittent isolation procedure listed in the *Isolation procedure* column. **This ends the procedure.**

No: You may need to install station protectors on the twinaxial cables to the failing workstations. **This ends the procedure.**

INTIP16:

Use this procedure when you need to copy a main storage dump to give to your next level of support.

About this task

For some problems, performing a dump of main storage helps to analyze the problem. The data on the dump is analyzed by support personnel to determine the cause of the problem and how to correct it.

1. Copy the main storage dump to tape. See Copying a dump in the Troubleshooting topic.
2. Ask your next level of support to determine for assistance. **This ends the procedure.**

INTIP18:

Use this procedure to determine if one or more PTFs are available to correct this specific problem.

1. Ensure that all PTFs that relate to the problem have been installed.

Note: Ensure that the latest platform LIC fix has been installed before you exchange a service processor.

2. Contact your next level of support for more information. **This ends the procedure.**

INTIP20:

Use this procedure to analyze system performance problems.

1. Look in the Product Activity Log (PAL), ASM log, or HMC to determine if any hardware errors occurred at the same time that the performance problem occurred. Did any hardware problems occur at the same time that the performance problem occurred?

Yes: Go to “Start of call procedure” on page 2 and correct the hardware errors. **This ends the procedure.**

No: The performance problems are not related to hardware. Continue with the next step.

2. Perform the following steps:
 - a. Ask the customer if they have asked software support for any software PTFs that relate to this problem.
 - b. Recommend that the customer install a cumulative PTF package if they have not done so in the past three months.
 - c. Inform the customer that performance could possibly be improved by having Software Support analyze the conditions.
 - d. Inform the customer that your service provider has performance tools. Contact Software Support for more information. **This ends the procedure.**

INTIP24:

Use this procedure to collect data when the service processor reports a suspected intermittent problem.

About this task

It is important that you collect data for this problem so that the problem can be corrected. Use this procedure to collect the data.

There are several ways the system can display the SRC. Follow the instructions for the correct display method, defined as follows:

- If this SRC is displayed in the Product Activity Log (PAL) or ASM log, then record all of the SRC data words, save all of the error log data, and contact your next level of support to submit an APAR.
- If the control panel is displaying SRC data words scrolling automatically through control panel functions 11, 12 and 13, and the control panel user interface buttons are not responding, then perform “FSPSP02” on page 282 instead of using this procedure.
- If the SRC is displayed at the control panel, and the control panel user interface buttons respond normally, then record all of the SRC words.

Do not perform an IPL until you perform a storage dump of the service processor. To get a storage dump of the service processor, perform the following:

1. Record the complete system reference code (SRC) (functions 11 through 20) on the Problem reporting forms.
2. Perform a service processor dump. See Performing a main storage or platform dump in the Troubleshooting topic.
3. Is a display shown on the console?
 - **Yes:** Continue with the next step.
 - **No:** The problem is not intermittent. Choose from the following options:

- If you were sent here from Reference codes, return there and follow the procedure for a problem that is not intermittent.
 - If the problem continues, replace the service processor hardware. See symbolic FRU “SVCPROC” on page 757. **This ends the procedure.**
4. The problem is intermittent. Copy the IOP dump to tape. See Performing a main storage or platform dump in the Troubleshooting topic.
 5. Complete the IPL.
 6. Go to the “General intermittent problem checklist” on page 73 to find available program temporary fixes (PTFs) for this problem.
 7. If you need to apply a PTF, see Getting fixes in the Customer Service and support information. Then, return here and answer the following question.

Did you find and apply a PTF for this problem?

- **Yes: This ends the procedure.**
- **No:** Record the following information, and contact your next level of support.
 - The complete SRC you recorded in this procedure
 - The service processor dump to tape you obtained in step 4.
 - All known system symptoms:
 - How often the intermittent problem occurs
 - System environment (IPL, certain applications)
 - If necessary, other SRCs that you suspect relate to the problem
 - Information needed to write an LICTR. See Authorized Program Analysis Report (APAR). **This ends the procedure.**

I/O processor (IOP) isolation procedures

Use these procedures to isolate a failure in the multiple function I/O card.

Please read all safety procedures before servicing the system.

Attention: Unless instructed otherwise, always power off the system or expansion tower where the field replaceable unit (FRU) is located (see Powering on and powering off) before removing, exchanging, or installing a FRU.

Attention: Disconnecting the J15 and J16 cables will not prevent the system unit from powering on.

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

IOPIP01:

Use this procedure to perform an IPL to dedicated service tool (DST) to determine if the same reference code occurs.

About this task

If a new reference code occurs, more analysis may be possible with the new reference code. If the same reference code occurs, you are instructed to exchange the failing items.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions, before continuing with this procedure.
2. Was the IPL performed from disk (Type A or Type B)?
 - No: Continue with the next step.
 - Yes: Go to step 5 on page 175.
3. Perform the following:
 - a. Ensure that the IPL media is the correct version and level that are needed for the system model.

- b. Ensure that the media is not physically damaged.
- c. Choose from the following options to clean the IPL media:
 - If it is cartridge type optical media (for example, DVD), do not attempt to clean the media.
 - If it is non-cartridge type media (for example, CD-ROM), wipe the disc in a straight line from the inner hub to the outer rim. Use a soft, lint-free cloth or lens tissue. Always handle the disc by the edges to avoid finger prints.
 - If it is tape, clean the recording head in the tape unit. Use the correct Cleaning Cartridge Kit provided by your service provider.
4. Perform a Type D IPL in **Manual** mode.

Does a system reference code (SRC) appear on the control panel?

 - **No:** Go to step 8.
 - **Yes:** Is the SRC the same one that sent you to this procedure?

Yes: You cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure. Refer to the failing item column in the reference code list. See Reference codes for details. If the failing item list contains FI codes, see "Using failing item codes" on page 598 to help determine part numbers and location in the system. **This ends the procedure.**

No: A different SRC occurred. Use the new SRC to correct the problem. See "Start of call procedure" on page 2. **This ends the procedure.**
5. Perform an IPL to DST. See Performing an IPL to DST.

Does an SRC appear on the control panel?

No: Continue with the next step.

Yes: Go to step 10 on page 176.
6. Does either the Disk Configuration Error Report, the Disk Configuration Attention Report, or the Disk Configuration Warning Report display appear on the console?
 - **No:** Continue with the next step.
 - **Yes:** Select option 5, press **F11**, then press **Enter** to display the details. Then, choose from the following options:
 - If all of the reference codes are 0000, go to "LICIP11" on page 211 and use cause code 0002.
 - If any of the reference codes are not 0000, go to step 10 on page 176, and use the reference code that is not 0000.

Note: Use the characters in the *Type* column to find the correct reference code table.
7. Look at the product activity log. See "Using the product activity log" on page 34 for details.

Is an SRC logged as a result of this IPL?

Yes: Continue with the next step.

No: The problem cannot be isolated any more. Use the original SRC and exchange the failing items. Start with the highest probable cause of failure in the failing item list for this reference code in the Reference codes topic and Removing and replacing parts. If the failing item list contains FI codes, see "Using failing item codes" on page 598 to help determine part numbers and location in the system. **This ends the procedure.**
8. Does either the Disk Configuration Error Report, the Disk Configuration Attention Report, or the Disk Configuration Warning Report display appear on the console?
 - **Yes:** Continue with the next step.
 - **No:** Look at the product activity log. See "Using the product activity log" on page 34 for details.

Is an SRC logged as a result of this IPL?

Yes: Continue with the next step.

No: The problem is corrected. **This ends the procedure.**

9. Select option 5, press **F11**, then press **Enter** to display the details. Then, choose from the following options:
 - If all of the reference codes are 0000, go to “LICIP11” on page 211 and use cause code 0002.
 - If any of the reference codes are not 0000, continue with the next step and use the reference code that is not 0000.

Note: Use the characters in the *Type* column to find the correct reference code table.

10. Record the SRC on the Problem summary form. See the Problem reporting forms for details.
Are the SRC and unit reference code (URC) the same ones that sent you to this procedure?
Yes: Continue with the next step.
No: Use the new SRC or reference code to correct the problem. See the Reference code topic. **This ends the procedure.**
11. Perform the following steps:
 - a. Power off the system or expansion tower. See Powering on and powering off.
 - b. Exchange the FRUs in the failing item list for the SRC you have now. Start with the highest probable cause of failure in the failing item column in the reference code list. See the Reference code topic. Perform the remaining steps of this procedure after you exchange each FRU until you determine the failing FRU.

Note: If you exchange a disk unit, do not attempt to save customer data until instructed to do so in this procedure.

12. Power on the system or the expansion unit.
Does an SRC appear on the control panel?
No: Continue with the next step.
Yes: Go to step 15.
13. Does either the Disk Configuration Error Report, the Disk Configuration Attention Report, or the Disk Configuration Warning Report display appear on the console?
 - **Yes:** Continue with the next step.
 - **No:** Look at the product activity log. See “Using the product activity log” on page 34 for details.
Is an SRC logged as a result of this IPL?
 - **Yes:** Continue with the next step.
 - **No:** The last FRU you exchanged was failing.

Note: Before exchanging a disk unit, you should attempt to save customer data. Go to Disk unit recovery procedures before exchanging a disk unit.

This ends the procedure.

14. Select option 5, press **F11**, then press **Enter** to display the details. Then, choose from the following options:
 - If all of the reference codes are 0000, go to “LICIP11” on page 211 and use cause code 0002.
 - If any of the reference codes are not 0000, go to step 10, and use the reference code that is not 0000.
- Note:** Use the characters in the *Type* column to find the correct reference code table.
15. Record the SRC on the Problem summary form. See “Using the product activity log” on page 34 for details.
Is the SRC the same one that sent you to this procedure?
 - **Yes:** The last FRU you exchanged is not the failing FRU. Go to step 11 to continue FRU isolation.
 - **No:** Is the SRC B100 4504 or B100 4505 and have you exchanged disk unit 1 in the system unit, or are all the reference codes on the console 0000?

- **Yes:** The last FRU you exchanged was failing. **This ends the procedure.**

Note: Before exchanging a disk unit, you should attempt to save customer data. See Disk unit recovery procedures before exchanging a disk unit.

- **No:** Use the new SRC or reference code to correct the problem. See the Reference code topic. **This ends the procedure.**

IOPIP13:

Use this procedure to isolate problems on the interface between the I/O card and the storage devices.

About this task

The unit reference code (part of the SRC that sent you to this procedure) indicates the SCSI bus that has the problem:

Unit reference code (URC)	SCSI bus
3100	0
3101	1
3102	2
3103	3

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions.
2. Were you performing an IPL from removable media (IPL type D) when the error occurred?
 - No:** Continue with the next step.
 - Yes:** Exchange the FRUs in the failing item list for the reference code that sent you to this procedure. **This ends the procedure.**
3. Look in the service action log for other errors logged at or around the same time as the 310x SRC. (For assistance on how to look for these errors, refer to Using the service action log.) Also, look in the product activity log for other errors logged. (For assistance on using the product activity log, refer to Using the product activity log). Were you able to find other errors?
 - No:** Continue with substep 3b.
 - Yes:** Continue with substep 3a.
 - a. Are most of the errors logged against a single device resource?
 - No:** Most of the errors are not logged against a single device resource. Continue with substep 3b.
 - Yes:** Replace the device. **This ends the procedure.**
 - b. Are you working with an attached 5786 or 5787 disk expansion unit?
 - No:** Continue with step 4.
 - Yes:** Continue with substep 3c.
 - c. Check all cable connections on the SCSI bus. If that does not resolve the problem, replace all of the SCSI interface cards on the SCSI bus. Go to Locations — 5786, 5787, 7031-D24, and 7031-T24 expansion unit to exchange the failing item. If this does not fix the problem, continue with step 4.
4. The following steps isolate a SCSI bus problem. Contact your next level of support, if necessary, for assistance with this procedure.
5. Perform an IPL to DST. See Performing an IPL to DST. Does an SRC appear on the control panel?
 - No:** Continue with the next step.

Yes: Go to step 8.

6. Does one of the following displays appear on the console?

- Disk Configuration Error Report
- Disk Configuration Attention Report
- Disk Configuration Warning Report
- Display Unknown Mirrored Load-Source Status
- Display Load-Source Failure
 - **Yes:** Continue with the next step.
 - **No:** Look at the product activity log. See “Using the product activity log” on page 34 for details. Is an SRC logged as a result of this IPL?
 - **Yes:** Continue with the next step.
 - **No:** You cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure see the failing item list for this reference code in the Reference codes topic. If the failing item list contains FI codes, see the “Using failing item codes” on page 598 topic to help determine part numbers and location in the system. **This ends the procedure.**

7. Are all of the reference codes 0000? On some of the displays, you must press **F11** to display reference codes.

- **No:** Continue with the next step. Use the reference code that is not 0000.
- **Yes:** Go to “LICIP11” on page 211 and use cause code 0002. **This ends the procedure.**

8. Is the SRC the same one that sent you to this procedure?

Yes: Continue with the next step.

No: Record the SRC on the Using the problem reporting forms. Then go to the Reference codes topic to correct the problem. **This ends the procedure.**

9. Perform the following:

- a. Power off the system or the expansion tower. See Powering on and powering off for details.
- b. Find the I/O card identified in the failing item list.
- c. Remove the I/O card and install a new I/O card. See Removing and replacing parts. This item has the highest probability of being the failing item.
- d. Power on the system or the expansion tower.

Does an SRC appear on the control panel?

No: Continue with the next step.

Yes: Go to step 13 on page 179.

10. Does one of the following displays appear on the console?

- Disk Configuration Error Report
- Disk Configuration Attention Report
- Disk Configuration Warning Report
- Display Unknown Mirrored Load-Source Status
- Display Load-Source Failure
- **Yes:** Does the Display Unknown Mirrored Load-Source Status display appear on the console?

Note: On some of these displays, you must press **F11** to display reference codes.

- **Yes:** Continue with the next step.
- **No:** Are all of the reference codes 0000?
 - **No:** Go to step 13 on page 179 using the reference code that is not 0000.
 - **Yes:** Go to “LICIP11” on page 211 and use cause code 0002. **This ends the procedure.**
- **No:** Go to step 12 on page 179.

11. Is the reference code the same one that sent you to this procedure?
- **No:** Either a new reference code occurred, or the reference code is 0000. There may be more than one problem. The original I/O card may be failing, but it must be installed in the system to continue problem isolation. Install the original I/O card by doing the following:
 - a. Power off the system or the expansion tower. See Powering on and powering off for details.
 - b. Remove the I/O card you installed in step 9 on page 178 and install the original I/O card.

Note: Do not power on the system or the expansion unit now.

A device connected to the I/O card could be the failing item. Go to "IOPIP16," step (9) to continue isolating the problem. **This ends the procedure.**

- **Yes:** Go to step 14.
12. Look at the product activity log. See "Using the product activity log" on page 34 for details. Is an SRC logged as a result of this IPL?
- Yes:** Continue with the next step.
- No:** The I/O card, which you removed in step 9 on page 178, is the failing item. **This ends the procedure.**
13. Is the SRC or reference code the same one that sent you to this procedure?
- Yes:** Continue with the next step.
- No:** Record the SRC on the Using the problem reporting forms. Then go to the Reference codes topic to correct the problem. **This ends the procedure.**
14. The original I/O card is not the failing item. Install the original I/O card by doing the following:
- a. Power off the system or the expansion tower. See Powering on and powering off for details.
 - b. Remove the I/O card you installed in step 9 on page 178 of this procedure and install the original I/O card.

Note: Do not power on the system or the expansion unit now.

A device connected to the I/O card could be the failing item. Go to "IOPIP16," step (9) to continue isolating the problem. **This ends the procedure.**

IOPIP16:

Use this procedure to isolate failing devices that are identified by FI codes FI01105, FI01106, and FI01107.

About this task

During this procedure, you will remove devices that are identified by the FI code, and then you will perform an IPL to determine if the symptoms of the failure have disappeared, or changed. You should not remove the load-source disk until you have shown that the other devices are not failing. Removing the load-source disk can change the symptom of failure, although it is not the failing unit.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions before continuing with this procedure.
2. Use the Hardware Service Manager (HSM) verify function (use DST or SST), and verify that all tape and optical units attached to the SCSI bus (identified by FI01105, FI01106, or FI01107) are operating correctly. See Verification procedures for details.

Note: Do not IPL the system to get to DST.

3. Choose from the following options:
 - If verification was successful for all tape and optical units, then go to step 5 on page 180.
 - If any tape or optical device could not be verified, or if it failed verification, then exchange the failing item. See the Removing and replacing parts and continue with the next step.

4. Use the Hardware Service Manager (HSM) verify function (use SST or DST) and verify that the exchanged item is operating correctly. See Verification procedures for details.

Was the verification successful?

No: Replace the exchanged device with the original. See Removing and replacing parts and continue with the next step.

Yes: The newly exchanged tape or optical device was the failing item. **This ends the procedure.**

5. Perform an IPL to DST. See Performing an IPL to DST.

Does an SRC appear on the control panel?

No: Continue with the next step.

Yes: Go to step 8.

6. Does one of the following displays appear on the console?

- Disk Configuration Error Report
- Disk Configuration Attention Report
- Disk Configuration Warning Report
- Display Unknown Mirrored Load-Source Status
- Display Load-Source Failure

Note: On some of these displays, you must press **F11** to display reference codes. The characters under Type are the same as the 4 leftmost characters of word 1. The characters under Reference Code are the same as the 4 rightmost characters of word 1.

– **No:** Continue with the next step.

– **Yes:** Are all of the reference codes 0000?

No: Go to step 8, and use the reference code that is not 0000.

Yes: Go to “LICIP11” on page 211 and use cause code 0002. **This ends the procedure.**

7. Look at the Product Activity Log. See “Using the product activity log” on page 34 for details.

Is a reference code logged as a result of this IPL?

Yes: Continue with the next step.

No: You cannot continue isolating the problem. Use the original reference code and exchange the failing items, starting with the highest probable cause of failure. See the failing item list for this reference code in the Reference codes topic. If the failing item list contains FI codes, see “Using failing item codes” on page 598 for additional details. **This ends the procedure.**

8. Is the SRC or reference code the same one that sent you to this procedure?

Yes: Continue with the next step.

No: Record the SRC or reference code on the Problem reporting forms. Then, go to the Reference codes topic to correct the problem. **This ends the procedure.**

9. Isolate the failing device by doing the following:

- a. Power off the system or the expansion unit if it is powered on. See Powering on and powering off.
- b. Go to “Using failing item codes” on page 598 to find the devices identified by FI code FI01105, FI01106, or FI01107 in the failing item list.
- c. Disconnect one of the devices that are identified by the FI code, other than the load-source disk unit.

Note: The tape, or optical units should be the first devices to be disconnected, if they are attached to the SCSI bus identified by FI01105, FI01106, or FI01107.

- d. Go to step 11 on page 181.

10. Continue to isolate the possible failing items by doing the following:

- a. Power off the system or the expansion unit. See Powering on and powering off.

- b. Disconnect the next device that is identified by FI codes FI01105, FI01106, or FI01107 in the FRU list. See the note in step 9 on page 180. Do not disconnect disk unit 1 (load-source disk) until you have disconnected all other devices and the load-source disk is the last device that is identified by these FI codes.
11. Power on the system or the expansion tower.
Does an SRC appear on the control panel?
No: Continue with the next step.
Yes: Go to step 14.
12. Does one of the following displays appear on the console?
- Disk Configuration Error Report
 - Disk Configuration Attention Report
 - Disk Configuration Warning Report
 - Display Unknown Mirrored Load-Source Status
 - Display Load-Source Failure
- Note:** On some of these displays, you must press **F11** to display reference codes. The characters under Type are the same as the 4 leftmost characters of word 1. The characters under Reference Code are the same as the 4 rightmost characters of word 1.
- **Yes:** Go to step 14.
 - **No:** Look at the Product Activity Log. See “Using the product activity log” on page 34 for details. Is a reference code logged as a result of this IPL?
No: Continue with the next step.
Yes: Go to step 14.
13. You are here because the IPL completed successfully. The last device you disconnected is the failing item.
Is the failing item a disk unit?
No: Exchange the failing item and reconnect the devices you disconnected previously. See the Removing and replacing parts. **This ends the procedure.**
Yes: Exchange the failing FRU. Before exchanging a disk drive, you should attempt to save customer data. Go to Disk unit recovery procedures before exchanging a disk unit. **This ends the procedure.**
14. Is the SRC or reference code the same one that sent you to this procedure?
Yes: Continue with the next step.
No: Record the SRC or reference code on the Problem summary form. Then go to step 16.
15. The last device you disconnected is not failing.
Have you disconnected all the devices that are identified by FI codes FI01105, FI01106, or FI01107 in the FRU list?
No: Leave the device disconnected and return to step 10 on page 180 to continue isolating the possible failing items.
Yes: Replace the device backplane or backplanes associated with the devices you removed in the earlier steps. If the device backplane does not fix the problem, then you cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure. See the failing item list for this reference code in the Reference codes topic. If the failing item list contains FI codes, see “Using failing item codes” on page 598 for additional information. **This ends the procedure.**
16. Is the SRC B1xx 4504, and have you disconnected the load-source disk unit? (The load-source disk unit is disconnected by disconnecting disk unit 1.)
- **Yes:** Continue with the next step.

- **No:** Does one of the following displays appear on the console, and are all reference codes 0000?
 - Disk Configuration Error Report
 - Disk Configuration Attention Report
 - Disk Configuration Warning Report
 - Display Unknown Mirrored Load-Source Status
 - Display Load-Source Failure

Note: On some of these displays, you must press **F11** to display reference codes. The characters under Type are the same as the 4 leftmost characters of word 1. The characters under Reference Code are the same as the 4 rightmost characters of word 1.

Yes: Continue with the next step.

No: A new SRC or reference code occurred. Go to the Reference codes topic to correct the problem. **This ends the procedure.**

17. The last device you disconnected may be the failing item. Exchange the last device you disconnected. See the Removing and replacing parts.

Note: Before exchanging a disk drive, you should attempt to save customer data. Go to Disk unit recovery procedures before exchanging a disk unit.

Was the problem corrected by exchanging the last device you disconnected?

No: Continue with the next step.

Yes: **This ends the procedure.**

18. Reconnect the devices you disconnected previously in this procedure.
19. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure. See the failing item list for this reference code in the Reference codes topic. Do not exchange the FRU that you exchanged in this procedure. If the failing item list contains FI codes, see “Using failing item codes” on page 598 to help determine part numbers and location in the system. **This ends the procedure.**

IOPIP17:

Use this procedure to isolate problems that are associated with SCSI bus configuration errors and device task initialization failures.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions before continuing with this procedure.
2. Were you performing an IPL from removable media (IPL type D) when the error occurred?
 - **Yes:** Exchange the FRUs in the failing item list for the reference code that sent you to this procedure.
 - **No:** Perform an IPL to DST. See Performing an IPL to DST. Does an SRC appear on the control panel?
 - No:** Continue with the next step.
 - Yes:** Go to step 5 on page 183.
3. Does either the Disk Configuration Error Report, the Disk Configuration Attention Report, or the Disk Configuration Warning Report display appear on the console?
 - **No:** Continue with the next step.
 - **Yes:** Does one of the following messages appear in the list?
 - Missing disk units in the configuration
 - Missing mirror protection disk units in the configuration
 - Device parity protected units in exposed mode.
 - **No:** Continue with the next step.

- **Yes:** Select option 5, press **F11**, then press **Enter** to display the details. Then, choose from the following options:
 - If all of the reference codes are 0000, go to “LICIP11” on page 211 and use cause code 0002.
 - If any of the reference codes are not 0000, go to step 5, and use the reference code that is not 0000.

Note: Use the characters in the *Type* column to find the correct reference code table.

4. Look at the product activity log. See “Using the Service Action Log” on page 32. Is an SRC logged as a result of this IPL?

Yes: Continue with the next step.

No: You cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure (see the failing item list for this reference code in the (System Reference Codes)) topic. If the failing item list contains FI codes, see (Failing items) to help determine part numbers and location in the system. **This ends the procedure.**

5. Record the SRC on the Problem summary form. See Problem reporting forms for details. Is the SRC the same one that sent you to this procedure?

- **No:** A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem. See “Start of call procedure” on page 2. **This ends the procedure.**
- **Yes:** Determine the device unit reference code (URC) from the SRC. If the Disk Configuration Error Report, the Disk Configuration Attention Report, or the Disk Configuration Warning Report display appears on the console, the device URC is displayed under *Reference Code*. This is on the same line as the missing device. Is the device unit reference code **3020**, **3021**, **3022**, or **3023**?

Yes: Continue with the next step.

No: Go to step 7 on page 184.

6. A unit reference code of **3020**, **3021**, **3022**, or **3023** indicates that there is a problem on an I/O card SCSI bus. The problem can be caused by a device that is attached to the I/O card that:

- Is not supported.
- Does not match system configuration rules. For example, there are too many devices that are attached to the bus.
- Is failing.

Perform the following:

- a. Look at the characters on the control panel Data display or the Problem Summary Form for characters 9 - 16 of the top 16 character line of function 12 (word 3). Use the format BBBB-Cc-bb (BBBB = bus, Cc = card, bb = board) to determine the card slot location for the I/O card (see (Locations and addresses)).
- b. The unit reference code indicates the SCSI bus that has the problem:

URC	SCSI Bus
3020	0
3021	1
3022	2
3023	3

- c. To find the bus and device locations, see Finding part locations.
- d. Find the printout that shows the system configuration from the last IPL and compare it to the present system configuration.

Note: If configuration is not the problem, a device on the SCSI bus may be failing.

- e. If you need to perform isolation on the SCSI bus, go to “IOPIP16” on page 179. **This ends the procedure.**

7. The possible failing items are FI codes **FI01105** (90%) and **FI01112** (10%). Find the device unit address from the SRC (see The System Reference Code (SRC) Format Description). Use this information to find the physical location of the device. Record the type and model numbers to determine if the addressed I/O card supports this device. Is the device given support on your system?

- **No:** Continue with the next step.
- **Yes:** Perform the following:
 - a. Exchange the device.
 - b. Perform an IPL to DST. See Performing an IPL to DST.

Does this correct the problem?

No: Ask your next level of support for assistance. **This ends the procedure.**

Yes: This ends the procedure.

8. Perform the following steps:
- a. Remove the device.
 - b. Perform an IPL to DST. See Performing an IPL to DST.

Does this correct the problem?

No: Ask your next level of support for assistance. **This ends the procedure.**

Yes: This ends the procedure.

IOPIP18:

Use this procedure to isolate problems that are associated with SCSI bus configuration errors and device task initialization failures.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions before continuing with this procedure.
2. Perform an IPL to DST. See Performing an IPL to DST.

Does an SRC appear on the control panel?

- **Yes:** Go to step 5 on page 185.
- **No:** Does either the Disk Configuration Error Report, the Disk Configuration Attention Report, or the Disk Configuration Warning Report display appear on the console?
 - Yes:** Continue with the next step.
 - No:** Go to step 4.

3. Does one of the following messages appear in the list?

- Missing disk units in the configuration
- Missing mirror protection disk units in the configuration
- Device parity protected units in exposed mode.
 - **No:** Continue with the next step.
 - **Yes:** Select option 5, press **F11**, and then press **Enter** to display the details. Choose from the following options:
 - If all of the reference codes are 0000, go to “LICIP11” on page 211 and use cause code 0002.
 - If any of the reference codes are not 0000, go to step 5 on page 185, and use the reference code that is not 0000.

Note: Use the characters in the *Type* column to find the correct reference code table.

4. Look at the product activity log (see (Log) for details).

Is an SRC logged as a result of this IPL?

Yes: Continue with the next step.

No: You cannot continue isolating the problem. Use the original SRC and exchange the failing items, starting with the highest probable cause of failure in the failing item column in the reference code list. See the Reference codes topic. If the failing item list contains FI codes, see “Using failing item codes” on page 598 to help determine part numbers and location in the system. **This ends the procedure.**

5. Record the SRC on the Problem summary form. See the Problem reporting forms.

Is the SRC the same one that sent you to this procedure?

Yes: Continue with the next step.

No: A different SRC or reference code occurred. Use the new SRC or reference code to correct the problem. See “Start of call procedure” on page 2. **This ends the procedure.**

6. Determine the device unit reference code (URC) from the SRC. If the Disk Configuration Error Report, the Disk Configuration Attention Report, or the Disk Configuration Warning Report display appears on the console, the device URC is displayed under *Reference Code*. This is on the same line as the missing device.

Is the device unit reference code 3020?

- **No:** Continue with the next step.
- **Yes:** A device reference code of 3020 indicates that a device is attached to the addressed I/O card. Either it is not supported, or it does not match system configuration rules. For example, there are too many devices that are attached to the bus. Perform the following steps:
 - a. Find the printout that shows the system configuration from the last IPL and compare it to the present system configuration.
 - b. Use the unit address and the physical address in the SRC to help you with this comparison.
 - c. If configuration is not the problem, a device on the SCSI bus may be failing. Use FI code FI00884 in the “Using failing item codes” on page 598 table to help find the failing device.
 - d. If you need to perform isolation on the SCSI bus, go to “IOPIP16” on page 179. **This ends the procedure.**

7. The possible failing items are FI codes FI01105 (90%) and FI01112 (10%).

Find the device unit address from the SRC. Use this information to find the physical location of the device. Record the type and model numbers to determine if the addressed I/O card supports this device.

Is the device given support on your system?

- **No:** Continue with the next step.
- **Yes:** Perform the following steps:
 - a. Exchange the device.
 - b. Perform an IPL to DST. See Performing an IPL to DST.

Does this correct the problem?

No: Ask your next level of support for assistance. **This ends the procedure.**

Yes: **This ends the procedure.**

8. Perform the following steps:

- a. Remove the device.
- b. Perform an IPL to DST. See Performing an IPL to DST.

Does this correct the problem?

No: Ask your next level of support for assistance. **This ends the procedure.**

Yes: **This ends the procedure.**

IOPIP19:

You were sent to this procedure from unit reference code (URC) 9010, 9011, or 9013.

About this task

Contact your next level of support for assistance.

IOPIP20:

Use this procedure to isolate the problem when two or more devices are missing from a disk array.

About this task

You were sent to this procedure from unit reference code (URC) 9020 or 9021.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions, before continuing with this procedure.
2. Access SST/DST by doing one of the following:
 - If you can enter a command at the console, access system service tools (SST). See System Service Tools (SST).
 - If you cannot enter a command at the console, perform an IPL to DST. See Performing an IPL to DST.
 - If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
3. Have any other I/O card or device SRCs (other than a 902F SRC) occurred at about the same time as this error?
 - **Yes:** Use the other I/O card or device SRCs to correct the problem. See the Reference codes topic. **This ends the procedure.**
 - **No:** Has the I/O card, or have the devices been repaired or reconfigured recently?
 - **Yes:** Continue with the next step.
 - **No:** Contact your next level of support for assistance. **This ends the procedure.**
4. Did you perform a D IPL to get to DST?
 - **Yes:** Continue with the next step.
 - **No:** Perform the following steps:
 - a. Access the Product Activity Log and display the SRC that sent you here and view the "Additional Information" to record the formatted log information. Record all devices that are missing from the disk array. These are the array members that have both a present address of 0 and an expected address that is not 0.

Note: There might be more than one Product Activity Log entry with the same Log ID. Access any additional entries by pressing the enter key from the "Display Detail Report for Resource" screen. View the "Additional Information" for each entry to record the formatted log information.

For example: There might be an xxxx902F SRC entry in the Product Activity Log if there are more than 10 disk units in the array.
 - b. Continue with step 6.
5. A formatted display of hexadecimal information for Product Activity Log entries is not available. In order to interpret the hexadecimal information, see More information from hexadecimal reports. Record all devices that are missing from the disk array. These are the array members that have both a present address of 0 and an expected address that is not 0.

Note: There might be an xxxx902F SRC entry in the Product Activity Log if there are more than 10 disk units in the array. In order to interpret the hexadecimal information for these additional disk units, see More information from hexadecimal reports.
6. There are three possible ways to correct the problem:

- a. Find the missing devices and install them in the correct physical locations in the system. If you can find the missing devices and want to continue with this repair option, then continue with the next step.
- b. Stop the disk array that contains the missing devices.
Attention: Customer data might be lost.
 If you want to continue with this repair option, go to step 8.
- c. Initialize and format the remaining members of the disk array.
Attention: Customer data will be lost.
 If you want to continue with this repair option, go to step 9.
7. Perform the following:
 - a. Install the missing devices in the correct locations in the system. See the Removing and replacing parts.
 - b. Power on the system. See Powering on and powering off.
 Does the IPL complete successfully?
No: Go to "Start of call procedure" on page 2. **This ends the procedure.**
Yes: This ends the procedure.
8. You have chosen to stop the disk array that contains the missing devices.
Attention: Customer data might be lost.
 Perform the following:
 - a. If you are not already using dedicated service tools, perform an IPL to DST. See Performing an IPL to DST.
 If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
 - b. Select **Work with disk units**.
 Did you get to DST with a Type D IPL?
Yes: Continue with the next step.
No: Select **Work with disk configuration** → **Work with device parity protection**. Then, continue with the next step.
 - c. Select **Stop device parity protection**.
 - d. Follow the on-line instructions to stop device parity protection.
 - e. Perform an IPL from disk.
 Does the IPL complete successfully?
No: Go to "Start of call procedure" on page 2. **This ends the procedure.**
Yes: This ends the procedure.
9. You have chosen to initialize and format the remaining members of the disk array. Perform the following steps:
Attention: Customer data will be lost.
 - a. If you are not already using dedicated service tools, perform an IPL to DST. See Performing an IPL to DST.
 If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
 - b. Select **Work with disk units**.
 Did you get to DST with a Type D IPL?
Yes: Continue with the next step.
No: Select **Work with disk unit recovery** → **Disk unit problem recovery procedures**, and continue with the next step.
10. Select **Initialize and format disk unit**.
11. Follow the online instructions to format and initialize the disk units.

12. Perform an IPL from disk. Does the IPL complete successfully?

No: Go to the "Start of call procedure" on page 2. **This ends the procedure.**

Yes: **This ends the procedure.**

IOPIP21:

This procedure resolves problems when disk drives are incompatible or a disk array has degraded protection due to a missing or failed disk unit.

About this task

Note:

- SRC xxxx9025 - Indicates that an incompatible disk unit is installed at the disk unit location that caused degraded protection in the disk array.
- SRC xxxx9030 or SRC xxxx9032 - Indicates that a disk array has degraded protection due to a missing or failed disk unit.

If you received SRC xxxx9025, xxxx9030, or xxxx9032, one of the following occurred:

- A disk unit has failed and the RAID array protection is degraded because no hot spare disk unit was available to replace it. The RAID array will continue to have degraded protection until the disk unit has been replaced and a manual rebuild of the array has been started.
- A disk unit has failed in a RAID array, but a hot spare was used to automatically start a rebuild of the array. Replace, format, and configure the failed disk unit as a hot spare.

Note: If the previous hot spare disk unit was a larger capacity than the failed disk unit, ensure the customer understands that the replacement disk unit might not provide adequate hot spare coverage for all of the arrays under this I/O adapter.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions before continuing with this procedure.
2. Is the device location information for this SRC available in the Service Action Log (see "Using the Service Action Log" on page 32 for details)?

Yes: Exchange the disk unit. See Disk unit recovery procedures. **This ends the procedure.**

No: Continue with the next step.

3. Examine the Product Activity Log and identify the affected I/O adapter and disk units by performing the following: Access SST/DST by doing one of the following:

- If you **can** enter a command at the console, access system service tools (SST). See System Service Tools (SST).
- If you **cannot** enter a command at the console, perform an IPL to DST. See Performing an IPL to DST.

4. Perform the following steps:

- a. Access the Product Activity Log and display the SRC that sent you here.
- b. Press the **F9** key for address information. This is the I/O adapter address.

Note: There may be more than one entry with the same Log ID. Entries with the same Log ID may be accessed by pressing the **Enter** key from the "Display Detail Report for Resource" screen.

Example: There may be a device specific SRC and/or an xxxx902F SRC entry in the Product Activity Log. The xxxx902F SRC will occur if there are more than 10 disk units in the array.

- c. Continue with the next step.

5. Perform the following steps:

- a. Return to the SST or DST main menu.
- b. Select **Work with disk units** → **Display disk configuration** → **Display disk configuration status**.
- c. On the Display disk configuration status display, look for the devices attached to the I/O adapter that is identified in step 4 on page 188.

Is there a device that has a status of "DPY/Unknown", RAID-5/Unknown", RAID-6/Unknown", "DPY/Failed", "RAID-5/Failed", or "RAID-6/Failed".?

Yes: Continue with the next step.

No: Continue with step 8.

6. Find the device that has a status of "DPY/Unknown", RAID-5/Unknown", RAID-6/Unknown", "DPY/Failed", "RAID-5/Failed", or "RAID-6/Failed". This is the device that is causing the problem. Show the device address by selecting Display Disk Unit Details > Display Detailed Address. Record the device address. See Finding part locations and find the diagram of the system unit, or the expansion unit and find the following:
 - The slot that is identified by the I/O adapter direct select address
 - The disk unit location that is identified by the device address
7. Have you determined the location of the I/O adapter and disk unit that is causing the problem?

Yes: Exchange the disk unit that is causing the problem. See Disk unit recovery procedures. This ends the procedure.

No: Ask your next level of support for assistance. **This ends the procedure.**
8. Press the function key to cancel and to return to the Display Disk Configuration menu, then do the following:
 - a. Select Display disk hardware status.
 - b. Find a device that is either "Not operational" or "Read/write protected".
 - c. Display details for the device and get the location of the failed disk unit.
 - d. Go to Exchanging a disk unit and configuring it as a hot spare. **This ends the procedure.**

IOPIP22:

Use this procedure to gather error information and contact your next level of support.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions, before continuing with this procedure.
2. Access SST/DST by doing one of the following:
 - If you **can** enter a command at the console, access system service tools (SST). See System Service Tools (SST).
 - If you **cannot** enter a command at the console, perform an IPL to DST. See Performing an IPL to DST.
 - If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
3. Did you perform a D IPL to get to DST?
 - **Yes:** Continue with the next step.
 - **No:** Perform the following steps:
 - a. Access the Product Activity Log and display the SRC that sent you here and view the "Additional Information" to record the formatted log information. Record all the information.

Note: There may be more than one Product Activity Log entry with the same Log ID. Access any additional entries by pressing the **Enter** key from the "Display Detail Report for Resource" screen. View the "Additional Information" for each entry to record the formatted log information. Example: There may be an xxxx902F SRC entry in the Product Activity Log if there are more than 10 disk units in the array.

- b. Continue with step 5.
4. A formatted display of hexadecimal information for Product Activity Log entries is not available. In order to interpret the hexadecimal information, see *More information from hexadecimal reports*. Record all the information. Then continue with the next step.


Note: There may be an xxxx902F SRC entry in the Product Activity Log if there are more than 10 disk units in the array. In order to interpret the hexadecimal information for these additional disk units, see *More information from hexadecimal reports*.

5. Ask your next level of support for assistance.

Note: Your next level of support may require the error information you recorded in the previous step.
This ends the procedure.

IOPIP23:

You were sent to this procedure from a unit reference code (URC) 9050.

If the failing item is in a migrated tower, use the *(Migrated Expansion Tower Problem Analysis, Repair and Parts)* manual  on the V5R1 Supplemental Manuals web site to fix the problem. Otherwise, contact your next level of support for assistance.

IOPIP25:

Use this procedure to isolate the problem when a device attached to the I/O card has functions that are not given support on the I/O card.

About this task

You were sent to this procedure from URC 9008.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to *Determining if the system has logical partitions*, before continuing with this procedure.
2. Have any other I/O card or device SRCs occurred at about the same time as this error?
 - **Yes:** Use the other I/O card or device SRCs to correct the problem. See the *(System Reference Codes)*. **This ends the procedure.**
 - **No:** Has the I/O card, or have the devices been repaired or reconfigured recently?
 - **Yes:** Continue with the next step.
 - **No:** Contact your next level of support for assistance. **This ends the procedure.**
3. Access SST/DST by doing one of the following:
 - If you **can** enter a command at the console, access system service tools (SST). System Service Tools (SST).
 - If you **cannot** enter a command at the console, perform an IPL to DST. See *Performing an IPL to DST*.
 - If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
4. Did you perform a D IPL to get to DST?
 - **No:** Access the Product Activity Log and display the SRC that sent you here. Press the **F9** key for address information. This is the I/O card address. Then, view the "Additional Information" to record the formatted log information. Record the addresses that are not 0000 0000 for all devices listed.
Continue with the next step.

- **Yes:** Access the Product Activity Log and display the SRC that sent you here. The direct select address (DSA) of the I/O Card is in the format BBBB-Cc-bb:
 - BBBB = hexadecimal offsets 4C and 4D
 - Cc = hexadecimal offset 51
 - bb = hexadecimal offset 4F

The unit address of the I/O card is hexadecimal offset 18C through 18F.

A formatted display of hexadecimal information for Product Activity Log entries is not available. In order to interpret the hexadecimal information, see *More information from hexadecimal reports*. Record the addresses that are not 0000 0000 for all devices listed. Continue with the next step.

5. See Finding part locations and find the diagram of the system unit, or the expansion unit. Then find the following:
 - The card slot that is identified by the I/O card direct select address (DSA) and unit address. If there is no IOA with a matching DSA and unit address, the IOP and IOA are one card. Use the IOP with the same DSA.
 - The disk unit locations that are identified by the unit addresses.

Have you determined the location of the I/O card and the devices that are causing the problem?

- **No:** Ask your next level of support for assistance. **This ends the procedure.**
- **Yes:** Have one or more devices been moved to this I/O card from another I/O card?

Yes: Continue with the next step.

No: Ask your next level of support for assistance. **This ends the procedure.**

6. Is the I/O card capable of supporting the devices attached, or is it in the correct mode to support the devices attached?

Note: For information on I/O card modes, see *Storage I/O card modes and jumpers*.

- **No:** Remove the devices from the I/O card. See *Disk unit recovery procedures*.

Note: You can remove disk units without installing another disk unit, and the system continues to operate.

This ends the procedure.

- **Yes:** Do you want to continue using these devices with this I/O card?
 - Yes:** Continue with the next step.
 - **No:** Either change the I/O card mode or remove the devices from the I/O card. See *Disk unit recovery procedures*.

Note: You can remove disk units without installing other disk units and the system continues to operate.

This ends the procedure.

7. Initialize and format the disk units by performing the following steps:

Attention: Data on the disk unit will be lost.

- a. Access SST or DST.
- b. Select **Work with disk units**.

Did you get to DST with a Type D IPL?

Yes: Continue with the next step.

No: Select **Work with disk unit recovery** → **Disk unit problem recovery procedures**. Then continue with the next step.

- c. Select **Initialize and format disk unit** for each disk unit. When the new disk unit is initialized and formatted, the display shows that the status is complete. This may take 30 minutes or longer. The disk unit is now ready to be added to the system configuration. **This ends the procedure.**

Use this procedure to correct the problem when the I/O card recognizes that the attached disk unit must be initialized and formatted.

About this task

You were sent to this procedure from URC 9092.

The possible causes are:

- Disk unit is a previously failed disk unit from a disk array and was automatically replaced by a hot spare disk unit.
 - Disk unit is a previously failed disk unit from a disk array and was removed and later reinstalled on a different adapter or different location on this adapter.
 - Appropriate service procedures were not followed when replacing disk units or reconfiguring the adapter, such as not performing a normal power down of the system prior to reconfiguring disk units and adapters.
 - Disk unit is a member of a disk array, but was detected subsequent to the adapter being configured.
 - Disk unit has multiple or complex configuration problems.
1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions before continuing with this procedure.
 2. Have any other I/O adapter or device SRCs occurred at about the same time as this error?
 - **Yes:** Use the other I/O adapter or device SRCs to correct the problem. See the Reference codes topic. **This ends the procedure.**
 - **No:** Continue with the next step.
 3. Identify the affected I/O adapter and disk units by examining the Product Activity Log. Perform the following:
 - a. Access SST/DST
 - If you can enter a command at the console, access system service tools (SST). See System Service Tools (SST).
 - If you cannot enter a command at the console, perform an IPL to DST. See Performing an IPL to DST.
 - If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
 - b. Access the Product Activity Log and record address information. If a D IPL was NOT performed to get to SST/DST:
 - The log information is formatted. Access the Product Activity Log and do the following:
 - 1) Display the SRC that sent you here.
 - 2) Press the F9 key for "Address Information". This is the I/O adapter address.
 - 3) Press F12 to cancel and return to the previous screen.
 - 4) Press the F4 key to view the "Additional Information" to record the formatted log information.
 - 5) Record the addresses that are not 0000 0000 for all devices listed.
 - If a D IPL was performed to get to DST:
 - The log information is not formatted. Access the Product Activity Log and display the SRC that sent you here. The direct select address (DSA) of the I/O adapter is in the format BBBB-Cc-bb:
 - BBBB = hexadecimal offsets 4C and 4D
 - Cc = hexadecimal offset 51
 - bb = hexadecimal offset 4F

In order to interpret the hexadecimal information to get device addresses, see More information from hexadecimal reports. Record the addresses that are not 0000 0000 for all devices listed.

- c. Determine the location of the I/O adapter and the devices that are causing the problem. See Finding part locations and find the diagram of the system unit, or the expansion unit. Then find the following:

- The card slot that is identified by the I/O adapter direct select address (DSA).
- The disk unit locations that are identified by the unit addresses.

Have you determined the location of the I/O adapter and the devices that are causing the problem?

No: Ask your next level of support for assistance. **This ends the procedure.**

Yes: Continue with the next step.

4. Have the adapter card or disk units been physically moved recently?

No: Continue with the next step.

Yes: Continue with step 6.

5. Is the data on the disk units needed for this or any other system or partition?

No: Continue with step 7.

Yes: Continue with the next step.

6. Perform only one of the following options that is most applicable to your situation: **Option 1**

Perform the following to cause the adapter to rediscover the disk units and then take action on any new errors:

- a. Use Hardware Service Manager to re-IPL the I/O processor that is associated with this I/O adapter.
- b. If needed, vary on any other attached I/O processor. **This ends the procedure.**

Option 2

- a. Power off the system or partition.
- b. Restore the I/O adapter and disk units back to their original configuration. **This ends the procedure.**

Option 3

Remove the disk units from this I/O adapter. See Disk unit recovery procedures. **This ends the procedure.**

7. Initialize and format the disk units by performing the following steps:

Attention: Data on the disk unit will be lost.

If a D IPL was NOT performed to get to SST/DST:

- a. Access SST or DST.
- b. Select the following:
 - 1) Work with disk units
 - 2) Work with disk unit recovery
 - 3) Disk unit problem recovery procedures.

>>

- c. Select **Initialize and format disk unit** for each disk unit. When the new disk unit is initialized and formatted, the display shows that the status is complete. This may take 30 minutes or much longer depending on the capacity of the disk unit. The disk unit is now ready to be added to the system configuration. **This ends the procedure.**

If a D IPL was performed to get to DST:

- a. Access DST.
- b. Select **Work with disk units**.

- c. Select **Initialize and format disk unit** for each disk unit. When the new disk unit is initialized and formatted, the display shows that the status is complete. This may take 30 minutes or much longer depending on the capacity of the disk unit. The disk unit is now ready to be added to the system configuration. **This ends the procedure.**

IOPIP27:

I/O card cache data exists for a missing or failed device.

About this task

You were sent to this procedure from a unit reference code (URC) of 9051.

Note: For some storage I/O adapters, the cache card is integrated and not removable.

Having I/O card cache data for a missing or failed device might be caused by the following conditions:

- One or more disk units have failed on the I/O card.
- The cache card of the I/O card was not cleared before it was shipped as a MES to the customer. In addition, the service representative moved devices from the I/O card to a different I/O card before performing a system IPL.
- The cache card of the I/O card was not cleared before it was shipped to the customer. In addition, residual data was left in the cache card for disk units that manufacturing used to test the I/O card.
- The I/O card and cache card were moved from a different system or a different location on this system after an abnormal power off.
- One or more disk units were moved either concurrently, or they were removed after an abnormal power off.

CAUTION:

Any Function 08 power down (including from a D-IPL) is an abnormal power off.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions before continuing with this procedure.
2. Access SST/DST by doing one of the following:
 - If you **can** enter a command at the console, access system service tools (SST). See System Service Tools (SST).
 - If you **cannot** enter a command at the console, perform an IPL to DST. See Performing an IPL to DST.
 - If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
3. Did you perform a D IPL to get to DST?
 - **Yes:** Continue with the next step.
 - **No:** Perform the following steps:
 - a. Access the Product Activity Log and display the SRC that sent you here.
 - b. Press the **F9** key for address information. This is the I/O card address.
 - c. Then view the "Additional Information" to record the formatted log information. Record the device types and serial numbers for those devices that show a unit address of 0000 0000.
 - d. Continue with step 5 on page 195.
4. Perform the following steps:
 - a. Access the Product Activity Log and display the SRC that sent you here. The direct select address (DSA) of the I/O card is in the format BBBB-Cc-bb:
 - BBBB = hexadecimal offsets 4C and 4D.
 - Cc = hexadecimal offset 51

- bb = hexadecimal offset 4F

The unit address of the I/O card is hexadecimal offset 18C through 18F.

A formatted display of hexadecimal information for Product Activity Log entries is not available. In order to interpret the hexadecimal information, see *More information from hexadecimal reports*.


- b. Record the device types and serial numbers for those devices that show a unit address of 0000 0000.
 - c. Continue with the next step.
5. See *Finding part locations* and find the diagram of the system unit, or the expansion unit. Find the card slot that is identified by the I/O card direct select address (DSA) and unit address. If there is no IOA with a matching DSA and unit address, the IOP and IOA are one card. Use the IOP with the same DSA.
 6. Choose from the following options:
 - If the devices from step 3 on page 194 of this procedure have never been installed on this system, continue with the next step.
 - If the devices are not in the current system disk configuration, go to step 9.
 - Otherwise, the devices are part of the system disk configuration; go to step 11.
 7. Choose from the following options:
 - If this I/O card and cache card were moved from a different system, continue with the next step.
 - Otherwise, the cache card was shipped to the customer without first being cleared. Perform the following:
 - a. Make a note of the serial number, the customer number, and the device types and their serial numbers. These were found in step 3 on page 194.
 - b. Inform your next level of support.
 - c. Then go to step 10 to clear the cache card and correct the URC 9051 problem.
 8. Install both the I/O card and the cache cards back into their original locations. Then re-IPL the system. There could be data in the cache card for devices in the disk configuration of the original system. After an IPL to DST and a normal power off on the original system, the cache card will be cleared. It is then safe to move the I/O card and the cache card to another location.
 9. One or more devices that are not currently part of the system disk configuration were installed on this I/O card. Either they were removed concurrently, they were removed after an abnormal power off, or they have failed. Continue with the next step.
 10. Use the Reclaim IOP cache storage procedure to clear data from the cache for the missing or failed devices as follows:
 - a. Perform an IPL to DST. See *Performing an IPL to DST*.
If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
 - b. Reclaim the cache adapter card storage. See *Reclaiming IOP cache storage*.
 11. Choose from the following options:
 - If this I/O card and cache card were moved from a different location on this system, go to step 8.
 - If the devices from step 3 on page 194 of this procedure are now installed on another I/O card, and they were moved there before the devices were added to the system disk configuration, go to step 7. (On an MES, the disk units are sometimes moved from one I/O card to another I/O card. This problem will result if manufacturing did not clear the cache card before shipping the MES.)
 - Otherwise, continue with the next step.
 12. One or more devices that are currently part of the system disk configuration are either missing or failed, and have data in the cache card. Consider the following:
 - The problem may be because devices were moved from the I/O card concurrently, or they were removed after an abnormal power off. If this is the case, locate the devices, power off the system and install the devices on the correct I/O card.

- If no devices were moved, look for other errors logged against the device, or against the I/O card that occurred at approximately the same time as this error. Continue the service action by using these system reference codes.

IOPIP28:

You were sent to this procedure from unit reference code (URC) 9052.

About this task


If the failing item is in a migrated tower, use the *(Migrated Expansion Tower Problem Analysis, Repair and Parts)* manual on the V5R1 Supplemental Manuals web site  to fix the problem. Otherwise, contact your next level of support for assistance.

IOPIP29:

The failing item is in a migrated tower.

About this task

You were sent to this procedure from URC 9012.

Perform SDIOP-PIP29 in the *(Migrated Expansion Tower Problem Analysis, Repair and Parts)* manual on the V5R1 Supplemental Manuals web site .

IOPIP30:

Use this procedure to correct the problem when the system cannot find the required cache data for the attached disk units.

About this task

You were sent to this procedure from URC 9050.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions before continuing with this procedure.
2. Did you just exchange the storage input/output (I/O) adapter as a result of a failure?
No: Continue with step 13 on page 198.
Yes: Continue with the next step.
3. Are you working with a 571F/575B card set?
No: Go to step 5 on page 197.
Yes: Continue with the next step.
4. Remove the 571F/575B card set. Create a new card set with the following:

Note: Label all parts (both original and new) before moving them.

- The **new** replacement 571F storage IOA.
- The cache directory card from the **original** 571F storage IOA.
- The **original** 575B auxiliary cache adapter.

See Separating the 571F/575B card set and moving the cache directory card.

- Ensure that the SCSI cable and the battery power cable on the top edge of the storage side of the card are connected to the top edge of the auxiliary cache side of the card.

- Reinstall this card set into the system and go to step 6.
5. Remove the I/O adapter. Install the **new** replacement storage I/O adapter with the following parts installed on it:

Note: Label all parts (both old and new) before moving them.

- The cache directory card from the **original** storage I/O adapter. On adapters with removable cache cards, the cache directory card will move with the removable cache card.
- The removable cache card from the **original** storage I/O adapter (this applies to only the 571E and some 2780 I/O adapters).

See Removing and replacing parts on type 2748, 2757, 2763, 2778, 2780, 2782, 4758, 4764, 5703, 5708, 5709, 571B, 571E, 571F, 573D, 574F, 575B.

- If the I/O adapter is attached to an auxiliary cache I/O adapter, ensure that the SCSI cable on the last port of the new replacement storage I/O adapter is connected to the auxiliary cache I/O adapter. For a list of auxiliary cache I/O adapters, see System parts.
6. Did the 9050 SRC that sent you to this procedure occur on a type-D IPL?
Yes: Perform a type-D IPL and continue with the next step.
No: Continue with the next step.
 7. Has a new 9010 or 9050 SRC occurred in the Service Action Log or Product Activity Log?
No: Go to step 10.
Yes: Continue with the next step.
 8. Was the new SRC 9050?
No: Continue with the next step.
Yes: Contact your next level of support. **This ends the procedure.**
 9. The new SRC was 9010. Reclaim the cache storage. See Reclaiming IOP cache storage.

Note: When an auxiliary cache I/O adapter that is connected to the storage I/O adapter logs a 9055 SRC in the Product Activity Log, the reclaim does not result in lost sectors. Otherwise, the reclaim does result in lost sectors, and the system operator might want to restore data from the most recent saved tape after you complete the repair.

10. Are you working with a 571F/575B card set?
No: Go to step 12.
Yes: Continue with the next step.
11. Remove the 571F/575B card set. Create a new card set with the following:
 - The **new** 571F storage IOA
 - The cache directory card from the **new** 571F storage IOA
 - The **new** 575B auxiliary cache adapter

See Separating the 571F/575B card set and moving the cache directory card.

- Ensure that the SCSI cable and the battery power cable on the top edge of the storage side of the card are connected to the top edge of the auxiliary cache side of the card.
 - Reinstall this card set into the system. **This ends the procedure.**
12. Remove the I/O adapter. Install the **new** replacement storage I/O adapter that has the following parts installed on it:
 - The cache directory card from the **new** storage I/O adapter. On adapters with removable cache cards, the cache directory card will move with the removable cache card.
 - The removable cache card from the **new** storage I/O adapter (this applies to only the 571E and some 2780 I/O adapters).

See Removing and replacing parts on type 2748, 2757, 2763, 2778, 2780, 2782, 4758, 4764, 5703, 5708, 5709, 571B, 571E, 571F, 573D, 574F, 575B.

- If the I/O adapter is attached to an auxiliary cache I/O adapter, ensure that the SCSI cable on the last port of the new replacement storage I/O adapter is connected to the auxiliary cache I/O adapter. For a list of auxiliary cache I/O adapters, see System parts.

This ends the procedure

13. Identify the affected disk units using information in the Product Activity Log. Access SST/DST by doing one of the following:
 - If you can enter a command at the console, access system service tools (SST). See System Service Tools (SST).
 - If you cannot enter a command at the console, perform an IPL to DST. See Performing an IPL to DST.
 - If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
14. Did you perform a D IPL to get to DST?
 - **Yes:** Continue with the next step.
 - **No:** Perform the following steps:
 - a. Access the Product Activity Log and display the SRC that sent you here, then view *Additional Information* to record the formatted log information. The *Device Errors detected* field indicates the total number of disk units that are affected. The *Device Errors logged* field indicates the number of disk units for which detailed information is provided. Under the *Device* heading, the unit address, type, and serial number are provided for up to three disk units. Additionally, the controller type and serial number for each of these disk units indicates the adapter to which the disk was last attached when it was operational.

Note: You might find more than one Product Activity Log entry with the same Log ID. Access any additional entries by pressing Enter from the Display Detail Report for Resource screen. View *Additional Information* for each entry, and record the formatted log information. For example: You might find an entry for an xxxx902F SRC in the Product Activity Log when the array includes more than 10 disk units.
 - b. Continue with step 16.
15. A formatted display of hexadecimal information for Product Activity Log entries is not available. To interpret the hexadecimal information, see More information from hexadecimal reports. The *Device Errors detected* field indicates the total number of disk units that are affected. The *Device Errors logged* field indicates the number of disk units for which detailed information is provided. Under the *Device* heading, the unit address, type, and serial number are provided for up to three disk units. Additionally, the controller type and serial number for each of these disk units indicates the adapter to which the disk was last attached when it was operational.

Note: You might find an entry for an xxxx902F SRC entry in the Product Activity Log when the array includes more than 10 disk units. To interpret the hexadecimal information for these additional disk units, see More information from hexadecimal reports.
16. Has the I/O card or have the devices been repaired or reconfigured recently?
 - Yes:** Continue with the next step.
 - No:** Contact your next level of support for assistance. **This ends the procedure.**
17. You can use one of the following repair options to correct the problem:
 - Reunite the adapter and disk units identified in previous steps so that the cache data can be written to the disk units. If you can find the devices and adapters and want to continue with this repair option, then continue with the next step.
 - If the data for the disk units identified in previous steps is not needed on this or any other system, initialize and format these disk units.

Attention: This repair option causes a loss of customer data. If you want to continue with this repair option, go to step 19 on page 199.
18. Perform the following:

- a. Restore the adapter and disk units back to their original configuration. For more information, see Removing and replacing parts. After the system writes cache data to the disk units and you power off the system normally, you can move the adapter and disk units to another location.
- b. Power on the system. For more information, see Powering on and powering off. Does the IP complete successfully?

No: Go to Start of call procedure. **This ends the procedure.**

Yes: This ends the procedure.

19. You have chosen to initialize and format the identified disk units. Perform the following steps:

Attention: Performing the following steps causes a loss of customer data.

- a. If you are not already using dedicated service tools, perform an IPL to DST. For more information, see Performing an IPL to DST. If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
- b. Select Work with disk units. Did you get to DST with a Type D IPL?

Yes: Continue with the next step.

No: Select **Work with disk unit recovery > Disk unit problem recovery procedures**, then continue with the next step.

20. Select **Initialize and format disk unit**.
21. Follow the online instructions to format and initialize the disk units.
22. Perform an IPL from disk. Does the IPL complete successfully?

No: Go to Start of call procedure. **This ends the procedure.**

Yes: This ends the procedure.

IOPIP31:

Cache data associated with the attached devices cannot be found.

About this task

You were sent to this procedure from URC 9010.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions before continuing with this procedure.
2. Has the system been powered off for several days?
 - **No:** Go to step 4.
 - **Yes:** The cache battery pack may be depleted. Do NOT replace the I/O adapter or the cache battery pack. Reclaim the cache storage. See Reclaiming IOP cache storage. Then continue with the next step.

Note: When an auxiliary cache I/O adapter connected to the storage I/O adapter logs a 9055 SRC in the Product Activity Log, the Reclaim does not result in lost sectors. Otherwise, the Reclaim does result in lost sectors, and the system operator may want to restore data from the most recent saved tape after you complete the repair.

3. Does the IPL complete successfully?
 - No:** Contact your next level of support. **This ends the procedure.**
 - Yes: This ends the procedure.**
4. Are you working with a 571F/575B card set?
 - No:** Go to step 6 on page 200.
 - Yes:** Continue with the next step.
5. Remove the 571F/575B card set. Create a new card set with the following:

Note: Label all parts (both original and new) before moving them.

- The **new** replacement 571F storage IOA
- The cache directory card from the **original** 571F storage IOA
- The **original** 575B auxiliary cache adapter

See Separating the 571F/575B card set and moving the cache directory card.

- Ensure that the SCSI cable and the battery power cable on the top edge of the storage side of the card are connected to the top edge of the auxiliary cache side of the card.
- Reinstall this card set into the system and go to step 7.

6. Remove the I/O adapter. Install the **new** replacement storage I/O adapter with the following parts installed on it:

Note: Label all parts (both old and new) before moving them.

- The cache directory card from the **original** storage I/O adapter. On adapters with removable cache cards, the cache directory card will move with the removable cache card.
- The removable cache card from the **original** storage I/O adapter (this applies to only the 571E and some 2780 I/O adapters).

See Removing and replacing parts on type 2748, 2757, 2763, 2778, 2780, 2782, 4758, 4764, 5703, 5708, 5709, 571B, 571E, 571F, 573D, 574F, 575B.

- If the I/O adapter is attached to an auxiliary cache I/O adapter, ensure that the SCSI cable on the last port of the new replacement storage I/O adapter is connected to the auxiliary cache I/O adapter. For a list of auxiliary cache I/O adapters, see System parts.

7. Did the 9010 SRC that sent you to this procedure occur on a type-D IPL?

No: Continue with the next step.

Yes: Perform a type-D IPL and continue with the next step.

8. Has a new 9010 or 9050 SRC occurred in the Service Action Log?

No: Go to step 11.

Yes: Continue with the next step.

9. Was the new SRC 9050?

No: Continue with the next step.

Yes: Contact your next level of support. **This ends the procedure.**

10. The new SRC was 9010. Reclaim the cache storage. See Reclaiming IOP cache storage.

Note: When an auxiliary cache I/O adapter that is connected to the storage I/O adapter logs a 9055 SRC in the Product Activity Log, the reclaim does not result in lost sectors. Otherwise, the reclaim does result in lost sectors, and the system operator might want to restore data from the most recent saved tape after you complete the repair.

11. Are you working with a 571F/575B card set?

No: Go to step 13 on page 201.

Yes: Continue with the next step.

12. Remove the 571F/575B card set. Create a new card set with the following:

- The **new** 571F storage IOA
- The cache directory card from the **new** 571F storage IOA
- The **new** 575B auxiliary cache adapter

See Separating the 571F/575B card set and moving the cache directory card.

- Ensure that the SCSI cable and the battery power cable on the top edge of the storage side of the card are connected to the top edge of the auxiliary cache side of the card.
- Reinstall this card set into the system.

This ends the procedure.

13. Remove the I/O adapter. Install the **new** replacement storage I/O adapter that has the following parts installed on it:
 - The cache directory card from the **new** storage I/O adapter. On adapters with removable cache cards, the cache directory card will move with the removable cache card.
 - The removable cache card from the **new** storage I/O adapter (this applies to only the 571E and some 2780 I/O adapters).

See Removing and replacing parts on type 2748, 2757, 2763, 2778, 2780, 2782, 4758, 4764, 5703, 5708, 5709, 571B, 571E, 571F, 573D, 574F, 575B.

- If the I/O adapter is attached to an auxiliary cache I/O adapter, ensure that the SCSI cable on the last port of the new replacement storage I/O adapter is connected to the auxiliary cache I/O adapter. For a list of auxiliary cache I/O adapters, see the System parts.

This ends the procedure

IOPIP32:

You were sent to this procedure from unit reference code (URC) 9011.

About this task

Attention: There is data in the cache of this I/O card, that belongs to devices other than those that are attached. Customer data may be lost.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions before continuing with this procedure.
2. Did you just exchange the storage I/O adapter as a result of a failure?
 - **No:** Continue with the next step.
 - **Yes:** Reclaim the cache storage. See Reclaiming IOP cache storage.

Does the IPL complete successfully?

No: Go to “Start of call procedure” on page 2. **This ends the procedure.**

Yes: **This ends the procedure.**

3. Have the I/O cards been moved or reconfigured recently?
 - **No:** Ask your next level of support for assistance. **This ends the procedure.**
 - **Yes:** Perform the following steps:
 - a. Power off the system. See Powering on and powering off for details.
 - b. Restore all I/O cards to their original position.
 - c. Select the IPL type and mode that are used by the customer.
 - d. Power on the system.

Does the IPL complete successfully?

No: Ask your next level of support for assistance. **This ends the procedure.**

Yes: **This ends the procedure.**

IOPIP33:

The I/O processor card detected a device configuration error. The configuration sectors on the device may be incompatible with the current I/O processor card.

About this task

You were sent to this procedure from unit reference code (URC) 9001.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to (Determine if the system has logical partitions) before continuing with this procedure.
2. Has the I/O adapter been replaced with a different type of I/O adapter, or have the devices been moved from a different type of I/O adapter to this one?
 - **No:** Contact your next level of support. **This ends the procedure.**
 - **Yes:** Continue with the next step.
3. Does the disk unit contain data that needs to be saved?
 - **Yes:** Continue with the next step.
 - **No:** Initialize and format the disk units.
Attention: Any data on the disk unit will be lost. Perform the following:
 - a. Access SST or DST.
 - b. Select **Work with disk units**.
 - c. Did you get to DST with a type D IPL?
 - **No:** Select **Work with disk unit recovery** → **Disk unit problem recovery procedures**. Then, continue with the next step.
 - **Yes:** Continue with the next step.
 - d. Select **Initialize and format disk unit** for each disk unit. When the new disk unit is initialized and formatted, the display will show that the status is complete. This may take 30 minutes or longer.
 - e. The disk unit is now ready to be added to the system configuration. **This ends the procedure.**
4. The disk unit contains data that needs to be saved.
 - If the I/O adapter has been replaced with a different type of I/O adapter, reinstall the original I/O adapter. Then continue with the next step.
 - If the disk units have been moved from a different type of I/O adapter to this one, return the disk units to their original I/O adapter. Then continue with the next step.
5. Stop parity protection on the disk units, and power down the system normally with the I/O adapter in an operational state. The I/O adapter or disk units can now be returned to the configuration at the beginning of this procedure. **This ends the procedure.**

IOPIP34:

You were sent to this procedure from unit reference code (URC) 9027.

About this task

The I/O processor card detected that an array is not functional due to the present hardware configuration.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to (Determine if the system has logical partitions) before continuing with this procedure.
2. Has the I/O adapter been replaced with a different I/O adapter, or have the devices been moved from a different I/O adapter to this one?
 - **No:** Perform (IOPIP22). **This ends the procedure.**
 - **Yes:** Perform the following:
 - a. Power off the system. See (Power on/off the system and logical partitions).
 - b. Restore all I/O cards or devices to their original position.
 - c. Power on the system.
3. Does the IPL complete successfully?
 - **No:** Ask your next level of support for assistance. **This ends the procedure.**

- **Yes: This ends the procedure.**

IOPIP40:

Use this procedure to isolate the problem when a storage I/O adapter is connected to an incompatible or non-operational auxiliary cache I/O adapter.

About this task

Perform the following:

1. Are you working on a 571F/575B combination storage and auxiliary cache IOA card set (uses two card slot locations)?
 - **Yes:** Continue with step 2.
 - **No:** Continue with step 3.
2. Find the location of the card.
 - Use the location displayed in the Service Action Log. If the Service Action Log does not have a location, determine the address of the I/O adapter. See System reference code (SRC) address formats.
 - The location identified is for the 571F side of the card set.

You must configure both the 571F and the 575B in the same partition. Are both the 571F side of the card set and the 575B side of the card set configured in the same partition?

- **Yes:** Replace the entire card set. See Finding part locations for the model you are working on. **This ends the procedure.**
 - **No:** Change the configuration so that the same partition controls both cards in the card set. **This ends the procedure.**
3. Ensure that the SCSI cable on the last port of the storage I/O adapter is connected to the auxiliary cache I/O adapter. Do the following:
 - a. Use the location of the storage I/O adapter displayed in the Service Action Log. If the Service Action Log does not have a location, determine the address of the storage I/O adapter. See System reference code (SRC) address formats.
 - b. Determine the location of the storage I/O adapter. See Finding part locations for the model you are working on.
 - c. Ensure that the SCSI cable on the last port of the storage I/O adapter is properly connected to an auxiliary cache I/O adapter.
 - d. Ensure that both the auxiliary cache I/O adapter and the storage I/O adapter are in the same partition.
 - e. Ensure that the slot power indicator is lit for the auxiliary cache I/O adapter. If it is not, use concurrent maintenance to power on the slot.
 4. Ensure that the auxiliary cache I/O adapter is supported for the storage I/O adapter to which it is connected. See PCI adapter installation instructions for information about which adapters are compatible.
 5. Replace the SCSI cable on the last port of the storage I/O adapter that connects to the auxiliary cache I/O adapter. See Part number catalog for cable part number information. If this does not fix the problem, replace the auxiliary cache I/O adapter. **This ends the procedure.**

IOPIP41:

Use this procedure to correct the problem when an auxiliary cache I/O adapter is not connected to a storage I/O adapter or when an auxiliary cache I/O adapter is connected to an incompatible or non-operational storage I/O adapter.

About this task

Perform the following:

1. Are you working on a 571F/575B combination storage and auxiliary cache IOA card set (uses two card slot locations)?
 - **Yes:** Continue with step 2.
 - **No:** Continue with step 3.
2. Find the location of the card.
 - Use the location displayed in the Service Action Log. If the Service Action Log does not have a location, determine the address of the I/O adapter. See System reference code (SRC) address formats.
 - The location identified is for the 575B side of the card set.

You must configure both the 571F and the 575B in the same partition. Are both the 571F side of the card set and the 575B side of the card set configured in the same partition?

- **Yes:** Replace the entire card set. See Finding part locations for the model you are working on. **This ends the procedure.**
 - **No:** Change the configuration so that the same partition controls both cards in the card set. **This ends the procedure.**
3. Ensure that the SCSI cable of the auxiliary cache I/O adapter is connected to the last port of the storage I/O adapter. Do the following:
 - a. Use the location of the auxiliary cache I/O adapter displayed in the Service Action Log. If the Service Action Log does not have a location, determine the address of the auxiliary cache I/O adapter. See System reference code (SRC) address formats.
 - b. Determine the location of the auxiliary cache I/O adapter. See Finding part locations for the model you are working on.
 - c. Ensure that the SCSI cable of the auxiliary cache I/O adapter is properly connected to the last port of the storage I/O adapter.
 - d. Ensure that both the auxiliary cache I/O adapter and the storage I/O adapter are in the same partition.
 - e. Ensure that the slot power indicator is lit for the storage I/O adapter. If it is not, use concurrent maintenance to power on the slot.
 4. Did you just replace the auxiliary cache I/O adapter because of a failure and did the new replacement auxiliary cache I/O adapter log a 9073 URC?
 - **Yes:** The SCSI bus on the storage I/O adapter may be disabled as a result of the initial failure. Use Hardware Service Manager to re-IPL the storage I/O adapter that is connected to the new replacement auxiliary cache I/O adapter. **This ends the procedure.**
 - **No:** Continue with the next step.
 5. Ensure that the auxiliary cache I/O adapter is supported for the storage I/O adapter to which it is connected. See PCI adapter installation instructions for information about which adapters are compatible.
 6. Replace the SCSI cable that connects the auxiliary cache I/O adapter to the storage I/O adapter. See Part number catalog for cable part number information. If this does not fix the problem, replace the storage I/O adapter. **This ends the procedure.**

Licensed internal code (LIC) isolation procedures

Use this section to isolate licensed internal code (LIC) problems.

Please read and observe all safety procedures before servicing the system and while performing a procedure.

Attention: Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, (see Powering on and powering off) before removing, exchanging, or installing a field-replaceable unit (FRU).

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

LICIP01:

Licensed Internal Code detected an IOP programming problem.

About this task

You will need to gather data to determine the cause of the problem. If using **OptiConnect**, and the IOP is connected to another system, then collect this information from both systems. Read the "Licensed internal code (LIC) isolation procedures" on page 204 before continuing with this procedure.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions before continuing with this procedure.
2. Is the system operational: Did the SRC come from the Service Action Log, Product Activity Log, problem log, or system operator message?

- **No:** Go to step 9.
 - **Yes:** Is this a x6xx5121 SRC?
 - No:** Continue with the next step.
 - Yes:** Go to step 4.
3. If the IOP has DASD attached to it, then the IOP dump is in SID87 (or SID187 if the DASD is mirrored). Copy the IOP dump. See Working with storage dumps.
 4. Print the Product Activity Log, including any IOP dumps, to removable media for the day which the problem occurred. Select the option to obtain HEX data.
 5. Use the "Licensed Internal Code log" service function under DST/SST to copy the LIC log entries to removable media for the day that the problem occurred.
 6. Copy the system configuration list. See Printing the System Configuration List.
 7. Provide the dumps to Service Support.
 8. Check the Logical Hardware Resource STATUS field using Hardware Service Manager. If the status is not *Operational* then IPL the IOP using the I/O Debug option. Ignore resources with a status of *not connected*.
 To IPL a failed IOP, the following command can be used: VRYCFG CFGOBJ(XXXX) CFGTYPE(*CTL) STATUS(*RESET) or use DST/SST Hardware Service Manager.
 If the IPL does not work:
 - Check the Service Action Log for new SRC entries. See "Using the Service Action Log" on page 32. Use the new SRC and go to the Reference codes topic.
 - If there are no new SRCs in the Service Action Log, go to "Start of call procedure" on page 2. **This ends the procedure.**
 9. Has the system stopped but the DST console is still active: Did the SRC come from the Main Storage Dump manager screen on the DST console?
 - Yes:** Continue with the next step.
 - No:** Go to step 15.
 10. Complete a Problem Summary Form using the information in words 1-9 from the control panel, or from the DST Main Storage Dump screen.
 11. The system has already taken a partial main storage dump for this SRC and automatically re-IPLed to DST.
 12. Copy the main storage dump to tape. See Working with storage dumps.
 13. When the dump is completed, the system will re-IPL automatically. Sign on to DST or SST. Obtain the data in steps 3, 4, 5, and 6.
 14. Provide the dumps to Service Support. **This ends the procedure.**
 15. Has the system stopped with an SRC at the control panel?
 - Yes:** Continue with the next step.
 - No:** Go to step 2 on page 205.
 16. Complete a Problem Summary Form using the information in words 1-9 from the control panel, or from the DST Main storage dump screen.
 17. Do **NOT** power off the system. Perform a manual IPL to DST, and start the Main storage dump manager service function.
 18. Copy the main storage dump to tape.
 19. Obtain the data in steps 3, 4, 5, and 6.
 20. Re-IPL the system.
 21. Has the system stopped with an SRC at the control panel?
 - Yes:** Use the new SRC and go to the Reference codes topic. **This ends the procedure.**
 - No:** Provide the dumps to Service Support. **This ends the procedure.**

LICIP03:

Dedicated service tools (DST) found a permanent program error, or a hardware failure occurred.

About this task

Read the danger notices in the “Licensed internal code (LIC) isolation procedures” on page 204 before continuing with this procedure.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions before continuing with this procedure.
2. Does URC 50FF occur?
No: Continue with the next step.
Yes: Go to step 4.
3. Perform a main storage dump, then perform an IPL by doing the following:
 - a. Perform a main storage dump. See Working with storage dumps.
 - b. Select **Manual** mode and perform an IPL to DST. See Performing an IPL to DST.
 - c. When the IPL has completed, the system console should be at the DST display. Go to step 7. If the DST display does not appear on the system console, contact your next level of support.
4. Perform a main storage dump, then perform an IPL by doing the following:
 - a. Perform a main storage dump. See Working with storage dumps.
 - b. Select **Manual** mode and perform an IPL to DST. See Performing an IPL to DST.Does a display appear?
No: Continue with the next step.
Yes: Go to step 7.
5. If the problem is in the logical partition, exchange the first workstation I/O processor card on bus 1. See Removing and replacing parts.
6. Select **Manual** mode and perform an IPL to DST. See Performing an IPL to DST.
Is the IPL or Install the System display shown?
Yes: Continue with the next step.
No: Ask your next level of support for assistance and report the problem. **This ends the procedure.**
7. Copy the main storage dump to removable media. See Working with storage dumps.
8. Report a Licensed Internal Code problem to your next level of support. **This ends the procedure.**

LICIP04:

The initial program load (IPL) service function ended.

About this task

Dedicated service tools (DST) was in the disconnected status or lost communications with the IPL console because of a console failure and could not communicate with the user. Read the danger notices in “Licensed internal code (LIC) isolation procedures” on page 204 before continuing with this procedure.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions before continuing with this procedure.
2. Select function **21** (Make DST Available) on the control panel and press **Enter** to start DST again.
Does the DST Sign On display appear?
 - **No:** Continue with the next step.

- **Yes:** Perform the following steps (see Dedicated Service Tools (DST) for details):
 - a. Select **Start a Service Tool** → **Licensed Internal Code log**.
 - b. Perform a dump of the Licensed Internal Code log to tape. See Start a service tool for details.
 - c. Return here and continue with the next step.
- 3. Perform a main storage dump. See Working with storage dumps for details.
- 4. Copy the main storage dump to removable media. See Working with storage dumps for details.
- 5. Report a Licensed Internal Code problem to your next level of support. **This ends the procedure.**

LICIP07:

The system detected a problem while communicating with a specific I/O processor.

About this task

The problem could be caused by Licensed Internal Code, the I/O processor card, or by bus hardware. Read the danger notices in “Licensed internal code (LIC) isolation procedures” on page 204 before continuing with this procedure.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions before continuing with this procedure.
2. Did a previous procedure have you power off the system, perform an IPL in Manual mode, **and** is the system in Manual mode now?
 - **Yes:** Continue with the next step.
 - **No:** Perform the following steps:
 - a. Power off the system. See Powering on and powering off for details.
 - b. Select **Manual** mode on the control panel. See IPL type, mode, and speed options for details.
 - c. Power on the system.
 - d. Continue with the next step.

3. Does the SRC that sent you to this procedure appear on the control panel?

- **No:** Continue with the next step.
- **Yes:** Use the information in the SRC to determine the card direct select address. If the SRC is B6006910, you can use the last 8 characters of the top 16 character line of function 13 (word 7) to find the card direct select address in BBBBCcbb format.

BBBB Bus number

Cc Card direct select address

bb board address

Go to step 11 on page 209.

4. Does the console display indicate a problem with missing disks?

Yes: Continue with the next step.

No: Go to step 6 on page 209.

5. Perform the following steps:

- a. Go to the DST main menu.
- b. On the DST sign-on display, enter the DST full authority user ID and password. See Dedicated Service Tools (DST) for details.
- c. Select **Start a service tool** → **Hardware service manager**.
- d. Check for the SRC in the service action log. See “Using the Service Action Log” on page 32.
Did you find the same SRC that sent you to this procedure?
 - **Yes:** Note the date and time for that SRC. Go to the Product Activity Log and search all logs to find the same SRC. When you have found the SRC, go to step 9 on page 209.

- **No:** Perform the following steps:
 - 1) Return to the DST main menu.
 - 2) Perform an IPL and return to the Display Missing Disk Units display.
 - 3) Go to "LICIP11" on page 211. **This ends the procedure.**
6. Does the SRC that sent you to this procedure appear on the console or on the alternative console?
- **Yes:** Continue with the next step.
 - **No:** Does the IPL complete successfully to the IPL or Install the System display?

Yes: Continue with the next step.

No: A different SRC occurred. Go to the Reference codes topic and use the new SRC to correct the problem. **This ends the procedure.**
7. Perform the following:
- a. Use the full-authority password to sign on to DST.
 - b. Search *All logs* in the product activity log looking for references of SRC B600 5209 and the SRC that sent you to this procedure.
- Note:** Search only for SRCs that occurred during the last IPL.
- Did you find B600 5209 or the same SRC that sent you to this procedure?
- **Yes:** Go to step 10.
 - **No:** Did you find a different SRC than the one that sent you to this procedure?

Yes: Continue with the next step.

No: The problem appears to be intermittent. Ask your next level of support for assistance. **This ends the procedure.**
8. Use the new SRC to correct the problem. See the Reference codes topic. **This ends the procedure.**
9. Use **F11** to move through alternative views of the log analysis displays until you find the card position and frame ID of the failing IOP associated with the SRC.
- Was the card position and frame ID available, **and** did this information help you find the IOP?
- No:** Continue with the next step.
- Yes:** Go to step 12.
10. Perform the following steps:
- a. Display the report for the log entry of the SRC that sent you to this procedure.
 - b. Display the additional information for the entry.
 - c. If the SRC is B6006910, use characters 9-16 of the top 16 character line of function 13 (word 7) to find the card direct select address in BBBBCcbb format.
- BBBB** Bus number
Cc Card direct select address
bb board address
11. Use the BBBBCcbb information and refer to Finding part locations to determine the failing IOP and its location.
12. Go to "MABIP06" on page 136 to isolate an I/O adapter problem on the IOP you just identified. If this fails to isolate the problem, return here and continue with the next step.
13. Is the I/O processor card you identified in step 9 or step 11 the CFIOP?
- **No:** Continue with the next step.
 - **Yes:** Perform the following steps:
 - a. Exchange the failing CFIOP card. See Removing and replacing parts.

Note: You will be prompted for the system serial number. Ignore any error messages regarding system configuration that appear during the IPL.
 - b. Go to step 16 on page 210.

14. Perform the following steps:

- a. Power off the system.
- b. Remove the IOP card.
- c. Power on the system.

Does the SRC that sent you to this procedure appear on the control panel or appear as a new entry in the service action log or product activity log?

- **No:** Continue with the next step.
- **Yes:** Perform the following steps:
 - a. Power off the system.
 - b. Install the IOP card you just removed.
 - c. Replace the multi-adapter bridge using symbolic FRU "MA_BRDG" on page 705. **This ends the procedure.**

15. Perform the following steps:

- a. Power off the system.
- b. Exchange the failing IOP card.

16. Power on the system.

Does the SRC that sent you to this procedure appear on the control panel, on the console, or on the alternative console?

No: Continue with the next step.

Yes: Go to step 18.

17. Does a different SRC appear on the control panel, on the console, or on the alternative console?

- **Yes:** Go to the Reference codes topic and use the new SRC to correct the problem. **This ends the procedure.**
- **No:** On the IPL or Install the System display, check for the SRC in the service action log. See "Using the Service Action Log" on page 32 for details.

Did you find the same SRC that sent you to this procedure?

Yes: Continue with the next step.

No: Go to "Verifying a high-speed link, system PCI bus, or a multi-adapter bridge repair" on page 111. **This ends the procedure.**

18. Perform the following steps:

- a. Power off the system.
- b. Remove the IOP card you just exchanged and install the original card.
- c. Go to (Bus-PIP1). **This ends the procedure.**

19. Ask your next level of support for assistance and report a Licensed Internal Code problem. You may be asked to verify that all PTFs have been applied.

If you are asked to perform the following, see the following:

- Copy the main storage dump from disk to tape or diskette, see Working with storage dumps.
- Print the product activity log, see "Using the product activity log" on page 34.
- Copy the IOP storage dump to removable media, see Working with storage dumps. **This ends the procedure.**

LICIP08:

Licensed Internal Code detected an operating system program problem.

About this task

Read the danger notices in “Licensed internal code (LIC) isolation procedures” on page 204 before continuing with this procedure.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions before continuing with this procedure.
2. Select **Manual** mode and perform an IPL to DST. See Performing an IPL to DST.
Does the same SRC occur?
 - **Yes:** Go to step 5.
 - **No:** Does the same URC appear on the console?
No: Continue with the next step.
Yes: Go to step 4.
3. Does a different SRC occur, or does a different URC appear on the console?
 - **Yes:** Use the new SRC or reference code to correct the problem. See the Reference codes topic. If the procedure for the new SRC sends you back to this procedure, then continue with the next step.
This ends the procedure.
 - **No:** Select **Perform an IPL** on the IPL or Install the System display to complete the IPL.
Is the problem intermittent?
Yes: Continue with the next step.
No: **This ends the procedure.**
4. Copy the main storage dump to removable media. See Working with storage dumps.
5. Report a Licensed Internal Code problem to your next level of support. **This ends the procedure.**

LICIP11:

Use this procedure to isolate a system **STARTUP** failure in the initial program load (IPL) mode.

About this task

Ensure you have read the danger notices in “Licensed internal code (LIC) isolation procedures” on page 204 before continuing with this procedure.

How to find the cause code:

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions.
2. Were you given a cause code by another procedure?
No: Continue with the next step.
Yes: Use the cause code given by the other procedure. Then, go to step 4.
3. Look at the Data display characters in word 3. You can obtain these characters by either:
 - Looking at word 3 on the Problem summary form that was filled out earlier.
 - Selecting characters 9-16 of the top 16 character line of function 12 (word 3).
4. The 4 leftmost characters of word 3 represent the **cause code**. Select the cause code to go to the correct isolation instructions:

“0001” on page 212

“0010” on page 218

“0020” on page 220

“0031” on page 222

“0002” on page 212

“0011” on page 218

“0021” on page 220

“0033” on page 222

“0004” on page 215

“0012” on page 218

“0022” on page 220

“0034” on page 222

"0005" on page 215	"0015" on page 218	"0023" on page 221	"0035" on page 222
"0006" on page 216	"0016" on page 218	"0024" on page 221	"0037" on page 222
"0007" on page 216	"0017" on page 218	"0025" on page 221	"0099" on page 223
"0008" on page 216	"0018" on page 218	"0026" on page 221	
"0009" on page 216	"0019" on page 218	"0027" on page 222	
"000A" on page 216	"001A" on page 219		
"000B" on page 217	"001C" on page 219		
"000C" on page 217	"001D" on page 219		
"000D" on page 217	"001E" on page 220		
"000E" on page 217	"001F" on page 220		

0001:

About this task

Disk configuration is missing.

1. Select **Manual** mode and perform an IPL to DST for the failing partition (see Performing an IPL to DST). Does the Disk Configuration Error Report display appear?

Yes: Continue with the next step.

No: The IPL completed successfully. **This ends the procedure.**

2. Is Missing Disk Configuration information displayed?

Yes: Continue with the next step.

No: Go to step 1 for cause code 0002.

3. On the Missing Disk Configuration display, perform the following:

- a. Select option **5** → **Display Detailed Report** → **Work with disk units** → **Work with disk unit recovery** → **Recover Configuration**.
- b. Follow the instructions on the display. After the disk configuration is recovered, the system automatically performs an IPL. **This ends the procedure.**

0002:

About this task

Disk units are missing from the disk configuration.

Data from the control panel can be used to find information about the missing disk unit. See System Reference Code (SRC) information for details.

1. Did you enter this procedure because all the devices listed on the Display Missing Units display (reached from the Disk Configuration Error Report, the Disk Configuration Attention Report, or the Disk Configuration Warning Report display) have a reference code of 0000?

No: Continue with the next step.

Yes: Go to step 20 on page 214.

2. Have you installed a new disk enclosure in a disk unit and not restored the data to the disk unit?

No: Continue with the next step.

Yes: Ignore SRC A600 5090. Continue with the disk unit exchange recovery procedure (see Copy the contents of the LIC log). **This ends the procedure.**

3. Use words 1-9 from the information recorded on the Problem summary form to determine the disk unit that is missing from the configuration:

- Characters 1-8 of the bottom 16 character line of function 12 (word 4) contain the IOP direct select address.

- Characters 1-8 of the top 16 character line of function 13 (word 6) contains the disk unit type, level and model number.
- Characters 9-16 of the top 16 character line of function 13 (word 7) contains the disk unit serial number.

Note: For 2105 and 2107 disk units, the 5 rightmost characters of word 7 contain the disk unit serial number.

- Characters 1-8 of the bottom 16 character line of function 13 (word 8) contains the number of missing disk units.

Are the problem disk units 432x, 660x, 671x, or 673x disk units?

No: Continue with the next step.

Yes: Go to step 5.

4. Attempt to get all devices attached to the MSIOP to Ready status by performing the following:
 - a. The MSIOP address (MSIOP Direct Select Address) to use is characters 1-8 of the bottom 16 character line of function 12 (word 4).
 - b. Verify the following and correct if necessary before continuing with step 10.
 - All cable connections are made correctly and are tight.
 - All storage devices have the correct signal bus address, as indicated in the system configuration list.
 - All storage devices are powered on and ready.
5. Did you enter this procedure because there was an entry in the Service Action Log which has the reference code B6005090?

Yes: Continue with the next step.

No: Go to step 10.
6. Are customer jobs running on the system now?

Yes: Continue with the next step.

No: Ensure that the customer is not running any jobs before continuing with this procedure. Then go to step 10.
7. Select **System Service Tools (SST) → Work with disk units → Display disk configuration → Display disk configuration status**.

Are any disk units missing from the configuration (indicated by an asterisk *)?

Yes: Continue with the next step.

No: This ends the procedure.
8. Do all of the disk units that are missing from the configuration have a status of "Suspended"?

Yes: Continue with the next step.

No: Ensure that the customer is not running any jobs before continuing with this procedure. Then go to step 10.
9. Use the Service Action Log to determine if there are any entries for the missing disk units (see "Using the Service Action Log" on page 32). Are there any entries in the Service Action Log for the missing disk units that were logged since the last IPL?

Yes: Use the information in the Service Action Log, and go to the SRC information for the specific disk unit (see Reference codes). Perform the action indicated for the unit reference code. **This ends the procedure.**

No: Go to step 21 on page 214.
10. Select **Manual** mode and perform an IPL to DST for the failing partition (see Performing an IPL to DST). Does the Disk Configuration Error Report, the Disk Configuration Attention Report, or the Disk Configuration Warning Report display appear?

Yes: Continue with the next step.

- No:** The IPL completed successfully. **This ends the procedure.**
11. Does one of the following messages appear in the list?
- Missing disk units in the configuration
 - Missing mirror protected disk units in the configuration
- Yes:** Continue with the next step.
- No:** Go to step 16.
12. Select option 5. Do the missing units have device parity protected status? (Device parity protection status is indicated by "DPY/", "RAID-5", or "RAID-6" as the first four characters of the status.)
- Yes:** Continue with the next step.
- No:** Go to step 14.
13. Is the status DPY/Active, RAID-5/Active, or RAID-6/Active?
- Yes:** Continue with the next step.
- No:** Use the Service Action Log to determine if there are any entries for the missing disk units or the IOA/IOP controlling them. See "Using the Service Action Log" on page 32 for details. **This ends the procedure.**
14. Press **F11**, and press **Enter** to display the details.
- Do all of the disk units listed on the display have a reference code of 0000?
- Yes:** Continue with the next step.
- No:** Use the disk unit reference code shown on the display and go to the SRC information for the specific disk unit in the Reference codes topic. Perform the action indicated for the unit reference code. **This ends the procedure.**
15. Do all of the IOPs or devices listed on the display have a reference code of 0000?
- No:** Use the IOP reference code shown on the display and go to Reference codes. Perform the action indicated for the reference code. **This ends the procedure.**
- Yes:** Go to step 20.
16. Does the following message appear in the list: Unknown load-source status?
- Yes:** Continue with the next step.
- No:** Go to step 18.
17. Select option 5, press **F11**, and then press **Enter** to display the details.
- Does the Assign Missing Load Source Disk display appear?
- No:** Continue with the next step.
- Yes:** Press **Enter** to assign the missing load-source disk unit. **This ends the procedure.**
18. Does the following message appear in the list?
- Load source failure
- Yes:** Continue with the next step.
- No:** The IPL completed successfully. **This ends the procedure.**
19. Select option 5, press **F11**, and then press **Enter** to display the details.
20. The number of failing disk unit facilities (actuators) is the number of disk units displayed. A disk unit has a *Unit* number greater than zero.
- Find the failing disk unit by type, model, serial number, or address displayed on the console.
21. Is there more than one failing disk device attached to the IOA or MSIOP?
- Yes:** Continue with the next step.
- No:** Go to step 24 on page 215.
22. Use the SAL to determine if there are any entries that occurred around the time of the A6xx/B6xx 5090 SRC (see "Using the Service Action Log" on page 32). Are there any such entries?
- No:** Continue with the next step.

Yes: Use the information in the SAL and go to the SRC information for the specific error (see Reference codes). Perform the action indicated for the unit reference code. **This ends the procedure.**

23. Are all the disk devices that are attached to the IOA or MSIOP failing? (If the disk units are using mirrored protection, select **Display Disk Status** to find out.)

No: Continue with the next step.

Yes: Go to step 25.

24. Go to the service information for the specific disk unit listed below and perform the action indicated. Then return here and answer the question below the listed disk units.

- **2105, 2107 disk units:** Use SRC 3002 in (2105, 2107) Disk unit reference codes and exchange the FRUs shown one at a time.
- **432x, 660x, 671x, 673x disk units:** Use SRC 3002 in (432x, 660x, 671x, 673x) Disk unit reference codes and exchange the FRUs shown one at a time.

Did the disk unit service information correct the problem?

No: Continue with the next step.

Yes: **This ends the procedure.**

25. Exchange the IOA or MSIOP (see Removing and replacing parts).

If exchanging the IOA or MSIOP did not correct the problem, use the original SRC and exchange the failing items, starting with the highest probable cause of failure. If the failing item list contains FI codes, see "Using failing item codes" on page 598 to help determine parts and locations. **This ends the procedure.**

0004:

About this task

Some disk units are unprotected but configured into a mirrored ASP. These units were originally DPY, RAID-5, or RAID-6 protected but protection was disabled.

Perform the following:

1. Is the system managed by an HMC?

Yes: Select **DST** by performing the HMC action for Function 21 for the failing partition (see Control panel functions in the Hardware Management Console topic). Then continue with the next step.

No: Select **DST** using Function 21 for the failing partition (see Control panel functions in Service functions). Then continue with the next step.

2. Select **Work with disk units** and take the actions to protect the system.

If you do not know what actions to take, select **Manual** mode and perform an IPL to DST for the failing partition. See Performing an IPL to DST.

When the Disk configuration error report appears, the recovery actions are listed in the Help text for the error message "Unprotected disk units in a mirrored ASP". **This ends the procedure.**

0005:

About this task

A disk unit using parity protection is operating in exposed mode.

1. Select **Manual** mode and perform an IPL to DST for the failing partition. See Performing an IPL to DST.

2. Choose from the following options:

- If the same reference code appears, ask your next level of support for assistance.
- If no reference code appears and the IPL completes successfully, the problem is corrected.

- If a different reference code appears, use it to correct the problem. See the Reference codes topic.
This ends the procedure.

0006:

About this task

There are new devices attached to the system that do not have Licensed Internal Code installed. Ask your next level of support for assistance.

0007:

About this task

Some of the configured disk units have device parity protection disabled when the system expected device parity protection to be enabled.

1. Is the system managed by an HMC?

Yes: Select **DST** by performing the HMC action for Function 21 for the failing partition (see Control panel functions in the Hardware Management Console topic). Then continue with the next step.

No: Select **DST** using Function 21 for the failing partition (see Control panel functions in Service functions). Then continue with the next step.

2. Correct the problem by doing the following:
 - a. Select **Work with disk units** → **Work with disk unit recovery** → **Correct device parity protection**.
 - b. Follow the online instructions. **This ends the procedure.**

0008:

About this task

A disk unit has no more alternate sectors to assign.

1. Determine the failing unit by type, model, serial number or address given in words 4-7. See System Reference Code (SRC) information.
2. See the service information for the specific storage device. Use the disk unit reference code listed below for service information entry.

432x 102E, 660x 102E, 671x 102E, 673x 102E (see Reference codes).

This ends the procedure.

0009:

About this task

The procedure to restore a disk unit from the tape unit did not complete. Continue with the disk unit exchange recovery procedure. See Disk unit recovery procedures.

000A:

About this task

There is a problem with a disk unit subsystem. As a result, there are missing disk units in the system.

Perform the following:

1. Is the system managed by an HMC?

Yes: Select **DST** by performing the HMC action for Function 21 for the failing partition (see Control panel functions in the Hardware Management Console topic). Then continue with the next step.

No: Select **DST** using Function 21 for the failing partition (see Control panel functions in Service functions). Then continue with the next step.

2. On the Service Tools display, select **Start a Service Tool** → **Product activity log** → **Analyze log**.
3. On the Select Subsystem Data display, select the option to view **All Logs**.

Note: You can change the From: and To: Dates and Times from the 24-hour default if the time that the customer reported having the problem was more than 24 hours ago.

4. Use the defaults on the Select Analysis Report Options display by pressing **Enter**.
5. Search the entries on the Log Analysis Report display for system reference codes associated with the missing disk units.
6. Go to Reference codes to correct the problem. **This ends the procedure.**

000B:

About this task

Some system IOPs require cache storage be reclaimed.

1. Is the system managed by an HMC?

Yes: Select **DST** by performing the HMC action for Function 21 for the failing partition (see Control panel functions in the Hardware Management Console topic). Then continue with the next step.

No: Select **DST** using Function 21 for the failing partition (see Control panel functions in Service functions). Then continue with the next step.

2. Reclaim the cache adapter card storage. See Reclaiming IOP cache storage.

Note: The system operator may want to restore data from the most recent saved tape after you complete the repair.

This ends the procedure.

000C:

About this task

One of the mirror protected disk units has no more alternate sectors to assign.

1. Determine the failing unit by type, model, serial number or address given in words 4-7. See System Reference Code (SRC) information.
2. See the service information for the specific storage device. Use the disk unit reference code listed below for service information entry.

432x 102E, 660x 102E, 671x 102E, 673x 102E (see Reference codes).

This ends the procedure.

000D:

About this task

The system disk capacity has been exceeded.

For more information about disk capacity, see *iSeries Handbook*, GA19-5486-20.

000E:

About this task

Start compression failure.

1. Select **Manual** mode and perform an IPL to DST for the failing partition. See Performing an IPL to DST.
2. Correct the problem by doing the following:
 - a. Select **Work with disk units** → **Work with disk unit recovery** → **Recover from start compression failure**.

- b. Follow the on-line instructions. **This ends the procedure.**

0010:

About this task

The disk configuration has changed.

The operating system must be installed again, and all customer data must be restored.

1. Select **Manual** mode on the control panel.
2. Perform an IPL to reinstall the operating system.
3. The customer must restore all data from the latest system backup. **This ends the procedure.**

0011:

About this task

The serial number of the control panel does not match the system serial number.

1. Select **Manual** mode on the control panel.
2. Perform an IPL. You will be prompted for the system serial number. **This ends the procedure.**

0012:

About this task

The operation to write the vital product data (VPD) to the control panel failed.

Exchange the multiple function I/O processor card. See Finding part locations for the model you are working on for the location of the card and a link to the remove and replace procedure.

0015:

About this task

The mirrored load-source disk unit is missing from the disk configuration. Go to step 1 on page 212 for cause code 0002.

0016:

About this task

A mirrored protected disk unit is missing. Wait six minutes. If the same reference code appears, go to step 1 on page 212 for cause code 0002.

0017:

About this task

One or more disk units have a lower level of mirrored protection than originally configured.

1. Select **Manual** mode and perform an IPL to DST for the failing partition. See Performing an IPL to DST.
2. Review the detailed display, which shows the new and the previous levels of mirrored protection. **This ends the procedure.**

0018:

About this task

Load-source configuration problem. The load-source disk unit is using mirrored protection and is configured at an incorrect address. Ensure that the load-source disk unit is in device location 1.

0019:

About this task

One or more disk units were formatted incorrectly.

The system will continue to operate normally. However, it will not operate at optimum performance. To repair the problem, perform the following:

1. Record the unit number and serial number of the disk unit that is formatted incorrectly.
2. Sign on to DST. See Accessing Dedicated Service Tools.
3. Select **Work with disk units** → **Work with disk unit configuration** → **Remove unit from configuration**.
4. Select the disk unit you recorded earlier in this procedure.
5. Confirm the option to remove data from the disk unit. This step may take a long time because the data must be moved to other disk units in the auxiliary storage pool (ASP).
6. When the remove function is complete, select **Add unit to configuration**.
7. Select the disk unit you recorded earlier in this procedure.
8. Confirm the add. The disk unit is formatted during functional operation. **This ends the procedure.**

001A:

About this task

The load-source disk unit data is down-level.

The load-source disk unit is mirror protected. The system is using the load-source disk unit that does not have the current level of data.

1. Select **Manual** mode and perform an IPL to DST for the failing partition. See Performing an IPL to DST. Does the Disk Configuration Error Report display appear?

No: The system is now using the correct load-source. **This ends the procedure.**

Yes: Continue with the next step.

2. Does a "Load source failure" message appear in the list?

Yes: Continue with the next step.

No: The system is now using the correct load-source. **This ends the procedure.**

3. Select option 5, press **F11**, and then press **Enter** to display details.

The load-source type, model, and serial number information that the system needs is displayed on the console.

Is the load-source disk unit (displayed on the console) attached to an MSIOP that cannot be used for a load-source?

Yes: Contact your next level of support. **This ends the procedure.**

No: The load-source disk unit is missing. Go to step 1 on page 212 for cause code 0002.

001C:

About this task

The disk units that are needed to update the system configuration are missing.

Perform an IPL by doing the following:

1. Select **Manual** mode on the control panel.
2. Perform an IPL. See IPL information to determine the cause of the problem. **This ends the procedure.**

001D:

1. Is the Disk Configuration Attention Report, or the Disk Configuration Warning Report displayed?

Yes: Continue with the next step.

No: Ask your next level of support for assistance. **This ends the procedure.**

2. On the Bad Load Source Configuration message line, select **5**, and press **Enter** to rebuild the load-source configuration information. If there are other types of warnings, select option **5** on the warnings, and correct the problem. **This ends the procedure.**

001E:

About this task

The load-source data must be restored. See Disk unit recovery procedures.

001F:

About this task

Licensed Internal Code was installed on the wrong disk unit of the load-source mirrored pair.

The system performed an IPL on a load source that may not contain the same level of Licensed Internal Code that was installed on the other load source. The type, model, and address of the active device are displayed in words 4-7 of the SRC.

Choose from the following options:

1. If the load-source disk unit in position 1 contains the correct level of Licensed Internal Code, perform the following:
 - a. Select **Manual** mode and perform an IPL to DST for the failing partition. See Performing an IPL to DST. Is the Disk Configuration Attention Report or Disk Configuration Warning Report displayed?
Yes: Select option **5** on the Incorrect Licensed Internal Code Install message line. When the Display Incorrect Licensed Internal Code Install display appears on the console, press **Enter**.
No: The system is now using the correct load source. **This ends the procedure.**
2. If the load-source disk unit in position 1 of the system unit does **not** contain the correct level of Licensed Internal Code, restore the Licensed Internal Code to the disk unit in position 1 of the system unit. See Utilities to Install and Restore Licensed Internal Code. **This ends the procedure.**

0020:

About this task

The system appears to be a one disk unit system. Select **Manual** mode and perform an IPL to DST for the failing partition. See Performing an IPL to DST.

0021:

About this task

The system password verification failed.

1. Select **Manual** mode and perform an IPL to DST for the failing partition. See Performing an IPL to DST.
2. When prompted, enter the correct system password. If the correct system password is not available perform the following:
 - a. Select **Bypass the system password**.
 - b. Have the customer contact the marketing representative immediately to order a new system password from your service provider. **This ends the procedure.**

0022:

About this task

A different compression status was expected on a reporting disk unit. Accept the warning. The reported compression status will be used as the current compression status.

0023:

About this task

There is a problem with a disk unit subsystem. As a result, there are missing disk units in the system. The system is capable of IPLing in this state.

1. Is the system managed by an HMC?

Yes: Select **DST** by performing the HMC action for Function 21 for the failing partition (see Control panel functions in the Hardware Management Console topic). Then continue with the next step.

No: Select **DST** using Function 21 for the failing partition (see Control panel functions in Service functions). Then continue with the next step.

2. On the Service Tools display, select **Start a Service Tool** → **Product activity log** → **Analyze log**.
3. On the Select Subsystem Data display, select the option to view All Logs.

Note: You can change the From: and To: Dates and Times from the 24-hour default if the time that the customer reported having the problem was more than 24 hours ago.

4. Use the defaults on the Select Analysis Report Options display by pressing **Enter**.
5. Search the entries on the Log Analysis Report display for system reference codes associated with the missing disk units.
6. Go to the Reference codes topic and use the SRC information to correct the problem. **This ends the procedure.**

0024:

About this task

The system type or system unique ID needs to be entered.

1. Select **Manual** mode and perform an IPL to DST for the failing partition. See Performing an IPL to DST.
2. When prompted, enter the correct system type or system unique ID. **This ends the procedure.**

0025:

About this task

Hardware Resource Information Persistence disabled.

1. Select **Manual** mode and perform an IPL to DST for the failing partition. See Performing an IPL to DST.
2. Contact your next level of support for instructions on how to enable the Hardware Resource Information Persistence function. **This ends the procedure.**

0026:

About this task

A disk unit is incorrectly configured for an LPAR system.

1. Select **Manual** mode and perform an IPL to DST for the failing partition. See Performing an IPL to DST.
2. On the Service Tools display, select **Start a Service Tool** → **Product activity log** → **Analyze log**.
3. On the Select Subsystem Data display, select the option to view All Logs.

Note: You can change the From: and To: Dates and Times from the 24-hour default if the time that the customer reported having the problem was more than 24 hours ago.

4. Use the defaults on the Select Analysis Report Options display by pressing **Enter**.
5. Search the entries on the Log Analysis Report display for system reference codes (B6xx 53xx) that are associated with the error.
6. Go to the Reference codes topic and use the SRC information to correct the problem. **This ends the procedure.**

0027:

About this task

The user ASP has overflowed. Contact your next level of support.

0031:

About this task

A problem was detected with the installation of Licensed Internal Code service displays. The cause may be defective media, the installation media being removed too early, a device problem or a Licensed Internal Code problem.

- Ask your next level of support for assistance. Characters 13-16 of the top 16 character line of function 12 (4 rightmost characters of word 3) contain information regarding the install error.
- If the customer does not require the service displays to be in the national language, you may be able to continue by performing another system IPL. **This ends the procedure.**

0033:

About this task

System model not supported. This model of hardware does not support the System Licensed Internal Code version and release that is being used. Use a supported version and release of the System Licensed Internal Code.

0034:

About this task

Insufficient main storage capacity.

There is not enough main storage capacity. For details about how much more capacity is required, see the "Insufficient Main Storage Capacity" screen, which is displayed when the system is IPLed in manual mode. Typically, this error occurs when you have moved memory between logical partitions, and one partition no longer has a sufficient amount of main storage.

0035:

About this task

Data from a User ASP has overflowed into the System ASP (ASP 1). There is not enough free space in the User ASP to move the overflowed data from the System ASP back into the User ASP. The system will continue to run in this condition, but if a disk failure in the System ASP causes the System ASP to be cleared, the data in the User ASP will also be cleared out.

You should delete some files or objects from the User ASP so that enough free space exists in the User ASP to allow the data that is overflowed into the System ASP to be moved back.

0037:

About this task

One or more functional connections to a disk unit in a multi-path environment have not been detected. The connections to the disk unit were established by running ESS Specialist. If you use the server in this state, you may cause a loss of data. You must ensure that all of the functional connections are still established between the disk and the Input/Output Adapters (IOAs) attached to this server and this logical partition. If there is an IOA which has a connection to the disk unit that has been moved to a different logical partition or different server, you should not continue with the IPL. Notify your next level of support.

0099:

About this task

A Licensed Internal Code program error occurred. Ask your next level of support for assistance.

LICIP12:

Use this procedure to isolate an Independent Auxiliary Storage Pool (IASP) vary on failure.

About this task

Message CPDB8E0 occurred if the user attempted to vary on the IASP. Read the **Danger** notices in “Licensed internal code (LIC) isolation procedures” on page 204 before continuing with this procedure.

How to find the cause code:

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions before continuing with this procedure.
2. Were you given a cause code by another procedure?
No: Continue with the next step.
Yes: Use the cause code given by the other procedure. Then go to step 4.
3. Look at the characters in word 3. You can obtain these characters by doing the following:
 - a. On the command line, enter the Start System Service Tools (**STRSST**) command. If you cannot get to SST, use function 21 to get to DST. See Selecting Function 21 while the system is operational. Do not IPL the system to get to DST.
 - b. On the Start Service Tools Sign On display, type in a User ID with service authority and password.
 - c. Select **Start a Service Tool** → **Hardware Service Manager** → **Work with service action log**.
 - d. On the Select Timeframe display, change the From: Date and Time to a date and time prior to when the user attempted to vary on the IASP.
 - e. Search for a B6005094 system reference code that occurred at the time the user attempted to vary on the IASP. Display the failing item information for this entry.
 - f. Select the function key for **Additional details**.
 - g. The 4 leftmost characters of word 3 is the cause code to be used in this procedure.
4. Find the **cause code** below:

“0002” on page 224

“000A” on page 226

“002C” on page 227

“0030” on page 227

“0004” on page 225

“000B” on page 226

“002D” on page 227

“0032” on page 227

“0007” on page 225

“000D” on page 226

“002E” on page 227

“0099” on page 228

“0009” on page 226

“000E” on page 226

“002F” on page 227

0002:

About this task

Disk units are missing from the IASP disk configuration.

1. Have you installed a new disk enclosure in a disk unit and not restored the data to the disk unit?

- **No:** Continue with the next step.
- **Yes:** Ignore SRC A600 5094.

Continue with the disk unit exchange recovery procedure. See Disk unit recovery procedures. **This ends the procedure.**

2. Use words 1-9 from the information in the Service Action Log to determine the disk unit that is missing from the configuration:

- Word 4 contains the IOP direct select address.
- Word 5 contains the unit address.
- Word 6 contains the disk unit type, level and model number.
- Word 7 contains the disk unit serial number.
- Word 8 contains the number of missing disk units.

Are the problem disk units 432x, 660x, or 671x Disk Units?

- **Yes:** Continue with the next step.
- **No:** Attempt to get all devices attached to the IOP to Ready status by performing the following:
 - a. The IOP address (IOP Direct Select Address) to use is Word 4.
 - b. Verify the following, and correct if necessary:
 - Ensure all cable connections are made correctly and are tight.
 - Ensure the configuration within the device is correct.
 - Ensure all storage devices are powered on and ready.
 - c. Continue with the next step.

3. Perform the following:

Select **System Service Tools (SST)** → **Work with disk units** → **Display disk configuration** → **Display disk configuration status**.

Are any disk units missing-indicated with an asterisk (*)- from the IASP configuration?

Yes: Continue with the next step.

No: **This ends the procedure.**

4. Use the Service Action Log to determine if there are any entries other than B6xx 5094 for the missing disk units or the IOA or IOP that is controlling them. See “Using the Service Action Log” on page 32.

Are there any entries in the Service Action Log other than B6xx 5094 for the missing disk units or the IOA or IOP that is controlling them?

No: Continue with the next step.

Yes: Use the information in the Service Action Log to solve the problem. See “Using the Service Action Log” on page 32. **This ends the procedure.**

5. Did you enter this procedure because there was a B6xx 5094 cause code of 0030?

- **No:** Continue with the next step.
- **Yes:** Work with the customer to recover the unknown configuration source disk unit.

Use a workstation with iSeries Navigator installed to select the disk pool with the problem, and then select **Recover unknown configuration source** for this disk pool. **This ends the procedure.**

6. Use Hardware Service Manager to display logical resources connected to the IOP. See Hardware Service Manager.

7. Is every device attached to the IOP failing?
 - **Yes:** Continue with the next step.
 - **No:** Are all of the disk units that are attached to one IOA missing?
 - **No:** Continue with the next step.
 - **Yes:** Exchange the IOA. Use the IOP direct select address and the first character of the unit address from step 2 on page 224 to find the location. See Finding part locations. **This ends the procedure.**
8. Is there more than one storage IOA attached to the IOP?
 - **Yes:** Exchange the IOP. Use the IOP direct select address from step 2 on page 224 to find the location. See Finding part locations. **This ends the procedure.**
 - **No:** Go to step 10.
9. Go to the service information for the specific disk unit that is listed below and perform the action indicated. Then return here and answer the following question.
 - **2105 Disk Units:** Use SRC 3002 in (2105, 2107) Disk unit reference codes and exchange the FRUs shown one at a time.
 - **432x, 660x, 671x Disk Units:** Use SRC 3002 in the Reference codes list and exchange the FRUs shown one at a time.

Did the disk unit service information correct the problem?

No: Continue with the next step.

Yes: **This ends the procedure.**
10. Perform the following:
 - a. Exchange the IOA. Use the IOP direct select address and the first character of the unit address from step 2 on page 224 to find the location. See Finding part locations.
 - b. If exchanging the IOA does not correct the problem, exchange the IOP. Use the IOP direct select address from step 2 on page 224 to find the location. See Finding part locations.
 - c. If exchanging the IOP does not correct the problem, exchange the failing items in the following FRU list starting with the first item in the list.
 - 1) FI01140
 - 2) "BACKPLN" on page 622
 - 3) FI00580
 - 4) AJDG301

This ends the procedure.

0004:

About this task

Some disk units are unprotected but configured into a mirrored IASP. These units were originally DPY protected but protection was disabled.

Direct the customer to take the actions necessary to start protection on these disk units. **This ends the procedure.**

0007:

About this task

Some of the configured disk units have device parity protection disabled when the system expected device parity protection to be enabled.

1. Select **Manual** mode and perform an IPL to DST. See Performing an IPL to DST.
2. Correct the problem by doing the following:

- a. Select **Work with disk units** → **Work with disk unit recovery** → **Correct device parity protection mismatch**.
- b. Follow the on-line instructions. **This ends the procedure.**

0008:

About this task

A disk unit has no more alternate sectors to assign.

1. Determine the failing unit by type, model, serial number or address given in words 4-7. See System Reference Code (SRC) information.
2. See the service information for the specific storage device. Use the disk unit reference code listed below for service information entry.
432x 102E, 660x 102E, 671x 102E (see the Reference codes topic). **This ends the procedure.**

0009:

About this task

The procedure to restore a disk unit from the tape unit did not complete.

Continue with the disk unit exchange recovery procedure. See Disk unit recovery procedures. **This ends the procedure.**

000A:

About this task

There is a problem with a disk unit subsystem. As a result, there are missing disk units in the system.

Use the Service Action Log to find system reference codes associated with the missing disk units by changing the From: Date and Time on the Select Timeframe display to a date and time prior to when the user attempted to vary on the IASP. For information on how to use the Service Action Log, see "Using the Service Action Log" on page 32. **This ends the procedure.**

000B:

About this task

Some system IOPs require cache storage be reclaimed.

1. Start SST.
2. Reclaim the cache adapter card storage by performing the following:
 - a. Select **Work with disk units** → **Work with disk unit recovery** → **Reclaim IOP Cache Storage**.
 - b. Follow the on-line instructions to reclaim cache storage.
 - c. After you complete the repair, the system operator may want to restore data from the most recently saved tape. **This ends the procedure.**

000D:

About this task

The system disk capacity has been exceeded.

For more information about disk capacity, see the *iSeries Handbook*. **This ends the procedure.**

000E:

About this task

Start compression failure.

1. Select **Manual** mode and perform an IPL to DST. See Performing an IPL to DST.
2. Correct the problem by doing the following:
 - a. Select **Work with disk units** → **Work with disk unit recovery** → **Recover from start compression failure**.
 - b. Follow the on-line instructions. **This ends the procedure.**

002C:

About this task

A Licensed Internal Code program error occurred.

Ask your next level of support for assistance. **This ends the procedure.**

002D:

About this task

The IASP configuration source disk unit data is down-level.

The system is using the IASP configuration source disk unit that does **not** have the current level of data.

Work with the customer to recover the configuration. On a workstation with iSeries Navigator installed, select the disk pool with the problem, and then select **Recover configuration**. **This ends the procedure.**

002E:

About this task

The Independent ASP is assigned to another system or a Licensed Internal Code program error occurred.

Work with the customer to check other systems to determine if the Independent ASP has been assigned to it. If the Independent ASP has not been assigned to another system, ask your next level of support for assistance. **This ends the procedure.**

002F:

About this task

The system version and release are at a different level than the IASP version and release.

The system version and release must be upgraded to be the same as the system version and release in which the IASP was created. **This ends the procedure.**

0030:

About this task

The mirrored IASP configuration source disk unit has a disk configuration status of *unknown* and is missing from the disk configuration.

Go to step 1 on page 224 for cause code 0002.

0032:

About this task

A Licensed Internal Code program error occurred.

Ask your next level of support for assistance. **This ends the procedure.**

0099:

About this task

A Licensed Internal Code program error occurred.

Ask your next level of support for assistance. **This ends the procedure.**

LICIP13:

A disk unit seems to have stopped communicating with the system.

About this task

The system has stopped normal operation until the cause of the disk unit failure is found and corrected. Ensure you have read the **Danger** notices in “Licensed internal code (LIC) isolation procedures” on page 204 before continuing with this procedure.

If the disk unit that stopped communicating with the system has **mirrored protection active**, normal operation of the system stops for one to two minutes. Then the system suspends mirrored protection for that disk unit and continues normal operation. See Disk unit recovery procedures for more information on systems with mirrored protection.

Note: Do not power off the system or partition using the white button, function 08, ASMI, or HMC immediate power-off when performing this procedure. If this procedure or other isolation procedures referenced by this procedure direct you to IPL or power off the system,

- perform a partition main storage dump (see Performing a platform or main storage dump), or
- if additional dump information is not needed, perform a function 03 IPL or restart the system or partition using the HMC.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions before continuing with this procedure.

2. Was a problem summary form completed for this problem?

No: Continue with the next step.

Yes: Use the problem summary form information and go to step 4.

3. Fill out a problem reporting form completely with the instructions provided.
4. Recovery from a device command time-out may have caused the communications loss condition (indicated by an SRC on the control panel or in the HMC). This communications loss condition has the following symptoms:
 - The A6xx SRC does not increment within two minutes.
 - The system continues to run normally after it recovers from the communications loss condition and the reference code is cleared from the control panel.

Does the communication loss condition have the above symptoms?

Yes: Continue with the next step.

No: Go to step 6 on page 229.

5. Verify that all Licensed Internal Code PTFs have been applied to the system. Apply any Licensed Internal Code PTFs that have not been applied to the system. Does the intermittent condition continue?

Yes: Print all product activity logs. Print the LIC logs with a major code of 1000. Provide this information to your next level of support. **This ends the procedure.**

No: This ends the procedure.

6. A manual reset of the IOP may clear the attention reference code. Perform the following:

If you are working from the control panel:

- a. Select *Manual* mode on the control panel.
- b. Select **Function 25** and press Enter.
- c. Select **Function 26** and press Enter.
- d. Select **Function 67** and press Enter to reset the IOP.
- e. Wait 10 minutes.
- f. Select **Function 25** and press Enter to disable the service functions on the control panel.

If you are working from the HMC:

- a. In the Navigation Area, open the Service Applications folder.
- b. Select **Service Focal Point**.
- c. In the contents area, select **Service Utilities**.
- d. In the Service Utilities window, select the system you are working on.
- e. Select **Selected → Operator Panel Service Functions**.
- f. Select the logical partition, and then select **Partition Functions**.
- g. Select **Disk Unit IOP Reset/Reload (67)**.
- h. Wait 10 minutes.

Did the reset successfully clear the control panel SRC or HMC panel value and can commands be entered on the partition console?

No: Continue with the next step.

Yes: Look for a Service Action Log (SAL) entry since the last IPL, and use it to fix the problem (see “Using the Service Action Log” on page 32). If a B6xx 5090 SRC occurred since the last IPL, look for other SRC entries and take action on them first. **This ends the procedure.**

7. Is the SRC the same reference code that sent you here?

Yes: The same reference code occurred. Continue with the next step.

No: Collect all words of the reference code and go to Reference codes to resolve the new problem. **This ends the procedure.**

8. Powering off and powering on the affected IOP domain may clear the attention reference code. Perform the following:

If you are working from the control panel:

- a. Select *Manual* mode on the control panel.
- b. Select **Function 25** and press Enter.
- c. Select **Function 26** and press Enter.
- d. Select **Function 68** and press Enter to power off the domain.
- e. After the domain has been powered off or 10 minutes have passed, select **Function 69** and press Enter to power on the domain.
- f. Wait 10 minutes.
- g. Select **Function 25** and press Enter to disable the service functions on the control panel.

If you are working from the HMC:

- a. In the Navigation Area, open the Service Applications folder.
- b. Select **Service Focal Point**.
- c. In the contents area, select **Service Utilities**.
- d. In the Service Utilities window, select the system you are working on.

- e. Select **Selected** → **Operator Panel Service Functions**.
- f. Select the logical partition, and then select **Partition Functions**.
- g. Select **Power off domain** (68).
- h. After the domain has been powered off or 10 minutes have passed, select **Power on domain** (69).
- i. Wait 10 minutes.

Did this successfully clear the control panel SRC or HMC panel value, and can commands be entered on the partition console?

No: Continue with the next step.

Yes: Look for a SAL entry since the last IPL, and use it to fix the problem (see “Using the Service Action Log” on page 32). If a B6xx 5090 SRC occurred since the last IPL, look for other SRC entries and take action on them first. **This ends the procedure.**

9. Is the SRC the same reference code that sent you here?
 - Yes:** The same reference code occurred. Continue with the next step.
 - No:** Collect all words of the reference code and go to Reference codes to resolve the new problem. **This ends the procedure.**
10. Is the disk unit that reported this problem a virtual disk unit?
 - Yes:** Continue with the next step.
 - No:** Continue with step 12.
11. Using the HMC, check the status of the I/O hosting partition. Does the partition have a status of “running”?
 - Yes:** Check for configuration problems and resolve them. If there are no configuration problems, then continue with step 10.
 - No:** Fix any problems found in the I/O hosting partition. If that does not resolve the problem that sent you here, then continue with step 12.
12. Perform a main storage dump, then perform an IPL by performing the following:
 - If you are working from the control panel:**
 - a. Select *Manual* mode on the control panel.
 - b. Select **Function 22** and press Enter to dump the main storage to the load-source disk unit.
 - c. Wait for SRC A100 300x to occur, indicating that the dump is complete.
 - d. Then perform an IPL to DST (see Performing an IPL to DST).
 - If you are working from the HMC:**
 - a. In the Navigation Area, open Server and Partition.
 - b. Select **Server Management**.
 - c. In the contents area, open the server on which the logical partition is located.
 - d. Select **Partitions**.
 - e. Right-click the logical partition profile and select **Restart Partition**.
 - f. In the Restart Partition window, select the **Dump** restart option.

Does a different SRC occur, or does a display appear on the console showing reference codes?

 - No:** Continue with the next step.
 - Yes:** Go to Reference codes to service the new problem. **This ends the procedure.**
13. Does the same reference code occur?
 - **Yes:** Continue with the next step.
 - **No:** The problem is intermittent. Perform the following:
 - a. Print the system product activity log for the magnetic storage subsystem and print the LIC logs with a major code of 1000.
 - b. Copy the main storage dump to removable media (see Copying a current main storage dump).

- c. Contact your next level of support and provide them with this information. **This ends the procedure.**
14. Are characters 7-8 of the top 16 character line of function 12 (2 rightmost characters of word 2) equal to 13 or 17?

Yes: Continue with the next step.

No: Go to step 17.
15. Use the word 1 through 9 information recorded on the Problem summary form to determine the disk unit that stopped communicating with the system:
 - Characters 9-16 of the top 16 character line of function 12 (word 3) contain the IOP direct select address.
 - Characters 1-8 of the bottom 16 character line of function 12 (word 4) contains the unit address.
 - Characters 1-8 of the top 16 character line of function 13 (word 6) may contain the disk unit type, level and model number.
 - Characters 13-16 of the top 16 character line of function 13 (4 rightmost characters of word 7) may contain the disk unit reference code.
 - Characters 1-8 of the bottom 16 character line of function 13 (word 8) may contain the disk unit serial number.

Note: For 2105 and 2107 disk units, characters 4-8 of the bottom 16 character line of function 13 (5 rightmost characters of word 8) contain the disk unit serial number.
16. Is the disk unit reference code 0000?
 - **No:** Using the information from step 15, find the table for the indicated disk unit type in the Reference codes topic. Perform problem analysis for the disk unit reference code. **This ends the procedure.**
 - **Yes:** Perform the following steps:
 - a. Determine the IOP type by using characters 9-12 of the bottom 16 character line of function 13 (4 leftmost characters of word 9).
 - b. Find the unit reference code table for the IOP type in the Reference codes topic. Determine the unit reference code by using characters 13-16 of the bottom 16 character line of function 13 (4 rightmost characters of word 9).
 - c. Perform problem analysis for the unit reference code. **This ends the procedure.**
17. Are characters 7-8 of the top 16 character line of function 12 (the two rightmost characters of word 2) equal to 27?

Yes: Continue with the next step.

No: Go to step 21 on page 232.
18. Use the word 1 through 9 information recorded on the Problem summary form to determine the disk unit that stopped communicating with the system:
 - Characters 9-16 of the top 16 character line of function 12 (word 3) contain the IOP direct select address.
 - Characters 1-8 of the bottom 16 character line of function 12 (word 4) contains the disk unit address
 - Characters 9-16 of the bottom 16 character line of function 12 (word 5) contains the disk unit type, level and model number.
 - Characters 1-8 of the bottom 16 character line of function 13 (word 8) contains the disk unit serial number.

Note: For 2105 and 2107 Disk Units, characters 4-8 of the bottom 16 character line of function 13 (5 rightmost characters of word 8) contain the disk unit serial number.

 - Characters 13-16 of the bottom 16 character line of function 13 (4 rightmost characters of word 9) contain the disk unit reference code.

19. Is the disk unit reference code 0000?
 - **No:** Continue with the next step.
 - **Yes:** Find the table for the indicated disk unit type in the Reference codes topic. Then find unit reference code (URC) 3002 in the table, and exchange the FRUs for that URC, one at a time.

Note: Do not perform any other isolation procedures that are associated with URC 3002.
This ends the procedure.
20. Are characters 9-16 of the bottom 16 character line of function 13 (word 9) B6xx 51xx?

Yes: Use the B6xx table in the Reference codes topic. Perform problem analysis for the 51xx unit reference code. **This ends the procedure.**

No: Using the information from step 18 on page 231, find the table for the indicated disk unit type in the Reference codes topic. Perform problem analysis for the disk unit reference code. **This ends the procedure.**
21. Are the 2 rightmost characters of word 2 on the Problem summary form equal to 62?

No: Use the information in characters 9-16 of the bottom 16 character line of function 13 (word 9) and go to the Reference codes topic. Use this information instead of the information in word 1 for the reference code. **This ends the procedure.**

Yes: Continue with the next step.
22. Are characters 9-16 of the top 16 character line of function 12 (word 3) equal to 00010004?

Yes: Continue with the next step.

No: Go to step 25.
23. Are characters 13-16 of the bottom 16 character line of function 12 (4 rightmost characters of word 5) equal to 0000?

No: Continue with the next step.

Yes: Go to step 26.
24. Note the following:
 - Characters 13-16 of the bottom 16 character line of function 12 (4 rightmost characters of word 5) contain the disk unit reference code.
 - Characters 1-8 of the top 16 character line of function 13 (word 6) contains the disk unit address.
 - Characters 9-16 of the top 16 character line of function 13 (word 7) contain the IOP direct select address.
 - Characters 1-8 of the bottom 16 character line of function 13 (word 8) contains the disk unit type, level and model number.

Find the table for the disk unit type (characters 1-4 of the bottom 16 character line of function 13 - 4 leftmost characters of word 8) in the Reference codes topic, and use characters 13-16 of the bottom 16 character line of function 12 (4 rightmost characters of word 5) as the unit reference code. **This ends the procedure.**
25. Are characters 9-16 of the top 16 character line of function 12 (word 3) equal to 0002000D?
 - **Yes:** Continue with the next step.
 - **No:** Use the information in characters 9-16 of the bottom 16 character line of function 13 (word 9), instead of the information in word 1 for the reference code, and go to the Reference codes topic.
 - Characters 1-8 of the top 16 character line of function 13 (word 6) may contain the disk unit address.
 - Characters 9-16 of the top 16 character line of function 13 (word 7) may contain the IOP direct select address.
 - Characters 1-8 of the bottom 16 character line of function 13 (word 8) may contain the disk unit type, level and model number. **This ends the procedure.**
26. Note the following:
 - Characters 1-8 of the top 16 character line of function 13 (word 6) contains the disk unit address.

- Characters 9-16 of the top 16 character line of function 13 (word 7) contain the IOP direct select address.
- Characters 1-8 of the bottom 16 character line of function 13 (word 8) contains the disk unit type, level and model number.

Find the table for the disk unit type (characters 1-4 of the bottom 16 character line of function 13 (4 leftmost characters of word 8) in the Reference codes topic and use 3002 as the unit reference code. Exchange the FRUs for URC 3002 one at a time. **This ends the procedure.**

LICIP14:

Licensed Internal Code detected a card slot test failure.

1. Has the I/O adapter moved to a new card location?

Yes: Continue with the next step.

No: Go to step 4.

2. Perform one of the following, and then continue with the next step:

- Use the concurrent maintenance option in Hardware Service Manager in SST/DST to power off, remove, reinsert, and power on the I/O adapter.

OR

- Power off the system, remove and reinsert the I/O adapter. Then IPL the system.

3. Does the reference code occur again for this same I/O adapter?

- **Yes:** Continue with the next step.

- **No:** No further service action is needed.

This ends the procedure.

4. Move the I/O adapter to a different card location, that has no I/O processors in the PCI bridge set, by performing one of the following, and then continue with the next step:

- Use the concurrent maintenance option in Hardware Service Manager in SST/DST to power off, remove the I/O adapter, install the I/O adapter in a different card location, and power on the I/O adapter. OR

- Power off the system, remove the I/O adapter, install the I/O adapter in a different card location, and then IPL the system.

5. Does the same reference code occur again for this I/O adapter?

- **Yes:** Replace the I/O adapter.

This ends the procedure.

- **No:** Replace the backplane.

This ends the procedure.

LICIP15:

Use this procedure to help you recover from an initial program load (IPL) failure.

1. Is the system HMC-managed?

Yes: Continue with the next step.

No: Go to step 3.

2. Check the LPAR configuration to ensure that the load source and alternate load source devices are valid. Is the LPAR configuration correct?

Yes: Continue with the next step.

No: Correct the LPAR configuration problem. **This ends the procedure.**

3. Did the failure occur when you were performing a type-D IPL?

- **No:** Go to step 9 on page 234.

- **Yes:** Perform the following:

- a. Ensure that the device is ready and has valid install media.
- b. Ensure that the device has the correct SCSI address and that any cables are properly connected and terminated.

If a correction is made during the above checks, retry the IPL. If none of the above items resolve the problem, continue with the next step.

4. Are the load source and alternate load source devices controlled by the same I/O adapter, and does the load source disk unit have SLIC loaded on it?

Yes: Continue with the next step.

No: Go to step 6.

5. Perform a type-B IPL in manual mode. Does the same SRC occur?

- **No:** Continue with the next step.
- **Yes:** Replace the following items, one at a time, and retry the IPL until the problem is resolved (see Finding part locations):
 - a. The I/O adapter controlling load source and alternate load source devices.

Note: The I/O adapter may be embedded on the system unit backplane.

- b. The I/O processor controlling the load source I/O adapter.
- c. The common cable, if present, attached between both the load source and alternate load source and the controlling I/O adapter.
- d. If none of the items above resolve the problem, contact your next level of support. **This ends the procedure.**

6. Replace the following items, one at a time, and retry the type-D IPL until the problem is resolved (see Finding part locations):

- a. Media in the alternate load source device
- b. Device cables (if present)
- c. Media device
- d. Media backplane
- e. I/O adapter controlling the alternate load source device

Note: The I/O adapter may be embedded on the system unit backplane

- f. I/O processor controlling the alternate load source I/O adapter
- g. If the problem persists after replacing each of these parts, contact your next level of support. **This ends the procedure.**

7. You performed a type A or type B IPL. Is the load source I/O adapter a Fibre Channel adapter?

Yes: Continue with the next step.

No: Continue with step 9.

8. Perform a type-D IPL in manual mode to DST. Look for other SRCs and use them to resolve the problem. If there are no SRCs, or if the SRCs do not resolve the problem, perform the actions for the 2847 3100 SRC (see List of system reference codes). **This ends the procedure.**

9. Is the device in a valid location (see Finding part locations)?

Yes: Continue with the next step.

No: Correct the device location problem and retry the IPL. If the problem persists, continue with the next step.

10. Perform a type-D IPL in manual mode to DST. Is the type-D IPL successful?

- **No:** Continue with the next step.
- **Yes:** Look for other SRCs and use them to resolve the problem. If there are no SRCs, or the SRCs do not resolve the problem, replace the following items, one at a time, until the problem is resolved (see Finding part locations):

- a. Load source disk drive
- b. Cables (if present)
- c. Disk drive backplane
- d. I/O adapter controlling the load source device

Note: The I/O adapter may be embedded on the system unit backplane

- e. I/O processor controlling the load source I/O adapter
 - f. Backplane that the I/O adapter and I/O processor are plugged into
 - g. If the problem persists after replacing each of these parts, contact your next level of support.
- This ends the procedure.**

11. The type-D IPL in manual mode to DST was not successful. Is the I/O adapter embedded on the system unit backplane?

No: Continue with the next step.

Yes: Go to step 18.

12. Are the load source and alternate load source controlled by the same I/O adapter?

No: Go to step 17.

Yes: Continue with the next step.

13. Replace the I/O adapter and perform a type-A or type-B IPL. Does the IPL complete successfully?

Yes: **This ends the procedure.**

No: Continue with the next step.

14. Perform a type-D IPL in manual mode to DST. Is the type-D IPL successful?

- **No:** Continue with the next step.
- **Yes:** Look for other SRCs and use them to resolve the problem. If there are no SRCs, or the SRCs do not resolve the problem, replace the following items, one at a time, until the problem is resolved (see Finding part locations):
 - a. Load source disk drive
 - b. Cables (if present)
 - c. Disk drive backplane
 - d. I/O adapter controlling the load source device

Note: The I/O adapter may be embedded on the system unit backplane

- e. I/O processor controlling the load source I/O adapter
 - f. Backplane that the I/O adapter and I/O processor are plugged into
 - g. If the problem persists after replacing each of these parts, contact your next level of support.
- This ends the procedure.**

15. Are the load source and alternate load source controlled by different I/O adapters, but the same I/O processor?

No: Go to step 17.

Yes: Continue with the next step.

16. Replace the I/O processor and retry the IPL. Does the IPL complete successfully?

Yes: **This ends the procedure.**

No: Continue with the next step.

17. Replace the backplane that the I/O adapter and the I/O processor are plugged into and retry the IPL. If the IPL still fails, contact your next level of support. **This ends the procedure.**

18. Replace the I/O processor and retry the IPL. Does the IPL complete successfully?

Yes: **This ends the procedure.**

No: Replace the system unit backplane and retry the IPL. If the IPL still fails, contact your next level of support. **This ends the procedure.**

LICIP16:

An adapter identified that its associated adapter is operational but is not located in the same partition. Use this procedure to identify the serial number and then find the location of the associated adapter and reassign it so that both adapters are in the same partition.

Before you begin

Note: If the associated adapter is located in a different i5/OS partition, there might also be a B600690A logged against the associated adapter in that partition.

1. The adapter against which the B600690A is logged has identified that its associated adapter can not be found in this partition. Find the resource name that this error was logged against. This can be obtained from the Service Action Log (see Using the Service Action Log). Then, using the resource name, perform the following:
 - a. Access SST or DST.
 - b. Select **Start a Service Tool**.
 - c. Select **Hardware Service Manager**.
 - d. Select **Locate resource by resource name**.
 - e. Enter the resource name that this error was logged against.
 - f. Take the option to Display detail for the adapter.
2. The bottom of the resource detail screen displays any combination of the following information:

Attached storage IOA resource name. :
Attached storage IOA serial number. :
Attached storage IOA link status. . :

Or

Attached auxiliary IOA resource name:
Attached auxiliary IOA serial number:
Attached auxiliary IOA link status. :

Or

Remote storage IOA resource name. . :
Remote storage IOA serial number. . :
Remote storage IOA link status. . . :

Using the serial number information displayed for the Attached or Remote IOA, have the customer determine which partition currently owns the adapter with that serial number by using logical resource or VPD utilities in each of the partitions on the system.

Note: The CCIN of the associated adapter is the first four characters of word 6 of the SRC.

Then, have the customer ensure that both adapters are owned by the same partition. For further assistance, the customer should contact their software service provider, or see Partitioning the server, for additional support. **This ends the procedure.**

Logical partition (LPAR) isolation procedure

These procedures help you to identify logical partition (LPAR) configuration conditions and the associated corrective actions.

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

LPRIP01:

Use this procedure to isolate the problem when LPAR configuration data does not match the current system configuration.

1. Is there **only one** B6005311 error logged, and is it against the load source device for the partition, in either the Primary or a secondary partition?
 - **Yes:** Is the reporting partition the Primary partition?
 - **Yes:** Continue with the next step.
 - **No:** Go to step 3 on page 238.
 - **No:** Go to step 4 on page 238.
2. Was the load source disk unit migrated from another partition within the same system?
 - **Yes:** Is this load source device intended to be the load source for the Primary partition?
 - **Yes:** To accept the load source disk unit: Go to SST/DST in the current partition and select **Work with system partitions** → **Recover configuration data** → **Accept load source disk unit**. This ends the procedure.

- **No:** Power off the system. Return the original load source disk to the Primary partition and perform a system IPL. **This ends the procedure.**
 - **No:** The load source disk unit has not changed. Contact your next level of support. **This ends the procedure.**
3. The reporting partition is a secondary partition.
Since the last IPL of the reporting partition, have one of the following occurred?
- Has the Primary partition time/date been moved backward to a time/date earlier than the previous setting?
 - Has the system serial number been changed?
 - Was the load source disk unit in this secondary partition, replaced intentionally with a load source from another system or another partition from the same system?
 - **Yes:** To accept the load source disk unit: Go to SST/DST in the current partition and select **Work with system partitions** → **Recover configuration data** → **Accept load source disk unit** **This ends the procedure.**
 - **No:** Contact your next level of support. **This ends the procedure.**
4. Are there **multiple** B600 5311 SRCs logged in the same partition?
- **Yes:** Continue with the next step.
 - **No:** None of the conditions in this procedure have been met, call your next level of support. **This ends the procedure.**
5. Is the resource for **one** of the B600 5311 SRCs the load source device and are **all** of the other B600 5311 entries for resources which are non-configured disk units?
- Note:** To determine if a disk unit is a non-configured disk unit, refer to the "Work with disk unit options" section in the "DST options" section of the "DST chapter" in the *iSeries Service Functions* information.
- **Yes:** Is the partition that is reporting the error the **Primary** partition?
 - **Yes:** Continue with the next step.
 - **No:** Go to step 7.
 - **No:** Go to step 8 on page 239.
6. Was the load source disk unit migrated from another partition within the same system?
- **Yes:** Is this load source device intended to be the load source for the Primary partition?
 - **Yes:** To accept the load source disk unit: Go to SST/DST in the current partition and select **Work with system partitions** → **Recover configuration data** → **Accept load source disk unit** **This ends the procedure.**
 - **No:** Power off the system. Return the original load source disk to the Primary partition and perform a system IPL. **This ends the procedure.**
 - **No:** The load source disk unit has not changed. Contact your next level of support. **This ends the procedure.**
7. The reporting partition is a secondary partition.
Since the last IPL of the reporting partition, have one of the following occurred:
- Has the Primary partition time/date been moved backward to a time/date earlier than the previous setting?
 - Has the system serial number been changed?
 - Was the load source disk unit in this secondary partition, replaced intentionally with a load source from another system or another partition from the same system?
 - **Yes:** To accept the load source disk unit: Go to SST/DST in the current partition and select **Work with system partitions** → **Recover configuration data** → **Accept load source disk unit** **This ends the procedure.**
 - **No:** Contact your next level of support. **This ends the procedure.**

8. One or more B600 5311 SRCs have been logged in the same partition.

Do all of the B600 5311 errors have a resource which is a non-configured disk unit in the partition?

Note: To determine if a disk unit is a non-configured disk unit, refer to the "Work with disk unit options" section in the "DST options" section of the "DST chapter" in the *iSeries Service Functions* information.

- **Yes:** Continue with the next step.
 - **No:** None of the conditions in this procedure have been met, call your next level of support. **This ends the procedure.**
9. Were any disk unit resources associated with the B600 5311 SRCs added to the partition, since the last IPL of this partition?
- **No:** Continue with the next step.
 - **Yes:** Perform the following to clear non-configured disk unit configuration data:
 - a. Go to SST/DST in the partition and select **Work with system partitions** → **Recover configuration data** → **Clear non-configured disk unit configuration data**.
 - b. Select each unit in the list which is new to the system and press **Enter**.
 - c. Continue the system IPL. **This ends the procedure.**
10. None of the resources that are associated with the B600 5311 SRCs are disk units that were added to the partition since the last IPL of the partition.
- Has a scratch install recently been performed on the partition that is reporting the error(s)?
- **No:** Continue with the next step.
 - **Yes:** Go to step 13.
11. If a scratch install was not performed, was the clear configuration data option recently used to discontinue LPAR use?
- **Yes:** Continue with the next step.
 - **No:** The **Clear configuration data** option was not used. Contact your next level of support. **This ends the procedure.**
12. Perform the following to clear non-configured disk unit configuration data:
- a. Go to SST/DST in the partition and select **Work with system partitions** → **Recover configuration data** → **Clear non-configured disk unit configuration data**.
 - b. Select each unit in the list which is new to the system and press **Enter**.
 - c. Continue the system IPL. **This ends the procedure.**
13. Was the load source device previously mirrored before the scratch install?
- **Yes:** Continue with the next step.
 - **No:** Go to step 15.
14. Perform the following to clear the old configuration data from the disk unit that was mirroring the old load source disk
- a. Go to SST/DST in the partition and select **Work with system partitions** → **Recover configuration data** → **Clear non-configured disk unit configuration data**.
 - b. Select the former load source mirror in the list and press **Enter**.
15. Is the Primary partition reporting the B600 5311 error(s)?
- **No:** **This ends the procedure.**
 - **Yes:** Does the customer want multiple partitions on the system?
 - **No:** **This ends the procedure.**
 - **Yes:** Use the **Recover primary partition configuration data** option to retrieve the LPAR configuration data from other devices in the system.

- a. Go to SST/DST in the primary partition and select **Work with system partitions → Recover configuration data → Recover primary partition configuration data**. The system will perform an automatic IPL.
- b. Verify the information that appears.
 - The device should be a former load source device from a secondary partition.
 - The time and date should reflect a time when that partition was active. It should be more recent than the last change to the logical partition configuration. **This ends the procedure.**

Operations Console isolation procedures

These procedures help you to isolate a failure with the Operations Console.

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

For direct cable only.

The following symptoms can be caused by Operations Console failing to connect:

- SRC A600 5008
- The status in the Operations Console window remains "Connecting console".

The following symptoms can be caused by a defective remote control panel cable:

- Remote control panel (hung) System control panel functions.
- SRC 0000 DDDD with attention light on the system panel.
- Remote control panel accepts mode selections, however the system does not respond.
- The remote control panel does not function.
- The status in the Operations Console window remains "Connecting console".

The following safety notices apply throughout this section.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the field-replaceable unit (FRU) is located. See Powering on and powering off before removing, exchanging, or installing a FRU.

OPCIP03:

Use this procedure to isolate a bringup failure with Operations Console.

About this task

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

Use this procedure to isolate an Operations Console bringup failure when the SRC on the panel is A6xx5008 or B6xx5008. If you are not using the Operations Console, see A6005004. This procedure only works with cable-connected and LAN configurations. It is not valid for dial connected configurations. Read the danger notices in "Operations Console isolation procedures" on page 240 before proceeding.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determine if the system has logical partitions before continuing with this procedure.
2. Is the SRC on the panel A6xx5008 or B6xx5008?
 - **No: This ends the procedure.**
 - **Yes:** Are you connecting Operations Console using the ASYNC adapter?
 - Yes:** Continue with the next step.
 - No:** You are connecting using a LAN adapter. Go to step 6 on page 243.
3. Are words 17, 18, and 19 all equal to 00000000?
 - **Yes:** Report the problem to your next level of support. **This ends the procedure.**

- **No:** Is word 17 equal to 00000001?
No: Continue with the next step.
Yes: The ASYNC adapter was not detected. Ensure that the ASYNC adapter card is installed, or replace the IOA and try again. **This ends the procedure.**
- 4. Is word 17 equal to 00000002?
 - **Yes:** On the ASYNC adapter card that was found, no cable was detected. Word 18 contains the card position. Locate the ASYNC adapter card in this card position, and ensure that the external cable is attached. Install or replace the external cable. **This ends the procedure.**
 - **No:** Is word 17 equal to 00000003?
No: Continue with the next step.
Yes: The cable that was detected does not have the correct cable ID. Word 18 contains the card position. Word 19 contains the cable ID. Locate the ASYNC adapter card in this card position, and verify that the correct cable is attached, or replace the cable. **This ends the procedure.**
- 5. Is word 17 equal to 00000004?
No: Report the problem to you next level of support. **This ends the procedure.**
Yes: Operations Console failed to make a connection because the port is already being used. Word 18 contains the card position. Disconnect the active communications session and try using the resource again. **This ends the procedure.**
- 6. Are words 13, 14 and 15 all equal to 00000000?
 - **Yes:** Report the problem to you next level of support. **This ends the procedure.**
 - **No:** Is word 13 equal to 00000002?
No: Continue with the next step.
Yes: The LAN hardware failed to activate. Replace the LAN IOA being used. **This ends the procedure.**
- 7. Is word 13 equal to 00000003?
 - **No:** Continue with the next step.
 - **Yes:** A hardware error occurred. Word 14 contains the error code, (example: 53001A80). Word 15 contains the card position.
 Is the error code equal to 53001A80?
Yes: The network cable is not attached to the LAN adapter, the cable is defective, or the network is not operational. **This ends the procedure.**
No: The LAN adapter hardware is not operational. Replace the hardware and try again. **This ends the procedure.**
- 8. Is word 13 equal to 00000004?
 - **Yes:** The console did not respond. Word 14 contains the number of attempts made. Word 15 contains the card position. The system is inserted into the network but there is no connection to the client (PC). Verify the configuration for the network at the system and client; verify the configuration of Operations Console. **This ends the procedure.**
 - **No:** Is word 13 equal to 00000005?
No: Report the problem to your next level support. **This ends the procedure.**
Yes: IP information was received from the console. Word 14 contains the received IP address. Verify the configuration data for the client (PC) or verify the configuration for the network. **This ends the procedure.**

Power isolation procedures

Contains procedures for isolating a problem in the power system.

Some field replaceable units (FRUs) can be replaced with the unit powered on. Follow the instructions in Removing and replacing parts when directed to remove, exchange, or install a FRU.

The following safety notices apply throughout the power isolation procedures. Please read all safety procedures before servicing the system and observe all safety procedures when performing a procedure.

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- **Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.**
- **Do not open or service any power supply assembly.**
- **Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**
- **The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.**
- **Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.**
- **Connect any equipment that will be attached to this product to properly wired outlets.**
- **When possible, use one hand only to connect or disconnect signal cables.**
- **Never turn on any equipment when there is evidence of fire, water, or structural damage.**
- **Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.**
- **Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.**

To Disconnect:

- 1. Turn off everything (unless instructed otherwise).**
- 2. Remove the power cords from the outlets.**
- 3. Remove the signal cables from the connectors.**
- 4. Remove all cables from the devices**

To Connect:

- 1. Turn off everything (unless instructed otherwise).**
- 2. Attach all cables to the devices.**
- 3. Attach the signal cables to the connectors.**
- 4. Attach the power cords to the outlets.**
- 5. Turn on the devices.**

(D005)

PWR1900:

Contains a procedural index based on model.

Follow the instructions for the model or expansion unit you are servicing.

For Models 285, 505, 51x, 52x, and OpenPower 710, perform “PWR1902” on page 245.

For Models 55x, and OpenPower 720 perform “PWR1903” on page 247.

For Models 561 and 570 perform “PWR1904” on page 250.

For 5074, 5079, 5094, and 5294 units perform “PWR1906” on page 252.

For 5088 and 0588 units perform “PWR1908” on page 256.

For 5095, 0595, 5790, D10, D11, and D20 units, perform “PWR1909” on page 258.

This ends the procedure.

PWR1902:

A system unit power supply load fault is occurring.

About this task

Please see “Power isolation procedures” on page 243 for important safety information before servicing the system.

PWR1902 instructions for models 285, 505, 51x, 52x, OpenPower 710:

1. Perform the following steps:

- a. Disconnect the AC power cable or cables from the unit on which you are working.
- b. Disconnect all of the I/O devices (tape, diskette, optical, and disk units) by sliding them partially out of the system unit (see Removing and replacing parts).
- c. Remove and label all cards (for example, PCI adapters, memory DIMMs, GX adapter(s), RIO/HSL and RAID cards if installed).
- d. If the SRC is 1xxx-1B01, also remove the regulators (see Finding part locations).
- e. Reconnect the AC power cable or cables to the unit on which you are working.
- f. Power on the system (see Powering on and powering off).

Does a power reference code occur?

Yes: Continue with the next step.

No: Go to step 6 on page 246.

2. Perform the following:

- a. Remove one of the fans from the system unit (if you have previously removed and reinstalled any fans using this procedure, remove one of the fans that has not been removed).

Note: Disregard a fan reference code if it occurs during this step.

- b. Power on the system (see Powering on and powering off).

Does a power reference code occur?

Yes: Continue with the next step.

No: The fan you removed in this step is the failing item. Replace the failing fan, go to Removing and replacing parts. **This ends the procedure.**

3. Have you tried removing each fan one at a time?

- **Yes:** Reinstall all the fans and continue with the next step.
- **No:** Perform the following:
 - a. Power off the system (see Powering on and powering off).
 - b. Install the fan that you removed in step 2 to its original location.
 - c. Repeat step 2.

4. Perform the following:

- a. Power off the system (see Powering on and powering off).
- b. Disconnect the power cable from and then remove one of the power supplies (that you have not already tried removing) from the system unit and replace it with a new one (see Part number catalog).
- c. Power on the system (see Powering on and powering off).

Does a power reference code occur?

No: The power supply you just removed and replaced is the failing item. Power off the system (see Powering on and powering off) and reinstall the parts you removed in previous steps. Go to Verifying the repair. **This ends the procedure.**

Yes: Continue with the next step.

5. Remove the new power supply that you just installed in step 4 on page 245 and reinstall the original power supply. Have you now tried exchanging all of the power supplies in the system?
No: Repeat step 4 on page 245.
Yes: Replace the backplane (see symbolic FRU "SYSBKPL" on page 758). Then reinstall the parts you removed in step 1 on page 245. Go to Verifying the repair. **This ends the procedure.**
6. Perform the following steps:
 - a. If you removed regulators in step 1 on page 245, reinstall all of the regulators. If not, go to step 9.
 - b. Power on the system (see Powering on and powering off).Does a power reference code occur?
Yes: Continue with the next step.
No: Go to step 9.
7. Perform the following:
 - a. Power off the system (see Powering on and powering off).
 - b. Disconnect one of the regulators you reinstalled in step 6.
 - c. Power on the system (see Powering on and powering off).Does a power reference code occur?
Yes: Continue with the next step.
No: Replace the last regulator you disconnected in this step (see Removing and replacing parts). **This ends the procedure.**
8. Have you disconnected all the regulators?
No: Repeat step 7.
Yes: Reinstall all of the parts removed in this procedure and go to "Start of call procedure" on page 2. **This ends the procedure.**
9. Perform the following:
 - a. Reinstall all of the cards (PCI adapters, memory DIMMs, GX adapter(s), RIO/HSL and RAID cards) you removed in step 1 on page 245.
 - b. Power on the system (see Powering on and powering off).Does a power reference code occur?
Yes: Continue with the next step.
No: Go to step 12.
10. Perform the following:
 - a. Power off the system (see Powering on and powering off).
 - b. Disconnect one of the cards you reinstalled in step 9.
 - c. Power on the system (see Powering on and powering off).Does a power reference code occur?
Yes: Continue with the next step.
No: Replace the last card you disconnected in this step (see Removing and replacing parts). **This ends the procedure.**
11. Have you disconnected all the cards?
No: Repeat step 10.
Yes: Reinstall all of the parts removed in this procedure and return to "Start of call procedure" on page 2. **This ends the procedure.**
12. Perform the following:
 - a. Power off the system (see Powering on and powering off).
 - b. Reconnect all of the I/O devices (tape, diskette, optical, or disk units) that you disconnected in step 1 on page 245.

- c. Power on the system (see Powering on and powering off).

Does a power reference code occur?

Yes: Continue with the next step.

No: The system is working. The problem seems to be intermittent (see “Intermittent problems” on page 71). **This ends the procedure.**

- 13. Perform the following:

- a. Power off the system (see Powering on and powering off).
- b. Disconnect one of the I/O devices (tape, diskette, optical, or disk units) that you reconnected in step 12 on page 246.
- c. Power on the system (see Powering on and powering off).

Does a power reference code occur?

Yes: Continue with the next step.

No: Replace the last I/O device you disconnected in this step (see Removing and replacing parts). **This ends the procedure.**

- 14. Have you disconnected all the I/O devices?

No: Repeat step 13.

Yes: Reinstall all of the parts you removed in this procedure and return to “Start of call procedure” on page 2. **This ends the procedure.**

PWR1903:

A system unit power supply load fault is occurring.

About this task

Please see “Power isolation procedures” on page 243 for important safety information before servicing the system.

Instructions for Models 55x and OpenPower 720:

- 1. Perform the following (see Locations — Model 550 and OpenPower 720 for links to exchange procedures when asked to remove a part):
 - a. Power off the system (see Powering on and powering off).
 - b. Disconnect the ac power cable(s) from the unit on which you are working.
 - c. Disconnect all of the I/O devices (tape, diskette, optical, and disk units) by sliding them partially out of the system unit.
 - d. Remove and label all cards (PCI, and RAID cards if installed).
 - e. If the SRC is 1xxx-1B01, also remove the voltage regulators located in P1-C10 and P1-C11 (if installed).
 - f. Reconnect the ac power cable(s) to the unit on which you are working.
 - g. Power on the system (see Powering on and powering off).

Does a power reference code occur?

Yes: Continue with the next step.

No: Go to step 8 on page 248.

- 2. Perform the following:

- a. Power off the system (see Powering on and powering off).
- b. Replace one of the processor cards (see Locations — OpenPower 720 and Model 550).
- c. Power on the system (see Powering on and powering off).

Does the problem persist?

No: **This ends the procedure.**

Yes: Continue with the next step.

3. Have you replaced all of the processor cards?

No: Repeat step 2 on page 247 and replace the next processor card.

Yes: Continue with the next step.

4. Perform the following:

- a. Power off the system (see Powering on and powering off).
- b. Remove one of the air moving devices (AMDs) from the system unit (see Locations — OpenPower 720 and Model 550).

Note: Disregard any AMD reference codes that occur during this step.

- c. Power on the system (see Powering on and powering off).

Does a power reference code occur?

Yes: Continue with the next step.

No: The AMD you removed is the failing item, and should be replaced (see Locations — OpenPower 720 and Model 550). **This ends the procedure.**

5. Have you tried removing each of the AMDs?

- **Yes:** Reinstall all of the AMDs and continue with the next step.
- **No:** Perform the following:
 - a. Power off the system (see Powering on and powering off).
 - b. Reinstall the AMD that you removed in step 4.
 - c. Repeat step 4.

6. Perform the following:

- a. Power off the system (see Powering on and powering off).
- b. Replace one of the power supplies from the system unit (see Locations — OpenPower 720 and Model 550).
- c. Power on the system (see Powering on and powering off).

Does a power reference code occur?

Yes: Continue with the next step.

No: The power supply you replaced is the failing item. Power off the system and reinstall any other parts you have removed in this procedure. **This ends the procedure.**

7. Reinstall the original power supply that you replaced in step 6.

Have you now tried to replace each of the power supplies?

No: Repeat step 6 and replace the next power supply.

Yes: Replace the backplane (see symbolic FRU “SYSBKPL” on page 758). Then reinstall the parts you removed in step 1 on page 247. **This ends the procedure.**

8. Did you remove any voltage regulators in step 1 on page 247?

Yes: Continue with the next step.

No: Go to step 12 on page 249.

9. Perform the following:

- a. Power off the system (see Powering on and powering off).
- b. Reinstall all of the regulators.
- c. Power on the system (see Powering on and powering off).

Does a power reference code occur?

Yes: Continue with the next step.

No: Go to step 12 on page 249.

10. Perform the following:

- a. Power off the system (see Powering on and powering off).
- b. Disconnect one of the regulators you reinstalled in step 9 on page 248.
- c. Power on the system (see Powering on and powering off).

Does a power reference code occur?

Yes: Continue with the next step.

No: The regulator you just disconnected is the failing item and should be replaced (see Locations — OpenPower 720 and Model 550). **This ends the procedure.**

11. Have you tried disconnecting each of the voltage regulators?

No: Reconnect the regulator you just disconnected, and then repeat step 10 on page 248 and try disconnecting the next regulator.

Yes: Reconnect the regulator your disconnected in this step and then continue with the next step.

12. Perform the following:

- a. Power off the system (see Powering on and powering off).
- b. Reinstall all of the cards you removed in step 1 on page 247.
- c. Power on the system (see Powering on and powering off).

Does a power reference code occur?

Yes: Continue with the next step.

No: Go to step 15.

13. Perform the following:

- a. Power off the system (see Powering on and powering off).
- b. Disconnect one of the cards you reinstalled in step 12.
- c. Power on the system (see Powering on and powering off).

Does a power reference code occur?

Yes: Continue with the next step.

No: The card you just disconnected is the failing item and should be replaced (see Locations — OpenPower 720 and Model 550). **This ends the procedure.**

14. Have you tried disconnecting each of the cards?

No: Reconnect the card you just disconnected. Then repeat step 13 and try disconnecting the next card.

Yes: Reinstall all of the parts you've removed in this procedure and continue with the next step.

15. Perform the following:

- a. Power off the system (see Powering on and powering off).
- b. Reinstall all of the I/O devices you disconnected in step 1 on page 247.
- c. Power on the system (see Powering on and powering off).

Does a power reference code occur?

Yes: Continue with the next step.

No: The problem appears to be intermittent. Go to "Intermittent problems" on page 71. **This ends the procedure.**

16. Perform the following:

- a. Power off the system (see Powering on and powering off).
- b. Remove one of the I/O devices you reinstalled in step 15.
- c. Power on the system (see Powering on and powering off).

Does a power reference code occur?

Yes: Continue with the next step.

No: The device you just removed is the failing item and should be replaced (see Locations — OpenPower 720 and Model 550). **This ends the procedure.**

17. Have you tried removing each of the I/O devices?

No: Reinstall the I/O device you just removed. Then repeat step 16 on page 249 and remove the next I/O device.

Yes: Reinstall all of the parts you've removed in this procedure and contact your next level of support. **This ends the procedure.**

PWR1904:

A power supply or regulator overcurrent fault is occurring in the server.

About this task

Refer to "Power isolation procedures" on page 243 for important safety information before servicing the system.

Instructions for Model 561, and 570:

1. Is the reference code 1xxx 1C02, 1C04, or 1C06?

Yes: Continue with the next step.

No: Go to step 5.

2. Is the reference code 1xxx 1C02 or 1C04?

No: Continue with the next step.

Yes: Go to step 4.

3. Perform the following:

a. Power off the system.

b. Replace one of the memory DIMMs on the processor cards (see Locations — model 561 and 570).

c. Power on the system.

d. Has this resolved the problem?

No: Continue with step 3e.

Yes: This ends the procedure.

e. Have you replaced all of the DIMMs?

No: Repeat step 3 and replace the next memory DIMM.

Yes: Go to step 4.

4. Perform the following:

a. Power off the system.

b. Replace one of the processor cards (see Locations — model 561 and 570).

c. Power on the system.

d. Has this resolved the problem?

No: Continue with step 4e.

Yes: This ends the procedure.

e. Have you replaced all of the processor cards?

No: Repeat step 4 and replace the next processor card.

Yes: Go to step 8 on page 251.

5. Perform the following:

a. Power off the system and disconnect the ac power cable from the unit you are working on.

b. Disconnect all of the I/O devices (tape, diskette, optical, and disk units) from the unit you are working on by sliding them partially out of the unit (see Locations — model 561 and 570).

c. Remove and label all cards (for example, PCI adapters, memory DIMMs, GX adapter(s), RIO/HSL and RAID cards if installed).

- d. Reconnect the ac power cable to the unit you are working on.
- e. Power on the system.

Does a power reference code occur?

Yes: Continue with the next step.

No: Go to step 10.

- 6. Perform the following:

- a. Power off the system.
- b. Replace one of the system fans (see Locations — model 561 and 570).
- c. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** The fan you just replaced was the failing item.

This ends the procedure.

- 7. Have you tried replacing all of the fans?

- **Yes:** Reinstall all of the fans you replaced in step 6 and continue with the next step.
- **No:** Perform the following:
 - a. Power off the system.
 - b. Reinstall the fan that you just removed in step 6 to its original location.
 - c. Repeat step 6.

- 8. Perform the following:

- a. Power off the system.
- b. Replace one of the voltage regulator cards. See Locations — model 561 and 570
- c. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** The voltage regulator card you just replaced was the failing item.

This ends the procedure.

- 9. Have you tried replacing all of the voltage regulator cards?

- **Yes:** Replace the regulator distribution connection backplane (see “SYSBKPL” on page 758). **This ends the procedure.**
- **No:** Perform the following:
 - a. Power off the system.
 - b. Reinstall the voltage regulator card that you just removed in step 8 to its original location.
 - c. Repeat step 8.

- 10. Perform the following:

- a. Power off the system.
- b. Reinstall all of the cards (PCI adapters, memory DIMMs, GX adapter(s), RIO/HSL and RAID cards) you removed in step 5 on page 250 to their original locations.
- c. Power on the system.

Does a power reference code occur?

Yes: Continue with the next step.

No: Go to step 13 on page 252.

- 11. Perform the following:

- a. Power off the system.
- b. Disconnect one of the cards you reinstalled in step 10.

c. Power on the system.

Does a power reference code occur?

Yes: Continue with the next step.

No: Exchange the last card you disconnected in this step (see Locations — model 561 and 570).

This ends the procedure.

12. Have you disconnected all of the cards?

No: Repeat step 11 on page 251.

Yes: Reinstall all of the parts you have removed or exchanged in this procedure and return to “Start of call procedure” on page 2. **This ends the procedure.**

13. Perform the following:

a. Power off the system.

b. Reconnect all of the I/O devices (tape, diskette, optical, and disk units) that you disconnected in step 5 on page 250.

c. Power on the system.

Does a power reference code occur?

Yes: Continue with the next step.

No: The problem has been resolved. **This ends the procedure.**

14. Perform the following:

a. Power off the system.

b. Disconnect one of the I/O devices (tape, diskette, optical, and disk units) that you reconnected in step 13.

c. Power on the system.

Does a power reference code occur?

Yes: Continue with the next step.

No: Exchange the last I/O device you disconnected in this step (see Locations — model 561 and 570). **This ends the procedure.**

15. Have you tried disconnecting all of the I/O devices?

No: Repeat step 14.

Yes: Reinstall all of the parts you have removed or exchanged in this procedure and return to “Start of call procedure” on page 2. **This ends the procedure.**

PWR1906:

The server detected an error in the power system.

About this task

Please see “Power isolation procedures” on page 243 for important safety information before servicing the system.

PWR1906 Instructions for 5074, 5079, 5094, and 5294 expansion units:

1. Perform the following:

a. Power off the unit you are working on.

b. Disconnect all the I/O devices (tape, diskette, optical, and disk units) from the unit that you are working on by sliding them partially out of the unit. See Removing and replacing parts.

c. Remove and label all of the cards that are installed in the PCI card area.

d. Power on the unit you are working on.

Does a power reference code occur?

Yes: Continue with the next step.

No: Go to step 9 on page 254.

2. Perform the following:
 - a. Power off the unit you are working on.
 - b. Remove, in order, all power supplies except first one (either P00 or P01 depending on the configuration).
 - c. Power on the unit you are working on.

Does a power reference code occur?

Yes: Continue with the next step.

No: Go to step 4.

3. Perform the following:
 - a. Power off the unit you are working on.
 - b. Remove the power supply that was left installed in step 2.
 - c. Reconnect the next power supply in order (P01 or P02).
 - d. Power on the unit you are working on.

Does a power reference code occur?

- **Yes:** Go to step 5.
- **No:** Exchange the power supply you removed in step 3b (see Part number catalog).

This ends the procedure.

4. Perform the following:
 - a. Power off the unit you are working on.
 - b. Reconnect the next power supply in order.
 - c. Power on the unit you are working on.

Does a power reference code occur?

- **No:** Repeat this step until all power supplies have been reconnected.

This ends the procedure.

- **Yes:** Exchange the power supply that you reconnected in this step (see Part number catalog).

This ends the procedure.

5. Perform the following:
 - a. Remove one of the fans from the unit you are working on that you did not previously remove during this procedure.

Note: Disregard a fan reference code if it occurs during this step.

- b. Power on the unit you are working on.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** The fan that you removed in this step is the failing item (see Part number catalog).

This ends the procedure.

6. Have you removed all of the fans, one at a time?
 - **Yes:** Install all of the fans and continue with the next step.
 - **No:** Perform the following:
 - a. Power off the unit you are working on.
 - b. Reinstall the fan that was removed in step 5 to its original location.
 - c. Repeat step 5.

7. Perform the following:
 - a. Remove the power cable (that was not previously removed) from one of the lower DASD backplanes.

b. Power on the unit you are working on.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** Replace the DASD backplane that the power cable was removed from in this step (see Part number catalog).

This ends the procedure.

8. Is a second lower DASD backplane installed?

- **Yes:** Repeat step 7 on page 253.
- **No:** Replace the following one at a time:
 - a. DASD backplane upper (DEVBPLN, see Part number catalog).
 - b. I/O tower unit backplane (TWRCARD, see Part number catalog).

This ends the procedure.

9. Perform the following:

- a. Power off the unit you are working on.
- b. Reinstall all of the cards that you removed in step 1 on page 252.
- c. Reconnect the ac power cable to the unit that you are working on.
- d. Power on the unit you are working on.

Does a power reference code occur?

Yes: Continue with the next step.

No: Go to step 12.

10. Perform the following:

- a. Power off the unit you are working on.
- b. Disconnect one of the cards that you connected in step 9.
- c. Power on the unit you are working on.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** Exchange the last card that you disconnected in this step (see Part number catalog).

This ends the procedure.

11. Have you disconnected all the cards?

Yes: Continue with the next step.

No: Repeat step 10.

12. Perform the following:

- a. Power off the unit you are working on.
- b. Reconnect all of the I/O devices (tape, diskette, optical, or disk units) that you disconnected in step 1 on page 252.
- c. Power on the unit you are working on.

Does a power reference code occur?

Yes: Continue with the next step.

No: This ends the procedure.

13. Perform the following:

- a. Power off the unit you are working on.
- b. Disconnect all of the I/O devices (tape, diskette, optical, or disk units)—if you have not already done so—that you reconnected in step 12.
- c. Now reconnect one of the I/O devices (tape, diskette, optical, or disk units) that you just disconnected.
- d. Power on the unit you are working on.

Does a power reference code occur?

- **No:** Continue with the next step.
- **Yes:** Exchange the last I/O device that you reconnected in this step (see Part number catalog).

This ends the procedure.

14. Have you reconnected all the I/O devices?

Yes: This ends the procedure.

No: Repeat step 13 on page 254 (you can skip part b).

PWR1907:

A unit was dropped from the SPCN configuration.

1. Is the reference code you are working with 1xxx 913B?

No: Continue with the next step.

Yes: A system power control network (SPCN) microcode download is needed, but not started due to a policy setting. A manual download needs to be started:

Access the advanced system management interface (ASMI) and select "Configure I/O Enclosures"

Select the enclosure that the reference code has identified as needing the download

Select "Start enclosure microcode update". The SPCN microcode will now be loaded to the enclosure.

This ends the procedure.

2. Is the reference code you are working with 1xxx 90F0?

No: Return to "Start of call procedure" on page 2.

Yes: A unit was dropped from the SPCN configuration.

This can be caused by any of the following:

- The rack or unit has lost all ac or dc power.
- The SPCN function in the unit has an error.
- The SPCN/RIO frame-to-frame cables or the remote I/O (RIO) adapter card has failed.

3. Using the HMC or ASMI, find the 1xxx 90F0 in the error log (see Displaying error and event logs). Use the *Show details* option to display the location information for the failing unit.

4. After locating the failing unit, ensure that the RIO cables are seated correctly, reseal the RIO cables if necessary.

Are the cables connected correctly?

No: Correctly reconnect the RIO cables, or replace them if necessary. **This ends the procedure.**

Yes: Continue with the next step.

5. Are the ac line cords on the failing unit connected properly at both ends?

No: Reconnect the ac line cords, or replace them if necessary. **This ends the procedure.**

Yes: Continue with the next step.

6. Check the voltage at the customer's ac outlet. Is the voltage correct?

No: Inform the customer that the voltage at the ac power outlet is incorrect. **This ends the procedure.**

Yes: Continue with the next step.

7. Are the power supplies functional?

No: Perform the following:

- a. Refer to ../iphau/locations.htm to determine the location and part number for each power supply, and to find the appropriate procedure for exchanging the power supplies.

- b. Replace each power supply one at a time, until the problem has been resolved.
- c. If the problem persists after replacing all of the power supplies, continue with the next step.

Yes: Continue with the next step.

8. Replace the SPCN node in the failing unit. Go to symbolic FRU "TWRCARD" on page 763 and perform the procedure. **This ends the procedure.**

PWR1908:

A power supply fault or load fault has occurred in a 5088 or 0588 expansion unit.

About this task

Please see "Power isolation procedures" on page 243 for important safety information before servicing the system. For location information, see Locations — 5088 and 0588 expansion I/O units.

PWR1908 instructions for 5088 and 0588 expansion units:

1. Perform the following:
 - a. Power off the frame that you are working on by removing the ac line cords from the power supplies on the expansion unit.
 - b. Remove and label all cards installed in the PCI backplane area.
 - c. Power on the frame by reconnecting the ac power cables to the unit.

Does a power reference code occur?

Yes: Continue with the next step.

No: Go to step 8 on page 257.
2. Is the reference code 1xxx 2603?
 - **No:** Continue with the next step.
 - **Yes:** Replace the PCI backplane (see "TWRCARD" on page 763).

This ends the procedure.
3. Perform the following:
 - a. Power off the frame you are working on by removing the ac line cords from the power supplies on the expansion unit.
 - b. Remove power supply P01.
 - c. Remove fan assembly B01 from power supply P01 and install it on a new power supply P01 (see Part number catalog).
 - d. Install the new power supply P01.
 - e. Power on the frame by reconnecting the ac power cables to the unit you are working on.

Does a power reference code occur?

 - **Yes:** Continue with the next step.
 - **No:** The power supply that you replaced in this step was the failing item.

This ends the procedure.
4. Perform the following:
 - a. Power off the frame you are working on by removing the ac line cords from the power supplies on the expansion unit.
 - b. Remove the new power supply P01 and replace it with the original power supply P01.
 - c. Remove power supply P02.
 - d. Remove fan assembly B02 from power supply P02 and install it on a new power supply P02.
 - e. Install the new power supply P02.

f. Power on the frame by reconnecting the ac power cables to the unit you are working on.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** The power supply that you replaced in this step was the failing item.

This ends the procedure.

5. Perform the following:

- a. Power off the frame you are working on by removing the ac line cords from the power supplies on the expansion unit.
- b. Remove both the new power supply P02 and the fan assembly B02.
- c. Reinstall the original power supply P02 and a new fan assembly B02 (see Part number catalog).
- d. Power on the frame by reconnecting the ac power cables to the unit you are working on.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** The fan assembly B02 that you replaced in this step was the failing item.

This ends the procedure.

6. Perform the following:

- a. Power off the frame you are working on by removing the ac line cords from the power supplies on the expansion unit.
- b. Remove power supply P02.
- c. Replace the new fan assembly B02 with the original fan assembly B02.
- d. Reinstall power supply P02.
- e. Remove power supply P01.
- f. Remove fan assembly B01 and replace it with a new fan assembly B01 (see Part number catalog).
- g. Reinstall power supply P01.
- h. Power on the frame by reconnecting the ac power cables to the unit you are working on.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** The fan assembly B01 that you removed in this step is the failing item.

This ends the procedure.

7. Perform the following:

- a. Power off the frame you are working on by removing the ac line cords from the power supplies on the expansion unit.
- b. Remove power supply P01.
- c. Replace fan assembly B01 with the original fan assembly B01.
- d. Reinstall power supply P01.
- e. Replace the following FRUs one at a time:
 - Control panel (see "CTLPNL" on page 640).
 - PCI backplane assembly CB1 (see "TWRCARD" on page 763).

This ends the procedure.

8. Perform the following:

- a. Power off the frame you are working on by removing the ac line cords from the power supplies on the expansion unit.
- b. Reinstall one of the cards that you removed in step 1 on page 256.
- c. Power on the frame by reconnecting the ac power cables to the unit you are working on.

Does a power reference code occur?

- **No:** Continue with the next step.

- **Yes:** Exchange the last card that you reinstalled in this step (see Part number catalog).
This ends the procedure.

9. Have you reinstalled all of the cards?

- **Yes:** Replace the PCI backplane assembly CB1 (see "TWRCARD" on page 763).
This ends the procedure.
- **No:** Repeat step 8 on page 257, reinstalling the next card.

PWR1909:

A power supply load fault is occurring in a system expansion unit or I/O tower.

About this task

Please see "Power isolation procedures" on page 243 for important safety information before servicing the system.

Instructions for 5095, 0595, 5790, D10, D11, D20:

1. Perform the following:
 - a. Power off the system.
 - b. Disconnect all the I/O devices (tape, diskette, optical, and disk units) from the expansion unit or I/O tower you are working on by sliding them partially out of the unit (see Removing and replacing parts).
 - c. Remove and label all cards installed in the PCI card area.
 - d. Power on the system.

Does a power reference code occur?

Yes: Continue with the next step.

No: Go to step 8 on page 259.

2. Perform the following:
 - a. Power off the system.
 - b. Remove one of the fans from the expansion unit or I/O tower that you have not previously removed during this procedure.

Note: Disregard a fan reference code if it occurs during this step.

- c. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** The fan you removed in this step is the failing item (see Part number catalog).

This ends the procedure.

3. Have you removed all of the fans one at a time?

- **No:** Perform the following:
 - a. Power off the system.
 - b. Reinstall the fan that you removed in step 2 into its original location.
 - c. Repeat step 2.
- **Yes:** Reinstall all of the fans and continue with the next step.

4. Perform the following:

- a. Power off the system.
- b. Remove the I/O tower power supply cable, at the DASD backplane, that you have not previously removed.

c. Power on the system.

Does a power reference code occur?

- **No:** The DASD backplane that was disconnected in this step is the failing item (see Part number catalog).

This ends the procedure.

- **Yes:** Continue with the next step.

5. Have you disconnected the power cables from each of the DASD backplanes one at a time?

Yes: Continue with the next step.

No: Repeat step 4 on page 258.

6. Perform the following:

- a. Power off the system.
- b. Remove a power supply that you have not previously removed, and replace it with a new one.
- c. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** The power supply that was removed in this step is the failing item (see Part number catalog).

This ends the procedure.

7. Have you removed all of the power supplies one at a time?

- **Yes:** Perform the following:
 - a. Remove the new power supply that you installed in step 6 and reinstall the original power supply.
 - b. Replace the backplane (see "TWRCARD" on page 763).

This ends the procedure.

- **No:** Remove the new power supply that you installed in step 6 and reinstall the original power supply. Then, repeat step 6.

8. Perform the following:

- a. Power off the system.
- b. Reinstall all of the cards you removed in step 1 on page 258.
- c. Power on the system.

Does a power reference code occur?

Yes: Continue with the next step.

No: Go to step 11.

9. Perform the following:

- a. Power off the system.
- b. Disconnect one of the cards you reconnected in step 8.
- c. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** Exchange the last card you disconnected in this step (see Part number catalog).

This ends the procedure.

10. Have you disconnected all the cards?

- **No:** Repeat step 9.
- **Yes:** Reinstall all the parts and return to "Start of call procedure" on page 2.

This ends the procedure.

11. Perform the following:

- a. Power off the system.
- b. Reconnect all of the I/O devices (tape, diskette, optical, or disk units) that you disconnected in step 1 on page 258.
- c. Power on the system.

Does a power reference code occur?

Yes: Continue with the next step.

No: This ends the procedure.

12. Perform the following:

- a. Power off the system.
- b. Disconnect one of the I/O devices you reconnected in step 11 on page 259.
- c. Power on the system.

Does a power reference code occur?

- **Yes:** Continue with the next step.
- **No:** Exchange the last I/O device you disconnected in this step (see Part number catalog).

This ends the procedure.

13. Have you disconnected all of the I/O devices?

- **No:** Repeat step 12.
- **Yes:** Reinstall all the parts and return to “Start of call procedure” on page 2.

This ends the procedure.

PWR1911:

You are here because of a power problem on a dual line cord system. If the failing unit does not have a dual line cord, return to the procedure that sent you here or go to the next item in the FRU list.

About this task

The following steps are for the system unit, unless other instructions are given. Please refer to “Power isolation procedures” on page 243 for important safety information before servicing the system.

1. Are you working with a model 575, 590 or 595?
 - No:** Continue with the next step.
 - Yes:** Go to “PWR1912” on page 265. **This ends the procedure.**
2. If an uninterruptible power supply is installed, verify that it is powered on before proceeding.
3. Are all the units powered on?
 - **Yes:** Go to step 8 on page 262.
 - **No:** On the unit that does not power on, perform the following:
 - a. Disconnect the ac line cords from the unit that does not power on.
 - b. Use a multimeter to measure the ac voltage at the system end of both ac line cords.

Table 33. Correct ac voltage

Model or expansion unit	Correct ac voltage
Models 505, 51x, 52x, 55x, 561, 570, OpenPower 710, OpenPower 720, and 5095, 0595, and 7311-D20 expansion units	100V to 127V or 200V to 240V
5074, 5079, 5088, 0588, 5094, 5294, 5790, 7311-D10, and 7311-D11 expansion units	200V to 240V

- c. Is the ac voltage correct (refer to Table 33)?

Yes: Continue with the next step.

No: Go to step 7 on page 262.

4. Are you working on a model 505, 51x, 52x, 55x, 561, 570, OpenPower 710 or OpenPower 720, or a 5088, 0588, 5095, 0595, 5790, 7311-D10, 7311-D11, or 7311-D20 expansion unit?
 - **No:** Continue with the next step.
 - **Yes:** Perform the following:
 - a. Reconnect the ac line cords.
 - b. Verify that the failing system or tower fails to power on.
 - c. Replace the failing power supply. Use the table below to determine which power supply needs replacing, and then see Finding part locations for its location, part number, and exchange procedure.

Table 34. Failing power supply for models 505, 51x, 52x, 55x, 561, 570, OpenPower 710, OpenPower 720, and 5088, 0588, 5095, 0595, 5790, 7311-D10, 7311-D11, 7311-D20 expansion units

Reference code	Models or expansion units	Failing item name
1510	505, 51x, 52x, 55x, 561, 570, OpenPower 710, OpenPower 720	Power supply 1
	5088, 0588	Power supply 2
	5095, 0595, 5790, 7311-D10, 7311-D11, 7311-D20	Power supply 1
1520	51x, 52x, 55x, 561, 570, OpenPower 710, OpenPower 720	Power supply 2
	5088, 0588	Power supply 1
	5095, 0595, 5790, 7311-D10, 7311-D11, 7311-D20	Power supply 2

This ends the procedure.

5. Perform the following:
 - a. Reconnect the ac line cord to the ac modules.
 - b. Remove the ac jumper cables at the power supplies.
 - c. Use a multimeter to measure the ac voltage at the jumper cable power supply end.

Is the ac voltage from 200V to 240V?

 - **No:** Continue with the next step.
 - **Yes:** Replace the failing power supply. Use the table below to determine which power supply needs replacing, and then see Finding part locations for its location, part number, and exchange procedure.

Attention: Do not install power supplies P00 and P01 ac jumper cables on the same ac module.

Table 35. Failing power supply for 5074, 5079, and 5094 expansion units

Reference code	Failing item name
1500	Power supply 0 (5094 only)
1510	Power supply 1
1520	Power supply 2
1530	Power supply 3 (5094 only)

This ends the procedure.

6. Perform the following:
 - a. Disconnect the ac jumper cable at the ac module output.
 - b. Use a multimeter to measure the ac voltage at the ac module output.

Is the ac voltage from 200V to 240V?

- **Yes:** Exchange the ac jumper cable.

This ends the procedure.

- **No:** Exchange the ac module (see Finding part locations).

This ends the procedure.

7. Perform the following:

- a. Disconnect the ac line cords from the customer's ac power outlet.
- b. Use a multimeter to measure the ac voltage at the customer's ac power outlet.

Is the ac voltage correct (refer to Table 33 on page 260)?

- **Yes:** Exchange the failing ac line cord.

This ends the procedure.

- **No:** Perform the following:

- a. Inform the customer that the ac voltage at the power outlet is not correct.
- b. Reconnect the ac line cords to the power outlet after the ac voltage at the power outlet is correct.

This ends the procedure.

8. Is the reference code 1xxx-00AC?

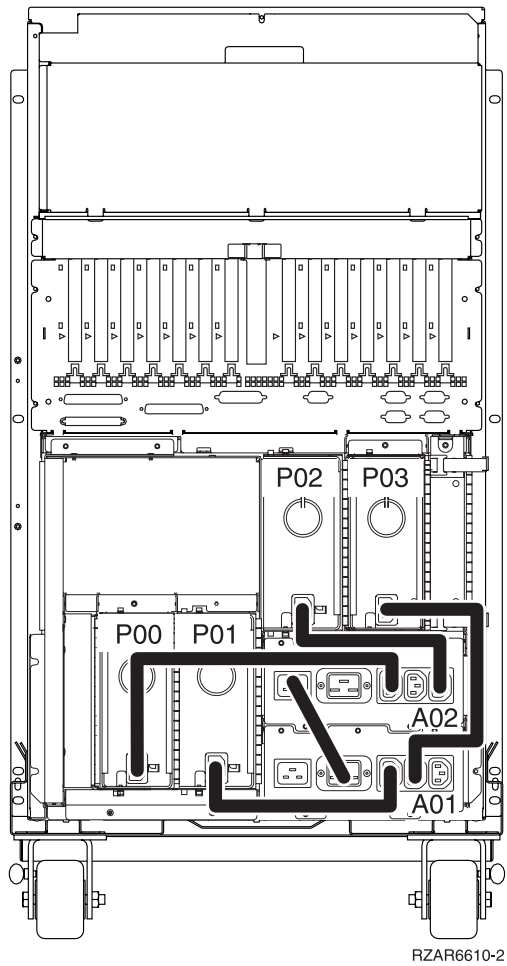
- **No:** Continue with the next step.
- **Yes:** This reference code may have been caused by an ac outage. If the system will power on without an error no parts need to be replaced.

This ends the procedure.

9. Is the reference code 1xxx-1510 or 1520?

- **No:** Continue with the next step.
- **Yes:** Perform the following:
 - a. Use the following table and Finding part locations to locate the failing parts.

Model or expansion unit	Reference code	Locate these parts
505, 51x, 52x, 55x, 561, 570, OpenPower 710, OpenPower 720	1xxx 1510	Power supply E1 and ac line cord 1
	1xxx 1520	Power supply E2 and ac line cord 2
5088 and 0588 (see Figure 8 on page 264)	1xxx 1510	ac jumper cable connected to power supply 2 and the ac module
	1xxx 1520	ac jumper cable connected to power supply 1 and the ac module
5074, 5079, and 5094 (see Figure 7 on page 263)	1xxx 1510	ac jumper cable connected to power supply 2 and the ac module
	1xxx 1520	ac jumper cable connected to power supply 1 and the ac module
5095 and 0595	1xxx 1510	Power supply 1 and ac line cord 1
	1xxx 1520	Power supply 2 and ac line cord 2
5790, 7311-D10, 7311-D11, 7311-D20	1xxx 1510	Power supply 1 and ac line cord 1
	1xxx 1520	Power supply 2 and ac line cord 2



- c. Go to step 11.
10. Is the reference code 1xxx 1500 or 1xxx 1530?
- **No:** Return to “Start of call procedure” on page 2.
This ends the procedure.
 - **Yes:** Locate the ac jumper cables for the reference code you are working on, and then continue with the next step:
Attention: Do not disconnect the other ac jumper cable when powered on.
 - If the reference code is 1xxx 1500, see Locations — 5094, 5294, and 8094-002 expansion I/O units to determine the locations of ac jumper cables that connect to power supply P00.
 - If the reference code is 1xxx 1530, see Locations — 5094, 5294, and 8094-002 expansion I/O units to determine the locations of ac jumper cables that connect to power supply P03.
11. Perform the following:
- a. For the reference code you are working on, disconnect either the ac jumper cable from the power supply **or** the ac line cord from the expansion unit.
 - b. Use a multimeter to measure the ac voltage at the power supply end of the ac jumper cable **or** the expansion unit end of the ac line cord.
- Is the ac voltage correct (see Table 33 on page 260)?
- No:** Continue with the next step.
- Yes:** Exchange the failing power supply. Refer to Table 34 on page 261 and Table 35 on page 261 for its position, and then see Finding part locations for part numbers and directions to the correct exchange procedures. **This ends the procedure.**
12. Perform the following:
- a. Disconnect the ac line cords from the power outlet.
 - b. Use a multimeter to measure the ac voltage at the customer’s ac power outlet.
- Is the ac voltage correct (see Table 33 on page 260)?
- **Yes:** Exchange the following, one at a time:
 - failing ac line cord
 - failing ac jumper cable (if installed)
 - failing ac module (if installed) (see Finding part locations for part numbers and directions to the correct exchange procedures)**This ends the procedure.**
 - **No:** Perform the following:
 - a. Inform the customer that the ac voltage at the power outlet is not correct.
 - b. Reconnect the ac line cords to the power outlet after the ac voltage at the power outlet is correct.
This ends the procedure.

PWR1912:

The server detected an error in the power system.

About this task

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

1. Are you working with a model 575 system unit?
No: Continue with step 5.
Yes: Continue with step 2
2. Is your bulk power subsystem in the on state (powered up)?
No: Continue with step 5.
Yes: Check all cable connections and try to power on the 575 system unit. Continue with step 3
3. Did the model 575 system unit power up?
No: Check the error log for errors (HMC - Service focal point), continue on step 4.
Yes: This ends the procedure.
4. Did you find an SRC in the error log?
No: Replace the DCA in the 575 system unit. **This ends the procedure.**
Yes: Return to the "Start of call procedure" on page 2.
5. Perform the following:
 - a. Ensure that both power line cords are properly connected.

- b. Make sure that the unit EPO switch is in the *on* position.
- c. Make sure that the unit EPO bypass switches on both bulk power controllers (BPCs) are in the *normal* position.
- d. Ensure that the cable from unit EPO connector J00 to BPC-A connector J05 and the cable from unit EPO connector J01 to BPC-B connector J05 are secure and undamaged.
- e. Ensure that the room temperature is not in excess of the maximum allowed (40° Celsius or 104° Fahrenheit).

Note: If the room temperature has exceeded the maximum allowed, the system may continually cycle on and off.

Were any problems discovered while performing the above checks?

No: Continue with the next step.

Yes: Correct any problems you found. **This ends the procedure.**

6. Make sure that the on/off switches on all the bulk power regulators (BPRs) are in the *on* (left) position.

Note: A switch set to the *off* position is not the cause of your problem, but they all need to be on before proceeding.

7. Check the state of the LEDs on both sides of the bulk power assembly (BPA) and then choose from the following conditions:
 - If all of the LEDs on both sides of the BPA are in the *off* position, go to step 8.
 - If the unit EPO power LED is turned on, the BPC **GOOD** LED is turned on, and all other LEDs are in the *off* position, go to step 9.
 - If neither of the above two conditions is true, independent faults are indicated on both sides of the BPA. Each side must be isolated separately. Call your next level of support. **This ends the procedure.**
8. Prepare a voltage meter to measure up to 600 V ac. Using the labelled test points on the frame, measure the voltage between phase A and phase B. Is the voltage greater than 180 V ac?

Yes: Independent faults are indicated on both sides of the BPA. Each side must be isolated separately. Call your next level of support. **This ends the procedure.**

No: Inform the customer that power line voltage at the input to the BPR is missing or too low and needs to be corrected. **This ends the procedure.**
9. Is a cable connected to connector J02 on the unit EPO card?

No: Continue with the next step.

Yes: Go to step 11 to determine if the room EPO circuit is the problem.
10. Is the internal toggle switch on the unit EPO card set to the *RM EPO BYPASS* position?

No: Set the internal toggle switch on the unit EPO card to the *RM EPO BYPASS* position. **This ends the procedure.**

Yes: The unit EPO card is the failing item. Go to Locations — model 590 and 595 or Locations — model 575 to locate and replace the card. **This ends the procedure.**
11. Unplug the cable from connector J02 on the EPO card and set the toggle switch to the *RM EPO BYPASS* position. Does the EPO **CMPLT** LED on at least one BPC become lit?

Yes: Inform the customer that the room EPO circuit is defective at this connection and requires service. **This ends the procedure.**

No: The unit EPO card is the failing item. Go to Locations — model 590 and 595 or Locations — model 575 to locate and replace the card. **This ends the procedure.**

PWR1915:

Use this procedure after observing a system reference code (SRC) of 1xxx 8440 on a 520 with Quiet Office Accoustic conversion or a 285.

Is your system producing an SRC of 1xxx 8440?

No: Return to the "Start of call procedure" on page 2.

Yes: Only 4 disk drives are supported on a 520 with Quiet Office Accoustic conversion or a 285. You must remove the second disk drive backplane or replace it with the passthru backplane. Failure to do so will not allow the system to power up.

This ends this procedure.

PWR1917:

Displaying or changing the configuration ID.

1. Use either the advanced system management interface (ASMI) or the control panel to display and change the configuration ID.
 - If you are using the ASMI, refer to Changing system configuration, and use Table 36 to find the correct configuration ID.
 - If you are using the control panel continue with the next step.
2. Perform the following to display the configuration ID:

Attention: The system or frame that will display the ID must be powered off with ac power applied.

Notes:

- If you have just restored power to the system, the service processor must come back up to standby before control panel functions will work properly. Bringing the service processor back up to standby takes a few minutes **after** the panel appears to be operational.
 - You must have the panel in Manual mode to access function 7 options.
- a. Select function 07 on the system control panel. Press Enter (07** will be displayed).
 - b. Use the arrow keys to increment/decrement to subfunction A8. 07A8 will be displayed. Press Enter (07A8 00 will be displayed).
 - c. Use the arrow keys to increment/decrement to the first byte of the unit address (usually 3C) for the box you want to check. 07nn (073C, for example) will be displayed, where nn is the first byte of the frame address.
 - d. Press Enter (073C 00, for example, will be displayed).
 - e. Use the arrow keys to increment/decrement to the second byte of the unit address (usually 01, 02, etc for I/O expansion units and 00 for system unit frames) for the box you want to check. 07nn will be displayed, where nn is the second byte of the frame address (0700, for example, for a system unit frame). Press Enter (0700 00, for example, will be displayed).

Note: The display on an addressed I/O expansion should be blinking on and off while displaying the configuration ID as the last two characters of the bottom line.

- f. For a system unit, press an arrow key (increment or decrement) twice to display the ID (first 07** will be displayed, then 07nn will be displayed, where nn is the configuration ID). For example, for a model 505, 07C0 will be displayed.
- g. Use the following table to check the frame configuration ID.

Table 36. Frame Configuration IDs

Model or expansion unit	Configuration ID (Processing unit identifier)
285 and 52x	B4
52x Battery backup	BC
505	C0

Table 36. Frame Configuration IDs (continued)

Model or expansion unit	Configuration ID (Processing unit identifier)
51x and OpenPower 710	BA
55x	B5
55x Battery backup	BD
OpenPower 720	BB
9116-561 and 570	B2
9116-561 and 570 (if service processor cable is attached to the primary unit or if there are one or more secondary units)	B3
575	B9
59x	B1
5074 and 5079	81
5088 and 0588	89
5094 and 5294	8A
5095 and 0595	8B
D10, D11, 5790	88
D20	8C

Note: Processing unit IDs are not applicable for the 7031-D24, 7031-T24, 7037-A50, the IntelliStation® POWER™, and the 7047-185.

h. Is the correct configuration ID displayed for the tower selected?

No: Continue with the next step.

Yes: Go to step step 6.

3. You need to set the frame configuration ID. Are you starting this step from the function 01 view on the control panel?

No: To ensure that the control panel operates properly, return to function 01. Do the following:

- The operator panel should still show the incorrect configuration ID (for example, 07C0).
- Press Enter. The control panel will now show 07xx 00 (for example, 07C0 00).
- Use the arrows to display 07xx, then press Enter. The control panel will now show 07.
- Use the arrows to get the display to function 01, then press Enter. You should now be at the regular function 01 control panel view.
- Continue with the next step.

Yes: Continue with step step 5.

4. Set the frame configuration ID. Do the following:

- Select function 07 on the system control panel. Press Enter (07** will be displayed).
- Use the arrow keys to increment/decrement to subfunction A9 (07A9 will be displayed). Press Enter (07A9 00 will be displayed).
- Use the arrow keys to increment/decrement to the first byte of the unit address (usually 3C) for the box that you want to change. 07nn (073C, for example) will be displayed, where nn is the first byte of the unit address. Press Enter (073C 00, for example, will be displayed).

Note: The display on the addressed frame will be blinking on and off (non-system unit frames only).

- d. Use the arrow keys to increment/decrement to the second byte of the unit address (usually 01, 02, etc for I/O Expansion units and 00 for system unit frames) for the box you want to check. 07nn will be displayed, where nn is the second byte of the frame address (0700, for example, for a system unit frame). Press Enter (0700 00, for example, will be displayed).

Note: The display on the addressed I/O expansion unit will be blinking on and off.

- e. Use the arrow keys to increment/decrement to the correct configuration ID (refer to Table 36 on page 268). 07xx will be displayed where xx is the configuration ID.
- f. Press Enter (07xx 00 will be displayed). After 20 to 30 seconds, the display on the addressed I/O expansion unit will stop blinking and return to the normal display format. On a system unit, the display will show the series of bring-up reference codes and then display function 01.

Note: To return the panel to normal display, scroll to 07** and press Enter.

- g. Is the reference code 1xxx 840D or 1xxx 840E?

No: This ends the procedure.

Yes: Continue with the next step.

5. Perform the following:
 - a. Power off the system.
 - b. Exchange the SPCN card in the failing frame (see "TWRCARD" on page 763). **This ends the procedure.**

PWR1918:

A voltage regulator card might be failing.

About this task

Instructions vary depending on the machine you are servicing. Choose from the following:

"Instructions for model 505"

"Instructions for model 51x and OpenPower 710" on page 271

"Instructions for model 285 and 52A" on page 271

"Instructions for model 520" on page 272

"Instructions for model 55x and OpenPower 720" on page 272

"Instructions for model 9116-561 and 570" on page 273

Instructions for model 505:

1. Is the reference code 1xxx 2631?

No: Continue with the next step.

Yes: The 1.5 V voltage regulator, which is part of the system backplane, is the failing item. Replace the system backplane (see Locations — model 505). **This ends the procedure.**

2. Is the reference code 1xxx 2632?

No: Continue with the next step.

Yes: The 2.5 V voltage regulator, which is part of the system backplane, is the failing item. Replace the system backplane (see Locations — model 505). **This ends the procedure.**

3. Is the reference code 1xxx 2636 or 2637?

No: Return to "Start of call procedure" on page 2. **This ends the procedure.**

Yes: Continue with the next step.

4. The 1.3 V voltage regulator is the failing item and needs to be replaced (see Locations — model 505). If you have a 2-way processor, you will have two 1.3 V voltage regulators—both of which will need to be replaced.

Does the problem persist?

No: This ends the procedure.

Yes: Replace the system backplane (see Locations — model 505). **This ends the procedure.**

Instructions for model 51x and OpenPower 710:

1. Is the reference code 1xxx 2631?

No: Continue with the next step.

Yes: The 1.5 V voltage regulator, which is part of the system backplane, is the failing item. Replace the system backplane (see Locations — model 510, 51A, and OpenPower 710). **This ends the procedure.**

2. Is the reference code 1xxx 2632?

No: Continue with the next step.

Yes: The 2.5 V voltage regulator is the failing item and needs to be replaced (see Locations — model 510, 51A, and OpenPower 710). **This ends the procedure.**

3. Is the reference code 1xxx 2636 or 2637?

No: Return to “Start of call procedure” on page 2. **This ends the procedure.**

Yes: Continue with the next step.

4. The 1.3 V voltage regulator is the failing item and needs to be replaced (see Locations — model 510, 51A, and OpenPower 710). If you have a 2-way processor, you will have two 1.3 V voltage regulators—both of which will need to be replaced.

Does the problem persist?

No: This ends the procedure.

Yes: Replace the system backplane (see Locations — model 510, 51A, and OpenPower 710). **This ends the procedure.**

Instructions for model 285 and 52A:

1. Is the reference code 1xxx 2631?

No: Continue with the next step.

Yes: The embedded voltage regulator for 1.5 V is the failing item and needs to be replaced (see Locations — Model 285 and 9131-52A to locate and replace the system backplane). **This ends the procedure.**

2. Is the reference code 1xxx 2632?

No: Continue with the next step.

Yes: The embedded voltage regulator for 2.5 V is the failing item and needs to be replaced (see Locations — Model 285 and 9131-52A to locate and replace the system backplane). **This ends the procedure.**

3. Is the reference code 1xxx 2636 or 2637?

No: Return to the “Start of call procedure” on page 2. **This ends the procedure.**

Yes: The 1.2 V voltage regulator is the failing item and needs to be replaced (see Locations — Model 285 and 9131-52A. If you have a 2-core processor, you will have two 1.2 V voltage regulators, both of which will need to be replaced.

Does the problem persist?

No: This ends the procedure.

Yes: Replace the system backplane (see Locations — Model 285 and 9131-52A). **This ends the procedure.**

Instructions for model 520:

1. Is the reference code 1xxx 2630?

No: Continue with the next step.

Yes: The voltage regulator for 1.2 V is the failing item and needs to be replaced (see Locations — Model 520 to locate and replace the regulator). **This ends the procedure.**

2. Is the reference code 1xxx 2631?

No: Continue with the next step.

Yes: The voltage regulator for 1.5 V is the failing item and needs to be replaced. If the HSL ports are on the backplane, replace the regulator. If the HSL ports are on a card (P1-C21), replace the backplane. See Locations — Model 520. **This ends the procedure.**

3. Is the reference code 1xxx 2632?

No: Continue with the next step.

Yes: The voltage regulator for 2.5 V is the failing item and needs to be replaced. If the HSL ports are on the backplane, replace the regulator. See Locations — Model 520. **This ends the procedure.**

4. Is the reference code 1xxx 2636 or 2637?

No: Return to the “Start of call procedure” on page 2. **This ends the procedure.**

Yes: The 1.2 V voltage regulator is the failing item and needs to be replaced (see Locations — Model 520. If you have a 2-core processor, you will have one 1.2 V voltage regulator that will need to be replaced.

Does the problem persist?

No: This ends the procedure.

Yes: Replace the system backplane (see Locations — Model 520). **This ends the procedure.**

Instructions for model 55x and OpenPower 720:

1. Is the reference code 1xxx 2630?

No: Continue with the next step.

Yes: The voltage regulator for 1.2 V for processor card 1 is the failing item and needs to be replaced (see Locations — 550, 55A, or OpenPower 720 to locate and replace the regulator). **This ends the procedure.**

2. Is the reference code 1xxx 2631?

No: Continue with the next step.

Yes: The voltage regulator for 1.5 V on system processor card 1 is the failing item and needs to be replaced (see Locations — 550, 55A, or OpenPower 720 to locate and replace the regulator). If the regulator is not pluggable or if the problem is not resolved after you replace this part, exchange system processor card 1. **This ends the procedure.**

3. Is the reference code 1xxx 2632?

No: Continue with the next step.

Yes: The voltage regulator for 2.5 V on system processor card 1 is the failing item and needs to be replaced (see Locations — 550, 55A, or OpenPower 720 to locate and replace the regulator). If this regulator is not pluggable or if the problem is not resolved after you replace this part, exchange the system processor card. **This ends the procedure.**

4. Is the reference code 1xxx 2640?

- **No:** Continue with the next step.

- **Yes:** The voltage regulator for 1.2 V for processor card 2 is the failing item and needs to be replaced (see Locations — 550, 55A, or OpenPower 720 to locate and replace the regulator). If the problem is not resolved after you replace this part, exchange the following parts, one at a time:

- service processor
- system processor assembly P2

This ends the procedure.

5. Is the reference code 1xxx 2641?

No: Continue with the next step.

Yes: The voltage regulator for 1.5 V on system processor card 2 is the failing item and needs to be replaced (see Locations — 550, 55A, or OpenPower 720 to locate and replace the regulator). If this regulator is not pluggable or if the problem is not resolved after you replace this part, exchange system processor card 2. **This ends the procedure.**

6. Is the reference code 1xxx 2642?

No: Return to the “Start of call procedure” on page 2. **This ends the procedure.**

Yes: The voltage regulator for 2.5 V on system processor card 2 is the failing item and needs to be replaced (see Locations — 550, 55A, or OpenPower 720 to locate and replace the regulator). If this regulator is not pluggable or if the problem is not resolved after you replace this part, exchange the system processor card. **This ends the procedure.**

Instructions for model 9116-561 and 570:

1. Is the reference code 1xxx 8450?

No: Continue with the next step.

Yes: You have fewer voltage regulator cards than processor cards. Add another regulator card in the next empty position (see Locations — Model 570). **This ends the procedure.**

2. Is the reference code 1xxx 8451?

No: Continue with the next step.

Yes: You have too few voltage regulator cards installed. Add another regulator card in the next empty position (see Locations — Model 570). **This ends the procedure.**

3. Is the reference code 1xxx 1611, 1612, or 1613?

No: Continue with the next step.

Yes: Voltage regulator 1 is the failing item and needs to be replaced (see Locations — Model 570 to locate and replace the regulator). **This ends the procedure.**

4. Is the reference code 1xxx 1621, 1622, or 1623?

No: Continue with the next step.

Yes: Voltage regulator 2 is the failing item and needs to be replaced (see Locations — Model 570 to locate and replace the regulator). **This ends the procedure.**

5. Is the reference code 1xxx 1631, 1632, or 1633?

No: Continue with the next step.

Yes: Voltage regulator 3 is the failing item and needs to be replaced (see Locations — Model 570 to locate and replace the regulator). **This ends the procedure.**

6. Is the reference code 1xxx 2602?

Yes: Continue with the next step.

No: Return to “Start of call procedure” on page 2. **This ends the procedure.**

7. Perform the following:

- Remove one of the voltage regulator cards that you have not already removed in this procedure and replace it with a new one (see Locations — Model 570 to locate and replace the regulator).
- Power on the system (see Powering on and powering off).

Does reference code 1xxx 2602 appear again?

Yes: Continue with the next step.

No: The voltage regulator card that you replaced was the failing item. **This ends the procedure.**

8. Have you replaced all of the voltage regulator cards?

Yes: Replace the regulator distribution connection backplane (see Locations — Model 570). **This ends the procedure.**

No: Reinstall the original regulator card, and then repeat step 7 on page 273.

PWR1920:

Use this procedure to verify that the lights on the server control panel and the display panel on all attached I/O expansion units are operating correctly.

About this task

Please see “Power isolation procedures” on page 243 for important safety information before continuing with this procedure.

1. Select function 04 **Lamp Test** on the control panel and press **Enter**.
2. Review the server control panel and the display panels on all attached I/O towers. The lamp test is only active on the I/O towers for 25 seconds after you press **Enter**. Are all of the following lights on for all attached I/O towers: power-on light, attention light, and all dots for the 32 character display?

- **No:** Exchange the following field replaceable units in the failing unit one at a time (see Removing and replacing parts):
 - Control panel (see “CTLPNL” on page 640)
 - Tower card (see “TWRCARD” on page 763)
 - Control panel cable

This ends the procedure.

- **Yes:** These control panel lights are working correctly. Continue with the next step.
3. Are any abnormal characters or character patterns (not reference codes or normal display mode) displayed?
- **No:** Return to “Start of call procedure” on page 2.

This ends the procedure.
 - **Yes:** Exchange the following FRUs in the failing unit one at a time (see Removing and replacing parts):
 - Control panel (see “CTLPNL” on page 640)
 - Tower card (see “TWRCARD” on page 763)
 - Control panel cable

This ends the procedure.

PWR2402:

The server detected an error in the power system.

About this task

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

1. Is the SRC 1xxx-8700 or 8701?

No: Return to the "Start of call procedure" on page 2. **This ends the procedure.**

Yes: Continue with the next step.

2. In this step you will be measuring voltages on one of the bulk power assemblies (BPAs). If the SRC is 1xxx8700, then you should measure the voltage on BPA-A (front). If the SRC is 1xxx8701, then you should measure the voltage on BPA-B (rear).

Using the labeled test points on the face of the BPA, measure the voltages between the following:

- phase A and phase B
- phase B and phase C
- phase C and phase A

Are all of the meter readings greater than 180 V ac?

Yes: Go to step 4 on page 276.

No: Inform the customer that power voltage at the input to the BPA could be missing or too low and needs to be checked. Continue with the next step once the check has been performed.

3. Does the check confirm that the customer's voltage levels missing or too low?
- Yes:** The customer must correct the voltage levels. **This ends the procedure.**
- No:** Replace the power cord (see Cables for the proper part number). **This ends the procedure.**
4. Exchange the following FRUs, one at a time, until the problem is resolved. Go to Locations — model 575 or Locations — model 590 and 595 to locate and replace the part.
- Bulk power regulator (BPR) 1
 - BPR 2
 - BPR 3
 - Bulk power controller (BPC)
 - Bulk power assembly (BPA)

This ends the procedure.

Router isolation procedures

These procedures serve as a guide to the correct isolation procedures from the reference code tables.

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

Perform these procedures only when directed to do so from another procedure.

RTRIP01:

Gives a link to a topic that might assist you when exchanging the I/O processor (IOP) for the system or partition console of i5/OS™.

Perform “CONSL01” on page 117.

RTRIP02:

Gives a link to a topic that might assist you when diagnosing workstation IOP detected errors.

Perform “TWSIP01” on page 352.

RTRIP03:

Gives links to topics to assist you when diagnosing workstation IOP detected errors.

If you have a twinaxial terminal for the console, perform “TWSIP01” on page 352. Otherwise, perform “WSAIP01” on page 359.

RTRIP04:

Use the FRU list in the service action log if it is available. If it is not available, examine word 5 of the reference code.

Is word 5 of the reference code zero (0000 0000)?

Yes: Perform “SIIOADP” on page 736.

No: Perform “PIOCARD” on page 722.

This ends the procedure.

RTRIP05:

Use the attached procedure when this reference code occurs for a HSL/RIO loop resource, when an I/O expansion unit on the loop is powered off for a concurrent maintenance action.

About this task

Note: This reference code can occur for the HSL/RIO loop resource when an I/O expansion unit on the loop is powered off for a concurrent maintenance action.

Note: A fiber optic cleaning kit may be required for optical HSL connections.

1. Multiple B600 6982 errors may occur due to efforts to retry and recover. If the recovery efforts were successful, there will be a B600 6985 reference code with xxxx 3206 in word 4 logged after all B600 6982 reference codes in the product activity log (PAL). If this is the case, close out all the B600 6982 entries. Then continue with the next step.
2. Is there a B600 6987 reference code in the service action log (SAL) logged at about the same time?
Yes: Close this problem and work the B600 6987.
This ends the procedure.
No: Continue with the next step.
3. Is there a B600 6981 reference code in the SAL logged at approximately the same time?
Yes: Go to step 8 on page 278.
No: Continue with the next step.

4. Perform “RIOIP06” on page 128 to determine if any other systems are connected to this loop and then return here.

Note: The loop number can be found in the SAL in the description for the HSL_LNK FRU.
Are there other systems connect to this loop?

Yes: Continue with the next step.

No: Go to step 8.

5. Check for HSL failures in the SALs on the other systems before replacing parts. HSL failures are indicated by SAL entries with HSL I/O bridge and Network Interface Controller (NIC) resources. Ignore B600 6982 and B600 6984 entries.

Are there HSL failures on other systems?

Yes: Continue with the next step.

No: Go to step 8.

6. Repair the problems on the other systems and return to this step. After making repairs on the other systems check the PAL of this system. Is there a B600 6985, along with this loop’s resource name, that was logged after the repairs you made on the other systems?

Yes: Continue with the next step.

No: Go to step 8.

7. For the B600 6985 reference code you found, use symbolic FRU “SIRSTAT” on page 747 to determine if the loop is now complete.

Is the loop complete?

Yes: The problem has been resolved.

This ends the procedure.

No: Go to step 8.

8. The FRU list displayed in the SAL may be different from the failing item list given here. Use the SAL’s FRU list when it is available.

Does this reference code appear in the SAL with the symbolic FRU HSL_LNK listed as a FRU?

Yes: Perform “RIOIP01” on page 118.

This ends the procedure.

No: Exchange the FRUs listed in the SAL according to their part action codes.

This ends the procedure.

RTRIP06:

Use the attached procedure when this reference code occurs in a service action code (SAL).

About this task

Note: A fiber optic cleaning kit may be required for optical HSL connections.

1. Is the reference code in the service action log (SAL)?

- **Yes:** Continue with the next step.
- **No:** The reference code is informational. Use symbolic FRU “SIRSTAT” on page 747 to determine what the reference code means.

This ends the procedure.

2. This error can appear in the SAL if a tower or another system in the loop did not complete powering on before Licensed Internal Code (LIC) checked this loop for errors. Search the product activity log (PAL) for all B600 6985 reference codes logged for this loop and use symbolic FRU “SIRSTAT” on page 747 to determine if this error requires service.

Is further service required?

Yes: Continue with the next step.

No: This ends the procedure.

3. There may be multiple B600 6985 reference codes, with xxxx 3205 in word 4, for the same loop resource in the SAL. This is caused by attempts to retry and recover. If there is a B600 6985 reference code with xxxx 3206 or xxxx 3208 in word 4 after the above B600 6985 entries in the PAL, then the recovery efforts were successful. If this is the case, close all the B600 6985 entries for that loop resource in the SAL. Then continue with the next step.
4. Is there a B600 6981 reference code in the SAL?
Yes: Close that problem and go to step 9.
No: Continue with the next step.
5. Perform "RIOIP06" on page 128 to determine if any other systems are connected to this loop and then return here.

Note: The loop number can be found in the SAL in the description for the HSL_LNK FRU.
Are there other systems connected to this loop?

Yes: Continue with the next step.

No: Go to step 9.

6. Check for HSL failures in the SALs on the other systems before replacing parts. HSL failures are indicated by SAL entries with HSL I/O bridge and Network Interface Controller (NIC) resources. Ignore B600 6982 and B600 6984 entries.

Are there HSL failures on other systems?

Yes: Continue with the next step.

No: Go to step 9.

7. Repair the problems on the other systems and return to this step. After making repairs on the other systems check the PAL of this system. Is there a B600 6985 reference code that was logged after the repairs you made on the other systems?

Yes: Continue with the next step.

No: Go to step 9.

8. For the B600 6985 log you found, use symbolic FRU "SIRSTAT" on page 747 to determine if the loop is now complete.

Is the loop complete?

- **Yes:** The problem has been resolved.

This ends the procedure.

- **No:** Go to step 9.

9. The FRU list displayed in the SAL may be different from the failing item list given here. Use the SAL's FRU list when it is available.

Does this reference code appear in the SAL with the symbolic FRU HSL_LNK listed as a FRU?

- **Yes:** Perform "RIOIP01" on page 118.

This ends the procedure.

- **No:** Exchange the FRUs listed in the SAL according to their part action codes.

This ends the procedure.

RTRIP07:

Gives a link to assist you when diagnosing a keyboard error.

Perform "WSAIP01" on page 359.

RTRIP08:

Gives a link to assist when the Licensed Internal Code detected an IOP programming problem.

Perform a system IPL. Is the IPL successful?

Yes: Perform "LICIP01" on page 205 to determine the cause of the problem. **This ends the procedure.**

No: Perform the action described in the new reference code. **This ends the procedure.**

Service processor isolation procedures

These procedures help you to isolate problems with the service processor.

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

FSPSP01:

A part vital to system function has been deconfigured.

About this task

Perform the following steps:

1. Is word 6 (the 8 leftmost characters of function 13) of the reference code 0000F234?

No: Go to step 5.

Yes: The system has detected a deconfigured memory controller that is required for the system to function, or it has detected that there is not enough memory or that the memory is plugged incorrectly. Continue with the next step.

2. Perform the following steps:

- a. Reseat all of the memory DIMMs. Refer to symbolic FRU "MEMDIMM" on page 714, but do not replace any memory DIMMs at this time.
- b. Perform a slow boot.

Does the problem persist?

Yes: Continue with the next step.

No: Go to Verifying the repair. **This ends the procedure.**

3. Perform the following for each of the memory DIMMs:

- a. Replace the memory DIMM using symbolic FRU "MEMDIMM" on page 714.
- b. Perform a slow boot between each replacement.
- c. Does the problem persist?

Yes: Repeat this step and replace the next memory DIMM. If you have replaced all of the memory DIMMs, then continue with the next step.

No: Go to Verifying the repair. **This ends the procedure.**

4. Perform the following for each of the memory controllers until the problem is resolved:

- a. Replace the memory controller using symbolic FRU "MEMCTLR" on page 711.
- b. Perform a slow boot between each replacement.
- c. Go to Verifying the repair. **This ends the procedure.**

5. Is word 6 of the reference code 0000F237?

- **No:** Continue with the next step.
- **Yes:** The system has detected a problem with a clock card. Perform the following for each of the clock cards until the problem is resolved:
 - a. Replace the clock card using symbolic FRU "CLCKMOD" on page 638.
 - b. Perform a slow boot between each replacement.
 - c. Go to Verifying the repair. **This ends the procedure.**

6. Is word 6 of the reference code 0000F230?

- **No:** Continue with the next step.
- **Yes:** The system has detected that all of the planars are deconfigured. Perform the following steps:
 - a. Review the system error logs for errors that called out planars. This will indicate which planars have problems and need to be replaced.
 - b. Go to symbolic FRU "NODEPL" on page 718 to replace the appropriate planar or planars.
 - c. Perform a slow boot after replacing the appropriate planar(s).
 - d. Go to Verifying the repair. **This ends the procedure.**

7. Is word 6 of the reference code 0000F231?

- **No:** Continue with the next step.
- **Yes:** The system has detected that all of the I/O bridges are deconfigured. Perform the following:
 - a. Review the system error logs for errors that called out I/O bridges. This will indicate which I/O bridges have problems and need to be replaced.
 - b. Replace the appropriate I/O bridges using symbolic FRU "IOBRDG" on page 699.
 - c. Perform a slow boot.
 - d. Go to Verifying the repair. **This ends the procedure.**

8. Is word 6 of the reference code 0000F236?

- **No:** Return to “Start of call procedure” on page 2. **This ends the procedure.**
- **Yes:** The system has detected that all of the I/O hubs are deconfigured. Perform the following:
 - a. Review the system error logs for errors that called out I/O hubs. This will indicate which I/O hubs have problems and need to be replaced.
 - b. Replace the appropriate I/O hubs using symbolic FRU “IO_HUB” on page 700.
 - c. Perform a slow boot.
 - d. Go to Verifying the repair. **This ends the procedure.**

FSPSP02:

This procedure is for boot failures that terminate very early in the boot process.

About this task

Attention: The system firmware level should be periodically checked on all servers and if it is appropriate, the firmware should be updated to the latest level. If you were directed here because the server displayed B1817201, C1001014, or C1001020 or a combination of these codes, the latest level of firmware can help avoid a recurrence of this problem.

Even if the customer cannot update the firmware on this system at this time, all of their systems should be updated to the latest firmware level as soon as possible to help prevent this problem from occurring on other systems.

Do one of the following:

- If the system has a physical control panel, continue to Systems with a physical control panel.
- If the system does not have a physical control panel, go to Systems with no physical control panel.

Systems with a physical control panel

This error path is indicated when the SRC data words are scrolling automatically through control panel functions 11, 12, and 13, and the control panel interface buttons are not responsive.

Perform the following:

1. Push the white power button to reset the system and bring it up on the other side of platform LIC.

Note: The white power button will only reset the system and attempt to reach standby.

2. Did an SRC occur after bringing the system up on the other side?

No: Update the code on the other side by performing symbolic FRU “LICCODE” on page 702.

This ends the procedure.

Yes: Continue with the next step.

3. Is the SRC the same SRC that brought you to this procedure?

- **No:** Return to “Start of call procedure” on page 2 to service this new SRC. **This ends the procedure.**
- **Yes:** Perform the following:
 - a. Replace the service processor using symbolic FRU “SVCPROC” on page 757.
 - b. If the problem persists, replace the system backplane using symbolic FRU “SYSBKPL” on page 758.

This ends the procedure.

Results

Systems with no physical control panel

If the service processor fails very early in the boot process, the logical control panel on the HMC will not be available. In that case, use the UEPO switch to completely remove power from the system, then restore power and watch the HMC to see if the logical control panel is available.

If the HMC still says that it cannot communicate with the managed system after the power is cycled, replace the service processor using symbolic FRU "SVCPROC" on page 757. **This ends the procedure.**

If the HMC can communicate with the managed system after the power is cycled, open the logical control panel and look for the service processor to reach standby. If the service processor reaches standby, this ends the procedure. If it does not reach standby, replace the service processor using symbolic FRU "SVCPROC" on page 757. **This ends the procedure.**

FSPSP03:

A system operator or user error has occurred.

About this task

Refer to the documentation for the function you were attempting to perform.

FSPSP04:

A problem has been detected in the service processor firmware.

About this task

Perform "LICCODE" on page 702.

FSPSP05:

The service processor has detected a problem in the platform firmware.

About this task

Perform symbolic FRU "LICCODE" on page 702.

FSPSP06:

The service processor reported a suspected intermittent problem.

About this task

Contact your next level of support.

FSPSP07:

The time of day has been reset to the default value.

1. To set the time of day, refer to Changing the time of day.
2. If the problem persists, replace the TOD battery. See symbolic FRU "TOD_BAT" on page 760.
3. After replacing the battery, perform a slow boot. **This ends the procedure.**

FSPSP08:

A problem has been detected with a system processor, but it cannot be isolated to a specific processor.

About this task

If you are working on a model 570 8-core through 16-core, a model 590, or a model 595, collect any error and platform dump data and call your next level of support. **This ends the procedure.**

If you are working on any other model, do the following

1. Replace system processors one at a time until the problem is resolved. See symbolic FRU “ANYPROC” on page 620 for details.
2. Perform a slow boot after replacing each processor. **This ends the procedure.**

FSPSP09:

A problem has been detected with a memory DIMM, but it cannot be isolated to a specific memory DIMM.

1. Replace all memory DIMMs one at a time until the problem is resolved. See symbolic FRU “MEMDIMM” on page 714 for instructions.
2. Perform a slow boot after replacing each memory DIMM. **This ends the procedure.**

FSPSP10:

The part indicated in the FRU callout that follows this procedure is invalid or missing for this system’s configuration.

About this task

Perform the following to correct the problem:

1. Does word 8 (the 8 leftmost characters in the 2nd line of function 13) of the reference code end with 02 or 04?
No: Go to step 3.
Yes: Continue with the next step.
2. The FRU that is called out after this procedure is either missing or invalid. Is that FRU installed and connected or plugged in properly?
Yes: The installed FRU is invalid. Remove that FRU. Then contact your next level of support to determine the correct FRU. **This ends the procedure.**
No: The FRU is missing. If the FRU is present but not connected, reconnect it and perform a slow boot (see Performing a slow boot). Otherwise, contact your next level of support to determine the missing FRU. **This ends the procedure.**
3. Does word 8 end with 01 or 05?
No: Return to the “Start of call procedure” on page 2. **This ends the procedure.**
Yes: The FRU that is called out after this procedure has the same serial number as another FRU in the system. Remove all but one of the FRUs that are called out after this procedure and then perform a slow boot (see Performing a slow boot). **This ends the procedure.**

FSPSP11:

The service processor has detected an error on the RIO/HSL port in the system unit.

1. Perform symbolic FRU “LICCODE” on page 702.
2. If the problem persists, replace the I/O hub using symbolic FRU “IO_HUB” on page 700. **This ends the procedure.**

FSPSP12:

The DIMM FRU that was called out failed to correct the memory error.

About this task

Perform the following:

1. Power off the system (see Powering on and powering off).
2. Replace the board that the DIMM is plugged into using symbolic FRU "MEMBRD" on page 710.
3. Perform a slow boot.
4. Are you working on a model 590?
No: This ends the procedure.
Yes: Continue with the next step.
5. Does the problem persist?
No: This ends the procedure.
Yes: Continue with the next step.
6. Power off the system (see Powering on and powering off).
7. Replace the MCM related to the DIMM FRU using symbolic FRU "MEMCTLR" on page 711.
8. Perform a slow boot.

Results

This ends the procedure.

FSPSP14:

This task helps you establish communication between the service processor and server firmware.

About this task

The Service Processor cannot establish communication with the server firmware. The server firmware will continue to run the system and partitions while it attempts to recover the communications. Server firmware recovery actions will continue for approximately 30 to 40 minutes. Perform the following to correct the problem:

1. Record the time the log was created or when you first noticed this SRC on the panel.
2. Are progress codes being displayed to the panel?
Yes: Server firmware was able to reset the Service Processor. **This ends the procedure.**
No: Continue with the next step.
3. Has an A7006995 SRC been displayed to the panel?
Yes: Partitions are being powered off and a server dump will be attempted. Follow the A7006995 SRC description if the partitions do not terminate as requested. **This ends the procedure.**
No: Continue with the next step.
4. Has the A1xx SRC remained on the panel for more than 40 minutes?
Yes: Server firmware could not begin termination of the partitions. Contact your next level of support to assist in attempting to terminate any remaining partitions and forcing a server dump. Collect the dump for support and power off and power on the system. **This ends the procedure.**
No: Contact next level of support. **This ends the procedure.**

FSPSP16:

Save any error log and dump data and contact your next level of support for assistance.

FSPSP17:

A system uncorrectable error has occurred.

1. Look for other serviceable events and use the call outs listed with them to correct the problem.
2. If you need to, you can run the system in a degraded mode until you can perform the service actions. To run the system in a degraded mode, do the following:
 - a. Power off the system (see Powering on and powering off).
 - b. Power on the system (see Powering on and powering off) to allow the memory diagnostics to clean up the memory. Guard out any defective parts.

This ends the procedure.

FSPSP18:

A problem has been detected in the platform LIC.

About this task

Perform symbolic FRU "LICCODE" on page 702.

FSPSP19:

The system processor's module interposers have a limit on the number of times modules can be plugged into them.

About this task

This procedure is usually called out due to a maintenance action dealing with an MCM and indicates that the plug count has been exceeded or is incorrect.

Note: Refer to Changing the interposer plug count for more information when performing this procedure.

1. Log on to the ASMI (see Accessing the Advanced System Management Interface).
2. Select **System Configuration** → **Interposer Plug Count**.
3. Find the target location code for the corresponding interposer.
4. Increment the interposer count by one.
5. Does the plug count exceed 10?
 - **Yes:** Perform the following:
 - a. Power off the system (see Powering on and powering off).
 - b. Replace the system processor for the interposer card that has exceeded 10 using symbolic FRU "ANYPROC" on page 620.
 - c. Reset the plug count to one (1) with the ASMI.
 - d. Perform a slow boot and handle any new serviceable events as new problems. **This ends the procedure.**
 - **No:** Perform a slow boot and handle any new serviceable events as new problems. **This ends the procedure.**

FSPSP20:

A failing item has been detected by a hardware procedure.

To run full hardware diagnostics, go to the procedures in Perform a slow boot .

If a new SRC occurs, go to Reference codes. If an incomplete occurs, go to Accessing the ASMI menus to power off, check for deconfigured components, and do a slow boot.

FSPSP21:

The system has detected that all I/O hubs are missing from the system configuration.

1. Power off the system (see Powering on and powering off).
2. Replace the service processor using symbolic FRU "SVCPROC" on page 757.
3. Perform a slow boot.
4. Are you working on a model 510, 550, 575, OpenPower 710, or OpenPower 720?
Yes: This ends the procedure.
No: Continue with the next step.
5. Does the problem persist?
Yes: Continue with the next step.
No: This ends the procedure.
6. Power off the system (see Powering on and powering off).
7. Replace the system backplane using symbolic FRU "SYSBKPL" on page 758.
8. Perform a slow boot.
9. Choose from the following:
 - If you are working on a model 520 or 570 4-core, **this ends the procedure.**
 - If you are working on a model 570 8-core through 16-core, continue with the next step.
 - If you are working on a model 590 or 595, go to step 11.
10. Does the problem persist?
 - **No: This ends the procedure.**
 - **Yes:** Perform the following:
 - a. Power off the system (see Powering on and powering off).
 - b. Replace each of the node planars one at a time using symbolic FRU "NODEPL" on page 718, performing a slow boot between each exchange, until the problem is resolved. **This ends the procedure.**
11. Does the problem persist?
No: This ends the procedure.
Yes: Continue with the next step.
12. Perform the following for each of the node planars:
 - a. Power off the system (see Powering on and powering off).
 - b. Replace one of the node planars using symbolic FRU "NODEPL" on page 718.
 - c. Perform a slow boot.
 - d. Does the problem persist?
No: This ends the procedure.
Yes: Continue with the next step.
13. Have you replaced each node planar?
No: Repeat step 12 and replace the next node planar.
Yes: Replace each of the I/O hubs one at a time using symbolic FRU "IO_HUB" on page 700, performing a slow boot between each exchange, until the problem is resolved. **This ends the procedure.**

FSPSP22:

The system has detected that a processor chip is missing from the system configuration because JTAG lines are not working.

1. Power off the system (see Powering on and powering off).

2. Replace the service processor using symbolic FRU "SVCPROC" on page 757.
3. Perform a slow boot.
4. Does the problem persist?
Yes: Continue with the next step.
No: This ends the procedure.
5. Perform the following for each system processor until the problem is resolved:
 - a. Power off the system (see Powering on and powering off).
 - b. Replace one of the system processors using symbolic FRU "ANYPROC" on page 620.
 - c. Perform a slow boot after replacing each processor.

This ends the procedure.

FSPSP23:

The system needs to perform a service processor dump.

1. Perform a service processor dump (see Performing a platform system or service processor dump).
2. Once the dump is complete, attempt to re-IPL the system.
3. Save the service processor dump to storage (see Copying a dump).
4. Contact your next level of support. **This ends the procedure.**

FSPSP24:

The system is running degraded. Array bit steering may be able to correct this problem without replacing hardware.

1. Power off the system (see Powering on and powering off).
2. Perform a slow boot. **This ends the procedure.**
3. If the problem persists, replace the FRU that is called out after this procedure. **This ends the procedure.**

FSPSP25:

The server has detected an over temperature thermal fault.

1. Before replacing any server hardware FRU callouts, look for thermal problems related to fans, power supplies, etc. Perform all service actions for the thermal problem SRCs first before continuing with any other callouts in the current SRC. Thermal problems are associated with 1100 xxxx SRCs, where xxxx may be any of the following:
 - 1514
 - 1524
 - 7201
 - 7203
 - 7205
 - 7610
 - 7611
 - 7620
 - 7621
 - 7630
 - 7631
2. If no thermal related SRCs or problems can be found, replace the server hardware FRU called out in the current SRC. **This ends the procedure.**

FSPSP26:

The system has detected a problem with the system backplane.

1. Power off the system (see Powering on and powering off).
2. Replace the system backplane using symbolic FRU "SYSBKPL" on page 758.
3. Perform a slow boot. **This ends the procedure.**

FSPSP27:

An attention line has been detected as having a problem.

1. Power off the system (see Powering on and powering off).
2. Are you working on a model 570?
No: Go to step 4.
Yes: Continue with the next step.
3. Perform the following:
 - a. Check the flex cables and replace them if necessary.
 - b. Perform a slow boot.
 - c. Does the problem persist?
No: This ends the procedure.
Yes: Continue with the next step.
4. Replace the service processor using symbolic FRU "SVCPROC" on page 757.
5. Perform a slow boot.
6. Are you working on a model 505, 510 or OpenPower 710?
Yes: This ends the procedure.
No: Continue with the next step.
7. Does the problem persist?
 - **No: This ends the procedure.**
 - **Yes:** Choose from the following:
 - If you are working on a model 550, 575, or OpenPower 720, go to step 11.
 - If you are working on any other model, continue with the next step.
8. Perform the following:
 - a. Power off the system (see Powering on and powering off).
 - b. Replace the system backplane using symbolic FRU "SYSBKPL" on page 758.
 - c. Perform a slow boot.
9. Are you working on a model 520?
Yes: This ends the procedure.
No: Continue with the next step.
10. Does the problem persist?
No: This ends the procedure.
Yes: Continue with the next step.
11. Choose from the following:
 - If you are working on a model 550, 575, OpenPower 720, or 570 (4-core), perform the following:
 - a. Power off the system (see Powering on and powering off).
 - b. Replace all system processors using symbolic FRU "ANYPROC" on page 620.
 - c. Perform a slow boot. **This ends the procedure.**
 - If you are working on a model 570 (8-core through 16-core), 590, or 595, perform the following:

- a. Power off the system (see Powering on and powering off).
- b. Replace the node planer that is indicated in word 6 (the 8 leftmost characters of function 13) using symbolic FRU "NODEPL" on page 718
- c. Perform a slow boot. **This ends the procedure.**

FSPSP28:

The resource ID (RID) of the FRU could not be found in the Vital Product Data (VPD) table.

1. Find another callout that reads "FSPxxxx" where xxxx is a 4 digit hex number that represents the RID. Record the RID.
2. Use ASMI to find the RID in the VPD table (see Viewing vital product data).
3. Replace the RID that is called out.
4. Perform a slow boot to ensure full hardware diagnostics. **This ends the procedure.**

FSPSP29:

The system has detected that all I/O bridges are missing from the system configuration.

1. Power off the system (see Powering on and powering off).
2. Replace the service processor using symbolic FRU "SVCPROC" on page 757.
3. Perform a slow boot.
4. Are you working on a model 510, 550, 575, OpenPower 710, or OpenPower 720?
Yes: This ends the procedure.
No: Continue with the next step.
5. Does the problem persist?
No: This ends the procedure.
Yes: Continue with the next step.
6. Power off the system (see Powering on and powering off).
7. Replace the system backplane using symbolic FRU "SYSBKPL" on page 758.
8. Perform a slow boot.
9. Choose from the following:
 - If you are working on a model 520 or 570 (4-core), **this ends the procedure.**
 - If you are working on a model 570 (8-core through 16-core), 590, or 595, continue with the next step.
10. Does the problem persist?
 - **No: This ends the procedure.**
 - **Yes:** Perform the following:
 - a. Power off the system (see Powering on and powering off).
 - b. Replace each of the node planars one at a time using symbolic FRU "NODEPL" on page 718, performing a slow boot between each exchange, until the problem is resolved. **This ends the procedure.**

FSPSP30:

A problem has been encountered accessing the VPD card or the data found on the VPD card has been corrupted.

About this task

This error occurred before VPD collection was completed, so no location codes have been created.

Choose the appropriate system model:

- “Instructions for models 520, 570, 590, and 595”
- “Instructions for models 510, 550, 575, OpenPower 710, OpenPower 720”

Instructions for models 520, 570, 590, and 595:

1. Power off the system (see Powering on and powering off) and remove ac power.
2. Replace the VPD card using symbolic FRU “CAPACTY” on page 634.
3. Perform a slow boot using the ASMI (see Performing a slow boot).
Yes: Continue with the next step.
No: Go to Verifying the repair. **This ends the procedure.**
4. Power off the system (see Powering on and powering off) and remove ac power.
5. Replace the service processor using symbolic FRU “SVCPROC” on page 757.
6. Perform a slow boot using the ASMI (see Performing a slow boot). Does the error reoccur?
 - **Yes:** Choose from the following:
 - If you are working on a model 520 or 570, continue with the next step.
 - If you are working on a model 590 or 595, contact your next level of support. **This ends the procedure.**
 - **No:** Go to Verifying the repair. **This ends the procedure.**
7. Power off the system (see Powering on and powering off).
8. Replace the system backplane using symbolic FRU “SYSBKPL” on page 758.
9. Reinstall the service processor that you replaced in step 5.
10. Perform a slow boot using the ASMI (see Performing a slow boot).
Yes: Contact your next level of support. **This ends the procedure.**
No: Go to Verifying the repair. **This ends the procedure.**

Instructions for models 510, 550, 575, OpenPower 710, OpenPower 720:

1. Power off the system (see Powering on and powering off) and remove ac power.
2. Replace the VPD card using symbolic FRU “CAPACTY” on page 634.
3. Perform a slow boot using the ASMI (see Performing a slow boot). Does the error reoccur?
Yes: Continue with the next step.
No: Go to Verifying the repair. **This ends the procedure.**
4. Power off the system (see Powering on and powering off) and remove ac power.
5. Replace the system backplane using symbolic FRU “SYSBKPL” on page 758.
6. Perform a slow boot using the ASMI (see Performing a slow boot). Does the error reoccur?
Yes: Contact your next level of support. **This ends the procedure.**
No: Go to Verifying the repair. **This ends the procedure.**

FSPSP31:

The service processor has detected that one or more of the required fields in the system VPD has not been initialized.

1. Log into ASMI with authorized service provider authority (see Accessing the Advanced System Management Interface).
2. Set the system VPD values (see Programming vital product data).

Note: The service processor will automatically reset when leaving the ASMI after updating the system VPD.

3. Power on the system (Powering on and powering off). **This ends the procedure.**

FSPSP32:

A problem with the enclosure has been found.

About this task

The problem is resulting from one of the following:

- the enclosure VPD cannot be found,
- the enclosure serial number is not programmed, or
- the enclosure feature code is not programmed.

Perform the following:

1. Record the reason code (the last 4 characters of word 11) from the SRC by looking at the operator panel or accessing the error log with the ASMI.

2. Is the reason code B06F?

No: Go to step 6.

Yes: Continue with the next step.

3. Check for and apply any server firmware updates (see Server firmware fixes). Does the problem persist?

No: This ends the procedure.

Yes: Continue with the next step.

4. Perform the following:

- a. Replace the service processor using symbolic FRU "SVCPROC" on page 757.
- b. Perform a slow boot (see Performing a slow boot).

Does the problem persist?

No: This ends the procedure.

Yes: Continue with the next step.

5. Perform the following:

- a. Replace the system backplane using symbolic FRU "SYSBKPL" on page 758.
- b. Perform a slow boot (see Performing a slow boot).

Does the problem persist?

No: This ends the procedure.

Yes: Contact your next level of support. **This ends the procedure.**

6. Is the reason code B071?

No: Go to step 8 on page 293.

Yes: Continue with the next step.

7. Perform the following:

- a. Set the enclosure serial number using the ASMI (see Setting the system identifiers).
- b. The service processor will automatically reset when leaving the ASMI after updating the serial number.
- c. Perform a slow boot (see Performing a slow boot).

Does the problem persist?

No: This ends the procedure.

Yes: Contact your next level of support. **This ends the procedure.**

8. Is the reason code B07D?

No: Contact your next level of support. **This ends the procedure.**

Yes: Continue with the next step.

9. Perform the following:

- a. Set the enclosure feature code using the ASMI (see Setting the system enclosure type).
- b. The service processor will automatically reset when leaving the ASMI after updating the serial number.
- c. Perform a slow boot (see Performing a slow boot).

Does the problem persist?

No: This ends the procedure.

Yes: Contact your next level of support. **This ends the procedure.**

FSPSP33:

A problem has been detected in the connection with the HMC.

1. Ensure that the cable connectors to the network from the HMC, managed system, managed system partitions, and other HMCs are securely connected. If the connections are not secure, plug the cables back into the proper spots and make sure that the connections are good.
2. Check to see if the HMC is working correctly or if the HMC was disconnected incorrectly from the managed system, managed system partitions, and other HMCs. If either has happened, reboot the HMC. For more information, see Shutting down, rebooting, and logging off the HMC.
3. Verify that the network connection between the HMC, managed system, managed system partitions, and other HMCs is working properly. If you have a high performance switch (HPS) network, verify that the network connection to the CSM Management Server is also working. If the connection is not working properly, contact the customer network support to correct the problems.
4. If applicable, service the next FRU.
5. If the problem continues to persist, contact your next level of support. **This ends the procedure.**

FSPSP34:

The memory cards are plugged in an invalid configuration and cannot be used by the system.

1. Is the SRC B1xx F642?

Yes: A memory card is missing from the system. The additional parts in the FRU callout list will include all memory cards in the group with the missing card. To correct the error, visually check the system to determine which of these cards is missing, and add the card (For models 590 and 595: see Memory plugging for models 590 and 595). **This ends the procedure.**

No: Continue with the next step.

2. Is the SRC B1xx F643?

Yes: A memory card is a different type than the other memory cards in the same group. The additional parts in the FRU callout list will include all memory cards in the group that contain the error. To correct the error, exchange the memory cards of the incorrect type with those of the desired type. **This ends the procedure.**

No: Continue with the next step.

3. Is the SRC B1xx F688?

Yes: There are one or more memory cards that are incompatible with the other memory cards plugged into the same board in the system. The additional parts in the FRU callout list will include all memory cards that are incompatible. To correct the error, remove these cards from the system. **This ends the procedure.**

No: Return to "Start of call procedure" on page 2. **This ends the procedure.**

FSPSP35:

The system has detected a problem with a memory controller.

About this task

Perform the following to enable redundant utilization:

1. Power off the system (see Powering on and powering off).
2. Perform a slow boot. **This ends the procedure.**

FSPSP36:

One or both of the SMP cables connecting the system processors on this system are incorrectly plugged, broken, or not the correct type of cable for this system configuration.

About this task

By analyzing the last 4 characters (reason code) of word 11 of the SRC, we can narrow down the reason for the error:

- If the reason code is B08E, then there was a mismatch or parity error in the SMP cables identity on the system processors in the system.
- If the reason code is F23E, then there was a mismatch on the SMP cables plugged into the system and the number of nodes detected in the system.
- If the reason code is FB53, then a system processor had an error that may have been caused by a bad SMP cable.

Perform the following, regardless of the reason code:

1. Re-plug the SMP cables that connect to the system processors.
2. Perform a slow boot.
3. Does the problem persist?

Yes: Continue with the next step.

No: This ends the procedure.

4. Replace the SMP cables.
5. Perform a slow boot.
6. Does the problem persist?

No: This ends the procedure.

Yes: Continue with the next step.

7. Perform the following for each system processor:

- a. Power off the system (see Powering on and powering off).
- b. Remove one of the processors using symbolic FRU "ANYPROC" on page 620.
- c. Perform a slow boot.
- d. Does the problem persist?

Yes: Reinstall the processor you removed and then repeat this step, removing the next processor.

No: Replace the processor you just removed, it is the failing item. **This ends the procedure.**

FSPSP37:

A timeout has occurred while waiting for the system processor to access main storage.

About this task

Choose the procedure for the model you are working on:

- “FSPSP37 instructions for Models 510, 520, OpenPower 710”
- “FSPSP37 instructions for Models 520, 550, OpenPower 720, and 570 (4-core)”
- “FSPSP37 instructions for Model 570 (8-core through 16-core)”
- “FSPSP37 instructions for Model 575” on page 296
- “FSPSP37 instructions for Model 590” on page 296

FSPSP37 instructions for Models 510, 520, OpenPower 710:

1. Power off the system (see Powering on and powering off).
2. Replace the system backplane using symbolic FRU “SYSBKPL” on page 758.
3. Perform a slow boot. **This ends the procedure.**

FSPSP37 instructions for Models 520, 550, OpenPower 720, and 570 (4-core):

1. Perform the following for each system processor:
 - a. Power off the system (see Powering on and powering off).
 - b. Replace one of the system processors using symbolic FRU “ANYPROC” on page 620.
 - c. Perform a slow boot.
 - d. Does the problem persist?
No: This ends the procedure.
Yes: Continue with the next step.
2. Have you replaced all of the system processors?
No: Repeat step 4 on page 297 and replace the next processor.
Yes: Continue with the next step.
3. Perform the following:
 - a. Power off the system (see Powering on and powering off).
 - b. Replace the RIO/HSL adapter card using symbolic FRU “SI_CARD” on page 735.
 - c. Perform a slow boot.
 - d. Does the problem persist?
No: This ends the procedure.
Yes: Continue with the next step.
4. Perform the following:
 - a. Power off the system (see Powering on and powering off).
 - b. Replace the system or I/O backplane using symbolic FRU “SYSBKPL” on page 758.
 - c. Perform a slow boot. **This ends the procedure.**

FSPSP37 instructions for Model 570 (8-core through 16-core):

1. Power off the system (see Powering on and powering off).
2. Replace the SMP cables.
3. Perform a slow boot.
4. Does the problem persist?
No: This ends the procedure.
Yes: Continue with the next step.
5. Perform the following for each system processor:
 - a. Power off the system (see Powering on and powering off).
 - b. Replace one of the system processors using symbolic FRU “ANYPROC” on page 620.

- c. Perform a slow boot.
- d. Does the problem persist?
No: This ends the procedure.
Yes: Continue with the next step.
- 6. Have you replaced all of the system processors?
No: Repeat step 5 on page 295 and replace the next processor.
Yes: Continue with the next step.
- 7. Perform the following:
 - a. Power off the system (see Powering on and powering off).
 - b. Replace the RIO/HSL adapter card using symbolic FRU "SI_CARD" on page 735.
 - c. Perform a slow boot.
 - d. Does the problem persist?
No: This ends the procedure.
Yes: Continue with the next step.
- 8. Perform the following:
 - a. Power off the system (see Powering on and powering off).
 - b. Replace each of the node planars, one at a time, using symbolic FRU "NODEPL" on page 718, performing a slow boot after replacing each planar, until the problem is resolved. **This ends the procedure.**

FSPSP37 instructions for Model 575:

- 1. Power off the system (see Powering on and powering off).
- 2. Perform the following for each system processor:
 - a. Power off the system (see Powering on and powering off).
 - b. Replace one of the system processors using symbolic FRU "ANYPROC" on page 620.
 - c. Perform a slow boot.
 - d. Does the problem persist?
No: This ends the procedure.
Yes: Continue with the next step.
- 3. Have you replaced all of the system processors?
No: Repeat step 2 and replace the next processor.
Yes: Continue with the next step.
- 4. Power off the system (see Powering on and powering off).
- 5. Replace the system backplane using symbolic FRU "SYSBKPL" on page 758.
- 6. Perform a slow boot. **This ends the procedure.**

FSPSP37 instructions for Model 590:

- 1. Determine which node on the system has the problem by performing the following:
 - a. Power off the system (see Powering on and powering off).
 - b. Replace one of the nodes.
 - c. Perform a slow boot.
 - d. Does the problem persist?
No: The node you just replaced is causing the problem. Go to step 3 on page 297.
Yes: Continue with the next step.
- 2. Have you tried replacing all of the nodes?
No: Repeat step 1 and replace the next node.

Yes: Replace the system backplane using symbolic FRU "SYSBKPL" on page 758. **This ends the procedure.**

3. Determine what part in the failing node is causing the problem by performing the following:
 - a. Power off the system (see Powering on and powering off).
 - b. Replace the RIO/HSL adapter card using symbolic FRU "SI_CARD" on page 735.
 - c. Reinstall the failing node.
 - d. Perform a slow boot.
 - e. Does the problem persist?
 - No: This ends the procedure.**
 - Yes:** Continue with the next step.
4. Perform the following:
 - a. Power off the system (see Powering on and powering off).
 - b. Replace one of the system processors on the failing node using symbolic FRU "ANYPROC" on page 620.
 - c. Perform a slow boot.
 - d. Does the problem persist?
 - No: This ends the procedure.**
 - Yes:** Continue with the next step.
5. Have you replaced all of the system processors on the failing node?
 - **No:** Repeat step 4 and replace the next processor.
 - **Yes:** Perform the following:
 - a. Power off the system (see Powering on and powering off).
 - b. Replace the failing node backplane using symbolic FRU "NODEPL" on page 718.
 - c. Perform a slow boot. **This ends the procedure.**

FSPSP38:

The system has detected an error within the JTAG path.

1. Power off the system (see Powering on and powering off).
2. Are you working on a model 590 or 595?
 - Yes:** Continue with the next step.
 - No:** Go to step 6.
3. Replace the multiplexer (JMUX) card (location: Un-Pn-C7) for the associated node.
4. Perform a slow boot.
5. Does the problem persist?
 - Yes:** Power off the system (see Powering on and powering off), continue with the next step.
 - No: This ends the procedure.**
6. Replace the service processor using symbolic FRU "SVCPROC" on page 757.
7. Perform a slow boot.
8. Are you working on a model 505, 510, 550, OpenPower 710, or OpenPower 720?
 - Yes: This ends the procedure.**
 - No:** Continue with the next step.
9. Does the problem persist?
 - **Yes:** Power off the system (see Powering on and powering off), continue with the next step.
 - **No: This ends the procedure.**
10. Are you working on a model 561 or 570 with 2 or more processor nodes?

- **Yes:** Continue with the next step.
 - **No:** Go to step 14.
11. Replace the service processor flex cable (see Model 561 or 570 cables .
 12. Perform a slow boot.
 13. Does the problem persist?
 - Yes:** Power off the system (see Powering on and powering off), continue with the next step.
 - No: This ends the procedure.**
 14. Replace the node backplane using symbolic FRU "NODEPL" on page 718.
 15. Perform a slow boot.
 16. Are you working on a model 520 or 52A?
 - Yes:** Continue with the next step.
 - No: This ends the procedure.**
 17. Replace the system backplane using symbolic FRU "SYSBKPL" on page 758.
 18. Perform a slow boot.
 19. Does the problem persist?
 - Yes:** Contact your next level of support. **This ends the procedure.**
 - No: This ends the procedure.**

FSPSP39:

This procedure will isolate a DIMM failure after the DIMM FRU failed to correct the problem.

1. Power off the system (see Powering on and powering off).
2. Place the DIMM that was replaced by the FRU callout back into its original location.
3. Replace the DIMM that is paired with the DIMM FRU that was called out, according to the following table. See Finding part locations for part numbers and a link to the exchange procedure.

Model	DIMM pairings
510 and OpenPower 710	C4, C11 C5, C10 C6, C9 C7, C8 Note: The preferred quad positions for installed memory are: <ul style="list-style-type: none"> • C4, C6, C9, C11 for the first quad • C5, C7, C8, C10 for the second quad
520	C9, C16 C10, C15 C11, C14 C12, C13 Note: The preferred quad positions for installed memory are: <ul style="list-style-type: none"> • C9, C11, C14, C16 for the first quad • C10, C12, C13, C15 for the second quad
550 and OpenPower 720	C1, C8 C2, C7 C3, C6 C4, C5 Note: The preferred quad positions for installed memory are: <ul style="list-style-type: none"> • C1, C3, C6, C8 for the first quad • C2, C4, C5, C7 for the second quad

Model	DIMM pairings
561 and 570	<p>These models use quads of memory, within each quad there are two pairs. The quads are:</p> <p>C1, C3, C6, and C8</p> <p>Within this quad, the pairs are C1, C8 and C3, C6. Replace the other DIMM in the pair before replacing the other DIMMs in the quad.</p> <p>C2, C4, C5, and C7</p> <p>Within this quad, the pairs are C2, C7 and C4, C5. Replace the other DIMM in the pair before replacing the other DIMMs in the quad.</p>

4. Perform a slow boot.
5. Does the problem persist?
No: This ends the procedure.
Yes: Continue with the next step.
6. Power off the system (see Powering on and powering off).
7. Replace the board that the DIMM is plugged into using symbolic FRU “MEMBRD” on page 710.
8. Perform a slow boot. **This ends the procedure.**

FSPSP40:

This procedure is a warning due to an invalid login attempt to the service processor.

No replacement action is required, and any other callouts associated with this error may be disregarded.

FSPSP41:

If you are directed here, you can isolate a problem that occurred when a program accessed a chip on the server’s I2C bus.

About this task

Click the model on which you are working to display the appropriate procedure:

- “FSPSP41: Models 285, 505, 51x, 52x, 55x, 575, OpenPower 710, and OpenPower 720”
- “FSPSP41: Model 570” on page 314
- “FSPSP41: Models 59x” on page 318

FSPSP41: Models 285, 505, 51x, 52x, 55x, 575, OpenPower 710, and OpenPower 720:

Shows how to isolate to a failing FRU.

About this task

To isolate to a failing FRU do the following:

1. Record words 7 and 8 of the primary SRC from the error log.
2. Determine which parts you need to replace.
 - a. From the following list, click the link to the I2C FRU table that includes the model on which you are working. In the I2C FRU table, find words 7 and 8 of the primary SRC to locate the I2C FRU list. The I2C FRU list specifies the parts that you need to replace.
 - I2C FRU table for model 9115-505

- I2C FRU table for models 510 and OpenPower 710
- I2C FRU table for model 520
- I2C FRU table for models 550 and OpenPower 720
- I2C FRU table for model 575

b. Is the model on which you are working in the previous list, and did you find the I2C FRU list?

Yes: Continue with the next step.

No: Contact your next level of support. **This ends the procedure.**

3. Starting with the first FRU in the list that you located in the table, perform the following:

- Power off the system.
- Replace the FRU. Go to Finding part locations for location, part number, and exchange information.
- Go to Perform a slow boot, then continue with the next step.
- Is the problem resolved?

Yes: This ends the procedure.

No: Continue with the next step.

4. Have you replaced all of the FRUs in the list?

Yes: Contact your next level of support. **This ends the procedure.**

No: Repeat step 3 for the next FRU in the list.

Results

Table 37. I2C FRU table for model505

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0000 0002	00FF 00FF	00FF 00FF	00A2 00A8	System backplane
0003	00FF	00FF	0090 00A0 00B4	1. Control panel 2. System backplane
0004	00FF	00FF	00A0	1. Memory module J0A 2. System backplane
0004	00FF	00FF	00A2	1. Memory module J2D 2. System backplane
0004	00FF	00FF	00A4	1. Memory module J0C 2. System backplane
0004	00FF	00FF	00A6	1. Memory module J2B 2. System backplane
0004	00FF	00FF	00A8	1. Memory module J0B 2. System backplane
0004	00FF	00FF	00AA	1. Memory module J2C 2. System backplane
0004	00FF	00FF	00AC	1. Memory module J0D 2. System backplane

Table 37. I2C FRU table for model505 (continued)

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0004	00FF	00FF	00AE	1. Memory module J2A 2. System backplane
0004 0005 0006 0006 0006	00FF 00FF 00FF 00FF 00FF	00FF 00FF 00FF 00FF 00FF	00C0 00C0 0010 0080 00A0	System backplane
0006	00FF	00FF	00A4	1. PCI riser card 2 2. System backplane
0006	00FF	00FF	00A6	1. PCI riser card 1 2. System backplane
0007 0007	00FF 00FF	00FF 00FF	0040 00A0	System backplane
000B	00FF	00FF	00E0	1. Processor core voltage regulator module 2. System backplane
000C 000C	00FF 00FF	00FF 00FF	0040 00C0	System backplane
000C	00FF	00FF	00E0	1. Processor core voltage regulator module 2. System backplane

Table 38. I2C FRU table for models 51x and OpenPower 710

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0000 0002	00FF 00FF	00FF 00FF	00A2 00A8	System backplane
0003	00FF	00FF	0090 00A0 00B4	1. Control panel 2. System backplane
0004	008E	0000	00C0	System backplane
0004	008E	0004	00A0	1. Memory module J0A 2. System backplane
0004	008E	0004	00A2	1. Memory module J2D 2. System backplane
0004	008E	0004	00A4	1. Memory module J0C 2. System backplane
0004	008E	0004	00A6	1. Memory module J2B 2. System backplane
0004	008E	0004	00A8	1. Memory module J0B 2. System backplane

Table 38. I2C FRU table for models 51x and OpenPower 710 (continued)

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0004	008E	0004	00AA	1. Memory module J2C 2. System backplane
0004	008E	0004	00AC	1. Memory module J0D 2. System backplane
0004	008E	0000	00AE	1. Memory module J2A 2. System backplane
0004 0004	008E 00FF	0008 00FF	00C0 00C2	System backplane
0005	00FF	00FF	0014	1. PCI adapter enclosure 2. System backplane
0006	00FF	00FF	0010 0080 00A0 00A4 00AC	System backplane
0007	00FF	00FF	0040 00A0	System backplane
000C	00FF	00FF	0040 00C0	System backplane

Table 39. I2C FRU table for models 285, and 52x

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0000	00FF	00FF	00A0	1. Service processor card 2. System backplane
0002	00FF	00FF	00A8 00C0	Service processor card
0003	00FF	00FF	0090 0092 00A0 00B4	1. Control panel cable 2. Control panel 3. Service processor card 4. Media drive backplane
0004	008E	0000	00C0 00C2	1. Service processor card 2. System backplane
0004	008E	0004	00A0	1. Memory module 1 2. Service processor card 3. System backplane
0004	008E	0004	00A2	1. Memory module 5 2. Service processor card 3. System backplane

Table 39. I2C FRU table for models 285, and 52x (continued)

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0004	008E	0004	00A4	1. Memory module 3 2. Service processor card 3. System backplane
0004	008E	0004	00A6	1. Memory module 7 2. Service processor card 3. System backplane
0004	008E	0004	00A8	1. Memory module 2 2. Service processor card 3. System backplane
0004	008E	0004	00AA	1. Memory module 6 2. Service processor card 3. System backplane
0004	008E	0004	00AC	1. Memory module 4 2. Service processor card 3. System backplane
0004	008E	0004	00AE	1. Memory module 8 2. Service processor card 3. System backplane
0004 0004	008E 00FF	0008 00FF	00C0 00C2	1. Service processor card 2. System backplane
0006	00FF	00FF	0010 0012 0080 00A0 00A4 00A8 00AC	1. Service processor card 2. System backplane
0007	00FF	00FF	0040 00A0	1. Disk drive (5-8) backplane 2. Service processor card 3. System backplane
0007	00FF	00FF	0044 00A4	1. Disk drive (1-4) backplane 2. Service processor card 3. System backplane
0009	00FF	00FF	00A2	1. Media drive backplane 2. Service processor card 3. System backplane
000C	00FF	00FF	0042 00C0	1. Service processor card 2. System backplane

Table 40. I2C FRU table for models 55x and OpenPower 720

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0000	00FF	00FF	0046 00A0 00C0 00C2 00C4	System backplane
0002	00FF	00FF	00A8 00C0	System backplane
0003	00FF	00FF	0090 0092 00A0 00B4	1. Control panel cable 2. Control panel 3. Media drive backplane 4. System backplane
0004	00FF	00FF	00A0	1. Memory module 1 on processor card 1 2. All remaining memory modules on Processor card 1 3. Processor card 1 4. System backplane
0004	00FF	00FF	00A2	1. Memory module 8 on processor card 1 2. All remaining memory modules on Processor card 1 3. Processor card 1 4. System backplane
0004	00FF	00FF	00A4	1. Memory module 3 on processor card 1 2. All remaining memory modules on Processor card 1 3. Processor card 1 4. System backplane
0004	00FF	00FF	00A6	1. Memory module 6 on processor card 1 2. All remaining memory modules on Processor card 1 3. Processor card 1 4. System backplane
0004	00FF	00FF	00A8	1. Memory module 2 on processor card 1 2. All remaining memory modules on Processor card 1 3. Processor card 1 4. System backplane
0004	00FF	00FF	00AA	1. Memory module 7 on processor card 1 2. All remaining memory modules on Processor card 1 3. Processor card 1 4. System backplane

Table 40. I2C FRU table for models 55x and OpenPower 720 (continued)

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0004	00FF	00FF	00AC	<ol style="list-style-type: none"> 1. Memory module 4 on processor card 1 2. All remaining memory modules on Processor card 1 3. Processor card 1 4. System backplane
0004	00FF	00FF	00AE	<ol style="list-style-type: none"> 1. Memory module 5 on processor card 1 2. All remaining memory modules on Processor card 1 3. Processor card 1 4. System backplane
0005	00FF	00FF	0042 00C0	<ol style="list-style-type: none"> 1. Processor card 1 2. System backplane
0006	00FF	00FF	0010 0012 0080 00A0 00A4 00A8 00AC	System backplane
0007	00FF	00FF	0040 00A0	<ol style="list-style-type: none"> 1. Disk drive (1-4) backplane 2. System backplane
0008	00FF	00FF	00A2	<ol style="list-style-type: none"> 1. Media drive backplane 2. System backplane
0009	00FF	00FF	0044 00A4	<ol style="list-style-type: none"> 1. Disk drive (5-8) backplane 2. System backplane
000A	00FF	00FF	00A0	<ol style="list-style-type: none"> 1. Memory module 1 on processor card 2 2. All remaining memory modules on Processor card 2 3. Processor card 2 4. System backplane
000A	00FF	00FF	00A2	<ol style="list-style-type: none"> 1. Memory module 8 on processor card 2 2. All remaining memory modules on Processor card 2 3. Processor card 2 4. System backplane
000A	00FF	00FF	00A4	<ol style="list-style-type: none"> 1. Memory module 3 on processor card 2 2. All remaining memory modules on Processor card 2 3. Processor card 2 4. System backplane

Table 40. I2C FRU table for models 55x and OpenPower 720 (continued)

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
000A	00FF	00FF	00A6	<ol style="list-style-type: none"> 1. Memory module 6 on processor card 2 2. All remaining memory modules on Processor card 2 3. Processor card 2 4. System backplane
000A	00FF	00FF	00A8	<ol style="list-style-type: none"> 1. Memory module 7 on processor card 2 2. All remaining memory modules on Processor card 2 3. Processor card 2 4. System backplane
000A	00FF	00FF	00AA	<ol style="list-style-type: none"> 1. Memory module 4 on processor card 2 2. All remaining memory modules on Processor card 2 3. Processor card 2 4. System backplane
000A	00FF	00FF	00AC	<ol style="list-style-type: none"> 1. Memory module 5 on processor card 2 2. All remaining memory modules on Processor card 2 3. Processor card 2 4. System backplane
000A	00FF	00FF	00AE	<ol style="list-style-type: none"> 1. Memory module 1 on processor card 2 2. All remaining memory modules on Processor card 2 3. Processor card 2 4. System backplane
000B	00FF	00FF	0042 00C0	<ol style="list-style-type: none"> 1. Processor card 2 2. System backplane
000C	00FF	00FF	00A0 00C0	<ol style="list-style-type: none"> 1. RIO/HSL adapter card 2. System backplane

Table 41. I2C FRU table for model 575

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0000	00FF	00FF	00A8	System backplane
0001	00FF	00FF	00A8	<ol style="list-style-type: none"> 1. Processor backplane 2. System backplane
0002	00FF	00FF	00A8	System backplane
0003	00FF	00FF	00A8	

Table 41. I2C FRU table for model 575 (continued)

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0004	00FF	00FF	0080 00A4 00A8 00AC	System backplane
0005	00FF	00FF	00A8	1. Processor backplane 2. System backplane
0006	0052	0000	00A2	1. Memory module 3 2. Memory modules 1, 6, 8 3. Processor backplane 4. System backplane
0006	0052	0000	00A4	1. Memory module 1 2. Memory modules 3, 6, 8 3. Processor backplane 4. System backplane
0006	0052	0000	00A8	1. Memory module 6 2. Memory modules 1, 3, 8 3. Processor backplane 4. System backplane
0006	0052	0000	00AE	1. Memory module 8 2. Memory modules 1, 3, 6 3. Processor backplane 4. System backplane
0006	0052	0001	00A2	1. Memory module 4 2. Memory modules 2, 5, 7 3. Processor backplane 4. System backplane
0006	0052	0001	00A4	1. Memory module 2 2. Memory modules 4, 5, 7 3. Processor backplane 4. System backplane
0006	0052	0001	00A8	1. Memory module 5 2. Memory modules 2, 4, 7 3. Processor backplane 4. System backplane
0006	0052	0001	00AE	1. Memory module 7 2. Memory modules 2, 4, 5 3. Processor backplane 4. System backplane

Table 41. I2C FRU table for model 575 (continued)

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0006	0052	0002	00A2	<ol style="list-style-type: none"> 1. Memory module 38 2. Memory modules 33, 35, 40 3. Processor backplane 4. System backplane
0006	0052	0002	00A4	<ol style="list-style-type: none"> 1. Memory module 40 2. Memory modules 33, 35, 38 3. Processor backplane 4. System backplane
0006	0052	0002	00A8	<ol style="list-style-type: none"> 1. Memory module 35 2. Memory modules 33, 38, 40 3. Processor backplane 4. System backplane
0006	0052	0002	00AE	<ol style="list-style-type: none"> 1. Memory module 33 2. Memory modules 35, 38, 40 3. Processor backplane 4. System backplane
0006	0052	0003	00A2	<ol style="list-style-type: none"> 1. Memory module 37 2. Memory modules 34, 36, 39 3. Processor backplane 4. System backplane
0006	0052	0003	00A4	<ol style="list-style-type: none"> 1. Memory module 39 2. Memory modules 34, 36, 37 3. Processor backplane 4. System backplane
0006	0052	0003	00A8	<ol style="list-style-type: none"> 1. Memory module 36 2. Memory modules 34, 37, 39 3. Processor backplane 4. System backplane
0006	0052	0003	00AE	<ol style="list-style-type: none"> 1. Memory module 34 2. Memory modules 36, 37, 39 3. Processor backplane 4. System backplane
0006	0052	0004	00A2	<ol style="list-style-type: none"> 1. Memory module 11 2. Memory modules 9, 14, 16 3. Processor backplane 4. System backplane
0006	0052	0004	00A4	<ol style="list-style-type: none"> 1. Memory module 9 2. Memory modules 11, 14, 16 3. Processor backplane 4. System backplane

Table 41. I2C FRU table for model 575 (continued)

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0006	0052	0004	00A8	<ol style="list-style-type: none"> 1. Memory module 14 2. Memory modules 9, 11, 16 3. Processor backplane 4. System backplane
0006	0052	0004	00AE	<ol style="list-style-type: none"> 1. Memory module 16 2. Memory modules 9, 11, 14 3. Processor backplane 4. System backplane
0006	0052	0005	00A2	<ol style="list-style-type: none"> 1. Memory module 12 2. Memory modules 10, 13, 15 3. Processor backplane 4. System backplane
0006	0052	0004	00A4	<ol style="list-style-type: none"> 1. Memory module 10 2. Memory modules 12, 13, 15 3. Processor backplane 4. System backplane
0006	0052	0004	00A8	<ol style="list-style-type: none"> 1. Memory module 13 2. Memory modules 10, 12, 15 3. Processor backplane 4. System backplane
0006	0052	0004	00AE	<ol style="list-style-type: none"> 1. Memory module 15 2. Memory modules 10, 12, 13 3. Processor backplane 4. System backplane
0006	0052	0006	00A2	<ol style="list-style-type: none"> 1. Memory module 46 2. Memory modules 41, 43, 48 3. Processor backplane 4. System backplane
0006	0052	0006	00A4	<ol style="list-style-type: none"> 1. Memory module 48 2. Memory modules 41, 43, 46 3. Processor backplane 4. System backplane
0006	0052	0006	00A8	<ol style="list-style-type: none"> 1. Memory module 43 2. Memory modules 41, 46, 48 3. Processor backplane 4. System backplane
0006	0052	0006	00AE	<ol style="list-style-type: none"> 1. Memory module 41 2. Memory modules 43, 46, 48 3. Processor backplane 4. System backplane

Table 41. I2C FRU table for model 575 (continued)

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0006	0052	0007	00A2	<ol style="list-style-type: none"> 1. Memory module 45 2. Memory modules 42, 44, 47 3. Processor backplane 4. System backplane
0006	0052	0007	00A4	<ol style="list-style-type: none"> 1. Memory module 47 2. Memory modules 42, 44, 45 3. Processor backplane 4. System backplane
0006	0052	0007	00A8	<ol style="list-style-type: none"> 1. Memory module 44 2. Memory modules 42, 45, 47 3. Processor backplane 4. System backplane
0006	0052	0007	00AE	<ol style="list-style-type: none"> 1. Memory module 42 2. Memory modules 44, 45, 47 3. Processor backplane 4. System backplane
0006	0052	0008	00A2	<ol style="list-style-type: none"> 1. Memory module 19 2. Memory modules 17, 22, 24 3. Processor backplane 4. System backplane
0006	0052	0008	00A4	<ol style="list-style-type: none"> 1. Memory module 17 2. Memory modules 19, 22, 24 3. Processor backplane 4. System backplane
0006	0052	0008	00A8	<ol style="list-style-type: none"> 1. Memory module 22 2. Memory modules 17, 19, 24 3. Processor backplane 4. System backplane
0006	0052	0008	00AE	<ol style="list-style-type: none"> 1. Memory module 24 2. Memory modules 17, 19, 22 3. Processor backplane 4. System backplane
0006	0052	0009	00A2	<ol style="list-style-type: none"> 1. Memory module 20 2. Memory modules 18, 21, 23 3. Processor backplane 4. System backplane
0006	0052	0009	00A4	<ol style="list-style-type: none"> 1. Memory module 18 2. Memory modules 20, 21, 23 3. Processor backplane 4. System backplane

Table 41. I2C FRU table for model 575 (continued)

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0006	0052	0009	00A8	<ol style="list-style-type: none"> 1. Memory module 21 2. Memory modules 18, 20, 23 3. Processor backplane 4. System backplane
0006	0052	0009	00AE	<ol style="list-style-type: none"> 1. Memory module 23 2. Memory modules 18, 20, 21 3. Processor backplane 4. System backplane
0006	0052	000A	00A2	<ol style="list-style-type: none"> 1. Memory module 54 2. Memory modules 49, 51, 56 3. Processor backplane 4. System backplane
0006	0052	000A	00A4	<ol style="list-style-type: none"> 1. Memory module 56 2. Memory modules 49, 51, 54 3. Processor backplane 4. System backplane
0006	0052	000A	00A8	<ol style="list-style-type: none"> 1. GX adapter 0 (Un-P2-C65) 2. Processor Backplane 3. System backplane
0006	0052	000A	00AE	<ol style="list-style-type: none"> 1. Memory module 49 2. Memory modules 51, 54, 56 3. Processor backplane 4. System backplane
0006	0052	000B	00A2	<ol style="list-style-type: none"> 1. Memory module 53 2. Memory modules 50, 52, 55 3. Processor backplane 4. System backplane
0006	0052	000B	00A4	<ol style="list-style-type: none"> 1. Memory module 55 2. Memory modules 50, 52, 53 3. Processor backplane 4. System backplane
0006	0052	000B	00A8	<ol style="list-style-type: none"> 1. GX adapter 0 (Un-P2-C66) 2. Processor Backplane 3. System backplane
0006	0052	000B	00AE	<ol style="list-style-type: none"> 1. Memory module 50 2. Memory modules 52, 53, 55 3. Processor backplane 4. System backplane

Table 41. I2C FRU table for model 575 (continued)

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0006	0052	000C	00A2	<ol style="list-style-type: none"> 1. Memory module 27 2. Memory modules 25, 30, 32 3. Processor backplane 4. System backplane
0006	0052	000C	00A4	<ol style="list-style-type: none"> 1. Memory module 25 2. Memory modules 27, 30, 32 3. Processor backplane 4. System backplane
0006	0052	000C	00A8	<ol style="list-style-type: none"> 1. Memory module 30 2. Memory modules 25, 27, 32 3. Processor backplane 4. System backplane
0006	0052	000C	00AE	<ol style="list-style-type: none"> 1. Memory module 32 2. Memory modules 25, 27, 30 3. Processor backplane 4. System backplane
0006	0052	000D	00A2	<ol style="list-style-type: none"> 1. Memory module 28 2. Memory modules 26, 29, 31 3. Processor backplane 4. System backplane
0006	0052	000D	00A4	<ol style="list-style-type: none"> 1. Memory module 26 2. Memory modules 28, 29, 31 3. Processor backplane 4. System backplane
0006	0052	000D	00A8	<ol style="list-style-type: none"> 1. Memory module 29 2. Memory modules 26, 28, 31 3. Processor backplane 4. System backplane
0006	0052	000D	00AE	<ol style="list-style-type: none"> 1. Memory module 31 2. Memory modules 26, 28, 29 3. Processor backplane 4. System backplane
0006	0052	000E	00A2	<ol style="list-style-type: none"> 1. Memory module 62 2. Memory modules 57, 59, 64 3. Processor backplane 4. System backplane
0006	0052	000E	00A4	<ol style="list-style-type: none"> 1. Memory module 64 2. Memory modules 57, 59, 62 3. Processor backplane 4. System backplane

Table 41. I2C FRU table for model 575 (continued)

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0006	0052	000E	00A8	<ol style="list-style-type: none"> 1. Memory module 59 2. Memory modules 57, 62, 64 3. Processor backplane 4. System backplane
0006	0052	000E	00AE	<ol style="list-style-type: none"> 1. Memory module 57 2. Memory modules 59, 62, 64 3. Processor backplane 4. System backplane
0006	0052	000F	00A2	<ol style="list-style-type: none"> 1. Memory module 61 2. Memory modules 58, 60, 63 3. Processor backplane 4. System backplane
0006	0052	000F	00A4	<ol style="list-style-type: none"> 1. Memory module 63 2. Memory modules 58, 60, 61 3. Processor backplane 4. System backplane
0006	0052	000F	00A8	<ol style="list-style-type: none"> 1. Memory module 60 2. Memory modules 58, 61, 63 3. Processor backplane 4. System backplane
0006	0052	000F	00AE	<ol style="list-style-type: none"> 1. Memory module 58 2. Memory modules 60, 61, 63 3. Processor Backplane 4. System backplane
0006	0052	0010	0040 00A8	<ol style="list-style-type: none"> 1. GX adapter 0 (Un-P2-C65) 2. Processor Backplane 3. System backplane
0006	0052	0010	00C6 00C8	<ol style="list-style-type: none"> 1. GX adapter 0 (Un-P2-C65) 2. Processor Backplane 3. System backplane
0006	0052	0011	0040 00A8	<ol style="list-style-type: none"> 1. GX adapter 0 (Un-P2-C66) 2. Processor Backplane 3. System backplane
0006	0052	0011	00C6 00C8	<ol style="list-style-type: none"> 1. GX adapter 0 (Un-P2-C66) 2. Processor Backplane 3. System backplane
0006	00FF	00FF	0052	<ol style="list-style-type: none"> 1. Processor backplane 2. System backplane
0008	00FF	00FF	00C2 00C4	System backplane

Table 41. I2C FRU table for model 575 (continued)

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0009	00FF	00FF	00C2	1. Processor backplane 2. System backplane
000B	0052	0003	0012	System backplane
000B	00FF	00FF	0052	System backplane
000C	00FF	00FF	0010	System backplane

FSPSP41: Model 570:

Shows how to isolate to a failing FRU.

About this task

To isolate to a failing FRU do the following:

1. Record words 3, 7, and 8 from the primary system reference code (SRC) of the error log.
2. Determine the enclosure that contains the service processor that started the I2C operation.

Note: The remainder of this procedure refers to this enclosure as the *FSP enclosure*.

Refer to the last byte in word 3 of the primary SRC to find the service processor enclosure:

- a. If the last byte is a 10, then the primary unit service processor started the I2C.
- b. If the last byte is a 20, then the secondary unit 1 service processor started the I2C.
- c. If the last byte is a 30, use one of the following methods to determine the enclosure:

If you have access to the Advanced System Management Interface (ASMI), log on and display the details of the service processor error log. Using the Platform Event Log id (shown in the first table of each detail of the log), look at the first byte.

- If the first byte is a 50, then the primary unit service processor started the I2C.
- If the first byte is a 51, then the secondary unit 1 service processor started the I2C.

If you have access to an Hardware Management Console (HMC), log in as PE user and bring up Manage Serviceable Events under the Service Focal Point screen. Display the events for the corresponding service processor system, then double-click the system to see the details. Look at the Field Platform log ID, which contains a decimal value that you need to convert to a hexadecimal value.

- If the first byte of the hexadecimal value is a 50, then the primary unit service processor started the I2C.
- If the first byte of the hexadecimal value is a 51, then the secondary unit 1 service processor started the I2C.

3. Determine which enclosure contains the target I2C device.

Note: The remainder of this procedure refers to the enclosure that contains the I2C device as the *target enclosure*.

In the I2C Target enclosure table, find word 7 from the primary SRC. The enclosure listed beside word 7 is the target enclosures. Click the following link to display the I2C Target enclosure table: I2C Target enclosures for model 570 (4-core or 8-core through 16-core)

4. Does word 7 have a match in the I2C Target enclosure table?

Yes: Continue with the step 6 on page 315.

No: Continue with the next step.

5. The right most 2 bytes of word 7 does not have a match in the I2C Target enclosure table. Use the following statements to determine which enclosure contains the target I2C device:
 - a. If the right most 2 bytes of word 7 is either 0002 or 0003, then the FSP enclosure and the target enclosure are the same.
 - b. If the right most 2 bytes of word 7 is either 0000 or 0001, then refer to the following conditions
 - 1) i. If the FSP enclosure is the primary unit, then the target enclosure is the secondary unit
 - 2) If the FSP enclosure is secondary unit 1, then the target enclosure is the primary unit.
6. Determine which parts you need to replace on the target enclosure.
 - a. Using the following I2C FRU table for model 570, refer to words 7 and 8 of the primary SRC to locate the I2C FRU list. The I2C FRU list identifies the parts that you need to replace. Click the following link to display the I2C FRU table: I2C FRU table for model 570 (4-core or 8-core through 16-core)
 - b. Did you find the I2C FRU list?

Yes: Continue with the next step.

No: Contact your next level of support. **This ends the procedure.**
7. Starting with the first FRU in the list that you located the I2C FRU table, do the following:
 - a. Power off the system.
 - b. Replace the FRU on the target enclosure. Go to Finding part locations for location, part number, and exchange information.
 - c. Go to Perform a slow boot, then continue with the next step.
 - d. Is the problem resolved?

Yes: This ends the procedure.

No: Continue with the next step.
8. Have you replaced all of the FRUs in the list?

No: Repeat step 7 for the next FRU in the list.

Yes: Continue with the next step.
9. Replace the following FRUs, one at a time and in the order listed. After you replace each FRU, perform a slow boot until the problem is resolved. For more information, see Perform a slow boot.
 - a. System/service processor cable connected from the service processor enclosure to the target enclosure
 - b. Service processor on the service processor enclosure
 - c. I/O backplane on the target enclosure
 - d. I/O backplane on the service processor enclosure
10. Is the problem resolved?

Yes: This ends the procedure.

No: Contact your next level of support. **This ends the procedure.**

Results

Table 42. I2C Target enclosures for model 570 (4-core or 8-core through 16-core)

Word 7: Leftmost 2 bytes	Enclosure
0004	Secondary unit 3
0005	Secondary unit 2
0006	Secondary unit 1
000B	Primary unit

Table 43. I2C FRU table for model 570 (4-core or 8-core through 16-core)

Word 7	Word 8	Word 8	I2C FRU list
Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0000	0000	00A8	1. Service processor card (if present in target enclosure)
		00C0	
0052	0000	00A0	1. Service processor card (if present in target enclosure)
	0001	0080	2. I/O backplane
		00A0	
		00A4	
		00A8	
		00AC	
	0002	00A0	
0052	0003	0092	1. All memory modules (1-8) on processor card 1 2. Processor card 1
0052	0003	00A0	1. Memory module 8 on Processor card 1 2. All remaining memory modules on Processor card 1 3. Processor card 1
0052	0003	00A2	1. Memory module 7 on Processor card 1 2. All remaining memory modules on Processor card 1 3. Processor card 1
0052	0003	00A4	1. Memory module 1 on Processor card 1 2. All remaining memory modules on Processor card 1 3. Processor card 1
0052	0003	00A6	1. Memory module 2 on Processor card 1 2. All remaining memory modules on Processor card 1 3. Processor card 1
0052	0003	00A8	1. Memory module 6 on Processor card 1 2. All remaining memory modules on Processor card 1 3. Processor card 1
0052	0003	00AA	1. Memory module 5 on Processor card 1 2. All remaining memory modules on Processor card 1 3. Processor card 1
0052	0003	00AC	1. Memory module 3 on Processor card 1 2. All remaining memory modules on Processor card 1 3. Processor card 1
0052	0003	00AE	1. Memory module 4 on Processor card 1 2. All remaining memory modules on Processor card 1 3. Processor card 1
0052	0003	00C0	1. All memory modules (1-8) on processor card 1 2. Processor card 1

Table 43. I2C FRU table for model 570 (4-core or 8-core through 16-core) (continued)

Word 7	Word 8	Word 8	I2C FRU list
Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0052	0004	0092	1. All memory modules (1-8) on processor card 2 2. Processor card 2
0052	0004	00A0	1. Memory module 8 on Processor card 2 2. All remaining memory modules on Processor card 2 3. Processor card 2
0052	0004	00A2	1. Memory module 7 on Processor card 2 2. All remaining memory modules on Processor card 2 3. Processor card 2
0052	0004	00A4	1. Memory module 1 on Processor card 2 2. All remaining memory modules on Processor card 2 3. Processor card 2
0052	0004	00A6	1. Memory module 2 on Processor card 2 2. All remaining memory modules on Processor card 2 3. Processor card 2
0052	0004	00A8	1. Memory module 6 on Processor card 2 2. All remaining memory modules on Processor card 2 3. Processor card 2
0052	0004	00AA	1. Memory module 5 on Processor card 2 2. All remaining memory modules on Processor card 2 3. Processor card 2
0052	0004	00AC	1. Memory module 3 on Processor card 2 2. All remaining memory modules on Processor card 2 3. Processor card 2
0052	0004	00AE	1. Memory module 4 on Processor card 2 2. All remaining memory modules on Processor card 2 3. Processor card 2
0052	0004	00C0	1. All memory modules (1-8) on processor card 2 2. Processor card 2
0052	0005	00A0	1. RIO/HSL adapter card
		00C0	
0052	0006	00C0	1. Service processor card (if present in target enclosure) 2. I/O backplane
0052	0007	0040	1. Disk drive backplane
		0044	
		00A0	
		00A4	
		00C0	

Table 43. I2C FRU table for model 570 (4-core or 8-core through 16-core) (continued)

Word 7	Word 8	Word 8	I2C FRU list
Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0052	0008	00A0	1. Media drive backplane 2. Disk drive backplane
0052	0009	00A0	1. Regulator distribution connection backplane
0052	000A	00A0	
0052	000B	00C0	1. Service processor card (if present in target enclosure) 2. I/O backplane
0052	000C	00C0	1. Disk drive backplane
0052	000F	00C0	1. Service processor card (if present in target enclosure) 2. I/O backplane
00FF	00FF	00A0	1. Control panel 2. Disk drive backplane
00FF	00FF	00A8	1. Service processor card (if present in target enclosure)
		00C0	

FSPSP41: Models 59x:

Covers how to isolate to a failing FRU.

About this task

To isolate to a failing FRU do the following:

- Record words 3, 7, and 8 of the primary system reference code (SRC) from the error log.
- Determine which service processor initiated the I2C operation by using the last byte in word 3 of the primary SRC:
 - When the last byte in word 3 of the primary SRC is a 10, then service processor 0 initiated the I2C
 - When the last byte in word 3 of the primary SRC is a 20, then the service processor 1 initiated the I2C
 - If the last byte is a 30, use one of the following methods to determine the enclosure:

If you have access to the Advanced System Management Interface (ASMI), log on and display the details of the service processor error log. Using the Platform Event Log id (shown in the first table of each detail of the log), look at the first byte.

 - If the first byte is a 50, then service processor 0 started the I2C.
 - If the first byte is a 51, then service processor 1 started the I2C.

If you have access to an Hardware Management Console (HMC), log in as PE user and bring up Manage Serviceable Events under the Service Focal Point screen. Display the events for the corresponding service processor system, then double-click the system to see the details. Look at the Field Platform log ID, which contains a decimal value that you need to convert to a hexadecimal value.

 - If the first byte of the hexadecimal value is a 50, then service processor 0 started the I2C.
 - If the first byte of the hexadecimal value is a 51, then service processor 1 started the I2C.

Note: The following I2C FRU table refers to the service processor identified in this step as the *originating service processor*.

3. Determine which parts you need to replace.
 - a. Using the following I2C FRU table for 59x models, refer to words 7 and 8 of the primary SRC to locate the I2C FRU list. The I2C FRU list identifies the parts that you need to replace. Click the following link to display the I2C FRU table: [I2C FRU table for 59x models](#).
 - b. Did you find the I2C FRU list?

Yes: Continue with the next step.

No: Contact your next level of support. **This ends the procedure.**
4. Starting with the first FRU in the list that you located in the table, perform the following:
 - a. Power off the system.
 - b. Replace the FRU. Go to Finding part locations for location, part number, and exchange information.
 - c. Perform a reset of the service processor from ASMI. Refer to Rebooting the service processor.
 - d. Go to Perform a slow boot, then continue with the next step.
 - e. Is the problem resolved?

Yes: This ends the procedure.

No: Continue with the next step.
5. Have you replaced all of the FRUs in the list?

Yes: Contact your next level of support. **This ends the procedure.**

No: Repeat step 4 for the next FRU in the list.

Results

Table 44. I2C FRU table for 59x models

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0002	0000	0000	00C6	1. Light strips, front and back 2. Cables to light strips 3. Originating service processor
0002	00FF	00FF	00A8	1. Originating service processor
0004	0052	0008	00A8	1. Adapter card 1 for node 3 2. Multiplexer card for node 3 3. Node 3 backplane 4. Originating service processor 5. System backplane
0004	0052	0009	00A8	1. Adapter card 2 for node 3 2. Multiplexer card for node 3 3. Node 3 backplane 4. Originating service processor 5. System backplane
0004	0052	000A	00A8	1. Adapter card 3 for node 3 2. Multiplexer card for node 3 3. Node 3 backplane 4. Originating service processor 5. System backplane

Table 44. I2C FRU table for 59x models (continued)

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0004	0052	000B	00A8	<ol style="list-style-type: none"> 1. Adapter card 4 for node 3 2. Multiplexer card for node 3 3. Node 3 backplane 4. Originating service processor 5. System backplane
0004	0052	000C	00A8	<ol style="list-style-type: none"> 1. Adapter card 5 for node 3 2. Multiplexer card for node 3 3. Node 3 backplane 4. Originating service processor 5. System backplane
0004	0052	000D	00A8	<ol style="list-style-type: none"> 1. Adapter card 6 for node 3 2. Multiplexer card for node 3 3. Node 3 backplane 4. Originating service processor 5. System backplane
0004	0052	000E	00A8	<ol style="list-style-type: none"> 1. Adapter card 7 for node 3 2. Multiplexer card for node 3 3. Node 3 backplane 4. Originating service processor 5. System backplane
0004	0052	000F	00A8	<ol style="list-style-type: none"> 1. Adapter card 8 for node 3 2. Multiplexer card for node 3 3. Node 3 backplane 4. Originating service processor 5. System backplane
0005	0052	0008	00A8	<ol style="list-style-type: none"> 1. Adapter card 1 for node 2 2. Multiplexer card for node 2 3. Node 2 backplane 4. Originating service processor 5. System backplane
0005	0052	0009	00A8	<ol style="list-style-type: none"> 1. Adapter card 2 for node 2 2. Multiplexer card for node 2 3. Node 2 backplane 4. Originating service processor 5. System backplane
0005	0052	000A	00A8	<ol style="list-style-type: none"> 1. Adapter card 3 for node 2 2. Multiplexer card for node 2 3. Node 2 backplane 4. Originating service processor 5. System backplane

Table 44. I2C FRU table for 59x models (continued)

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0005	0052	000B	00A8	1. Adapter card 4 for node 2 2. Multiplexer card for node 2 3. Node 2 backplane 4. Originating service processor 5. System backplane
0005	0052	000C	00A8	1. Adapter card 5 for node 2 2. Multiplexer card for node 2 3. Node 2 backplane 4. Originating service processor 5. System backplane
0005	0052	000D	00A8	1. Adapter card 6 for node 2 2. Multiplexer card for node 2 3. Node 2 backplane 4. Originating service processor 5. System backplane
0005	0052	000E	00A8	1. Adapter card 7 for node 2 2. Multiplexer card for node 2 3. Node 2 backplane 4. Originating service processor 5. System backplane
0005	0052	000F	00A8	1. Adapter card 8 for node 2 2. Multiplexer card for node 2 3. Node 2 backplane 4. Originating service processor 5. System backplane
0006	0052	0008	00A8	1. Adapter card 1 for node 1 2. Multiplexer card for node 1 3. Node 1 backplane 4. Originating service processor 5. System backplane
			00C6	
			0040	
0006	0052	0009	00A8	1. Adapter card 2 for node 1 2. Multiplexer card for node 1 3. Node 1 backplane 4. Originating service processor 5. System backplane
			00C6	
			0040	
0006	0052	000A	00A8	1. Adapter card 3 for node 1 2. Multiplexer card for node 1 3. Node 1 backplane 4. Originating service processor 5. System backplane
			00C6	
			0040	

Table 44. I2C FRU table for 59x models (continued)

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0006	0052	000B	00A8	1. Adapter card 4 for node 1
			00C6	2. Multiplexer card for node 1
			0040	3. Node 1 backplane 4. Originating service processor 5. System backplane
0006	0052	000C	00A8	1. Adapter card 5 for node 1
			00C6	2. Multiplexer card for node 1
			0040	3. Node 1 backplane 4. Originating service processor 5. System backplane
0006	0052	000D	00A8	1. Adapter card 6 for node 1
			00C6	2. Multiplexer card for node 1
			0040	3. Node 1 backplane 4. Originating service processor 5. System backplane
0006	0052	000E	00A8	1. Adapter card 7 for node 1
			00C6	2. Multiplexer card for node 1
			0040	3. Node 1 backplane 4. Originating service processor 5. System backplane
0006	0052	000F	00A8	1. Adapter card 8 for node 1
			00C6	2. Multiplexer card for node 1
			0040	3. Node 1 backplane 4. Originating service processor 5. System backplane
000B	0052	0008	00A8	1. Adapter card 1 for node 0
			00C6	2. Multiplexer card for node 0
			0040	3. Node 0 backplane 4. Originating service processor 5. System backplane
000B	0052	0009	00A8	1. Adapter card 2 for node 0
			00C6	2. Multiplexer card for node 0
			0040	3. Node 0 backplane 4. Originating service processor 5. System backplane
000B	0052	000A	00A8	1. Adapter card 3 for node 0
			00C6	2. Multiplexer card for node 0
			0040	3. Node 0 backplane 4. Originating service processor 5. System backplane

Table 44. I2C FRU table for 59x models (continued)

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
000B	0052	000B	00A8	1. Adapter card 4 for node 0
			00C6	2. Multiplexer card for node 0
			0040	3. Node 0 backplane 4. Originating service processor 5. System backplane
000B	0052	000C	00A8	1. Adapter card 5 for node 0
			00C6	2. Multiplexer card for node 0
			0040	3. Node 0 backplane 4. Originating service processor 5. System backplane
000B	0052	000D	00A8	1. Adapter card 6 for node 0
			00C6	2. Multiplexer card for node 0
			0040	3. Node 0 backplane 4. Originating service processor 5. System backplane
000B	0052	000E	00A8	1. Adapter card 7 for node 0
			00C6	2. Multiplexer card for node 0
			0040	3. Node 0 backplane 4. Originating service processor 5. System backplane
000B	0052	000F	00A8	1. Adapter card 8 for node 0
			00C6	2. Multiplexer card for node 0
			0040	3. Node 0 backplane 4. Originating service processor 5. System backplane
000C	0052	0001	00A8	1. Other service processor 2. Originating service processor 3. System backplane
000C	0052	0003	00A8	1. Oscillator 2 2. Originating service processor 3. System backplane
000C	0052	0004	00A8	1. Oscillator 1 2. Originating service processor 3. System backplane
000C	0052	0005	00A8	1. Light strip, front 2. Cables to light strips 3. Originating service processor
000C	0052	0006	00A8	1. Light strip, back 2. Cables to light strips 3. Originating service processor

Table 44. I2C FRU table for 59x models (continued)

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
000C	0052	0007	00A8	1. Node 0 backplane 2. Originating service processor 3. System backplane
000C	0052	0008	00A8	1. Node 1 backplane 2. Originating service processor 3. System backplane
000C	0052	0009	00A8	1. Node 2 backplane 2. Originating service processor 3. System backplane
000C	0052	000A	00A8	1. Node 3 backplane 2. Originating service processor 3. System backplane
000C	0052	000B	00A8	1. Multiplexer card for node 0
			00C6	2. Node 0 backplane
			00C8	3. Originating service processor 4. System backplane
000C	0052	000C	00A8	1. Multiplexer card for node 1
			00C6	2. Node 1 backplane
			00C8	3. Originating service processor 4. System backplane
000C	0052	000D	00A8	1. Multiplexer card for node 2
			00C6	2. Node 2 backplane
			00C8	3. Originating service processor 4. System backplane
000C	0052	000E	00A8	1. Multiplexer card for node 3
			00C6	2. Node 3 backplane
			00C8	3. Originating service processor 4. System backplane
000C	0052	0011	00A8	1. Originating service processor 2. System backplane
		0012		
000C	0052	0014	00A8	1. Node 0 backplane 2. Originating service processor 3. System backplane
000C	0052	0015	00A8	1. Node 1 backplane 2. Originating service processor 3. System backplane
000C	0052	0016	00A8	1. Node 2 backplane 2. Originating service processor 3. System backplane

Table 44. I2C FRU table for 59x models (continued)

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
000C	0052	0017	00A8	1. Node 3 backplane 2. Originating service processor 3. System backplane

FSPSP41: Model 550:

Includes I2C FRU table.

- Record words 3, 7, and 8 of the primary SRC from the error log.
- Determine which service processor initiated the I2C operation by using the last byte in word 3 of the primary SRC:
 - When the last byte in word 3 of the primary SRC is a 10, then service processor 0 initiated the I2C
 - When the last byte in word 3 of the primary SRC is a 20, then the service processor 1 initiated the I2C

Note: The following I2C FRU table refers to the service processor identified in this step as the *originating service processor*.

- Determine which parts you need to replace.
 - Using the following I2C FRU table for model 550, refer to words 7 and 8 of the primary SRC to locate the I2C FRU list. The I2C FRU list identifies the parts that you need to replace. Click the following link to display the I2C FRU table: I2C FRU table for model 550
 - Did you find the I2C FRU list?

Yes: Continue with the next step.

No: Contact your next level of support. **This ends the procedure.**
- Starting with the first FRU in the list that you located in the table, perform the following:
 - Power off the system.
 - Replace the FRU. Go to Finding part locations for location, part number, and exchange information.
 - Perform a reset of the service processor from ASMI. Refer to Rebooting the service processor.
 - Go to Perform a slow boot, then continue with the next step.
 - Is the problem resolved?

Yes: This ends the procedure.

No: Continue with the next step.
- Have you replaced all of the FRUs in the list?

Yes: Contact your next level of support. **This ends the procedure.**

No: Repeat step 4 for the next FRU in the list.

Results

Table 45. I2C FRU table for model 550

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
0000	00FF	00FF	00A2	1. System backplane
0002	00FF	00FF	00A8	
0003	00FF	00FF	0090	1. Control panel 2. System backplane
			00A0	
			00B4	
0004	00FF	00FF	00A0	1. Memory module J0A 2. System backplane
0004	00FF	00FF	00A2	1. Memory module J2D 2. System backplane
0004	00FF	00FF	00A4	1. Memory module J0C 2. System backplane
0004	00FF	00FF	00A6	1. Memory module J2B 2. System backplane
0004	00FF	00FF	00A8	1. Memory module J0B 2. System backplane
0004	00FF	00FF	00AA	1. Memory module J2C 2. System backplane
0004	00FF	00FF	00AC	1. Memory module J0D 2. System backplane
0004	00FF	00FF	00AE	1. Memory module J2A 2. System backplane
0004	00FF	00FF	00C0	1. System backplane
0005	00FF	00FF	00C0	1. System backplane
0006	00FF	00FF	0010	1. System backplane
			0080	
			00A0	
0006	00FF	00FF	00A4	1. PCI riser card 2 2. System backplane
0006	00FF	00FF	00A6	1. PCI riser card 1 2. System backplane
0007	00FF	00FF	0040	1. System backplane
			00A0	
000B	00FF	00FF	00E0	1. Processor core VRM 2. System backplane
000C	00FF	00FF	0040	1. System backplane
			00C0	

Table 45. I2C FRU table for model 550 (continued)

Word 7		Word 8		I2C FRU list
Leftmost 2 bytes	Rightmost 2 bytes	Leftmost 2 bytes	Rightmost 2 bytes	
000C	00FF	00FF	00E0	1. Processor core VRM 2. System backplane

FSPSP42:

An error communicating between two system processors was detected.

About this task

If you were unable to correct the problem by following FRUs that were previously specified before coming to this procedure, consider the possibility of failing node backplanes.

Use the following procedure for the model on which you are working:

- “Models 510, 520, 550, 575, or OpenPower 710, or OpenPower 720”
- “Model 570”
- “Models 590 or 595”

Models 510, 520, 550, 575, or OpenPower 710, or OpenPower 720:

1. Power off the system (see Powering on and powering off).
2. Replace the bad node backplane or backplanes by using NODEPL.
3. Perform a slow boot. **This ends the procedure.**

Model 570:

1. Use FRUs that were previously specified to determine if the system processors are on separate nodes. Are the system processors on separate nodes?
 - **No:** Continue with to step 2.
 - **Yes:** Do the following:
 - a. Power off the system (see Powering on and powering off).
 - b. Replace the SMP cables between the two nodes.
 - c. Perform a slow boot.
 - d. Is the problem resolved?
 - Yes: This ends the procedure.**
 - No:** Continue to step 2.
2. Power off the system (see Powering on and powering off).
3. Replace the bad node backplane or backplanes by using NODEPL.
4. Perform a slow boot. **This ends the procedure.**

Models 590 or 595:

1. Use FRUs that were previously specified to determine if the system processors are on separate nodes. Are the system processors on separate nodes?
 - **No:** Continue with step 2 on page 328.
 - **Yes:** Do the following:
 - a. Power off the system (see Powering on and powering off).
 - b. Replace the bad node backplane or backplanes by using NODEPL.

- c. Perform a slow boot.
- d. Is the problem resolved?

Yes: This ends the procedure.

No: Replace the bad node backplane or backplanes by using SYSBKPL. **This ends the procedure.**

2. Power off the system (see Powering on and powering off).
3. Replace the bad node backplane or backplanes by using NODEPL.
4. Perform a slow boot. **This ends the procedure.**

FSPSP43:

Use this procedure when you are performing a cold service processor replacement and the system uses static IP addressing for Advanced System Management Interface (ASMI) and Hardware Management Console (HMC) network connections.

1. Does the system use static IP addressing?
 - **Yes:** Continue with the next step.
 - **No: This ends the procedure.**
2. Configure the network interfaces by using static IP addresses. (See Configuring network interfaces.)
3. Remove AC line power from both drawers that contain the service processors.
4. Plug in the AC line power for the drawer that contains the original service processor (the one you are not replacing).
5. Wait for the original service processor to come to Power On Standby.
6. Plug in the AC line power for the drawer that contains the new service processor.
7. Return to the HMC Repair and Verify flows to indicate that power has been applied to the new service processor. (For more information, see Verifying the repair from the HMC)**This ends the procedure.**

FSPSP44:

A problem occurred while trying to read from or write to a smartchip FRU.

1. Are you working on a model 59x?
 - **Yes:** Continue with the next step.
 - **No: This ends the procedure.**
2. Record words 6 and 9 from the primary system reference code (SRC) of the error log.
3. If word 6 is 0003 and word 7 = 0001 or 0002?
 - **Yes:** Replace the VPD card. **This ends the procedure.**
 - **No:** Continue to next step.
4. If word 6 is 0003?
 - **Yes:** Use Table 2 and replace the first FRU stated in the table for the specified Node. If the problem still persists, replace the second FRU stated.
 - **No:** Use Table 1 and replace the Multiplexer card associated with the specified Node. **This ends the procedure.**

Table 46. Values for word 6 and Node to replace Multiplexer card

Word 6	Node for the multiplexer card to be replaced
1000, 1001	Node 0
1002, 1003	Node 1
1004, 1005	Node 2

Table 46. Values for word 6 and Node to replace Multiplexer card (continued)

Word 6	Node for the multiplexer card to be replaced
1006, 1007	Node 3
D000 through D00F	Node 0
D010 through D01F	Node 1
D020 through D02F	Node 2
D030 through D03F	Node 3

Table 47. Values for words 7 and 9 and associated FRUs

Word 7	Word 9	FRU to be replaced on Node n (one at a time)
0004	0000	1. Memory Card 1 on Node 0 2. Multiplexer card on Node 0
0004	0001	1. Memory Card 2 on Node 0 2. Multiplexer card on Node 0
0004	0002	1. Memory Card 3 on Node 0 2. Multiplexer card on Node 0
0004	0003	1. Memory Card 4 on Node 0 2. Multiplexer card on Node 0
0004	0004	1. Memory Card 5 on Node 0 2. Multiplexer card on Node 0
0004	0005	1. Memory Card 6 on Node 0 2. Multiplexer card on Node 0
0004	0006	1. Memory Card 7 on Node 0 2. Multiplexer card on Node 0
0004	0007	1. Memory Card 8 on Node 0 2. Multiplexer card on Node 0
0004	0008	1. Memory Card 9 on Node 0 2. Multiplexer card on Node 0
0004	0009	1. Memory Card 10 on Node 0 2. Multiplexer card on Node 0
0004	000A	1. Memory Card 11 on Node 0 2. Multiplexer card on Node 0
0004	000B	1. Memory Card 12 on Node 0 2. Multiplexer card on Node 0
0004	000C	1. Memory Card 13 on Node 0 2. Multiplexer card on Node 0
0004	000D	1. Memory Card 14 on Node 0 2. Multiplexer card on Node 0
0004	000E	1. Memory Card 15 on Node 0 2. Multiplexer card on Node 0

Table 47. Values for words 7 and 9 and associated FRUs (continued)

Word 7	Word 9	FRU to be replaced on Node n (one at a time)
0004	000F	1. Memory Card 16 on Node 0 2. Multiplexer card on Node 0
0004	0010	1. Multiplexer card on Node 0 2. MCM 0 on Node 0
0004	0011	1. Multiplexer card on Node 0 2. MCM 1 on Node 0
0005	0000	1. Memory Card 1 on Node 1 2. Multiplexer card on Node 1
0005	0001	1. Memory Card 2 on Node 1 2. Multiplexer card on Node 1
0005	0002	1. Memory Card 3 on Node 1 2. Multiplexer card on Node 1
0005	0003	1. Memory Card 4 on Node 1 2. Multiplexer card on Node 1
0005	0004	1. Memory Card 5 on Node 1 2. Multiplexer card on Node 1
0005	0005	1. Memory Card 6 on Node 1 2. Multiplexer card on Node 1
0005	0006	1. Memory Card 7 on Node 1 2. Multiplexer card on Node 1
0005	0007	1. Memory Card 8 on Node 1 2. Multiplexer card on Node 1
0005	0008	1. Memory Card 9 on Node 1 2. Multiplexer card on Node 1
0005	0009	1. Memory Card 10 on Node 1 2. Multiplexer card on Node 1
0005	000A	1. Memory Card 11 on Node 1 2. Multiplexer card on Node 1
0005	000B	1. Memory Card 12 on Node 1 2. Multiplexer card on Node 1
0005	000C	1. Memory Card 13 on Node 1 2. Multiplexer card on Node 1
0005	000D	1. Memory Card 14 on Node 1 2. Multiplexer card on Node 1
0005	000E	1. Memory Card 15 on Node 1 2. Multiplexer card on Node 1
0005	000F	1. Memory Card 16 on Node 1 2. Multiplexer card on Node 1

Table 47. Values for words 7 and 9 and associated FRUs (continued)

Word 7	Word 9	FRU to be replaced on Node n (one at a time)
0005	0010	1. Multiplexer card on Node 1 2. MCM 0 on Node 1
0005	0011	1. Multiplexer card on Node 1 2. MCM 1 on Node 1
0006	0000	1. Memory Card 1 on Node 2 2. Multiplexer card on Node 2
0006	0001	1. Memory Card 2 on Node 2 2. Multiplexer card on Node 2
0006	0002	1. Memory Card 3 on Node 2 2. Multiplexer card on Node 2
0006	0003	1. Memory Card 4 on Node 2 2. Multiplexer card on Node 2
0006	0004	1. Memory Card 5 on Node 2 2. Multiplexer card on Node 2
0006	0005	1. Memory Card 6 on Node 2 2. Multiplexer card on Node 2
0006	0006	1. Memory Card 7 on Node 2 2. Multiplexer card on Node 2
0006	0007	1. Memory Card 8 on Node 2 2. Multiplexer card on Node 2
0006	0008	1. Memory Card 9 on Node 2 2. Multiplexer card on Node 2
0006	0009	1. Memory Card 10 on Node 2 2. Multiplexer card on Node 2
0006	000A	1. Memory Card 11 on Node 2 2. Multiplexer card on Node 2
0006	000B	1. Memory Card 12 on Node 2 2. Multiplexer card on Node 2
0006	000C	1. Memory Card 13 on Node 2 2. Multiplexer card on Node 2
0006	000D	1. Memory Card 14 on Node 2 2. Multiplexer card on Node 2
0006	000E	1. Memory Card 15 on Node 2 2. Multiplexer card on Node 2
0006	000F	1. Memory Card 16 on Node 2 2. Multiplexer card on Node 2
0006	0010	1. Multiplexer card on Node 2 2. MCM 0 on Node 2

Table 47. Values for words 7 and 9 and associated FRUs (continued)

Word 7	Word 9	FRU to be replaced on Node n (one at a time)
0006	0011	1. Multiplexer card on Node 2 2. MCM 1 on Node 2
0007	0000	1. Memory Card 1 on Node 3 2. Multiplexer card on Node 3
0007	0001	1. Memory Card 2 on Node 3 2. Multiplexer card on Node 3
0007	0002	1. Memory Card 3 on Node 3 2. Multiplexer card on Node 3
0007	0003	1. Memory Card 4 on Node 3 2. Multiplexer card on Node 3
0007	0004	1. Memory Card 5 on Node 3 2. Multiplexer card on Node 3
0007	0005	1. Memory Card 6 on Node 3 2. Multiplexer card on Node 3
0007	0006	1. Memory Card 7 on Node 3 2. Multiplexer card on Node 3
0007	0007	1. Memory Card 8 on Node 3 2. Multiplexer card on Node 3
0007	0008	1. Memory Card 9 on Node 3 2. Multiplexer card on Node 3
0007	0009	1. Memory Card 10 on Node 3 2. Multiplexer card on Node 3
0007	000A	1. Memory Card 11 on Node 3 2. Multiplexer card on Node 3
0007	000B	1. Memory Card 12 on Node 3 2. Multiplexer card on Node 3
0007	000C	1. Memory Card 13 on Node 3 2. Multiplexer card on Node 3
0007	000D	1. Memory Card 14 on Node 3 2. Multiplexer card on Node 3
0007	000E	1. Memory Card 15 on Node 3 2. Multiplexer card on Node 3
0007	000F	1. Memory Card 16 on Node 3 2. Multiplexer card on Node 3
0007	0010	1. Multiplexer card on Node 3 2. MCM 0 on Node 3
0007	0011	1. Multiplexer card on Node 3 2. MCM 1 on Node 3

FSPSP45:

Use this procedure if after replacing a service processor on a model 561 or 570 you receive either SRC B181F12C or B181F407. Either of these two SRCs can be displayed when a lower firmware level does not recognize and initialize the replaced service processors.

About this task

Ensure the System Firmware is at a level that supports the POWER[™] 5+[™] processors which is SF240_201 or higher. For more details, please see the hardware prerequisite page at IBM Prerequisite at http://www-912.ibm.com/e_dir/eserverprereq.nsf/UpgradeCategories/Hardware?opendocument.

Ensure that when replacing the service processor on a model 561 or 570 that the replacement FRU does not contain down level firmware.

Tip: The firmware level installed on the service processor appears in the upper right corner of the main ASMI menu panel.

SRC B181F12C or B181F40 is displayed when the firmware level installed on a replacement service processor is at a release prior to 01SF240.

Remember:

- If your model 561 or 570 is HMC managed, update the system to the minimum required or later level firmware.
- If the system is non-HMC managed, you *must* order a service processor containing the same level of firmware as the service processor being replaced.

During a service processor replacement on a nonmanaged systems, order service processor FRU 10N8348 code A.

During a service processor replacement on a managed system, if the firmware is not at a supported level, the state of the managed system goes into a "recovery" state, indicating a mismatch between the partition profile data that is stored on the HMC and the newly installed service processor. You will need to clear the "recovery" state prior to upgrading the firmware to a supported level. To clear the recovery state and then upgrade the firmware to a supported level, do the following:

1. Rename the copy of the profile data that exists on the HMC. (This prevents the recovery state from being re-encountered.)
2. For systems connected by statically assigned IP addresses, obtain the IP addresses for the managed system. To view the IP addresses, do the following:
 - a. Working from the HMC console, with a cursor blinking on your desktop, click the right mouse button.
 - b. Select **rshterm** (terminals).

Note: When entering (typing in) any of the commands listed in the following steps, you do so from the command line that is visible on your HMC display. After you have completed typing in the command entry, you press the **Enter** key to activate the command.

- c. Enter the **lssysconn -r all** command.

Note: For systems equipped with redundant service processors, record both addresses.

3. Using the HMC, logically remove the Ethernet connection for the managed system by clicking your right mouse button on the managed system object, and then selecting the **Reset or Remove Connection** option.

Note: Do not physically remove the Ethernet connectors from the system.

4. Obtain the *pesh* password from your support center.
5. Obtain the existing HMC root password.
6. Login to the HMC as user *hscpe*, then create a hscpe user ID.
7. Enter the **pesh** command, for example, pesh XXXXXXX.

Note: The XXXXXXX equals the HMC serial number.

8. When prompted, enter in the *pesh* password.
9. Enter the **su** command to become *root*.
10. When prompted, enter the HMC's root-user's password.
11. Use the following **cd** command to change your directory to the profiles directory `cd /var/hsc/profiles`.
12. Enter the **ls** command. A directory entry for each of the attached managed systems is displayed by serial number.
13. Use the **cd** command to change to the directory of the managed system you are working.
14. Enter the **ls** command. A file named "backupFile" displays.
15. Use the following **cp** command to copy the displayed backupFile to a new file name `cp backupFile mybackup`.
16. Use the following **rm** command to remove the backupFile `rm backupFile`.
17. For systems connected by static IP addresses, manually add the managed system to the HMC using the **GUI Add Managed System** option, or enter the following **mksysconn** command `mksysconn --ip 9.3.23.1 -r sys`.
18. For systems connected by DHCP assigned addresses allow the HMC to reconnect.
19. After the managed system has been added to the HMC, the system reappears on the HMC in a "Failed Authentication" state. Authenticate the managed system using the HMC access password by clicking your right mouse button on the managed system object.
20. Upgrade the firmware to the required level.
21. Power on the system to partition standby.
22. Restore the partition profile data using the renamed backup file created in step 15.

Note: Do *not* use the new file named "backupFile". You *must* use the renamed backup file.

23. After the partition profile data restore is complete, the partitions can now be activated. When the first partition is activated, a panel might appear stating that the managed system is currently in the manufacturing default configuration (MDC). Select the **Exit MDC using partition profile activation** option.
24. Select **OK. This ends the procedure**.

FSPSPB1:

This error code indicates that the service processor failed early in its boot process.

Before you begin

Activate the service processor pinhole reset switch on the system's operator panel.

Note: You must activate the service processor pinhole reset switch very carefully. Using an insulated paper clip is recommended. Unbend the clip so that it has a straight section about two inches long. Insert the clip straight into the hole, keeping the clip perpendicular to the plastic bezel. When you engage the reset switch, you should feel the detent of the switch. After you press the switch, the service processor is reset, then the system shuts down.

About this task

After activating the service processor pinhole reset switch, do the following:

1. Reboot the system in slow mode from the permanent side using operator panel function 02.
2. Is there an HMC attached to the system?
NO Contact your service representative.
YES Attempt to reflash the platform firmware from the HMC. If the reflash is successful (the server boots to partition standby), that's the end this procedure. If the reflash is not successful, go to step 3.
3. Contact your service representative.

FSPSPC1:

If the system hangs after the code that sent you to this procedure appears in the control panel, perform these steps to reset the service processor.

Before you begin

Attention: The system firmware level should be periodically checked on all servers and if it is appropriate, the firmware should be updated to the latest level. If you were directed here because the server displayed B1817201, C1001014, or C1001020 or a combination of these codes, the latest level of firmware can help avoid a recurrence of this problem.

Even if the customer cannot update the firmware on this system at this time, all of their systems should be updated to the latest firmware level as soon as possible to help prevent this problem from occurring on other systems.

About this task

Are you are servicing a model 570 with multiple drawers?

No: Continue to the next step.

Yes: Verify that the Anchor VPD card is present in the first (top) drawer, and that an Anchor VPD card is not installed in any of the other processor drawers. If there are problems with the configuration of the Anchor VPD card, correct them, and reapply AC power. If the service processor comes up to standby, this ends the procedure. If the service processor still fails very early in the boot process, or the Anchor VPD card was configured correctly, continue to the next step.

If the system hangs after the code that sent you to this procedure appears in the control panel, perform these steps to reset the service processor.

Use the procedure that applies to the system on which you are working:

- Systems with a physical control panel
- Systems with a logical control panel

Resetting the service processor on systems with a physical control panel

1. If the Advanced System Management Interface (ASMI) is available, reset the service processor using the ASMI menus.

Were you able to use the ASMI menus to reset the service processor?

No: Continue with the next step.

Yes: This ends the procedure.

2. Activate the service processor pinhole reset switch on the system's operator panel by carefully performing these steps:

- a. Using an insulated paper clip, unbend the clip so that it has a straight section about two inches long.
- b. Insert the clip straight into the hole, keeping the clip perpendicular to the plastic bezel.
- c. When you engage the reset switch, you should feel the detent of the switch.
- d. Pressing the reset switch resets the service processor and causes the system to shut down.
3. Reboot the system in slow mode from the permanent side using control panel function 02 or the ASMI menus, if available.
4. If the hang repeats, check with service support to see if a firmware update is available that fixes the problem. For more information, see *Getting fixes*.
5. Choose from the following options:
 - If no firmware update is available, continue with the next step.
 - If a firmware update is available, apply it using the Service Focal Point in the Hardware Management Console (HMC).

Did the update resolve the problem so that the system now boots?

No: You are here because there is no HMC attached to the system, the flash update failed, or the updated firmware did not fix the hang. Continue with the next step.

Yes: This ends the procedure.
6. Choose from the following options:
 - If you are a customer, and your system has only one service processor, contact your hardware service provider. **This ends the procedure.**
 - If you are a customer, and your system has a secondary service processor, use the HMC to initiate a service processor failover and continue to bring up the system. Contact your service provider to schedule deferred maintenance on the service processor that is hung. **This ends the procedure.**
 - If you are a hardware service provider, continue with the next step.
7. Replace the service processor (see symbolic FRU “SVCPROC” on page 757).
8. If replacing the service processor does not fix the problem, contact your next level of support. **This ends the procedure.**

Resetting the service processor on systems with a logical control panel

1. Reset the service processor:
 - On model 575, use the Advanced System Management Interface (ASMI) menus, if available, or the Hardware Management Console (HMC) first to remove then to reapply power to the processor node.
 - On models 590 or 595, use the ASMI menus, if available, or the UEPO switch first to remove then to reapply power to the system.
2. Using the setting in the ASMI menu, reboot the system in slow mode from the permanent side.
3. If the hang repeats, check with service support to see if a firmware update is available that fixes the problem. See *Getting fixes* in the Customer service and support topic for details.
4. Choose from the following options:
 - If no firmware update is available, continue with the next step.
 - If a firmware update is available, apply it using the Service Focal Point in the HMC.

Did the update resolve the problem so that the system now boots?

No: You are here because there is no HMC attached to the system, the flash update failed, or the updated firmware did not fix the hang. Continue with the next step.

Yes: This ends the procedure.
5. Choose from the following options:
 - If you are a customer, and your system has only one service processor, contact your hardware service provider. **This ends the procedure.**

- If you are a customer, and your system has a secondary service processor, use the HMC to initiate a service processor failover and continue to bring up the system. Contact your service provider to schedule deferred maintenance on the service processor that is hung. **This ends the procedure.**
 - If you are a hardware service provider, continue with the next step.
6. Replace the service processor (see symbolic FRU “SVCPROC” on page 757).
 7. If replacing the service processor does not fix the problem, contact your next level of support. **This ends the procedure.**

FSPSPD1:

If the system hangs after the code that sent you to this procedure appears in the control panel, perform these steps to reset the service processor.

Before you begin

Attention: The system firmware level should be periodically checked on all servers and if it is appropriate, the firmware should be updated to the latest level. If you were directed here because the server displayed B1817201, C1001014, or C1001020 or a combination of these codes, the latest level of firmware can help avoid a recurrence of this problem.

Even if the customer cannot update the firmware on this system at this time, all of their systems should be updated to the latest firmware level as soon as possible to help prevent this problem from occurring on other systems.

About this task

Are you are servicing a model 570 with multiple drawers?

No: Continue to the next step.

Yes: Verify that the Anchor VPD card is present in the first (top) drawer, and that an Anchor VPD card is not installed in any of the other processor drawers. If there are problems with the configuration of the Anchor VPD card, correct them, and reapply AC power. If the service processor comes up to standby, this ends the procedure. If the service processor still fails very early in the boot process, or the Anchor VPD card was configured correctly, continue to the next step.

If the system hangs after the code that sent you to this procedure appears in the control panel, perform these steps to reset the service processor.

Use the procedure that applies to the system on which you are working:

- Systems with a physical control panel
- Systems with a logical control panel

Resetting the service processor on systems with a physical control panel

1. If the Advanced System Management Interface (ASMI) is available, reset the service processor using the ASMI menus.

Were you able to use the ASMI menus to reset the service processor?

No: Continue with the next step.

Yes: This ends the procedure.

2. Activate the service processor pinhole reset switch on the system’s operator panel by carefully performing these steps:
 - a. Using an insulated paper clip, unbend the clip so that it has a straight section about two inches long.
 - b. Insert the clip straight into the hole, keeping the clip perpendicular to the plastic bezel.

- c. When you engage the reset switch, you should feel the detent of the switch.
- d. Pressing the reset switch resets the service processor and causes the system to shut down.
3. Reboot the system in slow mode from the permanent side using control panel function 02 or the ASMI menus, if available.
4. If the hang repeats, check with service support to see if a firmware update is available that fixes the problem. For more information, see Getting fixes.
5. Choose from the following options:
 - If no firmware update is available, continue with the next step.
 - If a firmware update is available, apply it using the Service Focal Point in the Hardware Management Console (HMC).

Did the update resolve the problem so that the system now boots?

No: You are here because there is no HMC attached to the system, the flash update failed, or the updated firmware did not fix the hang. Continue with the next step.

Yes: This ends the procedure.
6. Choose from the following options:
 - If you are a customer, and your system has only one service processor, contact your hardware service provider. **This ends the procedure.**
 - If you are a customer, and your system has a secondary service processor, use the HMC to initiate a service processor failover and continue to bring up the system. Contact your service provider to schedule deferred maintenance on the service processor that is hung. **This ends the procedure.**
 - If you are a hardware service provider, continue with the next step.
7. Replace the service processor (see symbolic FRU “SVCPROC” on page 757).
8. If replacing the service processor does not fix the problem, contact your next level of support. **This ends the procedure.**

Resetting the service processor on systems with a logical control panel

1. Reset the service processor:
 - On model 575, use the Advanced System Management Interface (ASMI) menus, if available, or the Hardware Management Console (HMC) first to remove then to reapply power to the processor node.
 - On models 590 or 595, use the ASMI menus, if available, or the UEPO switch first to remove then to reapply power to the system.
2. Using the setting in the ASMI menu, reboot the system in slow mode from the permanent side.
3. If the hang repeats, check with service support to see if a firmware update is available that fixes the problem. See Getting fixes in the Customer service and support topic for details.
4. Choose from the following options:
 - If no firmware update is available, continue with the next step.
 - If a firmware update is available, apply it using the Service Focal Point in the HMC.

Did the update resolve the problem so that the system now boots?

No: You are here because there is no HMC attached to the system, the flash update failed, or the updated firmware did not fix the hang. Continue with the next step.

Yes: This ends the procedure.
5. Choose from the following options:
 - If you are a customer, and your system has only one service processor, contact your hardware service provider. **This ends the procedure.**
 - If you are a customer, and your system has a secondary service processor, use the HMC to initiate a service processor failover and continue to bring up the system. Contact your service provider to schedule deferred maintenance on the service processor that is hung. **This ends the procedure.**

- If you are a hardware service provider, continue with the next step.
- 6. Replace the service processor (see symbolic FRU “SVCPROC” on page 757).
- 7. If replacing the service processor does not fix the problem, contact your next level of support. **This ends the procedure.**

Tape unit isolation procedures

This topic contains the procedures necessary to isolate a failure in a tape device.

In these procedures, the term *tape unit* may be any one of the following:

- An internal tape drive, including its electronic parts and status indicators
- An internal tape drive, including its tray, power regulator, and AMDs
- An external tape drive, including its power supply, power switch, power regulator, and AMDs

You should interpret the term *tape unit* to mean the tape drive you are working on. However, these procedures use the terms *tape drive* and *enclosure* to indicate a more specific meaning.

Read and observe all safety procedures before servicing the system and while performing the procedures in this topic. Unless instructed otherwise, always power off the system or expansion unit where the FRU is located (see Powering on and powering off) before removing, exchanging, or installing a field-replaceable unit (FRU).

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

TUPIP02:

Use this procedure to perform the 8mm tape drive read self-test and hardware self-test.

About this task

The write test is performed in "TUPIP03" on page 342.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem (see Determining if the system has logical partitions).
2. Press the **Unload** switch on the front of the 8mm tape drive. Is a data cartridge present?
 - **No:** Continue with the next step.
 - **Yes:** Attempt to remove the data cartridge. Can you remove the data cartridge?

Yes: Continue with the next step.

No: The tape drive is the failing part. Go to (Tape cartridge - Manual removal). After removing the data cartridge, exchange the tape drive (see Removing and replacing parts). **This ends the procedure.**

3. Clean the tape drive by using the cleaning cartridge (part 16G8467). If the tape drive ejects the cleaning cartridge with the Disturbance light on, a new cleaning cartridge is needed. The tape drive unloads automatically when cleaning is complete. Cleaning takes up to 5 minutes.

Is the Disturbance light on continuously?

No: Continue with the next step.

Yes: Repeat this step while using a new cleaning cartridge. If you are using a new cleaning cartridge and the Disturbance light does not go off, the possible failing part is the 8mm tape drive. Go to "TUPIP03" on page 342. **This ends the procedure.**

4. Is the Disturbance light blinking?

- **No:** Continue with the next step.
- **Yes:** Choose from the following:
 - If the 8mm tape drive is a type 6390, the possible failing part is the 6390 tape drive.
 - If the 8mm tape drive is a type 7208, the possible failing parts are:
 - a. 7208 tape drive
 - b. Power supply
 - c. AMD

Go to "TUPIP03" on page 342. **This ends the procedure.**

5. Perform the read self-test:

Notes:

- a. The 8mm tape drive read self-test and hardware self-test can take up to 5 minutes to run.
- b. The tape drive runs the read self-test first. During the read self-test, the Read-Write light blinks, and the Disturbance and Ready lights are off.

To start the read self-test and hardware self-test, insert the diagnostic cartridge (part 46G2660) into the tape drive. The following conditions indicate that the read self-test ended successfully:

- The Read-Write light stops blinking.
- The diagnostic cartridge ejects automatically.
- The three status lights go on to indicate the start of the hardware test.

Does the read self-test end successfully?

- **No:** Does the tape drive eject the diagnostic cartridge?
 - **Yes:** Continue with the next step.
 - **No:** The tape drive is the failing part.

Go to (Tape cartridge - Manual removal). After removing the diagnostic cartridge, exchange the tape drive (see Removing and replacing parts). **This ends the procedure.**

- **Yes:** Go to step 8 on page 342.

6. Is the Disturbance light blinking approximately four times per second?

- **No:** Continue with the next step.
- **Yes:** The possible failing part is the diagnostic cartridge (part 46G2660).
 - If this is your first time through this step, get a new diagnostic cartridge. Go to step 3 of this procedure to clean the tape drive again. Afterwards, run the read self-test and hardware self-test while using the new diagnostic cartridge.
 - If this is your second time through this step, the possible failing part is the 8mm tape drive. Go to "TUPIP03" on page 342. **This ends the procedure.**

7. The Disturbance light is blinking approximately once per second.

- If the 8mm tape drive is a type 6390, the possible failing part is the 6390 tape drive.
- If the 8mm tape drive is a type 7208, the possible failing parts are:
 - a. 7208 tape drive

- b. Power supply
- c. AMD

Go to "TUPIP03." **This ends the procedure.**

8. The tape drive runs the hardware self-test. During the hardware self-test, the three tape drive status lights are on for 15 to 30 seconds. The three status lights go off when the hardware self-test ends successfully.

Does the hardware self-test end successfully?

- **Yes:** Continue with the next step.
- **No:** When the hardware self-test does not end successfully, the following conditions occur:
 - The three status lights do not go off.
 - The Ready and Read-Write lights go off.
 - The Disturbance light blinks approximately once per second.

Possible failing parts are:

- If the 8mm tape drive is a type 6390, the possible failing part is the 6390 tape drive.
- If the 8mm tape drive is a type 7208, the possible failing parts are:
 - a. 7208 tape drive
 - b. Power supply
 - c. AMD

Go to "TUPIP03." **This ends the procedure.**

9. The read self-test and hardware self-test ended successfully.

Was the user's original tape identified as the probable cause of failure?

- **Yes:** Perform the following:
 - a. Mark and date the data cartridge to indicate that it failed with a permanent error.
 - b. Discard this data cartridge when:
 - Volume statistics (if available) indicate a problem with the data cartridge.
 - A total of three permanent errors have occurred with the same data cartridge.
 - c. If possible, continue operations with a new data cartridge.

Go to "TUPIP03." **This ends the procedure.**

- **No:** Go to "TUPIP03." **This ends the procedure.**

TUPIP03:

You were directed here because you may need to exchange a failing part.

About this task

The failing part was determined from one of the following:

- Other problem isolation procedures
- The *Failing item* column of the tape unit reference code table
- Tape unit service guide

Note: Occasionally, the system is available but not performing an alternate IPL (type D IPL). In this instance, any hardware failure of the tape unit I/O processor, or any device attached to it is not critical. With the exception of the loss of the affected devices, the system remains available.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem (see Determining if the system has logical partitions).
2. Do you need to exchange a possible failing device?
 - **No:** Do you need to exchange the tape unit I/O processor?

- No:** Continue with the next step.
- Yes:** Exchange the tape unit I/O processor (see Removing and replacing parts). When you have completed the remove and replace procedure, continue with the next step.
- **Yes:** Perform the following:
 - For an internal tape unit, go to Removing and replacing parts.
 - For an external tape unit, go to the remove and replace procedures in the device service information.
3. Are you working with a tape unit in the system unit or in an expansion unit?
 - **Yes:** Is the system available, and can you enter commands on the command line?
 - No:** Continue with the next step.
 - Yes:** Go to step 9.
 - **No:** Continue with the next step.
 4. Display the selected IPL type (see IPL type, mode, and speed options in the Service functions). Is the displayed IPL type D?
 - **No:** Do you want to perform an alternate IPL (type D)?
 - No:** Continue with the next step.
 - Yes:** Go to step 6.
 - **Yes:** Go to step 6.
 5. Perform an IPL from disk by doing the following:
 - a. Power off the system (see Powering on and powering off).
 - b. Select IPL type A in manual mode.
 - c. Power on the system.
 - d. Go to step 8.
 6. Place the first tape of the latest set of SAVSYS tapes or SAVSTG tapes, or the first Software Distribution tape in the alternate IPL tape drive. The tape drive automatically becomes ready for the IPL operation (this may take several minutes).
 7. Perform an alternate IPL by doing the following:
 - a. Power off the system.
 - b. Select IPL type D in Manual mode.
 - c. Power on the system.
 8. The IPL may take one or more hours to complete. Does an unexpected reference code appear on the control panel, and is the System Attention light on?
 - **No:** Does the IPL complete successfully?
 - Yes:** Continue with the next step.
 - No:** Go to “Start of call procedure” on page 2 to continue analyzing the problem. **This ends the procedure.**
 - **Yes:** Go to step 10.
 9. Perform the following to test the tape unit:
 - a. Enter VFYTAP (the Verify Tape command) on the command line.
 - b. Follow the prompts on the Verify Tape displays, then return here and answer the following question.
 Does the VFYTAP command end successfully?
 - No:** Continue with the next step.
 - Yes:** **This ends the procedure.**
 10. Record the SRC on the Problem summary form (see Problem reporting forms).

Is the SRC the same one that sent you to this procedure?

Yes: You cannot continue to analyze the problem. Use the original SRC and exchange the FRUs. Begin with the FRU which has the highest percent of probable failure (see the failing item list for this reference code). **This ends the procedure.**

No: A different SRC occurred. Use the new SRC to correct the problem (see Reference codes). **This ends the procedure.**

TUPIP04:

Use this procedure to reset an IOP and its attached tape units. Read the (overview) before continuing with this procedure.

About this task

If disk units are attached to an IOP, you must power off the system, then power it on to reset the IOP.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem (see Determining if the system has logical partitions).
2. Is the tape unit powered on?
 - **No:** Continue with the next step.
 - **Yes:** Perform the following:
 - a. Press the Unload switch on the front of the tape unit you are working on.
 - b. If a data cartridge or a tape reel is present, do not load it until you need it.
 - c. Continue with the next step of this procedure.
3. Verify the following:
 - If the external device has a power switch, ensure that it is set to the **On** position.
 - Ensure that the power and external signal cables are connected correctly.

Note: For every 8mm and 1/4 inch tape unit, the I/O bus terminating plug for the SCSI external signal cable is connected internally. These devices do not need and should not have an external terminating plug.

4. Did you press the Unload switch in step 2?
 - **Yes:** Can you enter commands on the command line?
 - Yes:** Continue with the next step.
 - No:** Go to step 11 on page 346.
 - **No:** Press the **Unload** switch on the front of the tape unit you are working on. If a data cartridge or a tape reel is present, do not load it until you need it. Continue with the next step of this procedure.
5. Has the tape unit operated correctly since it was installed? If you do not know, continue with the next step of this procedure.
 - Yes:** Continue with the next step.
 - No:** Go to step 11 on page 346.
6. If a system message displayed an I/O processor name, a tape unit resource name, or a device name, record the name for use in the next step. You may continue without a name.

Does the I/O processor give support to only one tape unit? If you do not know, continue with the next step of this procedure.

 - **No:** Continue with the next step.
 - **Yes:** Perform the following. You must complete all parts of this step before you press **Enter**.
 - a. Enter

```
WRKCFGSTS *DEV *TAP ASTLVL(*INTERMED)
```

(the Work with Configuration Status command) on the command line.

b. If the device is not varied off, select **Vary off** before continuing.

c. Select **Vary on** for the failing tape unit.

d. Enter

RESET(*YES)

(the Reset command) on the command line.

e. Press **Enter**. **This ends the procedure.**

7. This step determines if the I/O processor for the tape unit gives support to other tape units or to a disk unit.

Notes:

- a. If you cannot determine the tape unit you are attempting to use, go to step **11** (See 11 on page 346).
- b. System messages refer to other tape units that the I/O processor gives support to as *associated devices*.

Enter WRKHDWRS *STG (the Work with Hardware Resources command) on the command line.

Did you record an I/O processor (IOP) resource name in step 6 on page 344?

- **No:** Perform the following:

- a. Select **Work with resources** for each storage resource IOP (CMB01, SIO1, and SIO2 are examples of storage resource IOPs).
- b. Find the Configuration Description name of the tape unit you are attempting to use, and then record the Configuration Description names of all tape units that the I/O processor gives support to.
- c. Record whether the I/O processor for the tape unit also gives support to any disk unit resources.
- d. Continue with the next step.

- **Yes:** Perform the following:

- a. Select **Work with resources** for that resource.
- b. Record the Configuration description name of all tape units for which the I/O processor provides support.
- c. Record whether the I/O processor for the tape unit also gives support to any disk unit resources.
- d. Continue with the next step.

8. Does the I/O processor give support to any disk unit resources?

No: Continue with the next step.

Yes: The **Reset** option is not available. Go to step 11 on page 346.

9. Does the I/O processor give support to only one tape unit?

- **No:** Continue with the next step.

- **Yes:** Perform the following:

- a. Select **Work with configuration description** and press **Enter**.
- b. Select **Work with status** and press **Enter**.

Note: You must complete the remaining parts of this step before you press **Enter** again.

c. If the device is not varied off, select **Vary off** before continuing.

d. Select **Vary on** for the failing tape unit.

e. Enter RESET(*YES) (the Reset command) on the command line.

f. Press **Enter**. **This ends the procedure.**

10. Perform the following:

a. Enter

```
WRKCFGSTS *DEV *TAP ASTLVL(*INTERMED)
```

(the Work with Configuration Status command) on the command line.

b. Select **Vary off** for the failing tape unit and associated devices (the devices you identified in step 7 on page 345), and then press **Enter**.

Note: You must complete the remaining parts of this step before you press **Enter** again.

c. Select **Vary on** for the failing tape unit.

d. Enter

```
RESET(*YES)
```

(the Reset command) on the command line.

e. Press **Enter**.

f. Select **Vary on** for the associated devices (tape units) you identified in step 7 on page 345. It is not necessary to use the **Reset** option again.

Does a system message indicate that the vary on operation failed?

Yes: Continue with the next step.

No: This ends the procedure.

11. The **Reset** is not available, or you were not able to find the Configuration Description name when using

```
WRKHDWRSC *STG
```

(the Work with Hardware Resources command).

You can perform an I/O processor (IOP) reset by performing an IPL of the I/O processor. All devices that are attached to the IOP will reset.

The following steps describe how to load an IOP, how to configure a tape drive, how to vary on tape devices, and how to make tape devices available.

12. Is the tape device you are working on an 8mm tape drive?

- **No:** Continue with the next step.

- **Yes:** Verify the following on the 8mm tape drive:

- The power and external signal cables are connected correctly.
- The Power switch is set to the On position (pushed in).

Note: The SCSI I/O bus terminating plug for the system-external signal cables is connected internally in the 8mm tape drive. The 8mm tape drive does not need, and must not have an external terminating plug.

Is the 8mm tape drive Power light on, and is the Disturbance light off?

Yes: Continue with the next step.

No: Go to "TUPIP02" on page 340 to correct the problem. **This ends the procedure.**

13. Is a data cartridge or a tape reel installed in the tape device?

No: Continue with the next step.

Yes: Remove the data cartridge or tape reel. Continue with the next step.

14. Can you enter commands on the command line?

- **Yes:** Continue with the next step.

- **No:** Perform the following:

- a. Power off the system (see Powering on and powering off).

- b. Power on the system.

The system performs an IPL and resets all devices. If the tape device responds to SCSI address 7, the system configures the tape device. **This ends the procedure.**

15. Verify that automatic configuration is on by entering
DPSYSVAL QAUTOCFG

(the Display System Value command) on the command line.

Is the **Autoconfigure device** option set to **1**?

- **Yes:** Continue with the next step.
- **No:** Perform the following:
 - a. Press **Enter** to return to the command line.
 - b. Set automatic configuration to On by entering
CHGSYSVAL QAUTOCFG '1'
(the Change System Value command) on the command line.

Note: QAUTOCFG resets to its initial value in step 21 on page 348.

- c. Continue with the next step.

16. Perform the following:

- a. Enter
STRSST

(the Start SST command) on the command line.

- b. On the Start Service Tools Sign On display, type in a User ID with QSRV authority and Password.
- c. Select **Start a Service Tool** → **Hardware Service Manager** → **Logical Hardware Resources** → **System Bus Resources**. The Logical Hardware Resources on System Bus display shows all of the IOPs.
- d. Find the IOP you want to reset. You **must** ensure that no one is using any of the tape units, communication channels, or display stations that are attached to the IOP you want to reset.

Does a "*" indicator appear to the right of the IOP description?

- **No:** Continue with the next step.
- **Yes:** Disk units are attached to the IOP.
Perform the following:
 - a. Press **F3** until the Exit System Service Tools display appears.
 - b. Press **Enter**.
 - c. Power off the system (see Powering on and powering off).
 - d. Power on the system.

The system performs an IPL and resets all devices. **This ends the procedure.**

17. Perform the following:

- a. Select **I/O debug** → **IPL the I/O processor**.
- b. When the IOP reset is complete, continue with the next step of this procedure.

18. Perform the following:

- a. Press **F12** to return to the Logical Hardware Resources on System Bus display.
- b. Select **Resources associated with IOP** for the IOP you reset.

Did the IOP detect the tape unit?

- **Yes:** Continue with the next step.
- **No:** The IOP did not detect the tape unit. Consider the following:

- Ensure that the tape unit is powered on and that the signal cables are connected correctly. If you find and correct a power or a signal cable problem, return to step 16 on page 347.
 - The tape unit may be failing. Go to the tape unit service information and perform the procedures for analyzing device problems. If you find and correct a tape unit problem, return to step 16 on page 347.
 - If none of the above are true, ask your next level of support for assistance. **This ends the procedure.**
19. Press **F3** until the Exit System Service Tools display appears. Then press **Enter**.
 20. Was automatic configuration Off before you performed step 15 on page 347?
 - Yes:** Continue with the next step.
 - No:** **This ends the procedure.**
 21. Enter


```
CHGSYSVAL QAUTOCFG '0'
```

(the Change System Value command) on the command line to reset QAUTOCFG to its initial value.
This ends the procedure.

TUPIP06:

Use this procedure to isolate a Device Not Found message during installation from an alternate device.

About this task

There are several possible causes:

- The alternate installation device was not correctly defined.
- The alternate installation device was not made ready.
- The alternate installation device does not contain installation media.
- The alternate installation device is not powered on.
- The alternate installation device is not connected properly.
- There is a hardware error on the alternate installation device or the attached I/O processor.

Read the danger notices in “Tape unit isolation procedures” on page 339 before continuing with this procedure.

1. Is the device that you are using for alternate installation defined as the alternate installation device?
 - **Yes:** Is the alternate installation device ready?
 - Yes:** Continue with the next step.
 - No:** Make the alternate installation device ready and retry the alternate installation. **This ends the procedure.**
 - **No:** Correct the alternate installation device information and retry the alternate installation. **This ends the procedure.**
2. Is there installation media in the alternate installation device?
 - **Yes:** Is the alternate installation device an external device?
 - Yes:** Continue with the next step.
 - No:** Go to step 5 on page 349.
 - **No:** Load the correct media and retry the alternate installation. **This ends the procedure.**
3. Is the alternate installation device powered on?
 - **Yes:** Make sure that the alternate installation device is properly connected to the I/O processor or I/O adapter card.

Is the alternate installation device properly connected?

Yes: Go to step 5.

No: Correct the problem and retry the alternate installation. **This ends the procedure.**

- **No:** Continue with the next step.
- 4. Ensure that the power cable is connected tightly to the power cable connector at the back of the alternate device. Ensure that the power cable is connected to a power outlet that has the correct voltage. Set the alternate device Power switch to the Power On position.

The Power light should go on and remain on. If a power problem is present, one of the following power failure conditions may occur:

- The Power light flashes, then remains off.
- The Power light does not go on.
- Another indication of a power problem occurs.

Does one of the above power failure conditions occur?

- **No:** The alternate device is powered on and runs its power-on self-test. Wait for the power-on self-test to complete.

Does the power-on self-test complete successfully?

No: Go to the service information for the specific alternate installation device to correct the problem. Then retry the alternate installation. **This ends the procedure.**

Yes: Retry the alternate installation. **This ends the procedure.**

- **Yes:** Perform the following:
 - a. Go to the service information for the specific alternate device to correct the power problem.
 - b. When you have corrected the power problem, retry the alternate installation. **This ends the procedure.**
- 5. Was a device error recorded in the Product Activity Log?
 - No:** Contact your next level of support. **This ends the procedure.**
 - Yes:** See Reference codes to correct the problem. **This ends the procedure.**

Tape unit self-test procedure:

This procedure is designed to allow you to quickly perform a complete set of diagnostic tests on a 6384 or 6387 tape unit.

About this task

The following procedure is designed to allow you to quickly perform a complete set of diagnostic tests on a 6384 or 6387 tape unit, without impacting your system operation. This test can also be used to verify good performance of individual tape cartridges.

Enter diagnostic mode:

1. Verify that a cartridge is not loaded in the tape unit. To unload a cartridge, press the **eject** button on the front of the tape unit. If the cartridge does not eject, refer to (Tape unit - manual removal).
2. Press and hold the **eject** button for about 6 seconds until the amber LED starts flashing slowly, then release the button. The amber (left) LED will flash, indicating that the tape unit is waiting for a cartridge to be inserted.

Running the self-test:

1. Self-testing begins when a scratch data cartridge is inserted into the tape unit. The Ready (left) LED will flash, indicating that self-testing is in progress.

Note: A cartridge must be loaded within 15 seconds, otherwise, the tape unit will automatically revert back to normal operation. If necessary, return to step 1 to reenter diagnostic mode.

2. For fastest results, we recommend using an SLR100 Test Tape (P/N 35L0967) which was originally provided with your iSeries server.

Attention: Use a blank cartridge that does not contain customer data. During this self-test, the cartridge will be rewritten with a test pattern and any customer data will be destroyed.

Note: Use a cartridge that is not write-protected. If a write-protected cartridge is inserted while the tape unit is in diagnostic mode, the cartridge will be ejected, see Incorrect cartridge below.

Self-testing will only be performed using a write-compatible cartridge type, and with a cartridge that is not damaged, see Incorrect cartridge below.

If a cleaning cartridge is inserted while the tape unit is in diagnostic mode, drive cleaning will occur and the tape unit will then return to normal operating mode. Return to step 1 on page 349 to reenter diagnostic mode.

3. **At any time, self-testing can be stopped by pressing the eject button.** After the current operation is completed, the cartridge will be ejected and tape unit will return to normal operating mode.
4. The Ready (left) LED will continue to flash during the following:
 - The **cartridge load sequence** has a approximate duration of 30 seconds. The center LED indicates tape movement.
 - The **hardware test** has an approximate duration of 2 and 1/2 minutes. During that time, a static test is performed on tape unit electrical components. No tape motion occurs during this step.
 - The **cartridge load/unload test** has an approximate duration of 1 and 1/2 minutes. During that time, the Ready LED will continue to flash while a dynamic test is performed on tape unit mechanical components. Two cartridge load cycles are included.
 - Duration of the **write/read test** will vary, depending on what type of cartridge is loaded into the tape unit. When an SLR100 Test Tape is used, typical duration will be 5 minutes. Use of other cartridge types can increase the write/read test duration to 30-40 minutes. During this test, the Ready LED will continue to flash. The center LED indicates tape movement.

Interpreting the results:

About this task

Test Passed: When self-testing has completed successfully, and no problems are detected, the cartridge is unloaded from the tape unit and all LEDs are off. Proper function of both the tape unit and tape cartridge have now been verified.

Note: A solid amber light indicates that self-testing has completed successfully, but the tape unit requires cleaning. Clean the tape unit by inserting an Dry Process Cleaning Cartridge (P/N 35L0844).

Test Failed: The cartridge will remain loaded inside the tape unit, and the amber LED will flash when a problem is detected with either the tape unit or cartridge.

Note: To isolate failure to either tape unit or cartridge, return to step 1 on page 349 and repeat this self-test using a different scratch cartridge.

Incorrect cartridge: When the center (green) and right (amber) LEDs flash and a cartridge is unloaded, the tape unit has determined that an incorrect tape cartridge has been inserted, and self-testing cannot be performed. Verify that your tape cartridge is **not** one of the following:

- Write-protected
- Damaged
- Unsupported media type
- Media which is not write-compatible with tape unit.

Press the **eject** button, to end self-test and return the tape unit to normal operating mode. Then return to step 1 on page 349 and run the self-test using another cartridge, or one which is not write-protected. **This ends the procedure.**

Tape device ready conditions:

All the conditions that are listed for the device, must be correct for the device to be ready.

If the device is not ready, use the Action column or other instructions, and go to the service information for the specific tape device.

If the system has logical partitions, perform this procedure from the logical partition that reported the problem (see Determining if the system has logical partitions).

Table 48. Tape device ready conditions

Storage device	Ready description	Action
3480 or 3490	<ul style="list-style-type: none"> Power switch is set to the On position. Power light is on. DC Power light is on. Control unit On-line switch is set to the On-line position. Control unit Normal/Test switch is set to the Normal position. Control unit channel Enable/Disable switch is set to the Enable position. Tape unit On-line/Off-line switch is set to the On-line position. Tape is loaded. Tape unit displays Ready U or Ready F. 	See the <i>3480 Magnetic Tape Subsystem Operator's Guide</i> , SA32-0066, or <i>3490 Magnetic Tape Subsystem Operator's Guide</i> , SA32-0124, for instructions on making the tape unit ready.
7208	<ul style="list-style-type: none"> Power switch is on (pressed). Power light is on. Data cartridge is inserted. Ready light is on. System external signal cable is connected to the type 2621 I/O processor and to the 7208 tape drive. <p>Note: The SCSI I/O bus terminating plug for the system external signal cable is connected internally in the 7208 tape drive. The 7208 tape drive does not need, and must not have, an external terminating plug.</p>	See the <i>7208 8 mm Tape Drive Operator's Manual</i> for instructions on making the tape drive ready. If you cannot make the 7208 Model 012 tape drive ready, go to "TUPIP02" on page 340.
9348	<ul style="list-style-type: none"> Power switch is set to the On position. Power light is on. Tape is loaded. Status display shows 00 A002. On-line light is on. 	See the <i>9348 Customer Information manual</i> , SA21-9567, for instructions on making the tape unit ready. If you cannot make the tape unit ready, go to the "Analyzing Problems" section of <i>9348 Tape Unit Service Information</i> , SY31-0697.

Twinaxial workstation I/O processor isolation procedure

Use the procedure below to isolate a failure which has been detected by the twinaxial workstation I/O processor. If you are using a personal computer, an emulation program must be installed and working.

Please read and observe all safety procedures before servicing the system and while performing the procedure below.

Attention: Unless instructed otherwise, always power off the system or expansion tower where the FRU is located (see Powering on and powering off) before removing, exchanging, or installing a field-replaceable unit (FRU).

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

Attention: When instructed, remove and connect cables carefully. You may damage the connectors if you use too much force.

TWSIP01:

The workstation IOP detected an error.

About this task

Please read the danger notices in “Twinaxial workstation I/O processor isolation procedure” on page 352 before performing this procedure.

One of the following occurred:

- All of the workstations on one port are not working.
 - All of the workstations on the system are not working.
 - One of the workstations on the system is not working.
 - The reference code table instructed you to perform this procedure.
 - The Remote Operations Console is not working.
1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions before continuing with this procedure.
 2. Are you using a workstation adapter console?

Note: A personal computer (used as a console) that is attached to the system by using a console cable feature is known as a workstation adapter console. The cable (part number 46G0450, 46G0479, or 44H7504) connects the system port on the personal computer to a communications I/O adapter on the system.

No: Continue with the next step.

Yes: Go to “WSAIP01” on page 359. **This ends the procedure.**

3. Is the device you are attempting to repair a personal computer (PC)?

No: Continue with the next step.

Yes: PC emulation programs operate and report system-to-PC communications problems differently. See the PC emulation information for details on error identification. Then, continue with the next step.

4. Perform the following steps:
 - a. Verify that all the devices you are attempting to repair, the primary console, and any alternative consoles are powered on.
 - b. Verify that the all the devices you are attempting to repair, the primary console, and any alternative consoles have an available status. For more information on displaying the device status, see Hardware Service Manager.
 - c. Verify that the workstation addresses of all workstations on the failing port are correct. Each workstation on the port must have a separate address, from 0 through 6. See the workstation service information for details on how to check addresses.
 - d. Verify that the last workstation on the failing port is terminated. All other workstations on that port must not be terminated.
 - e. Ensure that the cables that are attached to the device or devices are tight and are not visibly damaged.
 - f. If there were any cable changes, check them carefully.
 - g. If all of the workstations on the system are not working, disconnect them by terminating at the console.
 - h. Verify the device operation (see the device information for instructions).
 - i. The cursor position can assist in problem analysis.
 - If the cursor is in the upper right corner, it indicates a communication problem between the workstation IOP and the device. Continue with the next step.
 - If the cursor is in the upper left corner, it indicates a communication problem between the workstation IOP and the operating system. Perform the following steps:
 - 1) Verify that all current PTFs are loaded.

- 2) Ask your next level of support for assistance. **This ends the procedure.**
5. Is the system powered off?
- Yes:** Continue with the next step.
- No:** Go to step 8.
6. Perform the following:
- Power on the system in **Manual** mode. See IPL type, mode, and speed options for details.
 - Wait for a display to appear on the console or a reference code to appear on the control panel.
Does a display appear on the console?
- No:** Continue with the next step.
 - Yes:** If you disconnected any devices after the console in step 4 on page 353, perform the following:
 - Power off the system.
 - Reconnect one device.

Note: Ensure that you terminate the device you just reconnected and remove the termination from the device previously terminated.
- Power on the system.
 - If a reference code appears on the control panel, go to step 9.
 - If no reference code appears, repeat steps a through d of this step until you have checked all devices disconnected previously.
 - Continue to perform the initial program load (IPL). **This ends the procedure.**
7. Does the same reference code that sent you to this procedure appear on the control panel?
- Yes:** Continue with the next step.
- No:** Go to “Start of call procedure” on page 2 for this new problem. **This ends the procedure.**
8. Perform the following to make DST available:
- Ensure that **Manual** mode on the control panel is selected.
 - Select function 21 **Make DST Available**.
 - Check the console and any alternative consoles for a display.
Does a display appear on any of the console displays?
- No:** Continue with the next step.
 - Yes:** If you disconnected any devices after the console in step 4 on page 353, perform the following:
 - Power off the system.
 - Reconnect one device.

Note: Ensure that you terminate the device you just reconnected and remove the termination from the previously terminated device.
- Power on the system.
 - If a reference code appears on the control panel or on the HMC, go to step 9.
 - If no reference code, repeat steps a through d of this step until you have checked all devices disconnected previously.
 - Continue to perform the initial program load (IPL). **This ends the procedure.**
9. Ensure that the following conditions are met:
- The workstation addresses of all workstations on the failing port must be correct.
Each workstation on the port must have a separate address, from 0 through 6. See the workstation service information if you need help with checking addresses.
Did you find a problem with any of the above conditions?

Yes: Continue with the next step.

No: Go to step 11.

10. Perform the following:

- a. Correct the problem.
- b. Select function 21 **Make DST Available**.
- c. Check the console and any alternative consoles for a display.

Does a display appear on any of the consoles?

- **Yes:** Continue to perform the IPL. **This ends the procedure.**
- **No:** Does the same reference code appear on the control panel?

Yes: Continue with the next step.

No: Go to "Start of call procedure" on page 2 for this new problem. **This ends the procedure.**

11. Is the reference code one of the following: 0001, 0003, 0004, 0005, 0006, 0101, 0103, 0104, 0105, 0106, 5004, 5082, B000, D010, or D023?

No: Continue with the next step.

Yes: Go to step 15 on page 356.

12. Does the system have an alternative console on a second workstation IOP?

Yes: Continue with the next step.

No: Go to step 14.

13. There is either a Licensed Internal Code problem, or there are two device failures on the workstation IOPs, consoles, or cables. The console and any alternative consoles are the most probable causes for this failure.

- See the service information for the failing display to attempt to correct the problem. If a display is connected to the system by a link protocol converter, use the link protocol converter information to attempt to correct the problem. The link protocol converter may be the failing item.
- If you have another working display, you can exchange the console and alternative consoles and perform an IPL to attempt to correct the problem.
- Exchange the following parts one at a time until you determine the failing item:
 - a. Console
 - b. Alternative console
 - c. Cables
 - d. Workstation IOA for the console
 - e. The multi-adapter bridge. See symbolic FRU "MA_BRDG" on page 705. **This ends the procedure.**

14. The console, cables, or the workstation IOP card is the most probable causes for this failure. If the console is connected to the system by a link protocol converter, the link protocol converter is possibly the failing item. Use one or more of the following options to correct the problem:

- a. See the service information for the failing displays for more information. If a display is connected to the system by a link protocol converter, see the link protocol converter information to attempt to correct the problem.
- b. If you have another working display, you can exchange the console and perform an IPL to attempt to correct the problem.
- c. Exchange the following parts one at a time until you determine the failing item:
 - 1) Console
 - 2) Workstation IOA
 - 3) The multi-adapter bridge. See symbolic FRU "MA_BRDG" on page 705.
 - 4) Twinaxial attachment (cable) **This ends the procedure.**

15. To continue problem analysis, use a port tester, part 93X2040 or 59X4262, which you may have with your tools or the customer may have one. The port tester has either two or three lights.

Is a port tester available?

- **Yes:** Continue with the next step.
- **No:** Check or exchange the cables from the system to the failing display. Did this correct the problem?

Yes: You corrected the problem. **This ends the procedure.**

No: Go to step 12 on page 355.

16. To use the port tester to isolate the problem, perform the following:

- Verify that the port tester is operating correctly by doing a self-test. A self-test can be made at any time, even when the port tester is attached to a port or cable. Perform the following steps to do a self-test:
 - a. Move the selector switch to the center (0) position.
 - b. Push and hold the test button until all lights go on. The yellow lights should go on immediately, and the green light should go on approximately 5 seconds later. The port tester is ready for use if all lights go on.
- Leave the system power on.

17. Find the input cable to the failing console or port.

Is the failing console or the failing port attached to a protocol converter?

- **No:** Perform the following:
 - a. Disconnect the input cable from the failing console.
 - b. Connect the port tester to the input cable.
 - c. Continue with the next step.
- **Yes:** Perform the following:
 - a. Disconnect the cable that comes from the system at the protocol converter.
 - b. Connect the port tester to the cable.
 - c. Continue with the next step.

18. Perform the following:

- a. Set the selector switch on the port tester to the left (1) position for a twinaxial connection. Set the switch to the right (2) position for a twisted pair connection.
- b. Press and hold the test switch on the port tester for 15 seconds and observe the lights.
- c. Choose from the following options:

- If the port tester has **three** lights, do the following:
 - If only the top (green) light is on, go to step 27 on page 358.
 - If both the top (green) and center (yellow) lights are on, go to step 20 on page 357.

Note: The center (yellow) light is always on for twisted pair cable and may be on for fiber optical cable.

- If only the bottom (yellow) light is on, go to step 21 on page 357.
- If all lights are off, go to step 22 on page 357.
- If all lights are on, go to step 19.
- If the port tester has **two** lights, do the following:
 - If only the top (green) light is on, go to step 27 on page 358.
 - If only the bottom (yellow) light is on, go to step 21 on page 357.
 - If both lights are off, go to step 22 on page 357.
 - If both lights are on, continue with the next step.

19. The tester is in the self-test mode. Check the position of the selector switch.

- If the selector switch is not in the correct position, go to step 18 on page 356.
 - If the selector switch is already in the correct position, the port tester is not working correctly. Exchange the port tester, and go to step 16 on page 356.
20. The cable you are testing has an open shield.
- Note:** The open shield can be checked only on the cable from the twinaxial workstation attachment to the device or from device to device. Only one section of cable can be checked at a time. See the SA41-3136, Port Tester Use information.
- This ends the procedure.**
21. The cable network is bad. The wires in the cable between the console and the twinaxial workstation attachment are reversed. Go to step 26.
22. Perform the following:
- a. Find the twinaxial workstation attachment to which the failing console is attached.
 - b. Disconnect the cable from port 0 on that twinaxial workstation attachment.
 - c. Connect the port tester to port 0 on the attachment.
 - d. Set the selector switch on the port tester to the left (1) position.
23. Perform the following:
- a. Press and hold the test switch on the port tester for 15 seconds and observe the lights.
 - b. If the port tester has **three** lights, do the following:
 - If both the top (green) and center (yellow) lights are on, continue with step 24.

Note: The center (yellow) light is always on for twisted pair cable and may be on for fiber optical cable.

 - If only the bottom (yellow) light is on, continue with step 24.
 - If all lights are off, continue with step 24.
 - If only the top (green) light is on, go to step 26.
 - If all lights are on, go to step 25.
 - c. If the port tester has **two** lights, do the following:
 - If only the top (green) light is on, go to step 26.
 - If only the bottom (yellow) light is on, continue with step 24.
 - If both lights are off, continue with step 24.
 - If both lights are on, go to step 25.
24. The test indicated that there was no signal from the system. Reconnect the cable you disconnected and perform the following:
- a. Exchange the following parts:
 - 1) Twinaxial workstation IOA card
 - 2) The multi-adapter bridge. See symbolic FRU "MA_BRDG" on page 705.
 - b. Power on the system to perform an IPL. **This ends the procedure.**
25. The tester is in the self-test mode. Check the position of the selector switch:
- If the selector switch is not in the left (1) position, set the switch to the left (1) position. Then go to step 23.
 - If the selector switch is already in the left (1) position, the port tester is not working correctly. Exchange the port tester and go to step 22.
26. The cable to the workstation is the failing item. Cable maintenance is a customer responsibility. The cable must be repaired or exchanged. For information on correcting cable problems, refer to the Twinaxial cables information in the Planning topic. For other cabling instructions, see the Plan for cables topic. Then, power on the system to perform an IPL. **This ends the procedure.**

27. The port tester detects most problems, but it does not always detect an intermittent problem or some cable impedance problems. The tester may indicate a good condition, although there is a problem with the workstation IOP card or cables.
- If the failing display is connected to a link protocol converter, the link protocol converter is the failing item. See the link protocol converter service information to correct the problem.
 - Exchange the following parts:
 - Console
 - Twinaxial workstation IOA
 - The multi-adapter bridge. See symbolic FRU "MA_BRDG" on page 705.
 - Cables
 - If you have another working display, you can exchange the console and perform an IPL to attempt to correct the problem. See the service information for the failing display for more information.
 - If exchanging the failing items did not correct the problem and the reference code was a 5002, 5082, or 50FF, there may be a Licensed Internal Code problem. Go to "LICIP03" on page 207.
 - The problem may be caused by devices that are attached after the console on port 0. **This ends the procedure.**

Workstation adapter isolation procedure

Contains the procedure necessary to isolate a failure that is detected by the workstation adapter, and is used when no display is available with which to perform on-line problem analysis.

The workstation adapter detected a problem while communicating with the workstation that is used as the primary console.

Note: If you are using a PC, you must install an emulation program.

Please read and observe all safety procedures before servicing the system and while performing the procedure below.

Attention: Unless instructed otherwise, always power off the system or expansion tower where the FRU is located (see Powering on and powering off) before removing, exchanging, or installing a field-replaceable unit (FRU).

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

WSAIP01:

Use this procedure if your console has a keyboard error with a "K" on the display.

About this task

Note: If the console has a keyboard error, there may be a "K" on the display. See the workstation service information for more information.

Perform the following procedure from the logical partition that reported the problem:

1. Select the icon on the workstation to make it the console (you may have already done this). You must *save* the console selection.
2. Access Dedicated Service Tools (DST) by performing the following:
 - a. Select **Manual** mode on the control panel.
 - b. Use the selection switch on the control panel to display function 21, **Make DST Available**, and press **Enter** on the control panel.
 - c. Wait for a display to appear on the console or for a reference code to appear on the control panel.

Does a display appear on the console?

No: Continue with the next step.

Yes: The problem is corrected. **This ends the procedure.**

3. Isolate the problem to one server and one workstation (console) by performing the following:
 - a. Disconnect the power cable from the workstation.
 - b. Eliminate all workstations, cables, and connector boxes from the network except for one server, one console, two connector boxes, and one cable.
 - c. Ensure that the cables that are connected to the console, the keyboard, and the server are connected correctly and are not damaged.
4. Perform the following:
 - a. Ensure that the server console is terminated correctly.
 - b. Set the Power switch on the console to the **On** position.
 - c. Select the **SNA*PS** icon on the console.
 - d. See the workstation information for more information.
5. Access DST by performing the following:
 - a. Select **Manual** mode on the control panel.
 - b. Use the selection switch on the control panel to display function 21, **Make DST Available**, and press **Enter** on the control panel.
 - c. Wait for a display to appear on the console or for a reference code to appear on the control panel.

Does a display appear on the console?

No: Continue with the next step.

Yes: The problem is in a cable, connector box, or device you disconnected in step 3. **This ends the procedure.**

6. Does the reference code A600 5005 appear on the control panel?

Yes: Continue with the next step.

No: Return to "Start of call procedure" on page 2. **This ends the procedure.**
7. Do you have another workstation, cable, and two connector boxes you can exchange with the workstation connected to the server?
 - **Yes:** Continue with the next step.
 - **No:** One of the following is causing the problem:

Note: The items at the top of the list have a higher probability of fixing the problem than the items at the bottom of the list.

- Workstation adapter Licensed Internal Code
- Workstation adapter configuration
- Workstation
- Cable
- Connector box
- Workstation IOA
- Workstation IOP

If you still have not corrected the problem, ask your next level of support for assistance. **This ends the procedure.**

8. Repeat steps 3 through 7 of this procedure, using a different workstation, cable, and connector boxes. Do you still have a problem?

Yes: Continue with the next step.

No: The problem is in the cable, connector boxes, or workstation you disconnected. **This ends the procedure.**

9. One of the following is causing the problem:

Note: The items at the top of the list have a higher probability of fixing the problem than the items at the bottom of the list.

- Workstation adapter Licensed Internal Code
- Workstation adapter configuration
- Workstation IOA
- Communications IOP

To bring up a workstation other than the console, perform the following:

- a. Connect another workstation into this network.
- b. Select **Normal** mode on the control panel.
- c. Perform an IPL (see IPL information in the Service functions).

If the sign-on display appears, the following parts are good:

- Communications IOP
- Workstation IOA

Note: If a printer connected to this assembly is not working correctly, it may look like the display is bad. Perform a self-test on the printer to ensure that it prints correctly (see the printer service information).

If you still have not corrected the problem, ask your next level of support for assistance. **This ends the procedure.**

Workstation adapter console isolation procedure

Contains the procedure necessary to isolate a failure that is detected by the workstation adapter console.

About this task

Use this procedure when no display is available with which to perform online problem analysis.

Note: If you are using a PC, you must install an emulation program.

Read all safety procedures before servicing the system. Observe all safety procedures when performing a procedure. Unless instructed otherwise, always power off the system or expansion tower where the FRU is located, see Powering on and powering off before removing, exchanging, or installing a field-replaceable unit (FRU).

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

Read and understand the following service procedures before using this section:

- Powering on and powering off
- Determining a primary or alternative console in Service functions.
- Card removal and replacement in Removing and replacing parts
- Finding part locations

Note: If the console has a keyboard error, there may be a K on the display. See the workstation service information for more information.

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions.
2. Ensure that your workstation meets the following conditions:
 - The workstation that you are using for the console is powered on.
 - The emulation program is installed and is working.
 - The input/output adapter (IOA) is installed and the workstation console cable is attached.

Notes:

- a. Card information: Hardware that is associated with 6A59 feature is the type 2745 card.
- b. Cable information: The cable attaches directly to the IOA.

Did you find a problem with any of the conditions listed above?

No: Continue with the next step.

Yes: Correct the problem. Then, perform an IPL of the system. **This ends the procedure.**

3. Perform the following to make dedicated service tool (DST) available:

- a. If there is an alternative console, ensure that it is powered on.
- b. Ensure that **Manual** mode on the control panel is selected. See Service functions.
- c. Select function 21, **Make DST Available** on the control panel, and press **Enter**.

Does a display appear on either the console or any alternative console?

No: Continue with the next step.

Yes: Complete the IPL. When the operating system display appears, use the Work with Problem command (WRKPRB) or Analyze Problem command (ANZPRB) to analyze and correct or report any console problems. **This ends the procedure.**

4. Do you have SRC A600 5001, A600 5004, A600 5007, or B075 xxxx (where xxxx is any value)?

- **No:** Continue with the next step.
- **Yes:** Perform the following:
 - a. Disconnect any cables that are attached to the IOA.
 - b. Install the wrap plug on the IOA. The 2745 wrap plug label is QQ.
 - c. Perform an IPL in Manual mode.

5. Does SRC 6A59 5007 occur?

- **No:** Continue with the next step.
- **Yes:** One of the following is causing the problem:
 - Workstation emulation program
 - Workstation
 - Workstation console cable

This ends the procedure.

6. Did SRC A600 5001, A600 5004, or 6A59 5008 occur?

No: This is a new problem. Use the new reference code to correct the problem, see Reference codes, or ask your next level of support for assistance. **This ends the procedure.**

Yes: The Type 2745 workstation adapter is the failing item. **This ends the procedure.**

Collect serviceable events in IVM

Use this procedure when using Integrated Virtualization Manager (IVM) to check for serviceable events on your system.

About this task

1. Did you receive a reference code on the IVM console?

Note: For details on viewing reference codes using IVM, refer to Using the Integrated Virtualization Manager.

Yes: Record the reference code, and return to the procedure that sent you here to further isolate the problem.

No: Continue with the next step to check for serviceable events.

2. In the IVM navigation bar, under Service Management, select **Manage Serviceable Events**.

3. In the Serviceable Event Selection Criteria field, select the criteria for the serviceable events that you want to view and click on **Apply**. The serviceable events appear in a table on your monitor. The table contains a list that shows all serviceable events matching your selection criteria.
4. Select one of the following options to perform an action on your serviceable events.
 - To view properties, continue with step 5.
 - To view associated FRUs, continue with step 6.
 - To close a serviceable event, continue with step 7.
 - To view additional details for a serviceable event, continue with step 8.
5. To view properties for a serviceable event, select the serviceable event that you want to view properties for and select **Properties**. The Serviceable Event Comments window opens.
6. To view associated field replaceable units (FRUs), select the serviceable event that you want to view FRUs for, and select **View associated FRUs**. The serviceable event window opens.
7. To close a serviceable event, select one or more of the serviceable events that you want to close, and select **Close Events**. The Serviceable Event Comments window opens.
 - a. Enter comments if necessary, and click **Close Events**.
 - b. On the Close Serviceable Event dialog box, click **Yes** to close the serviceable event.
8. To view additional details for a serviceable event, select the serviceable event that you want to view additional details for and select **View additional details**. The Serviceable Event Comments window opens.

This ends this procedure.

AIX fast-path problem isolation

Use this information to help you isolate a hardware problem and the server is running the AIX operating system.

About this task

In most cases, AIX diagnostics are performed through automatic error log analysis. In some cases, these procedures direct you to run online diagnostics. Standalone diagnostics should only be used if you are unable to boot AIX or are otherwise specifically directed to do so.

Notes:

1. If the server or partition has an external SCSI disk drive enclosure attached and you have not been able to find a reference code or other symptom, go to "MAP 2010: 7031-D24 or 7031-T24 START" on page 45.
2. If you are servicing an SP™ system, go to the Start of Call MAP 100 in the *SP System Service Guide*.
3. If you are servicing a clustered server, go to the Start of Call MAP 100 in the *Clustered Installation and Service Guide*.
4. If you are servicing a clustered server that has InfiniBand switch networks, go to the *Guide to Clustering systems using InfiniBand hardware*.

Note: If you already know the reference code or have another symptom other than a reference code, go directly to the "AIX fast path table" on page 366.

Use the following procedure to display or confirm a previously reported reference code including an SRN.

1. Log into the AIX operating system as the root user, or use the CE login. If you need assistance, contact the system operator.
2. Enter the **diag** command. The diag command allows you to load the diagnostic controller and display the online diagnostic menus.

3. Press **Enter**. This opens the **FUNCTION SELECTION** menu.
4. Select **Task Selection**.
5. Select **Display Previous Diagnostic Results**.
6. Select **DISPLAY DIAGNOSTIC LOG SUMMARY**. A display diagnostic log summary table is shown with a time ordered table of events from the error log.
7. Look for the most recent **S** entry in the **T** column. The most recent S entry is the one closest to the beginning of the **DISPLAY DIAGNOSTIC LOG SUMMARY** table.
8. Move your cursor over the row containing the S entry and press **Enter**.
9. Press **F7** to **Commit**.

A screen containing details from the table is displayed; look for the reference code (SRN or SRC) entry. The SRN or SRC entry is shown near the bottom of the screen.

10. Record the reference code.

The following example, which shows the details of an SRN, is similar to what you should see on your terminal when you perform the above procedure.

```

DISPLAY DIAGNOSTIC LOG                                     802004
[TOP]
-----
IDENTIFIER:          DAFE

Date/Time:           Fri Aug 27 17:57:54
Sequence Number:     952
Event type:          SRN Callout

Resource Name:       ent1
Resource Description: Gigabit Ethernet-SX Adapter (e414a816)
Location:            U8842.P1Z.23A0781-P1-T7

Diag Session:        21546
Test Mode:           No Console,Non-Advanced,Normal IPL,ELA,Option Checkout

Error Log Sequence Number: 2189
Error Log Identifier:    6363CE4F

SRN:                  25C4-601

Description:          Download Firmware Error.

Probable FRUs:
  ent1                FRU: BCM95704A41          U8842.P1Z.23A0781-P1-T7
                     Gigabit Ethernet-SX Adapter (e414a816)

-----
[BOTTOM]
Use Enter to continue.

Esc+3=Cancel      Esc+0=Exit      Enter

```

11. If any reference codes are displayed, record all information provided from the diagnostic results and go to Reference codes.
- OR
- If a *no trouble found* is displayed continue to the next step.
12. When your results are complete, press **F3** to return to the Diagnostic Operating Instructions display.
 13. Press **Ctrl + D** to log off from being either the root user or CE login user.

AIX fast path table

About this task

Locate the problem in the following table and perform the action indicated.

Symptoms	Action
Eight-Digit Error Codes	
You have an eight-digit error code.	Go to Reference codes, read the notes on the first page, and do the listed action for the eight-digit error code. Note: If the repair for this code does not involve replacing a FRU (for instance, if you run an AIX command that fixes the problem or if you change a hot-pluggable FRU), then run the Log Repair Action option on resource sysplanar0 from the Task Selection menu under online diagnostics after the problem is resolved to update the AIX error log.
SRNs	
You have an SRN.	Look up the SRN in the List of service request numbers and do the listed action. Note: Customer-provided SRNs should be verified. To verify the SRN use the Display Previous Diagnostic Results Service Aid. Choose the Display Diagnostic Log Summary when running this service aid.
An SRN is displayed when running diagnostics.	<ol style="list-style-type: none"> 1. Record the SRN and location code. 2. Look up the SRN in the List of service request numbers and do the listed action.
888 Sequence in Operator Panel Display	
An 888 sequence in the operator panel display.	Go to MAP 0070: 888 Sequence in operator panel display.
The System Stops or Hangs With a Value Displayed in the Operator Panel Display	
The system stopped with a 4-digit code that begins with a 2 (two) displayed in the operator panel display.	Record SRN 101-xxxx (where xxxx is the four digits of code displayed). The physical location code or device name displays on system units with a multiple-line operator panel display. If a physical location code or an AIX location code is displayed, record it, then look up the SRN in the List of service request numbers and do the listed action.
The system stopped with a 3-digit code operator panel display.	Record SRN 101-xxx (where xxx is the three digits of the code displayed). Look up the SRN in the List of service request numbers and do the listed action.
System Automatically Reboots	
System automatically reboots.	<ol style="list-style-type: none"> 1. Turn off the system unit power. 2. Turn on the system unit power and boot from a removable media device, disk, or LAN in service mode. 3. Run the diagnostics in problem determination mode. 4. Select the All Resources option from the Resource Selection menu to test all resources. 5. If an SRN displays, look up the SRN in the List of service request numbers and do the listed action. 6. If an SRN is not displayed, suspect a power supply or power source problem.

Symptoms	Action
System does not Reboot When Reset Button is Pushed	
System does not reboot (reset) when the reset button is pushed.	Record SRN 111-999. Look up the SRN in the List of service request numbers and do the listed action.
ASync Communication Problems	
You suspect an async communication problem.	<ol style="list-style-type: none"> 1. Run the advanced async diagnostics on the ports on which you are having problems. If an SRN is displayed, look up the SRN in the List of service request numbers and do the listed action. 2. If you suspect a problem with the async concentrator, remote async node, and so on, refer to the documentation in <i>RS/6000® eServer pSeries Adapters, Devices, and Cable Information for Multiple Bus Systems</i> on these devices and perform any tests or checks listed.
SCSI Adapter Problems	
<p>You suspect a SCSI adapter problem.</p> <p>SCSI adapter diagnostics can only be run on a SCSI adapter that was not used for booting. The POST tests any SCSI adapter before attempting to use it for booting. If the system was able to boot using a SCSI adapter, then the adapter is most likely good.</p> <p>SCSI adapters problems are also logged into the error log and are analyzed when the online SCSI diagnostics are run in problem determination mode. Problems are reported if the number of errors is above defined thresholds.</p>	<ol style="list-style-type: none"> 1. Run the online SCSI adapter diagnostic in problem determination mode. If an SRN is displayed, look up the SRN in the List of service request numbers and do the listed action. 2. Use MAP 0050: SCSI bus problems. Note: If you cannot load diagnostics (standalone or online) go to "PFW1540: Problem isolation procedures" on page 58.
SCSI Bus Problems	
You suspect a SCSI bus problem.	<ol style="list-style-type: none"> 1. Use MAP 0050: SCSI bus problems. 2. Use the SCSI Bus Service Aid to exercise and test the SCSI Bus.
Tape Drive Problems	

Symptoms	Action
You suspect a tape drive problem.	<ol style="list-style-type: none"> 1. Refer to the tape drive documentation and clean the tape drive. 2. Refer to the tape drive documentation and do any listed problem determination procedures. 3. Run the online advanced tape diagnostics in problem determination mode. If an SRN is displayed, look up the SRN in the List of service request numbers and do the listed action. 4. Use the Backup and restore service aid to exercise and test the drive and media. 5. Use MAP 0050: SCSI bus problems. 6. Use the SCSI bus service aid to exercise and test the SCSI bus. 7. Refer to the device section of <i>RS/6000 eServer pSeries Adapters, Devices, and Cable Information for Multiple Bus Systems</i> for additional information and MAP 0020: Problem determination procedure for problem determination procedures. <p>Note: Information on tape cleaning and tape-problem determination can be found in Tape unit isolation procedures.</p>
Optical Drive Problems	
You suspect an optical drive problem.	<ol style="list-style-type: none"> 1. Perform the problem determination procedures in the optical drive documentation. 2. Before servicing an optical drive ensure that it is not in use and that the power connector is correctly attached to the drive. If the load or unload operation does not function, replace the optical drive. 3. Run the online advanced optical diagnostics in problem determination mode. If an SRN is displayed, look up the SRN in the List of service request numbers and do the listed action. 4. If the problem is with a SCSI optical drive, use MAP 0050: SCSI bus problems. 5. If the problem is with a SCSI optical drive, use the SCSI bus service aid to exercise and test the SCSI bus. 6. Refer to the device section of <i>RS/6000 eServer pSeries Adapters, Devices, and Cable Information for Multiple Bus Systems</i> for additional information and MAP 0020: Problem determination procedure for problem determination procedures.
SCSI Disk Drive Problems	

Symptoms	Action
<p>You suspect a disk drive problem.</p> <p>Disk problems are logged in the error log and are analyzed when the online disk diagnostics are run in problem determination mode. Problems are reported if the number of errors is above defined thresholds.</p> <p>If the diagnostics are booted from a disk, then the diagnostics can only be run on those drives that are not part of the root volume group. However, error log analysis is run if these drives are selected. To run the disk diagnostic tests on disks that are part of the root volume group, the standalone diagnostics must be used.</p>	<ol style="list-style-type: none"> 1. Run the online advanced disk diagnostics in problem determination mode. If an SRN is displayed, look up the SRN in the List of service request numbers and do the listed action. 2. Run standalone disk diagnostics. If an SRN is displayed, look up the SRN in the List of service request numbers and do the listed action. 3. Use the certify disk service aid to verify that the disk can be read. 4. Use MAP 0050: SCSI bus problems. 5. Use the SCSI bus service aid to exercise and test the SCSI Bus. 6. Refer to the device section of <i>RS/6000 eServer pSeries Adapters, Devices, and Cable Information for Multiple Bus Systems</i> for additional information and MAP 0020: Problem determination procedure for problem determination procedures.
Identify LED does not function on the drive plugged into the SES or SAF-TE backplane.	Use the "identify a device attached to a SES device" service aid listed under SCSI and SCSI RAID Hot-Plug Manager on the suspect drive LED. If the drive LED does not blink when put into the identify state, use FFC 2D00 and SRN source code "B" and go to MAP 0210: General problem resolution.
Activity LED does not function on the drive plugged into the SES or SAF-TE backplane.	Use the certify media service aid (see certify media) on the drive in the slot containing the suspect activity LED. If the activity LED does not intermittently blink when running certify, use FFC 2D00 and SRN source code "B" and go to MAP 0210: General problem resolution.
Diskette Drive Problems	
You suspect a diskette drive problem.	<ol style="list-style-type: none"> 1. Run the diskette drive diagnostics. If an SRN is displayed, look up the SRN in the List of service request numbers and do the listed action. 2. Use the diskette media service aid to test the diskette media. 3. Use the backup/restore media service aid to exercise and test the drive and media.
Token-Ring Problems	
You suspect a token-ring adapter or network problem.	<ol style="list-style-type: none"> 1. Run the online advanced token-ring diagnostics in problem determination mode. If an SRN is displayed, look up the SRN in the List of service request numbers and do the listed action. 2. Use the ping command to exercise and test the network. 3. Refer to MAP 0020: Problem determination procedure for additional information and problem determination procedures.
Ethernet Problems	

Symptoms	Action
You suspect an Ethernet adapter or network problem.	<ol style="list-style-type: none"> 1. Run the online advanced Ethernet diagnostics in problem determination mode. If an SRN is displayed, look up the SRN in the List of service request numbers and do the listed action. 2. Use the ping command to exercise and test the network. 3. Refer to MAP 0020: Problem determination procedure. for additional information and problem determination procedures.
Display Problems	
You suspect a display problem.	<ol style="list-style-type: none"> 1. If your display is connected to a KVM switch, go to Troubleshooting the keyboard, video, and mouse (KVM) switch for the 1x8 and 2x8 console manager. If you are still having display problems after performing the KVM switch procedures, come back here and continue with step 2. 2. If you are using the Hardware Management Console, go to the Managing your server using the Hardware Management Console section. 3. If you are using a graphics display: <ol style="list-style-type: none"> a. Go to the problem determination procedures for the display. b. If you do not find a problem: <ul style="list-style-type: none"> • Replace the graphics display adapter. Refer to Removing and replacing parts. • Replace the backplane into which the graphics display adapter is plugged. Refer to Removing and replacing parts.
Keyboard or Mouse	
You suspect a keyboard or mouse problem.	<p>If your keyboard is connected to a KVM switch, go to Troubleshooting the keyboard, video, and mouse (KVM) switch for the 1x8 and 2x8 console manager. If you are still having keyboard problems after performing the KVM switch procedures, come back here and continue to the next paragraph. Run the device diagnostics. If an SRN is displayed, look up the SRN in the List of service request numbers and do the listed action.</p> <p>If you are unable to run diagnostics because the system does not respond to the keyboard, replace the keyboard or system planar.</p> <p>Note: If the problem is with the keyboard it could be caused by the mouse device. To check, unplug the mouse and then recheck the keyboard. If the keyboard works, replace the mouse.</p>
Printer and TTY Problems	

Symptoms	Action
You suspect a TTY terminal or printer problem.	<ol style="list-style-type: none"> 1. Go to problem determination procedures for the printer or terminal. 2. Check the port that the device is attached to by running diagnostics on the port. If an SRN is displayed, look up the SRN in the List of service request numbers and do the listed action. 3. Use the "Testing the Line Printer" procedure in General diagnostic information to test the connection to the printer. If a problem exists, replace the following in the order listed: <ol style="list-style-type: none"> a. Device cable b. Port to which the printer or terminal is connected.
Other Adapter Problems	
You suspect a problem on another adapter that is not listed above.	<ol style="list-style-type: none"> 1. Run the online advanced diagnostics in problem determination on the adapter you suspect. If an SRN is displayed, look up the SRN in the List of service request numbers and do the listed action. 2. Refer to MAP 0020: Problem determination procedure. for additional information and problem determination procedures.
System Messages	
A system message is displayed.	<ol style="list-style-type: none"> 1. If the message describes the cause of the problem, attempt to correct it. 2. Look for another symptom to use.
Processor and Memory Problems	
<p>You suspect a memory problem.</p> <p>Memory tests are only done during POST. Only problems that prevent the system from booting are reported during POST. All other problems are logged and analyzed when the sysplanar0 option under the advanced diagnostics selection menu is run.</p> <p>System crashes are logged in the AIX error log. The sysplanar0 option under the advanced diagnostic selection menu is run in problem determination mode to analyze the error.</p>	<ol style="list-style-type: none"> 1. Power off the system. 2. Turn on the system unit power and load the online diagnostics in service mode. 3. Run either the sysplanar0 or the Memory option under the advanced diagnostics in problem determination mode. 4. If an SRN is displayed, record the SRN and location code. 5. Look up the SRN in the List of service request numbers and do the listed action.
Degraded Performance or Installed Memory Mismatch	
Degraded performance or installed memory mismatch	<p>Degraded performance can be caused by memory problems that cause a reduction in the size of available memory. To verify that the system detected the full complement of installed memory do the following:</p> <ol style="list-style-type: none"> 1. From the task selection menu select the Display Resource Attribute. 2. From the resource selection menu select one of the listed memory resources. 3. Verify the amount of memory listed matches the amount actually installed. 4. Use the service processor (ASMI) menus to see if the memory has been removed (garded out of) the system's configuration by the system or an administrator.

Symptoms	Action
Missing Resources	
Missing resources	<p>Use the Display Configuration and Resource List or Vital Product Data (VPD) Service Aid to verify that the resource was configured.</p> <p>If an installed resource does not appear, check that it is installed correctly. If you do not find a problem, go to MAP 0020: Problem determination procedure.</p>
Missing Path on MPIO Resource	
Missing path on MPIO resource	<p>If a path is missing on an MPIO resource, shown as the letter P in front of the resource in the resource listing, go to MAP 0020: Problem determination procedure.</p>
System Hangs or Loops When Running the OS or Diagnostics	
The system hangs in the same application.	<p>Suspect the application. To check the system:</p> <ol style="list-style-type: none"> 1. Power off the system. 2. Turn on the system unit power and load the online diagnostics in service mode. 3. Select the All Resources option from the resource selection menu to test all resources. 4. If an SRN is displayed at anytime, record the SRN and location code. 5. Look up the SRN in the List of service request numbers and do the listed action.
The system hangs in various applications.	<ol style="list-style-type: none"> 1. Power off the system. 2. Turn on system unit power and load the online diagnostics in service mode. 3. Select the All Resources option from the resource selection menu to test all resources. 4. If an SRN is displayed at anytime, record the SRN and location code. 5. Look up the SRN in the List of service request numbers and do the listed action.
The system hangs when running diagnostics.	Replace the resource that is being tested.
You Cannot Find the Symptom in This Table	
All other problems.	Go to MAP 0020: Problem determination procedure.
Exchanged FRUs Did Not Fix the Problem	
A FRU or FRUs you exchanged did not fix the problem.	Go to MAP 0020: Problem determination procedure.
RAID Problems	
You suspect a problem with a RAID.	<p>A potential problem with a RAID adapter exists. Run diagnostics on the RAID adapter. Refer to the <i>RAID Adapters User's Guide and Maintenance Information</i> or the service guide for the RAID.</p> <p>If the RAID adapter is a PCI-X RAID adapter, refer to the <i>PCI-X SCSI RAID Controller Reference Guide for AIX</i>.</p>
System Date and Time Problems	

Symptoms	Action
<ul style="list-style-type: none"> The system does not retain the calendar date after the system has been booted. The system does not retain the time of day after the system has been booted. 	<ol style="list-style-type: none"> Run the sysplanar0 option under the advanced diagnostics in problem determination mode. If an SRN is reported, record the SRN and location code information. Look up the SRN in the List of service request numbers and do the listed action. Replace the TOD (NVRAM) battery. If this does not fix the problem, replace the service processor; its location is model-dependent.
SSA Problems	
You suspect an SSA problem.	A potential problem with an SSA adapter exists. Run the SSA service aid. To perform a service aid see AIX service aids and follow the instructions.
Power Indicator Light is Not On	
A drawer power indicator is not on.	Return to "Start of call procedure" on page 2.
System Power Problem	
The system does not power on.	Return to "Start of call procedure" on page 2.
The system powers on when it should not.	Return to "Start of call procedure" on page 2.

MAP 0020: Problem determination procedure

Use this MAP to get a service request number (SRN) if the customer or a previous MAP provided none.

Purpose of this MAP

Use this MAP to get a service request number (SRN) if the customer or a previous MAP provided none. If you are unable to power the system on, refer to the Power isolation procedure.

• Step 0020-1

Visually check the server for obvious problems such as unplugged power cables or external devices that are powered off.

Did you find an obvious problem?

NO Go to Step 0020-2.

YES Fix the problem, then go to MAP 0410: Repair Checkout.

• Step 0020-2

Are the AIX online diagnostics installed?

Note: If AIX is not installed on the server or partition, answer no to the above question.

NO If the operating system is running, perform its shutdown procedure. Get help if needed. Go to Step 0020-4.

YES Go to Step 0020-3.

• Step 0020-3

Note: When possible, run online diagnostics in service mode. Online diagnostics perform additional functions compared to standalone diagnostics.

Run online diagnostics in concurrent mode when the customer does not let you power-off the system unit. To run online diagnostics in service mode, go to substep 5. If the system unit is already running in the service mode and you want to run online diagnostics, proceed to the question at the bottom of this MAP step. Otherwise, continue with 1 through 4 on page 374 in the following procedure.

1. Log in with root authority or use CE login. If necessary, ask the customer for the password.

2. Enter the **diag -a** command to check for missing resources.
 - a. If you see a command line prompt, proceed to substep 3 below.
 - b. If the DIAGNOSTIC SELECTION menu is displayed, with the letter M shown next to any resource, select that resource, then press Commit (F7 key). Follow any instructions displayed. If you are prompted with a message Do you want to review the previously displayed error select **Yes** and press Enter. If an SRN displays, record it, and go to Step 0020-15. If there is no SRN, go to substep 3 below.
 - c. If MISSING RESOURCE menu is displayed, follow any instructions displayed. If you are prompted with a message Do you want to review the previously displayed error select **Yes** and press Enter. If an SRN displays, record it, and go to Step 0020-15. If there is no SRN, go to substep 3 below.
3. Enter the **diag** command.
4. Go to Step 0020-5.
5. If the operating system is running, perform its shut down procedure (get help if needed).
6. Turn off the system unit power and wait 45 seconds before proceeding.
7. Turn on the system unit power.
8. Load the online diagnostics in service mode.
9. Wait until the Diagnostic Operating Instructions display or the system appears to have stopped.

Are the Diagnostic Operating Instructions displayed?

NO Go to Step 0020-16.

YES Go to Step 0020-5.

• **Step 0020-4**

Note: If you are working on a partition, do not remove the power as directed in the following procedure. Only remove the power if you are working on a server that does not have multiple partitions.

1. If the server does not have multiple partitions, disconnect the power from the server, wait 45 seconds, then reconnect the power.
2. If the server supports slow boot (See Performing a slow boot) set the server to perform a slow boot for the next boot that is performed. If the system does not support slow boot, do a normal boot in the next step.
3. Refer to Loading the AIX online and eServer standalone diagnostics to load the eServer standalone diagnostics. Before continuing to the next step, ensure that the server power is turned on, or if you are working on a partition, the partition is started. The server or partition should be booting the eServer standalone diagnostics from a CD-ROM or a network server.
4. Wait until the Diagnostic Operating Instructions display or the server boot appears to have stopped.

Are the Diagnostic Operating Instructions displayed?

NO Go to Step 0020-16.

YES Go to Step 0020-5.

• **Step 0020-5**

Are the Diagnostic Operating Instructions displayed (screen number 801001) with no obvious problem (for example, blurred or distorted)?

NO For display problems, go to Step 0020-12.

YES To continue with diagnostics, go to Step 0020-6.

• **Step 0020-6**

Press the Enter key.

Is the FUNCTION SELECTION menu displayed (screen number 801002)?

NO Go to Step 0020-13.

YES Go to Step 0020-7.

• **Step 0020-7**

1. Select the **ADVANCED DIAGNOSTICS ROUTINES** option.

Notes:

- a. If the terminal type is not defined, do so now. You cannot proceed until this is complete.
 - b. If you have SRNs from a Previous Diagnostics Results screen, process these Previous Diagnostics Results SRNs prior to processing any SRNs you may have received from an SRN reporting screen.
2. If the DIAGNOSTIC MODE SELECTION menu (screen number 801003) displays, select the **PROBLEM DETERMINATION** option.
 3. Find your system response in the following table. Follow the instructions in the Action column.

System Response	Action
Previous Diagnostic Results. Do you want to review the previously displayed error?	<p>You have a pending item in the error log for which there is no corresponding Log Repair Action. To see this error, select YES at the prompt.</p> <p>Information from the error log is displayed in order of last event first. Record the error code, the FRU names and the location code of the FRUs.</p> <p>Go to Step 0020-15.</p>
The RESOURCE SELECTION menu or the ADVANCED DIAGNOSTIC SELECTION menu is displayed (screen number 801006).	<p>Go to Step 0020-8.</p>
The system halted while testing a resource.	<p>Record SRN 110-xxxx, where xxxx is the first four digits of the menu number displayed in the upper-right corner of the diagnostic menu. Go to Step 0020-15.</p>
The MISSING RESOURCE menu is displayed or the letter M is displayed alongside a resource in the resource list.	<p>If the MISSING RESOURCE menu is displayed, follow the displayed instructions until either the ADVANCED DIAGNOSTIC SELECTION menu or an SRN is displayed. If an M is displayed in front of a resource (indicating that it is missing) select that resource then choose the Commit (F7 key).</p> <p>Notes:</p> <ol style="list-style-type: none">1. Run any supplemental media that may have been supplied with the adapter or device, and then return to substep 1 of Step 0020-7.2. If the SCSI enclosure services device appears on the missing resource list along with the other resources, select it first.3. ISA adapters cannot be detected by the system. The ISA adapter configuration service aid in standalone diagnostics allows the identification and configuration of ISA adapters. <p>If the ADVANCED DIAGNOSTIC SELECTION menu is displayed, go to Step 0020-11.</p> <p>If an 8-digit error code is displayed, go to Reference codes.</p> <p>If an SRN is displayed, record it, and go to Step 0020-15.</p>
The message The system will now continue the boot process is displayed continuously on the system unit's console.	<p>Go to Step 0020-4.</p>

System Response	Action
The message Processing supplemental diagnostic diskette media is displayed continuously on the system unit's console.	Call your service support structure.
The diagnostics begin testing a resource. Note: If the problem determination option was selected from the DIAGNOSTIC MODE SELECTION menu, and if a recent error has been logged in the error log, the diagnostics automatically begin testing the resource.	Follow the displayed instructions. If the No Trouble Found screen is displayed, press Enter. If another resource is tested, repeat this step. If the ADVANCED DIAGNOSTIC SELECTION menu is displayed, go to Step 0020-11. If an SRN is displayed, record it, and go to Step 0020-15. If an 8-digit error code is displayed, go to Reference codes.
The system did not respond to selecting the advanced diagnostics option.	Go to Step 0020-13.
A system unit with a beeper did not beep while booting.	Record SRN 111-947 and then go to Step 0020-15
The system unit emits a continuous sound from the beeper.	Record SRN 111-947 and then go to Step 0020-15.
An SRN or an eight-digit error code is displayed.	Record the error code, the FRU names, and the location code for the FRUs. If a SRN is displayed, go to Step 0020-15. If an 8-digit error code is displayed, go to Reference codes.
The system stopped with a 3-digit or 4-digit code displayed in the operator panel display.	Record SRN 101-xxx (where xxx is the rightmost three digits of the displayed code). Go to Step 0020-15.
An 888 message is displayed in the operator panel display. Note: The 888 may or may not be flashing.	Go to Isolation MAP 0070: 888 Sequence in operator panel display.

• Step 0020-8

On the DIAGNOSTIC SELECTION or ADVANCED DIAGNOSTIC SELECTION menu, look through the list of resources to make sure that all adapters and SCSI devices are listed including any new resources.

Notes:

- Resources attached to serial and parallel ports may not appear in the resource list.
- If running diagnostics in a partition within a partitioned system, resources assigned to other partitions will not be displayed on the resource list.

Did you find the all the adapters or devices on the list?

NO Go to Step 0020-9.

YES Go to Step 0020-11.

• Step 0020-9

Is the new device or adapter an exact replacement for a previous one installed at same location?

NO Go to Step 0020-10.

YES The replacement device or adapter may be defective. If possible, try installing it in an alternate location if one is available; if it works in that location, then suspect that the location where it

failed to appear has a defective slot; schedule time to replace the hardware that supports that slot. If it does not work in alternate location, suspect a bad replacement adapter or device. If you are still unable to detect the device or adapter, contact your service support structure.

- **Step 0020-10**

Is the operating system software to support this new adapter or device installed?

NO Load the operating system software.

YES The replacement device or adapter may be defective. If possible, try installing it in an alternate location if one is available; if it works in that location, then suspect that the location where it failed to appear has a defective slot; schedule time to replace the hardware that supports that slot. If it does not work in alternate location, suspect a bad replacement adapter or device. If you are still unable to detect the device or adapter, contact your service support structure.

- **Step 0020-11**

Select and run the diagnostic test problem determination or system verification on one of the following:

- The resources with which the customer is having problems. If the resource is not shown on the DIAGNOSTIC SELECTION menu, then run diagnostics on its parent (the adapter or controller to which the resource is attached).
- The resources you suspect are causing a problem.
- All resources.

Note: When choosing **All Resources**, interactive tests are not done. If no problem is found running **All Resources** you should choose each of the individual resources on the selection menu to run diagnostics tests on to do the interactive tests

Find the response in the following table or follow the directions on the test results screen.

Diagnostic Response	Action
An SRN or an eight-digit error code is displayed on the screen.	Record the error code, the FRU names, and the location code for the FRUs. If an SRN is displayed, go to Step 0020-15. If an 8-digit error code is displayed, go to the information center, and perform a search on the error code to obtain the name and location of the failing FRU. Perform the listed action.
The TESTING COMPLETE menu and the No trouble was found message are displayed, and you have not tested all of the resources.	Press Enter and continue testing other resources.
The TESTING COMPLETE menu and the No trouble was found message are displayed, and you have tested all of the resources.	Go to Step 0020-14. Note: If you have not run the sysplanar test, do so before going to Step 0020-14.
The system halted while testing a resource.	Record SRN 110-xxxx, where xxxx is the first three or four digits of the menu number displayed in the upper-right corner of the diagnostic menu screen. Go to Step 0020-15.
When running the Online Diagnostics, an installed device does not appear in the test list.	Ensure that the diagnostic support for the device was installed. The display configuration service aid can be used to determine whether diagnostic support is installed for the device. Record SRN 110-101. Go to Step 0020-15. Note: Supplemental diskettes may be required if service aids are run from standalone diagnostics.

Diagnostic Response	Action
The IBM ARTIC960 Quad T1/E1 adapter diagnostics display a message indicating that the interface board (PMC) is either not installed or is malfunctioning.	<p>Install a PMC board if not already installed.</p> <p>When running online diagnostics on any of the IBM ARTIC960 family of adapters and the message indicates that the PMC (daughter board) is not installed, but it is installed, do the following:</p> <ul style="list-style-type: none"> • Reseat the PMC board, then run diagnostics. • If the response is the same, replace the PMC and then go to MAP 0410: Repair Checkout.
The symptom was not found in the table.	Go back to the Start of call procedure.

• **Step 0020-12**

The following step analyzes a console display problem.

Find your type of console display in the following table. Follow the instructions given in the Action column.

Type of Console Display	Action
TTY-type terminal	<p>Be sure the TTY terminal attributes are set correctly. See "Running the Diagnostic Programs from a TTY Terminal" in Using Standalone and Online Diagnostics.</p> <p>If you did not find a problem with the attributes, go to the documentation for this type of TTY terminal, and continue problem determination. If you do not find the problem, record SRN 111-259, then go the Step 0020-15.</p>
Graphics display	Go to the documentation for this type of graphics display, and continue problem determination. If you do not find the problem, record SRN 111-82c, then go to Step 0020-15.
HMC (Hardware Management Console)	Go to "HMC isolation procedures" on page 597. If HMC tests find no problem, there may be a problem with the communication between the HMC and the managed system. If the HMC communicates with the managed system through a network interface, verify whether the network interface is functional. If the HMC communicates with the managed system through the HMC interface, check the cable between the HMC and the managed system. If it is not causing the problem, suspect a configuration problem of the HMC communications setup.

• **Step 0020-13**

There is a problem with the keyboard.

Find the type of keyboard you are using in the following table. Follow the instructions given in the Action column.

Keyboard Type	Action
Type 101 keyboard (U.S.). Identify by the size of the Enter key. The Enter key is in only one horizontal row of keys.	Record SRN 111-736, then go to Step 0020-15.
Type 102 keyboard (W.T.). Identify by the size of the Enter key. The Enter key extends into two horizontal rows.	Record SRN 111-922; then go to Step 0020-15.
Kanji-type keyboard. (Identify by the Japanese characters.)	Record SRN 111-923; then go to Step 0020-15.
TTY terminal keyboard	Go to the documentation for this type of TTY terminal and continue problem determination.

Keyboard Type	Action
HMC (Hardware Management Console)	Go to "HMC isolation procedures" on page 597. If HMC tests find no problem, there may be a problem with the communication between the HMC and the managed system. If the HMC communicates with the managed system through a network interface, verify whether the network interface is functional. If the HMC communicates with the managed system through the HMC interface, check the cable between the HMC and the managed system. If it is not causing the problem, suspect a configuration problem of the HMC communications setup.

- **Step 0020-14**

The diagnostics did not detect a problem.

If the problem is related to either the system unit or the I/O expansion box, refer to the service documentation for that unit.

If the problem is related to an external resource, use the problem determination procedures, if available, for that resource.

If a problem occurs when running online diagnostics but not when running the stand-alone diagnostics, suspect a software problem.

Check for the presence of supplemental diagnostic material, such as diskettes or documentation.

This is possibly a problem with software or intermittent hardware. If you think that you have an intermittent hardware problem, go to MAP 0040: Intermittent problem isolation.

- **Step 0020-15**

Take the following actions:

1. Handle multiple SRNs and error codes in the following order:

- 8-Digit Error Codes.
- SRNs with a source code other than F or G.
- SRNs with a source code of F. Run online diagnostics in advanced and problem determination mode to obtain maximum isolation.
- SRNs with a source code of G.

Note: The priority for multiple SRNs with a source of G is determined by the time stamp of the failure. Follow the action for the SRN with the earliest time stamp first.

- Device SRNs and error codes (5-digit SRNs).

If a group has multiple SRNs, it does not matter which SRN is handled first.

2. Find the SRN in the List of service request numbers.

Note: If the SRN is not listed, look for it in the following:

- Any supplemental service manual for the device
- The diagnostic problem report screen for additional information
- The "Service Hints" service aid in Using standalone and online diagnostics
- The CERADME file (by using the Service Hints service aid)

3. Perform the action listed.

4. If you replace a part, go to MAP 0410: Repair checkout.

- **Step 0020-16**

Refer to AIX IPL progress codes for definitions of configuration program indicators. They are normally 0xxx.

Is a configuration program indicator displayed?

NO Go to the Problems with loading and starting the operating system (AIX and Linux)

YES Record SRN 101-xxxx (where xxxx is the rightmost three or four digits or characters of the configuration program indicator). Go to Step 0020-17.

- **Step 0020-17**

Is a physical location code or an AIX location code displayed on the operator panel display?

NO Go to Step 0020-15.

YES Record the location code, then go to Step 0020-15.

MAP 0030: Additional Problem Determination

This MAP is used for problems that still occur after all FRUs indicated by the SRN or error code have been exchanged.

Purpose of This MAP

This MAP is used for problems that still occur after all FRUs indicated by the SRN or error code have been exchanged.

Note: Check the action text of the SRN before proceeding with this MAP. If there is an action listed, perform that action before proceeding with this MAP.

- **Step 0030-1**

Some external devices (including rack drawers that contain devices) have their own problem determination procedures. If the problem is related to an external device that has its own problem determination procedure, run those procedures if not already run. If they do not correct the problem, continue with this MAP.

- **Step 0030-2**

The problem may have been caused by a resource that has not been tested. System Checkout tests all resources. If the online Diagnostics are installed and you are able to load them, then **All Resources** under the Diagnostic Selection menu should be run. If you get a different SRN, look up the SRN in the SRN chapters and do the listed action. If you are unable to run **All Resources** under the Diagnostic Selection menu or you do not get another SRN when running it, continue with this MAP.

- **Step 0030-3**

If the problem is related to a SCSI device, SCSI bus, or SCSI controller, go to MAP 0050: SCSI bus problems. If you are unable to isolate the problem with MAP 0050, continue with Step 0030-4.

- **Step 0030-4**

1. Find the resource(s) that are identified by the SRN or error code in the following table.
2. Perform the first action listed for the resource.
3. If you exchange a FRU or change a switch setting, test the resource again.
4. If the action does not correct the problem, perform the next action until all actions have been tried. If an action says to exchange a FRU that you have already exchanged, go to the next action. If an action corrects the problem, go to "MAP 0410: Repair checkout" on page 419.
5. If you perform all of the actions and do not correct the problem, check the Service Hints service aid for information. If the service aid does not help, call your service support structure.

Failing Resource	Repair Action
SCSI Device	Exchange the SCSI controller. Replace the power supply.
Pluggable SCSI or IDE controller	Exchange the backplane into which the adapter is plugged.
Keyboard, tablet, mouse, dials, LPF keys, diskette drive	Check the cable attaching the device to its adapter. If you do not find a problem, exchange the device's adapter.

Failing Resource	Repair Action
Pluggable adapters, CPU cards, and controllers	Determine whether the adapter contains any attached FRUs such as fuses, DRAMs, and crossover cables. <ol style="list-style-type: none"> 1. Check or exchange any attached FRU on the resource. 2. If the adapter is plugged into a riser card, check or exchange the riser card. 3. Exchange the backplane into which the adapter is plugged.
System and I/O backplanes	Contact your service support structure.
Built-In system ports	Replace the service processor if present.
A device attached to the system by a cable and an adapter.	<ol style="list-style-type: none"> 1. Replace the adapter for the device. 2. Replace the cable to the device.
IDE Device	Replace the cable between the IDE controller and the device. If the IDE controller is packaged on a backplane, replace that backplane, otherwise replace the adapter containing the IDE controller.

MAP 0040: Intermittent Problem Isolation

This MAP provides a structured way of analyzing intermittent problems.

Purpose of This MAP

This MAP provides a structured way of analyzing intermittent problems. It consists of two tables: Hardware Symptoms and Software Symptoms.

Because software or hardware can cause intermittent problems, consider all symptoms relevant to your problem.

How to Use This MAP

This MAP contains information about causes of intermittent symptoms. In the following tables, find your symptoms, and read the list of things to check.

When you exchange a FRU, go to MAP 0410: Repair Checkout to check out the system.

Hardware Symptoms

Note: This table spans several pages.

Symptom of Hardware Problem	Things to Check For
Any hardware log entry in the error log.	Use the Hardware Error Report service aid to view the error log and check for: <ul style="list-style-type: none"> • Multiple errors on devices attached to the same SCSI bus. • Multiple errors on devices attached to the same async adapter. • Multiple errors on internally installed devices only. Contact your service support structure for assistance with error report interpretation.

Symptom of Hardware Problem	Things to Check For
Hardware-caused system crashes	<ul style="list-style-type: none"> • The connections on the CPU planar or CPU card • Memory modules for correct connections • Connections to the system planar. • Cooling fans operational • The environment for a too-high or too-low operating temperature. • Vibration: proximity to heavy equipment.
System unit powers off a few seconds after powering On.	<ul style="list-style-type: none"> • Fan speed. Some fans contain a speed-sensing circuit. If one of these fans is slow, the power supply powers the system unit off. • Correct voltage at the outlet into which the system unit is plugged. • Loose power cables and fan connectors, both internal and external.
System unit powers off after running for more than a few seconds.	<ul style="list-style-type: none"> • Excessive temperature in the power supply area. • Loose cable connectors on the power distribution cables. • Fans turning at full speed after the system power has been on for more than a few seconds.
Only internally installed devices are failing.	<p>Check the following items that are common to more than one device:</p> <ul style="list-style-type: none"> • Ground connections on all of the disk drives and other types of drives installed. • Loose connections on the power cables to the planars, drives, fans, and battery. • System unit cooling. Is the input air temperature within limits? Are all the fans running at full speed? Are any of the vent areas blocked? • Signal cables to the diskette drives, and the power supply. • SCSI device signal cables for loose connectors and terminators. • Loose SCSI device address jumpers. • Possible contamination of any device that has a cleaning procedure. See the operator guide for cleaning instructions. • Excessive static electricity. • Correct voltage at the system unit power outlet
Only externally attached devices are failing.	<p>Check the following items that are common to more than one device.</p> <ul style="list-style-type: none"> • Check the SCSI signal cables to the devices for loose connectors and terminators. • Check devices that use jumpers to set the SCSI address for loose jumpers. • Check any device that has a cleaning procedure for contamination. See the operator guide for cleaning instructions. • Check for excessive static electricity. • Check the outlet that the device is plugged into for correct voltage. • Check the error log for entries for the adapter driving the failing devices. • Check the temperature of the devices. Are the cooling vents blocked? Are the fans running? • Check for other devices near the failing device that may be radiating noise (displays, printers, and so on).

Software Symptoms

Symptom of Software Problem	Things to Check For
Any symptom you suspect is related to software.	Use the software documentation to analyze software problems. Be sure to check RETAIN® for known problems with your type of system unit or software.
Software-caused system crashes	Check the following software items: <ul style="list-style-type: none">• Is the problem only with one application program?• Is the problem only with one device?• Does the problem occur on a recently installed program?• Was the program recently patched or modified in any way?• Is the problem associated with any communication lines?• Check for static discharge occurring at the time of the failure.

MAP 0050: SCSI bus problems

Use this MAP to analyze problems with a SCSI bus.

Purpose of this MAP

Use this MAP to analyze problems with a SCSI bus.

For additional information about this adapter, see the *RS/6000 eServer pSeries Adapters, Devices, and Cable Information for Multiple Bus Systems*.

Considerations

- To prevent hardware damage or erroneous diagnostic results from a system with its power turned on, use "PCI hot-plug manager" subtask "replace/remove PCI hot plug adapter" before connecting or disconnecting cables or devices.
- Also, use this MAP for SCSI adapters that are built into system backplanes or I/O backplanes. If this procedure calls for replacing a SCSI adapter and the SCSI adapter is built into the system backplane or I/O backplane, replace the system backplane or I/O backplane as appropriate.
- If the failure is a terminator power failure (SRNs xxx-226, xxx-240, xxx-800), always allow five minutes for the PTC to cool.
- The differential version of the adapter has socket-type terminators to support high-availability. If this is the adapter's configuration, the terminators would have been removed from the adapter. MAP steps requiring the removal of the cable from the adapter are inapplicable, since an adapter that is not terminated always fails diagnostics. Proper SCSI diagnostics require proper termination. If the configuration involves a Y-cable, leave it, with the appropriate terminator, attached to the adapter. Or, place an external differential terminator on the external port.
- If the system uses shared disk-drive hardware or a high-availability configuration, ensure that the other system that is sharing the devices is not using the devices. For additional information concerning high-availability configurations, see SCSI service hints.
- For intermittent problems that cannot be resolved with this MAP, refer to SCSI service hints.
- If the SCSI bus is attached to a RAID subsystem, refer to the RAID subsystem documentation for any problem determination. If the RAID adapter is a PCI-X RAID adapter, refer to the *PCI-X SCSI RAID Controller Reference Guide for AIX*.

Follow the steps in this MAP to isolate a SCSI bus problem.

Note: This procedure steps you through a process to systematically remove devices and components from a SCSI bus until a problem or a symptom or problem is eliminated. If you go through the whole procedure you will remove all components of a SCSI bus in the following order:

1. Hot-swap devices
2. Devices that are not hot-swap
3. SCSI Enclosure Services (SES) device or enclosures
4. SCSI cables
5. SCSI adapter

Do the following:

- **Step 0050-1**

Have changes been made recently to the SCSI configuration?

NO Go to Step 0050-2.

YES Go to Step 0050-5.

- **Step 0050-2**

Are there any hot-swap devices (SCSI disk drives or media devices) controlled by the adapter?

NO Go to Step 0050-3.

YES Go to Step 0050-11.

- **Step 0050-3**

Are there any devices other than hot-swappable devices controlled by the adapter?

NO Go to Step 0050-4.

YES Go to Step 0050-13.

- **Step 0050-4**

Is an enclosure or drawer that supports hot-swap devices controlled by the adapter?

NO Go to Step 0050-22.

YES Go to Step 0050-15.

- **Step 0050-5**

This step handles cases where recent changes have been made to the SCSI configuration.

Using the first three digits of the SRN, refer to the FFC listing and determine if the adapter is single-ended or differential.

Is the adapter a single-ended adapter?

NO Go to Step 0050-6.

YES Go to Step 0050-7.

- **Step 0050-6**

The adapter's termination jumper settings may be incorrect. Power off the system, and inspect jumper J7. Refer to the "SCSI cabling" section of the *RS/6000 eServer pSeries Adapters, Devices, and Cable Information for Multiple Bus Systems* for the correct jumper settings.

Are the jumpers correct?

NO Go to Step 0050-8.

YES Go to Step 0050-9.

- **Step 0050-7**

If the adapter *is not* being used in a high-availability configuration, be sure sockets RN1, RN2, and RN3 are populated.

If the adapter *is* being used in a high-availability configuration, be sure sockets RN1, RN2, and RN3 *are not* populated.

Go to Step 0050-9.

- **Step 0050-8**

1. Correct the jumper settings and reinstall the adapter and all cables.
2. Power on the system, and run diagnostics in system verification mode on the adapter.

Did the diagnostic pass?

NO Go to Step 0050-9.

YES Go to Step 0050-10.

- **Step 0050-9**

Check for the following problems:

- Address conflicts between devices.
- Cabling problems such as, configurations that exceed the maximum cable lengths, missing termination, or excessive termination.

Refer to the *RS/6000 eServer pSeries Adapters, Devices, and Cable Information for Multiple Bus Systems* for more details about supported SCSI cabling.

Did you find a problem?

NO Go to Step 0050-2.

YES Go to Step 0050-10.

- **Step 0050-10**

1. Correct the problem.
2. Power on the system, and run diagnostics in system verification mode on the adapter.

Did a failure occur?

NO Go to MAP 0410: Repair Checkout.

YES Go to Step 0050-2.

- **Step 0050-11**

This step determines if a hot-swap device is causing the failure.

1. Go to Preparing for a hot-plug SCSI device or cable deconfiguration.
2. Disconnect all hot-swap devices attached to the adapter.
3. Go to After hot-plug SCSI device or cable deconfiguration.
4. If the Missing Options menu displays, select the **The resource has been turned off, but should remain in the system configuration** option for all the devices that were disconnected.
5. Run the diagnostics in system verification mode on the adapter.

Did a failure occur?

NO Go to Step 0050-12.

YES Go to Step 0050-3.

- **Step 0050-12**

Go to Preparing for a hot-plug SCSI device or cable deconfiguration. Reconnect the hot-plug devices one at a time. After reconnecting each device, do the follow:

1. Go to After hot-plug SCSI device or cable deconfiguration.
2. Rerun the diagnostics on the adapter.
3. If the adapter fails, the problem may be with the last device reconnected. Perform these substeps:
 - a. Follow repair procedures for that last device.
 - b. Rerun diagnostics on the adapter.
 - c. If diagnostics fail, replace the SES backplane corresponding to the slot for the device.
 - d. Rerun diagnostics.

- e. If diagnostics fail, replace the last device.
- f. Rerun diagnostics on the adapter.
- g. If diagnostics pass, go to MAP 0410: Repair Checkout. Otherwise, contact your support center.

Note: A device problem can cause other devices attached to the same SCSI adapter to go into the defined state. Ask the system administrator to make sure that all devices attached to the same SCSI adapter as the device that you replaced are in the available state.

4. If no errors occur, the problem could be intermittent. Make a record of the problem. Running the diagnostics for each device on the bus may provide additional information.

• **Step 0050-13**

This step determines if a device other than a hot-swappable device is causing the failure. Follow these steps:

1. Go to Preparing for a hot-plug SCSI device or cable deconfiguration.
2. Disconnect all devices attached to the adapter (except for the device from which you boot to run diagnostics; you may want to temporarily move this device to another SCSI port while you are trying to find the problem).
3. Go to After hot-plug SCSI device or cable deconfiguration.
4. If the Missing Options menu displays, select the **The resource has been turned off, but should remain in the system configuration** option for all the devices that were disconnected.
5. Run the diagnostics in system verification mode on the adapter.

Did a failure occur?

NO Go to Step 0050-14.

YES Go to Step 0050-4.

• **Step 0050-14**

Reconnect the devices one at time. After reconnecting each device, follow this procedure:

1. Rerun the diagnostics in system verification mode on the adapter.
2. If there is a failure, the problem should be with the last device reconnected. Follow the repair procedures for that device, then go to MAP 0410: Repair Checkout.
3. If no errors occur, the problem could be intermittent. Make a record of the problem. Running the diagnostics for each device on the bus may provide additional information.

• **Step 0050-15**

This step determines whether the SCSI Enclosure Services (SES) controller, which provides hot-plug capability for SCSI drives in the server, is causing the problem.

Note: In most cases the SES controller is integrated on the backplane that is used to connect SCSI devices, for example a disk drive backplane. If your system has hot-plug capability and the SES controller is separate from the SCSI drive backplane, there will be an intermediate card on the SCSI bus between the SCSI adapter and the device or SCSI backplane. You will have to make a visual check to see if there are any intermediate cards on the SCSI bus that is displaying a problem.

Does a separate SES controller plug into the SCSI device backplane?

NO Go to Step 0050-18.

YES Go to Step 0050-16.

• **Step 0050-16**

Follow these steps:

1. Power off the system.
2. Remove the intermediate SES controller card. Locate the SES controller part number under FFC 199.
3. Power on the system.

4. If the Missing Options menu displays, select the **The resource has been turned off, but should remain in the system configuration** option for all the devices that were disconnected.

5. Run the diagnostics in system verification mode on the adapter.

Did a failure occur?

NO Go to Step 0050-17.

YES Go to Step 0050-18.

- **Step 0050-17**

Follow these steps:

1. Power off the system.
2. Replace the intermediate SES controller card.
3. Go to MAP 0410: Repair Checkout.

- **Step 0050-18**

Follow these steps:

1. Go to Preparing for a hot-plug SCSI device or cable deconfiguration.
2. Disconnect all cables attached to the SCSI adapter. For SCSI differential adapters in a high-availability configuration, see Considerations.
3. Go to After hot-plug SCSI device or cable deconfiguration.
4. If the Missing Options menu displays, select the **The resource has been turned off, but should remain in the system configuration** option for all the devices that were disconnected.
5. Run the diagnostics in system verification mode on the adapter.

Did a failure occur?

NO Go to Step 0050-19.

YES Replace the adapter, then go to MAP 0410: Repair Checkout.

- **Step 0050-19**

Follow these steps:

1. Go to Preparing for a hot-plug SCSI device or cable deconfiguration.
2. Reconnect the cables to the adapter.

Does the SES controller (an intermediated SES controller) plug into the backplane?

NO Go to Step 0050-20.

YES Go to Step 0050-21.

- **Step 0050-20**

Follow these steps:

1. Replace the SES controller. Locate the intermediate SES controller part number under FFC 199.
2. Power on the system.
3. If the Missing Options menu displays, select the **The resource has been turned off, but should remain in the system configuration** option for all the devices that were disconnected.
4. Run the diagnostics in system verification mode on the adapter.

Did a failure occur?

NO Go to MAP 0410: Repair Checkout.

YES Go to Step 0050-21.

- **Step 0050-21**

One of the cables remaining in the system is defective. Refer to FFC 199 for the cable part numbers. Replace the parts one at a time in the order listed. Follow these steps for each FRU replaced:

1. Rerun the diagnostics for the adapter.

2. If there is any failure, continue with the next FRU.
3. If there is no failure, go to MAP 0410: Repair Checkout.

- **Step 0050-22**

Follow these steps:

1. Go to Preparing for a hot-plug SCSI device or cable deconfiguration.
2. Disconnect all cables attached to the adapter (except for the cable to the device from which you boot to run diagnostics; you may want to temporarily move this device to another SCSI port while you are trying to find the problem).
3. Go to After hot-plug SCSI device or cable deconfiguration.
4. If the Missing Options menu displays, select the **The resource has been turned off, but should remain in the system configuration** option for all the devices that were disconnected.
5. Run the diagnostics on the adapter.

Did a failure occur?

NO Go to Step 0050-23.

YES Replace the adapter, then go to MAP 0410: Repair Checkout.

- **Step 0050-23**

One of the cables remaining in the system is defective. Refer to FFC 199 for the cable part numbers. Replace the parts one at a time in the order listed. Follow these steps for each FRU replaced:

1. Rerun the diagnostics for the adapter.
2. If there is any failure, continue with the next FRU.
3. If there is no failure, go to MAP 0410: Repair Checkout.

After hot-plug SCSI device or cable deconfiguration:

Use this procedure after you deconfigure or hot-plug a SCSI device to ensure that the replaced component was successfully installed.

1. Press Enter, then continue to follow the screen instructions until you receive a message that the replacement is successful. A successful replacement is indicated by the OK message displayed next to the command field at the top of the screen.
2. Press the F3 or ESC 3 key to return to the PCI Hot-Plug Manager menu.
3. Press the F3 or ESC 3 key to return to the TASK selection list.
4. Select "Log Repair Action".
5. Select the adapter you just removed the cables or devices from, then press Enter.
6. Press Commit (F7 or ESC 7), then press Enter.
7. Press the F10 or the ESC 0 key to exit diagnostics.
8. Type the **diag -a** command on the command line.

Preparing for hot-plug SCSI device or cable deconfiguration:

Use this procedure when you are preparing to deconfigure a hot-plug SCSI device or cable. This procedure will help determine if a SCSI device or SCSI device cable is causing your system problem.

Purpose of this procedure:

About this task

Use this procedure to determine if a SCSI device or SCSI device cable is causing the symptom.

Disconnect all cables attached to the adapter, (except for the cable to the device from which you boot to run diagnostics; you may want to temporarily move this device to another SCSI port while you are trying to find the problem).

Note: Move this device to another SCSI port while you are trying to find the problem.

1. Go to Loading and Using the AIX online diagnostics or the standalone diagnostics and perform the prerequisite tasks described in the "Before you begin" topic.
2. Determine which SCSI adapter you plan to remove the cables or devices from.
3. Adapter slots are numbered on the rear of the system unit, record the slot number and location of each adapter being removed.
4. Ensure that any processes or applications that might use the adapter are stopped.
5. Enter the system diagnostics by logging in as "root" user or as the "celogin" user. Type the **diag** command on the AIX command line.
6. When the "DIAGNOSTIC OPERATING INSTRUCTIONS" menu displays, press Enter. The "FUNCTION SELECTION" menu appears.
7. From the "FUNCTION SELECTION" menu, select "Task Selection", then press Enter.
8. From the "Task Selection" list, select "PCI Hot Plug Manager".
9. From the PCI Hot Plug Manager menu, select "Unconfigure a Device", then press Enter.
10. Press F4 or ESC 4 to display the "Device Names" menu.
11. Select the adapter from which you are removing the cables or devices in the "Device Names" menu.
12. In the "Keep Definition" field, use the tab key to answer "Yes".
13. In the "Unconfigure Child Devices" field, use the Tab key to answer "Yes", then press Enter.
14. The "ARE YOU SURE" screen displays. Press Enter to verify the information. A successful deconfiguration is indicated by the "OK" message displayed next to the Command field at the top of the screen.
15. Press F4 or ESC 4 twice to return to the "Hot Plug Manager" menu.
16. Select "replace/remove PCI Hot Plug adapter".
17. Select the slot that has the adapter you want to remove the cables or devices from in the system.
18. Select "remove".

Note: A fast blinking amber LED located at the back of the machine near the adapter indicates that the slot has been identified.

19. Press Enter. This places the adapter in the "action" state, meaning it is ready to be removed from the system. (Don't need to remove the adapter, unless it makes removing the cables attached to it easier).

MAP 0054: PCI-X SCSI Bus Problems

Use this MAP to determine which FRUs may need to be replaced in order to solve a SCSI bus-related problem on a PCI-X SCSI or PCI-X SCSI RAID adapter.

Purpose of This MAP

Use the following to determine which FRUs may need to be replaced in order to solve a SCSI bus-related problem on a PCI-X SCSI or PCI-X SCSI RAID adapter.

Considerations

- Remove power from the system before connecting and disconnecting cables or devices, as appropriate, to prevent hardware damage or erroneous diagnostic results.
- Note that some systems have SCSI and PCI-X bus interface logic integrated onto the system boards and use a pluggable RAID enablement card (a non-PCI form factor card) for these SCSI/PCI-X busses. An example of such a RAID enablement card is FC 5709. For these configurations, replacement of the RAID enablement card is unlikely to solve a SCSI bus-related problem, since the SCSI bus interface logic is on the system board.
- Some adapters provide two connectors, one internal and one external, for each SCSI bus. For this type of adapter, it is not acceptable to use both connectors for the same SCSI bus at the same time. SCSI bus problems are likely to occur if this is done. However, it is acceptable to use an internal connector for

one SCSI bus and an external connector for another SCSI bus. The internal and external connectors are labeled to indicate which SCSI bus they correspond to.

Attention: Replacing RAID adapters is not recommended without assistance from your service support structure when SCSI bus problems exist. Because the adapter may contain non-volatile write cache data and configuration data for the attached disk arrays, additional problems can be created by replacing an adapter when SCSI bus problems exist.

Removing functioning disks in a disk array is not recommended without assistance from your service support structure. A disk array may become degraded or failed if functioning disks are removed, and additional problems may be created.

Follow the steps in this MAP to isolate a PCI-X SCSI bus problem.

- **Step 0054-1**

Identify the SCSI bus on which the problem is occurring on by examining the hardware error log. To view the hardware error log, do the following:

1. Invoke diagnostics and select **Task Selection** on the Function Selection screen.
2. Select **Display Hardware Error Report**.
3. Choose one of the following options:
 - If the type of adapter is not known, select **Display Hardware Errors for Any Resource**.
 - If the adapter is a PCI-X SCSI adapter, select **Display Hardware Errors for PCI-X SCSI Adapters**.
 - If the adapter is a PCI-X SCSI RAID adapter, select **Display Hardware Errors for PCI-X SCSI RAID Adapters**.
4. Select the resource, or select **All Resources** if the resource is not known.

Note: If you had previously selected **Display Hardware Errors for Any Resource**, then select **All Resources**.

5. On the Error Summary screen, look for an entry with a SRN corresponding to the problem which sent you here, and select it.

Note: If multiple entries exist for the SRN it could be that some entries are old or that the problem has occurred on multiple entities (adapters, disk arrays, and/or devices). Older entries can be ignored; however, this MAP may need to be used multiple times if the same problem has occurred on multiple entities.

6. Select the hardware error log to view.

While viewing the hardware error log, under the Detail Data and SENSE DATA headings, identify the first four bytes of the hexadecimal data (for example, nnnn nnnn nnnn nnnn ...). The four bytes identified in the error log can be interpreted as:

00bb ssLL

where:

- bb, when not FF, identifies the adapter's SCSI bus
- ss, when not FF, identifies the SCSI ID of a device
- LL, when not FF, identifies the logical unit number (LUN) of a device

Go to Step 0540-2.

- **Step 0054-2**

Are the last two bytes of the four bytes identified in Step 0540-1, equal to FFFF (for example, 00bb FFFF, where bb identifies the adapter's SCSI bus)?

NO Go to Step 0540-4.

YES Go to Step 0540-3.

- **Step 0054-3**

While the error persists, replace the components of the failing SCSI bus in the following order:

1. Cable on bus bb (if present)
2. Adapter (if SCSI bus interface logic is on the adapter) or system board (if SCSI bus interface logic is on the system board)

To replace a component, and see if the problem was corrected, do the following:

1. Follow the removal and replacement procedure for the component as previously described in this step.
2. Run diagnostics in system verification mode on the adapter.

When the problem is resolved, go to MAP 0410: Repair Checkout.

- **Step 0054-4**

Are the last two bytes of the four bytes identified in Step 0540-1, equal to FF00 (for example, 00bb FF00, where bb identifies the adapter's SCSI bus)?

NO Go to Step 0540-6.

YES Go to Step 0540-5.

- **Step 0054-5**

While the error persists, replace the components of the failing SCSI bus in the following order:

1. Cable on bus bb (if present)
2. Adapter (if SCSI bus interface logic is on the adapter) or system board (if the SCSI bus interface logic is on the system board)
3. DASD backplane attached to bus bb (if present)

To replace a component, and see if the problem was corrected, do the following:

1. Follow the removal and replacement procedure for the component as previously described in this step.
2. Run diagnostics in system verification mode on the adapter.

When the problem is resolved, go to MAP 0410: Repair Checkout.

- **Step 0054-6**

While the error persists, replace the components of the failing SCSI bus in the following order:

1. Device on bus bb with SCSI ID ss
2. Cable on bus bb (if present)
3. Adapter (if SCSI bus interface logic is on the adapter) or system board (if SCSI bus interface logic is on the system board)

To replace a component and see if the problem was corrected, do the following:

1. Follow the removal and replacement procedure for the component as previously described in this step.
2. Run diagnostics in system verification mode on the adapter.

When the problem is resolved, go to MAP 0410: Repair Checkout.

MAP 0070: 888 sequence in operator panel display

Use this MAP when you receive an 888 sequence on the operator panel display or monitor.

Purpose of this MAP

An 888 sequence in operator panel display suggests that either a hardware or software problem has been detected and a diagnostic message is ready to be read.

Note: The 888 may or may not be flashing on the operator panel display.

- **Step 0070-1**

Perform the following steps to record the information contained in the 888 sequence message.

1. Wait until the 888 sequence displays.
2. Record, in sequence, every code displayed after the 888. On systems with a 3-digit or a 4-digit operator panel, you may need to press the system's "reset" button to view the additional digits after the 888. Stop recording when the 888 digits reappear.
3. Go to Step 0070-2.

- **Step 0070-2**

Using the first code that you recorded, use the following list to determine the next step to use.

Type 102

Go to Step 0070-3.

Type 103

Go to Step 0070-4.

- **Step 0070-3**

A Type 102 message generates when a software or hardware error occurs during system execution of an application. Use the following information to determine the content of the type 102 message. Descriptions of the crash codes and the dump status codes are in AIX Diagnostic Numbers and Location Codes AIX IPL Progress codes.

The message readout sequence is:

102 = Message type RRR = Crash code (the three-digit code that immediately follows the 102) SSS = Dump status code (the three-digit code that immediately follows the Crash code).

Record the crash code and the dump status from the message you recorded in Step 0070-1. For an explanation of the dump status or the crash codes, see AIX Diagnostic Numbers and Location Codes AIX IPL Progress codes.

Are there additional codes following the dump status?

No Go to Step 0070-5.

YES The message also has a type 103 message included in it. Go to Step 0070-4 to decipher the SRN and field replaceable unit (FRU) information in the Type 103 message.

Note: Type 102 messages have no associated SRNs.

- **Step 0070-4**

A type 103 message is generated by the hardware when certain types of hardware errors are detected. Use the following steps and information you recorded in Step 0070-1 to determine the content of the Type 103 message.

The message readout sequence is:

103 = Message type (x)xxx (y)yyy = SRN (where (x)xxx = the three- or four-digit code following the 103 and (y)yyy is the three- or four-digit code following the (x)xxx code).

1. Record the SRN and FRU location codes from the recorded message.
2. Find the SRN in the Service Request Number List and do the indicated action.

Note: The only way to recover from an 888 type of halt is to turn off the system unit.

- **Step 0070-5**

Perform the following steps:

1. Turn off the system unit power.
2. Turn on the system unit power, and load the online diagnostics in service mode.
3. Wait until one of the following conditions occurs:
 - You are able to load the diagnostics to the point where the Diagnostic Mode Selection menu displays.
 - The system stops with an 888 sequence.

- The system appears hung.

Is the Diagnostic Mode Selection menu displayed?

No Go to the Start-of-call procedure.

Yes Go to Step 0070-6.

- **Step 0070-6**

Run the **All Resources** options under Advanced Diagnostics in Problem Determination Mode.

Was an SRN reported by the diagnostics?

No This is possibly a software-related 888 sequence. Follow the procedure for reporting a software problem.

Yes Record the SRN and its location code information. Find the SRN in the SRN Listing and do the indicated action.

MAP 0080: System Bus Problem Isolation

Use this MAP to analyze a bus problem that does not prevent the system from booting.

Purpose of This MAP

Use this MAP to analyze a bus problem that does not prevent the system from booting.

Note: Some devices installed in the system may require the loading of supplemental diskettes for diagnostic support.

- **Step 0080-1**

1. Perform a system shutdown and then, if necessary, turn off the system unit power.
2. Locate the diagnostic CD-ROM.
3. Turn on the system unit power, and then load the diagnostic CD-ROM into the CD-ROM drive.
4. Load the standalone diagnostics.
5. Wait until the "Please Define the System Console" screen displays or all system activity appears to have stopped.

Is the "Please Define the System Console" screen displayed?

No The symptom has changed. Use the start-of-call procedure in the Information Center.

Yes Go to Step 0080-2.

- **Step 0080-2**

Follow the instructions on the screen.

Are all of the installed PCI adapters listed on the Installed Resources menu?

No Go to Step 0080-3 and make a note of all PCI adapters not listed and their locations.

Yes You may have an intermittent problem. If you think that you have an intermittent problem, go to MAP 0040: Intermittent Problem Isolation.

- **Step 0080-3**

1. Perform a system shutdown, and then, if necessary, turn off the system unit power.
2. Remove all but one of the PCI adapters that was not listed on the Installed Resources menu.

Note: If only one adapter is present, do not remove it.

3. Turn on the system unit power, and load standalone diagnostics from the optical drive.
4. Wait until the "Please define the System Console" screen displays or all system activity appears to have stopped.

Is the "Please Define the System Console" screen displayed?

No The symptom has changed. Use the start-of-call procedure in the Information Center.

Yes Go to Step 0080-4.

- **Step 0080-4**

Follow the displayed instructions until the Installed Resources menu displays.

Is the adapter that you did not remove shown as an installed resource?

No Record SRN 111-78C and make a note of the adapter you just installed. Look up the SRN in the SRN listings and perform the indicated action.

Yes Go to Step 0080-5.

- **Step 0080-5**

Have you installed all of the removed adapters?

No Go to Step 0080-6.

Yes Call your service support structure.

- **Step 0080-6**

1. Perform a system shutdown and then, if necessary, turn off the system unit power.
2. Install one of the remaining removed adapters into its original location.
3. Turn on the system unit power, and load standalone diagnostics from the optical drive.
4. Wait until the "Please Define the System Console" screen displays or all system activity appears to stop.

Is the "Please Define the System Console" screen displayed?

No The symptom has changed. Go to PFW1540: Problem Isolation Procedure.

Yes Go to Step 0080-7.

- **Step 0080-7**

Follow the displayed instructions until the Installed Resources menu displays.

Is the adapter that you just installed shown as an installed resource?

No Record SRN 111-78C and make a note of the adapter you just installed. Look up the SRN in the SRN listings and perform the indicated action.

Yes Go to Step 0080-5.

General problem resolution

Use this procedure to exchange the FRUs in the order of their failure probability.

- **Step 0210-1**

Did the problem report provide a part number for the FRU you are about to replace?

NO Go to Step 0210-2.

YES Go to Step 0210-3.

- **Step 0210-2**

Find the failing function codes in the System parts, and record the FRU part number and description of each FRU.

- **Step 0210-3**

Obtain the replacement part.

- **Step 0210-4**

Go to Removing and replacing parts, and follow the procedures for the FRU you are servicing.

Hot-Swap FRU problem resolution

Use this procedure to exchange hot-swappable field replaceable units (FRUs).

Note: The FRU you want to hot plug might have a defect on it that can cause the hot-plug operation to fail. If, after following the hot-plug procedure, you continue to get an error message that indicates

that the hot-plug operation has failed, schedule a time for deferred maintenance when the system containing the FRU can be powered down. Then go to MAP 0210: General problem resolution, Step 0210-2 and answer NO to the question **Do you want to exchange this FRU as a hot-plug FRU?**

Attention: If the FRU is a disk drive or an adapter, ask the system administrator to perform the steps necessary to prepare the device for removal.

- **Step 0220-1**

1. If the system displayed a FRU part number on the screen, use that part number to exchange the FRU.

If there is no FRU part number displayed on the screen, refer to the SRN listing. Record the SRN source code and the failing function codes in the order listed.

2. Find the failing function codes in the FFC listing, and record the FRU part number and description of each FRU.
3. To determine if the part is hot-swappable, refer to the removing and replacing parts procedure for the part.

Does this system unit support hot-swapping of the first FRU listed?

NO Go to MAP 0210: General problem resolution.

YES Go to Step 0220-2.

- **Step 0220-2**

Is the FRU a hot-swap power supply or fan?

NO Go to Step 0220-4.

YES Go to Step 0220-3.

- **Step 0220-3**

Note: Refer to the removing and replacing parts procedure for the part .

1. Remove the old FRU.
2. Install the new FRU.
3. Enter the **diag** command.

Go to Step 0220-14.

- **Step 0220-4**

Is the FRU a hot-plug PCI adapter?

NO Go to Step 0220-5.

YES Go to Step 0220-12.

- **Step 0220-5**

Is the FRU a SCSI hot-plug device?

NO Go to Step 0220-11.

YES Go to Step 0220-6.

- **Step 0220-6**

Is the hot-plug drive located within a system unit?

NO Go to Step 0220-8.

YES Go to Step 0220-7.

- **Step 0220-7**

Refer to the removing and replacing procedures for your system in removing and replacing parts .
Go to Step 0220-13.

- **Step 0220-8**

Does the hot-plug drive's enclosure have procedures for removing and replacing SCSI disk drives?

NO Go to Step 0220-9.

YES If a hot-plug procedure exists, use that procedure to remove the old hot-plug SCSI disk drive and replace it with a new hot-plug SCSI disk drive. Otherwise, if no hot-plug procedure exists, use the power off procedure to remove the old SCSI disk drive and replace it with a new SCSI disk drive. Go to Step 0220-13.

- **Step 0220-9**

1. Ask the customer to back up the data on the drive that you intend to replace onto another drive.
2. Verify that the disk drive is in the defined state. The amber LED on the hot-plug disk drive should be off.

Is the hot-plug disk drive's amber LED unlit?

NO Ask the customer to remove the hot-plug disk drive from the operating system configuration (refer the customer to the system management guide for more information).

YES Go to Step 0220-10.

- **Step 0220-10**

Using the hot-plug task service aid described in the AIX tasks and service aids, replace the hot-plug drive using the following procedure:

1. Use the **List the SES Devices** option to show the configuration of the hot-plug slots. Identify the slot number of the adapter for the FRU you want to replace.
2. Select the **REPLACE/REMOVE a Device Attached to an SES Device** option.
3. Select the slot which contains the SCSI hot-plug drive you wish to replace. Press Enter. You will see a fast blinking green light on the front on the hot-plug drive indicating that it is ready for removal.

Note: Refer to the "Installing hardware" section of the information; locate the server information that you are servicing and follow the tables to locate the correct removal or replacement procedure.

4. Remove the old hot-plug drive.
5. Install the new hot-plug drive. Once the hot-plug drive is in place, press Enter.
6. Press the exit key. Wait while configuration is done on the drive, until you see the "hot-plug task" on the service aid menu.

Go to Step 0220-15.

- **Step 0220-11**

Attention: Removing functioning disks in a disk array attached to a PCI-X SCSI RAID controller is not recommended without assistance from your service support structure. A disk array may become degraded or failed if functioning disks are removed and additional problems may be created. If you still need to remove a RAID array disk attached to a PCI-X SCSI RAID controller, use the SCSI and "SCSI RAID hot-plug manager" as described in SCSI and SCSI RAID Hot-Plug Manager.

Using the hot plug-task service aid described in AIX tasks and service aids, replace the hot-plug drive using the hot plug RAID service aid:

Note: The drive you wish to replace must be either a SPARE or FAILED drive. Otherwise, the drive would not be listed as an "Identify and remove resources" selection within the RAID HOT-PLUG DEVICES screen. In that case you must ask the customer to put the drive into FAILED state. Refer the customer to the System Management Guide for more information. Ask the customer to back up the data on the drive that you intend to replace.

1. Select the **RAID HOT-PLUG DEVICES** option within the **HOT-PLUG TASK** under **DIAGNOSTIC SERVICE AIDS**.

2. Select the RAID adapter that is connected to the RAID array containing the RAID drive you wish to remove, then select **COMMIT**.
3. Choose the **IDENTIFY** option in the IDENTIFY AND REMOVE RESOURCES menu.
4. Select the physical disk which you wish to remove from the RAID array and press Enter.
5. The disk will go into the **IDENTIFY** state, indicated by a flashing light on the drive. Verify that it is the physical drive you wish to remove, then press Enter.
6. At the IDENTIFY AND REMOVE RESOURCES menu, choose the **REMOVE** option and press Enter.
7. A list of the physical disks in the system which may be removed will be displayed. If the physical disk you wish to remove is listed, select it and press Enter. The physical disk will go into the REMOVE state, as indicated by the LED on the drive. If the physical disk you wish to remove is not listed, it is not a SPARE or FAILED drive. Ask the customer to put the drive in the FAILED state before you can proceed to remove it. Refer the customer to the System Management Guide for more information.
8. Refer to service guide for the system unit or enclosure that contains the physical drive for removal and replacement procedures for the following substeps:
 - a. Remove the old hot-plug RAID drive.
 - b. Install the new hot-plug RAID drive. Once the hot-plug drive is in place, press Enter. The drive will exit the REMOVE state, and will go to the NORMAL state once you exit diagnostics.

Note: There are no elective tests to run on a RAID drive itself under diagnostics (the drives are tested by the RAID adapter).

9. This completes the repair. Return the system to the customer. Ask the customer to add the physical disk drive to the original configuration within the RAID. Refer them to system management guide for more information.

- **Step 0220-12**

1. Remove the old adapter FRU and replace it with the new adapter FRU. Refer to the removing and replacing parts procedure for the part.
2. Enter the diag command.
3. Go to the FUNCTION SELECTION menu, and select the Advanced Diagnostics Routines option.
4. When the DIAGNOSTIC MODE SELECTION menu displays, select the System Verification option.
5. Go to Step 0220-14.

- **Step 0220-13**

1. If not already running diagnostics, enter the diag command.

Note: If you are already running service mode diagnostics and have just performed the **Configure Added/Replaced Devices** task (under the SCSI Hot Swap manager of the Hot Plug Task service aid), you must use the F3 key to return to the DIAGNOSTIC OPERATING INSTRUCTIONS menu before proceeding with the next step, or else the drive might not appear on the resource list.

2. Go to the FUNCTION SELECTION menu, and select the **Advanced Diagnostics Routines** option.
3. When the DIAGNOSTIC MODE SELECTION menu displays, select the **System Verification** option.

Does the hot-plug SCSI disk drive you just replaced appear on the resource list?

NO Verify that you have correctly followed the procedures for replacing hot-plug SCSI disk drives in the system service guide. If the disk drive still does not appear in the resource list, go to MAP 0210: General Problem Resolution to replace the resource that the hot-plug SCSI disk drive is plugged in to.

YES Go to Step 0220-14.

- **Step 0220-14**

Run the diagnostic test on the FRU you just replaced.

Did the diagnostics run with no trouble found?

NO Go to Step 0220-15.

YES Go to MAP 0410: Repair checkout. Before returning the system to the customer, if a hot-plug disk has been removed, ask the customer to add the hot-plug disk drive to the operating system configuration. Refer to system management guide for more information."

- **Step 0220-15**

1. Use the **Log Repair Action** option in the TASK SELECTION menu to update the AIX error log. If the repair action was reseating a cable or adapter, select the resource associated with your repair action. If it is not displayed on the resource list, select **sysplanar0**.

Note: On systems with a fault indicator LED, this changes the fault indicator LED from the "fault" state to the "normal" state.

2. While in diagnostics, go to the FUNCTION SELECTION menu. Select the **Advanced Diagnostics Routines** option.
3. When the DIAGNOSTIC MODE SELECTION menu displays, select the **system verification** option. Run the diagnostic test on the FRU you just replaced, or **sysplanar0**.

Did the diagnostics run with no trouble found?

NO Go to Step 0220-16.

YES If you changed the service processor or network settings, restore the settings to the value they had prior to servicing the system. If you performed service on a PCI RAID subsystem involving changing of the RAID adapter cache card or changing the configuration on RAID disks, ask the customer to run "PCI SCSI disk array manager" using smitty to resolve the PCI SCSI RAID adapter configuration. The following is an example of how the customer would resolve the configuration:

1. At the AIX command line, type `smitty pdam`.
2. On the "PCI SCSI Disk Array Manager" screen, select **RECOVERY OPTIONS**.
3. If a previous configuration exists on the replacement adapter, this must be cleared. Select **Clear PCI SCSI RAID Adapter Configuration**. Press F3.
4. On the "Recovery Options" screen, select **RESOLVE PCI SCSI RAID ADAPTER CONFIGURATION**.
5. On the "Resolve PCI SCSI RAID Adapter Configuration" screen, select **ACCEPT CONFIGURATION** on **DRIVES**.
6. On the PCI SCSI RAID Adapter selection menu, select the adapter that you changed.
7. On the next screen, press Enter.
8. When you get the "Are You Sure?" selection menu, press Enter to continue.
9. You should get an OK status message when the recovery is complete. If you get a Failed status message, verify that you are doing recovery on the correct adapter, then do this complete procedure. When you complete the recovery, exit smitty to return to the AIX command line.

Go to MAP 0410: Repair checkout.

- **Step 0220-16**

Does the original problem persist?

NO If a FRU was replaced, run the log repair action service aid under the online diagnostics for the resource that was replaced. If the resource associated with your action is not displayed on the resource list, select **sysplanar0**. If steps were taken to make the device ready for removal, inform the system administrator of the steps required to return the system to the original state. Go to MAP 0410: Repair checkout.

YES Go to Step 0220-17.

- **Step 0220-17**

Have you exchanged all the FRUs that correspond to the failing function codes?

NO Go to Step 0220-18.

YES The SRN did not identify the failing FRU. Schedule a time to run diagnostics in service mode. If the same SRN is reported in service mode, go to MAP 0030: Additional Problem Determination.

- **Step 0220-18**

Note: Before proceeding, remove the FRU you just replaced and install the original FRU in its place.

Does the system unit support hot-swapping of the next FRU listed?

NO Go to MAP 0210: General Problem Resolution.

YES The SRN did not identify the failing FRU. Schedule a time to run diagnostics in service mode. If the same SRN is reported in service mode, go to Step 0220-14.

MAP 0230: Platform error problem resolution

Use this MAP to resolve problems reported by SRNs A00-xxx to A25-xxxx.

Step 0230-1

1. The last character of the SRN is bit-encoded as follows:

8	4	2	1	
				Replace all FRUs listed
				Hot-swap is supported
				Software or Firmware could be the cause
				Reserved

2. Refer to the last character in the SRN. A 4, 5, 6, or 7 indicates a possible software or firmware problem.

Does the last character indicate a possible software or firmware problem?

NO Go to Step 0230-4

YES Go to Step 0230-2.

Step 0230-2

Ask the customer if any software or firmware has been installed recently.

Has any software or firmware been installed recently?

NO Go to Step 0230-4.

YES Go to Step 0230-3.

Step 0230-3

Suspect the new software or firmware.

Check with your support center for any known problems with the new software or firmware.

Are there any known problems with the software or firmware?

NO Go to Step 0230-4.

YES Obtain and follow the procedure to correct the software problem. This completes the repair.

Step 0230-4

Were any FRUs or location code reported with the SRN?

NO Go to Step 0230-5.

YES Go to Step 0230-9

Step 0230-5

Run the diagnostics in problem determination mode on **sysplanar0**.

Were there any FRUs reported with the SRN?

NO Go to Step 0230-6.

YES Go to Step 0230-9

Step 0230-6

Did the system display: "Previous Diagnostic Results - Do you want to review the previously displayed error?"

NO Go to Step 0230-7.

YES You have a pending item in the error log for which there is no corresponding log repair action. To see this error, select **YES** at the prompt. Information from the error log displays in order of last event first. Record the error code, the FRU names and the location code of the FRUs. Go to Step 0230-7

Step 0230-7

Were there any other SRNs that begin with an A00 to A1F reported?

NO Go to Step 0230-8.

YES Go to Step 0230-1 and use the new SRN.

Step 0230-8

Attempt to boot the system on slow boot mode.

If the system boots, run the diagnostics in problem determination mode on **sysplanar0**

Were any new error codes or SRNs reported?

NO Call your support center.

YES Follow the procedure for the new error code or SRN.

Step 0230-9

1. Obtain the list of physical location codes and FRU numbers that were listed on the Problem Report Screen. The list can be obtained by running the **sysplanar0** diagnostics or using the **Display Previous Diagnostic Results** task.
2. Record the physical location codes and FRU numbers.
3. Refer to the last character in the SRN. A 2, 3, 6, or 7 indicates that hot-swap is possible.

Does the last character indicate that hot-swap is possible?

NO Go to Step 0230-10.

YES Go to Step 0230-14

Step 0230-10

Note: If necessary, refer to the section under "Reference Information" in the system service guide "Powering the system on and off" for information on system shut down and powering the system on and off.

1. If the operating system is running, perform the operating system's shutdown procedure.
2. Turn off power to the system.
3. Refer to the last character in the SRN. A 1, 3, 5, or 7 indicates that all FRUs listed on the Problem Report Screen need to be replaced. For SRNs ending with any other character, exchange one FRU at a time, in the order listed.

Note: Use the appropriate procedure under "Removal and Replacement Procedures" in the system service guide to replace any FRUs indicated.

4. Turn on power to the system.
5. Load Online Diagnostics in service mode (see the system's service guide if needed).

Note: If the Diagnostics Operating Instructions do not display or you are unable to select the **Task Selection** option, check for loose cards, cables, and obvious problems. If you do not find a problem, go to "MAP 0020: Problem determination procedure" on page 373 and get a new SRN.

6. Wait until the **Diagnostics Operating Instructions** are displayed or the system appears to stop.
7. Press Enter.
8. Select **Diagnostic Routines** at the function selection menu.
9. Select **System Verification**.
10. If a missing options exist, particularly if it is related to the device that was replaced, resolve the missing options before proceeding
11. Select the **Task Selection** option.
12. Select the **Log Repair Action** option.
13. Log a repair action for each replaced resource.
14. If the resource associated with your repair action is not displayed on the resource list, select **sysplanar0**.
15. Return to the Task Selection Menu.
16. If the FRU that was replaced was memory and the system is running as a full system partition, select **Run Exercisers** and run the short exerciser on all the resources, otherwise proceed to Step 0230-15.
17. If you ran the exercisers in Step 0230-10, substep 16, return to the Task Selection menu.
18. Select **Run Error Log Analysis** and run analysis on all the resources.

Was a problem reported?

NO The repair is complete. Go to "MAP 0410: Repair checkout" on page 419.

YES Go to Step 0230-11.

Step 0230-11

Is the problem the same as the original problem?

NO The symptom has changed. Check for loose cards, cables, and obvious problems. If you do not find a problem, go to "MAP 0020: Problem determination procedure" on page 373 and get a new SRN.

YES Go to Step 0230-12.

Step 0230-12

Look at the physical location codes and FRU part numbers you recorded.

Have you exchanged all the FRUs that were listed?

NO Go to Step 0230-13.

YES The SRN did not identify the failing FRU. Call your support person for assistance.

Step 0230-13

1. After performing a shutdown of the operating system, turn off power to the system.
2. Remove the new FRU and install the original FRU.
3. Exchange the next FRU in list.
4. Turn on power to the system.
5. Load Online Diagnostics in service mode (see the system's service guide if needed).

Note: If the Diagnostics Operating Instructions do not display or you are unable to select the **Task Selection** option, check for loose cards, cables, and obvious problems. If you do not find a problem, go to "MAP 0020: Problem determination procedure" on page 373 and get a new SRN.

6. Wait until the Diagnostics Operating Instructions are displayed or the system appears to stop.
7. Press Enter.
8. Select **Diagnostic Routines** at the function selection menu.
9. Select **System Verification**.
10. If a missing options exist, particularly if it is related to the device that was replaced, resolve the missing options before proceeding
11. Select the **Task Selection** option.
12. Select the **Log Repair Action** option.
13. Log a repair action for each replaced resource.
14. If the resource associated with your action does not appear on the Resource List, select **sysplanar0**.
15. Return to the Task Selection Menu.
16. If the FRU that was replaced was memory and the system is running as a full system partition, select **Run Exercisers** and run the short exerciser on all the resources, otherwise proceed to Step 0230-15.
17. If you ran the exercisers in Step 0230-13, substep 16, return to the Task Selection menu.
18. Select **Run Error Log Analysis** and run analysis on all the resources.

Was a problem reported?

NO The repair is complete. Go to "MAP 0410: Repair checkout" on page 419.

YES Go to Step 0230-11.

Step 0230-14

The FRUs can be hot-swapped. If you do not want to use the hot-swap, go to Step 0230-10.

Note: See the hot-swap procedures in the "Removal and Replacement" section of your system unit's service guide.

1. Refer to the last character in the SRN. A 1, 3, 5, or 7 indicates that all FRUs listed on the Problem Report Screen must be replaced. For SRNs ending with any other character, exchange one FRU at a time, in the order listed.
2. If available, use the CE Login and enter the **diag** command.

Note: If CE Login is not available, have the system administrator enter superuser mode and then enter the **diag** command.

3. After the Diagnostics Operating Instructions display, press Enter.
4. Select the **Task Selection** option.
5. Select the **Log Repair Action** option.
6. If the resource associated with your action is not displayed on the Resource List, select **sysplanar0**.
7. Log a repair action for each replaced resource.
8. Return to the Task Selection menu.
9. For systems running as a full system partition, select **Run Exercisers** and run the short exerciser on all resources.
10. Use the **Log Repair Action** option in the Task Selection menu to update the AIX error log. If the repair action was reseating a cable or adapter, select the resource associated with your repair action. If it is not displayed on the resource list, select **sysplanar0**.

Note: On systems with a Fault Indicator LED, this changes the Fault Indicator LED from the "fault" state to the "normal" state.

Was a problem reported?

NO The repair is complete. Return the system to the customer.

YES Go to Step 0230-15.

Step 0230-15

Is the problem the same as the original problem?

NO The symptom has changed. Check for loose cards, cables, and obvious problems. If you do not find a problem, go to "MAP 0020: Problem determination procedure" on page 373 and get a new SRN.

YES Go to Step 0230-16.

Step 0230-16

Look at the physical location codes and FRU part numbers you recorded.

Have you exchanged all the FRUs that were listed?

NO Go to Step 0230-17.

YES The SRN did not identify the failing FRU. Call your support person for assistance.

Step 0230-17

1. Remove the new FRU and install the original FRU.
2. Exchange the next FRU in the list.
3. Return to the Task Selection Menu.
4. Select the **Log Repair Action** option.
5. Log a repair action for each replaced resource.
6. If the resource associated with your action is not displayed on the Resource List, select **sysplanar0**.

7. Return to the Task Selection Menu.
8. For systems running as a full system partition select **Run Exercisers** and run the short exerciser on all resources.
9. If you ran the exercisers in substep Step 0230-17, substep 8, go to the Task Selection menu.
10. Select **Run Error Log Analysis** and run analysis on all exchanged resources.

Was a problem reported?

NO The repair is complete. Return the system to the customer.

YES Go to Step 0230-15.

MAP 0235: System Array Self-Repair Problem Resolution

Use this MAP to resolve problems reported by SRNS A11-560 to A11-580.

Note: The following steps may require that the system be rebooted to invoke Array bit steering, so you may wish to schedule deferred maintenance with the system administrator to arrange a convenient time to reboot their system.

Step 0235-1

Was the SRN A11-560?

NO Go to Step 0235-3.

YES Go to Step 0235-2.

Step 0235-2

Logged in as root or using CE Login, at the AIX command line type diag then press enter. Use the **Log Repair Action** option in the TASK SELECTION menu to update the AIX error log. Select sysplanar0.

Note: On systems with fault indicator LED, this changes the fault indicator LED from the FAULT state to the NORMAL state.

Were there any other errors on the resource reporting the array bit steering problem?

NO Step 0235-4.

YES Resolve those errors before proceeding.

Step 0235-3

Logged in as root or using CE Login, at the AIX command line type diag then press enter. Use the **Log Repair Action** option in the TASK SELECTION menu to update the AIX error log. Select procx, where x is the processor number of the processor that reported the error.

Note: On systems with fault indicator LED, this changes the fault indicator LED from the FAULT state to the NORMAL state.

Were there any other errors on procx?

NO Step 0235-4.

YES Resolve those errors before proceeding.

Step 0235-4

Schedule deferred Maintenance with the customer. When it is possible, reboot the system to invoke Array Bit steering.

Step 0235-5

After the system has been rebooted, log in as root or use CE Login. At the AIX command line, run diagnostics in problem determination mode to determine if the array bit steering was able to correct the problem.

If diagnostics are not run (for instance, if the system returns to **Resource Selection** menu after running diagnostics in problem determination mode) or there is no problem on the resource that originally reported the problem, then array bit steering was able to correct the problem. Exit this MAP and go to MAP 0410: Repair checkout.

MAP 0260: System hangs during resource configuration

Use this MAP when the system unit hangs while configuring a resource.

Purpose of this MAP

This MAP handles problems when the system unit hangs while configuring a resource.

- **Step 0260-1**

The last three or four digits of the SRN following the dash (-) match a failing function code number.

Look at the System parts and find the failing function code that matches the last three or four digits of your SRN, following the dash. Record the FRU part number and description (use the first FRU part listed when multiple FRUs are listed).

The physical location code, AIX location code, or device name is displayed on the operator panel.

Do you have either a physical location code or AIX location code displayed?

No Go to Step 0260-4.

Yes Go to Step 0260-2.

- **Step 0260-2**

Are there any FRUs attached to the device described by the physical location code or AIX location code?

No Go to Step 0260-6.

Yes Go to Step 0260-3.

- **Step 0260-3**

Remove this kind of FRU attached to the device described in the location code one at a time. Note whether the system still hangs after each device is removed. Do this until you no longer get a hang, or all attached FRUs have been removed from the adapter or device.

Has the symptom changed?

No Go to Step 0260-4.

Yes Use the location code of the attached device that you removed when the symptom changed, and go to Step 0260-6.

- **Step 0260-4**

Does your system unit contain only one of this kind of FRU?

No Go to Step 0260-5.

Yes Go to Step 0260-6.

- **Step 0260-5**

One of the FRUs of this kind is defective.

Remove this kind of FRU one at a time. Test the system unit after each FRU is removed. Stop when the test completes successfully or when you have removed all of the FRUs of this kind.

Were you able to identify a failing FRU?

No Go to MAP 1540: Problem Isolation Procedure.

Yes Go to Step 0260-6.

- **Step 0260-6**

1. Turn off the system unit.
2. Exchange the FRU identified by the location code or Step 0260-5.

Is this system capable of running online diagnostics in service mode?

No Go to Step 02607.

Yes Go to Step 02608.

- **Step 0260-7**

1. Turn on the system unit.
2. Load the standalone diagnostics and refer to Loading and using the AIX online diagnostics or the standalone diagnostics.
3. Wait until the Diagnostic Operating Instructions display or the system appears to have stopped.

Are the DIAGNOSTIC OPERATING INSTRUCTIONS displayed?

NO Go to Step 02609.

YES Go to MAP 0410: Repair Checkout.

- **Step 0260-8**

1. Turn on the system unit.
2. Load the standalone diagnostics and refer to Loading and using the AIX online diagnostics or the standalone diagnostics.
3. Wait until the Diagnostic Operating Instructions display or the system appears to have stopped.

Are the DIAGNOSTIC OPERATING INSTRUCTIONS displayed?

NO Go to Step 0260-9.

YES Go to MAP 0410: Repair Checkout.

- **Step 0260-9**

Look at the operator panel display.

Is the number displayed the same as the last three or four digits after the dash (-) of your SRN?

NO The symptom changed. Check for loose cards, cables, and obvious problems. If you do not find a problem, go to MAP 0020: Problem Determination Procedure and get a new SRN.

YES Go to Step 0260-10.

- **Step 0260-10**

Was the FRU you exchanged an adapter or a planar?

NO Go to Step 0260-11.

YES Go to MAP 1540: Problem Isolation Procedure.

- **Step 0260-11**

Was the FRU you exchanged a device?

NO Go to MAP 1540: Problem Isolation Procedure.

YES Go to Step 0260-12.

- **Step 0260-12**

The adapter for the device may be causing the problem.

1. Turn off the system unit.
2. Exchange the adapter for the device.

Note: If the AIX operating system is not used on the system, start diagnostics from an alternate source.

3. Turn on the system unit. If c31 is displayed, follow the instructions to select a console display.
4. Load the standalone diagnostics and refer to Loading and using the AIX online diagnostics or the standalone diagnostics.
5. Wait until the DIAGNOSTIC OPERATING INSTRUCTIONS display or the system appears to have stopped.

Are the DIAGNOSTIC OPERATING INSTRUCTIONS displayed?

NO Go to MAP 1540: Problem Isolation Procedure.

YES Go to MAP 0410: Repair Checkout.

MAP 0270: SCSI RAID problem resolution and verification

Use this MAP to resolve SCSI RAID adapter, cache, or drive problems.

Purpose of This MAP

Use this MAP to resolve SCSI RAID adapter, cache, or drive problems.

Notes:

1. This MAP assumes that the RAID adapter and drive microcode is at the correct level. To check the microcode level, see PCI SCSI RAID Descriptions and Diagnostic Procedures.
2. This MAP only applies to PCI, not PCI-X, RAID adapters.

Attention: If the FRU is a disk drive or an adapter, ask the system administrator to perform the steps necessary to prepare the device for removal.

• Step 0270-1

1. If the system displayed a FRU part number on the screen, use that part number. If there is no FRU part number displayed on the screen, refer to the SRN listing. Record the SRN source code and the failing function codes in the order listed.
2. Find the failing function codes in the FFC listing, and record the FRU part number and description of each FRU.

Go to Step 0270-2.

• Step 0270-2

Is the FRU a RAID drive?

NO Go to Step 0270-6.

YES Go to Step 0270-3.

• Step 0270-3

If the RAID drive you want to replace is not already in the **failed** state, then ask the customer to run the **PCI SCSI Disk Array Manager** using **smit** to fail the drive that you wish to replace. An example of this procedure is:

1. Login as root.
2. Type `smit pdam`.
3. Select **Fail a Drive in a PCI SCSI Disk Array**.
4. Select the appropriate disk array by placing the cursor over that array and press Enter.
5. Select the appropriate drive to fail based on the Channel and ID called out in diagnostics.

6. The **Fail a Drive** screen will appear. Verify that you are failing the correct drive by looking at the Channel ID row. Press Enter when verified correct. Press Enter again.
7. Press **F10** and type `smit pdam`
8. Select **"Change/Show PCI SCSI RAID Drive Status → Remove a Failed Drive"**
9. Select the drive that just failed.

Go to Step 0270-4.

• **Step 0270-4**

Using the Hot Plug Task service aid described in Hot-Swap Task, replace the RAID drive using the RAID HOT PLUG DEVICES service aid:

Note: The drive you wish to replace must be either a SPARE or FAILED drive. Otherwise, the drive would not be listed as an IDENTIFY AND REMOVE RESOURCES selection within the RAID HOT PLUG DEVICES screen. In that case you must ask the customer to put the drive into FAILED state. For information on putting the drive in a FAILED state, refer the customer to the *PCI Dual Channel Ultra320 SCSI RAID Adapter Installation and Using Guide*, order number SC23-1324.

1. Select the RAID HOT PLUG DEVICES option within the HOT PLUG TASK under DIAGNOSTIC SERVICE AIDS.
2. Select the RAID adapter that is connected to the RAID array containing the RAID drive you wish to remove, then select COMMIT.
3. Choose the IDENTIFY option in the IDENTIFY AND REMOVE RESOURCES menu.
4. Select the physical disk which you wish to remove from the RAID array and press Enter.
5. The disk will go into the IDENTIFY state, indicated by a flashing light on the drive. Verify that it is the physical drive you wish to remove, then press Enter.
6. At the IDENTIFY AND REMOVE RESOURCES menu, choose the REMOVE option and press Enter.
7. A list of the physical disks in the system which may be removed will be displayed. If the physical disk you wish to remove is listed, select it and press Enter. The physical disk will go into the REMOVE state, as indicated by the LED on the drive. If the physical disk you wish to remove is not listed, it is not a SPARE or FAILED drive. Ask the customer to put the drive in the FAILED state before you can proceed to remove it. For information on putting the drive in a FAILED state, refer the customer to the *PCI Dual Channel Ultra320 SCSI RAID Adapter Installation and Using Guide*, order number SC23-1324.
8. Refer to service guide for the system unit or enclosure that contains the physical drive for removal and replacement procedures for the following substeps:
 - a. Remove the old hot-swap RAID drive.
 - b. Install the new hot-swap RAID drive. Once the hot-swap drive is in place, press Enter. The drive will exit the REMOVE state, and will go to the NORMAL state once you exit diagnostics.

Note: There are no elective tests to run on a RAID drive itself under diagnostics (the drives are tested by the RAID adapter).

Go to Step 0270-5.

• **Step 0270-5**

If the RAID did not begin reconstructing automatically, perform the steps that follow.

Adding a Disk to the RAID array and Reconstructing:

Ask the customer to run the PCI SCSI Disk Array Manager using `smit`. An example of this procedure is:

1. Login as root.
2. Type `smit pdam`.
3. Select **Change/Show PCI SCSI RAID Drive Status**.
4. Select **Add a Spare Drive**.

5. Select the appropriate adapter.
6. Select the channel and ID of the drive which was replaced.
7. Press Enter when verified.
8. Press **F3** until you are back at the **Change/Show PCI SCSI RAID Drive Status** screen.
9. Select **Add a Hot Spare**.
10. Select the drive you just added as a spare.
11. If there was no hot spare previously installed in the array, the array will begin reconstructing immediately. Reconstruction time will vary based on the size of the RAID array. Allow 1-2 hours for completion.

To check the progress of the reconstruction:

1. Login as root.
2. Type `smit pdam`.
3. Select **List PCI SCSI RAID Arrays**.
4. Choose the array containing the drive you replaced.
If the state of the RAID array is reconstructing then it is in process of reconstructing. If it is optimal, then reconstruction has completed.
5. Press **F10** to exit.

Go to Step 027017.

- **Step 0270-6**

Is the FRU a RAID adapter base card, RAID adapter cache card, or RAID adapter battery?

NO Go to Step 0270-15.

YES Go to Step 0270-7.

- **Step 0270-7**

Do you want to change the FRU using a hot-swap operation?

NO Power down the system, and remove the RAID adapter, if necessary refer to the PCI Adapter section. Go to Step 0270-8.

YES Remove the RAID adapter, if necessary refer to the PCI Adapter section. Go to Step 0270-8.

- **Step 0270-8**

Is the FRU you want to replace a RAID adapter cache card or RAID adapter battery?

NO Go to Step 0270-10.

YES Go to Step 0270-9.

- **Step 0270-9**

Replace the FRU onto the existing base card.

Go to Step 0270-11.

- **Step 0270-10**

After physically removing the base card from the system, remove any other good FRUs (RAID cache card or cache battery) from the RAID base card adapter. Plug these FRUs on to the replacement RAID base card adapter FRU.

Go to Step 0270-11.

- **Step 0270-11**

Did you change the FRU using a hot-swap operation?

NO Install the RAID adapter assembly into the system, if necessary refer to the PCI Adapter section. Power up the system and login to AIX. Go to Step 0270-12.

YES Install the RAID adapter assembly into the system. If necessary, refer to the PCI Adapter section. Go to Step 0270-12.

- **Step 0270-12**

Was the replacement FRU a RAID base card?

NO Go to Step 0270-14.

YES Go to Step 0270-13.

- **Step 0270-13**

Attention: Prior to cabling the SCSI RAID adapter to the subsystem check for preexisting configurations on the replacement SCSI RAID base card. The replacement base card can overwrite your system's configuration data if it already has a configuration written to it! Check it before cabling the SCSI RAID subsystem array.

Ask to customer to check for preexisting configuration on the SCSI RAID base card. Below is an example of this procedure:

1. Login as root (if not already root).
2. Type `smit pdam`.
3. Select **List PCI SCSI RAID Arrays**.
4. If no RAID arrays are listed, then there are no preexisting configurations on the base card.
5. Press **F10** key to exit.

If a preexisting configuration exists on the base card, ask the customer to run the PCI SCSI Disk Array Manager using **smitty**.

1. Login as root (if not already root).
2. Type `smit pdam` from the AIX command prompt (if not already in the RAID manager).
3. Select **Recovery Options**.
4. Select **Clear PCI SCSI RAID Adapter Configuration**. Select the adapter which you just installed. Press Enter" to confirm.
5. Return to the **Recovery Options** menu (if not already there). Select **Resolve PCI SCSI RAID Adapter Configuration**. Select **Accept Configuration on Drives**. Select the adapter which you just installed. Press Enter to confirm. The configuration on the new adapter should now match the configuration existent on the drives.
6. Press **F10** to exit.

You may now proceed to cable the RAID system array.

Go to Step 0270-16.

- **Step 0270-14**

Ask the customer to resynchronize the RAID array configuration. Below is an example of this procedure:

1. Log in as root (if not already root).
2. Type `smit pdam`.
3. Select **Recovery Options**.
4. Select **Resolve PCI SCSI RAID Adapter Configuration**.
5. Select **Retry Current Configuration**.
6. Select the appropriate `sccraid` (SCSI RAID) adapter.
7. A message will be displayed as to the success of the operation.
8. Press **F10** to exit.

Go to Step 0270-16.

- **Step 0270-15**

Other RAID FRUs require that the system be shut down prior to replacement.

1. If the operating system is running, perform the operating system shutdown procedure (get help if needed).
2. Turn off the system power.

3. Replace the FRU indicated by the FFC.
Go to Step 0270-16.
- **Step 0270-16**
Run the diagnostics in system verification mode on the RAID subsystem.
Did the diagnostics run with no trouble found?
NO Go to Step 0270-18.
YES Go to Step 0270-17.
- **Step 0270-17**
 1. Use the **Log Repair Action** option in the TASK SELECTION menu to update the AIX error log. Select **scraidX** (where X is the RAID adapter number of the RAID subsystem you've been working on).

Note: On systems with fault indicator LED, this changes the fault indicator LED from the **Fault** state to the **Normal** state.
 2. While in diagnostics, go to the FUNCTION SELECTION menu. Select the **Advanced Diagnostics Routines** option.
 3. When the DIAGNOSTIC MODE SELECTION menu displays, select the system verification option. Run the diagnostic test on **scraidX** (where X is the RAID adapter number).**Did the diagnostics run with no trouble found?**
NO Go to the Step 0270-18.
YES If you changed the service processor or network settings, restore the settings to the value they had prior to servicing the system. If the system you are servicing has a hardware management console (HMC) with service focal point (SFP) go to the **End of Call MAP for systems with Service Focal Point** in the system service guide.
This completes the repair; return the system to the customer.
- **Step 0270-18**
Have you exchanged all the FRUs that correspond to the failing function codes?
NO Go to Step 0270-19.
YES The SRN did not identify the failing FRU. Schedule a time to run diagnostics in service mode. If the same SRN is reported in service mode, go to MAP 0030: Additional Problem Determination.
- **Step 0270-19**

Note: Note: Before proceeding, remove the FRU you just replaced and install the original FRU in its place.
Use the next FRU on the list and go to Step 0270-2.

MAP 0280: Console and Keyboard Problem Resolution

Use this MAP to resolve console and keyboard problems when the system is booting.

Purpose of This MAP

Use this MAP to resolve console and keyboard problems when the system is booting. For other boot problems and concerns, go to Problems with loading and starting the operating system (AIX and Linux).

Entry Table	
Entry 1	Go to Step 0280-1.
Entry 2	Go to Step 0280-2.

Entry Table	
Entry 3	Go to Step 0280-3.

- **Step 0280-1**

The system fails to respond to keyboard entries.

This problem is most likely caused by a faulty keyboard, keyboard adapter, or keyboard cable.

Try the FRUs in the order listed below: (Test each FRU by retrying the failing operation.)

1. Keyboard
2. Keyboard adapter (normally located on the system board)
3. Keyboard cable (if not included with the keyboard)

Were you able to resolve the problem?

NO Go to MAP 0030: Additional Problem Determination.

YES Go to MAP 0410: Repair Checkout.

- **Step 0280-2**

1. Some systems have a graphic adapter POST. Check Power-on self test (POST) keys for information about graphic adapter POSTs. If a graphic adapter POST is supported and it indicates a failure, follow the procedures in the system guide to resolve the problem.
2. If a graphic adapter POST is supported and it does not indicate a failure, suspect the display or display cable.
3. If the system does not have a graphic adapter POST, go to the display's problem determination procedures. If you do not find a problem, replace the graphics adapter.

Were you able to resolve the problem?

NO Go to MAP 0030: Additional Problem Determination.

YES Go to MAP 0410: Repair Checkout.

- **Step 0280-3**

Go to the problem determination procedure for the terminal. If you do not find a problem, suspect the serial port adapter or terminal cable.

Were you able to resolve the problem?

NO Call your support person.

YES Go to MAP 0410: Repair Checkout.

MAP 0285: Multipath I/O (MPIO) Problem Resolution

Use this MAP to handle SRN A23-001 and ssss-640 (where ssss is the 3 or 4 digit FFC of an SCSD drive) to check the path from adapter to device.

Purpose of this MAP

Use this MAP to handle SRN A23-001 and ssss-640 (where ssss is the 3 or 4 digit FFC of an SCSD drive) to check the path from adapter to device.

Note: Not all devices support MPIO. Before proceeding with this MAP, make sure that the devices on both ends of the missing path support MPIO.

- **Step 0285-1**

Look at the problem report screen for the missing path. After the resource name and FRU, the next column identifies the missing path between resources (for example, scsi0 -> hdisk1). This indicates the missing path between the two resources, scsi0 (the parent resource) and hdisk1 (the child resource).

Is the cabling present between the two resources?

NO Go to Step 0285-2.

YES Go to Step 0285-4.

Note: In the following MAP steps, if no path previously existed between a parent and child device, the child device will have to be changed from the "defined" to the "available" state, otherwise you will be unable to select the child device to which you want to establish a path.

- **Step 0285-2**

1. Power off the system.
2. Connect the proper cable between the two resources.
3. Power on the system, rebooting AIX.
4. At the AIX command line, type `smitty mpio`.
5. Choose **MPIO Path Management**.
6. Select **Enable Paths**.
7. Select **Enable Paths for a Device**.
8. In the **Device Name** selection, choose the name of the child device (the device at the end of the path).
9. In the **Paths to Enable** selection, select the missing path (between the parent and child device).
10. Press Enter.

Did the smitty menu complete with no errors?

NO Go to Step 0285-4.

YES Go to Step 0285-3.

- **Step 0285-3**

To verify that the device path is present, rerun `diag -a`.

When the resource list displays, select the child resource that had the missing path. If the letter P is shown in front of the resource, you still have a path problem. If no letter P is shown in front of the resource or if the system returns to the command prompt or you get a message without the resource list being displayed, then the problem has been resolved.

Do you still have a path problem?

NO Go to MAP 0410: Repair Checkout.

YES Go to Step 0285-4.

- **Step 0285-4**

1. Power off the system.
2. Reseat the cables between the device and the adapter that have the missing path.
3. Power on the system, rebooting AIX.
4. At the AIX command line, type `smitty mpio`.
5. Choose **MPIO Path Management**.
6. Select **Enable Paths**.
7. Select **Enable Paths for a Device**.
8. In the **Device Name** selection, choose the name of the child device (the device at the end of the path).
9. In the **Paths to Enable** selection, select the missing path (between the parent and child device).
10. Press enter.

Did the smitty menu complete with no errors?

NO Go to Step 0285-6.

YES Go to Step 0285-5.

- **Step 0285-5**

To verify that the device path is present, rerun `diag -a`

When the resource list displays, select the child resource that had the missing path. If the letter P is shown in front of the resource, you still have a path problem. If no letter P is shown in front of the resource or if the system returns to the command prompt or you get a message without the resource list being displayed, then the problem has been resolved.

Do you still have a path problem?

NO Go to MAP 0410: Repair Checkout.

YES Go to Step 0285-6.

- **Step 0285-6**

You may have a problem with the driver interface or connector on either the parent or child device.

1. Power off the system (refer to the system service guide if necessary).
2. Remove the cables to the parent device.
3. Replace the cable(s) that go between the parent and child device (if present).
4. Reattach the cables to the parent device.
5. Power on the system, rebooting AIX (refer to the system service guide if necessary).
6. At the AIX command line, type `smitty mpio`.
7. Choose **MPIO Path Management**.
8. Select **Enable Paths**.
9. Select **Enable Paths for a Device**.
10. In the **Device Name** selection, choose the name of the child device (the device at the end of the path).
11. In the **Paths to Enable** selection, select the missing path (between the parent and child device).
12. Press enter.

Did the smitty menu complete with no errors?

NO Go to Step 0285-7.

YES Go to Step 0285-8.

- **Step 0285-7**

To verify that the device path is present, rerun `diag -a`.

When the resource list displays, select the child resource that had the missing path. If the letter P is shown in front of the resource, you still have a path problem. If the letter P is not shown in front of the resource, or if the system returns to the command prompt, or you get a message without the resource list being displayed, then the problem has been resolved.

Do you still have a problem?

NO Go to MAP 0410: Repair Checkout.

YES Go to Step 0285-8.

- **Step 0285-8**

You may have a problem with the driver interface or connector on either the parent or child device.

1. Power off the system.
2. Remove the cables to the parent device.
3. Replace the parent device.
4. Reattach the cables to the parent device.
5. Power on the system, rebooting AIX.
6. At the AIX command line, type `smitty mpio`.
7. Choose **MPIO Path Management**.

8. Select **Enable Paths**.
9. Select **Enable Paths for a Device**.
10. In the **Device Name** selection, choose the name of the child device (the device at the end of the path).
11. In the **Paths to Enable** selection, select the missing path (between the parent and child device).
12. Press enter.

Did the smitty menu complete with no errors?

NO Go to Step 0285-9.

YES Go to Step 0285-10.

- **Step 0285-9**

To verify that the device path is present, rerun `diag -a`.

When the resource list displays, select the child resource that had the missing path. If the letter P is shown in front of the resource, you still have a path problem. If no letter P is shown in front of the resource or if the system returns to the command prompt or you get a message without the resource list being displayed, then the problem has been resolved.

Do you still have a path problem?

NO Go to MAP 0410: Repair Checkout.

YES Go to Step 0285-10.

- **Step 0285-10**

You may have a problem with the driver interface or connector on the child device.

1. Power off the system.
2. Remove the cables to the child device.
3. Replace the child device (in the case of a SCSI or SAF-TE backplane, replace the backplane first, followed by the child device).
4. Reattach the cables to the child device.
5. Power on the system, rebooting AIX.
6. At the AIX command line, type `smitty mpio`.
7. Choose **MPIO Path Management**.
8. Select **Enable Paths**.
9. Select **Enable Paths for a Device**.
10. In the **Device Name** selection, choose the name of the child device (the device at the end of the path).
11. In the **Paths to Enable** selection, select the missing path (between the parent and child device).
12. Press enter.

Did the smitty menu complete with no errors?

NO Neither the cabling, nor the parent, nor the child seem to be causing the problem. Contact your service support structure.

YES Go to Step 0285-11.

- **Step 0285-11**

Rerun `diag -a` to verify that the device path is present.

When the resource list displays, select the child resource that had the missing path. If the letter P is shown in front of the resource, you still have a path problem. If no letter P is shown in front of the resource or if the system returns to the command prompt or you get a message without the resource list being displayed, then the problem has been resolved.

Do you still have a path problem?

NO Go to MAP 0410: Repair Checkout.

YES Neither the cabling, nor the parent, nor the child seem to be causing the problem. Contact your service support structure.

MAP 0290: Missing Resource Problem Resolution

Use this MAP to handle problems when a resource is not detected by the diagnostics.

Purpose of this MAP

Use this MAP to handle problems when a resource is not detected by the diagnostics.

- **Step 0290-1**

Use the Display Configuration and Resource List to display the resources that were sensed by the configuration program when the diagnostic programs were loaded. Go to Step 0290-2.

Notes:

1. Supplemental diskettes may be required for specific adapters and devices if service aids are run from standalone diagnostics.
2. ISA adapters cannot be detected by the system. The ISA Adapter Configuration service aid in standalone diagnostics is used to identify and configure ISA adapters based on user input.
3. A resource's software must be installed on the AIX operating system before a resource can be detected by the online diagnostics.
4. If a parent device and all of its children are the missing resources at the same time, first use the parent device as the missing resource when going through this MAP. If the problem with the parent device is resolved so that it is no longer missing, but any of its children are still missing, use the children when going through this MAP.

- **Step 0290-2**

Is the undetected resource a SCSI device installed in an externally attached enclosure for a SCSI device(s)?

NO Go to Step 0290-4.

YES Go to Step 0290-3.

- **Step 0290-3**

Go to the documentation for SCSI devices installed in an externally attached enclosure for a SCSI device(s), and check the device(s) for proper power, cabling, fans running, and any other checks available. Return to this step after you check the device.

Did you find a problem?

NO Go to Step 0290-4.

YES Correct the problem; then go to MAP 0410: Repair Checkout.

- **Step 0290-4**

Are you running Standalone Diagnostics?

NO Go to Step 0290-7.

YES Go to Step 0290-5.

- **Step 0290-5**

Are multiple devices missing that are connected to the same adapter? (If the adapter itself is also missing, answer "No" to this question.)

NO Go to Step 0290-7.

YES Suspect a problem with the device adapter. Run diagnostics in problem determination mode on the device adapter, then go to Step 0290-6.

- **Step 0290-6**

Did the diagnostics detect a problem with the adapter?

NO Go to Step 0290-8.

YES Record the SRN, then find the SRN in the SRN List and do the listed action.

- **Step 0290-7**

Take the following steps:

1. Exchange the undetected resource.
2. Use the Display Configuration and Resource List to display the resources sensed by the configuration program.

Is the resource listed?

NO Go to MAP 0030: Additional Problem Determination.

YES Go to MAP 0410: Repair Checkout.

- **Step 0290-8**

Are the missing devices attached to a backplane?

NO Go to Step 0290-7.

YES Exchange the backplane then go to Step 0290-9.

Note: Before exchanging the backplane check that all cables connected to the backplane are properly seated and that all cables and connectors are in good working condition. If a problem is found, correct it, and then go to MAP 0410: Repair Checkout.

- **Step 0290-9**

Load the standalone diagnostics, then use the list of resources in the DIAGNOSTIC SELECTION to determine if devices that were previously missing now appear on the resource list.

Are the previously missing devices now listed on the resource list?

NO Go to Step 0290-10.

YES Go to MAP 0410: Repair Checkout.

- **Step 0290-10**

Is the missing resource (or resources) on a SCSI bus?

NO Go to MAP 0030: Additional Problem Determination.

YES Go to Step 0290-11.

- **Step 0290-11**

Use the removal and replacement procedures for the backplane you are servicing for the following steps:

1. Remove all resources from the backplane.
Repeat steps 2 through 4 for each device you removed from the backplane.
2. Reconnect the devices one at a time to the backplane.
3. After reconnecting each device, use the Display Configuration and Resource List to display the resources sensed by the configuration program.
4. If one or more previously missing resources does not appear, reinstall the resources you removed in step 1 into the backplane, then go to MAP 0410: Repair Checkout.
5. If after having reconnected each device to the backplane, the previously missing resource does not appear, go to MAP 0030: Additional Problem Determination.

MAP 0291: Missing Device or Bus Problem Resolution

Use this MAP when a bus or device (such as a disk drive) is reported as a missing resource by the diagnostics.

Purpose of this MAP

Use this MAP when a bus or device (such as a disk drive) is reported as a missing resource by the diagnostics.

- **Step 0291-1**

The device may be missing because of a power problem.

If the missing device is located in a drawer or enclosure, do the following:

1. Check for any environmental problem indicators such as power or cooling that may indicate a problem. (if needed, refer to the service documentation.)
2. If a problem is indicated, follow the service documentation to resolve the problem.

Go to Step 0291-2.

- **Step 0291-2**

Inspect the cables (signal and power) of the missing device. Be sure all connections are in place and power is present. Refer to the system or enclosure documentation containing the power wiring diagram or system cable diagram to locate specific cables, determine the cable numbering, and check for a problem-determination procedure. Look for obvious power cabling problems, such as missing or loose cable connectors.

Power problems can sometimes be identified by checking other devices that use the same power source (such as a diskette drive and a SCSI tape drive, even though they have different controllers). If other devices that share a power source are reported as missing devices, suspect the power source as the problem.

If there is a power problem, refer to Power problems.

Did you find a problem?

NO Go to Step 0291-3.

YES Correct the problem, then go to MAP 0410: Repair Checkout.

- **Step 0291-3**

Is the missing device a SCSI device installed in a SCSI Enclosure Services (AIX resource SESx) or SAF-TE (AIX resource SAFTEEx), or a SCSI device installed in either type of enclosure?

NO Go to MAP 0210: General Problem Resolution.

YES Go to Step 0291-4.

- **Step 0291-4**

Run the advanced diagnostics in problem determination mode on the SCSI Enclosure Services or SAF-TE device.

Note: A no trouble found result, or if you get another SRN with the same digits before the dash as you previously had from the diagnostics, indicates that you did NOT get a different SRN.

Did you get a different SRN than when you ran the diagnostics previously?

NO Go to Step 0291-5.

YES Take the following action:

1. Find the SRN in List of service request numbers.

Note: If the SRN is not listed a Service Request Number Lists, look for additional information in the following:

- Any supplemental service manual for the device.
- The diagnostic Problem Report screen.
- The Service Hints service aid in Using Standalone and Online Diagnostics.

2. Perform the action listed.

- **Step 0291-5**

Power off the system. Disconnect all hot-swap devices attached to the adapter. Reconnect the hot-swap devices one at a time. After reconnecting each device, do the following:

1. Power on the system and boot the system in the same mode that you were in when you received the symptom that led you to this MAP Powering on and off.
2. At an AIX command prompt, run a (**diag -a**) to check for missing options.
3. Verify that the device you just added to the system is present in the system configuration. If other devices are now missing, the problem may be with the last device that was reconnected or reinstalled. Perform these substeps:
 - a. If the device that was just reinstalled in the system is missing, or if additional devices are now missing, replace the last device that was reinstalled.
 - b. Rerun **diag -a** to check for missing options.
 - c. If devices are no longer missing, go to MAP 0410: Repair Checkout. Otherwise, contact your support center.

Note: A device problem can cause other devices attached to the same SCSI adapter to go into the defined state. Ask the system administrator to make sure that all devices attached to the same SCSI adapter as the device that you replaced are in the available state.

4. If no devices were missing, the problem could be intermittent. Make a record of the problem. Running the diagnostics for each device on the bus may provide additional information. If you have not replaced FFCs B88, 190, and 152 go to MAP 0210: General Problem Resolution, using FFCs (in order): B88, 190, and 152.

MAP 0410: Repair checkout

Use this MAP to check out the server after a repair is completed.

Purpose of this MAP

Use this MAP to check out the server after a repair is completed.

Note: Only use standalone diagnostics for repair verification when no other diagnostics are available on the system. Standalone diagnostics do not log repair actions.

If you are servicing an SP system, go to the End-of-call MAP in the *SP System Service Guide*.

If you are servicing a clustered eServer, go to the End of Call MAP in the *Clustered eServer Installation and Service Guide*.

- **Step 0410-1**

Did you use an AIX diagnostics service aid hot-swap operation to change the FRU?

NO Go to Step 0410-2.

YES Go to Step 0410-4.

- **Step 0410-2**

Note: If the system planar or battery has been replaced and you are loading diagnostics from a server over a network, it may be necessary for the customer to set the network boot information for this system before diagnostics can be loaded. The system time and date information should also be set when the repair is completed.

Do you have any FRUs (for example cards, adapters, cables, or devices) that were removed during problem analysis that you want to put back into the system?

NO Go to Step 0410-3.

YES Reinstall all of the FRUs that were removed during problem analysis. Go to Step 0410-3.

- **Step 0410-3**

Is the system or logical partition that you are performing a repair action on running the AIX operating system?

NO Go to Step 0410-5.

YES Go to Step 0410-4.

- **Step 0410-4**

Does the system or logical partition you are performing a repair action on have AIX installed?

Note: Answer "NO" to this question if you have just replaced a hard disk in the root volume group.

NO Go to Step 0410-5.

YES Go to Step 0410-6.

- **Step 0410-5**

Run standalone diagnostics from either a CD ROM or from a NIM server. For instruction on running standalone diagnostics from a CD and using an HMC, go to Using the HMC to load the standalone diagnostics from CD-ROM. For instruction on running standalone diagnostics from a CD and not using an HMC, go to Loading the standalone diagnostics on a system without an HMC attached. For instruction on running standalone diagnostics from a NIM server and using an HMC, go to Running Standalone Diagnostics from a Network Installation Management (NIM) Server with an HMC Attached to the System. For instruction on running standalone diagnostics from a NIM server, go to Client Configuration and Booting Standalone Diagnostics from the NIM Server.

Did you encounter any problems?

NO Go to Step 0410-14.

YES Go to MAP 0020: Problem determination procedure.

- **Step 0410-6**

1. If the system supports slow boot (See Performing a slow boot), do a slow boot on the system. If the system does not support slow boot, do a normal boot.
2. Power on the system.
3. Wait until the AIX operating system login prompt displays or until system activity on the operator panel or display apparently has stopped.

Did the AIX Login Prompt display?

NO Go to MAP 0020: Problem Determination Procedure.

YES Go to Step 0410-7.

- **Step 0410-7**

If the **Resource Repair Action** menu is already displayed, go to Step 0410-10; otherwise, do the following:

1. Log into the operating system either with root authority (if needed, ask the customer to enter the password) or use the CE login.
2. Enter the diag -a command and check for missing resources. Follow any instructions that display. If an SRN displays, suspect a loose card or connection. If no instructions display, no resources were detected as missing. Continue on to Step 0410-8

- **Step 0410-8**

1. Enter diag at the command prompt.
2. Press Enter.
3. Select the **Diagnostics Routines** option.
4. When the DIAGNOSTIC MODE SELECTION menu displays, select **Problem determination**.

5. When the ADVANCED DIAGNOSTIC SELECTION menu displays, select the **All Resources** option or test the FRUs you exchanged, and any devices that are attached to the FRU(s) you exchanged, by selecting the diagnostics for the individual FRU.

Did the RESOURCE REPAIR ACTION menu (801015) display?

NO Go to Step 0410-9.

YES Go to Step 0410-10.

- **Step 0410-9**

Did the TESTING COMPLETE, no trouble was found menu (801010) display?

NO There is still a problem. Go to MAP 0020: Problem Determination Procedure.

YES Use the **Log Repair Action** option, if not previously logged, in the TASK SELECTION menu to update the AIX error log. If the repair action was reseating a cable or adapter, select the resource associated with that repair action.

If the resource associated with your action is not displayed on the resource list, select **sysplanar0**.

Note: If the system attention indicator is on, this will set it back to the normal state.

Go to Step 0410-12.

- **Step 0410-10**

When a test is run on a resource in system verification mode, and that resource has an entry in the AIX error log, if the test on the resource was successful, the RESOURCE REPAIR ACTION menu displays.

After replacing a FRU, you must select the resource for that FRU from the RESOURCE REPAIR ACTION menu. This updates the AIX error log to indicate that a system-detectable FRU has been replaced.

Note: If the system attention indicator is on, this action will set it back to the normal state.

Do the following:

1. Select the resource that has been replaced from the RESOURCE REPAIR ACTION menu. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your action is not displayed on the resource list, select **sysplanar0**.
2. Press **Commit** after you make your selections.

Did another Resource Repair Action (801015) display?

NO If the No Trouble Found menu displays, go to Step 0410-12.

YES Go to Step 0410-11.

- **Step 0410-11**

The parent or child of the resource you just replaced may also require that you run the RESOURCE REPAIR ACTION service aid on it.

When a test is run on a resource in system verification mode, and that resource has an entry in the AIX error log, if the test on the resource was successful, the RESOURCE REPAIR ACTION menu displays.

After replacing that FRU, you must select the resource for that FRU from the RESOURCE REPAIR ACTION menu. This updates the AIX error log to indicate that a system-detectable FRU has been replaced.

Note: If the system attention indicator is on, this action will set it back to the normal state.

Do the following:

1. From the RESOURCE REPAIR ACTION menu, select the parent or child of the resource that has been replaced. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your action is not displayed on the resource list, select **sysplanar0**.

2. Press COMMIT after you make your selections.
3. If the No Trouble Found menu displays, go to Step 0410-12.

- **Step 0410-12**

If you changed the service processor or network settings, as instructed in previous MAPs, restore the settings to the value they had prior to servicing the system. If you ran standalone diagnostics from CD-ROM, remove the standalone diagnostics CD-ROM from the system.

Did you perform service on a RAID subsystem involving changing of the PCI RAID adapter cache card or changing the configuration?

Note: This does not refer to the PCI-X RAID adapter or cache.

NO Go to Step 0410-14.

YES Go to Step 0410-13.

- **Step 0410-13**

Use the **Recover Options** selection to resolve the RAID configuration. To do this, do the following:

1. On the PCI SCSI Disk Array Manager screen, select **Recovery options**.
2. If a previous configuration exists on the replacement adapter, this must be cleared. Select **Clear PCI SCSI Adapter Configuration**. Press F3.
3. On the Recovery Options screen, select **Resolve PCI SCSI RAID Adapter Configuration**.
4. On the Resolve PCI SCSI RAID Adapter Configuration screen, select **Accept Configuration on Drives**.
5. On the PCI SCSI RAID Adapter selections menu, select the adapter that you changed.
6. On the next screen, press Enter.
7. When you get the Are You Sure selection menu, press Enter to continue.
8. You should get an OK status message when the recover is complete. If you get a Failed status message, verify that you selected the correct adapter, then repeat this procedure. When recover is complete, exit the operating system.
9. Go to Step 0410-14.

- **Step 0410-14**

If the system you are servicing has a Hardware Management Console (HMC) with Service Focal Point (SFP), go to the End-of-call procedure for systems with Service Focal Point.

This completes the repair; return the server to the customer.

MAP 0420: System checkout

Use this MAP to verify that the system is working correctly.

Purpose of this MAP

Use this MAP to verify that the system is working correctly.

- **Step 0420-1**

1. If the operating system is running, perform the operating system's shutdown procedure (get help if needed).
2. Power off the system.
3. Power on the system.
4. Load either the Online or Standalone Diagnostics in Service Mode (refer to the system unit's service guide if necessary).
5. Wait until the diagnostics are loaded or the system appears to stop.

Were you able to load the diagnostics?

NO There is a problem. Go to the system unit's service guide.

YES Go to Step 0420-1.

- **Step 0420-2**

1. Press Enter.
2. When the FUNCTION SELECTION menu displays, select **Advanced Diagnostics**.
3. When the DIAGNOSTIC MODE SELECTION menu displays, select the **System Verification** option.

Note: If the terminal type is not defined, you are prompted to define it. You cannot continue until this is done.

4. On the DIAGNOSTIC SELECTION or ADVANCED DIAGNOSTIC SELECTION menu, look through the list of resources to make sure that all adapters and SCSI devices are listed including any new resources.

Note:

- a. Resources attached to serial and parallel ports may not appear in the resource list.
- b. ISA adapters cannot be detected by the system. The ISA Adapter Configuration Service Aid in Standalone Diagnostics allows the identification and configuration of ISA adapters.
- c. If running diagnostics in a partition within a partitioned system, resources assigned to other partitions are displayed on the resource list.

Did you find all the adapters or devices on the list?

NO Go to Step 0420-3.

YES Go to Step 0420-5.

- **Step 0420-3**

Is the new device or adapter an exact replacement for a previous one installed at same location?

Step 0420-1

Go to Step 0420-4.

YES The replacement device or adapter may be defective. If possible, try installing it in an alternate location if one is available. If it works in that location, suspect that the location where it failed to appear has a defective slot; schedule time to replace the hardware that supports that slot. If it does not work in an alternate location, suspect a bad replacement adapter or device. If you are still unable to detect the device or adapter, contact your service support structure.

- **Step 0420-4**

Is the operating system software to support this new adapter or device installed?

NO Load the operating system software.

YES The replacement device or adapter may be defective. If possible, try installing it in an alternate location if one is available. If it works in that location, suspect that the location where it failed to appear has a defective slot; schedule time to replace the hardware that supports that slot. If it does not work in an alternate location, suspect a bad replacement adapter or device. If you are still unable to detect the device or adapter, contact your service support structure.

- **Step 0420-5**

1. The MISSING RESOURCE menu only displays when a resource was removed or moved. If the MISSING RESOURCE menu is displayed, follow the instructions.
2. If the ADVANCED DIAGNOSTIC SELECTION menu displays, select the **System Verification** option, then use the **All Resources** option to test the system or select the individual tests you want to run. If the RESOURCE SELECTION menu is displayed, select the **All Resources** option to test the system or select each test you want to run.

Did the test pass?

NO There is a problem. Go to MAP 0020: Problem Determination Procedure.

YES This completes the system checkout.

Installation Checkout

The installation checkout procedure is used by the service representative to verify system functionality after the system is installed, or after an MES or EC has been installed.

Installation Checkout Procedure

To start the checkout, go to Step 1. Doing a Visual Check.

- **Step 1. Doing a Visual Check**

Perform the following actions after initial system installation or system alteration:

1. Be sure the system unit power switch is set to Off.
2. Be sure the power switches on all of the attached devices are set to Off.
3. Visually check the system unit and attached devices to ensure that:
 - All power cables are securely attached to the system unit and devices
 - All signal cables are connected at both ends
 - All power cables are plugged into the customer's outlet
 - All covers are installed and the vent openings are not obstructed
 - All ribbons, guides, and other attachments are in place.
4. Go to Step 2. Checking the TTY Terminal Attributes.

- **Step 2. Checking the TTY Terminal Attributes**

Checking the TTY terminal attributes usually needs to be done only during the initial installation.

If you have trouble selecting the console display and you are using a TTY (ASCII) terminal attached to a system port, check the TTY terminal attributes again.

When you run the diagnostic programs from a TTY terminal, the attributes for the terminal must be set to match the defaults of the diagnostic programs. The TTY terminal must be attached to the S1 system port on the system unit.

Are you going to run this procedure on an TTY terminal?

NO Go to Step 3. Loading the Diagnostics.

YES Go to the TTY terminal attribute settings in the terminal's documentation, and check the terminal attributes. Return to Step 3 when you finish checking the attributes.

- **Step 3. Loading the Diagnostics**

The diagnostics can be run from a CD-ROM, from a locally attached disk, or from a NIM (network installation management) server.

If the AIX operating system is installed, the diagnostic programs load from a locally attached disk. If the AIX operating system is not installed, diagnostics can be loaded from the diagnostic CD-ROM or from a NIM server.

The following procedure attempts to load the diagnostics from a disk or from a server. If they cannot be loaded from a disk or server, the diagnostic CD-ROM is used to load and run the checkout.

1. Set the power switches on all of the attached devices to On.
2. Set the power switch on the system unit to On.

Note: After the first icon displays on the system console, press 5 if you are using a directly attached console, or press 6 on a TTY console.

3. If the System Management Services menu displays, the AIX operating system is not installed. Do the following:
 - a. Insert the diagnostic CD-ROM disc into the optical drive.
 - b. Power off the system unit, wait 45 seconds and then power on the system unit.

Note: After the first icon displays on the system console, press 6 if you are using a directly attached console, or press 6 on a TTY console.

- c. If the system stops with an eight-digit error code displayed or stops with a device mnemonic displayed, a problem was detected.

Check for loose cables or cards. If you do not find a problem, go to MAP 0020: Problem Determination Procedure.

4. When the diagnostic programs load correctly, the DIAGNOSTIC OPERATING INSTRUCTIONS display.

Did the DIAGNOSTIC OPERATING INSTRUCTIONS display?

NO Go to MAP 0020: Problem Determination Procedure.

YES Go to Step 4. Checking the Correct Resources.

- **Step 4. Checking for the Correct Resources**

Use the Display or Change System Configuration or VPD service aid to check the resources that are present (memory, SCSI devices, adapters, diskette drives, disk drives, and input devices).

Notes:

1. If the terminal type has not been defined, it must be defined before you can select the service aids. Use the **Initialize Terminal** option on the FUNCTION SELECTION menu to define the terminal.
2. If the Dials and LPF keys are attached to system port S1 or S2, they are not listed by the service aid unless they have been configured by the user. Refer to the AIX operating system documentation to configure these devices.

Were all the resources listed by the service aid?

NO Check for loose cables or cards. If you do not find a problem, go to MAP 0020: Problem Determination Procedure.

YES Go to Step 5. Checking the Hardware.

- **Step 5. Checking the Hardware**

If you are running online diagnostics from a disk, the system can be checked by one of the following methods, depending on the version of the diagnostic programs you are using:

1. Select **Advanced Diagnostics** on the FUNCTION SELECTION menu.
2. Select **System Verification** on the DIAGNOSTIC MODE SELECTION menu.

All resources can be checked out by selecting **System Verification** option on the ADVANCED DIAGNOSTIC SELECTION menu, then select the **All Resources** option, or you can select each resource individually.

3. Check each resource.

Did the diagnostics run without error?

NO Record the SRN; then go to AIX fast-path isolation procedure.

YES Go to Step 6. Completing the Installation.

- **Step 6. Completing the Installation**

Some of the following steps only apply to an initial installation. These steps are provided as reminders in completing the installation or finishing an MES or EC activity.

1. If present, remove the CD-ROM diagnostic disc from the appropriate drive, and store the disc in a safe place
2. Give the keys to the customer and explain the importance of keeping the reorder tag for the keys in a safe place.
3. Keep a copy of the following:
 - SCSI Address Record
 - Machine History card for each system unit and device.

Contact the person that is going to install the software or turn the system over to the customer.

If needed, go to the AIX operating system installation kit to install and configure the AIX operating system.

MAP 1240: xxxxx

This MAP is being reserved for future use.

MAP 1240

PFW1540: Problem isolation procedures

The PFW1540 procedures are used to locate problems in the processor subsystem or I/O subsystem(s).

If a problem is detected, these procedures help you isolate the problem to a failing unit. Find the symptom in the following table; then follow the instructions given in the Action column.

Problem Isolation Procedures	
Symptom/Reference Code/Checkpoint	Action
You have or suspect an I/O card or I/O subsystem failure. You received one of the following SRNs or reference codes: 101-000, 101-517, 101-521, 101-538, 101-551 to 101-557, 101-559 to 101-599, 101-662, 101-727, 101-c32, 101-c33, 101-c70	Go to PFW1542: I/O problem isolation procedure.
The service processor on your Model 590 or Model 595 posts a failure and halts the IPL before the server firmware standby is reached. The server logs an error code indicating a problem with one of the MCMs.	Go to PFW1543: Model 590 and model 595 MCM problem isolation procedure.
The service processor on your Model 590 or Model 595 posts a failure and halts the IPL before the server firmware standby is reached. The server logs an error code indicating a memory subsystem failure.	Go to PFW1546: Model 590 and model 595 Memory problem isolation procedure.
You have or suspect a memory or processor subsystem problem on a server other than a Model 590 or Model 595. You received the following SRN or reference code: 101-185	Go to PFW1548: Memory and Processor Problem Isolation Procedure.
If you were directed to the PFW1540 procedure by an SRN and that SRN is not listed in this table.	Go to PFW1542: I/O problem isolation procedure.

FRU identify LEDs

Your system is configured with an arrangement of LEDs that help identify various components of the system. These include but are not limited to:

- Rack identify beacon LED (optional rack status beacon)
- Processor subsystem drawer identify LED
- I/O drawer identify LED
- RIO port identify LED
- FRU identify LED
- Power subsystem FRUs
- Processor subsystem FRUs
- I/O subsystem FRUs
- I/O adapter identify LED
- DASD identify LED

The identify LEDs are arranged hierarchically with the FRU identify LED at the bottom of the hierarchy, followed by the corresponding processor subsystem or I/O drawer identify LED, and the corresponding rack identify LED to locate the failing FRU more easily. Any identify LED in the system may be flashed; refer to Managing your server using the Advanced System Management Interface.

Any identify LED in the system may also be flashed by using the “Identify and Attention Indicators” task through the AIX diagnostic programs. The procedure to use the Identify and Attention Indicators task in the AIX diagnostics is outlined in “Tasks and Service Aids” in Working with AIX diagnostics.

PFW1542: I/O Problem Isolation Procedure

This I/O problem-determination procedure isolates I/O card and I/O subsystem failures. When I/O problem isolation is complete, all cables and cards that are failing will have been replaced or reseated.

Notes:

1. Be sure to unplug the power cords before removing or installing any part to avoid damage to it or the system or subsystem.
2. This MAP assumes that either:
 - An optical drive is installed and connected to the integrated EIDE adapter, and an AIX diagnostic CD-ROM is available.
 - OR
 - AIX standalone diagnostics can be booted from a NIM server.
3. If a power-on password or privileged-access password is set, you are prompted to enter the password before the AIX diagnostic CD-ROM can load.
4. The term POST indicators refers to the device mnemonics that appear during the power-on self-test (POST).
5. The service processor might have been set by the user to monitor system operations and to attempt recoveries. You might want to disable these options while you diagnose and service the system. If these settings are disabled, make notes of their current settings so that they can be restored before the system is turned back over to the customer.

The following settings may be of interest.

Monitoring

(also called surveillance) From the ASMI menu, expand the System Configuration menu, then click on Monitoring. Disable both types of surveillance.

Auto power restart

(also called unattended start mode) From the ASMI menu, expand Power/Restart Control, then click on Auto Power Restart, and set it to disabled.

Wake on LAN

From the ASMI menu, expand Wake on LAN, and set it to disabled. Call Out From the ASMI menu, expand the Service Aids menu, then click on Call-Home/Call-In Setup. Set the call-home system port and the call-in system port to disabled.

6. If this is a pSeries system, verify that the system has not been set to boot to the SMS menus or to the open firmware prompt. From the ASMI menu, expand Power/Restart Control to view the menu, then click on Power On/Off System. The AIX/Linux partition mode boot should say “Continue to Operating System”.

Select the model number you are servicing from the following list:

“PFW1548-185: Processor subsystem problem isolation procedure for model 185 and A50” on page 490

“PFW1548-505: Processor subsystem problem isolation procedure for model 505 with an HMC attached” on page 497

“PFW1548-505: Processor subsystem problem isolation procedure for model 505 without an HMC attached” on page 505

“PFW1548-510: Processor subsystem problem isolation procedure for model 510, 51A, and OpenPower 710 with an HMC attached” on page 512

“PFW1548-510: Processor subsystem problem isolation procedure for model 510, 51A, and OpenPower 710 without an HMC attached” on page 519

“PFW1542-520: I/O problem isolation procedure for model 520, 52A, and 285”

“PFW1542-550: I/O problem isolation procedure for model 550, 55A, and OpenPower 720” on page 437

“PFW1542-570: I/O problem isolation procedure for model 561 and 570” on page 450

“PFW1542-575: I/O problem isolation procedure for model 575” on page 462

“PFW1542-590: I/O problem isolation procedure for model 590, and 595” on page 471

PFW1542-520: I/O problem isolation procedure for model 520, 52A, and 285

Use this procedure to locate defective FRUs not found by normal diagnostics when servicing a 520.

For this procedure, diagnostics are run on a minimally configured system. If a failure is detected on the minimally configured system, the remaining FRUs are exchanged one at a time until the failing FRU is identified. If a failure is not detected, FRUs are added back until the failure occurs. The failure is then isolated to the failing FRU.

• **PFW1542-520-1**

1. Insure that the diagnostics and the operating system are shut down.
2. Turn off the power.
3. Select “Slow System Boot Speed” on the Power On/Off system menu under the Power/Restart Control menu on the ASMI.
4. Turn on the power.
5. Put the AIX diagnostic CD-ROM into the optical drive.

Does the optical drive appear to operate correctly?

NO Go to Problems with loading and starting the operating system.

YES Continue to PFW1542-520-2.

• **PFW1542-520-2**

1. When the keyboard indicator is displayed (the word keyboard), if the system or partition gets that far in the IPL process, press the 5 key on the firmware console.
2. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Continue to PFW1542-520-3.

YES Go to PFW1542-520-4.

• **PFW1542-520-3**

The system is unable to boot standalone AIX diagnostics. Check the service processor error log (using the ASMI) and the operator panel for additional error codes resulting from the slow boot that was performed in PFW1542-520-1.

Did the slow boot generate a different error code or partition firmware hang from the one that originally sent you to PFW1542?

NO If you were sent here by an error code, and the error code did not change as the result of a slow boot, you have a processor subsystem problem. Go to PFW1548: Memory and Processor Problem Isolation. If you were sent here because the system is hanging on a partition firmware checkpoint, and the hang condition did not change as a result of the slow boot, go to PFW1542-520-5.

YES Restore fast boot on the power on/off system menu from the ASMI. Look up the new error code in the reference code index and perform the listed actions.

- **PFW1542-520-4**

The system stopped with the please define the system console prompt on the system console. Standalone diagnostics can be booted. Perform the following:

1. Follow the instructions on the screen to select the system console.
2. When the DIAGNOSTIC OPERATING INSTRUCTIONS screen is displayed, press Enter.
3. If the terminal type has not been defined, you must use the Initialize Terminal option on the FUNCTION SELECTION menu to initialize the AIX operating system environment before you can continue with the diagnostics. This is a separate operation from selecting the firmware console.
4. Select Advanced Diagnostic Routines.
5. When the DIAGNOSTIC MODE SELECTION menu displays, select System Verification to run diagnostics on all resources.

Did running diagnostics produce a different symptom?

NO Go to step 6 of PFW1542-520-6

YES Go to the Start-of-Call Procedure. Use the new symptom.

6. Record any devices missing from the list of all adapters and devices. Continue with this procedure. When you have fixed the problem, use this record to verify that all devices appear when you run system verification.

Are there any devices missing from the list of all adapters and devices?

NO Reinstall all remaining adapters, if any, and reconnect all devices. Return the system to its original configuration. Be sure to select fast boot on the power on/off system menu on the ASMI. Go to MAP 0410: Repair checkout.

YES The boot attempts that follow will attempt to isolate any remaining I/O subsystem problems with missing devices. Ignore any codes that may display on the operator panel unless stated otherwise. Continue to PFW1542-520-5.

- **PFW1542-520-5**

Examine RIO port 0 on the base system at Un-P1-T3.

Are there any I/O subsystems attached to the base system?

NO Go to PFW1542-520-22.

YES Continue to PFW1542-520-6.

- **PFW1542-520-6**

There may be devices missing from one of more of the I/O subsystems.

Attention: The 5094 expansion unit and the 7311/D20 I/O subsystem may both be connected to the pSeries 520. The 7311/D20 I/O subsystem is a full-width rack-mounted drawer; the 5094 can be either a tower or a full-width drawer.

The RIO ports on these subsystems are:

	5094	7311/D20
RIO port 0	Un-CB1-C08-00 (bottom connector)	Un-CB1-C08-01 (top connector)
RIO port 1	Un-CB1-C08-01 (top connector)	Un-P1-C05-01 (top connector)

Note: Before continuing, check the cabling from the base system to the I/O subsystem(s) to insure that the system is cabled correctly. Refer to Connect your unit with HSL/RIO cables for valid configurations. Record the current cabling configuration and then continue with the following steps.

1. Turn off the power.
2. At the base system, disconnect the cable connection at RIO port 0 (Un-P1-T3).

3. At the other end of the RIO cable referred to in step 2 on page 429 of PFW1542-520-6, disconnect the I/O subsystem port connector 0 (Un-CB1-C08-00 (bottom connector) or Un-P1-C05-00 (bottom connector) , depending on the I/O subsystem). The RIO cable that was connected to RIO port 0 in the base system should now be loose; remove it. Record the location of this I/O subsystem and call it "subsystem #1".
4. Examine the connection at the I/O port connector 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) of the I/O subsystem recorded in step 3 of PFW1542-520-6. If the RIO cable attached to I/O port connector 1 connects to the I/O port connector 0 of another I/O subsystem, record the location of the next I/O subsystem that is connected to I/O port 1 of subsystem #1, then go to step 9 of PFW1542-520-6.
5. This step is reserved.
6. At the base system, disconnect the cable connection at RIO port 1 (Un-P1-T4) and reconnect it to RIO port 0 (Un-P1-T3).
7. At the I/O subsystem recorded in step 3 of PFW1542-520-6, disconnect the I/O port connector 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) and reconnect to I/O port 0 (Un-CB1-C08-00 (bottom connector) or Un-P1-C05-00 (bottom connector)).
8. Verify that a single RIO cable connects base system RIO port 0 (Un-P1-T3) to the I/O subsystem recorded in step 4 of PFW1542-520-6 port 0 (Un-CB1-C08-00 (bottom connector) or Un-P1-C05-00 (bottom connector)). Go to step 21 on page 431 of PFW1542-520-6.
9. Record the location of the next I/O subsystem and call it "subsystem #2". This is the I/O subsystem that is connected to I/O port 1 of subsystem #1.
10. Examine the connection at the I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) of subsystem #2 recorded in step 9 of PFW1542-520-6. If the RIO cable attached to I/O port 1 connects to the I/O port 0 of another I/O subsystem, record the location of the next I/O subsystem that is connected to I/O port 1 of subsystem #2 and call it "subsystem #3". Go to step 14 of PFW1542-520-6.
11. The RIO cable attached to the I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) of subsystem #2 is attached to port 1 (Un-P1-T4) of the base system. At the base system, disconnect the cable connection at RIO port 1 (Un-P1-T4) and reconnect it to RIO port 0 (Un-P1-T3).
12. On subsystem #2, disconnect the cable from I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) and reconnect it to I/O port 0 (Un-CB1-C08-00 (bottom connector) or Un-P1-C05-00 (bottom connector)) of subsystem #1.
13. Verify that a single RIO cable connect base system RIO port 0 to one or two I/O subsystems. Go to step 21 on page 431 of PFW1542-520-6.
14. Examine the connection at the I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) of subsystem #3 recorded in step 10 of PFW1542-520-6. If the RIO cable attached to I/O port 1 connects to the I/O port 0 of another I/O subsystem, record the location of the next I/O subsystem that is connected to I/O port 1 of the subsystem #3 and call it "subsystem #4". Go to step 18 on page 431 of PFW1542-520-6.
15. The RIO cable attached to the I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) of subsystem #3 is attached to port 1 (Un-P1-T4) of the base system. At the base system, disconnect the cable connection at RIO port 1 (Un-P1-T4) and reconnect it to RIO port 0 (Un-P1-T3).
16. On subsystem #3, disconnect the cable from I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) and reconnect it to I/O port 0 (Un-CB1-C08-00 (bottom connector) or Un-P1-C05-00 (bottom connector)) of subsystem #1.
17. Verify that a single RIO cable connects base system RIO port 0 to three I/O subsystems. Go to step 21 on page 431 of PFW1542-520-6. The RIO cable attached to the I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) of subsystem #4 is attached to port 1 (Un-P1-T4) of the base system. At the base system, disconnect the cable connection at RIO port 1 (Un-P1-T4) and reconnect it to RIO port 0 (Un-P1-T3).

18. On subsystem #4, disconnect the cable from I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) and reconnect it to I/O port 0 (Un-CB1-C08-00 (bottom connector) or Un-P1-C05-00 (bottom connector)) of subsystem #1.
19. Verify that a single RIO cable connects base system RIO port 0 to four I/O subsystems. Continue to step 21 of PFW1542-520-6.
20. Turn on the power to boot the standalone AIX diagnostics from CD-ROM.
21. If the Please define the System Console screen is displayed, follow the directions to select the system console.
22. Use the Display Configuration and Resource List option to list all of the attached devices and adapters.
23. Verify that all adapters and the attached devices are listed.

Did the Please define the System Console screen display and are all adapters and attached devices listed?

NO Go to PFW1542-520-7.

YES The RIO cable that was removed in step 3 on page 430 of PFW1542-520-6 is defective. Replace this RIO cable.

- If four I/O subsystems are chained to RIO port 0 (Un-P1-T3) of the base system, connect the new RIO cable from subsystem #4 I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) to base system RIO port 1 (Un-P1-T4).
- If three I/O subsystems are chained to RIO port 0 (Un-P1-T3) of the base system, connect the new RIO cable from subsystem #3 I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) to base system RIO port 1 (Un-P1-T4).
- If two I/O subsystems are chained to RIO port 0 (Un-P1-T3) of the base system, connect the new RIO cable from subsystem #2 I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) to base system RIO port 1 (Un-P1-T4).
- If one I/O subsystem is chained to RIO port 0 (Un-P1-T3) of the base system, connect the new RIO cable from subsystem #1 I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) to base system RIO port 1 (Un-P1-T4). Restore the system back to its original configuration. Go to MAP 0410: Repair Checkout.

• **PFW1542-520-7**

The I/O in the base system will now be isolated. Power down the system. Disconnect the cable connection at RIO port 0 (Un-P1-T3) of the base system.

• **PFW1542-520-8**

1. Turn on the power to boot the standalone diagnostic CD-ROM.
2. If the Please define the System Console screen is displayed, follow the directions to select the system console.
3. Use the Display Configuration and Resource List option to list all of the attached devices and adapters.
4. Check that all adapters and attached devices in the base system are listed.
If the Please define the System Console screen was not displayed or all adapters and attached devices are not listed, the problem is in the base system.

Was the Please define the System Console screen displayed and were all adapters and attached devices listed?

NO Go to PFW1542-520-22.

YES Go to PFW1542-520-21.

• **PFW1542-520-9**

For subsystem #1:

- Are there any adapters in slots 1, 2, 3, 4, 5, or 6 if it is a 7311/D20?

- Are there any adapters in slots 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, or 15 if it is a 5094?

NO Go to PFW1542-520-10.

YES Go to PFW1542-520-13.

- **PFW1542-520-10**

For subsystem #2:

- Are there any adapters in slots 1, 2, 3, 4, 5, or 6 if it is a 7311/D20?
- Are there any adapters in slots 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, or 15 if it is a 5094?

NO Go to PFW1542-520-11.

YES Go to PFW1542-520-14.

- **PFW1542-520-11**

For subsystem #3:

- Are there any adapters in slots 1, 2, 3, 4, 5, or 6 if it is a 7311/D20?
- Are there any adapters in slots 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, or 15 if it is a 5094?

NO Go to PFW1542-520-12.

YES Go to PFW1542-520-15.

- **PFW1542-520-12**

For subsystem #4:

- Are there any adapters in slots 1, 2, 3, 4, 5, or 6 if it is a 7311/D20?
- Are there any adapters in slots 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, or 15 if it is a 5094?

NO Go to PFW1542-520-20.

YES Go to PFW1542-520-16.

- **PFW1542-520-13**

1. If it is not already off, turn off the power.
2. Label and record the locations of any cables attached to the adapters, then disconnect the cables.
3. Record the slot numbers of the adapters.
4. Remove all adapters from slots 1, 2, 3, 4, 6, and 7 in the I/O subsystem if it is a 7311/D20, or from slot 1-9 and 11-15 if it is a 5094.
5. Turn on the power to boot the standalone diagnostic CD-ROM.
6. If the ASCII terminal displays Enter 0 to select this console, press the 0 (zero) key on the ASCII terminal's keyboard.
7. If the Please define the System Console screen is displayed, follow the directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
9. Check that all adapters and attached devices are listed.

Was the Please define the System Console screen displayed and were all adapters and attached devices listed?

NO Go to PFW1542-520-10.

YES Go to PFW1542-520-17.

- **PFW1542-520-14**

1. If it is not already off, turn off the power.
2. Label and record the locations of any cables attached to the adapters, then disconnect the cables.
3. Record the slot numbers of the adapters.
4. Remove all adapters from slots 1, 2, 3, 4, 6, and 7 in the I/O subsystem if it is a 7311/D20, or from slot 1-9 and 11-15 if it is a 5094.

5. Turn on the power to boot the standalone diagnostic CD-ROM.
6. If the ASCII terminal displays Enter 0 to select this console, press the 0 (zero) key on the ASCII terminal's keyboard.
7. If the Please define the System Console screen is displayed, follow the directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
9. Check that all adapters and attached devices are listed.

Was the Please define the System Console screen displayed and were all adapters and attached devices listed?

NO Go to PFW1542-520-11.

YES Go to PFW1542-520-17.

• **PFW1542-520-15**

1. If it is not already off, turn off the power.
2. Label and record the locations of any cables attached to the adapters, then disconnect the cables.
3. Record the slot numbers of the adapters.
4. Remove all adapters from slots 1, 2, 3, 4, 6, and 7 in the I/O subsystem if it is a 7311/D20, or from slot 1-9 and 11-15 if it is a 5094.
5. Turn on the power to boot the standalone diagnostic CD-ROM.
6. If the ASCII terminal displays Enter 0 to select this console, press the 0 (zero) key on the ASCII terminal's keyboard.
7. If the Please define the System Console screen is displayed, follow the directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
9. Check that all adapters and attached devices are listed.

Was the Please define the System Console screen displayed and were all adapters and attached devices listed?

NO Go to PFW1542-520-12.

YES Go to PFW1542-520-17.

• **PFW1542-520-16**

1. If it is not already off, turn off the power.
2. Label and record the locations of any cables attached to the adapters, then disconnect the cables.
3. Record the slot numbers of the adapters.
4. Remove all adapters from slots 1, 2, 3, 4, 6, and 7 in the I/O subsystem if it is a 7311/D20, or from slots 1-9 and 11-15 if it is a 5094.
5. Turn on the power to boot the standalone diagnostic CD-ROM.
6. If the ASCII terminal displays Enter 0 to select this console, press the 0 (zero) key on the ASCII terminal's keyboard.
7. If the Please define the System Console screen is displayed, follow the directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
9. Check that all adapters and attached devices are listed.

Was the Please define the System Console screen displayed and were all adapters and attached devices listed?

NO Go to PFW1542-520-19.

YES Go to PFW1542-520-17.

• **PFW1542-520-17**

If the Please define the System Console screen was not displayed and all adapters and attached devices were not listed, the problem is with one of the adapter cards or attached devices that was removed or disconnected from the I/O subsystem.

1. Turn off the power.
2. Reinstall one adapter and device that was removed. Use the original adapter cards in their original slots when reinstalling adapters.
3. Turn on the power to boot the standalone diagnostic CD-ROM.
4. If the Please define the System Console screen is displayed, follow the directions to select the system console.
5. Use the Display Configuration and Resource List option to list all adapters and attached devices.
6. Check that all adapters and attached devices are listed.

Was the Please define the System Console screen displayed and were all adapters and attached devices listed?

NO Go to PFW1542-520-18.

YES Reinstall the next adapter and device and return to the beginning of this step. Repeat this process until an adapter or device causes the Please define the System Console screen to not display or all attached devices and adapters to not be listed.

After installing all of the adapters and the Please define the System Console screen does display and all attached devices and adapters are listed, return the system to its original configuration. Go to MAP 0410: Repair Checkout.

• **PFW1542-520-18**

Replace the adapter you just installed with a new adapter and retry booting AIX standalone diagnostics from CD-ROM.

1. If the Please define the System Console screen is displayed, follow the directions to select the system console.
2. Use the Display Configuration and Resource List option to list all adapters and attached devices.
3. Check that all adapters and attached devices are listed.

Was the Please define the System Console screen displayed and were all adapters and attached devices listed?

NO The I/O subsystem backplane is defective. Replace the I/O subsystem backplane. In both the 7311/D20 and the 5094, the I/O subsystem backplane is Un-CB1. Then go to PFW1542-520-20.

YES The adapter was defective. Go to PFW1542-520-20.

• **PFW1542-520-19**

1. Turn off the power.
2. Disconnect the I/O subsystem power cables.
3. Replace the following parts, one at a time, if present, in the sequence listed:
 - a. I/O subsystem #1 backplane, Un-CB1.
 - b. I/O subsystem #2 backplane, Un-CB1.
 - c. I/O subsystem #3 backplane, Un-CB1.
 - d. I/O subsystem #4 backplane, Un-CB1.
4. Reconnect the I/O subsystem power cables.
5. Turn on the power.
6. Boot standalone AIX diagnostics from CD.
7. If the Please define the System Console screen is displayed, follow directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
9. Check that all attached devices and adapters are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Replace the next part in the list and return to the beginning of this step. Repeat this process until a part causes the Please define the System Console screen to be displayed and all adapters and attached devices to be listed. If you have replaced all the items listed above and the Please define the System Console screen does not display or all attached devices and adapters are not listed, check all external devices and cabling. If you do not find a problem, contact your next level of support for assistance.

YES Go to PFW1542-520-20.

- **PFW1542-520-20**

1. Turn off the power.
 2. The item just replaced fixed the problem.
 3. If a display adapter with keyboard and mouse were installed, reinstall the display adapter card, keyboard, and mouse.
 4. Reconnect the tape drive (if previously installed) to the internal SCSI bus cable.
 5. Plug in all adapters that were previously removed but not reinstalled.
 6. Reconnect the I/O subsystem power cables that were previously disconnected.
- Return the system to its original condition. Go to MAP 0410: Repair Checkout.

- **PFW1542-520-21**

1. Turn off the power.
2. At the base system, reconnect the cable connection at RIO port 0 (Un-P1-T3) recorded in PFW1542-520-6.
3. At the base system, reconnect the cable connection at RIO port 1(Un-P1-T4) recorded in PFW1542-520-6.
4. Reconnect the power cables to the I/O subsystems that were found attached to the base system RIO ports mentioned in step 2 and step 3 of PFW1542-520-21. All I/O subsystems that were attached to the base system RIO port 0 and RIO port 1 should now be reconnected to the base system.
5. Make sure the I/O subsystem(s) are cabled correctly as shown in Connect your unit with HSL/RIO cables.
6. Turn on the power to boot standalone AIX diagnostics from CD-ROM.
7. If the Please define the System Console screen is displayed, follow the directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
9. Check that all adapters and attached devices are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Go to PFW1542-520-9 to isolate a problem in an I/O subsystem attached to the base system RIO bus on the system backplane.

YES Go to PFW1542-520-20.

- **PFW1542-520-22**

Are there any adapters in slots 1, 2, 3, 4, 5, or 6 in the base system?

NO Go to PFW1542-520-23.

YES Go to PFW1542-520-25.

- **PFW1542-520-23**

Replace the system backplane, Un-P1. Go to MAP 0410: Repair Checkout.

- **PFW1542-520-24**

1. Boot standalone AIX diagnostics from CD.

2. If the Please define the System Console screen is displayed, follow directions to select the system console.
3. Use the Display Configuration and Resource List to list all adapters and attached devices.
4. Check that all adapters and attached devices are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Go to PFW1542-520-28.

YES Go to PFW1542-520-20.

• **PFW1542-520-25**

1. If it is not already off, turn off the power.
2. Label and record the location of any cables attached to the adapters.
3. Record the slot number of the adapters.
4. Remove all adapters from slots 1, 2, 3, 4, 5, and 6 in the base system that are not attached to the boot device.
5. Turn on the power to boot standalone diagnostics from CD-ROM.
6. If the ASCII terminal displays Enter 0 to select this console, press the 0 key on the ASCII terminal's keyboard.
7. If the Please define the System Console screen is displayed, follow directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
9. Check that all adapters and attached devices are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Go to PFW1542-520-23.

YES Go to PFW1542-520-26.

• **PFW1542-520-26**

If the Please define the System Console screen does display and all adapters and attached devices are listed, the problem is with one of the adapter cards or devices that was removed or disconnected from the base system.

1. Turn off the power.
2. Reinstall one adapter and device that was removed. Use the original adapter cards in their original slots when reinstalling adapters.
3. Turn on the power to boot standalone diagnostics from CD-ROM.
4. If the Please define the System Console screen is displayed, follow the directions to select the system console.
5. Use the Display Configuration and Resource List to list all adapters and attached devices.
6. Check that all adapters and attached devices are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Go to PFW1542-520-27.

YES Reinstall the next adapter and device and return to the beginning of this step. Repeat this process until an adapter and device causes the Please define the System Console screen to not display or all attached devices and adapters to not be listed. After installing all of the adapters and the Please define the System Console screen displays and all attached devices and adapters are listed, go to PFW1542-520-20.

• **PFW1542-520-27**

Replace the adapter you just installed with a new adapter and retry the boot to standalone AIX diagnostics from CD-ROM.

1. If the Please define the System Console screen is displayed, follow directions to select the system console.
2. Use the Display Configuration and Resource List option to list all adapters and attached devices.
3. Check that all adapters and attached devices are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Go to PFW1542-520-23.

YES Go to PFW1542-520-20.

- **PFW1542-520-28**

1. Turn off the power
2. Disconnect the base system power cables.
3. Replace the following parts, one at a time, in the sequence listed:
 - a. Internal SCSI cable
 - b. Disk drive backplanes, one at a time
 - c. Media backplane
 - d. IDE devices, one at a time
 - e. SCSI devices, one at a time
 - f. Service processor
4. Reconnect the base system power cables.
5. Turn on the power.
6. Boot standalone AIX diagnostics from CD.
7. If the Please define the System Console screen is displayed, follow directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
9. Check that all adapters and attached devices are listed.

Did the Please define the System Console screen display and are all adapters and attached devices listed?

NO Replace the next part in the list and return to the beginning of this step. Repeat this process until a part causes the Please define the System Console screen to be displayed and all adapters and attached devices to be listed. If you have replaced all the items listed above and the Please define the System Console screen does not display or all adapters and attached devices are not listed, check all external devices and cabling. If you do not find a problem, contact your next level of support for assistance.

YES Go to PFW1542-520-20.

PFW1542-550: I/O problem isolation procedure for model 550, 55A, and OpenPower 720

Use this procedure to locate defective FRUs not found by normal diagnostics.

Purpose of this procedure

Use this procedure to locate defective FRUs not found by normal diagnostics when servicing a 550. For this procedure, diagnostics are run on a minimally configured system. If a failure is detected on the minimally configured system, the remaining FRUs are exchanged one at a time until the failing FRU is identified. If a failure is not detected, FRUs are added back until the failure occurs. The failure is then isolated to the failing FRU.

- **PFW1542-550-1**

1. Insure that the diagnostics and the operating system are shut down.
2. Turn off the power.
3. Select slow system boot speed on the power on/off system menu under the power/restart control menu on the ASMI.
4. Turn on the power.
5. Put the AIX diagnostic CD-ROM into the optical drive.

Does the optical drive appear to operate correctly?

NO Go to Problems with Loading and Starting the Operating System

YES Continue to PFW1542-550-2.

• **PFW1542-550-2**

1. When the keyboard indicator is displayed (the word keyboard), if the system or partition gets that far in the IPL process, press the 5 key on the firmware console.
2. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Continue to PFW1542-550-3.

YES Go to PFW1542-550-4.

• **PFW1542-550-3**

The system is unable to boot standalone AIX diagnostics. Check the service processor error log (using the ASMI) and the operator panel for additional error codes resulting from the slow boot that was performed in PFW1542-550-1.

Did the slow boot generate a different error code or partition firmware hang from the one that originally sent you to PFW1542?

NO If you were sent here by an error code, and the error code did not change as the result of a slow boot, you have a processor subsystem problem. Go to PFW1548: Memory and Processor Problem Isolation. If you were sent here because the system is hanging on a partition firmware checkpoint, and the hang condition did not change as a result of the slow boot, go to PFW1542-550-5.

YES Restore fast boot on the power on/off system menu from the ASMI. Look up the new error code in the reference code index and perform the listed actions.

• **PFW1542-550-4**

The system stopped with the please define the system console prompt on the system console. Standalone diagnostics can be booted. Perform the following:

1. Follow the instructions on the screen to select the system console.
2. When the DIAGNOSTIC OPERATING INSTRUCTIONS screen is displayed, press Enter.
3. If the terminal type has not been defined, you must use the Initialize Terminal option on the FUNCTION SELECTION menu to initialize the AIX operating system environment before you can continue with the diagnostics. This is a separate operation from selecting the firmware console.
4. Select Advanced Diagnostic Routines.
5. When the DIAGNOSTIC MODE SELECTION menu displays, select System Verification to run diagnostics on all resources.

Did running diagnostics produce a different symptom?

NO Go to step 6 of PFW1542-550-4.

YES Go to the Start-of-Call procedure. Use the new symptom.

6. Record any devices missing from the list of all adapters and devices. Continue with this procedure. When you have fixed the problem, use this record to verify that all devices appear when you run system verification.

Are there any devices missing from the list of all adapters and devices?

NO Reinstall all remaining adapters, if any, and reconnect all devices. Return the system to its original configuration. Be sure to select fast boot on the power on/off system menu on the ASMI. Go to Repair Checkout.

YES The boot attempts that follow will attempt to isolate any remaining I/O subsystem problems with missing devices. Ignore any codes that may display on the operator panel unless stated otherwise. Continue to PFW1542-550-5.

- **PFW1542-550-5**

Examine RIO port 0 on the base system at Un-P1-T11.

Are there any I/O subsystems attached to the base system?

NO Go to PFW1542-550-25.

YES Continue to PFW1542-550-6.

- **PFW1542-550-6**

There may be devices missing from one of more of the I/O subsystems, or one or more devices in the I/O subsystems may be causing the system or a partition to hang during IPL.

Attention: The 5094 expansion unit and the 7311/D20 I/O subsystem may both be connected to the 550. The 7311/D20 I/O subsystem is a full-width rack-mounted drawer; the 5094 can be either a tower or a full-width drawer.

The RIO ports on these subsystems are:

	550 (base system)	5094	7311/D20
RIO port 0	Un-P1-T11	Un-CB1-C08-00 (bottom connector)	Un-P1-C05-00 (bottom connector)
RIO port 1	Un-P1-T12	Un-CB1-C08-01 (top connector)	Un-P1-C05-01 (top connector)

Note: Before continuing, check the cabling from the base system to the I/O subsystem(s) to insure that the system is cabled correctly. Refer to Connect your unit with HSL/RIO cables for valid configurations. Record the current cabling configuration and then continue with the following steps.

1. Turn off the power.
2. At the base system, disconnect the cable connection at RIO port 0 (Un-P1-T11).
3. At the other end of the RIO cable referred to in step 2, disconnect the I/O subsystem port connector 0 (Un-CB1-C08-00 (bottom connector) or Un-P1-C05-00 (bottom connector), depending on the I/O subsystem). The RIO cable that was connected to RIO port 0 in the base system should now be loose; remove it. Record the location of this I/O subsystem and call it "subsystem #1".
4. Examine the connection at the I/O port connector 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector) of the I/O subsystem recorded in step 3 of PFW1542-550-6. If the RIO cable attached to I/O port connector 1 connects to the I/O port connector 0 of another I/O subsystem, record the location of the next I/O subsystem that is connected to I/O port 1 of subsystem #1, then go to step 9 of PFW1542-550-6.
5. This step is reserved.
6. At the base system, disconnect the cable connection at RIO port 1 (Un-P1-T12) and reconnect it to RIO port 0 (Un-P1-T11).
7. At the I/O subsystem recorded in step 3 of PFW1542-550-6, disconnect the I/O port connector 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) and reconnect to I/O port 0 (Un-CB1-C08-00 (bottom connector) or Un-P1-C05-00 (bottom connector)).
8. Verify that a single RIO cable connects base system RIO port 0 (Un-P1-T11) to the I/O subsystem recorded in step 4 of PFW1542-550-6 port 0 (Un-CB1-C08-00 (bottom connector) or Un-P1-C05-00 (bottom connector)). Go to step 21 of PFW1542-550-6.

9. Record the location of the next I/O subsystem and call it "subsystem #2". This is the I/O subsystem that is connected to I/O port 1 of subsystem #1.
10. Examine the connection at the I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) of subsystem #2 recorded in step 9 of PFW1542-550-6. If the RIO cable attached to I/O port 1 connects to the I/O port 0 of another I/O subsystem, record the location of the next I/O subsystem that is connected to I/O port 1 of subsystem #2 and call it "subsystem #3". Go to step 14 of PFW1542-550-6.
11. The RIO cable attached to the I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) of subsystem #2 is attached to port 1 (Un-P1-T12) of the base system. At the base system, disconnect the cable connection at RIO port 1 (Un-P1-T12) and reconnect it to RIO port 0 (Un-P1-T11).
12. On subsystem #2, disconnect the cable from I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) and reconnect it to I/O port 0 (Un-CB1-C08-00 (bottom connector) or Un-P1-C05-00 (bottom connector)) of subsystem #1.
13. Verify that a single RIO cable connect base system RIO port 0 to one or two I/O subsystems. Go to step 21 of PFW1542-550-6.
14. Examine the connection at the I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) of subsystem #3 recorded in step 10 of PFW1542-550-6. If the RIO cable attached to I/O port 1 connects to the I/O port 0 of another I/O subsystem, record the location of the next I/O subsystem that is connected to I/O port 1 of the subsystem #3 and call it "subsystem #4". Go to step 18 of PFW1542-550-6.
15. The RIO cable attached to the I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) of subsystem #3 is attached to port 1 (Un-P1-T12) of the base system. At the base system, disconnect the cable connection at RIO port 1 (Un-P1-T12) and reconnect it to RIO port 0 (Un-P1-T11).
16. On subsystem #3, disconnect the cable from I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) and reconnect it to I/O port 0 (Un-CB1-C08-00 (bottom connector) or Un-P1-C05-00 (bottom connector)) of subsystem #1.
17. Verify that a single RIO cable connects base system RIO port 0 to three I/O subsystems. Go to step 21 of PFW1542-550-6.
18. The RIO cable attached to the I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) of subsystem #4 is attached to port 1 (Un-P1-T12) of the base system. At the base system, disconnect the cable connection at RIO port 1 (Un-P1-T12) and reconnect it to RIO port 0 (Un-P1-T11).
19. On subsystem #4, disconnect the cable from I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) and reconnect it to I/O port 0 (Un-CB1-C08-00 (bottom connector) or Un-P1-C05-00 (bottom connector)) of subsystem #1.
20. Verify that a single RIO cable connects base system RIO port 0 to four I/O subsystems. Continue to step 21 of PFW1542-550-6. Turn on the power to boot the standalone AIX diagnostics from CD-ROM.
21. If the Please define the System Console screen is displayed, follow the directions to select the system console.
22. Use the Display Configuration and Resource List option to list all of the attached devices and adapters.
23. Verify that all adapters and the attached devices are listed.

Did the Please define the System Console screen display and are all adapters and attached devices listed?

NO Go to PFW1542-550-7.

YES Replace the RIO cable that was removed in step 3 of PFW1542-550-6.

Notes:

1. If four I/O subsystems are chained to RIO port 0 (Un-P1-T11) of the base system, connect the new RIO cable from subsystem #4 I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) to base system RIO port 1 (Un-P1-T12).
2. If three I/O subsystems are chained to RIO port 0 (Un-P1-T11) of the base system, connect the new RIO cable from subsystem #3 I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) to base system RIO port 1 (Un-P1-T12).
3. If two I/O subsystems are chained to RIO port 0 (Un-P1-T11) of the base system, connect the new RIO cable from subsystem #2 I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) to base system RIO port 1 (Un-P1-T12).
4. If one I/O subsystem is chained to RIO port 0 (Un-P1-T11) of the base system, connect the new RIO cable from subsystem #1 I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) to base system RIO port 1 (Un-P1-T12).

Restore the system back to its original configuration. Go to MAP 0410: Repair checkout.

- **PFW1542-550-7**

The I/O attached to the RIO ports on the base system planar will now be isolated. Power down the system. Disconnect the cable connection at RIO port 0 (Un-P1-T11) of the base system.

- **PFW1542-550-8**

1. Turn on the power to boot the standalone diagnostic CD-ROM.
2. If the Please define the System Console screen is displayed, follow the directions to select the system console.
3. Use the Display Configuration and Resource List option to list all of the attached devices and adapters.
4. Check that all adapters and attached devices in the base system are listed. If the Please define the System Console screen was not displayed or all adapters and attached devices are not listed, the problem is in the base system.

Was the Please define the System Console screen displayed and were all adapters and attached devices listed?

NO Go to PFW1542-550-25.

YES Go to PFW1542-550-21.

- **PFW1542-550-9**

For subsystem #1:

Are there any adapters in slots 1, 2, 3, 4, 5, or 6 if it is a 7311/D20?

OR

Are there any adapters in slots 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, or 15 if it is a 5094?

NO Go to PFW1542-550-10.

YES Go to PFW1542-550-13.

- **PFW1542-550-10**

For subsystem #2:

Are there any adapters in slots 1, 2, 3, 4, 5, or 6 if it is a 7311/D20?

OR

Are there any adapters in slots 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, or 15 if it is a 5094?

NO Go to PFW1542-550-11.

YES Go to PFW1542-550-14.

- **PFW1542-550-11**

For subsystem #3:

Are there any adapters in slots 1, 2, 3, 4, 5, or 6 if it is a 7311/D20?

OR

Are there any adapters in slots 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, or 15 if it is a 5094?

NO Go to PFW1542-550-12.

YES Go to PFW1542-550-15.

- **PFW1542-550-12**

For subsystem #4:

Are there any adapters in slots 1, 2, 3, 4, 5, or 6 if it is a 7311/D20?

OR

Are there any adapters in slots 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, or 15 if it is a 5094?

NO Go to PFW1542-550-19.

YES Go to PFW1542-550-16.

- **PFW1542-550-13**

1. If it is not already off, turn off the power.
2. Label and record the locations of any cables attached to the adapters, then disconnect the cables.
3. Record the slot numbers of the adapters.
4. Remove all adapters from slots 1, 2, 3, 4, 6, and 7 in the I/O subsystem if it is a 7311/D20, or from slot 1-9 and 11-15 if it is a 5094.
5. Turn on the power to boot the standalone diagnostic CD-ROM.
6. If the ASCII terminal displays Enter 0 to select this console, press the 0 (zero) key on the ASCII terminal's keyboard.
7. If the Please define the System Console screen is displayed, follow the directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
9. Check that all adapters and attached devices are listed.

Was the Please define the System Console screen displayed and were all adapters and attached devices listed?

NO Go to PFW1542-550-10.

YES Go to PFW1542-550-17.

- **PFW1542-550-14**

1. If it is not already off, turn off the power.
2. Label and record the locations of any cables attached to the adapters, then disconnect the cables.
3. Record the slot numbers of the adapters.
4. Remove all adapters from slots 1, 2, 3, 4, 6, and 7 in the I/O subsystem if it is a 7311/D20, or from slot 1-9 and 11-15 if it is a 5094.
5. Turn on the power to boot the standalone diagnostic CD-ROM.
6. If the ASCII terminal displays Enter 0 to select this console, press the 0 (zero) key on the ASCII terminal's keyboard.
7. If the Please define the System Console screen is displayed, follow the directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
9. Check that all adapters and attached devices are listed.

Was the Please define the System Console screen displayed and were all adapters and attached devices listed?

NO Go to PFW1542-550-11.

YES Go to PFW1542-550-17.

- **PFW1542-550-15**

1. If it is not already off, turn off the power.
2. Label and record the locations of any cables attached to the adapters, then disconnect the cables.
3. Record the slot numbers of the adapters.
4. Remove all adapters from slots 1, 2, 3, 4, 6, and 7 in the I/O subsystem if it is a 7311/D20, or from slot 1-9 and 11-15 if it is a 5094.
5. Turn on the power to boot the standalone diagnostic CD-ROM.
6. If the ASCII terminal displays Enter 0 to select this console, press the 0 (zero) key on the ASCII terminal's keyboard.
7. If the Please define the System Console screen is displayed, follow the directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
9. Check that all adapters and attached devices are listed.

Was the Please define the System Console screen displayed and were all adapters and attached devices listed?

NO Go to PFW1542-550-12.

YES Go to PFW1542-550-17.

- **PFW1542-550-16**

1. If it is not already off, turn off the power
2. Label and record the locations of any cables attached to the adapters, then disconnect the cables.
3. Record the slot numbers of the adapters.
4. Remove all adapters from slots 1, 2, 3, 4, 6, and 7 in the I/O subsystem if it is a 7311/D20, or from slots 1-9 and 11-15 if it is a 5094.
5. Turn on the power to boot the standalone diagnostic CD-ROM.
6. If the ASCII terminal displays Enter 0 to select this console, press the 0 (zero) key on the ASCII terminal's keyboard.
7. If the Please define the System Console screen is displayed, follow the directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
9. Check that all adapters and attached devices are listed.

Was the Please define the System Console screen displayed and were all adapters and attached devices listed?

NO Go to PFW1542-550-19.

YES Go to PFW1542-550-17.

- **PFW1542-550-17**

If the Please define the System Console screen was not displayed and all adapters and attached devices were not listed, the problem is with one of the adapter cards or attached devices that was removed or disconnected from the I/O subsystem.

1. Turn off the power.
2. Reinstall one adapter and device that was removed. Use the original adapter cards in their original slots when reinstalling adapters.
3. Turn on the power to boot the standalone diagnostic CD-ROM
4. If the Please define the System Console screen is displayed, follow the directions to select the system console.
5. Use the Display Configuration and Resource List option to list all adapters and attached devices.
6. Check that all adapters and attached devices are listed.

Was the Please define the System Console screen displayed and were all adapters and attached devices listed?

NO Go to PFW1542-550-18.

YES Reinstall the next adapter and device and return to the beginning of this step. Repeat this process until an adapter or device causes the Please define the System Console screen to not display or all attached devices and adapters to not be listed. After installing all of the adapters and the Please define the System Console screen does display and all attached devices and adapters are listed, return the system to its original configuration. Go to MAP 0410: Repair Checkout.

- **PFW1542-550-18**

Replace the adapter you just installed with a new adapter and retry booting AIX standalone diagnostics from CD-ROM.

1. If the Please define the System Console screen is displayed, follow the directions to select the system console.
2. Use the Display Configuration and Resource List option to list all adapters and attached devices.
3. Check that all adapters and attached devices are listed.

Was the Please define the System Console screen displayed and were all adapters and attached devices listed?

NO The I/O subsystem backplane is defective. Replace the I/O subsystem backplane. In both the 7311/D20 and the 5094, the I/O subsystem backplane is Un-CB1. Then go to PFW1542-550-20.

YES The adapter was defective. Go to PFW1542-550-20.

- **PFW1542-550-19**

1. Turn off the power.
2. Disconnect the I/O subsystem power cables.
3. Replace the following parts, one at a time, if present, in the sequence listed:
 - a. I/O subsystem #1 backplane, Un-CB1.
 - b. I/O subsystem #2 backplane, Un-CB1.
 - c. I/O subsystem #3 backplane, Un-CB1.
 - d. I/O subsystem #4 backplane, Un-CB1.
 - e. The RIO interface in the base system that the RIO cables are presently attached to: either the base planar (Un-P1) if the cables are connected to Un-P1-T11 and Un-P1-T12, or the RIO expansion card (Un-P1-C6) if the RIO cables are attached to Un-P1-C6-T1 and Un-P1-C6-T2.
4. Reconnect the I/O subsystem power cables.
5. Turn on the power.
6. Boot standalone AIX diagnostics from CD.
7. If the Please define the System Console screen is displayed, follow directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
9. Check that all attached devices and adapters are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Replace the next part in the list and return to the beginning of this step. Repeat this process until a part causes the Please define the System Console screen to be displayed and all adapters and attached devices to be listed. If you have replaced all the items listed above and the Please define the System Console screen does not display or all attached devices and adapters are not listed, check all external devices and cabling. If you do not find a problem, contact your next level of support for assistance.

YES Go to PFW1542-550-20.

- **PFW1542-550-20**

1. Turn off the power.
2. The item just replaced fixed the problem.
3. If a display adapter with keyboard and mouse were installed, reinstall the display adapter card, keyboard, and mouse.
4. Reconnect the tape drive (if previously installed) to the internal SCSI bus cable.
5. Plug in all adapters that were previously removed but not reinstalled.
6. Reconnect the I/O subsystem power cables that were previously disconnected.
7. Return the system to its original condition. Go to MAP 0410: Repair Checkout.

- **PFW1542-550-21**

1. Turn off the power.
2. At the base system, reconnect the cable connection at RIO port 0 (Un-P1-T11) recorded in PFW1542-550-7.
3. At the base system, reconnect the cable connection at RIO port 1(Un-P1-T12) recorded in PFW1542-550-7.
4. Reconnect the power cables to the I/O subsystems that were found attached to the base system RIO ports mentioned in Step 2 and Step 3 of PFW1542-550-21. All I/O subsystems that were attached to the base system RIO port 0 and RIO port 1 should now be reconnected to the base system.
5. Make sure the I/O subsystem(s) are cabled correctly as shown in Connect your unit with HSL/RIO cables.
6. Turn on the power to boot standalone AIX diagnostics from CD-ROM.
7. If the Please define the System Console screen is displayed, follow the directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
9. Check that all adapters and attached devices are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Go to PFW1542-550-9 to isolate a problem in an I/O subsystem attached to the base system RIO bus on the system backplane.

YES Go to PFW1542-550-22.

- **PFW1542-550-22**

Is there a RIO expansion card plugged into Un-P1-C6 in the base system, and if so, is there at least one I/O subsystem attached to it?

NO Go to PFW1542-550-25.

YES Continue to PFW1542-550-23.

- **PFW1542-550-23**

1. Turn off the power.
2. At the base system, reconnect the cable connection at RIO port 0 on the RIO expansion card (Un-P1-C6-T2) recorded in PFW1542-550-7.
3. At the base system, reconnect the cable connection at RIO port 1 on the RIO expansion card (Un-P1-C6-T1) recorded in PFW1542-550-7.
4. Reconnect the power cables to the I/O subsystems that were attached to the base system's RIO ports mentioned in step 2 and step 3 of PFW1542-550-23. All I/O subsystems that were attached to RIO port 0 on the RIO expansion card (Un-P1-C6-T2) and RIO port 1 on the RIO expansion card (Un-P1-C6-T1) in the base system should now be reconnected to the system.

5. Make sure that the I/O subsystem(s) are cabled correctly as shown in Connect your unit with HSL/RIO cables.
6. Turn on the power to boot the standalone AIX diagnostic CD-ROM.
7. If the Please define the System Console screen is displayed, follow the directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
9. Verify that all adapters and attached devices are listed.

Did the Please define the System Console screen display and are all adapters and attached devices listed?

NO Go to PFW1542-550-24 to isolate the problems in the I/O subsystems that are attached to the RIO expansion card in the base system.

YES Go to PFW1542-550-25.

• **PFW1542-550-24**

At the base system, reconnect the second I/O subsystem to the RIO ports on the base system's expansion card at Un-P1-C6-T1 and Un-P1-C6-T2.

The 5094 and the 7311/D20 I/O subsystem may both be connected to the 9113/550. The 7311/D20 I/O subsystem is a full-width rack-mounted drawer; the 5094 can be either a tower or a full-width drawer. The RIO ports on these subsystems, and the RIO ports on the base system that will be used in this section of the procedure, are:

	550 (RIO expansion card)	5094	7311/D20
RIO port 0	Un-P1-C6-T2	Un-CB1-C08-00 (bottom connector)	Un-P1-C05-00 (bottom connector)
RIO port 1	Un-P1-C6-T1	Un-CB1-C08-01 (top connector)	Un-P1-C05-01 (top connector)

Note: Note: Before continuing, check the cabling from the base system to the I/O subsystem(s) to insure that the system is cabled correctly. Refer to Connect your unit with HSL/RIO cables for valid configurations. Record the current cabling configuration and then continue with the following steps.

1. Turn off the power.
2. At the base system, disconnect the cable connection at RIO port 0 (Un-P1-C6-T2).
3. At the other end of the RIO cable referred to in step 2, disconnect the I/O subsystem port connector 0 (Un-CB1-C08-00 (bottom connector) or Un-P1-C05-00 (bottom connector), depending on the I/O subsystem). The RIO cable that was connected to RIO port 0 on the expansion card should now be loose; remove it. Record the location of this I/O subsystem and call it "subsystem #1".
4. Examine the connection at the I/O port connector 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) of the I/O subsystem recorded in step 3 of PFW1542-550-24. If the RIO cable attached to I/O port connector 1 connects to the I/O port connector 0 of another I/O subsystem, record the location of the next I/O subsystem that is connected to I/O port 1 of subsystem #1, then go to step 9 of PFW1542-550-24.
5. This step is reserved.
6. At the base system, disconnect the cable connection at RIO port 1 on the RIO expansion card (Un-P1-C6-T1) and reconnect it to RIO port 0 on the RIO expansion card (Un-P1-C6-T2).
7. At the I/O subsystem recorded in step 3 of PFW1542-550-24, disconnect the I/O port connector 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) and reconnect to I/O port 0 (Un-CB1-C08-00 (bottom connector) or Un-CB1-C08-00 (bottom connector)).

8. Verify that a single RIO cable connects base system RIO port 0 on the RIO expansion card (Un-P1-C6-T1) to the I/O subsystem recorded in step 4 of PFW1542-550-24 port 0 (Un-CB1-C08-00 (bottom connector) or Un-P1-C05-00 (bottom connector)). Go to step 21 of PFW1542-550-24.
9. Record the location of the next I/O subsystem and call it "subsystem #2". This is the I/O subsystem that is connected to I/O port 1 of subsystem #1.
10. Examine the connection at the I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) of subsystem #2 recorded in step 9 of PFW1542-550-24. If the RIO cable attached to I/O port 1 connects to the I/O port 0 of another I/O subsystem, record the location of the next I/O subsystem that is connected to I/O port 1 of subsystem #2 and call it "subsystem #3". Go to step 14 of PFW1542-550-24.
11. The RIO cable attached to the I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) of subsystem #2 is attached to port 1 (Un-P1-C6-T1) of the base system. At the base system, disconnect the cable connection at RIO port 1 on the RIO expansion card (Un-P1-C6-T1) and reconnect it to RIO port 0 on the RIO expansion card (Un-P1-C6-T1).
12. On subsystem #2, disconnect the cable from I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) and reconnect it to I/O port 0 (Un-CB1-C08-00 (bottom connector) or Un-P1-C05-00 (bottom connector)) of subsystem #1.
13. Verify that a single RIO cable connect base system RIO port 0 to one or two I/O subsystems. Go to step 21 of PFW1542-550-24.
14. Examine the connection at the I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) of subsystem #3 recorded in step 10 of PFW1542-550-24. If the RIO cable attached to I/O port 1 connects to the I/O port 0 of another I/O subsystem, record the location of the next I/O subsystem that is connected to I/O port 1 of the subsystem #3 and call it "subsystem #4". Go to step 18 of PFW1542-550-24.
15. The RIO cable attached to the I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) of subsystem #3 is attached to RIO port 1 on the RIO expansion card (Un-P1-C6-T1). At the base system, disconnect the cable connection at RIO port 1 on the RIO expansion card (Un-P1-C6-T1) and reconnect it to RIO port 0 on the RIO expansion card (Un-P1-C6-T1).
16. On subsystem #3, disconnect the cable from I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) and reconnect it to I/O port 0 (Un-CB1-C08-00 (bottom connector) or Un-P1-C05-00 (bottom connector)) of subsystem #1.
17. Verify that a single RIO cable connects base system RIO port 0 to three I/O subsystems. Go to step 21 of PFW1542-550-24.
18. The RIO cable attached to the I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) of subsystem #4 is attached to port 1 (Un-P1-C6-T1) on the RIO expansion card. On the RIO expansion card, disconnect the cable connection at RIO port 1 (Un-P1-C6-T1) and reconnect it to RIO port 0 (Un-P1-C6-T2).
19. On subsystem #4, disconnect the cable from I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) and reconnect it to I/O port 0 (Un-CB1-C08-00 (bottom connector) or Un-P1-C05-00 (bottom connector)) of subsystem #1.
20. Verify that a single RIO cable connects base system RIO port 0 to four I/O subsystems. Continue to step 21 of PFW1542-550-24.
21. Turn on the power to boot the standalone AIX diagnostics from CD-ROM.
22. If the Please define the System Console screen is displayed, follow the directions to select the system console.
23. Use the Display Configuration and Resource List option to list all of the attached devices and adapters.
24. Verify that all adapters and the attached devices are listed.

Did the Please define the System Console screen display and are all adapters and attached devices listed?

- NO** Go to PFW1542-550-9 to further isolate a problem in the I/O subsystem(s) attached to the RIO expansion card (Un-P1-C6).
- YES** The RIO cable that was removed in step 3 of PFW1542-550-24 is defective. Replace this RIO cable.

Notes:

1. If four I/O subsystems are chained to RIO port 0 (Un-P1-C6-T1) of the base system, connect the new RIO cable from subsystem #4 I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) to RIO port 1 on the RIO expansion card (Un-P1-C6-T1).
2. If three I/O subsystems are chained to RIO port 0 (Un-P1-C6-T1) of the base system, connect the new RIO cable from subsystem #3 I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) to RIO port 1 on the RIO expansion card (Un-P1-C6-T1).
3. If two I/O subsystems are chained to RIO port 0 (Un-P1-C6-T1) of the base system, connect the new RIO cable from subsystem #2 I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) to RIO port 1 on the RIO expansion card (Un-P1-C6-T1).
4. If one I/O subsystem is chained to RIO port 0 (Un-P1-C6-T1) of the base system, connect the new RIO cable from subsystem #1 I/O port 1 (Un-CB1-C08-01 (top connector) or Un-P1-C05-01 (top connector)) to RIO port 1 on the RIO expansion card (Un-P1-C6-T1).
5. Restore the system back to its original configuration. Go to MAP 0410: Repair Checkout.

• **PFW1542-550-25**

Are there any adapters in slots 1, 2, 3, 4, 5, or 6 in the base system?

NO Go to PFW1542-550-26.

YES Go to PFW1542-550-28.

• **PFW1542-550-26**

Replace the system backplane, Un-P1. Continue to PFW1542-550-27.

• **PFW1542-550-27**

1. Boot standalone AIX diagnostics from CD.
2. If the Please define the System Console screen is displayed, follow directions to select the system console.
3. Use the Display Configuration and Resource List to list all adapters and attached devices.
4. Check that all adapters and attached devices are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Go to PFW1542-550-31.

YES Go to PFW1542-550-20.

• **PFW1542-550-28**

1. If it is not already off, turn off the power.
2. Label and record the location of any cables attached to the adapters.
3. Record the slot number of the adapters.
4. Remove all adapters from slots 1, 2, 3, 4, 5, and 6 in the base system that are not attached to the boot device.
5. Turn on the power to boot standalone AIX diagnostics from CD-ROM.
6. If the ASCII terminal displays Enter 0 to select this console, press the 0 key on the ASCII terminal's keyboard
7. If the Please define the System Console screen is displayed, follow directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.

9. Check that all adapters and attached devices are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Go to PFW1542-550-26.

YES Continue to PFW1542-550-29.

- **PFW1542-550-29**

If the Please define the System Console screen does display and all adapters and attached devices are listed, the problem is with one of the adapter cards or devices that was removed or disconnected from the base system.

1. Turn off the power.
2. Reinstall one adapter and device that was removed. Use the original adapter cards in their original slots when reinstalling adapters.
3. Turn on the power to boot standalone AIX diagnostics from CD-ROM.
4. If the Please define the System Console screen is displayed, follow the directions to select the system console.
5. Use the Display Configuration and Resource List to list all adapters and attached devices.
6. Check that all adapters and attached devices are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Continue to PFW1542-550-30.

YES Return to the beginning of this step to continue reinstalling adapters and devices.

- **PFW1542-550-30**

Replace the adapter you just installed with a new adapter and retry the boot to standalone AIX diagnostics from CD-ROM.

1. If the Please define the System Console screen is displayed, follow directions to select the system console.
2. Use the Display Configuration and Resource List option to list all adapters and attached devices.
3. Check that all adapters and attached devices are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Go to PFW1542-550-26.

YES The adapter you just replaced was defective. Go to PFW1542-550-20.

- **PFW1542-550-31**

1. Turn off the power
2. Disconnect the base system power cables.
3. Replace the following parts, one at a time, in the sequence listed:
 - a. Internal SCSI cable
 - b. Disk drive backplanes, one at a time
 - c. Media backplane
 - d. IDE devices, one at a time
 - e. SCSI devices, one at a time
 - f. Service processor.
4. Reconnect the base system power cables.
5. Turn on the power.
6. Boot standalone AIX diagnostics from CD.

7. If the Please define the System Console screen is displayed, follow directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
9. Check that all adapters and attached devices are listed.

Did the Please define the System Console screen display and are all adapters and attached devices listed?

NO Replace the next part in the list and return to the beginning of this step. Repeat this process until a part causes the Please define the System Console screen to be displayed and all adapters and attached devices to be listed. If you have replaced all the items listed above and the Please define the System Console screen does not display or all adapters and attached devices are not listed, check all external devices and cabling.

YES Go to PFW1542-550-20.

PFW1542-570: I/O problem isolation procedure for model 561 and 570

Provides a procedure to locate defective FRUs not found by normal diagnostics.

Purpose of this procedure

Use this procedure to locate defective FRUs not found by normal diagnostics when servicing a 570. For this procedure, diagnostics are run on a minimally configured system. If a failure is detected on the minimally configured system, the remaining FRUs are exchanged one at a time until the failing FRU is identified. If a failure is not detected, FRUs are added back until the failure occurs. The failure is then isolated to the failing FRU.

• PFW1542-570-1

1. Insure that the diagnostics and the operating system are shut down.
2. Turn off the power.
3. Select slow system boot speed on the power on/off system menu under the power/restart control menu on the ASMI.
4. Turn on the power.
5. Put the AIX diagnostic CD-ROM into the optical drive.

Does the optical drive appear to operate correctly?

NO Go to "Problems with loading and starting the operating system (AIX and Linux)" on page 55

YES Continue to PFW1542-570-2.

• PFW1542-570-2

1. When the keyboard indicator is displayed (the word keyboard), if the system or partition gets that far in the IPL process, press the 5 key on the firmware console.
2. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Continue to PFW1542-570-3.

YES Go to PFW1542-570-4.

• PFW1542-570-3

The system is unable to boot standalone AIX diagnostics. Check the service processor error log (using the ASMI) and the operator panel for additional error codes resulting from the slow boot that was performed in PFW1542-570-1.

Did the slow boot generate a different error code or partition firmware hang from the one that originally sent you to PFW1542?

NO If you were sent here by an error code, and the error code did not change as the result of a slow boot, you have a processor subsystem problem. Go to "PFW1548: Memory and processor

subsystem problem isolation procedure” on page 69. If you were sent here because the system is hanging on a partition firmware checkpoint, and the hang condition did not change as a result of the slow boot, go to PFW1542-570-5.

YES Restore fast boot on the power on/off system menu from the ASMI. Look up the new error code in the reference code index and perform the listed actions.

- **PFW1542-570-4**

The system stopped with the please define the system console prompt on the system console. Standalone diagnostics can be booted. Perform the following:

1. Follow the instructions on the screen to select the system console.
2. When the DIAGNOSTIC OPERATING INSTRUCTIONS screen is displayed, press Enter.
3. If the terminal type has not been defined, you must use the Initialize Terminal option on the FUNCTION SELECTION menu to initialize the AIX operating system environment before you can continue with the diagnostics. This is a separate operation from selecting the firmware console.
4. Select Advanced Diagnostic Routines.
5. When the DIAGNOSTIC MODE SELECTION menu displays, select System Verification to run diagnostics on all resources.

Did running diagnostics produce a different symptom?

NO Go to step 6 of PFW1542-570-4.

YES Go to the Start-of-Call procedure. Use the new symptom.

6. Record any devices missing from the list of all adapters and devices. Continue with this procedure. When you have fixed the problem, use this record to verify that all devices appear when you run system verification.

Are there any devices missing from the list of all adapters and devices?

NO Reinstall all remaining adapters, if any, and reconnect all devices. Return the system to its original configuration. Be sure to select fast boot on the power on/off system menu on the ASMI. Go to MAP 0410: Repair Checkout.

YES The boot attempts that follow will attempt to isolate any remaining I/O subsystem problems with missing devices. Ignore any codes that may display on the operator panel unless stated otherwise. Continue to PFW1542-570-5.

- **PFW1542-570-5**

Examine RIO port 0 on the base system at Un-P1-T8.

Are there any I/O subsystems attached to the base system?

NO Go to PFW1542-570-25.

YES Continue to PFW1542-570-6.

- **PFW1542-570-6**

There may be devices missing from one of more of the I/O subsystems, or one or more devices in the I/O subsystems may be causing the system or a partition to hang during IPL.

Attention: The 5088 expansion unit, 5094 expansion unit, 5095 expansion unit, the 7311 Model D10/D11 I/O subsystem, and the 7311/D20 I/O subsystem may be connected to this system.

The RIO ports on these subsystems are shown in the following table. Use this table to determine the physical location codes of the RIO connectors that are mentioned in the remainder of this MAP.

	570 (base system)	5088	5094	7311-D10/11	7311/D20	5095
RIO port 0	Un-P1-T8	Un-CB1-C10-00	Un-CB1-C08-00	Un-P1-C7-00 (top connector)	Un-P1-C05-00 (bottom connector)	Un-CB1-C05-00

	570 (base system)	5088	5094	7311-D10/11	7311/D20	5095
RIO port 1	Un-P1-T9	Un-CB1-C10-01	Un-CB1-C08-01	Un-P1-C7-01	Un-P1-C05-01	Un-CB1-C05-01

Note: Before continuing, check the cabling from the base system to the I/O subsystem(s) to insure that the system is cabled correctly. Refer to Connect your unit with HSL/RIO cables for valid configurations. Record the current cabling configuration and then continue with the following steps.

1. Turn off the power. Record the location and machine type and model number, or feature number, of each I/O drawer or tower. In the following steps, use this information to determine the physical location codes of the RIO connectors that are referred to by their logical names. For example, if I/O subsystem #1 is a 7311/D20 drawer, RIO port 0 is Un-P1-C05-00.

Attention: On all I/O drawers and towers except the 7311-D10/D11, RIO port 0 is the bottom connector on the RIO adapter card. On the 7311-D10/D11, RIO port 0 is the top connector on the RIO adapter card.

2. At the base system, disconnect the cable connection at RIO port 0 (Un-P1-T8).
3. At the other end of the RIO cable referred to in step 2 of PFW1542-570-6, disconnect the I/O subsystem port connector 0. The RIO cable that was connected to RIO port 0 in the base system should now be loose; remove it. Record the location of this I/O subsystem and call it "subsystem #1".
4. Examine the connection at the I/O port connector 1 of the I/O subsystem recorded in step 3 of PFW1542-570-6. If the RIO cable attached to I/O port connector 1 connects to the I/O port connector 0 of another I/O subsystem, record the location of the next I/O subsystem that is connected to I/O port 1 of subsystem #1, then go to step 9 of PFW1542-570-6.
5. This step is reserved.
6. At the base system, disconnect the cable connection at RIO port 1 (Un-P1-T9) and reconnect it to RIO port 0 (Un-P1-T8).
7. At the I/O subsystem recorded in step 3 of PFW1542-570-6, disconnect the I/O port connector 1 and reconnect to I/O port 0.
8. Verify that a single RIO cable connects base system RIO port 0 (Un-P1-T8) to the I/O subsystem recorded in substep 4 port 0. Go to step 21 of PFW1542-570-6.
9. Record the location of the next I/O subsystem and call it "subsystem #2". This is the I/O subsystem that is connected to I/O port 1 of subsystem #1.
10. Examine the connection at the I/O port 1 of subsystem #2 recorded in step 9 of PFW1542-570-6. If the RIO cable attached to I/O port 1 connects to the I/O port 0 of another I/O subsystem, record the location of the next I/O subsystem that is connected to I/O port 1 of subsystem #2 and call it "subsystem #3". Go to step 14 of PFW1542-570-6.
11. The RIO cable attached to the I/O port 1 of subsystem #2 is attached to port 1 (Un-P1-T9) of the base system. At the base system, disconnect the cable connection at RIO port 1 (Un-P1-T9) and reconnect it to RIO port 0 (Un-P1-T8).
12. On subsystem #2, disconnect the cable from I/O port 1 and reconnect it to I/O port 0 of subsystem #1.
13. Verify that a single RIO cable connect base system RIO port 0 to one or two I/O subsystems. Go to step 21 of PFW1542-570-6.
14. Examine the connection at the I/O port 1 of subsystem #3 recorded in step 10 of PFW1542-570-6. If the RIO cable attached to I/O port 1 connects to the I/O port 0 of another I/O subsystem, record the location of the next I/O subsystem that is connected to I/O port 1 of the subsystem #3 and call it "subsystem #4". Go to step 18 of PFW1542-570-6.

15. The RIO cable attached to the I/O port 1 of subsystem #3 is attached to port 1 (Un-P1-T9) of the base system. At the base system, disconnect the cable connection at RIO port 1 (Un-P1-T9) and reconnect it to RIO port 0 (Un-P1-T8).
16. On subsystem #3, disconnect the cable from I/O port 1 and reconnect it to I/O port 0 of subsystem #1.
17. Verify that a single RIO cable connects base system RIO port 0 to three I/O subsystems. Go to step 21 of PFW1542-570-6.
18. The RIO cable attached to the I/O port 1 of subsystem #4 is attached to port 1 (Un-P1-T9) of the base system. At the base system, disconnect the cable connection at RIO port 1 (Un-P1-T9) and reconnect it to RIO port 0 (Un-P1-T8).
19. On subsystem #4, disconnect the cable from I/O port 1 and reconnect it to I/O port 0 of subsystem #1.
20. Verify that a single RIO cable connects base system RIO port 0 to four I/O subsystems. Continue to step 21 of PFW1542-570-6.
21. Turn on the power to boot the standalone AIX diagnostics from CD-ROM.
22. If the Please define the system console screen is displayed, follow the directions to select the system console.
23. Use the Display Configuration and Resource List option to list all of the attached devices and adapters.
24. Verify that all adapters and the attached devices are listed.

Did the Please define the system console screen display and are all adapters and attached devices listed?

NO Go to PFW1542-570-7.

YES The RIO cable that was removed in step 3 above is defective. Replace this RIO cable.

If four I/O subsystems are chained to RIO port 0 (Un-P1-T8) of the base system, connect the new RIO cable from subsystem #4 I/O port 1 to base system RIO port 1 (Un-P1-T9).

If three I/O subsystems are chained to RIO port 0 (Un-P1-T8) of the base system, connect the new RIO cable from subsystem #3 I/O port 1 to base system RIO port 1 (Un-P1-T9).

If two I/O subsystems are chained to RIO port 0 (Un-P1-T8) of the base system, connect the new RIO cable from subsystem #2 I/O port 1 to base system RIO port 1 (Un-P1-T9).

If one I/O subsystem is chained to RIO port 0 (Un-P1-T8) of the base system, connect the new RIO cable from subsystem #1 I/O port 1 to base system RIO port 1 (Un-P1-T9).

Restore the system back to its original configuration. Go to MAP 0410: Repair Checkout.

• **PFW1542-570-7**

The I/O attached to the RIO ports on the base system planar will now be isolated. Power down the system. Disconnect the cable connection at RIO port 0 (Un-P1-T8) of the base system.

• **PFW1542-570-8**

1. Turn on the power to boot the standalone diagnostic CD-ROM.
2. If the Please define the system console screen is displayed, follow the directions to select the system console.
3. Use the Display Configuration and Resource List option to list all of the attached devices and adapters.
4. Check that all adapters and attached devices in the base system are listed.

If the Please define the system console screen was not displayed or all adapters and attached devices are not listed, the problem is in the base system.

Was the Please define the system console screen displayed and were all adapters and attached devices listed?

NO Go to PFW1542-570-25.

YES Go to PFW1542-570-21.

- **PFW1542-570-9**

For subsystem #1:

- Are there any adapters in slots 1, 2, 3, 5, 6, or 7 if it is a 7311-D10?
- Are there any adapters in slots 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, or 15 if it is a 5088 or 5094?

NO Go to PFW1542-570-10.

YES Go to PFW1542-570-13.

- **PFW1542-570-10**

For subsystem #2:

- Are there any adapters in slots 1, 2, 3, 5, 6, or 7 if it is a 7311-D10?
- Are there any adapters in slots 1, 2, 3, 4, 5, or 6 if it is a 7311/D20?
- Are there any adapters in slots 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, or 15 if it is a 5088 or 5094?

NO Go to PFW1542-570-11.

YES Go to PFW1542-570-14.

- **PFW1542-570-11**

For subsystem #3:

- Are there any adapters in slots 1, 2, 3, 5, 6, or 7 if it is a 7311-D10?
- Are there any adapters in slots 1, 2, 3, 4, 5, or 6 if it is a 7311/D20?
- Are there any adapters in slots 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, or 15 if it is a 5088 or 5094?

NO Go to PFW1542-570-12.

YES Go to PFW1542-570-15.

- **PFW1542-570-12**

For subsystem #4:

- Are there any adapters in slots 1, 2, 3, 5, 6, or 7 if it is a 7311-D10?
- Are there any adapters in slots 1, 2, 3, 4, 5, or 6 if it is a 7311/D20?
- Are there any adapters in slots 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, or 15 if it is a 5088 or 5094?

NO Go to PFW1542-570-19.

YES Go to PFW1542-570-16.

- **PFW1542-570-13**

1. If it is not already off, turn off the power.
2. Label and record the locations of any cables attached to the adapters, then disconnect the cables.
3. Record the slot numbers of the adapters.
4. Remove all adapters from slots 1, 2, 3, 5, 6, and 7 in the I/O subsystem if it is a 7311-D10, 1, 2, 3, 4, 6, and 7 in the I/O subsystem if it is a 7311/D20, or from slot 1-9 and 11-15 if it is a 5088 or 5094.
5. Turn on the power to boot the standalone diagnostic CD-ROM.
6. If the ASCII terminal displays Enter 0 to select this console, press the 0 (zero) key on the ASCII terminal's keyboard.
7. If the Please select the system console screen is displayed, follow the directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
9. Check that all adapters and attached devices are listed.

Was the Please define the system console screen displayed and were all adapters and attached devices listed?

NO Go to PFW1542-570-10.

YES Go to PFW1542-570-17.

- **PFW1542-570-14**

1. If it is not already off, turn off the power.
2. Label and record the locations of any cables attached to the adapters, then disconnect the cables.
3. Record the slot numbers of the adapters.
4. Remove all adapters from slots 1, 2, 3, 5, 6, and 7 in the I/O subsystem if it is a 7311-D10, slots 1, 2, 3, 4, 6, and 7 in the I/O subsystem if it is a 7311/D20, or from slot 1-9 and 11-15 if it is a 5088 or 5094.
5. Turn on the power to boot the standalone diagnostic CD-ROM.
6. If the ASCII terminal displays Enter 0 to select this console, press the 0 (zero) key on the ASCII terminal's keyboard.
7. If the Please select the system console screen is displayed, follow the directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
9. Check that all adapters and attached devices are listed.

Was the Please define the system console screen displayed and were all adapters and attached devices listed?

NO Go to PFW1542-570-11.

YES Go to PFW1542-570-17.

- **PFW1542-570-15**

1. If it is not already off, turn off the power.
2. Label and record the locations of any cables attached to the adapters, then disconnect the cables.
3. Record the slot numbers of the adapters.
4. Remove all adapters from slots 1, 2, 3, 5, 6, and 7 in the I/O subsystem if it is a 7311-D10, slots 1, 2, 3, 4, 6, and 7 in the I/O subsystem if it is a 7311/D20, or from slot 1-9 and 11-15 if it is a 5088 or 5094.
5. Turn on the power to boot the standalone diagnostic CD-ROM.
6. If the ASCII terminal displays Enter 0 to select this console, press the 0 (zero) key on the ASCII terminal's keyboard.
7. If the Please select the system console screen is displayed, follow the directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
9. Check that all adapters and attached devices are listed.

Was the Please define the system console screen displayed and were all adapters and attached devices listed?

NO Go to PFW1542-570-12.

YES Go to PFW1542-570-17.

- **PFW1542-570-16**

1. If it is not already off, turn off the power.
2. Label and record the locations of any cables attached to the adapters, then disconnect the cables.
3. Record the slot numbers of the adapters.
4. Remove all adapters from slots 1, 2, 3, 5, 6, and 7 in the I/O subsystem if it is a 7311-D10, slots 1, 2, 3, 4, 6, and 7 in the I/O subsystem if it is a 7311/D20, or from slots 1-9 and 11-15 if it is a 5088 or 5094.
5. Turn on the power to boot the standalone diagnostic CD-ROM.
6. If the ASCII terminal displays Enter 0 to select this console, press the 0 (zero) key on the ASCII terminal's keyboard.

7. If the Please define the system console screen is displayed, follow the directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
9. Check that all adapters and attached devices are listed.

Was the Please define the system console screen displayed and were all adapters and attached devices listed?

NO Go to PFW1542-570-19.

YES Go to PFW1542-570-17.

• **PFW1542-570-17**

If the Please define the system console screen was not displayed and all adapters and attached devices were not listed, the problem is with one of the adapter cards or attached devices that was removed or disconnected from the I/O subsystem.

1. Turn off the power.
2. Reinstall one adapter and device that was removed. Use the original adapter cards in their original slots when reinstalling adapters.
3. Turn on the power to boot the standalone diagnostic CD-ROM.
4. If the Please define the system console screen is displayed, follow the directions to select the system console.
5. Use the Display Configuration and Resource List option to list all adapters and attached devices.
6. Check that all adapters and attached devices are listed.

Was the Please define the system console screen displayed and were all adapters and attached devices listed?

NO Go to PFW1542-570-18.

YES Reinstall the next adapter and device and return to the beginning of this step. Repeat this process until an adapter or device causes the Please define the System Console screen to not display or all attached devices and adapters to not be listed.

After installing all of the adapters and the Please define the System Console screen does display and all attached devices and adapters are listed, return the system to its original configuration. Go to MAP 0410: Repair Checkout.

• **PFW1542-570-18**

Replace the adapter you just installed with a new adapter and retry booting AIX standalone diagnostics from CD-ROM.

1. If the Please define the system console screen is displayed, follow the directions to select the system console.
2. Use the Display Configuration and Resource List option to list all adapters and attached devices.
3. Check that all adapters and attached devices are listed.

Was the Please define the system console screen displayed and were all adapters and attached devices listed?

NO The I/O subsystem backplane is defective. Replace the I/O subsystem backplane. In all 4 subsystem types, the I/O subsystem backplane is Un-CB1. Then go to PFW1542-570-20.

YES The adapter was defective. Go to PFW1542-570-20.

• **PFW1542-570-19**

1. Turn off the power.
2. Disconnect the I/O subsystem power cables.
3. Replace the following parts, one at a time, if present, in the sequence listed:
 - a. I/O subsystem #1 backplane

- b. I/O subsystem #2 backplane
 - c. I/O subsystem #3 backplane
 - d. I/O subsystem #4 backplane
 - e. The RIO interface in the base system that the RIO cables are presently attached to: either the base planar (Un-P1) if the cables are connected to Un-P1-T8 and Un-P1-T9, or the RIO expansion card (Un-P1-C7) if the RIO cables are attached to Un-P1-C7-T1 and Un-P1-C7-T2.
4. Reconnect the I/O subsystem power cables.
 5. Turn on the power.
 6. Boot standalone AIX diagnostics from CD.
 7. If the Please define the System Console screen is displayed, follow directions to select the system console.
 8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
 9. Check that all attached devices and adapters are listed.
- Did the Please define the System Console screen display and are all attached devices and adapters listed?**

NO Replace the next part in the list and return to the beginning of this step. Repeat this process until a part causes the Please define the System Console screen to be displayed and all adapters and attached devices to be listed. If you have replaced all the items listed above and the Please define the System Console screen does not display or all attached devices and adapters are not listed, check all external devices and cabling. If you do not find a problem, contact your next level of support for assistance.

YES Go to PFW1542-570-20.

• **PFW1542-570-20**

1. Turn off the power.
 2. The item just replaced fixed the problem.
 3. If a display adapter with keyboard and mouse were installed, reinstall the display adapter card, keyboard, and mouse.
 4. Reconnect the tape drive (if previously installed) to the internal SCSI bus cable.
 5. Plug in all adapters that were previously removed but not reinstalled.
 6. Reconnect the I/O subsystem power cables that were previously disconnected.
- Return the system to its original condition. Go to MAP 0410: Repair Checkout.

• **PFW1542-570-21**

1. Turn off the power.
2. At the base system, reconnect the cable connection at RIO port 0 (Un-P1-T8) recorded in PFW1542-570-7.
3. At the base system, reconnect the cable connection at RIO port 1(Un-P1-T9) recorded in PFW1542-570-7.
4. Reconnect the power cables to the I/O subsystems that were found attached to the base system RIO ports mentioned in step 2 and step 3 of PFW1542-570-21. All I/O subsystems that were attached to the base system RIO port 0 and RIO port 1 should now be reconnected to the base system.
5. Make sure the I/O subsystem(s) are cabled correctly as shown in Connect your unit with HSL/RIO cables.
6. Turn on the power to boot standalone AIX diagnostics from CD-ROM.
7. If the Please define the System Console screen is displayed, follow the directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
9. Check that all adapters and attached devices are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Go to PFW1542-570-9 to isolate a problem in an I/O subsystem attached to the base system RIO bus on the system backplane.

YES Go to PFW1542-570-22.

• **PFW1542-570-22**

Is there a RIO expansion card plugged into Un-P1-C7 in the base system, and if so, is there at least one I/O subsystem attached to it?

NO Go to PFW1542-570-25.

YES Continue to PFW1542-570-23.

• **PFW1542-570-23**

1. Turn off the power.
2. At the base system, reconnect the cable connection at RIO port 0 on the RIO expansion card (Un-P1-C7-T2) recorded in PFW1542-570-7.
3. At the base system, reconnect the cable connection at RIO port 1 on the RIO expansion card (Un-P1-C7-T1) recorded in PFW1542-570-7.
4. Reconnect the power cables to the I/O subsystems that were attached to the base system's RIO ports mentioned in substeps 2 and 3 in this step. All I/O subsystems that were attached to RIO port 0 on the RIO expansion card (Un-P1-C7-T2) and RIO port 1 on the RIO expansion card (Un-P1-C7-T1) in the base system should now be reconnected to the system.
5. Make sure that the I/O subsystem(s) are cabled correctly as shown in Connect your unit with HSL/RIO cables
6. Turn on the power to boot the standalone AIX diagnostic CD-ROM.
7. If the Please define the system console screen is displayed, follow the directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
9. Verify that all adapters and attached devices are listed.

Did the Please define the system console screen display and are all adapters and attached devices listed?

NO Go to PFW1542-570-24 to isolate the problems in the I/O subsystems that are attached to the RIO expansion card in the base system.

YES Go to PFW1542-570-25.

• **PFW1542-570-24**

At the base system, reconnect the second I/O subsystem to the RIO ports on the base system's expansion card at Un-P1-C7-T1 and Un-P1-C7-T2.

Attention: The 5088 expansion unit, 5094 expansion unit, 5095 expansion unit, the 7311 Model D10/D11 I/O subsystem, and the 7311/D20 I/O subsystem may be connected to this system.

The RIO ports on these subsystems are shown in the following table. Use this table to determine the physical location codes of the RIO connectors that are mentioned in the remainder of this MAP.

	570 (base system)	5088	5094	7311-D10/11	7311/D20	5095
RIO port 0	Un-P1-T8	Un-CB1-C10-00	Un-CB1-C08-00	Un-P1-C7-00 (top connector)	Un-P1-C05-00 (bottom connector)	Un-CB1-C05-00
RIO port 1	Un-P1-T9	Un-CB1-C10-01	Un-CB1-C08-01	Un-P1-C7-01	Un-P1-C05-01	Un-CB1-C05-01

Note: Before continuing, check the cabling from the base system to the I/O subsystem(s) to insure that the system is cabled correctly. Refer to Connect your unit with HSL/RIO cables for valid configurations. Record the current cabling configuration and then continue with the following steps.

1. Turn off the power.
2. Record the location and machine type and model number, or feature number, of each I/O drawer or tower. In the following steps, use this information to determine the physical location codes of the RIO connectors that are referred to by their logical names. For example, if I/O subsystem #1 is a 7311/D20 drawer, RIO port 0 is Un-P1-C05-00.
3. At the base system, disconnect the cable connection at RIO port 0 (Un-P1-C7-T2).
4. At the other end of the RIO cable referred to in step 2 of PFW1542-570-24, disconnect the I/O subsystem port connector 0. The RIO cable that was connected to RIO port 0 on the expansion card should now be loose; remove it. Record the location of this I/O subsystem and call it "subsystem #1".
5. Examine the connection at the I/O port connector 1 of the I/O subsystem recorded in step 3 of PFW1542-570-24. If the RIO cable attached to I/O port connector 1 connects to the I/O port connector 0 of another I/O subsystem, record the location of the next I/O subsystem that is connected to I/O port 1 of subsystem #1, then go to step 9 of PFW1542-570-24.
6. This step is reserved.
7. At the base system, disconnect the cable connection at RIO port 1 on the RIO expansion card (Un-P1-C7-T1) and reconnect it to RIO port 0 on the RIO expansion card (Un-P1-C7-T2).
8. At the I/O subsystem recorded in step 3 of PFW1542-570-24, disconnect the I/O port connector 1 and reconnect to I/O port 0.
9. Verify that a single RIO cable connects base system RIO port 0 on the RIO expansion card (Un-P1-C7-T1) to the I/O subsystem recorded in step 4 of PFW1542-570-24 port 0. Go to step 21 of PFW1542-570-24.
10. Record the location of the next I/O subsystem and call it "subsystem #2". This is the I/O subsystem that is connected to I/O port 1 of subsystem #1.
11. Examine the connection at the I/O port 1 of subsystem #2 recorded in step 9 of PFW1542-570-24. If the RIO cable attached to I/O port 1 connects to the I/O port 0 of another I/O subsystem, record the location of the next I/O subsystem that is connected to I/O port 1 of subsystem #2 and call it "subsystem #3". Go to step 14 of PFW1542-570-24.
12. The RIO cable attached to the I/O port 1 of subsystem #2 is attached to port 1 (Un-P1-C7-T1) of the base system. At the base system, disconnect the cable connection at RIO port 1 on the RIO expansion card (Un-P1-C7-T1) and reconnect it to RIO port 0 on the RIO expansion card (Un-P1-C7-T1).
13. On subsystem #2, disconnect the cable from I/O port 1 and reconnect it to I/O port 0 of subsystem #1.
14. Verify that a single RIO cable connect base system RIO port 0 to one or two I/O subsystems. Go to step 21 of PFW1542-570-24.
15. Examine the connection at the I/O port 1 of subsystem #3 recorded in 10 of PFW1542-570-24. If the RIO cable attached to I/O port 1 connects to the I/O port 0 of another I/O subsystem, record the location of the next I/O subsystem that is connected to I/O port 1 of the subsystem #3 and call it "subsystem #4". Go to step 18 of PFW1542-570-24.
16. The RIO cable attached to the I/O port 1 of subsystem #3 is attached to RIO port 1 on the RIO expansion card (Un-P1-C7-T1). At the base system, disconnect the cable connection at RIO port 1 on the RIO expansion card (Un-P1-C7-T1) and reconnect it to RIO port 0 on the RIO expansion card (Un-P1-C7-T1).
17. On subsystem #3, disconnect the cable from I/O port 1 and reconnect it to I/O port 0 of subsystem #1.

18. Verify that a single RIO cable connects base system RIO port 0 to three I/O subsystems. Go to step 21 of PFW1542-570-24.
19. The RIO cable attached to the I/O port 1 of subsystem #4 is attached to port 1 (Un-P1-C7-T1) on the RIO expansion card. On the RIO expansion card, disconnect the cable connection at RIO port 1 (Un-P1-C7-T1) and reconnect it to RIO port 0 (Un-P1-C7-T2).
20. On subsystem #4, disconnect the cable from I/O port 1 and reconnect it to I/O port 0 of subsystem #1.
21. Verify that a single RIO cable connects base system RIO port 0 to four I/O subsystems. Continue to step 22 of PFW1542-570-24.
22. Turn on the power to boot the standalone AIX diagnostics from CD-ROM.
23. If the Please define the system console screen is displayed, follow the directions to select the system console.
24. Use the Display Configuration and Resource List option to list all of the attached devices and adapters.
25. Verify that all adapters and the attached devices are listed.

Did the Please define the system console screen display and are all adapters and attached devices listed?

NO Go to PFW1542-570-9 to further isolate a problem in the I/O subsystem(s) attached to the RIO expansion card (Un-P1-C7).

YES The RIO cable that was removed in step 3 of PFW1542-570-24 is defective. Replace this RIO cable.

If four I/O subsystems are chained to RIO port 0 (Un-P1-C7-T1) of the base system, connect the new RIO cable from subsystem #4 I/O port 1 to RIO port 1 on the RIO expansion card (Un-P1-C7-T1).

If three I/O subsystems are chained to RIO port 0 (Un-P1-C7-T1) of the base system, connect the new RIO cable from subsystem #3 I/O port 1 to RIO port 1 on the RIO expansion card (Un-P1-C7-T1).

If two I/O subsystems are chained to RIO port 0 (Un-P1-C7-T1) of the base system, connect the new RIO cable from subsystem #2 I/O port 1 to RIO port 1 on the RIO expansion card (Un-P1-C7-T1).

If one I/O subsystem is chained to RIO port 0 (Un-P1-C7-T1) of the base system, connect the new RIO cable from subsystem #1 I/O port 1 to RIO port 1 on the RIO expansion card (Un-P1-C7-T1).

Restore the system back to its original configuration. Go to MAP 0410: Repair Checkout.

- **PFW1542-570-25**

Are there any adapters in slots 1, 2, 3, 4, 5, or 6 in the base system?

NO Go to PFW1542-570-26.

YES Go to PFW1542-570-28.

- **PFW1542-570-26**

Replace the system backplane, Un-P1. Continue to PFW1542-570-27.

- **PFW1542-570-27**

1. Boot standalone AIX diagnostics from CD.
2. If the Please define the System Console screen is displayed, follow directions to select the system console.
3. Use the Display Configuration and Resource List to list all adapters and attached devices.
4. Check that all adapters and attached devices are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Go to PFW1542-570-31.

YES Go to PFW1542-570-20.

- **PFW1542-570-28**

1. If it is not already off, turn off the power.
2. Label and record the location of any cables attached to the adapters.
3. Record the slot number of the adapters.
4. Remove all adapters from slots 1, 2, 3, 4, 5, and 6 in the base system that are not attached to the boot device.
5. Turn on the power to boot standalone AIX diagnostics from CD-ROM.
6. If the ASCII terminal displays Enter 0 to select this console, press the 0 key on the ASCII terminal's keyboard.
7. If the Please define the System Console screen is displayed, follow directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
9. Check that all adapters and attached devices are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Go to PFW1542-570-26.

YES Continue to PFW1542-570-29.

- **PFW1542-570-29**

If the Please define the System Console screen does display and all adapters and attached devices are listed, the problem is with one of the adapter cards or devices that was removed or disconnected from the base system.

1. Turn off the power.
2. Reinstall one adapter and device that was removed. Use the original adapter cards in their original slots when reinstalling adapters.
3. Turn on the power to boot standalone AIX diagnostics from CD-ROM.
4. If the Please define the System Console screen is displayed, follow the directions to select the system console.
5. Use the Display Configuration and Resource List to list all adapters and attached devices.
6. Check that all adapters and attached devices are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Continue to PFW1542-570-30.

YES Return to the beginning of this step to continue reinstalling adapters and devices.

- **PFW1542-570-30**

Replace the adapter you just installed with a new adapter and retry the boot to standalone AIX diagnostics from CD-ROM.

1. If the Please define the System Console screen is displayed, follow directions to select the system console.
2. Use the Display Configuration and Resource List option to list all adapters and attached devices.
3. Check that all adapters and attached devices are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Go to PFW1542-570-26.

YES The adapter you just replaced was defective. Go to PFW1542-570-20.

- **PFW1542-570-31**

1. Turn off the power.
2. Disconnect the base system power cables.
3. Replace the following parts, one at a time, in the sequence listed:
 - a. Internal SCSI cable
 - b. Disk drive backplanes, one at a time
 - c. Media backplane
 - d. IDE devices, one at a time
 - e. SCSI devices, one at a time
 - f. Service processor
4. Reconnect the base system power cables.
5. Turn on the power.
6. Boot standalone AIX diagnostics from CD.
7. If the Please define the System Console screen is displayed, follow directions to select the system console.
8. Use the Display Configuration and Resource List option to list all adapters and attached devices.
9. Check that all adapters and attached devices are listed.

Did the Please define the System Console screen display and are all adapters and attached devices listed?

NO Replace the next part in the list and return to the beginning of this step. Repeat this process until a part causes the Please define the System Console screen to be displayed and all adapters and attached devices to be listed. If you have replaced all the items listed above and the Please define the System Console screen does not display or all adapters and attached devices are not listed, check all external devices and cabling. If you do not find a problem, contact your next level of support for assistance.

YES Go to PFW1542-570-20.

PFW1542-575: I/O problem isolation procedure for model 575

This MAP is used to locate defective FRUs not found by normal diagnostics.

Purpose of this MAP

For this procedure, diagnostics are run on a minimally configured system. If a failure is detected on the minimally configured system, the remaining FRUs are exchanged one at a time until the failing FRU is identified. If a failure is not detected, FRUs are added back until the failure occurs. The failure is then isolated to the failing FRU. This I/O problem-determination MAP isolates I/O card and I/O subsystem failures. When I/O problem isolation is complete, all cables and cards exhibiting a failure will have been replaced or reseated.

Notes:

1. This MAP requires that a NIM server be accessible to provide the ability to boot to standalone diagnostics. Alternately, the service representative may choose to use online diagnostics available from a bootable hard drive already attached to the system. Using online diagnostics reduces coverage (especially for boot device problems) and magnifies problems with missing resources during I/ O isolation. The preferred method is to run the standalone diagnostics from a NIM server.
2. If a general-access password or privileged-access password is installed, you are prompted to enter the password before the diagnostics can load.
3. The term POST indicators refers to the device mnemonics (words memory, keyboard, network, scsi, and speaker) that appear on the system console during the power-on self-test (POST).

4. The service processor may have recorded one or more symptoms in its error log. It is a good idea to examine that error log before proceeding and take actions as indicated.
5. The service processor may have been set by the user to monitor system operations and to attempt recoveries. You can disable these actions while you diagnose and service the system. If you disable them, make notes of their current settings so that you can restore them easily.
6. The service processor might have been set by the user to monitor system operations and to attempt recoveries. You might want to disable these options while you diagnose and service the system. If these settings are disabled, make notes of their current settings so that they can be restored before the system is turned back over to the customer. The following settings may be of interest.

Monitoring (also called surveillance)

From the ASMI menu, expand the System Configuration menu, then click on Monitoring. Disable both types of surveillance.

Auto power restart (also called unattended start mode)

From the ASMI menu, expand Power/Restart Control, then click on Auto Power Restart, and set it to disabled.

Wake on LAN

From the ASMI menu, expand Wake on LAN, and set it to disabled.

Call Out

From the ASMI menu, expand the Service Aids menu, then click on Call-Home/Call-In Setup. Set the call-home system port and the call-in system port to disabled.

7. If this is a pSeries system, verify that the system has not been set to boot to the SMS menus or to the open firmware prompt. From the ASMI menu, expand Power/Restart Control to view the menu, then click on Power On/Off System. The AIX/Linux partition mode boot should say "Continue to Operating System".

The steps in this procedure will attempt to slow boot the system into service mode diagnostics. The procedure for booting a partitioned system with an attached HMC is described in Performing a Slow Boot. Performing slow boot describes the procedure for booting online diagnostics (6 key between the keyboard and speaker indicators) and the following procedure requires booting standalone diagnostics (5 key between the keyboard and speaker indicators). Therefore, on a partitioned system, ensure the partition you selected to boot in the following procedure has an Ethernet interface allocated to it, as described in Loading and Using the AIX online diagnostics or the eserver standalone diagnostics.

• **PFW1542-575-1**

1. Ensure that the diagnostics and the operating system are shut down.

Note: When you are directed to turn power off or turn power on in this procedure, follow the instructions in Powering the System On and Off.

2. Turn off the power.
3. Select slow-boot mode. See Performing a Slow Boot.
4. Turn on the power.

• **PFW1542-575-2**

1. When the keyboard indicator is displayed (the word keyboard), press the 5 key on the firmware console.
2. Enter the appropriate password when you are prompted to do so.

Is the Please Define the System Console screen displayed?

No Go to PFW1542-575-3.

Yes Go to PFW1542-575-4.

• **PFW1542-575-3**

The system is unable to boot standalone diagnostics. Check the service processor error log for additional error codes resulting from the slow boot done in PFW1542-575-1.

Did the slow boot generate a different error code from the one that originally sent you to MAP 1542?

No It appears you have a processor subsystem problem. Call for service support. This ends the procedure.

Yes Follow the actions for the new error code.

- **PFW1542-575-4**

The system stopped with the Please Define the System Console prompt appearing on the system console. Standalone diagnostics can be booted. Perform the following:

1. Follow the instructions on the screen to select the system console.
2. When the DIAGNOSTIC OPERATING INSTRUCTIONS screen is displayed, press Enter.
3. If the terminal type has not been defined, you must use the Initialize Terminal option on the Function Selection Menu to initialize the AIX operating system environment before you can continue with the diagnostics.

This is a separate operation from selecting the firmware console display.

4. Select Advanced Diagnostic Routines.
5. When the Diagnostic Mode Selection Menu displays, select system verification to run diagnostics on all resources.

Did running diagnostics produce a different symptom?

No Go to substep PFW1542-575-6.

Yes Go to the Start-of-Call. Use the new symptom.

6. Record any devices missing from the list of all adapters and devices.

Continue with this MAP. When you have fixed the problem, use this record to verify that all devices appear when you run system verification.

Are there any devices missing from the list of all adapters and devices?

No Reinstall all remaining adapters, if any, and reconnect all devices. Return the system to its original configuration. Be sure to select fast-boot mode using either the HMC or the AMSI menus. Go to MAP 0410: Repair Checkout.

Yes The boot attempts that follow will attempt to isolate any remaining I/O subsystem problems with missing devices. Ignore any codes that may display on the operator panel value on the HMC unless stated otherwise. Go to PFW1542-575-5.

- **PFW1542-575-5**

Examine the processor subsystem RIO port A0 (Un-P1-T7). Are there any I/O subsystems attached to this processor subsystem?

No Go to PFW1542-575-22.

Yes Go to PFW1542-575-6.

- **PFW1542-575-6**

There might be missing devices associated with one or more I/O subsystems.

Before continuing, check the cabling from the processor subsystem to I/O subsystem(s) to ensure that the system is cabled correctly. Record the current cabling configuration and then continue with the following steps:

Notes:

1. Turn off the power.
2. At the processor subsystem, disconnect the cable connection at RIO port A0 (Un-P1-T7). Follow this RIO cable to a RIO connector on an I/O subsystem at the other end.

3. If the RIO cable in substep pfw154257562 is connected to the right side of the I/O subsystem, disconnect the right I/O port connector 0 (Un-P2-T2). The RIO cable that was connected to RIO port A0 on the processor subsystem should now be loose and can be removed. Record the location of this I/O subsystem and that it is not looped right. Go to substep pfw154257565 .
4. If the RIO cable in substep pfw154257562 above is connected to the left side of the I/O subsystem, disconnect the left I/O port connector 0 (Un-P1-T2). The RIO cable that was connected to RIO port A0 on the processor subsystem should now be loose and can be removed. Record the location of this I/O subsystem. Go to substep pfw154257568.
5. At the processor subsystem, disconnect the cable connection at RIO port A1 (Un-P1-T8) and reconnect it to RIO port A0 (Un-P1-T7).
6. At the I/O subsystem recorded in substep pfw154257563 , disconnect the right I/O port connector 1 (Un-P2-T1) and reconnect to the right I/O port connector 0 (Un-P2-T2).
7. Verify that a single RIO cable connects processor subsystem RIO port A0 (Un-P1-Q1) to the right I/O port connector 0 (Un-P2-T2) of the I/O subsystem. Go to substep pfw1542575614 .
8. Examine the connection at the left I/O port connector 1 of the I/O subsystem recorded in substep pfw154257564 . If the RIO cable attached to the left I/O port connector 1 of the I/O subsystem leads to the right I/O port connector 0 of the I/O subsystem, record that the I/O subsystem is looped Go to substep pfw1542575613
9. If the RIO cable attached to the left I/O port connector 1 of the I/O subsystem leads to port A1 of the processor subsystem, record that the I/O subsystem is not looped left.
10. At the processor subsystem, disconnect the cable connection at RIO port A1 (Un-P1-T8) and reconnect it to RIO port A0 (Un-P1-T7).
11. At the I/O subsystem recorded in substep pfw154257564, disconnect the left I/O port connector 1 (Un-P1-T1) and reconnect to the left I/O port connector 0 (Un-P1-T2).
12. Verify that a single RIO cable connects processor subsystem RIO port A0 (Un-P1-Q1) to the left I/O port connector 0 of the I/O subsystem. Go to substep pfw1542575614.
13. At the I/O subsystem recorded in substep pfw154257564 , disconnect the right I/O port connector 1 (Un-P2-T1) and reconnect to the left I/O port connector 0 (Un-P1-T2). Go to substep pfw1542575612
14. If the I/O subsystem was looped, verify that the I/O subsystem left I/O port connector 1 (Un-P1-T1) is connected to the I/O subsystem right I/O port connector 0 (Un-P2-T2).
15. Turn on the power to boot standalone diagnostics from the NIM server.
16. If the Please Define the System Console screen is displayed, follow the directions to select the system console.
17. Use the Display Configuration and Resource List to list all attached devices and adapters.
18. Check that all attached devices and adapters are listed.

Did the Please Define the System Console screen display and are all attached devices and adapters listed?

No Go to PFW1542-575-7.

Yes The RIO cable that was removed in substep PFW1542-57563 or PFW1542-57564 above is defective. Replace the RIO cable. If the I/O subsystem was looped, connect the new RIO cable from I/O subsystem 1 right I/O port connector 1 (Un-P2-T1) to processor subsystem RIO port A1 (Un-P1-T8). If the I/O subsystem was not looped left, connect the new RIO cable from the I/O subsystem left I/O port connector 1 (Un-P1-T1) to processor subsystem RIO port A1 (Un-P1-T8). If the I/O subsystem was not looped right, connect the new RIO cable from the I/O subsystem right I/O port connector 1 (Un-P2-T1) to processor subsystem RIO port A1 (Un-P1-T8). Reconfigure the system to its original condition. Go to MAP 0410: Repair Checkout.

- PFW1542-575-7

The system may have only one full-width I/O subsystem attached to a processor subsystem. The following steps reduce the system I/O to the minimum required:

1. Turn off the system power.
2. At the processor subsystem, disconnect the cable connection at RIO port A0 (Un-P1-T7).
3. At the processor subsystem, disconnect the cable connection at RIO port A1 (Un-P1-T8).
4. Disconnect the power cables from the I/O subsystem(s) that were attached to the processor subsystem. All I/O subsystems should now be physically disconnected from the processor subsystem. Go to PFW1542-575-8.

• **PFW1542-575-8**

The processor subsystem is running from the integrated I/O or from I/O attached to an adapter installed into one of the integrated PCI slots.

1. Turn on the power to boot standalone diagnostics from the NIM server.
2. If the Please Define the System Console prompt is displayed, follow the directions to select the system console.
3. Use the Display Configuration and Resource List to list all attached devices and adapters.
4. Check that all attached devices and adapters are listed.

If the "Please Define the System Console" prompt did not display or all attached devices and adapters are not listed, the problem is in processor subsystem.

Did the Please Define the System Console screen display and are all attached devices and adapters listed?

No Go to PFW1542-575-22.

Yes Go to PFW1542-575-21.

• **PFW1542-575-9**

If the I/O subsystem is looped, or not looped left (see step PFW1542-575-6), are there any adapters in slot 1, 2, 3, 4 or 5 (location codes Un-P1-C1 through C5) on the left side of the I/O subsystem?

No Go to PFW1542-575-10.

Yes Go to PFW1542-575-13.

• **PFW1542-575-10**

If the I/O subsystem is looped, or not looped left, (see step PFW1542-575-6), are there any adapters in slot 6, 7, 8, 9 or 10 (location codes Un-P1-C6 through C10) on the left side of the I/O subsystem?

No Go to PFW1542-575-11.

Yes Go to PFW1542-575-14.

• **PFW1542-575-11**

If the I/O subsystem is looped or not looped right, (see step PFW1542-575-6), are there any adapters in slots 1, 2, 3, 4 or 5 (location codes Un-P2-C1 through C5) on the right side of the I/O subsystem?

No Go to PFW1542-575-12.

Yes Go to PFW1542-575-15.

• **PFW1542-575-12**

If the I/O subsystem is looped or not looped right, (see step PFW1542-575-6), are there any adapters in slots 6, 7, 8, 9 or 10 (location codes Un-P2-C6 through C10) on the right side of the I/O subsystem?

No Go to PFW1542-575-19.

Yes Go to PFW1542-575-16.

• **PFW1542-575-13**

Did the Please Define the System Console screen display and are all attached devices and adapters listed?

No Go to PFW1542-575-10.

Yes Go to PFW1542-575-17.

- **PFW1542-575-14**

1. If it is not already off, turn off the power.
2. Remove all adapters from slots 1, 2, 3, 4 and 5 (location codes Un-P1-C1 through C5) from the left side of the I/O subsystem.
3. Label and record the location of any cables attached to the adapters.
4. Record the slot number of the adapters.
5. Turn on the power to boot standalone diagnostics from the NIM server.
6. If the TTY screen displays "Enter 0 to select this console", press the 0 key on the TTY terminal's keyboard.
7. If the Please Define the System Console screen is displayed, follow the directions to select the system console.
8. Use the Display Configuration and Resource List to list all adapters and attached devices.
9. Check that all attached devices and adapters are listed.

Did the Please Define the System Console screen display and are all attached devices and adapters listed?

No Go to PFW1542-575-11.

Yes Go to PFW1542-575-17.

- **PFW1542-575-15**

1. If it is not already off, turn off the power.
2. Remove all adapters from slots 1, 2, 3, 4 and 5 (location codes Un-P2-C1 through C5) from the right side of the I/O subsystem.
3. Label and record the location of any cables attached to the adapters.
4. Record the slot number of the adapters.
5. Turn on the power to boot standalone diagnostics from the NIM server.
6. If the TTY screen displays "Enter 0 to select this console", press the 0 key on the TTY terminal's keyboard.
7. If the Please Define the System Console screen is displayed, follow the directions to select the system console.
8. Use the Display Configuration and Resource List to list all attached devices and adapters.
9. Check that all attached devices and adapters are listed.

Did the Please Define the System Console screen display and are all attached devices and adapters listed?

No Go to PFW1542-575-12.

Yes Go to PFW1542-575-17.

- **PFW1542-575-16**

1. If it is not already off, turn off the power.
2. Remove all adapters from slots 6, 7, 8, 9 and 10 (location codes Un-P2-C6 through C10) from the right side of the I/O subsystem.
3. Label and record the location of any cables attached to the adapters.
4. Record the slot number of the adapters.
5. Turn on the power to boot standalone diagnostics from the NIM server.

6. If the TTY screen displays "Enter 0 to select this console", press the 0 key on the TTY terminal's keyboard.
7. If the Please Define the System Console screen is displayed, follow the directions to select the system console.
8. Use the Display Configuration and Resource List to list all attached devices and adapters.
9. Check that all attached devices and adapters are listed.

Did the Please Define the System Console screen display and are all attached devices and adapters listed?

No Go to PFW1542-575-19.

Yes Go to PFW1542-575-17.

• **PFW1542-575-17**

If the Please Define the System Console screen does display and all attached devices and adapters are listed, the problem is with one of the adapter cards or devices that was removed or disconnected from the I/O subsystem.

1. Turn off the power.
2. Reinstall one adapter or device that was removed.
3. Turn on the power to boot standalone diagnostics from the NIM server.
4. If the Please Define the System Console screen is displayed, follow the directions to select the system console.
5. Use the Display Configuration and Resource List to list all attached devices and adapters.
6. Check that all attached devices and adapters are listed.

Did the Please Define the System Console screen display and are all attached devices and adapters listed?

No Go to PFW1542-575-18.

Yes Reinstall the next adapter or device and return to the beginning of this step. Continue repeating this process until an adapter or device causes the "Please Define the System Console" screen to not display or all attached devices and adapters to not be listed. After installing all of the adapters and the "Please Define the System Console" screen does display and all attached devices and adapters are listed, return the system to its original configuration. Go to MAP 0410: Repair Checkout.

• **PFW1542-575-18**

Replace the adapter you just installed with a new adapter and retry the boot to standalone diagnostics from the NIM server.

1. If the Please Define the System Console screen is displayed, follow the directions to select the system console.
2. Use the Display Configuration and Resource List to list all attached devices and adapters.
3. Check that all attached devices and adapters are listed.

Did the Please Define the System Console screen display and are all attached devices and adapters listed?

No The I/O subsystem backplane is defective. Replace the I/O subsystem backplane on the side of the problem adapter (Un-P1 or Un-P2). Go to PFW1542-575-20.

Yes The adapter was defective. Go to PFW1542-575-20.

• **PFW1542-575-19**

1. Turn off the power.
2. Disconnect the I/O subsystem power cables.
3. Replace the following parts, one at a time, in the sequence listed:
 - a. I/O subsystem backplane at Un-P1.

- b. I/O subsystem backplane at Un-P2.
 - c. I/O subsystem DCA at Un-E1.
 - d. I/O subsystem DCA at Un-E2.
- 4. Reconnect the I/O subsystem power cables.
- 5. Turn on the power.
- 6. Boot standalone diagnostics from the NIM server.
- 7. If the "Please Define the System Console" screen is displayed, follow the directions to select the system console.
- 8. Use the "Display Configuration and Resource List" to list all attached devices and adapters.
- 9. Check that all attached devices and adapters are listed.
- **PFW1542-575-20**
 - 1. Turn off the power.
 - 2. The item just replaced fixed the problem.
 - 3. Plug in all adapters that were previously removed but not reinstalled.
 - 4. Reconnect the I/O subsystem power cables that were previously disconnected.

Reconfigure the system to its original condition. Go to MAP 0410: Repair Checkout.
- **PFW1542-575-21**
 - 1. Turn off the power.
 - 2. At the processor subsystem, reconnect the cable connection at RIO port A0 (Un-P1-T7).
 - 3. At the processor subsystem, reconnect the cable connection at RIO port A1 (Un-P1-T8).
 - 4. Reconnect the power cables from the I/O subsystem(s) that were attached to the processor subsystem.

All I/O subsystems should now be physically reconnected to the processor subsystem.

 - 5. Ensure that the I/O subsystem is cabled correctly.
 - 6. Go to PFW1542-575-9.
- **PFW1542-575-22**

Are there any adapters in slots 1, 2, 3, or 4 (location codes Un-P1-C1, Un-P1-C2, Un-P1-C4, or Un-P1-C5) in the processor subsystem?

No Go to PFW1542-575-23.

Yes Go to PFW1542-575-25.
- **PFW1542-575-23**

Attention: Contact service support before replacing the I/O backplane.

 - 1. Turn off the power.
 - 2. Disconnect the processor subsystem power cables.
 - 3. Replace the following parts, one at a time, in the sequence listed:
 - a. Internal SCSI hard drives, if present, at Un-P1-D1 and Un-P1-D2.
 - b. I/O backplane, Un-P1.
 - 4. Reconnect the processor subsystem power cables.
 - 5. Turn on the power.
 - 6. Boot standalone diagnostics from the NIM server.
 - 7. If the Please Define the System Console screen is displayed, follow the directions to select the system console.
 - 8. Use the Display Configuration and Resource List to list all attached devices and adapters.
 - 9. Check that all attached devices and adapters are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

No Replace the next part in the list and return to the beginning of this step. Continue repeating this process until a part causes the Please Define the System Console screen to be displayed and all attached devices and adapters to be listed. If you have replaced all the items listed above and the Please Define the System Console screen does not display or all attached devices and adapters are not listed, check any external devices and cabling. If you do not find a problem, contact your next level of support for assistance.

Yes Go to PFW1542-575-24.

- **PFW1542-575-24**

1. Turn off the power.
2. The item just replaced fixed the problem.
3. Plug in all adapters that were previously removed but not reinstalled.
4. Reconnect the I/O subsystem power cables that were previously disconnected.

Reconfigure the system to its original condition. Go to MAP 0410: Repair Checkout.

- **PFW1542-575-25**

1. Power down the system if necessary.
2. Remove the PCI adapter(s), if present, in slots Un-P1-C1, Un-P1-C2, Un-P1-C4, and Un-P1-C5.
3. Power on the system to boot standalone diagnostics from the NIM server.

Did the Please Define the System Console screen does display and all attached devices and adapters left in the processor subsystem show up using the Display Configuration and Resource List option?

No Go to PFW1542-575-23.

Yes Go to PFW1542-575-26.

- **PFW1542-575-26**

The problem is with one of the adapter cards or devices that was removed or disconnected from the processor subsystem.

Turn off the power.

Have all of the PCI adapters been reinstalled?

No Reinstall one adapter or device that was removed. Use the original adapter cards in their original slots when reinstalling adapters. Go to PFW1542-575-27.

Yes Go to PFW1542-575-23.

- **PFW1542-575-27**

Power on the system to boot standalone diagnostics from the NIM server.

Did the Please Define the System Console screen does display and all attached devices and adapters left in the processor subsystem show up using the Display Configuration and Resource List option?

No Go to PFW1542-575-28.

Yes Go to PFW1542-575-26.

- **PFW1542-575-28**

Replace the adapter you just installed with a new adapter and retry the boot to standalone diagnostics from the NIM server.

1. If the Please Define the System Console screen is displayed, follow the directions to select the system console.
2. Use the Display Configuration and Resource List to list all attached devices and adapters.
3. Check that all attached devices and adapters are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

- No** The processor subsystem I/O unit's backplane is defective. Replace the I/O backplane (Un-P1). Go to PFW1542-575-20.
- Yes** The adapter was defective. Go to PFW1542-575-20.

PFW1542-590: I/O problem isolation procedure for model 590, and 595

Use this procedure to locate defective FRUs not found by normal diagnostics.

Purpose of this MAP

This MAP is used to locate defective FRUs not found by normal diagnostics. For this procedure, diagnostics are run on a minimally configured system. If a failure is detected on the minimally configured system, the remaining FRUs are exchanged one at a time until the failing FRU is identified. If a failure is not detected, FRUs are added back until the failure occurs. The failure is then isolated to the failing FRU.

This I/O problem-determination procedure isolates I/O card and I/O subsystem failures. When I/O problem isolation is complete, all cables and cards exhibiting a failure will have been reseated or replaced.

Notes:

1. This procedure assumes that an optical drive is installed in the integrated media drawer and connected to the SCSI LVD adapter, and that an AIX diagnostic CD-ROM is available.
 2. If a power-on password or privileged-access password is set, you are prompted to enter the password before the AIX diagnostic CD-ROM can load.
 3. The term POST indicators refers to the device mnemonics that appear during the power-on self-test (POST).
 4. The service processor might have recorded one or more symptoms in its error/event log. Use the ASMI menus to view the error/event log.
 - If you arrived here after performing a slow boot, look for a possible new error that occurred during the slow boot. If there is a new error, and its actions call for a FRU replacement, perform those actions. If this does not resolve the problem, go to PFW1542-590-1.
 - If an additional slow boot has not been performed, or if the slow boot did not yield a new error code, look at the error that occurred just before the original error. Perform the actions associated with that error. If the problem is not resolved, go to PFW1542-590-1.
 - If a slow boot results in the same error code, and there are no error codes before the original error code, go to PFW1542-590-1.
 5. The service processor might have been set by the user to monitor system operations and to attempt recoveries. You might want to disable these options while you diagnose and service the system. If these settings are disabled, make notes of their current settings so that they can be restored before the system is turned back over to the customer. The following settings may be of interest. Monitoring (also called surveillance) From the ASMI menu, expand the System Configuration menu, then click on Monitoring. Disable both types of surveillance. Auto power restart (also called unattended start mode) From the ASMI menu, expand Power/Restart Control, then click on Auto Power Restart, and set it to disabled. Wake on LAN From the ASMI menu, expand Wake on LAN, and set it to disabled. Call Out From the ASMI menu, expand the Service Aids menu, then click on Call-Home/Call-In Setup. Set the call-home system port and the call-in system port to disabled.
 6. If this is a pSeries system, verify that the system has not been set to boot to the SMS menus or to the open firmware prompt. From the ASMI menu, expand Power/Restart Control to view the menu, then click on Power On/Off System. The AIX/Linux partition mode boot should say "Continue to Operating System".
- **PFW1542-590-1**
 1. Insure that the diagnostics and the operating system are shut down

2. Use the HMC to power down the system.
3. Access the ASMI menus, Power/Restart Control, Power On/Off System, set the System boot speed to slow.
4. Turn on the power to the system using the HMC.
5. Does the optical drive appear to boot the AIX diagnostic CD-ROM?

Does the optical drive appear to boot the AIX diagnostic CD-ROM?

NO Go to Problems With Booting and Loading the Operating System. After the problem has been corrected, return to PFW1542-590-1.

YES Go to PFW1542-590-2.

• **PFW1542-590-2**

1. After the word keyboard is displayed on the firmware console, but before the word speaker is displayed, press the number 5 key.
2. If you are prompted to do so, enter the appropriate password.

Is the Please define the System Console screen displayed?

NO Go to PFW1542-590-3.

YES Go to PFW1542-590-4.

• **PFW1542-590-3**

The system is unable to boot standalone diagnostics.

Check the service processor error log and the control panel for additional error codes resulting from the slow boot in step PFW1542-590-1.

Did the slow boot generate a different error code from the one that originally sent you to PFW1542-590?

NO It appears there is a problem in the processor subsystem. Call for support. This ends the procedure.

YES Go to the Start-of-call procedure with the new error code.

• **PFW1542-590-4**

The system stopped with the Please define the system console prompt appearing on the system console.

Standalone diagnostics can be booted. Perform the following:

1. Follow the instructions on the screen to select the diagnostic console.
2. When the DIAGNOSTIC OPERATING INSTRUCTIONS screen is displayed, press Enter.
3. If the terminal type has not been defined, you must use the Initialize Terminal option of the FUNCTION SELECTION menu to initialize the AIX operating system environment before you can continue with the diagnostics. This is a separate operation from selecting the firmware console display.
4. Select Advanced Diagnostic Routines.
5. When the DIAGNOSTIC MODE SELECTION menu displays, select System Verification to run diagnostics on all resources.

Did running diagnostics produce a different symptom?

NO Go to substep PFW1542-590-4-6.

YES Go to the start-of-call procedure with the new symptom.

6. Record any devices missing from the list of all adapters and devices. Continue with this procedure. When you have fixed the problem, use this record to verify that all devices appear when you run system verification.

Are there any devices missing from the list of all adapters and devices?

NO Reinstall all remaining adapters, if any, and reconnect all devices. Return the system to its

original configuration. Be sure to select fast-boot mode on the Power/Restart Control menu on the ASMI. Go to MAP 0410: Repair Checkout. This ends the procedure.

YES The boot attempts that follow will attempt to isolate any remaining I/O subsystem problems with missing devices. Ignore any codes that may display on the control panel unless stated otherwise. Continue to PFW1542-590-5.

• **PFW1542-590-5**

Attention: If redundant service processors are installed in the system, the GX+ adapter plugging rules shown below are altered. Do the following before continuing:

1. Redundant service processors require GX+ adapters to be installed in GX+ slots C01 and C03 in the first node (*Un-P2-C01* and *Un-P2-C03*), and slots C01 and C03 (*Un-P3-C01* and *Un-P3-C03*) in the second node; verify that these slots are occupied. If any one of these slots does not have a GX+ adapter installed, this must be resolved first; see Table 49.
2. Verify that only copper GX+ adapters (FC 7818) are in positions *Un-P2-C01*, *Un-P2-C03*, *Un-P3-C01* and *Un-P3-C03*.

Note: A system with a single node supports redundant service processors by default, since the *Un-P2-C01*, *Un-P2-C03*, *Un-P3-C01* and *Un-P3-C03* slots are always populated in a single node.

There are missing devices associated with one or more I/O subsystems.

Note: Before continuing, check the cabling from the processor subsystem to the I/O subsystem(s) to insure that the system is cabled correctly. Refer to the following adapter plugging rules tables for valid configurations. Record the current cabling configuration and then continue with the following steps:

The 590 server must have a minimum of one I/O subsystem and one media subsystem attached to the processor subsystem. The following substeps reduce the system I/O to the minimum of one I/O subsystem.

1. Use the HMC to turn off the power to the managed system.
2. The RIO adapters should be populated, and cabled, according to one of the following tables:

Note: The tables are model dependent.

Table 49. Model 590 GX+ adapter plugging rules

16W System		32W System	
Node 0 Slot D1	<i>Un-P2-C1</i>	Node 0 Slot D1	<i>Un-P2-C1</i>
Node 0 Slot D2	<i>Un-P2-C3</i>	Node 1 Slot D2	<i>Un-P3-C3</i>
Node 0 Slot D8	<i>Un-P2-C13</i>	Node 0 Slot D8	<i>Un-P2-C13</i>
Node 0 Slot D7	<i>Un-P2-C11</i>	Node 1 Slot D8	<i>Un-P3-C13</i>
Node 0 Slot D6	<i>Un-P2-C9</i>	Node 0 Slot D7	<i>Un-P2-C11</i>
Node 0 Slot D5	<i>Un-P2-C8</i>	Node 1 Slot D7	<i>Un-P3-C11</i>
Node 0 Slot D4	<i>Un-P2-C6</i>	Node 0 Slot D6	<i>Un-P2-C9</i>
Node 0 Slot D3	<i>Un-P2-C5</i>	Node 1 Slot D6	<i>Un-P3-C9</i>
		Node 0 Slot D5	<i>Un-P2-C8</i>
		Node 1 Slot D5	<i>Un-P3-C8</i>
		Node 0 Slot D4	<i>Un-P2-C6</i>
		Node 1 Slot D4	<i>Un-P3-C6</i>
		Node 0 Slot D3	<i>Un-P2-C5</i>
		Node 1 Slot D3	<i>Un-P3-C5</i>

Table 49. Model 590 GX+ adapter plugging rules (continued)

16W System		32W System	
		Node 0 Slot D2	Un-P2-C3
		Node 1 Slot D1	Un-P3-C1

Table 50. Model 595 GX+ adapter plugging rules

16W System	32W System	48W System	64W System
Node 0 Slot D1 Un-P2-C1	Node 0 Slot D1Un-P2-C1	Node 0 Slot D1Un-P2-C1	Node 0 Slot D1Un-P2-C1
Node 0 Slot D2Un-P2-C3	Node 1 Slot D2Un-P2-C3	Node 1 Slot D2Un-P3-C3	Node 1 Slot D2Un-P3-C3
Node 0 Slot D8Un-P2-C13	Node 0 Slot D8Un-P2-C13	Node 2 Slot D8Un-P4-C13	Node 2 Slot D8Un-P4-C13
Node 0 Slot D7Un-P2-C11	Node 1 Slot D8Un-P3-C13	Node 0 Slot D8Un-P2-C13	Node 3 Slot D8Un-P5-C13
Node 0 Slot D6Un-P2-C9	Node 0 Slot D7Un-P2-C11	Node 1 Slot D8Un-P3-C13	Node 0 Slot D8Un-P2-C13
Node 0 Slot D5Un-P2-C8	Node 1 Slot D7Un-P3-C11	Node 2 Slot D7Un-P4-C11	Node 1 Slot D8Un-P3-C13
	Node 0 Slot D6Un-P2-C9	Node 0 Slot D7Un-P2-C11	Node 2 Slot D7Un-P4-C11
	Node 1 Slot D6Un-P3-C9	Node 1 Slot D7Un-P3-C11	Node 3 Slot D7Un-P5-C11
	Node 0 Slot D5Un-P2-C8	Node 2 Slot D6Un-P4-C9	Node 0 Slot D7Un-P2-C11
	Node 1 Slot D5Un-P3-C8	Node 0 Slot D6Un-P2-C9	Node 1 Slot D7Un-P3-C11
	Node 0 Slot D2Un-P2-C3	Node 1 Slot D6Un-P3-C9	Node 2 Slot D6Un-P4-C9
	Node 1 Slot D2Un-P3-C3	Node 2 Slot D5Un-P4-C8	Node 3 Slot D6Un-P5-C9
		Node 0 Slot D5Un-P2-C8	Node 0 Slot D6Un-P2-C9
		Node 1 Slot D5Un-P3-C8	Node 1 Slot D6Un-P3-C9
		Node 2 Slot D2Un-P4-C3	Node 2 Slot D5Un-P4-C8
		Node 0 Slot D2Un-P2-C3	Node 3 Slot D5Un-P5-C8
		Node 1 Slot D1Un-P3-C1	Node 0 Slot D5Un-P2-C8
		Node 2 Slot D1Un-P4-C1	Node 1 Slot D5Un-P3-C8
			Node 2 Slot D2Un-P4-C3
			Node 3 Slot D2Un-P4-C3
			Node 0 Slot D2Un-P2-C3
			Node 1 Slot D1Un-P3-C1
			Node 2 Slot D1Un-P4-C1
			Node 3 Slot D1Un-P5-C1

Leave the cables attached to the RIO adapter in the top-most position in the first node (Un-P2-C1). Unplug the rest of the RIO adapters in the first node and all additional nodes; carefully pull them out approximately 12 mm (1/2 inch) away from the node connector without disconnecting any cables.

3. Verify that the media subsystem still has a power cable connected. Remove the power cables from all I/O subsystems except the one who's RIO adapter is still plugged into the node.
4. At the first RIO adapter, disconnect the cable connection at RIO port 0 (Un-P2-C1-T1).
5. Disconnect the cable connection at I/O subsystem 1's (at Un) left RIO port connector 0 (Un-P1-T2). The RIO cable that was connected to RIO port 0 in step 2 should be loose and can now be removed.
6. At the first RIO adapter, disconnect the cable connection at RIO port 1 (Un-P1-C1-T2) and reconnect it to RIO port 0 (Un-P1-C1-T1).

7. Disconnect the cable connection at I/O subsystem 1's (at *Un*) right RIO port connector 1 (*Un-P2-T1*) and reconnect it to I/O subsystem 1's (at *Un*) left RIO port connector 0 (*Un-P2-T2*).
8. Verify that I/O subsystem 1's (at *Un*) left RIO port connector 1 (*Un-P1-T1*) is connected to I/O subsystem 1's (at *Un*) right RIO port connector 0 (*Un-P2-T2*).
9. Use the HMC to turn on the power to boot the AIX standalone diagnostics from CD-ROM.
10. Use the Display Configuration and Resource List option to list all adapters and attached devices.
11. Check that all adapters and attached devices are listed.

Did the Please Define the System Console screen display and are all adapters and attached devices listed?

NO Go to PFW1542-590-7.

YES The RIO cable that was removed in step 5 above is defective. Replace the RIO cable. Connect the new RIO cable from I/O subsystem 1's right port connector 1 (*Un-P2-T1*) to RIO connector 1's (at *Un-P1-C1-T2*) port 1. Return the system to its original configuration. Go to MAP 0410: Repair Checkout.

- **PFW1542-590-6**

This step is reserved. Go to PFW1542-590-7.

- **PFW1542-590-7**

The first I/O subsystem (at *Un*) and the media drawer are the only drawers connected to the processor subsystem.

1. Access the ASMI menus, Power/Restart Control, Power On/Off System, set the system boot speed to slow.
2. Turn on the power to the system using the HMC.
3. After the word keyboard is displayed on the firmware console, but before the word speaker is displayed, press the number 5 key.
4. If you are prompted to do so, enter the appropriate password.
5. As soon as the optical drive has power, insert the AIX diagnostic CD-ROM into the optical drive.
6. If the Please define the System Console screen is displayed, follow directions to select the system console.
7. Use the Display Configuration and Resource List to list all attached devices and adapters
8. Check that all attached devices and adapters are listed. If the Please define the System Console prompt did not display or all attached devices and adapters are not listed, the problem is in the media subsystem or I/O subsystem 1 (at *Un*).

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Go to PFW1542-590-8.

YES Go to PFW1542-590-21.

- **PFW1542-590-8**

Perform the following to deconfigure the media subsystem:

1. Use the HMC to turn off power to the managed system.
2. If you have not already done so, set the service processor settings with the instructions just before PFW1542-590-1 in this procedure, then return here and continue.
3. Disconnect the AC power cable going to the media subsystem.
4. If a graphics adapter with a keyboard and mouse is connected to a USB adapter in the first I/O subsystem, and is being used as the firmware console, locate an ASCII terminal (a 3151, for example) and attach it to the S1 port on the back of the CEC. You can also use a virtual terminal on the HMC as the firmware console.
5. If present, remove the keyboard and mouse from the USB adapter in the first I/O subsystem.

6. Unplug all other devices, in any, in the media subsystem except the optical drive.
 7. Reconnect the AC power cable going to the media subsystem. Continue to PFW1542-590-9.
- **PFW1542-590-9**
Are there any adapters in slots 1, 2, 3, 4 or 5 (location codes Un-P1-C1 through C5) on the left side of the I/O subsystem?
 NO Go to PFW1542-590-10.
 YES Go to PFW1542-590-13.
 - **PFW1542-590-10**
Are there any adapters in slots 6, 7, 8, 9 or 10 (location codes Un-P1-C6 through C10) on the left side of the I/O subsystem?
 NO Go to PFW1542-590-11.
 YES Go to PFW1542-590-12.
 - **PFW1542-590-11**
Are there any adapters in slots 1, 2, 3, 4 or 5 (location codes Un-P2-C1 through C5) on the right side of the I/O subsystem?
 NO Go to PFW1542-590-12.
 YES Go to PFW1542-590-13.
 - **PFW1542-590-12**
Are there any adapters in slots 6, 7, 8, 9 or 10 (location codes Un-P2-C7 through C10) on the right side of the I/O subsystem?
 NO Go to PFW1542-590-19.
 YES Go to PFW1542-590-16.
 - **PFW1542-590-13**
 1. If it is not already off, turn off the power.
 2. Remove all adapters from slots 1, 2, 3, 4 and 5 (location codes Un-P1-C1 through C5) from the left side of the I/O subsystem that are not attached to the boot device.
 3. Label and record the location of any cables attached to the adapters.
 4. Record the slot number of the adapters.
 5. Turn on the power to boot standalone diagnostics from CD.
 6. If the TTY screen displays enter 0 to select this console by pressing the 0 key on the TTY terminal's keyboard.
 7. If the Please define the System Console screen is displayed, follow the directions to select the system console.
 8. Use the Display Configuration and Resource List to list all attached devices and adapters.
 9. Check that all attached devices and adapters are listed.**Did the Please define the System Console screen display and are all attached devices and adapters listed?**
 NO Go to PFW1542-590-10.
 YES Go to PFW1542-590-17.
 - **PFW1542-590-14**
 1. If it is not already off, turn off the power.
 2. Remove all adapters from slots 6, 7, 8, 9 and 10 (location codes Un-P1-C6 through C10) from the left side of the I/O subsystem that are not attached to the boot device.
 3. Label and record the location of any cables attached to the adapters.
 4. Record the slot number of the adapters.

5. Turn on the power to boot standalone diagnostics from CD.
6. If the TTY screen displays Enter 0 to select this console, press the 0 key on the TTY terminal's keyboard.
7. If the Please define the System Console screen is displayed, follow directions to select the system console.
8. Use the Display Configuration and Resource List to list all attached devices and adapters.
9. Check that all attached devices and adapters are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Go to PFW1542-590-11.

YES Go to PFW1542-590-17.

• **PFW1542-590-15**

1. If it is not already off, turn off the power.
2. Remove all adapters from slots 1, 2, 3, 4 and 5 (location codes *Un-P2-C1* through *C5*) from the right side of the I/O subsystem that are not attached to the boot device.
3. Label and record the location of any cables attached to the adapters.
4. Record the slot number of the adapters.
5. Turn on the power to boot standalone diagnostics from CD.
6. If the TTY screen displays Enter 0 to select this console, press the 0 key on the TTY terminal's keyboard.
7. If the Please define the System Console screen is displayed, follow directions to select the system console.
8. Use the Display Configuration and Resource List to list all attached devices and adapters.
9. Check that all attached devices and adapters are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Go to PFW1542-590-11.

YES Go to PFW1542-590-16.

• **PFW1542-590-16**

1. If it is not already off, turn off the power.
2. Remove all adapters from slots 6, 7, 8, 9 and 10 (location codes *Un-P2-C6* through *C10*) from the right side of the I/O subsystem that are not attached to the boot device.
3. Label and record the location of any cables attached to the adapters.
4. Record the slot number of the adapters.
5. Turn on the power to boot standalone diagnostics from CD.
6. If the TTY screen displays Enter 0 to select this console, press the 0 key on the TTY terminal's keyboard.
7. If the Please define the System Console screen is displayed, follow directions to select the system console.
8. Use the Display Configuration and Resource List to list all attached devices and adapters.
9. Check that all attached devices and adapters are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Go to PFW1542-590-19.

YES Go to PFW1542-590-17.

• **PFW1542-590-17**

If the Please define the System Console screen displays and all adapters and attached devices are listed, the problem is with one of the adapter cards or devices that was removed or disconnected from the I/O subsystem.

1. Turn off the power.
2. Reinstall one adapter or device that was removed. Use the original adapter cards in their original slots when reinstalling adapters.
3. Turn on the power to boot standalone diagnostics from CD.
4. If the Please define the System Console screen is displayed, follow directions to select the system console.
5. Use the Display Configuration and Resource List to list all attached devices and adapters.
6. Check that all attached devices and adapters are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Go to PFW1542-590-18.

YES Reinstall the next adapter or device and return to the beginning of this step. Continue repeating this process until an adapter or device causes the Please define the System Console screen to not display or all attached devices and adapters to not be listed. After installing all of the adapters and the Please define the System Console screen does display and all attached devices and adapters are listed, return the system to its original configuration. Go to MAP 0410: Repair Checkout. This ends the procedure.

• **PFW1542-590-18**

Replace the adapter you just installed with a new adapter and try to boot standalone diagnostics from CD again.

1. If the Please define the System Console screen is displayed, follow directions to select the system console.
2. Use the Display Configuration and Resource List to list all attached devices and adapters.
3. Check that all attached devices and adapters are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO The I/O subsystem backplane is defective. Replace the I/O subsystem backplane on the side of the problem adapter (Un-P1 or Un-P2). Go to PFW1542-590-21.

YES The adapter was defective. Go to PFW1542-590-21.

• **PFW1542-590-19**

1. Turn off the power.
2. Disconnect the I/O subsystem power cables.
3. Replace the following parts, one at a time, in the sequence listed:
 - a. Boot device SCSI cable, if applicable.
 - b. Boot device SCSI adapter, if applicable.
 - c. Boot device SCSI backplane, if applicable.
 - d. Boot device, if applicable.
 - e. I/O subsystem backplane where boot device is located, if applicable.
 - f. Other I/O subsystem backplane
 - g. Both I/O subsystem DCAs
4. Reconnect the I/O subsystem power cables.
5. Turn on the power.
6. Boot standalone diagnostics from CD-ROM.

7. If the Please define the System Console screen is displayed, follow directions to select the system console.
8. Use the Display Configuration and Resource List to list all attached devices and adapters.
9. Check that all attached devices and adapters are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Replace the next part in the list and return to the beginning of this step. Continue repeating this process until a part causes the Please define the System Console screen to be displayed and all attached devices and adapters to be listed. If you have replaced all the items listed above and the Please define the System Console screen does not display or all attached devices and adapters are not listed, check any external devices and cabling. If you do not find a problem, contact your next level of support for assistance.

YES Go to PFW1542-590-21.

• **PFW1542-590-20**

1. Turn off the power.
2. The part just replaced fixed the problem
3. If a display adapter with keyboard, and mouse were used, reinstall the display adapter card, keyboard and mouse.
4. Reconnect the diskette drive cable to the diskette drive connector on the media subsystem.
5. Reconnect the tape drive (if previously installed) to the internal SCSI bus cable.
6. Plug in all adapters that were previously removed but not reinstalled.
7. Reconnect the I/O subsystem power cables that were previously disconnected. Reconfigure the system to its original condition. Go to MAP 0410: Repair Checkout. This ends the procedure.

• **PFW1542-590-21**

If the boot is successful, the problem is with one of the remaining I/O subsystems. Use the HMC to turn off the power.

Are there any RIO adapters left to connect to the processor subsystem?

NO Return the system to its original configuration. Go to MAP 0410: Repair Checkout. This ends the procedure.

YES Reconnect the next RIO adapter in the sequence shown in PFW1542-590-5 plugging rules tables, then continue to PFW1542-590-22.

• **PFW1542-590-22**

1. At the RIO adapter that was just replugged, disconnect the cable connection at RIO port 0 (*Un-Px-Cy-T1*).
2. Disconnect the cable connection at the I/O subsystem's left I/O port connector 0 (*Un-P1-T2*). The RIO cable that was connected to RIO port 0 should now be loose and can be removed.
3. At the RIO adapter that was just replugged, disconnect the cable connection at RIO port 1 (*Un-Px-Cy-T2*) and reconnect it to port 0 (*Un-Px-Cy-T1*).
4. Disconnect the cable connection at the I/O subsystem's right I/O port connector 1 (*Un-P2-T1*) and reconnect it to the I/O subsystem's left I/O port connector 0 (*Un-P1-T2*).
5. Verify that the I/O subsystem's left I/O port connector 1 (*Un-P1-T1*) is connected to the I/O subsystem's right I/O port connector 0 (*Un-P2-T2*).
6. Use the HMC to turn on the power to boot AIX standalone diagnostics from CD.
7. If the Please define the System Console screen is displayed, follow the directions to select the system console.
8. Use the Display Configuration and Resource List to list all attached devices and adapters.
9. Check that all attached devices and adapters are listed.

Did the Please define the System Console screen display and are all attached devices and adapters listed?

NO Connect the previously removed RIO cable from I/O subsystem 2 right I/O port connector 1 (*Un-P2/Q1*) to processor subsystem RIO port B1 on primary I/O book (*Un-P1-H2/Q4*). Go to PFW1542-590-9.

YES The RIO cable that was removed in PFW1542-590-22-2 above is defective. Replace the RIO cable. Connect the new RIO cable from the I/O subsystem's right I/O port connector 1 (*Un-P2-T1*) to RIO adapter port 1 (*Un-Px-Cy-T2*). Return the system to its original configuration. Go to MAP 0410: Repair Checkout. This ends the procedure.

PFW1543: Model 590 and model 595 MCM problem isolation procedure

Use this procedure to locate defective FRUs not found by normal diagnostics.

Purpose of this procedure

This procedure is used to locate defective FRUs not found by normal diagnostics. It should be used when the service processor posts a failure and halts the IPL before server firmware standby is reached.

To perform this procedure, run diagnostics on a minimally configured system. If a failure is detected on the minimally configured system, the remaining FRUs are exchanged one at a time until the failing FRU is identified. If a failure is not detected, FRUs are added back until the failure occurs. The failure is then isolated to the failing FRU.

This MCM problem-determination procedure isolates processor subsystem failures.

Notes:

1. The service processor might have recorded one or more symptoms in its error/event log. Use the Advanced System Management Interface (ASMI) menus to view the error/event log.
 - If you arrived here after performing a slow boot, look for a possible new error that occurred during the slow boot. If there is a new error, and its actions call for a FRU replacement, perform those actions. If this does not resolve the problem, go to PFW1543-1.
 - If an additional slow boot has not been performed, or if the slow boot did not yield a new error code, look at the error that occurred prior to the original error. Perform the actions associated with that error. If the problem is not resolved, go to PFW1543-1.
 - If a slow boot results in the same error code, and there are no error codes before the original error code, go to PFW1543-1.
2. The service processor might have been set by the user to monitor system operations and to attempt recoveries. You might want to disable these options while you diagnose and service the system. If these settings are disabled, make notes of their current settings so that they can be restored before the system is turned back over to the customer. The following settings may be of interest.

Setting	Description
Monitoring (also called surveillance)	From the ASMI menu, expand the System Configuration menu, then click on Monitoring. Disable both types of surveillance.
Auto power restart (also called unattended start mode)	From the ASMI menu, expand Power/Restart Control, then click on Auto Power Restart, and set it to disabled.
Wake on LAN	From the ASMI menu, expand Wake on LAN, and set it to disabled.
Call Out	From the ASMI menu, expand the Service Aids menu, then click on Call-Home/Call-In Setup. Set the call-home system port and the call-in system port to disabled.

3. If this is a pSeries system, verify that the system has not been set to boot to the SMS menus or to the open firmware prompt. From the ASMI menu, expand Power/Restart Control to view the menu, then click on Power On/Off System. The AIX/Linux partition mode boot should say "Continue to Operating System".
- **PFW1543-1**
Record the error code(s) and location codes(s) that sent you to this procedure.
 - **PFW1543-2**
Use the HMC to power off the system.
Examine the amber logic-power LEDs on all of the processor subsystem DCAs.
 - **PFW1543-3**
Are all of the amber logic-power LEDs on all of the processor subsystem DCAs off?
NO Contact service support.
YES Continue to step 1543-4.
 - **PFW1543-4**
Attention: Some of the parts in the following lists have a limit of xxx plug cycles.
You may be asked to replace one or more of the following cards and MCM modules. Before replacing any of the listed MCM modules, call for support.
 - MCM module 0 at location Un-Px-??
 - MCM module 0 at location Un-Px-??
 - System clock card(s) at location Un-P1-C3 and Un -P1-C4
 Replace, in the order listed, the following modules or cards, if present, one at a time:
 1. Clock cards, Un-P1-C3 and Un-P1-C2.
 2. First location code, if any, recorded in PFW1543-1.
 3. Second location code, if any, recorded in PFW1543-1.
 4. Third location code, if any, recorded in PFW1543-1.
 5. Fourth location code, if any, recorded in PFW1543-1.
 6. Fifth location code, if any, recorded in PFW1543-1.
 7. Sixth location code, if any, recorded in PFW1543-1.
 8. MCM 0 at Un-Pn-?? if not recorded in PFW1543-1.
 9. MCM 1 at Un-Pn-?? if not recorded in PFW1543-1.
 - **PFW1543-5**
Turn on the power.
 - **PFW1543-6**
Does the system stop with the same error code as recorded in step 1543-1?
NO The module just replace was defective. Return the system to its original configuration. Go to MAP 0410: Repair Checkout. This ends the procedure.
YES Go to PFW1543-7.
 - **PFW1543-7**
Have all of the modules listed in step 1543-4 been replaced?
NO Go to PFW1543-2.
YES Go to PFW1543-8.
 - **PFW1543-8**
Turn off the power.
 - **PFW1543-9**

Examine the amber logic-power LEDs on all of the processor subsystem DCAs.

- **PFW1543-10**

Are all of the amber logic-power LEDs on all of the processor subsystem DCAs off?

NO Contact service support.

YES Continue to PFW1543-11.

- **PFW1543-11**

Attention: Before replacing the node's backplane, call service support.

Replace the node's backplane and chassis, Un-Px.

- **PFW1543-12**

Turn on the power.

- **PFW1543-13**

Does the system stop with the same error code as recorded in step 1543-1?

NO The part just replaced was defective. Return the system to its original configuration. Go to MAP 0410: Repair Checkout. This ends the procedure.

YES Go to PFW1543-14.

- **PFW1543-14**

Turn off the power.

Make sure that all of the amber logic-power LEDs on all of the processor subsystem DCAs are off.

- **PFW1543-15**

Call service support.

PFW1546: Model 590 and model 595 memory problem isolation procedure

Use this procedure to locate defective FRUs not found by normal diagnostics.

Purpose of this procedure

Use this procedure to locate defective FRUs not found by normal diagnostics. It should be used when the service processor posts a failure and halts the IPL before server firmware standby is reached.

To perform this procedure, run diagnostics on a minimally configured system. If a failure is detected on the minimally configured system, the remaining FRUs are exchanged one at a time until the failing FRU is identified. If a failure is not detected, FRUs are added back until the failure occurs. The failure is then isolated to the failing FRU.

This memory problem-determination procedure isolates memory subsystem failures. When memory problem isolation is complete, memory cards exhibiting a failure will have been reseated or replaced.

Notes:

1. The service processor might have recorded one or more symptoms in its error/event log. Use the Advanced System Management Interface (ASMI) menus to view the error/event log.
 - If you arrived here after performing a slow boot, look for a possible new error that occurred during the slow boot. If there is a new error, and its actions call for a FRU replacement, perform those actions. If this does not resolve the problem, go to PFW1546-1.
 - If an additional slow boot has not been performed, or if the slow boot did not yield a new error code, look at the error that occurred prior to the original error. Perform the actions associated with that error. If the problem is not resolved, go to PFW1546-1.
 - If a slow boot results in the same error code, and there are no error codes before the original error code, go to PFW1546-1.

2. The service processor might have been set by the user to monitor system operations and to attempt recoveries. You might want to disable these options while you diagnose and service the system. If these settings are disabled, make notes of their current settings so that they can be restored before the system is turned back over to the customer. The following settings may be of interest.

Setting	Description
Monitoring (also called surveillance)	From the ASMI menu, expand the System Configuration menu, then click on Monitoring. Disable both types of surveillance.
Auto power restart (also called unattended start mode)	From the ASMI menu, expand Power/Restart Control, then click on Auto Power Restart, and set it to disabled.
Wake on LAN	From the ASMI menu, expand Wake on LAN, and set it to disabled.
Call Out	From the ASMI menu, expand the Service Aids menu, then click on Call-Home/Call-In Setup. Set the call-home system port and the call-in system port to disabled.

3. If this is a pSeries system, verify that the system has not been set to boot to the SMS menus or to the open firmware prompt. From the ASMI menu, expand Power/Restart Control to view the menu, then click on Power On/Off System. The AIX/Linux partition mode boot should say "Continue to Operating System".

- **PFW1546-1**

Record the error code(s) and location codes(s) that sent you to this procedure.

- **PFW1546-2**

Use the HMC to power off the system.

Examine the amber logic-power LEDs on all of the processor subsystem DCAs.

- **PFW1546-3**

Are all of the amber logic-power LEDs on all of the processor subsystem DCAs off?

NO Contact service support.

YES Continue to PFW1546-4.

- **PFW1546-4**

Attention: Some of the parts in the following lists have a limit of three plugging cycles.

Replace the following memory cards, one at a time, in the order listed, if present.

1. The device at the first location code recorded in PFW1546-1 .
2. The device at the second location code recorded in PFW1546-1.
3. The device at the third location code recorded in PFW1546-1.
4. The device at the fourth location code recorded in PFW1546-1.
5. The device at the fifth location code recorded in PFW1546-1.
6. The device at the sixth location code recorded in PFW1546-1.

- **PFW1546-5**

Turn on the power.

- **PFW1546-6**

Did the system stop with the same error code as recorded in step 1546-1?

NO The memory card just replace was defective. Return the system to its original configuration. Go to MAP 0410: Repair Checkout. This ends the procedure.

YES Go to PFW1546-7.

- **PFW1546-7**

Have all of the memory cards listed in step 1546-4 been replaced?

NO Go to PFW1546-2.

YES Go to PFW1546-8.

- **PFW1546-8**

Turn off the power.

- **PFW1546-9**

Examine the amber logic-power LEDs on all of the processor subsystem DCAs.

- **PFW1546-10**

Are all of the amber logic-power LEDs on all of the processor subsystem DCAs off?

NO Contact service support.

YES Continue to PFW1546-11.

- **PFW1546-11**

Using the memory card plugging sequence table shown below, depopulate the memory cards in the system according to the following.

Note: As each node is removed, record the configuration of memory cards before removing any.

- In a one-node system with only one MCM active (in a model 595 only), leave the first two memory cards in the table installed.
- In a one-node system with both MCMs active, leave the first four memory cards in the table installed.
- In a two-node system, leave the first eight memory cards in the table installed.
- In a three-node system, leave the first twelve memory cards in the table installed.
- In a four-node system, leave the first sixteen memory cards in the table installed.

•

Table 51. Memory card plugging sequences for multi-node systems

16W System	32W System	48W System	64W System
Node 0 MC01	Node 0 MC01	Node 0 MC01	Node 0 MC01
Node 0 MC02	Node 0 MC02	Node 0 MC02	Node 0 MC02
Node 0 MC03	Node 1 MC01	Node 1 MC01	Node 1 MC01
Node 0 MC04	Node 1 MC02	Node 1 MC02	Node 1 MC02
Node 0 MC05	Node 0 MC03	Node 2 MC01	Node 2 MC01
Node 0 MC06	Node 0 MC04	Node 2 MC02	Node 2 MC02
Node 0 MC15	Node 1 MC03	Node 0 MC03	Node 3 MC01
Node 0 MC16	Node 1 MC04	Node 0 MC04	Node 3 MC02
Node 0 MC08	Node 0 MC05	Node 1 MC03	Node 0 MC03
Node 0 MC09	Node 0 MC06	Node 1 MC04	Node 0 MC04
Node 0 MC12	Node 1 MC05	Node 2 MC03	Node 1 MC03
Node 0 MC13	Node 1 MC06	Node 2 MC04	Node 1 MC04
Node 0 MC07	Node 0 MC15	Node 0 MC05	Node 2 MC03
Node 0 MC10	Node 0 MC16	Node 0 MC06	Node 2 MC04
Node 0 MC11	Node 1 MC15	Node 1 MC05	Node 3 MC03
Node 0 MC14	Node 1 MC16	Node 1 MC06	Node 3 MC04
	Node 0 MC08	Node 2 MC05	Node 0 MC05

Table 51. Memory card plugging sequences for multi-node systems (continued)

16W System	32W System	48W System	64W System
	Node 0 MC09	Node 2 MC06	Node 0 MC06
	Node 1 MC08	Node 0 MC15	Node 1 MC05
	Node 1 MC09	Node 0 MC16	Node 1 MC06
	Node 0 MC12	Node 1 MC15	Node 2 MC05
	Node 0 MC13	Node 1 MC16	Node 2 MC06
	Node 1 MC12	Node 2 MC15	Node 3 MC05
	Node 1 MC13	Node 2 MC16	Node 3 MC06
	Node 0 MC07	Node 0 MC08	Node 0 MC15
	Node 0 MC10	Node 0 MC09	Node 0 MC16
	Node 1 MC07	Node 1 MC08	Node 1 MC15
	Node 1 MC10	Node 1 MC09	Node 1 MC16
	Node 0 MC11	Node 2 MC08	Node 2 MC15
	Node 0 MC14	Node 2 MC09	Node 2 MC16
	Node 1 MC11	Node 0 MC12	Node 3 MC15
	Node 1 MC14	Node 0 MC13	Node 3 MC16
		Node 1 MC12	Node 0 MC08
		Node 1 MC13	Node 0 MC09
		Node 2 MC12	Node 1 MC08
		Node 2 MC13	Node 1 MC09
		Node 0 MC07	Node 2 MC08
		Node 0 MC10	Node 2 MC09
		Node 1 MC07	Node 3 MC08
		Node 1 MC10	Node 3 MC09
		Node 2 MC07	Node 0 MC12
		Node 2 MC10	Node 0 MC13
		Node 0 MC11	Node 1 MC12
		Node 0 MC14	Node 1 MC13
		Node 1 MC11	Node 2 MC12
		Node 1 MC14	Node 2 MC13
		Node 2 MC11	Node 3 MC12
		Node 2 MC14	Node 3 MC13
			Node 0 MC07
			Node 0 MC10
			Node 1 MC07
			Node 1 MC10
			Node 2 MC07
			Node 2 MC10
			Node 3 MC07
			Node 3 MC10
			Node 0 MC11

Table 51. Memory card plugging sequences for multi-node systems (continued)

16W System	32W System	48W System	64W System
			Node 0 MC14
			Node 1 MC11
			Node 1 MC14
			Node 2 MC11
			Node 2 MC14
			Node 3 MC11
			Node 3 MC14

Reinstall the nodes into the system.

After the system has been taken down to the minimum memory for the number of nodes in the system, power on the system using the HMC.

Does the system boot to server firmware standby with no error codes on the control panel?

NO Go to PFW1546-12.

YES Go to PFW1546-18.

• **PFW1546-12**

The following steps will isolate the failing node. The nodes will be removed, repopulated with memory, and added back to the system one at a time.

Use the HMC to power down the system.

Remove all nodes from the system.

Reconfigure the memory in the first node according to the first column in the table in PFW1546-11.

Reinstall the first node, then use the HMC to power on the system.

Does the system boot to server firmware standby with no error codes on the control panel?

NO Go to PFW1546-13.

YES Go to PFW1546-14.

• **PFW1546-13**

The failure has been isolated to the node that was just reinstalled. Do the following in the order listed:

1. Use the HMC to power down the system.
2. Remove the last node that was reinstalled. Replace the eight memory cards in the node with eight known-good cards, or eight cards from the ones that were removed in PFW1546-11.
3. Reinstall the node.
4. Use the HMC to power up the system.

Does the system boot to server firmware standby with no error codes on the control panel?

NO Before replacing the node's backplane and chassis, or one of the MCMs, call the support center. This ends the procedure.

YES One of the eight memory cards originally in this node is bad. Isolate to the failing quad first, then isolate the failing memory card. Replace the failing card, then go to MAP 0410: Repair Checkout. This ends the procedure.

• **PFW1546-14**

Use the HMC to power down the system.

Is there a second node in the system?

NO Go to PFW1546-17.

YES Do the following:

1. Reconfigure the minimum memory in the first node and the second node according to the second column in the table in PFW1546-11.
2. Reinstall the second node, then use the HMC to power on the system.

Does the system boot to server firmware standby with no error codes on the control panel?

NO Go to PFW1546-13.

YES Go to PFW1546-15.

- **PFW1546-15**

Use the HMC to power down the system.

Is there a third node in the system?

NO Go to PFW1546-17.

YES Do the following:

1. Reconfigure the minimum memory in the first node, the second node, and the third node according to the second column in the table in PFW1546-11.
2. Reinstall the third node, then use the HMC to power on the system.

Does the system boot to server firmware standby with no error codes on the control panel?

NO Go to PFW1546-13.

YES Go to PFW1546-16.

- **PFW1546-16**

Use the HMC to power down the system.

Is there a fourth node in the system?

NO Go to PFW1546-17.

YES Do the following:

1. Reconfigure the minimum memory in the first node, the second node, the third node, and the fourth node according to the second column in the table in PFW1546-11.
2. Reinstall the third node, then use the HMC to power on the system.

Does the system boot to server firmware standby with no error codes on the control panel?

NO Go to PFW1546-13.

YES Go to PFW1546-17.

- **PFW1546-17**

The system now boots to server firmware standby with the minimum configuration of memory cards. Go to PFW1546-18 to start adding back in the additional memory in the system.

- **PFW1546-18**

Power off the system using the HMC.

Add another set of four memory cards back in order, one set a time, according to the table in PFW1546-11.

After each set of four is added, reinstall the node into the system.

Does the system boot to server firmware standby with no error codes on the control panel?

NO Go to PFW1546-20.

YES Go to PFW1546-19.

- **PFW1546-19**

Has the last set of four memory cards been installed (so the system has been returned to its original configuration)?

NO Go to PFW1546-18.

YES The system is now booting to server firmware standby with all of the memory cards installed.
Go to MAP 0410: Repair Checkout. This ends the procedure.

• **PFW1546-20**

The set of four memory cards that was reinstalled in step 18, or the slots into which they were installed, are causing the failure.

Do the following:

1. Power down the system using the HMC.
2. Remove the node into which the last set of memory cards was installed.
3. Replace the last set of memory cards that was installed with a known-good set.
4. Reinstall the node in the system.
5. Using the HMC, power on the system.

Does the system boot to server firmware standby with no error codes on the control panel?

NO One or more of the memory slots is bad. Before replacing the chassis, contact the support center. This ends the procedure.

YES Go to PFW1546-21.

• **PFW1546-21**

One or more of the memory cards in the last set installed is bad. Using the known good set, swap out the memory cards one at a time until the failing card is isolated. Replace it. Return the system to its original configuration, then go to MAP 0410: Repair Checkout. This ends the procedure.

PFW1548: Memory and processor subsystem problem isolation procedure

Use MAP to locate defective FRUs not found by normal diagnostics.

Attention: This procedure is not applicable to an iSeries-branded system that is not managed by an HMC.

Purpose of this procedure

This MAP is used to locate defective FRUs not found by normal diagnostics. For this procedure, diagnostics are run on a minimally configured system. If a failure is detected on the minimally configured system, the remaining FRUs are exchanged one at a time until the failing FRU is identified. If a failure is not detected, FRUs are added back until the failure occurs. The failure is then isolated to the failing FRU.

Note: This MAP assumes that either:

- An optical drive is installed and connected to the integrated EIDE adapter, and an AIX diagnostic CD-ROM is available.
- OR
- AIX standalone diagnostics can be booted from a NIM server.

Do the following:

1. Be sure to unplug the power cords before removing or installing any part to avoid damage to it.
2. If a power-on password or privileged-access password is set, you are prompted to enter the password before the AIX diagnostic CD-ROM can load.
3. The term POST indicators refers to the device mnemonics that appear during the power-on self-test (POST).
4. If your system is a model A50 or 185, go to step 8 on page 70. Otherwise, continue to the next step.
5. The service processor might have recorded one or more symptoms in its error/event log. Use the Advanced System Management Interface (ASMI) menus to view the error/event log.

- If you arrived here after performing a slow boot, look for a possible new error that occurred during the slow boot. If there is a new error, and its actions call for a FRU replacement, perform those actions. If this does not resolve the problem, select one of the files listed below according to the system model you are servicing, then go to PFW1548-xxx-1 in that procedure.
 - If an additional slow boot has not been performed, or if the slow boot did not yield a new error code, look at the error that occurred just before the original error. Perform the actions associated with that error. If the problem is not resolved, select one of the files listed below according to the system model you are servicing, then go to PFW1548-xxx-1 in that procedure.
 - If a slow boot results in the same error code, and there are no error codes before the original error code, select one of the files listed below according to the system model you are servicing, then go to PFW1548-xxx-1 in that procedure.
6. The service processor might have been set by the user to monitor system operations and to attempt recoveries. You might want to disable these options while you diagnose and service the system. If these settings are disabled, make notes of their current settings so that they can be restored before the system is turned back over to the customer. The following settings may be of interest.

Monitoring

(also called surveillance) From the ASMI menu, expand the System Configuration menu, then click on Monitoring. Disable both types of surveillance.

Auto power restart

(also called unattended start mode) From the ASMI menu, expand Power/Restart Control, then click on Auto Power Restart, and set it to disabled.

Wake on LAN

From the ASMI menu, expand Wake on LAN, and set it to disabled.

Call Out

From the ASMI menu, expand the Service Aids menu, then click on Call-Home/Call-In Setup. Set the call-home system port and the call-in system port to disabled.

7. If this is a pSeries system, verify that the system has not been set to boot to the System Management Services (SMS) menus or to the open firmware prompt. From the ASMI menu, expand Power/Restart Control to view the menu, then click on Power On/Off System. The AIX/Linux partition mode boot should say "Continue to Operating System". Go to step 10 on page 70.
8. On a model A50 or 185 system, the SMS menus might have been used by the customer to enable auto power restart and wake-on-LAN. You might want to disable these options while you diagnose and service the system. Before you disable these settings, make notes of their current values so that you can restore them before turning the system back over to the customer. The following settings may be of interest.

Auto power restart

(also called unattended start mode) On the SMS main menu, expand Power/Restart Control, then click on Auto Power Restart, and set it to disabled.

Wake on LAN

On the SMS main menu, expand Power/Restart Control, then click on Auto Power Restart, and set it to disabled.

9. On a model A50 or 185 system, the SMS menus may have been used by the customer to enable multiboot at startup. You can disable multiboot starting the the main SMS menu by selecting **Select Boot Options → Multiboot Startup**.
 - To have the system boot to the SMS menus automatically each time it reboots, enable this flag.
 - To have the system boot to the operating system each time it reboots, disable this flag.

In either case, record the customer's setting and return it to that setting after you complete the service actions.

10. To continue with this procedure select one of the following files according to the model system you are servicing.

"PFW1548-185: Processor subsystem problem isolation procedure for model 185 and A50"

"PFW1548-505: Processor subsystem problem isolation procedure for model 505 with an HMC attached" on page 497

"PFW1548-505: Processor subsystem problem isolation procedure for model 505 without an HMC attached" on page 505

"PFW1548-510: Processor subsystem problem isolation procedure for model 510, 51A, and OpenPower 710 with an HMC attached" on page 512

"PFW1548-510: Processor subsystem problem isolation procedure for model 510, 51A, and OpenPower 710 without an HMC attached" on page 519

"PFW1548-520: Processor subsystem problem isolation procedure for the model 520, 52A, and 285 with an HMC" on page 526

"PFW1548-520: Processor subsystem problem isolation procedure for the model 520, 52A, and 285 without an HMC" on page 536

"PFW1548-550: Processor subsystem problem isolation procedure for models 550, 55A, and OpenPower 720 with an HMC" on page 544

"PFW1548-550: Processor subsystem problem isolation procedure for models 550, 55A, and OpenPower 720 without an HMC attached" on page 554

"PFW1548-570: Processor subsystem problem isolation procedure for models 561 and 570" on page 563

"PFW1548-575: Processor subsystem problem isolation procedure for model 575" on page 574

"PFW1543: Model 590 and model 595 MCM problem isolation procedure" on page 60

PFW1548-185: Processor subsystem problem isolation procedure for model 185 and A50

Use this problem isolation procedure to aid in solving memory, processor, and I/O problems on model 185 and A50.

• **PFW1548-185-1a**

1. Insure that the diagnostics and the operating system are shut down.
2. Power on the system.
3. Insert the AIX diagnostic CD-ROM into the optical drive.

Note: If you cannot insert the diagnostic CD-ROM, go to PFW1548-185-2a

4. When the keyboard indicator is displayed on the system console:
 - On an ASCII terminal or directly-attached keyboard, press the number 5 key.
5. If you are prompted to do so, enter the appropriate password.

Is the "Please define the System Console" screen displayed?

NO Go to step PFW1548-185-2a.

YES Go to step PFW1548-185-17a

• **PFW1548-185-2a**

Note: Ask the customer to identify the firmware console, which is the device that displays the system management services (SMS) menus.

- If system port 1 is the firmware console, leave the cable attached to system port 1 (as noted in step 2 on page 491).
- If a graphics adapter is the firmware console, you will remove this adapter in step 4 on page 491. Removing the graphics adapter will start the selection routine of the firmware console.

Ask the customer to attach an ASCII terminal to system port 1, or use your service provider console to simulate an ASCII terminal. If neither of these is an option, watch the operator panel for system reference code (SRC) AA00E1A9, which indicates that the firmware is displaying the SMS main menu.

1. Remove the power cords.
2. Disconnect all external cables (parallel, system port 2, keyboard, mouse, Ethernet on the system backplane, and so on), except the serial cable on system port 1, if present.
3. Remove the service access cover, or place the system, into the service position and remove the service access cover.
4. Record the slot numbers of the PCI adapters. Label and record the locations of all cables attached to the adapters. Disconnect all cables attached to the adapters and remove all of the adapters.
5. Disconnect all of the power and signal cables from the media drives located in the media bay.
6. Remove the media drives.
7. Record the slot numbers of the memory DIMMs on the system backplane. Remove all memory DIMMs except for one pair from the system backplane.

Notes:

- a. Place the memory DIMM locking tabs in the locked (upright) position to prevent damage to the tabs.
 - b. Memory DIMMs must be installed in pairs and in the correct connectors. Refer to Install model 185 and A50 memory modules for plugging rules.
8. Disconnect the IDE cable from the IDE connector on the system backplane.
 9. Disconnect the signal and power connectors from the disk drives. Disconnect the SCSI signal cable from the system backplane.
 10. Plug in the power cords and wait for 01 to display in the upper-left-hand corner of the control panel display.
 11. Power on the system.

Does the system stop with the SMS main menu on the firmware console and AA00E1A9 in the operator panel?

NO Go to step PFW1548-185-6a.

YES Go to step PFW1548-185-3a

• **PFW1548-185-3a**

Were any memory DIMMs removed from the system backplane?

NO Go to step PFW1548-185-8a.

YES Go to step PFW1548-185-4a

• **PFW1548-185-4a**

1. Turn off the power, and remove the power cords.
2. Replug the memory DIMMs that were removed from the system backplane in step PFW1548-185-2a in their original locations.

Notes:

- a. Place the memory DIMM locking tabs in the locked (upright) position to prevent damage to the tabs.
 - b. Memory DIMMs must be installed in pairs and in the correct connectors. Refer to Install model 185 and A50 memory modules for plugging rules.
3. Plug in the power cords and wait for 01 to display in the upper-left-hand corner of the control panel display.
 4. Power on the system.

Does the system stop with the SMS main menu on the firmware console and AA00E1A9 in the operator panel?

NO A memory DIMM in the pair you just replaced in the system is defective. Turn off the power, remove the power cords, and exchange the memory DIMMs in that pair one at a time with new or previously removed memory DIMMs. Repeat this step until the defective memory DIMM is identified, or all memory DIMMs have been exchanged.

If your symptom did not change and all the memory DIMMs have been exchanged, call your next level of support for assistance.

If the symptom changed, check for loose cards and obvious problems.

If you do not find a problem, go to the Start-of-Call procedure and follow the instructions for the new symptom.

YES Go to step PFW1548-185-8a

- **PFW1548-185-5a**

This step is reserved.

- **PFW1548-185-6a**

One of the FRUs remaining in the system unit is defective.

Note: If a memory DIMM is exchanged, insure that the new memory DIMM is the same size and speed as the original memory DIMM.

1. Turn off the power, remove the power cords, and exchange the following FRUs in the order listed:
 - a. Memory DIMMs. Exchange one at a time with new or previously removed DIMMs.
 - b. System backplane, location Un-P1.
 - c. Power supply.
2. Plug in the power cords and wait for 01 to display in the upper-left-hand corner of the control panel display.
3. Power on the system.

Does the system stop with the SMS main menu on the firmware console and AA00E1A9 in the operator panel?

NO Reinstall the original FRU. Repeat the FRU replacement steps until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call your next level of support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-Call procedure and follow the instructions for the new symptom.

YES Go to MAP 0410: Repair Checkout.

- **PFW1548-185-7a**

This step is reserved.

- **PFW1548-185-8a**

1. Turn off the power.
2. Reconnect the system console.
 - a. If an ASCII terminal has been defined as the firmware console, attach the ASCII terminal cable to the S1 connector on the rear of the system unit.
 - b. If a display attached to a display adapter has been defined as the firmware console, install the display adapter and connect the display to the adapter. Plug the keyboard and mouse into the keyboard connector on the rear of the system unit.

3. Power on the system.
4. If the ASCII terminal or graphics display (including display adapter) is connected differently from the way it was previously, the console selection screen appears. Select a firmware console.
5. When the word keyboard is displayed, press the number 1 key on the directly attached keyboard, an ASCII terminal or HMC. This activates the system management services (SMS).
6. Enter the appropriate password if you are prompted to do so.

Is the SMS screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

- a. Replace the system backplane, location Un-P1.
- b. If you are using a graphics display, go to the problem determination procedures for the display.

If you do not find a problem, do the following:

- 1) Replace the display adapter.
- 2) Replace the backplane, location: Un-P1.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call your next level of support for assistance.

If the symptom changed, check for loose cards and obvious problems.

If you do not find a problem, go to the Start-of-Call procedure and follow the instructions for the new symptom..

YES Go to PFW1548-185-9a.

• **PFW1548-185-9a**

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Plug the IDE cable into the IDE connector on the system backplane.
4. Connect the signal and power connectors to the IDE optical drive.
5. Plug in the power cords and wait for 01 to display in the upper-left-hand corner of the control panel display.
6. Power on the system.
7. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

- a. IDE cable
- b. Optical drive
- c. System backplane, location: Un-P1

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call your next level of support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-Call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-185-12a.

- **PFW1548-185-10a**

This step is reserved.

- **PFW1548-185-11a**

This step is reserved.

- **PFW1548-185-12a**

The system is working correctly with this configuration. One of the disk drives that you removed from the configuration may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Reattach the SCSI signal cable to the system backplane if you have not already done so. Attach the power cable and the signal cable to a disk drive.
4. Plug in the power cords and wait for 01 to display in the upper-left-hand corner of the control panel display.
5. Power on the system.
6. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO

Exchange the FRUs that have not been exchanged, in the following order:

- a. Last disk drive that was reconnected.
- b. System backplane, location: Un-P1

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call your next level of support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-Call procedure and follow the instructions for the new symptom.

YES Repeat this step with all disk drives that were installed in the system. Go to PFW1548-185-14a.

- **PFW1548-185-13a**

This step is reserved.

- **PFW1548-185-14a**

The system is working correctly with this configuration. One of the devices that was disconnected from the system backplane may be defective.

1. Turn off the power and remove the power cords.
2. Attach a system backplane device (for example: parallel, system port 1, system port 2, system port 3, keyboard, mouse, Ethernet, or SCSI) that had been removed.
3. Plug in the power cords and wait for 01 to display in the upper-left-hand corner of the control panel display.
4. Power on the system.
5. If the Console Selection screen is displayed, choose the system console.

6. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO The last device or cable that you attached is defective.

To test each FRU, exchange the FRUs in the following order:

- a. Device and cable (last one attached)
- b. System backplane, location: Un-P1

If the symptom did not change and all the FRUs have been exchanged, call your next level of support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-Call procedure and follow the instructions for the new symptom. Go to MAP 0410: Repair Checkout.

YES Repeat this step until all of the devices are attached. Go to PFW1548-185-15a.

• **PFW1548-185-15a**

The system is working correctly with this configuration. One of the PCI adapters that you removed may be defective.

1. Turn off the power and remove the power cords.
2. Install a FRU (adapter) and connect any cables and devices that were attached to the FRU.
3. Plug in the power cords and wait for OK prompt to display in the control panel display.
4. Power on the system.
5. If the Console Selection screen is displayed, choose the system console.
6. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Go to PFW1548-185-16a.

YES Repeat this step until all of the FRUs (adapters) are installed. Go to MAP 0410: Repair Checkout

• **PFW1548-185-16a**

The last FRU installed or one of its attached devices is probably defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Starting with the last installed adapter, disconnect one attached device and cable.
4. Plug in the power cords and wait for the "01" in the upper-left corner on the control panel display.
5. Power on the system.
6. If the Console Selection screen is displayed, choose the system console.
7. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Repeat this step until the defective device or cable is identified or all devices and cables have been disconnected.

If all the devices and cables have been removed, then one of the FRUs remaining in the system unit is defective.

To test each FRU, exchange the FRUs in the following order:

- a. Adapter (last one installed)
- b. System backplane, location Un-P1

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES The last device or cable that you disconnected is defective. Exchange the defective device or cable. Go to MAP 0410: Repair Checkout.

- **PFW1548-185-17a**

1. Follow the instructions on the screen to select the system console.
2. When the DIAGNOSTIC OPERATING INSTRUCTIONS screen is displayed, press Enter.
3. Select Advanced Diagnostics Routines.
4. If the terminal type has not been defined, you must use the initialize terminal option on the FUNCTION SELECTION menu to initialize the AIX diagnostic environment before you can continue with the diagnostics. This is a separate operation from selecting the console display.
5. If the NEW RESOURCE screen is displayed, select an option from the bottom of the screen.

Note: Adapters and devices that require supplemental media are not shown in the new resource list. If the system has adapters or devices that require supplemental media, select option 1.

6. When the DIAGNOSTIC MODE SELECTION screen is displayed, press Enter.
7. Select All Resources. (If you were sent here from PFW1548-185-21a, select the adapter or device that was loaded from the supplemental media).

Did you get an SRN?

NO Go to PFW1548-185-19a.

YES Go to PFW1548-185-18a.

- **PFW1548-185-18a**

Look at the FRU part numbers associated with the SRN.

Have you exchanged all the FRUs that correspond to the failing function codes (FFCs)?

NO Exchange the FRU with the highest failure percentage that has not been changed.

Repeat this step until all the FRUs associated with the SRN have been exchanged or diagnostics run with no trouble found. Run diagnostics after each FRU is exchanged. Go to MAP 0410: Repair Checkout.

YES If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

- **PFW1548-185-19a**

Does the system have adapters or devices that require supplemental media?

NO Go to PFW1548-185-20a.

YES Go to PFW1548-185-21a.

- **PFW1548-185-20a**

Consult the PCI adapter configuration documentation for your operating system to verify that all adapters are configured correctly. Go to MAP 0410: Repair Checkout.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

- **PFW1548-185-21a**

1. Select Task Selection.
2. Select Process Supplemental Media and follow the on screen instructions to process the media. Supplemental media must be loaded and processed one at a time.

Did the system return to the TASKS SELECTION SCREEN after the supplemental media was processed?

NO Go to PFW1548-185-22a.

YES Press F3 to return to the FUNCTION SELECTION screen. Go to step 4.

- **PFW1548-185-22a**

The adapter or device is probably defective.

If the supplemental media is for an adapter, replace the FRUs in the following order:

1. Adapter
2. System backplane, location Un-P1

If the supplemental media is for a device, replace the FRUs in the following order:

1. Device and any associated cables
2. The adapter to which the device is attached

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-Call procedure and follow the instructions for the new symptom. Go to MAP 0410: Repair Checkout.

End of procedure.

PFW1548-505: Processor subsystem problem isolation procedure for model 505 with an HMC attached

Use this problem isolation procedure to aid in solving memory and processor problems on 505 attached to an HMC.

- **PFW1548-505-1**

1. Insure that the diagnostics and the operating system are shut down.

Is the system at "service processor standby", indicated by "01" in the control panel?

NO Replace the system backplane, location: Un-P1. Return to the beginning of this step.

YES Continue with substep 2.

2. Turn on the power using either the white button or the HMC.

Does the managed system reach "service processor standby" indicated by "01" in the control panel?

NO Go to step PFW1548-505-3.

YES Go to step PFW1548-505-2.

- **PFW1548-505-2**

1. Insert the diagnostic CD-ROM into the optical drive.

Note: If you cannot insert the diagnostic CD-ROM, go to PFW1548-505-3.

2. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.

3. If you are prompted to do so, enter the appropriate password.

Is the "Please define the System Console" screen displayed?

NO Go to step PFW1548-505-3.

YES Go to step PFW1548-505-21.

- **PFW1548-505-3**

1. Turn off the power.
2. If you have not already done so, configure the service processor (using the ASMI menus) with the instructions in note 6 at the beginning of this procedure, then return here and continue.
3. Exit the service processor (ASMI) menus and remove the power cords.
4. Disconnect all external cables (parallel, system port 1, system port 2, keyboard, mouse, Ethernet on the system planar, Ethernet on the service processor [if present], and so on). Leave the Ethernet cable between the service processor and the HMC attached.
5. Place the drawer into the service position and remove the service access cover.
6. Record the slot numbers of the PCI adapters. Label and record the locations of all cables attached to the adapters. Disconnect all cables attached to the adapters and remove all of the adapters.
7. Disconnect all of the power and signal cables from the media drives located in media bay.
8. Remove the media drives.
9. Record the slot numbers of the memory DIMMs on the system backplane. Remove all memory DIMMs except for one pair from the system backplane.

Notes:

- a. Place the memory DIMM locking tabs in the locked (upright) position to prevent damage to the tabs.
 - b. Memory DIMMs must be installed in pairs and in the correct connectors. Refer to the memory DIMM section of Locations-Model 505 for information on memory DIMMs.
10. Disconnect the IDE cable from the IDE connector on the system backplane.
 11. Disconnect the signal and power connectors from both disk drive backplanes.
 12. Disconnect the disk drives (if present) from the disk drive backplane.
 13. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
 14. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.

Does the system stop with B1xxF22A, CA00E1F2, CA00E1F3, or STBY displayed on the control panel?

NO Go to PFW1548-505-7.

YES Go to PFW1548-505-4.

- **PFW1548-505-4**

Were any memory DIMMs removed from the system backplane?

NO Go to PFW1548-505-9.

YES Go to PFW1548-505-5.

- **PFW1548-505-5**

1. Turn off the power, and remove the power cords.
2. Replug the memory DIMMs that were removed from the system backplane in PFW1548-505-2 in their original locations.

Notes:

- a. Place the memory DIMM locking tabs into the locked (upright) position to prevent damage to the tabs.
 - b. Memory DIMMs must be installed in pairs in the correct connectors. Refer to Memory DIMM locations for information on memory DIMMs.
3. Plug in the power cords and wait for "01" in the control panel display.
 4. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
 5. If you are prompted to do so, enter the appropriate password.

Does the system stop with B1xxF22A, CA00E1F2, CA00E1F3, or STBY displayed on the control panel?

NO A memory DIMM in the pair you just replaced in the system is defective. Turn off the power, remove the power cords, and exchange the memory DIMMs in that pair one at a time with new or previously removed memory DIMMs. Repeat this step until the defective memory DIMM is identified, or all memory DIMMs have been exchanged.

If your symptom did not change and all the memory DIMMs have been exchanged, call your service support person for assistance.

If the symptom changed, check for loose cards and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-505-9.

- **PFW1548-505-6**

This step is reserved.

- **PFW1548-505-7**

One of the FRUs remaining in the system unit is defective.

Note: If a memory DIMM is exchanged, insure that the new memory DIMM is the same size and speed as the original memory DIMM.

1. Turn off the power, remove the power cords, and exchange the following FRUs in the order listed:
 - a. Memory DIMMs. Exchange one at a time with new or previously removed DIMMs
 - b. System backplane, location UN-P1
 - c. Power supplies.
2. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
3. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.

Does the system stop with B1xxF22A, CA00E1F2, CA00E1F3, or STBY displayed on the control panel?

NO Reinstall the original FRU. Repeat the FRU replacement steps until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the "Start of call procedure" on page 2 and follow the instructions for the new symptom.

YES Go to "MAP 0410: Repair checkout" on page 419.

- **PFW1548-505-8**

This step is reserved.

- **PFW1548-505-9**

1. Turn off the power.
2. Reconnect the system console.

Notes:

- a. If an ASCII terminal has been defined as the firmware console, attach the ASCII terminal cable to the S1 connector on the rear of the system unit.
 - b. If a display attached to a display adapter has been defined as the firmware console, install the display adapter and connect the display to the adapter. Plug the keyboard and mouse into the keyboard connector on the rear of the system unit.
3. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
 4. If the ASCII terminal or graphics display (including display adapter) is connected differently from the way it was previously, the console selection screen appears. Select a firmware console.
 5. When the word keyboard is displayed, press the number 1 key on the directly attached keyboard, an ASCII terminal or HMC. This activates the system management services (SMS).
 6. Enter the appropriate password if you are prompted to do so.

Is the SMS screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. Replace the service processor, location Un-P1.
2. If you are using a graphics display, go to the problem determination procedures for the display.

If you do not find a problem, do the following:

- Replace the display adapter.
- Replace the backplane in which the graphics adapter is plugged.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the "Start of call procedure" on page 2 and follow the instructions for the new symptom.

YES Go to PFW1548-505-10.

- **PFW1548-505-10**

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Plug the IDE cable into the IDE connector on the system backplane.
4. Connect the signal and power connectors to the IDE optical drive.
5. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.

6. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
7. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. IDE cable
2. Optical drive
3. System backplane, location Un-P1

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the "Start of call procedure" on page 2 and follow the instructions for the new symptom.

YES Go to PFW1548-505-11.

• **PFW1548-505-11**

The system is working correctly with this configuration. One of the SCSI devices that was disconnected may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Install a disk drive in a disk drive backplane.
4. Plug the power cords and wait for "01" on the control panel display.
5. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
6. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO

Exchange the FRUs that have not been exchanged, in the following order:

1. Last disk drive installed
2. System backplane, location Un-P1 (Since the disk drive backplane is not a separate FRU)

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the "Start of call procedure" on page 2 and follow the instructions for the new symptom.

YES

Repeat this step with all disk drives that were installed in the disk drive backplane. Go to PFW1548-505-12.

- **PFW1548-505-12**

This step is reserved.

- **PFW1548-505-13**

The system is working correctly with this configuration. One of the disk drive backplanes may be defective.

1. Turn off the power and remove the power cords.
2. Attach a system backplane device (for example: parallel, system port 1, system port 2, Ethernet, SCSI, keyboard or mouse) that had been removed.
3. Plug in the power cords and wait for "01" in the upper-left corner on the control panel display.
4. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
5. If the Console Selection screen is displayed, choose the system console.
6. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO The last device or cable that you attached is defective. To test each FRU, exchange the FRUs in the following order:

1. Device and cable (last one attached)
2. System backplane

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the "Start of call procedure" on page 2 and follow the instructions for the new symptom. Go to "MAP 0410: Repair checkout" on page 419.

YES Repeat this step until all of the devices are attached. Go to step PFW1548-505-14.

- **PFW1548-505-14**

The system is working correctly with this configuration. One of the disk drives that you removed from the disk drive backplanes may be defective.

1. Turn off the power and remove the power cords.
2. Install a FRU (adapter) and connect any cables and devices that were attached to the FRU.
3. Plug in the power cords and wait for the OK prompt to display on the control panel display.
4. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
5. If the Console Selection screen is displayed, choose the system console.

6. After the word keyboard displays, press the number 5 key on either the directly attached keyboard, virtual terminal on the HMC, or an ASCII terminal.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Go to step PFW1548-505-15.

YES Repeat this step until all of the FRUs (adapters) are installed. Go to "MAP 0410: Repair checkout" on page 419.

- **PFW1548-505-15**

The last FRU installed or one of its attached devices is probably defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Starting with the last installed adapter, disconnect one attached device and cable.
4. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
5. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
6. If the Console Selection screen is displayed, choose the system console.
7. After the word keyboard displays, press the number 5 key on either the directly attached keyboard, virtual terminal on the HMC, or an ASCII terminal.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Repeat this step until the defective device or cable is identified or all devices and cables have been disconnected.

If all the devices and cables have been removed, then one of the FRUs remaining in the system unit is defective.

To test each FRU, exchange the FRUs in the following order:

1. Adapter (the last one installed)
2. PCI backplane, Un-P2
3. System backplane, Un-P1

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem return, go to the "Start of call procedure" on page 2 and follow the instructions for the new symptom.

YES The last device or cable that you disconnected is defective. Exchange the defective device or cable. Go to "MAP 0410: Repair checkout" on page 419.

- **PFW1548-505-16**

The system is working correctly with this configuration. One of the devices that was disconnected from the system backplane may be defective.

1. Follow the instructions on the screen to select the system console.
2. When the DIAGNOSTIC OPERATING INSTRUCTIONS screen is displayed, press Enter.
3. Select Advanced Diagnostics Routines.

4. If the terminal type has not been defined, you must use the initialize terminal option on the FUNCTION SELECTION menu to initialize the AIX diagnostic environment before you can continue with the diagnostics. This is a separate operation from selecting the console display.
5. If the NEW RESOURCE screen is displayed, select an option from the bottom of the screen.

Note: Adapters and devices that require supplemental media are not shown in the new resource list. If the system has adapters or devices that require supplemental media, select option 1.

6. When the DIAGNOSTIC MODE SELECTION screen is displayed, press Enter.
7. Select All Resources. (If you were sent here from step PFW1548-505-20, select the adapter or device that was loaded from the supplemental media).

Did you get an SRN?

NO Go to step PFW1548-505-18.

YES Go to PFW1548-505-17.

• **PFW1548-505-17**

Look at the FRU part numbers associated with the SRN

Have you exchanged all the FRUs that correspond to the failing function codes (FFCs)?

NO Exchange the FRU with the highest failure percentage that has not been changed.

Repeat this step until all the FRUs associated with the SRN have been exchanged or diagnostics run with no trouble found. Run diagnostics after each FRU is exchanged. Go to "MAP 0410: Repair checkout" on page 419.

YES If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

• **PFW1548-505-18**

Does the system have adapters or devices that require supplemental media?

NO Go to step PFW1548-505-19.

YES Go to step PFW1548-505-20.

• **PFW1548-505-19**

Consult the PCI adapter configuration documentation for your operating system to verify that all adapters are configured correctly. Go to MAP 0410: Repair Checkout.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

• **PFW1548-505-20**

1. Select Task Selection.
2. Select Process Supplemental Media and follow the on screen instructions to process the media. Supplemental media must be loaded and processed one at a time.

Did the system return to the TASKS SELECTION SCREEN after the supplemental media was processed?

NO Go to PFW1548-505-21.

YES Press F3 to return to the FUNCTION SELECTION screen. Go to 4.

• **PFW1548-505-21**

The adapter or device is probably defective.

If the supplemental media is for an adapter, replace the FRUs in the following order:

1. Adapter
2. PCI backplane, Un-P2.
3. System backplane, Un-P1.

If the supplemental media is for a device, replace the FRUs in the following order:

1. Device and any associated cables
2. The adapter to which the device is attached

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the "Start of call procedure" on page 2 and follow the instructions for the new symptom. Go to "MAP 0410: Repair checkout" on page 419.

End of procedure.

PFW1548-505: Processor subsystem problem isolation procedure for model 505 without an HMC attached

Use this problem isolation procedure to aid in solving memory and processor problems on 505 that is not attached to an HMC.

• **PFW1548-505-1a**

1. Insure that the diagnostics and the operating system(s) are shut down.
2. Turn on the power.
3. Insert the AIX diagnostic CD-ROM into the optical drive.

Note: If you cannot insert the diagnostic CD-ROM, go to PFW1548-505-2a.

4. When the keyboard indicator is displayed on the system console:
 - On an ASCII terminal or directly-attached keyboard, press the number 5 key.
5. If you are prompted to do so, enter the appropriate password.

Is the "Please define the System Console" screen displayed?

NO Go to step PFW1548-505-2a.

YES Go to step PFW1548-505-17a.

• **PFW1548-505-2a**

1. Turn on the power.
2. If you have not already done so, configure the service processor (using the ASMI menus) with the instructions in note6 on page 69 at the beginning of this MAP, then return here and continue.
3. Exit the service processor (ASMI) menus and remove the power cords.
4. Disconnect all external cables (parallel, system port 1, system port 2, keyboard, mouse, Ethernet on the system planar, Ethernet on the service processor [if present], and so on).
5. Remove the service access cover (model xxx), or place the drawer (model yyy), into the service position and remove the service access cover.
6. Record the slot numbers of the PCI adapters. Label and record the locations of all cables attached to the adapters. Disconnect all cables attached to the adapters and remove all of the adapters.
7. Disconnect all of the power and signal cables from the media drives located in the media bay.
8. Remove the media drives.
9. Record the slot numbers of the memory DIMMs on the system backplane. Remove all memory DIMMs except for one pair from the system backplane.

Notes:

- a. Place the memory DIMM locking tabs in the locked (upright) position to prevent damage to the tabs.
 - b. Memory DIMMs must be installed in pairs and in the correct connectors. Refer to Locations — model 505 for information on memory DIMMs.
10. Disconnect the IDE cable from the IDE connector on the system backplane.

11. Disconnect the signal and power connectors from both disk drive backplanes.
12. Disconnect the disk drives (if present) from both disk drive backplanes.
13. Plug in the power cords and wait for "01" in the upper-left-hand corner of the control panel display.
14. Turn on the power.

Does the system stop with B1xxF22A, CA00E1F2, CA00E1F3, or STBY displayed on the control panel?

NO Go to step PFW1548-505-6a.

YES Go to step PFW1548-505-3a.

• **PFW1548-505-3a**

Were any memory DIMMs removed from the system backplane?

NO Go to step PFW1548-505-8a.

YES Go to step PFW1548-505-4a.

• **PFW1548-505-4a**

1. Turn off the power, and remove the power cords.
2. Replug the memory DIMMs that were removed from the system backplane in step PFW1548-505-2a in their original locations.

Notes:

- a. Place the memory DIMM locking tabs into the locked (upright) position to prevent damage to the tabs.
- b. Memory DIMMs must be installed in pairs in the correct connectors. Refer to Locations — model 505 for information on memory DIMMs.

3. Plug in the power cords and wait for "01" in the control panel display.

4. Turn on the power.

Does the system stop with B1xxF22A, CA00E1F2, CA00E1F3, or STBY displayed on the control panel?

NO A memory DIMM in the pair you just replaced in the system is defective. Turn off the power, remove the power cords, and exchange the memory DIMMs in that pair one at a time with new or previously removed memory DIMMs. Repeat this step until the defective memory DIMM is identified, or all memory DIMMs have been exchanged.

If your symptom did not change and all the memory DIMMs have been exchanged, call your service support person for assistance.

If the symptom changed, check for loose cards and obvious problems.

If you do not find a problem, go to the Start-of-Call MAP and follow the instructions for the new symptom.

YES Go to PFW1548-505-8a.

• **PFW1548-505-5a**

This step is reserved.

• **PFW1548-505-6a**

One of the FRUs remaining in the system unit is defective.

Note: If a memory DIMM is exchanged, insure that the new memory DIMM is the same size and speed as the original memory DIMM.

1. Turn off the power, remove the power cords, and exchange the following FRUs in the order listed:
 - a. Memory DIMMs. Exchange one at a time with new or previously removed DIMMs

- b. System backplane, location Un-P1.
 - c. Power supplies.
2. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
 3. Turn on the power.

Does the system stop with B1xxF22A, CA00E1F2, CA00E1F3, or STBY displayed on the control panel?

NO Reinstall the original FRU. Repeat the FRU replacement steps until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to MAP 0410: Repair Checkout.

- **PFW1548-505-7a**

This step is reserved.

- **PFW1548-505-8a**

1. Turn off the power.
2. Reconnect the system console.
 - a. If an ASCII terminal has been defined as the firmware console, attach the ASCII terminal cable to the S1 connector on the rear of the system unit.
 - b. If a display attached to a display adapter has been defined as the firmware console, install the display adapter and connect the display to the adapter. Plug the keyboard and mouse into the keyboard connector on the rear of the system unit.
3. Turn on the power.
4. If the ASCII terminal or graphics display (including display adapter) is connected differently from the way it was previously, the console selection screen appears. Select a firmware console.
5. When the word keyboard is displayed, press the number 1 key on the directly attached keyboard, an ASCII terminal or HMC. This activates the system management services (SMS).
6. Enter the appropriate password if you are prompted to do so.

Is the SMS screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. Replace the system backplane, location Un-P1.
2. If you are using a graphics display, go to the problem determination procedures for the display.

If you do not find a problem, do the following:

- Replace the display adapter.
- Replace the PCI riser in which the graphics adapter is plugged.
- Replace the backplane, location: Un-P1.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-505-9a.

- **PFW1548-505-9a**

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Plug the IDE cable into the IDE connector on the system backplane.
4. Connect the signal and power connectors to the IDE optical drive.
5. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
6. Turn on the power.
7. Insert the diagnostic CD-ROM into the optical drive.
8. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.
9. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. IDE cable
2. Optical drive
3. System backplane, location: Un-P1

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-505-12a.

- **PFW1548-505-10a**

This step is reserved.

- **PFW1548-505-11a**

This step is reserved.

- **PFW1548-505-12a**

The system is working correctly with this configuration. One of the disk drives that you removed from the disk drive backplanes may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Install a disk drive in a disk drive backplane.
4. Plug in the power cords and wait for the "01" on the control panel display.
5. Turn on the power.
6. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Exchange the FRUs that have not been exchanged, in the following order:

1. Last disk drive installed
2. System backplane, location Un-P1 (since the disk drive backplane is not a separate FRU)

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged. If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Repeat this step with all disk drives that were installed in the disk drive backplane. Go to PFW1548-505-14a.

- **PFW1548-505-13a**

This step is reserved.

- **PFW1548-505-14a**

The system is working correctly with this configuration. One of the devices that was disconnected from the system backplane may be defective.

1. Turn off the power and remove the power cords.
2. Attach a system backplane device (for example: parallel, system port 1, system port 2, system port 3, keyboard, mouse, Ethernet, Ultra-2 SCSI,) that had been removed.
3. Plug in the power cords and wait for "01" in the upper-left corner on the control panel display.
4. Turn on the power.
5. If the Console Selection screen is displayed, choose the system console.
6. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO The last device or cable that you attached is defective.

To test each FRU, exchange the FRUs in the following order:

1. Device and cable (last one attached)
2. System backplane, location: Un-P1.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom. Go to MAP 0410: Repair Checkout.

YES Repeat this step until all of the devices are attached. Go to PFW1548-505-15a.

- **PFW1548-505-15a**

The system is working correctly with this configuration. One of the PCI adapters that you removed may be defective.

1. Turn off the power and remove the power cords.
2. Install a FRU (adapter) and connect any cables and devices that were attached to the FRU.
3. Plug in the power cords and wait for the OK prompt to display on the control panel display.
4. Turn on the power.
5. If the Console Selection screen is displayed, choose the system console.
6. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Go to PFW1548-505-16a.

YES Repeat this step until all of the FRUs (adapters) are installed. Go to MAP 0410: Repair Checkout.

• **PFW1548-505-16a**

The last FRU installed or one of its attached devices is probably defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Starting with the last installed adapter, disconnect one attached device and cable.
4. Plug in the power cords and wait for the "01" in the upper-left corner on the control panel display.
5. Turn on the power.
6. If the Console Selection screen is displayed, choose the system console.
7. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Repeat this step until the defective device or cable is identified or all devices and cables have been disconnected.

If all the devices and cables have been removed, then one of the FRUs remaining in the system unit is defective.

To test each FRU, exchange the FRUs in the following order:

1. Adapter (last one installed)
2. PCI risers, location Un-P1-C12 and Un-P1-C13.
3. System backplane, location Un-P1

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES The last device or cable that you disconnected is defective. Exchange the defective device or cable. Go to MAP 0410: Repair Checkout.

• **PFW1548-505-17a**

1. Follow the instructions on the screen to select the system console.
2. When the DIAGNOSTIC OPERATING INSTRUCTIONS screen is displayed, press Enter.
3. Select Advanced Diagnostics Routines.
4. If the terminal type has not been defined, you must use the initialize terminal option on the FUNCTION SELECTION menu to initialize the AIX diagnostic environment before you can continue with the diagnostics. This is a separate operation from selecting the console display.
5. If the NEW RESOURCE screen is displayed, select an option from the bottom of the screen.

Note: Adapters and devices that require supplemental media are not shown in the new resource list. If the system has adapters or devices that require supplemental media, select option 1.

6. When the DIAGNOSTIC MODE SELECTION screen is displayed, press Enter.
7. Select All Resources. (If you were sent here from PFW1548-505-21a, select the adapter or device that was loaded from the supplemental media).

Did you get an SRN?

NO Go to PFW1548-505-19a.

YES Go to PFW1548-505-18a.

- **PFW1548-505-18a**

Look at the FRU part numbers associated with the SRN.

Have you exchanged all the FRUs that correspond to the failing function codes (FFCs)?

NO Exchange the FRU with the highest failure percentage that has not been changed.

Repeat this step until all the FRUs associated with the SRN have been exchanged or diagnostics run with no trouble found. Run diagnostics after each FRU is exchanged. Go to MAP 0410: Repair Checkout.

YES If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

- **PFW1548-505-19a**

Does the system have adapters or devices that require supplemental media?

NO Go to PFW1548-505-20a.

YES Go to PFW1548-505-21a.

- **PFW1548-505-20a**

Consult the PCI adapter configuration documentation for your operating system to verify that all adapters are configured correctly. Go to MAP 0410: Repair Checkout.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

- **PFW1548-505-21a**

1. Select Task Selection.

2. Select Process Supplemental Media and follow the on screen instructions to process the media. Supplemental media must be loaded and processed one at a time.

Did the system return to the TASKS SELECTION SCREEN after the supplemental media was processed?

NO Go to PFW1548-505-22a.

YES Press F3 to return to the FUNCTION SELECTION screen. Go to step 4.

- **PFW1548-505-22a**

The adapter or device is probably defective.

If the supplemental media is for an adapter, replace the FRUs in the following order:

1. Adapter
2. PCI riser cards, location Un-P1-C12 and UN-P1-C13.
3. System backplane, location Un-P1

If the supplemental media is for a device, replace the FRUs in the following order:

1. Device and any associated cables
2. The adapter to which the device is attached

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom. Go to MAP 0410: Repair Checkout.

End of procedure.

PFW1548-510: Processor subsystem problem isolation procedure for model 510, 51A, and OpenPower 710 with an HMC attached

Use this problem isolation procedure to aid in solving memory and processor problems on 510 and OpenPower 710 attached to an HMC.

• PFW1548-510-1

1. Insure that the diagnostics and the operating system are shut down.

Is the system at "service processor standby", indicated by "01" in the control panel?

NO Replace the system backplane, location: Un-P1. Return to the beginning of this step.

YES Continue with substep 2.

2. Turn on the power using either the white button or the HMC.

Does the managed system reach "service processor standby" indicated by "01" in the control panel?

NO Go to step PFW1548-510-3.

YES Go to step PFW1548-510-2.

• PFW1548-510-2

1. Insert the diagnostic CD-ROM into the optical drive.

Note: If you cannot insert the diagnostic CD-ROM, go to PFW1548-510-3.

2. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.

3. If you are prompted to do so, enter the appropriate password.

Is the "Please define the System Console" screen displayed?

NO Go to step PFW1548-510-3.

YES Go to step PFW1548-510-21.

• PFW1548-510-3

1. Turn off the power.
2. If you have not already done so, configure the service processor (using the ASMI menus) with the instructions in note 6 at the beginning of this procedure, then return here and continue.
3. Exit the service processor (ASMI) menus and remove the power cords.
4. Disconnect all external cables (parallel, system port 1, system port 2, keyboard, mouse, Ethernet on the system planar, Ethernet on the service processor [if present], and so on). Leave the Ethernet cable between the service processor and the HMC attached.
5. Remove the service access cover (model xxx), or place the drawer (model yyy), into the service position and remove the service access cover.
6. Record the slot numbers of the PCI adapters. Label and record the locations of all cables attached to the adapters. Disconnect all cables attached to the adapters and remove all of the adapters.
7. Disconnect all of the power and signal cables from the media drives located in media bay.
8. Remove the media drives.
9. Record the slot numbers of the memory DIMMs on the system backplane. Remove all memory DIMMs except for one pair from the system backplane.

Notes:

- a. Place the memory DIMM locking tabs in the locked (upright) position to prevent damage to the tabs.

- b. Memory DIMMs must be installed in pairs and in the correct connectors. Refer to the memory DIMM section of Locations-Model 510 for information on memory DIMMs.
10. Disconnect the IDE cable from the IDE connector on the system backplane.
11. Disconnect the signal and power connectors from both disk drive backplanes.
12. Disconnect the disk drives (if present) from the disk drive backplane.
13. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
14. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.

Does the system stop with B1xxF22A, CA00E1F2, CA00E1F3, or STBY displayed on the control panel?

NO Go to PFW1548-510-7.

YES Go to PFW1548-510-4.

• **PFW1548-510-4**

Were any memory DIMMs removed from the system backplane?

NO Go to PFW1548-510-9.

YES Go to PFW1548-510-5.

• **PFW1548-510-5**

1. Turn off the power, and remove the power cords.
2. Replug the memory DIMMs that were removed from the system backplane in PFW1548-510-2 in their original locations.

Notes:

- a. Place the memory DIMM locking tabs into the locked (upright) position to prevent damage to the tabs.
 - b. Memory DIMMs must be installed in pairs in the correct connectors. Refer to Memory DIMM locations for information on memory DIMMs.
3. Plug in the power cords and wait for "01" in the control panel display.
4. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
5. If you are prompted to do so, enter the appropriate password.

Does the system stop with B1xxF22A, CA00E1F2, CA00E1F3, or STBY displayed on the control panel?

NO A memory DIMM in the pair you just replaced in the system is defective. Turn off the power, remove the power cords, and exchange the memory DIMMs in that pair one at a time with new or previously removed memory DIMMs. Repeat this step until the defective memory DIMM is identified, or all memory DIMMs have been exchanged.

If your symptom did not change and all the memory DIMMs have been exchanged, call your service support person for assistance.

If the symptom changed, check for loose cards and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-510-9.

- **PFW1548-510-6**

This step is reserved.

- **PFW1548-510-7**

One of the FRUs remaining in the system unit is defective.

Note: If a memory DIMM is exchanged, insure that the new memory DIMM is the same size and speed as the original memory DIMM.

1. Turn off the power, remove the power cords, and exchange the following FRUs in the order listed:
 - a. Memory DIMMs. Exchange one at a time with new or previously removed DIMMs
 - b. System backplane, location UN-P1
 - c. Power supplies.
2. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
3. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.

Does the system stop with B1xF22A, CA00E1F2, CA00E1F3, or STBY displayed on the control panel?

NO Reinstall the original FRU. Repeat the FRU replacement steps until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to MAP 0410: Repair Checkout.

- **PFW1548-510-8**

This step is reserved.

- **PFW1548-510-9**

1. Turn off the power.
2. Reconnect the system console.

Notes:

- a. If an ASCII terminal has been defined as the firmware console, attach the ASCII terminal cable to the S1 connector on the rear of the system unit.
 - b. If a display attached to a display adapter has been defined as the firmware console, install the display adapter and connect the display to the adapter. Plug the keyboard and mouse into the keyboard connector on the rear of the system unit.
3. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
 4. If the ASCII terminal or graphics display (including display adapter) is connected differently from the way it was previously, the console selection screen appears. Select a firmware console.

5. When the word keyboard is displayed, press the number 1 key on the directly attached keyboard, an ASCII terminal or HMC. This activates the system management services (SMS).
6. Enter the appropriate password if you are prompted to do so.

Is the SMS screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. Replace the service processor, location Un-P1.
2. If you are using a graphics display, go to the problem determination procedures for the display.

If you do not find a problem, do the following:

- Replace the display adapter.
- Replace the backplane in which the graphics adapter is plugged.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-510-10.

• **PFW1548-510-10**

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Plug the IDE cable into the IDE connector on the system backplane.
4. Connect the signal and power connectors to the IDE optical drive.
5. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
6. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
7. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. IDE cable
2. Optical drive
3. System backplane, location Un-P1

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-510-11.

• **PFW1548-510-11**

The system is working correctly with this configuration. One of the SCSI devices that was disconnected may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Install a disk drive in a disk drive backplane.
4. Plug the power cords and wait for "01" on the control panel display.
5. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
6. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO

Exchange the FRUs that have not been exchanged, in the following order:

1. Last disk drive installed
2. System backplane, location Un-P1 (Since the disk drive backplane is not a separate FRU)

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES

Repeat this step with all disk drives that were installed in the disk drive backplane. Go to PFW1548-510-12.

• **PFW1548-510-12**

This step is reserved.

• **PFW1548-510-13**

The system is working correctly with this configuration. One of the disk drive backplanes may be defective.

1. Turn off the power and remove the power cords.
2. Attach a system backplane device (for example: parallel, system port 1, system port 2, Ethernet, SCSI, keyboard or mouse) that had been removed.
3. Plug in the power cords and wait for "01" in the upper-left corner on the control panel display.
4. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
5. If the Console Selection screen is displayed, choose the system console.

6. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO The last device or cable that you attached is defective. To test each FRU, exchange the FRUs in the following order:

1. Device and cable (last one attached)
2. System backplane

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom. Go to MAP 0410: Repair Checkout.

YES Repeat this step until all of the devices are attached. Go to step PFW1548-510-14.

• **PFW1548-510-14**

The system is working correctly with this configuration. One of the disk drives that you removed from the disk drive backplanes may be defective.

1. Turn off the power and remove the power cords.
2. Install a FRU (adapter) and connect any cables and devices that were attached to the FRU.
3. Plug in the power cords and wait for the OK prompt to display on the control panel display.
4. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
5. If the Console Selection screen is displayed, choose the system console.
6. After the word keyboard displays, press the number 5 key on either the directly attached keyboard, virtual terminal on the HMC, or an ASCII terminal.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Go to step PFW1548-510-15.

YES Repeat this step until all of the FRUs (adapters) are installed. Go to MAP 0410: Repair Checkout.

• **PFW1548-510-15**

The last FRU installed or one of its attached devices is probably defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Starting with the last installed adapter, disconnect one attached device and cable.
4. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
5. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
6. If the Console Selection screen is displayed, choose the system console.
7. After the word keyboard displays, press the number 5 key on either the directly attached keyboard, virtual terminal on the HMC, or an ASCII terminal.

8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Repeat this step until the defective device or cable is identified or all devices and cables have been disconnected.

If all the devices and cables have been removed, then one of the FRUs remaining in the system unit is defective.

To test each FRU, exchange the FRUs in the following order:

1. Adapter (the last one installed)
2. PCI backplane, Un-P2
3. System backplane, Un-P1

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem return, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES The last device or cable that you disconnected is defective. Exchange the defective device or cable. Go to MAP 0410: Repair Checkout.

• **PFW1548-510-16**

The system is working correctly with this configuration. One of the devices that was disconnected from the system backplane may be defective.

1. Follow the instructions on the screen to select the system console.
2. When the DIAGNOSTIC OPERATING INSTRUCTIONS screen is displayed, press Enter.
3. Select Advanced Diagnostics Routines.
4. If the terminal type has not been defined, you must use the initialize terminal option on the FUNCTION SELECTION menu to initialize the AIX diagnostic environment before you can continue with the diagnostics. This is a separate operation from selecting the console display.
5. If the NEW RESOURCE screen is displayed, select an option from the bottom of the screen.

Note: Adapters and devices that require supplemental media are not shown in the new resource list. If the system has adapters or devices that require supplemental media, select option 1.

6. When the DIAGNOSTIC MODE SELECTION screen is displayed, press Enter.
7. Select All Resources. (If you were sent here from step PFW1548-510-20, select the adapter or device that was loaded from the supplemental media).

Did you get an SRN?

NO Go to step PFW1548-510-18.

YES Go to PFW1548-510-17.

• **PFW1548-510-17**

Look at the FRU part numbers associated with the SRN

Have you exchanged all the FRUs that correspond to the failing function codes (FFCs)?

NO Exchange the FRU with the highest failure percentage that has not been changed.

Repeat this step until all the FRUs associated with the SRN have been exchanged or diagnostics run with no trouble found. Run diagnostics after each FRU is exchanged. Go to MAP 0410: Repair Checkout.

YES If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

- **PFW1548-510-18**

Does the system have adapters or devices that require supplemental media?

NO Go to step PFW1548-510-19.

YES Go to step PFW1548-510-20.

- **PFW1548-510-19**

Consult the PCI adapter configuration documentation for your operating system to verify that all adapters are configured correctly. Go to MAP 0410: Repair Checkout.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

- **PFW1548-510-20**

1. Select Task Selection.

2. Select Process Supplemental Media and follow the on screen instructions to process the media. Supplemental media must be loaded and processed one at a time.

Did the system return to the TASKS SELECTION SCREEN after the supplemental media was processed?

NO Go to PFW1548-510-21.

YES Press F3 to return to the FUNCTION SELECTION screen. Go to 4 on page 518.

- **PFW1548-510-21**

The adapter or device is probably defective.

If the supplemental media is for an adapter, replace the FRUs in the following order:

1. Adapter
2. PCI backplane, Un-P2.
3. System backplane, Un-P1.

If the supplemental media is for a device, replace the FRUs in the following order:

1. Device and any associated cables
2. The adapter to which the device is attached

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom. Go to MAP 0410: Repair Checkout.

End of procedure.

PFW1548-510: Processor subsystem problem isolation procedure for model 510, 51A, and OpenPower 710 without an HMC attached

Use this problem isolation procedure to aid in solving memory and processor problems on 510 and OpenPower 710 that is not attached to an HMC.

- **PFW1548-510-1a**

1. Insure that the diagnostics and the operating system(s) are shut down.
2. Turn on the power.
3. Insert the AIX diagnostic CD-ROM into the optical drive.

Note: If you cannot insert the diagnostic CD-ROM, go to PFW1548-510-2a.

4. When the keyboard indicator is displayed on the system console:
 - On an ASCII terminal or directly-attached keyboard, press the number 5 key.
5. If you are prompted to do so, enter the appropriate password.

Is the "Please define the System Console" screen displayed?

NO Go to step PFW1548-510-2a.

YES Go to step PFW1548-510-17a.

- **PFW1548-510-2a**

1. Turn on the power.
2. If you have not already done so, configure the service processor (using the ASMI menus) with the instructions in note 6 at the beginning of this MAP, then return here and continue.
3. Exit the service processor (ASMI) menus and remove the power cords.
4. Disconnect all external cables (parallel, system port 1, system port 2, keyboard, mouse, Ethernet on the system planar, Ethernet on the service processor [if present], and so on).
5. Remove the service access cover (model xxx), or place the drawer (model yyy), into the service position and remove the service access cover.
6. Record the slot numbers of the PCI adapters. Label and record the locations of all cables attached to the adapters. Disconnect all cables attached to the adapters and remove all of the adapters.
7. Disconnect all of the power and signal cables from the media drives located in the media bay.
8. Remove the media drives.
9. Record the slot numbers of the memory DIMMs on the system backplane. Remove all memory DIMMs except for one pair from the system backplane.

Notes:

- a. Place the memory DIMM locking tabs in the locked (upright) position to prevent damage to the tabs.
 - b. Memory DIMMs must be installed in pairs and in the correct connectors. Refer to "Memory DIMM Locations" for information on memory DIMMs.
10. Disconnect the IDE cable from the IDE connector on the system backplane.
 11. Disconnect the signal and power connectors from both disk drive backplanes.
 12. Disconnect the disk drives (if present) from both disk drive backplanes.
 13. Plug in the power cords and wait for "01" in the upper-left-hand corner of the control panel display.
 14. Turn on the power.

Does the system stop with B1xF22A, CA00E1F2, CA00E1F3, or STBY displayed on the control panel?

NO Go to step PFW1548-510-6a.

YES Go to step PFW1548-510-3a.

- **PFW1548-510-3a**

Were any memory DIMMs removed from the system backplane?

NO Go to step PFW1548-510-8a.

YES Go to step PFW1548-510-4a.

- **PFW1548-510-4a**

1. Turn off the power, and remove the power cords.
2. Replug the memory DIMMs that were removed from the system backplane in step PFW1548-510-2a in their original locations.

Notes:

- a. Place the memory DIMM locking tabs into the locked (upright) position to prevent damage to the tabs.

- b. Memory DIMMs must be installed in pairs in the correct connectors. Refer to "Memory DIMM Locations" for information on memory DIMMs.
3. Plug in the power cords and wait for "01" in the control panel display.
4. Turn on the power.

Does the system stop with B1xxF22A, CA00E1F2, CA00E1F3, or STBY displayed on the control panel?

NO A memory DIMM in the pair you just replaced in the system is defective. Turn off the power, remove the power cords, and exchange the memory DIMMs in that pair one at a time with new or previously removed memory DIMMs. Repeat this step until the defective memory DIMM is identified, or all memory DIMMs have been exchanged.

If your symptom did not change and all the memory DIMMs have been exchanged, call your service support person for assistance.

If the symptom changed, check for loose cards and obvious problems.

If you do not find a problem, go to the Start-of-Call MAP and follow the instructions for the new symptom.

YES Go to PFW1548-510-8a.

- **PFW1548-510-5a**

This step is reserved.

- **PFW1548-510-6a**

One of the FRUs remaining in the system unit is defective.

Note: If a memory DIMM is exchanged, insure that the new memory DIMM is the same size and speed as the original memory DIMM.

1. Turn off the power, remove the power cords, and exchange the following FRUs in the order listed:
 - a. Memory DIMMs. Exchange one at a time with new or previously removed DIMMs
 - b. System backplane, location Un-P1.
 - c. Power supplies.
2. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
3. Turn on the power.

Does the system stop with B1xxF22A, CA00E1F2, CA00E1F3, or STBY displayed on the control panel?

NO Reinstall the original FRU. Repeat the FRU replacement steps until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to MAP 0410: Repair Checkout.

- **PFW1548-510-7a**

This step is reserved.

- **PFW1548-510-8a**

1. Turn off the power.
2. Reconnect the system console.
 - a. If an ASCII terminal has been defined as the firmware console, attach the ASCII terminal cable to the S1 connector on the rear of the system unit.

- b. If a display attached to a display adapter has been defined as the firmware console, install the display adapter and connect the display to the adapter. Plug the keyboard and mouse into the keyboard connector on the rear of the system unit.
3. Turn on the power.
4. If the ASCII terminal or graphics display (including display adapter) is connected differently from the way it was previously, the console selection screen appears. Select a firmware console.
5. When the word keyboard is displayed, press the number 1 key on the directly attached keyboard, an ASCII terminal or HMC. This activates the system management services (SMS).
6. Enter the appropriate password if you are prompted to do so.

Is the SMS screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. Replace the system backplane, location Un-P1.
2. If you are using a graphics display, go to the problem determination procedures for the display.

If you do not find a problem, do the following:

- Replace the display adapter.
- Replace the backplane in which the graphics adapter is plugged.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-510-9a.

• **PFW1548-510-9a**

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Plug the IDE cable into the IDE connector on the system backplane.
4. Connect the signal and power connectors to the IDE optical drive.
5. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
6. Turn on the power.
7. Insert the diagnostic CD-ROM into the optical drive.
8. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.
9. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. IDE cable
2. Optical drive
3. System backplane

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-510-12a.

- **PFW1548-510-10a**

This step is reserved.

- **PFW1548-510-11a**

This step is reserved.

- **PFW1548-510-12a**

The system is working correctly with this configuration. One of the disk drives that you removed from the disk drive backplanes may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Install a disk drive in a disk drive backplane.
4. Plug in the power cords and wait for the "01" on the control panel display.
5. Turn on the power.
6. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Exchange the FRUs that have not been exchanged, in the following order:

1. Last disk drive installed
2. System backplane, location Un-P1 (since the disk drive backplane is not a separate FRU)

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged. If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Repeat this step with all disk drives that were installed in the disk drive backplane. Go to PFW1548-510-14a.

- **PFW1548-510-13a**

This step is reserved.

- **PFW1548-510-14a**

The system is working correctly with this configuration. One of the devices that was disconnected from the system backplane may be defective.

1. Turn off the power and remove the power cords.
2. Attach a system backplane device (for example: parallel, system port 1, system port 2, system port 3, keyboard, mouse, Ethernet, Ultra-2 SCSI,) that had been removed.
3. Plug in the power cords and wait for "01" in the upper-left corner on the control panel display.
4. Turn on the power.
5. If the Console Selection screen is displayed, choose the system console.
6. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO The last device or cable that you attached is defective.

To test each FRU, exchange the FRUs in the following order:

1. Device and cable (last one attached)
2. System backplane

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom. Go to MAP 0410: Repair Checkout.

YES Repeat this step until all of the devices are attached. Go to PFW1548-510-15a.

• **PFW1548-510-15a**

The system is working correctly with this configuration. One of the FRUs (adapters) that you removed may be defective.

1. Turn off the power and remove the power cords.
2. Install a FRU (adapter) and connect any cables and devices that were attached to the FRU.
3. Plug in the power cords and wait for the OK prompt to display on the control panel display.
4. Turn on the power.
5. If the Console Selection screen is displayed, choose the system console.
6. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Go to PFW1548-510-16a.

YES Repeat this step until all of the FRUs (adapters) are installed. Go to MAP 0410: Repair Checkout.

• **PFW1548-510-16a**

The last FRU installed or one of its attached devices is probably defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Starting with the last installed adapter, disconnect one attached device and cable.
4. Plug in the power cords and wait for the "01" in the upper-left corner on the control panel display.
5. Turn on the power.
6. If the Console Selection screen is displayed, choose the system console.
7. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Repeat this step until the defective device or cable is identified or all devices and cables have been disconnected.

If all the devices and cables have been removed, then one of the FRUs remaining in the system unit is defective.

To test each FRU, exchange the FRUs in the following order:

1. Adapter (last one installed)

2. PCI backplane, location Un-P2.
3. System backplane, location Un-P1

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES The last device or cable that you disconnected is defective. Exchange the defective device or cable. Go to MAP 0410: Repair Checkout.

- **PFW1548-510-17a**

1. Follow the instructions on the screen to select the system console.
2. When the DIAGNOSTIC OPERATING INSTRUCTIONS screen is displayed, press Enter.
3. Select Advanced Diagnostics Routines.
4. If the terminal type has not been defined, you must use the initialize terminal option on the FUNCTION SELECTION menu to initialize the AIX diagnostic environment before you can continue with the diagnostics. This is a separate operation from selecting the console display.
5. If the NEW RESOURCE screen is displayed, select an option from the bottom of the screen.

Note: Adapters and devices that require supplemental media are not shown in the new resource list. If the system has adapters or devices that require supplemental media, select option 1.

6. When the DIAGNOSTIC MODE SELECTION screen is displayed, press Enter.
7. Select All Resources. (If you were sent here from PFW1548-510-21a, select the adapter or device that was loaded from the supplemental media).

Did you get an SRN?

NO Go to PFW1548-510-19a.

YES Go to PFW1548-510-18a.

- **PFW1548-510-18a**

Look at the FRU part numbers associated with the SRN.

Have you exchanged all the FRUs that correspond to the failing function codes (FFCs)?

NO Exchange the FRU with the highest failure percentage that has not been changed.

Repeat this step until all the FRUs associated with the SRN have been exchanged or diagnostics run with no trouble found. Run diagnostics after each FRU is exchanged. Go to MAP 0410: Repair Checkout.

YES If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

- **PFW1548-510-19a**

Does the system have adapters or devices that require supplemental media?

NO Go to PFW1548-510-20a.

YES Go to PFW1548-510-21a.

- **PFW1548-510-20a**

Consult the PCI adapter configuration documentation for your operating system to verify that all adapters are configured correctly. Go to MAP 0410: Repair Checkout.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

- **PFW1548-510-21a**

1. Select Task Selection.
2. Select Process Supplemental Media and follow the on screen instructions to process the media. Supplemental media must be loaded and processed one at a time.

Did the system return to the TASKS SELECTION SCREEN after the supplemental media was processed?

NO Go to PFW1548-510-22a.

YES Press F3 to return to the FUNCTION SELECTION screen. Go to step 4.

- **PFW1548-510-22a**

The adapter or device is probably defective.

If the supplemental media is for an adapter, replace the FRUs in the following order:

1. Adapter
2. PCI backplane, location Un-P2.
3. System backplane, location Un-P1

If the supplemental media is for a device, replace the FRUs in the following order:

1. Device and any associated cables
2. The adapter to which the device is attached

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom. Go to MAP 0410: Repair Checkout.

End of procedure.

PFW1548-520: Processor subsystem problem isolation procedure for the model 520, 52A, and 285 with an HMC

Use this problem isolation procedure to aid in solving memory and processor problems on 520, 52A, and 285 models attached to an HMC.

- **PFW1548-520-1**

1. Insure that the diagnostics and the operating system(s) are shut down.

Is the system at "service processor standby", indicated by "01" in the control panel?

NO Replace the service processor card, location: Un-P1-C8. Return to the beginning of step PFW1548-520-1.

YES Continue with substep 2.

2. Turn on the power using either the white button or the HMC.

Does the managed system reach power on at hypervisor standby as indicated on the HMC?

NO Go to step PFW1548-520-3.

YES Go to step PFW1548-520-2.

- **PFW1548-520-2**

1. Insert the AIX diagnostic CD-ROM into the optical drive.

Note: If you cannot insert the diagnostic CD-ROM, go to PFW1548-520-3.

2. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.

3. If you are prompted to do so, enter the appropriate password.

Is the "Please define the System Console" screen displayed?

NO Go to step PFW1548-520-3.

YES Go to step PFW1548-520-23.

- **PFW1548-520-3**

1. Turn off the power.
2. If you have not already done so, configure the service processor (using the ASMI menus) with the instructions in note 6 at the beginning of this procedure, then return here and continue.
3. Exit the service processor (ASMI) menus and remove the power cords.
4. Disconnect all external cables (parallel, system port 1, system port 2, keyboard, mouse, Ethernet on the system planar, Ethernet on the service processor [if present], and so on). Leave the Ethernet cable between the service processor and the HMC attached.
5. Remove the service access cover (model xxx), or place the drawer (model yyy), into the service position and remove the service access cover.
6. Record the slot numbers of the PCI adapters. Label and record the locations of all cables attached to the adapters. Disconnect all cables attached to the adapters and remove all of the adapters.
7. Disconnect all of the power and signal cables from the media drives located in media bay.
8. Remove the media drives.
9. Record the slot numbers of the memory DIMMs on the system backplane. Remove all memory DIMMs except for one pair from the system backplane.

Notes:

- a. Place the memory DIMM locking tabs in the locked (upright) position to prevent damage to the tabs.
 - b. Memory DIMMs must be installed in pairs and in the correct connectors. Refer to the memory DIMM section of Locations-Model 520 for information on memory DIMMs.
10. Disconnect the IDE cable from the IDE connector on the system backplane.
 11. If the system is equipped with a diskette drive, disconnect the diskette drive cable from the diskette drive connector on the system backplane.
 12. Disconnect the signal and power connectors from both disk drive backplanes.
 13. Disconnect the disk drives from both disk drive backplanes.
 14. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
 15. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.

Does the system stop with B1xF22A, CA00E1F2, CA00E1F3, or STBY displayed on the control panel?

NO Go to PFW1548-520-7.

YES Go to PFW1548-520-4.

- **PFW1548-520-4**

Were any memory DIMMs removed from the system backplane?

NO Go to PFW1548-520-9.

YES Go to PFW1548-520-5.

- **PFW1548-520-5**

1. Turn off the power, and remove the power cords.

2. Replug the memory DIMMs that were removed from the system backplane in PFW1548-520-2 in their original locations.

Notes:

- a. Place the memory DIMM locking tabs into the locked (upright) position to prevent damage to the tabs.
 - b. Memory DIMMs must be installed in pairs in the correct connectors. Refer to Memory DIMM locations for information on memory DIMMs.
3. Plug in the power cords and wait for "01" in the control panel display.
 4. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.

Does the system stop with B1xxF22A, CA00E1F2, CA00E1F3, or STBY displayed on the control panel?

NO A memory DIMM in the pair you just replaced in the system is defective. Turn off the power, remove the power cords, and exchange the memory DIMMs in that pair one at a time with new or previously removed memory DIMMs. Repeat this step until the defective memory DIMM is identified, or all memory DIMMs have been exchanged.

If your symptom did not change and all the memory DIMMs have been exchanged, call your service support person for assistance.

If the symptom changed, check for loose cards and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-520-9.

- **PFW1548-520-6**

This step is reserved.

- **PFW1548-520-7**

One of the FRUs remaining in the system unit is defective.

Note: If a memory DIMM is exchanged, insure that the new memory DIMM is the same size and speed as the original memory DIMM.

1. Turn off the power, remove the power cords, and exchange the following FRUs in the order listed:
 - a. Memory DIMMs. Exchange one at a time with new or previously removed DIMMs
 - b. Service processor
 - c. System backplane
 - d. Power supplies.
2. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
3. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.

Does the system stop with B1xxF22A, CA00E1F2, CA00E1F3, or STBY displayed on the control panel?

NO Reinstall the original FRU. Repeat the FRU replacement steps until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to MAP 0410: Repair Checkout.

- **PFW1548-520-8**

This step is reserved.

- **PFW1548-520-9**

1. Turn off the power.
2. Reconnect the system console.
 - a. If an ASCII terminal has been defined as the firmware console, attach the ASCII terminal cable to the S1 connector on the rear of the system unit.
 - b. If a display attached to a display adapter has been defined as the firmware console, install the display adapter and connect the display to the adapter. Plug the keyboard and mouse into the keyboard connector on the rear of the system unit.
3. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
4. If the ASCII terminal or graphics display (including display adapter) is connected differently from the way it was previously, the console selection screen appears. Select a firmware console.
5. When the word keyboard is displayed, press the number 1 key on the directly attached keyboard, an ASCII terminal or HMC. This activates the system management services (SMS).
6. Enter the appropriate password if you are prompted to do so.

Is the SMS screen displayed?

NO One of the FRUs remaining in the system unit is defective.

1. Exchange the FRUs that have not been exchanged, in the following order:
 - Replace the service processor, location Un-P1-C7.
 - Replace the system backplane, location Un-P1.
2. If you are using a graphics display, go to the problem determination procedures for the display.

If you do not find a problem, do the following:

- Replace the display adapter.
- Replace the backplane in which the graphics adapter is plugged.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-520-10.

- **PFW1548-520-10**

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Plug the IDE cable into the IDE connector on the system backplane.

4. Connect the signal and power connectors to the IDE optical drive.
5. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
6. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
7. Insert the diagnostic CD-ROM into the optical drive.
8. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.
9. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. IDE cable
2. Optical drive
3. Media backplane
4. System backplane

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-520-11.

• **PFW1548-520-11**

The system is working correctly with this configuration. One of the SCSI devices that was disconnected may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Plug the SCSI cable into the SCSI connector on the system backplane.
4. Connect the signal and power connectors to one of the SCSI devices if present (a SCSI LVD tape device in media bay #1, for example). Do not connect the signal and power connectors to the disk drive backplane at this time.
5. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
6. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
7. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. SCSI cable
2. Last SCSI device connected (for example, tape drive)
3. System backplane

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES

Repeat this step, adding one SCSI device at a time, until all the SCSI devices that were attached to the integrated SCSI adapter, except the disk drive backplanes, are connected and tested. Go to PFW1548-520-12.

• PFW1548-520-12

The system is working correctly with this configuration. One of the disk drive backplanes may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Connect the signal and power connectors to one of the disk drive backplanes.
4. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
5. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
6. If the Console Selection screen is displayed, choose the system console.
7. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. SCSI cable
2. Disk drive backplane

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES If both disk drive backplanes have been reconnected, go to PFW1548-520-13. Otherwise, repeat PFW1548-520-12 for the other disk drive backplane if present.

• PFW1548-520-13

The system is working correctly with this configuration. One of the disk drives that you removed from the disk drive backplanes may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Install a disk drive in a disk drive backplane.
4. Plug in the power cords and wait for the OK prompt to display on the control panel display.
5. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
6. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Exchange the FRUs that have not been exchanged, in the following order:

1. Last disk drive installed
2. Disk drive backplane where the disk drive was installed

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged. If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Repeat this step with all disk drives that were installed in the disk drive backplanes.

If the system has a diskette drive, go to PFW1548-520-14, if not go to PFW1548-520-15.

• **PFW1548-520-14**

The system is working correctly with this configuration. The diskette drive may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Plug the diskette drive cable into the diskette drive connector on the system backplane.
4. Connect the signal and power connectors to the diskette drive.
5. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
6. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
7. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. Diskette drive
2. Diskette drive cable
3. System backplane

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem return, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-520-15.

• **PFW1548-520-15**

The system is working correctly with this configuration. One of the devices that was disconnected from the system backplane may be defective.

1. Turn off the power and remove the power cords.
2. Attach a system backplane device (for example: parallel, system port 1, system port 2, system port 3, keyboard, mouse, Ethernet, Ultra-2 SCSI,) that had been removed.
3. Plug in the power cords and wait for "01" in the upper-left corner on the control panel display.
4. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
5. If the Console Selection screen is displayed, choose the system console.
6. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO The last device or cable that you attached is defective.

To test each FRU, exchange the FRUs in the following order:

1. Device and cable (last one attached)
2. System backplane

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom. Go to MAP 0410: Repair Checkout.

YES Repeat this step until all of the devices are attached. Go to PFW1548-520-16.

• **PFW1548-520-16**

The system is working correctly with this configuration. One of the FRUs (adapters) that you removed may be defective.

1. Turn off the power and remove the power cords.
2. Install a FRU (adapter) and connect any cables and devices that were attached to the FRU.
3. Plug in the power cords and wait for the OK prompt to display on the control panel display.
4. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
5. If the Console Selection screen is displayed, choose the system console.

6. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Go to PFW1548-520-17.

YES Repeat this step until all of the FRUs (adapters) are installed. Go to MAP 0410: Repair Checkout.

- **PFW1548-520-17**

The last FRU installed or one of its attached devices is probably defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Starting with the last installed adapter, disconnect one attached device and cable.
4. Plug in the power cords and wait for the "01" in the upper-left corner on the control panel display.
5. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
6. If the Console Selection screen is displayed, choose the system console.
7. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Repeat this step until the defective device or cable is identified or all devices and cables have been disconnected.

If all the devices and cables have been removed, then one of the FRUs remaining in the system unit is defective.

To test each FRU, exchange the FRUs in the following order:

1. Adapter (last one installed)
2. System backplane

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES The last device or cable that you disconnected is defective. Exchange the defective device or cable. Go to MAP 0410: Repair Checkout.

- **PFW1548-520-18**

1. Follow the instructions on the screen to select the system console.
2. When the DIAGNOSTIC OPERATING INSTRUCTIONS screen is displayed, press Enter.
3. Select Advanced Diagnostics Routines.
4. If the terminal type has not been defined, you must use the initialize terminal option on the FUNCTION SELECTION menu to initialize the AIX diagnostic environment before you can continue with the diagnostics. This is a separate operation from selecting the console display.
5. If the NEW RESOURCE screen is displayed, select an option from the bottom of the screen.

Note: Adapters and devices that require supplemental media are not shown in the new resource list. If the system has adapters or devices that require supplemental media, select option 1.

6. When the DIAGNOSTIC MODE SELECTION screen is displayed, press Enter.

7. Select All Resources. (If you were sent here from PFW1548-520-21, select the adapter or device that was loaded from the supplemental media).

Did you get an SRN?

NO Go to PFW1548-520-20.

YES Go to PFW1548-520-19.

- **PFW1548-520-19**

Look at the FRU part numbers associated with the SRN.

Have you exchanged all the FRUs that correspond to the failing function codes (FFCs)?

NO Exchange the FRU with the highest failure percentage that has not been changed.

Repeat this step until all the FRUs associated with the SRN have been exchanged or diagnostics run with no trouble found. Run diagnostics after each FRU is exchanged. Go to MAP 0410: Repair Checkout.

YES If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

- **PFW1548-520-20**

Does the system have adapters or devices that require supplemental media?

NO Go to PFW1548-520-21.

YES Go to PFW1548-520-22.

- **PFW1548-520-21**

Consult the PCI adapter configuration documentation for your operating system to verify that all adapters are configured correctly. Go to MAP 0410: Repair Checkout.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

- **PFW1548-520-22**

1. Select Task Selection.

2. Select Process Supplemental Media and follow the on screen instructions to process the media. Supplemental media must be loaded and processed one at a time.

Did the system return to the TASKS SELECTION SCREEN after the supplemental media was processed?

NO Go to PFW1548-520-23.

YES Press F3 to return to the FUNCTION SELECTION screen. Go to step 4.

- **PFW1548-520-23**

The adapter or device is probably defective.

If the supplemental media is for an adapter, replace the FRUs in the following order:

1. Adapter
2. System backplane

If the supplemental media is for a device, replace the FRUs in the following order:

1. Device and any associated cables
2. The adapter to which the device is attached

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom. Go to MAP 0410: Repair Checkout.

End of procedure.

PFW1548-520: Processor subsystem problem isolation procedure for the model 520, 52A, and 285 without an HMC

Use this problem isolation procedure to aid in solving memory and processor problems on for the model 520, 52A, and 285 models that are not attached to an HMC.

• **PFW1548-520-1a**

1. Insure that the diagnostics and the operating system(s) are shut down.
2. Turn on the power.
3. Insert the AIX diagnostic CD-ROM into the optical drive.

Note: If you cannot insert the diagnostic CD-ROM, go to PFW1548-520-2a.

4. When the keyboard indicator is displayed on the system console:
 - On an ASCII terminal or directly-attached keyboard, press the number 5 key.
5. If you are prompted to do so, enter the appropriate password.

Is the "Please define the System Console" screen displayed?

NO Go to step PFW1548-520-2a.

YES Go to step PFW1548-520-17a.

• **PFW1548-520-2a**

1. Turn on the power.
2. If you have not already done so, configure the service processor (using the ASMI menus) with the instructions in note 6 at the beginning of this MAP, then return here and continue.
3. Exit the service processor (ASMI) menus and remove the power cords.
4. Disconnect all external cables (parallel, system port 1, system port 2, keyboard, mouse, Ethernet on the system planar, Ethernet on the service processor [if present], and so on).
5. Remove the service access cover (model xxx), or place the drawer (model yyy), into the service position and remove the service access cover.
6. Record the slot numbers of the PCI adapters. Label and record the locations of all cables attached to the adapters. Disconnect all cables attached to the adapters and remove all of the adapters.
7. Disconnect all of the power and signal cables from the media drives located in the media bay.
8. Remove the media drives.
9. Record the slot numbers of the memory DIMMs on the system backplane. Remove all memory DIMMs except for one pair from the system backplane.

Notes:

- a. Place the memory DIMM locking tabs in the locked (upright) position to prevent damage to the tabs.
 - b. Memory DIMMs must be installed in pairs and in the correct connectors. Refer to "Memory DIMM Locations" for information on memory DIMMs.
10. Disconnect the IDE cable from the IDE connector on the system backplane.
 11. If the system is equipped with a diskette drive, disconnect the diskette drive cable from the diskette drive connector on the system backplane.
 12. Disconnect the signal and power connectors from both disk drive backplanes.
 13. Disconnect the disk drives from both disk drive backplanes.

14. Plug in the power cords and wait for "01" in the upper-left-hand corner of the control panel display.

15. Turn on the power.

Does the system stop with B1xxF22A, CA00E1F2, CA00E1F3, or STBY displayed on the control panel?

NO Go to step PFW1548-520-6a.

YES Go to step PFW1548-520-3a.

- **PFW1548-520-3a**

Were any memory DIMMs removed from the system backplane?

NO Go to step PFW1548-520-8a.

YES Go to step PFW1548-520-4a.

- **PFW1548-520-4a**

1. Turn off the power, and remove the power cords.
2. Replug the memory DIMMs that were removed from the system backplane in step PFW1548-520-2 in their original locations.

Notes:

- a. Place the memory DIMM locking tabs into the locked (upright) position to prevent damage to the tabs.
- b. Memory DIMMs must be installed in pairs in the correct connectors. Refer to "Memory DIMM Locations" for information on memory DIMMs.

3. Plug in the power cords and wait for "01" in the control panel display.

4. Turn on the power.

Does the system stop with B1xxF22A, CA00E1F2, CA00E1F3, or STBY displayed on the control panel?

NO A memory DIMM in the pair you just replaced in the system is defective. Turn off the power, remove the power cords, and exchange the memory DIMMs in that pair one at a time with new or previously removed memory DIMMs. Repeat this step until the defective memory DIMM is identified, or all memory DIMMs have been exchanged.

If your symptom did not change and all the memory DIMMs have been exchanged, call your service support person for assistance.

If the symptom changed, check for loose cards and obvious problems.

If you do not find a problem, go to the Start-of-Call MAP and follow the instructions for the new symptom.

YES Go to PFW1548-520-8a.

- **PFW1548-520-5a**

This step is reserved.

- **PFW1548-520-6a**

One of the FRUs remaining in the system unit is defective.

Note: If a memory DIMM is exchanged, insure that the new memory DIMM is the same size and speed as the original memory DIMM.

1. Turn off the power, remove the power cords, and exchange the following FRUs in the order listed:
 - a. Memory DIMMs. Exchange one at a time with new or previously removed DIMMs
 - b. Service processor
 - c. System backplane

- d. Power supplies
 - e. Voltage regulators VRMs
2. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
 3. Turn on the power.

Does the system stop with B1xxF22A, CA00E1F2, CA00E1F3, or STBY displayed on the control panel?

NO Reinstall the original FRU. Repeat the FRU replacement steps until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to MAP 0410: Repair Checkout.

- **PFW1548-520-7a**

This step is reserved.

- **PFW1548-520-8a**

1. Turn off the power.
2. Reconnect the system console.
 - a. If an ASCII terminal has been defined as the firmware console, attach the ASCII terminal cable to the S1 connector on the rear of the system unit.
 - b. If a display attached to a display adapter has been defined as the firmware console, install the display adapter and connect the display to the adapter. Plug the keyboard and mouse into the keyboard connector on the rear of the system unit.
3. Turn on the power.
4. If the ASCII terminal or graphics display (including display adapter) is connected differently from the way it was previously, the console selection screen appears. Select a firmware console.
5. When the word keyboard is displayed, press the number 1 key on the directly attached keyboard, an ASCII terminal or HMC. This activates the system management services (SMS).
6. Enter the appropriate password if you are prompted to do so.

Is the SMS screen displayed?

NO One of the FRUs remaining in the system unit is defective.

1. Exchange the FRUs that have not been exchanged, in the following order:
 - Replace the service processor, location Un-P1-C7.
 - Replace the system backplane, location Un-P1.
2. If you are using a graphics display, go to the problem determination procedures for the display.

If you do not find a problem, do the following:

- Replace the display adapter.
- Replace the backplane in which the graphics adapter is plugged.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-520-9a.

• **PFW1548-520-9a**

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Plug the IDE cable into the IDE connector on the system backplane.
4. Connect the signal and power connectors to the IDE optical drive.
5. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
6. Turn on the power.
7. Insert the diagnostic CD-ROM into the optical drive.
8. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.
9. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. IDE cable
2. Optical drive
3. Media backplane
4. System backplane

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-520-10a.

• **PFW1548-520-10a**

The system is working correctly with this configuration. One of the SCSI devices that was disconnected may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Plug the SCSI cable into the SCSI connector on the system backplane.
4. Connect the signal and power connectors to one of the SCSI devices if present (a SCSI LVD tape device in media bay #1, for example). Do not connect the signal and power connectors to the disk drive backplane at this time.
5. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
6. Turn on the power.
7. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. SCSI cable

2. Last SCSI device connected (for example, tape drive)
3. System backplane

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES

Repeat this step, adding one SCSI device at a time, until all the SCSI devices that were attached to the integrated SCSI adapter, except the disk drive backplanes, are connected and tested. Go to PFW1548-520-11a.

• **PFW1548-520-11a**

The system is working correctly with this configuration. One of the disk drive backplanes may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Connect the signal and power connectors to one of the disk drive backplanes.
4. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
5. Turn on the power.
6. If the Console Selection screen is displayed, choose the system console.
7. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. SCSI cable
2. Disk drive backplane

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES If both disk drive backplanes have been reconnected, go to PFW1548-520-12a. Otherwise, repeat PFW1548-520-11a for the other disk drive backplane if present.

• **PFW1548-520-12a**

The system is working correctly with this configuration. One of the disk drives that you removed from the disk drive backplanes may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Install a disk drive in a disk drive backplane.
4. Plug in the power cords and wait for the OK prompt to display on the control panel display.

5. Turn on the power.
6. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Exchange the FRUs that have not been exchanged, in the following order:

1. Last disk drive installed
2. Disk drive backplane where the disk drive was installed

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged. If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Repeat this step with all disk drives that were installed in the disk drive backplanes.

If the system has a diskette drive, go to PFW1548-520-13a, if not go to PFW1548-520-14a.

• **PFW1548-520-13a**

The system is working correctly with this configuration. The diskette drive may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Plug the diskette drive cable into the diskette drive connector on the system backplane.
4. Connect the signal and power connectors to the diskette drive.
5. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
6. Turn on the power.
7. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. Diskette drive
2. Diskette drive cable
3. System backplane

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged. If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem return, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-520-14a.

• **PFW1548-520-14a**

The system is working correctly with this configuration. One of the devices that was disconnected from the system backplane may be defective.

1. Turn off the power and remove the power cords.

2. Attach a system backplane device (for example: parallel, system port 1, system port 2, system port 3, keyboard, mouse, Ethernet, Ultra-2 SCSI,) that had been removed.
3. Plug in the power cords and wait for "01" in the upper-left corner on the control panel display.
4. Turn on the power.
5. If the Console Selection screen is displayed, choose the system console.
6. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO The last device or cable that you attached is defective.

To test each FRU, exchange the FRUs in the following order:

1. Device and cable (last one attached)
2. System backplane

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom. Go to MAP 0410: Repair Checkout.

YES Repeat this step until all of the devices are attached. Go to PFW1548-520-15a.

• **PFW1548-520-15a**

The system is working correctly with this configuration. One of the FRUs (adapters) that you removed may be defective.

1. Turn off the power and remove the power cords.
2. Install a FRU (adapter) and connect any cables and devices that were attached to the FRU.
3. Plug in the power cords and wait for the OK prompt to display on the control panel display.
4. Turn on the power.
5. If the Console Selection screen is displayed, choose the system console.
6. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Go to PFW1548-520-16a.

YES Repeat this step until all of the FRUs (adapters) are installed. Go to MAP 0410: Repair Checkout.

• **PFW1548-520-16a**

The last FRU installed or one of its attached devices is probably defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Starting with the last installed adapter, disconnect one attached device and cable.
4. Plug in the power cords and wait for the "01" in the upper-left corner on the control panel display.
5. Turn on the power.
6. If the Console Selection screen is displayed, choose the system console.
7. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Repeat this step until the defective device or cable is identified or all devices and cables have been disconnected.

If all the devices and cables have been removed, then one of the FRUs remaining in the system unit is defective.

To test each FRU, exchange the FRUs in the following order:

1. Adapter (last one installed)
2. System backplane

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES The last device or cable that you disconnected is defective. Exchange the defective device or cable. Go to MAP 0410: Repair Checkout.

• **PFW1548-520-17a**

1. Follow the instructions on the screen to select the system console.
2. When the DIAGNOSTIC OPERATING INSTRUCTIONS screen is displayed, press Enter.
3. Select Advanced Diagnostics Routines.
4. If the terminal type has not been defined, you must use the initialize terminal option on the FUNCTION SELECTION menu to initialize the AIX diagnostic environment before you can continue with the diagnostics. This is a separate operation from selecting the console display.
5. If the NEW RESOURCE screen is displayed, select an option from the bottom of the screen.

Note: Adapters and devices that require supplemental media are not shown in the new resource list. If the system has adapters or devices that require supplemental media, select option 1.

6. When the DIAGNOSTIC MODE SELECTION screen is displayed, press Enter.
7. Select All Resources. (If you were sent here from PFW1548-520-21a, select the adapter or device that was loaded from the supplemental media).

Did you get an SRN?

NO Go to PFW1548-520-19a.

YES Go to PFW1548-520-18a.

• **PFW1548-520-18a**

Look at the FRU part numbers associated with the SRN.

Have you exchanged all the FRUs that correspond to the failing function codes (FFCs)?

NO Exchange the FRU with the highest failure percentage that has not been changed.

Repeat this step until all the FRUs associated with the SRN have been exchanged or diagnostics run with no trouble found. Run diagnostics after each FRU is exchanged. Go to MAP 0410: Repair Checkout.

YES If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

• **PFW1548-520-19a**

Does the system have adapters or devices that require supplemental media?

NO Go to PFW1548-520-20a.

YES Go to PFW1548-520-21a.

- **PFW1548-520-20a**

Consult the PCI adapter configuration documentation for your operating system to verify that all adapters are configured correctly. Go to MAP 0410: Repair Checkout.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

- **PFW1548-520-21a**

1. Select Task Selection.
2. Select Process Supplemental Media and follow the on screen instructions to process the media. Supplemental media must be loaded and processed one at a time.

Did the system return to the TASKS SELECTION SCREEN after the supplemental media was processed?

NO Go to PFW1548-520-22a.

YES Press F3 to return to the FUNCTION SELECTION screen. Go to step 4.

- **PFW1548-520-22a**

The adapter or device is probably defective.

If the supplemental media is for an adapter, replace the FRUs in the following order:

1. Adapter
2. System backplane

If the supplemental media is for a device, replace the FRUs in the following order:

1. Device and any associated cables
2. The adapter to which the device is attached

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom. Go to MAP 0410: Repair Checkout.

End of procedure.

PFW1548-550: Processor subsystem problem isolation procedure for models 550, 55A, and OpenPower 720 with an HMC

Use this problem isolation procedure to aid in solving memory and processor problems on 550, 55A, and OpenPower 720 models attached to an HMC.

- **PFW1548-550-1**

Insure that the diagnostics and the operating system are shut down.

Is the system at "service processor standby", indicated by "01" in the control panel?

NO Replace the service processor card, location: Un-P1-C8. Return to the beginning of step 1548-1.

YES YES Continue with substep 1.

1. Turn on the power using either the HMC or the white button.

Does the managed system reach power on at hypervisor standby as indicated on the HMC?

NO Go to step PFW1548-550-3.

YES Go to step PFW1548-550-2.

- **PFW1548-550-2**

1. Insert the AIX diagnostic CD-ROM into the optical drive.

Note: If you cannot insert the diagnostic CD-ROM, go to PFW1548-550-3.

2. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.

3. If you are prompted to do so, enter the appropriate password.

Is the Please define the System Console screen displayed?

NO Go to PFW1548-550-3.

YES Go to PFW1548-550-23.

- **PFW1548-550-3**

1. Turn off the power.
2. If you have not already done so, configure the service processor (using the ASMI menus) with the instructions in note 6 at the beginning of the PFW1548 procedure, then return here and continue.
3. Exit the service processor (ASMI) menus and remove the power cords.
4. Disconnect all external cables (parallel, system port 1, system port 2, keyboard, mouse, USB devices, SPCN, Ethernet on the system planar, Ethernet on the service processor [if present], and so on).
5. Remove the service access cover (model xxx), or place the drawer (model yyy), into the service position and remove the service access cover.
6. Record the slot numbers of the PCI adapters. Label and record the locations of all cables attached to the adapters. Disconnect all cables attached to the adapters and remove all of the adapters.
7. Disconnect all of the power and signal cables from the media drives located in media bay 1 and media bay 2.
8. Remove the media drives.
9. Record the slot numbers of the memory DIMMs on processor card #1. Remove all memory DIMMs except for one quad from processor card #1.

Notes:

- a. Place the memory DIMM locking tabs in the locked (upright) position to prevent damage to the tabs.
 - b. Memory DIMMs must be installed in pairs and in the correct connectors. Refer to the memory DIMM section of Locations-Model 550 for information on memory DIMMs.
10. Disconnect the IDE cable from the IDE connector on the system backplane.
 11. If the system is equipped with a diskette drive, disconnect the diskette drive cable from the diskette drive connector on the system backplane.
 12. Disconnect the signal and power connectors from the disk drive backplane.
 13. Disconnect the disk drives from both disk drive backplanes.
 14. Plug in the power cords and wait for "01" in the upper-left corner of the operator panel display.
 15. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.

Does the system stop with B1xxF22A, CA00E1F2, CA00E1F3, or STBY displayed on the operator panel?

NO Go to PFW1548-550-7.

YES Go to PFW1548-550-4.

- **PFW1548-550-4**

Were any memory DIMMs removed from the system backplane?

NO Go to PFW1548-550-9.

YES Go to PFW1548-550-5.

- **PFW1548-550-5**

1. Turn off the power, and remove the power cords.
2. Replug the memory DIMMs that were removed from the system backplane in PFW1548-550-3 in their original locations.

Notes:

- a. Place the memory DIMM locking tabs into the locked (upright) position to prevent damage to the tabs.
 - b. Memory DIMMs must be installed in pairs in the correct connectors. Refer to Memory DIMM locations for information on memory DIMMs.
3. Plug in the power cords and wait for "01" in the upper-left corner of the operator panel display.
 4. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.

Does the system stop with B1xxF22A, CA00E1F2, CA00E1F3, or STBY displayed on the operator panel?

NO A memory DIMM in the pair you just replaced in the system is defective. Turn off the power, remove the power cords, and exchange the memory DIMMs in that pair one at a time with new or previously removed memory DIMMs. Repeat this step until the defective memory DIMM is identified, or all memory DIMMs have been exchanged.

If your symptom did not change and all the memory DIMMs have been exchanged, call your service support person for assistance.

If the symptom changed, check for loose cards and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-550-8.

- **PFW1548-550-6**

This step is reserved.

- **PFW1548-550-7**

One of the FRUs remaining in the system unit is defective.

Note: If a memory DIMM is exchanged, insure that the new memory DIMM is the same size and speed as the original memory DIMM.

1. Turn off the power, remove the power cords, and exchange the following FRUs in the order listed:
 - a. Memory DIMMs. Exchange one at a time with new or previously removed DIMMs
 - b. Service processor
 - c. System backplane
 - d. Power supplies
2. Plug in the power cords and wait for "01" in the upper-left corner of the operator panel display.
3. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux

or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.

Does the system stop with B1xxF22A, CA00E1F2, CA00E1F3, or STBY displayed on the operator panel?

NO Reinstall the original FRU.

Repeat the FRU replacement steps until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to MAP 0410: Repair Checkout.

- **PFW1548-550-8**

This step is reserved.

- **PFW1548-550-9**

1. Turn off the power.
2. Reconnect the system console.

Notes:

- a. If an ASCII terminal has been defined as the firmware console, attach the ASCII terminal cable to the S1 connector on the rear of the system unit.
 - b. If a display attached to a display adapter has been defined as the firmware console, install the display adapter and connect the display to the adapter. Plug the keyboard and mouse into the keyboard connector on the rear of the system unit.
3. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
 4. If the ASCII terminal or graphics display (including display adapter) is connected differently from the way it was previously, the console selection screen appears. Select a firmware console.
 5. When the word keyboard is displayed, press the number 1 key on the directly attached keyboard, an ASCII terminal or HMC. This activates the system management services (SMS).
 6. Enter the appropriate password if you are prompted to do so.

Is the SMS screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1.
 - a. Service processor, location: Un-P1-C7.
 - b. System backplane, location Un-P1.
2. If you are using a graphics display, go to the problem determination procedures for the display. If you do not find a problem, do the following:
 - a. Replace the display adapter.
 - b. Replace the backplane in which the graphics adapter is plugged.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-550-10.

• **PFW1548-550-10**

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Plug the IDE cable into the IDE connector on the system backplane.
4. Connect the signal and power connectors to the IDE optical drive.
5. Plug in the power cords and wait for "01" in the upper-left corner of the operator panel display.
6. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
7. Insert the diagnostic CD-ROM into the optical drive.
8. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.
9. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. IDE cable
2. Optical drive
3. Media backplane
4. System backplane

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-550-11.

• **PFW1548-550-11**

The system is working correctly with this configuration. One of the SCSI devices that was disconnected may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Plug the SCSI cable into the SCSI connector on the system backplane.
4. Connect the signal and power connectors to one of the SCSI devices if present (a SCSI LVD tape device in media bay #1, for example). Do not connect the signal and power connectors to the disk drive backplane at this time.

5. Plug in the power cords and wait for "01" in the upper-left corner of the operator panel display.
6. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
7. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. SCSI cable
2. Last SCSI device connected (for example, tape drive)
3. System backplane

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES

Repeat this step, adding one SCSI device at a time, until all the SCSI devices that were attached to the integrated SCSI adapter, except the disk drive backplanes, are connected and tested. Go to PFW1548-550-12.

• **PFW1548-550-12**

The system is working correctly with this configuration. One of the disk drive backplanes may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Connect the signal and power connectors to one of the disk drive backplanes.
4. Plug in the power cords and wait for "01" in the upper-left corner of the operator panel display.
5. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
6. If the Console Selection screen is displayed, choose the system console.
7. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. SCSI cable
2. Disk drive backplane

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES If both disk drive backplanes have been reconnected, go to PFW1548-550-13. Otherwise, repeat PFW1548-550-12 for the other disk drive backplane if present.

• **PFW1548-550-13**

The system is working correctly with this configuration. One of the disk drives that you removed from the disk drive backplanes may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Install a disk drive in a disk drive backplane.
4. Plug in the power cords and wait for the OK prompt to display on the operator panel display.
5. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
6. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Exchange the FRUs that have not been exchanged, in the following order:

1. Last disk drive installed
2. Disk drive backplane where the disk drive was installed

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Repeat this step with all disk drives that were installed in the disk drive backplanes.

If the system has an internal diskette drive, go to PFW1548-550-14, if not go to PFW1548-550-15.

• **PFW1548-550-14**

The system is working correctly with this configuration. The diskette drive may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Plug the diskette drive cable into the diskette drive connector on the system backplane.
4. Connect the signal and power connectors to the diskette drive.
5. Plug in the power cords and wait for "01" in the upper-left corner of the operator panel display.
6. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux

or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.

7. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. Diskette drive
2. Diskette drive cable
3. System backplane

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem return, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-550-15.

• **PFW1548-550-15**

The system is working correctly with this configuration. One of the devices that was disconnected from the system backplane may be defective.

1. Turn off the power and remove the power cords
2. Attach a system backplane device (for example: parallel, system port 1, system port 2, system port 3, keyboard, mouse, Ethernet, Ultra-2 SCSI) that had been removed.
3. Plug in the power cords and wait for "01" in the upper-left corner on the operator panel display.
4. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
5. If the Console Selection screen is displayed, choose the system console.
6. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO The last device or cable that you attached is defective.

To test each FRU, exchange the FRUs in the following order:

1. Device and cable (last one attached)
2. System backplane

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom. Go to MAP 0410: Repair Checkout.

YES Repeat this step until all of the devices are attached. Go to PFW1548-550-16.

- **PFW1548-550-16**

The system is working correctly with this configuration. One of the FRUs (adapters) that you removed may be defective.

1. Turn off the power and remove the power cords.
2. Install a FRU (adapter) and connect any cables and devices that were attached to the FRU.
3. Plug in the power cords and wait for the OK prompt to display on the operator panel display.
4. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
5. If the Console Selection screen is displayed, choose the system console.
6. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Go to PFW1548-550-17.

YES Repeat this step until all of the FRUs (adapters) are installed. Go to MAP 0410: Repair Checkout.

- **PFW1548-550-17**

The last FRU installed or one of its attached devices is probably defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Starting with the last installed adapter, disconnect one attached device and cable.
4. Plug in the power cords and wait for the "01" in the upper-left corner on the operator panel display.
5. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
6. If the Console Selection screen is displayed, choose the system console.
7. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Repeat this step until the defective device or cable is identified or all devices and cables have been disconnected.

If all the devices and cables have been removed, then one of the FRUs remaining in the system unit is defective.

To test each FRU, exchange the FRUs in the following order:

1. Adapter (last one installed)
2. System backplane

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES The last device or cable that you disconnected is defective. Exchange the defective device or cable. Go to MAP 0410: Repair Checkout.

- **PFW1548-550-18**

1. Follow the instructions on the screen to select the system console.
2. When the DIAGNOSTIC OPERATING INSTRUCTIONS screen is displayed, press Enter.
3. Select Advanced Diagnostics Routines.
4. If the terminal type has not been defined, you must use the initialize terminal option on the FUNCTION SELECTION menu to initialize the AIX diagnostic environment before you can continue with the diagnostics. This is a separate operation from selecting the console display.
5. If the NEW RESOURCE screen is displayed, select an option from the bottom of the screen.

Note: Adapters and devices that require supplemental media are not shown in the new resource list. If the system has adapters or devices that require supplemental media, select option 1.

6. When the DIAGNOSTIC MODE SELECTION screen is displayed, press Enter.
7. Select All Resources. (If you were sent here from step PFW1548550-21, select the adapter or device that was loaded from the supplemental media).

Did you get an SRN?

NO Go to PFW1548-550-20.

YES Go to PFW1548-550-19.

- **PFW1548-550-19**

Look at the FRU part numbers associated with the SRN.

Have you exchanged all the FRUs that correspond to the failing function codes (FFCs)?

NO Exchange the FRU with the highest failure percentage that has not been changed.

Repeat this step until all the FRUs associated with the SRN have been exchanged or diagnostics run with no trouble found. Run diagnostics after each FRU is exchanged. Go to MAP 0410: Repair Checkout.

YES If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

- **PFW1548-550-20**

Does the system have adapters or devices that require supplemental media?

NO Go to PFW1548-550-22.

YES Go to PFW1548-550-21.

- **PFW1548-550-21**

Consult the PCI adapter configuration documentation for your operating system to verify that all adapters are configured correctly. Go to MAP 0410: Repair Checkout.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

- **PFW1548-550-22**

1. Select Task Selection.
2. Select Process Supplemental Media and follow the on screen instructions to process the media. Supplemental media must be loaded and processed one at a time.

Did the system return to the TASKS SELECTION SCREEN after the supplemental media was processed?

NO Go to PFW1548-550-23.

YES Press F3 to return to the FUNCTION SELECTION screen. Go to step 4.

- **PFW1548-550-23**

The adapter or device is probably defective.

If the supplemental media is for an adapter, replace the FRUs in the following order:

1. Adapter
2. System backplane

If the supplemental media is for a device, replace the FRUs in the following order:

1. Device and any associated cables
2. The adapter to which the device is attached

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom. Go to MAP 0410: Repair Checkout.

End of procedure.

PFW1548-550: Processor subsystem problem isolation procedure for models 550, 55A, and OpenPower 720 without an HMC attached

Use this problem isolation procedure to aid in solving memory and processor problems on 550, 55A, and OpenPower 720 models that are not attached to an HMC.

- **PFW1548-550-1a**

1. Insure that the diagnostics and the operating system(s) are shut down.
2. Turn on the power.
3. Insert the AIX diagnostic CD-ROM into the optical drive.

Note: If you cannot insert the diagnostic CD-ROM, go to PFW1548-550-2a.

4. When the keyboard indicator is displayed on the system console:
 - On an ASCII terminal or directly-attached keyboard, press the number 5 key.
5. If you are prompted to do so, enter the appropriate password.

Is the "Please define the System Console" screen displayed?

NO Go to step PFW1548-550-2a.

YES Go to step PFW1548-550-17a.

- **PFW1548-550-2a**

1. Turn on the power.
2. If you have not already done so, configure the service processor (using the ASMI menus) with the instructions in note 6 at the beginning of this MAP, then return here and continue.
3. Exit the service processor (ASMI) menus and remove the power cords.
4. Disconnect all external cables (parallel, system port 1, system port 2, keyboard, mouse, Ethernet on the system planar, Ethernet on the service processor [if present], and so on).
5. Remove the service access cover (model xxx), or place the drawer (model yyy), into the service position and remove the service access cover.
6. Record the slot numbers of the PCI adapters. Label and record the locations of all cables attached to the adapters. Disconnect all cables attached to the adapters and remove all of the adapters.
7. Disconnect all of the power and signal cables from the media drives located in the media bay.
8. Remove the media drives.

9. Remove processor card #2 (if installed). If processor card #2 is removed, insure that processor card #1 is installed and contains at least one pair of DIMMs.
10. Record the slot numbers of the memory DIMMs on processor card #1. Remove all memory DIMMs except for one pair from processor card #1.

Notes:

- a. Place the memory DIMM locking tabs in the locked (upright) position to prevent damage to the tabs.
 - b. Memory DIMMs must be installed in pairs and in the correct connectors. Refer to "Memory DIMM Locations" for information on memory DIMMs.
11. Disconnect the IDE cable from the IDE connector on the system backplane.
 12. If the system is equipped with a diskette drive, disconnect the diskette drive cable from the diskette drive connector on the system backplane.
 13. Disconnect the signal and power connectors from both disk drive backplanes.
 14. Disconnect the disk drives from both disk drive backplanes.
 15. Plug in the power cords and wait for "01" in the upper-left-hand corner of the control panel display.
 16. Turn on the power.

Does the system stop with B1xxF22A, CA00E1F2, CA00E1F3, or STBY displayed on the control panel?

NO Go to step PFW1548-550-6a.

YES Go to step PFW1548-550-3a.

• **PFW1548-550-3a**

Were any memory DIMMs removed from processor card #1?

NO Go to step PFW1548-550-8a.

YES Go to step PFW1548-550-4a.

• **PFW1548-550-4a**

1. Turn off the power, and remove the power cords.
2. Replug the memory DIMMs that were removed from processor card #1 in step PFW1548-550-2a in their original locations.

Notes:

- a. Place the memory DIMM locking tabs into the locked (upright) position to prevent damage to the tabs.
 - b. Memory DIMMs must be installed in pairs in the correct connectors. Refer to "Memory DIMM Locations" for information on memory DIMMs.
3. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
 4. Turn on the power.

Does the system stop with B1xxF22A, CA00E1F2, CA00E1F3, or STBY displayed on the control panel?

NO A memory DIMM in the pair you just replaced in the system is defective. Turn off the power, remove the power cords, and exchange the memory DIMMs in that pair one at a time with new or previously removed memory DIMMs. Repeat this step until the defective memory DIMM is identified, or all memory DIMMs have been exchanged.

If your symptom did not change and all the memory DIMMs have been exchanged, call your service support person for assistance.

If the symptom changed, check for loose cards and obvious problems.

If you do not find a problem, go to the Start-of-Call MAP and follow the instructions for the new symptom.

YES Go to PFW1548-550-5a.

- **PFW1548-550-5a**

Was processor card #2 removed from the system?

NO Go to step PFW1548-550-8a.

YES Go to step PFW1548-550-7a.

- **PFW1548-550-6a**

One of the FRUs remaining in the system unit is defective.

Note: If a memory DIMM is exchanged, insure that the new memory DIMM is the same size and speed as the original memory DIMM.

1. Turn off the power, remove the power cords, and exchange the following FRUs in the order listed:
 - a. Memory DIMMs. Exchange one at a time with new or previously removed DIMMs
 - b. Processor card #1
 - c. System backplane
 - d. Power supplies.
2. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
3. Turn on the power.

Does the system stop with B1xxF22A, CA00E1F2, CA00E1F3, or STBY displayed on the control panel?

NO Reinstall the original FRU. Repeat the FRU replacement steps until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to MAP 0410: Repair Checkout.

- **PFW1548-550-7a**

No failure was detected with this configuration.

1. Turn off the power and remove the power cords.
2. Reinstall processor card #2.
3. Plug in the power cords and wait for "01" in the upper-left-hand corner of the operator panel display.
4. Turn on the power.

Does the system stop with B1xxF22A, CA00E1F2, CA00E1F3, or STBY displayed on the operator panel?

NO One of the FRUs remaining in the system is defective.

Exchange the FRUs (that have not already been changed) in the following order:

1. Memory DIMMs (if present) on processor card #2. Exchange the DIMMs one at a time with new or previously removed DIMMs.
2. Processor card #2
3. System backplane

Repeat the FRU replacement steps until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to step PFW1548-550-8a.

• **PFW1548-550-8a**

1. Turn off the power.
2. Reconnect the system console.
 - a. If an ASCII terminal has been defined as the firmware console, attach the ASCII terminal cable to the S1 connector on the rear of the system unit.
 - b. If a display attached to a display adapter has been defined as the firmware console, install the display adapter and connect the display to the adapter. Plug the keyboard and mouse into the keyboard connector on the rear of the system unit.
3. Turn on the power.
4. If the ASCII terminal or graphics display (including display adapter) is connected differently from the way it was previously, the console selection screen appears. Select a firmware console.
5. When the word keyboard is displayed, press the number 1 key on the directly attached keyboard, an ASCII terminal or HMC. This activates the system management services (SMS).
6. Enter the appropriate password if you are prompted to do so.

Is the SMS screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. If you are using an ASCII terminal, go to the problem determination procedures for the display. If you do not find a problem, replace the system backplane, location Un-P1.
2. If you are using a graphics display, go to the problem determination procedures for the display.

If you do not find a problem, do the following:

- Replace the display adapter.
- Replace the backplane in which the graphics adapter is plugged.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-550-9a.

• **PFW1548-550-9a**

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Plug the IDE cable into the IDE connector on the system backplane.
4. Connect the signal and power connectors to the IDE optical drive.
5. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
6. Turn on the power.

7. Insert the diagnostic CD-ROM into the optical drive.
8. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.
9. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. IDE cable
2. Optical drive
3. Media backplane
4. System backplane

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-550-10a.

• **PFW1548-550-10a**

The system is working correctly with this configuration. One of the SCSI devices that was disconnected may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Plug the SCSI cable into the SCSI connector on the system backplane.
4. Connect the signal and power connectors to one of the SCSI devices if present (a SCSI LVD tape device in media bay #1, for example). Do not connect the signal and power connectors to the disk drive backplane at this time.
5. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
6. Turn on the power.
7. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. SCSI cable
2. Last SCSI device connected (for example, tape drive)
3. System backplane

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES

Repeat this step, adding one SCSI device at a time, until all the SCSI devices that were attached to the integrated SCSI adapter, except the disk drive backplanes, are connected and tested. Go to PFW1548-550-11a.

- **PFW1548-550-11a**

The system is working correctly with this configuration. One of the disk drive backplanes may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Connect the signal and power connectors to one of the disk drive backplanes.
4. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
5. Turn on the power.
6. If the Console Selection screen is displayed, choose the system console.
7. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. SCSI cable
2. Disk drive backplane

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES If both disk drive backplanes have been reconnected, go to PFW1548-550-12a. Otherwise, repeat PFW1548-550-11a for the other disk drive backplane if present.

- **PFW1548-550-12a**

The system is working correctly with this configuration. One of the disk drives that you removed from the disk drive backplanes may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Install a disk drive in a disk drive backplane.
4. Plug in the power cords and wait for the OK prompt to display on the control panel display.
5. Turn on the power.
6. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Exchange the FRUs that have not been exchanged, in the following order:

1. Last disk drive installed
2. Disk drive backplane where the disk drive was installed

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged. If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Repeat this step with all disk drives that were installed in the disk drive backplanes.

If the system has a diskette drive, go to PFW1548-550-13a, if not go to PFW1548-550-14a.

• **PFW1548-550-13a**

The system is working correctly with this configuration. The diskette drive may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Plug the diskette drive cable into the diskette drive connector on the system backplane.
4. Connect the signal and power connectors to the diskette drive.
5. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
6. Turn on the power.
7. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. Diskette drive
2. Diskette drive cable
3. System backplane

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged. If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem return, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-550-14a.

• **PFW1548-550-14a**

The system is working correctly with this configuration. One of the devices that was disconnected from the system backplane may be defective.

1. Turn off the power and remove the power cords.
2. Attach a system backplane device (for example: parallel, system port 1, system port 2, system port 3, keyboard, mouse, Ethernet, Ultra-2 SCSI, keyboard or mouse) that had been removed.
3. Plug in the power cords and wait for "01" in the upper-left corner on the control panel display.
4. Turn on the power.
5. If the Console Selection screen is displayed, choose the system console.
6. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO The last device or cable that you attached is defective.

To test each FRU, exchange the FRUs in the following order:

1. Device and cable (last one attached)
2. System backplane

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged. If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem return, go to the Start-of-call procedure and follow the instructions for the new symptom.

Go to MAP 0410: Repair Checkout.

YES Repeat this step until all of the devices are attached. Go to PFW1548-550-15a.

• **PFW1548-550-15a**

The system is working correctly with this configuration. One of the FRUs (adapters) that you removed may be defective.

1. Turn off the power and remove the power cords.
2. Install a FRU (adapter) and connect any cables and devices that were attached to the FRU.
3. Plug in the power cords and wait for the OK prompt to display on the control panel display.
4. Turn on the power.
5. If the Console Selection screen is displayed, choose the system console.
6. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Go to PFW1548-550-16a.

YES Repeat this step until all of the FRUs (adapters) are installed. Go to MAP 0410: Repair Checkout.

• **PFW1548-550-16a**

The last FRU installed or one of its attached devices is probably defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Starting with the last installed adapter, disconnect one attached device and cable.
4. Plug in the power cords and wait for the "01" in the upper-left corner on the control panel display.
5. Turn on the power.
6. If the Console Selection screen is displayed, choose the system console.
7. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Repeat this step until the defective device or cable is identified or all devices and cables have been disconnected.

If all the devices and cables have been removed, then one of the FRUs remaining in the system unit is defective.

To test each FRU, exchange the FRUs in the following order:

1. Adapter (last one installed)
2. System backplane

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES The last device or cable that you disconnected is defective. Exchange the defective device or cable. Go to MAP 0410: Repair Checkout.

- **PFW1548-550-17a**

1. Follow the instructions on the screen to select the system console.
2. When the DIAGNOSTIC OPERATING INSTRUCTIONS screen is displayed, press Enter.
3. Select Advanced Diagnostics Routines.
4. If the terminal type has not been defined, you must use the initialize terminal option on the FUNCTION SELECTION menu to initialize the AIX diagnostic environment before you can continue with the diagnostics. This is a separate operation from selecting the console display.
5. If the NEW RESOURCE screen is displayed, select an option from the bottom of the screen.

Note: Adapters and devices that require supplemental media are not shown in the new resource list. If the system has adapters or devices that require supplemental media, select option 1.

6. When the DIAGNOSTIC MODE SELECTION screen is displayed, press Enter.
7. Select All Resources. (If you were sent here from PFW1548-550-21a, select the adapter or device that was loaded from the supplemental media).

Did you get an SRN?

NO Go to PFW1548-550-19a.

YES Go to PFW1548-550-18a.

- **PFW1548-550-18a**

Look at the FRU part numbers associated with the SRN.

Have you exchanged all the FRUs that correspond to the failing function codes (FFCs)?

NO Exchange the FRU with the highest failure percentage that has not been changed.

Repeat this step until all the FRUs associated with the SRN have been exchanged or diagnostics run with no trouble found. Run diagnostics after each FRU is exchanged. Go to MAP 0410: Repair Checkout.

YES If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

- **PFW1548-550-19a**

Does the system have adapters or devices that require supplemental media?

NO Go to PFW1548-550-20a.

YES Go to PFW1548-550-21a.

- **PFW1548-550-20a**

Consult the PCI adapter configuration documentation for your operating system to verify that all adapters are configured correctly. Go to MAP 0410: Repair Checkout.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

- **PFW1548-550-21a**

1. Select Task Selection.
2. Select Process Supplemental Media and follow the on screen instructions to process the media. Supplemental media must be loaded and processed one at a time.

Did the system return to the TASKS SELECTION SCREEN after the supplemental media was processed?

NO Go to PFW1548-550-22a.

YES Press F3 to return to the FUNCTION SELECTION screen. Go to step 4.

- **PFW1548-550-22a**

The adapter or device is probably defective.

If the supplemental media is for an adapter, replace the FRUs in the following order:

1. Adapter
2. System backplane

If the supplemental media is for a device, replace the FRUs in the following order:

1. Device and any associated cables
2. The adapter to which the device is attached

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems.

If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom. Go to MAP 0410: Repair Checkout.

End of procedure.

PFW1548-570: Processor subsystem problem isolation procedure for models 561 and 570

Use this problem isolation procedure to aid in solving memory and processor problems on 575 models.

- **PFW1548-570-1**

1. Insure that the diagnostics and the operating system are shut down.

Is the system at "service processor standby", indicated by "01" in the control panel?

NO Replace the service processor card, location: Un-P1-C8. Return to step PFW1548-570-1.

YES Continue with substep 2.

2. Turn on the power using either the white button or the HMC.

Does the managed system reach power on at hypervisor standby as indicated on the HMC?

NO Go to PFW1548-570-3.

YES Go to PFW1548-570-2.

3. Insert the AIX diagnostic CD-ROM into the optical drive.

Note: If you cannot insert the diagnostic CD-ROM, go to PFW1548-570-2.

4. When the keyboard indicator is displayed on an ASCII terminal, a directly-attached keyboard, or hardware management console (HMC), press the number 5 key.
5. If you are prompted to do so, enter the appropriate password.

Is the Please define the System Console screen displayed?

NO Go to PFW1548-570-2.

YES Go to PFW1548-570-17.

- **PFW1548-570-2**

Insert the AIX diagnostic CD-ROM into the optical drive.

Note: If you cannot insert the diagnostic CD-ROM, go to step PFW1548-570-3.

Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.

If you are prompted to do so, enter the appropriate password.

Is the "Please define the System Console" screen displayed?

NO Go to PFW1548-570-3.

YES Go to PFW1548-570-24.

• **PFW1548-570-3**

1. Turn off the power.
2. If you have not already done so, configure the service processor (using the ASMI menus) with the instructions in note 6 at the beginning of this procedure, then return here and continue.
3. Exit the service processor (ASMI) menus and remove the power cords.
4. Disconnect all external cables (parallel, system port 1, system port 2, keyboard, mouse, USB devices, SPCN, Ethernet on the system planar, and so on). Also disconnect all of the external cables attached to the service processor except the Ethernet cable going to the HMC.

Is there more than one processor drawer in the system?

NO Go to PFW 1548-570-5.

YES Go to PFW1548-570-4.

• **PFW1548-570-4**

Disconnect the flex cables from the front and the back of the all processor drawers if not already disconnected.

Does the processor drawer with the service processor card power on OK?

NO Go to PFW 1548-570-5.

YES Go to PFW1548-570-20.

• **PFW1548-570-5**

1. Place the drawer into the service position and remove the service access cover.
2. Record the slot numbers of the PCI adapters. Label and record the locations of all cables attached to the adapters. Disconnect all cables attached to the adapters and remove all of the adapters.
3. Disconnect all of the power and signal cables from the media drives located in the media bay.
4. Remove the media drives.
5. Remove processor card #2 (if installed). If processor card #2 is removed, insure that processor card #1 is installed and contains at least one quad of DIMMs.
6. Record the slot numbers of the memory DIMMs on processor card #1. Remove all memory DIMMs except for one quad from processor card #1.

Notes:

- a. Place the memory DIMM locking tabs in the locked (upright) position to prevent damage to the tabs.
 - b. Memory DIMMs must be installed in quads and in the correct connectors. Refer to Memory DIMM locations for information on memory DIMMs.
7. Disconnect the IDE cable from the IDE connector on the system backplane.
 8. Disconnect the signal and power connectors from the disk drive backplane.
 9. Disconnect the disk drives from the disk drive backplane.
 10. Plug in the power cords and wait for "01" in the upper-left-hand corner of the control panel display.

11. Turn on the power using either the HMC or the white button.

Does the managed system reach power on at hypervisor standby as indicated on the HMC?

NO Go to PFW1548-570-9.

YES Go to PFW1548-570-6.

- **PFW1548-570-6**

Were any memory DIMMs removed from processor card #1?

NO Go to PFW1548-570-11.

YES Go to PFW1548-570-7.

- **PFW1548-570-7**

1. Turn off the power, and remove the power cords.
2. Replug the memory DIMMs that were removed from processor card #1 in PFW1548-570-2 in their original locations.

Notes:

- a. Place the memory DIMM locking tabs into the locked (upright) position to prevent damage to the tabs.
 - b. Memory DIMMs must be installed in quads in the correct connectors. Refer to Memory DIMM locations for information on memory DIMMs.
3. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
 4. Turn on the power using either the HMC or the white button.

Does the managed system reach power on at hypervisor standby as indicated on the HMC?

NO A memory DIMM in the quad you just replaced in the system is defective. Turn off the power, remove the power cords, and exchange the memory DIMMs in that quad one at a time with new or previously removed memory DIMMs. Repeat this step until the defective memory DIMM is identified, or all memory DIMMs have been exchanged.

If your symptom did not change and all the memory DIMMs have been exchanged, call your service support person for assistance.

If the symptom changed, check for loose cards and obvious problems. If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-570-8.

- **PFW1548-570-8**

Was processor card #2 removed from the system?

NO Go to PFW1548-570-10.

YES Go to PFW1548-570-9.

- **PFW1548-570-9**

One of the FRUs remaining in the system unit is defective.

Note: If a memory DIMM is exchanged, insure that the new memory DIMM is the same size and speed as the original memory DIMM.

1. Turn off the power, remove the power cords, and exchange the following FRUs in the order listed:
 - a. Memory DIMMs. Exchange one at a time with new or previously removed DIMMs
 - b. Processor card #1, location: Un-P2-C1.
 - c. Processor backplane, location: Un-P2
 - d. Power supplies, locations: Un-E1 and Un-E2.
 - e. Processor regulators, locations: Un-P2-C3, Un-P2-C4, Un-P2-C5.

- f. Service processor, location: Un-P1-C8.
 - g. I/O backplane, location: Un-P1.
2. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
 3. Turn on the power using either the HMC or the white button.

Does the managed system reach power on at hypervisor standby as indicated on the HMC?

NO Reinstall the original FRU.

Repeat the FRU replacement steps until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to MAP 0410: Repair Checkout.

• **PFW1548-570-10**

No failure was detected with this configuration.

1. Turn off the power and remove the power cords.
2. Reinstall processor card #2.
3. Plug in the power cords and wait for "01" in the upper-left corner of the control panel display.
4. Turn on the power using either the HMC or the white button.

Does the managed system reach power on at hypervisor standby as indicated on the HMC?

NO One of the FRUs remaining in the system is defective.

Exchange the FRUs (that have not already been changed) in the following order:

1. Memory DIMMs (if present) on processor card #2. Exchange the DIMMs one at a time with new or previously removed DIMMs.
2. Processor card #2
3. Processor backplane, location: Un-P2.
4. Power supplies, locations: Un-E1 and Un-E2.
5. Processor regulators, locations: Un-P2-C3, Un-P2-C4, Un-P2-C5.
6. Service processor, location: Un-P1-C8.
7. I/O backplane, location: Un-P1.

Repeat the FRU replacement steps until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-570-11.

• **PFW1548-570-11**

1. Turn off the power.
2. Reconnect the system console.

Notes:

- a. If an ASCII terminal has been defined as the firmware console, attach the ASCII terminal cable to the S1 connector on the rear of the system unit.
 - b. If a display attached to a display adapter has been defined as the firmware console, install the display adapter and connect the display to the adapter. Plug the keyboard and mouse into the keyboard connector on the rear of the system unit.
3. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
4. If the ASCII terminal or graphics display (including display adapter) is connected differently from the way it was previously, the console selection screen appears. Select a firmware console.
5. When the word keyboard is displayed, press the number 1 key on the directly attached keyboard, an ASCII terminal or HMC. This activates the system management services (SMS).
6. Enter the appropriate password if you are prompted to do so.

Is the SMS screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. If you are using an ASCII terminal, go to the problem determination procedures for the display. If you do not find a problem, do the following:
 - a. Replace the service processor, location: Un-P1-C8.
 - b. Replace the I/O backplane, location: Un-P1.
2. If you are using a graphics display, go to the problem determination procedures for the display. If you do not find a problem, do the following:
 - a. Replace the display adapter.
 - b. Replace the backplane in which the graphics adapter is plugged.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom changed, check for loose cards, cables, and obvious problems. If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-570-12.

• **PFW1548-570-12**

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Plug the IDE cable into the IDE connector on the system backplane.
4. Connect the signal and power connectors to the IDE optical drive.
5. Plug in the power cords and wait for "01" in the upper-left corner of the operator panel display.
6. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
7. Insert the diagnostic CD-ROM into the optical drive.
8. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.

9. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. IDE cable
2. Optical drive
3. Media backplane, Un-P3.
4. I/O backplane, Un-P1.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-570-13.

• **PFW1548-570-13**

The system is working correctly with this configuration. One of the SCSI devices that was disconnected may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Plug the SCSI cable into the SCSI connector on the system backplane.
4. Connect the signal and power connectors to one of the SCSI devices if present (a SCSI LVD tape device in media bay #1, for example). Do not connect the signal and power connectors to the disk drive backplane at this time.
5. Plug in the power cords and wait for "01" in the upper-left corner of the operator panel display.
6. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
7. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. SCSI cable
2. Last SCSI device connected (for example, tape drive)
3. I/O backplane, location: Un-P1.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Repeat this step, adding one SCSI device at a time, until all the SCSI devices that were attached to the integrated SCSI adapter, except the disk drive backplanes, are connected and tested. Go to PFW1548-570-14.

• **PFW1548-570-14**

The system is working correctly with this configuration. One of the disk drive backplanes may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Connect the signal and power connectors to the disk drive backplane.
4. Plug in the power cords and wait for "01" in the upper-left corner of the operator panel display.
5. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
6. If the Console Selection screen is displayed, choose the system console.
7. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system unit is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. SCSI cable
2. SCSI backplane, location: Un-P3.
3. I/O backplane, location: Un-P1.

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES If both disk drive backplanes have been reconnected, go to PFW1548-570-13. Otherwise, repeat PFW1548-570-12 for the other disk drive backplane if present.

• **PFW1548-570-15**

The system is working correctly with this configuration. One of the disk drives that you removed from the disk drive backplanes may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Install a disk drive in a disk drive backplane.
4. Plug in the power cords and wait for the OK prompt to display on the operator panel display.
5. Turn on the power.
6. After the word keyboard is displayed, press the number 5 key on either the directly attached keyboard or an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Exchange the FRUs that have not been exchanged, in the following order:

1. Last disk drive installed
2. Disk drive backplane where the disk drive was installed

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Repeat this step with all disk drives that were installed in the disk drive backplanes.

If the system has an internal diskette drive, go to PFW1548-570-14, if not go to PFW1548-570-15.

• **PFW1548-570-16**

The system is working correctly with this configuration. The diskette drive may be defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.
2. Turn off the power and remove the power cords.
3. Plug the diskette drive cable into the diskette drive connector on the system backplane.
4. Connect the signal and power connectors to the diskette drive.
5. Plug in the power cords and wait for "01" in the upper-left corner of the operator panel display.
6. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
7. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO One of the FRUs remaining in the system is defective.

Exchange the FRUs that have not been exchanged, in the following order:

1. Diskette drive
2. Diskette drive cable
3. System backplane

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged. If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem return, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Go to PFW1548-570-17.

• **PFW1548-570-17**

The system is working correctly with this configuration. One of the devices that was disconnected from the system backplane may be defective.

1. Turn off the power and remove the power cords.
2. Attach a system backplane device (for example: system port 1, system port 2, USB, keyboard, mouse, Ethernet, SCSI) that had been removed.

After all of the I/O backplane device cables have been reattached, reattach the cables to the service processor one at a time.

3. Plug in the power cords and wait for "01" in the upper-left corner on the operator panel display.
4. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
5. If the Console Selection screen is displayed, choose the system console.
6. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO The last device or cable that you attached is defective.

To test each FRU, exchange the FRUs in the following order:

1. Device and cable (last one attached)
2. If the last cable in this step was reconnected to the service processor, replace the service processor.
3. I/O backplane, location: Un-P1.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES Repeat this step until all of the devices are attached. Go to PFW1548-570-18.

• **PFW1548-570-18**

The system is working correctly with this configuration. One of the FRUs (adapters) that you removed may be defective.

1. Turn off the power and remove the power cords.
2. Install a FRU (adapter) and connect any cables and devices that were attached to the FRU.
3. Plug in the power cords and wait for the OK prompt to display on the operator panel display.
4. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
5. If the Console Selection screen is displayed, choose the system console.
6. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
7. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Go to PFW1548-570-19.

YES Repeat this step until all of the FRUs (adapters) are installed. Go to MAP 0410: Repair Checkout.

• **PFW1548-570-19**

The last FRU installed or one of its attached devices is probably defective.

1. Make sure the diagnostic CD-ROM is inserted into the optical drive.

2. Turn off the power and remove the power cords.
3. Starting with the last installed adapter, disconnect one attached device and cable.
4. Plug in the power cords and wait for the "01" in the upper-left corner on the operator panel display.
5. Turn on the power using either the HMC or the white button. (If the diagnostic CD-ROM is not in the optical drive, insert it now.) After the system has reached hypervisor standby, activate a Linux or AIX partition by clicking on the "Advanced" button on the activation screen. On the "advanced" activation screen, select "boot in service mode using the default boot list" to boot the diagnostic CD-ROM.
6. If the Console Selection screen is displayed, choose the system console.
7. After the word keyboard displays, press the number 5 key on either the directly attached keyboard or on an ASCII terminal keyboard.
8. Enter the appropriate password if you are prompted to do so.

Is the Please define the System Console screen displayed?

NO Repeat this step until the defective device or cable is identified or all devices and cables have been disconnected.

If all the devices and cables have been removed, then one of the FRUs remaining in the system unit is defective.

To test each FRU, exchange the FRUs in the following order:

1. Adapter (last one installed)
2. I/O backplane, location: Un-P1.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

YES The last device or cable that you disconnected is defective. Exchange the defective device or cable then go to PFW1548-570-20.

• **PFW1548-570-20**

Reattach the flex cables, if present, both front and back. Return the system to its original configuration. Reinstall the control panel, the anchor card, and the FSP in the original primary processor drawer. Reattach the power codes. Power on the system.

Does the system come up properly?

NO Go to PFW1548-570-21.

YES Go to MAP 0410: Repair Checkout.

• **PFW1548-570-21**

Have all of the drawers been tested individually with the physical control panel (if present), FSP, and anchor card?

NO

1. Detach the flex cables from the front and back of the system if not already disconnected.
2. Remove the service processor card, the VPD card, and the control panel from the processor drawer that was just tested.
3. Install these parts in the next drawer in the rack, going top to bottom.
4. Go to step PFW1548-570-3.

YES Reinstall the control panel, the anchor card, and the service processor card in the original primary processor drawer. Return the system to its original configuration.

Suspect a problem with the flex cables. If the error code indicates a problem with the SPCN or service processor communication between drawers, replace the flex cable in the rear. If the error code indicates a problem with inter-processor drawer communication, replace the flex cable on the front of the system.

Did replacing the flex cable(s) resolve the problem?

NO Go to step PFW1548-570-23.

YES The problem is resolved. Go to MAP 0410: Repair Checkout.

- **PFW1548-570-22**

This step is reserved.

- **PFW1548-570-23**

Replacing the flex cables did not resolve the problem. If the problem appears to be with the FSP or SPCN signals, suspect the I/O backplanes. If the problem appears to be with processor communication, suspect the processor cards.

Replace the I/O backplanes, or processor cards, one at a time until the defective part is found.

Did this resolve the problem?

NO Contact your next level of support.

YES The problem is resolved. Go to MAP 0410: Repair Checkout.

- **PFW1548-570-24**

1. Follow the instructions on the screen to select the system console.
2. When the DIAGNOSTIC OPERATING INSTRUCTIONS screen is displayed, press Enter.
3. Select Advanced Diagnostics Routines.
4. If the terminal type has not been defined, you must use the initialize terminal option on the FUNCTION SELECTION menu to initialize the AIX diagnostic environment before you can continue with the diagnostics. This is a separate operation from selecting the console display.
5. If the NEW RESOURCE screen is displayed, select an option from the bottom of the screen.

Note: Adapters and devices that require supplemental media are not shown in the new resource list. If the system has adapters or devices that require supplemental media, select option 1.

6. When the DIAGNOSTIC MODE SELECTION screen is displayed, press Enter.
7. Select All Resources. (If you were sent here from step 1548-25, select the adapter or device that was loaded from the supplemental media).

Did you get an SRN?

NO Go to step PFW1548-570-26.

YES Go to step PFW1548-570-25.

- **PFW1548-570-25**

Look at the FRU part numbers associated with the SRN.

Have you exchanged all the FRUs that correspond to the failing function codes (FFCs)?

NO Exchange the FRU with the highest failure percentage that has not been changed.

Repeat this step until all the FRUs associated with the SRN have been exchanged or diagnostics run with no trouble found. Run diagnostics after each FRU is exchanged. Go to MAP 0410: Repair Checkout.

YES If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

- **PFW1548-570-26**

Does the system have adapters or devices that require supplemental media?

NO Go to step PFW1548-570-27.

YES Go to step PFW1548-570-28.

- **PFW1548-570-27**

Consult the PCI adapter configuration documentation for your operating system to verify that all adapters are configured correctly.

Go to MAP 0410: Repair Checkout.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

- **PFW1548-570-28**

1. Select Task Selection.

2. Select Process Supplemental Media and follow the on-screen instructions to process the media. Supplemental media must be loaded and processed one at a time.

Did the system return to the TASKS SELECTION SCREEN after the supplemental media was processed?

NO Go to step PFW1548-570-29.

YES Press F3 to return to the FUNCTION SELECTION screen. Go to step PFW1548-570-24, substep 4 on page 573.

- **PFW1548-570-29**

The adapter or device is probably defective.

If the supplemental media is for an adapter, replace the FRUs in the following order:

1. Adapter
2. I/O backplane, location: Un-P1.

If the supplemental media is for a device, replace the FRUs in the following order:

1. Device and any associated cables
2. The adapter to which the device is attached

Repeat this step until the defective FRU is identified or all the FRUs have been exchanged.

If the symptom did not change and all the FRUs have been exchanged, call service support for assistance.

If the symptom has changed, check for loose cards, cables, and obvious problems. If you do not find a problem, go to the Start-of-call procedure and follow the instructions for the new symptom.

Go to MAP 0410: Repair Checkout.

End of procedure.

PFW1548-575: Processor subsystem problem isolation procedure for model 575

Use this problem isolation procedure to aid in solving memory and processor problems on 575 models.

- **PFW1548-575-1**

Record the error code and the location code(s) that sent you to this MAP.

Note: When you are directed to turn power off or turn power on in this procedure, follow the instructions in Powering the System On and Off.

- **PFW1548-575-2**

Turn off the power. Examine the green power-in LED on the processor subsystem DCA.

- **PFW1548-575-3**

Is the green power-in LED on the processor subsystem DCA off?

NO Call for service support.

YES Go to PFW1548-575-4.

- **PFW1548-575-4**

Replace the following cards and modules, if present, one at a time:

- First location code item recorded, if any, in PFW1548-575-1.
- Second location code item recorded, if any, in PFW1548-575-1.
- Third location code item recorded, if any, in PFW1548-575-1.

- **PFW1548-575-5**

Turn on the power.

Did the system stop with the same error code as recorded in PFW1548-575-1?

NO The card or module just replaced was defective. This ends the procedure. Return the system to its original configuration. Go to MAP 0410: Repair Checkout.

YES Go to PFW1548-575-6.

- **PFW1548-575-6**

Have all the cards or modules listed in PFW1548-575-4 been replaced?

NO Go to PFW1548-575-2.

YES Go to PFW1548-575-7.

- **PFW1548-575-7**

Turn off the power. Remove all but one of the quads of DIMMs plugged into the system planar. (Leave 4 DIMMs in the first 4 slots associated with one processor.)

- **PFW1548-575-8**

Turn on the power.

Did the system stop with the same error code as recorded in PFW1548-575-1?

NO If there are more DIMMs that have not been reinstalled, turn off the power, reinstall another quad of DIMMs, then go to PFW1548-575-9.

If all of the DIMMs have been reinstalled, go to PFW1548-575-11.

YES Go to PFW1548-575-9.

- **PFW1548-575-9**

Replace the remaining quad of DIMMs one DIMM at a time. After each DIMM is replaced, turn on the power.

Did the system stop with the same error code as recorded in PFW1548-575-1?

NO The DIMM you replaced was defective. Return the system to its original configuration, then go to MAP 0410: Repair Checkout.

YES **Have all 4 DIMMs in the remaining quad been replaced?**

NO Go to PFW1548-575-9.

YES Go to PFW1548-575-10.

NO Call for service support.

- **PFW1548-575-10**

Attention: Before replacing the system backplane, call for service support.

- **PFW1548-575-11**

Turn on the power.

- **PFW1548-575-12**

Did the system stop with the same error code as recorded in PFW1548-575-1?

NO The part just replaced was defective. This ends the procedure. Return the system to its original configuration. Go to MAP 0410: Repair Checkout.

YES Go to PFW1548-575-13.

- **PFW1548-575-13**

Turn off the power. Insure that the green power-in LED on the processor subsystem DCA is off. Go to PFW1548-575-14.

- **PFW1548-575-14**

Call for service support. This ends the procedure.

PFW1549: Model 561 and Model 570 multiple-drawer server problem isolation

Power-on and boot-time failures on multiple-drawer Model 561 and Model 570 servers (where the server is made up of two or more drawers that are connected by SMP and service processor flex cables) can be difficult to isolate.

Most failures are due to incorrectly seated service processor or SMP flex cables; however a failure could be caused by the flex connectors or the logic components on an I/O backplane or processor card.

If a multiple-drawer server managed by an HMC fails to reach the power standby state when power is applied, or a multiple-drawer server not managed by an HMC fails to reach the SMS menus, use the following steps to isolate the cause.

- **PFW1549-1**

In this procedure you will test individual drawers to determine if they can be powered on successfully. Before you begin, ensure that the multiple-drawer server power is turned off, then do the following:

1. Remove the front (SMP) and back (service processor) flex cables.
2. Using the ASMI menus on the first (or top) drawer, set the PUID (processing unit ID) to B2 (to indicate a single drawer server).

Were you able to power-on the first (or top) drawer to the ASMI menus and reset the PUID successfully?

NO Replace the service processor in the first (or top) drawer, then return to the beginning of this step.

YES Go to step 1549-3.

- **PFW1549-2**

Have all of the drawers that made up the server been successfully powered on individually?

NO Go to step 1549-4.

YES Go to step 1549-6.

- **PFW1549-3**

Attempt to power on the first (or top) drawer to server firmware standby if the server is managed by an HMC, or to the SMS menus if the server is not managed by an HMC.

Was the power-on process successful?

NO Go to step 1549-5.

YES Go to step 1549-4.

- **PFW1549-4**

Move the control (operator) panel, the service processor card, and the Vital Product Data (VPD) card to next individual drawer and attempt to power it on.

Was the power-on process successful?

NO Go to step 1549-5.

YES Go to step 1549-2.

- **PFW1549-5**

If an individual drawer fails, do the following;

1. Use the ASMI error and event log logs to try to identify the failing part.

2. If the failure is still not isolated, swap parts from other drawers that have booted successfully until the failing part is isolated.

Note: You can also use the following additional problem-determination steps:

- a. Move the system backplane assembly (processors, memory, regulators, and system backplane) from a working drawer to the failing one to determine if the failure is in the system backplane assembly.
- b. Move the I/O backplane from a working drawer to the failing one to determine if the failure is in the I/O backplane.
- c. Move the power supplies from a working drawer to the failing one to determine if the failure is in a power supply.
- d. Move the disk drive backplane from a working drawer to the failing one to determine if the failure is in a disk drive backplane.

Were you able to repair the drawer?

NO Contact your next level of support. **This ends the procedure.**

YES Go to step 1549-2.

• **PFW1549-6**

All of the drawers have successfully powered on individually. Reattach the SMP flex cable in the front and the service processor flex cable in the back. Reset the PUID back to B3 using the ASMI menus.

Does the multiple-drawer server power on?

NO Suspect a defective SMP flex cable or service processor flex cable. Replace them one at a time. Go to step 1549-7.

YES The server is functioning correctly. **This ends the procedure.**

• **PFW1549-7**

Did replacing the SMP flex cable or the service processor flex cable fix the server?

NO Contact your next level of support.

YES The server is functioning correctly. Restore the server back to its original configuration. **This ends the procedure.**

SCSI service hints

Use one or more of the following procedures when servicing SCSI adapter or devices.

General SCSI Configuration Checks:

About this task

The following steps apply to all types of SCSI problems:

1. Verify that all SCSI devices on the SCSI bus have a unique address.
2. Verify that all cables are connected securely and that there is proper termination at both ends of the SCSI bus.
3. Verify that the cabling configuration does not exceed the maximum cable length for the adapter in use. Refer to *RS/6000 eServer pSeries Adapters, Devices, and Cable Information for Multiple Bus Systems* for more details on SCSI cabling.
4. Verify that the adapters and devices that you are working with are at the appropriate microcode levels for the customer situation. If you need assistance with microcode issues, contact your service support structure.
5. If there are multiple SCSI adapters on the SCSI bus, verify that the customer is using the appropriate software (such as HACMP™ or HANFS) to support such an arrangement. If the correct software is not in use, some SCSI errors should be expected when multiple adapters attempt to access the same SCSI device. Also, each adapter should have a unique address.

High Availability or Multiple SCSI System Checks:

About this task

If you have a high-availability configuration, or if more than one system is attached to the same SCSI bus, do the following:

1. Verify that the adapters and devices have unique SCSI addresses. The default SCSI adapter address is always 7. If you have more than one adapter on the bus, change the address of at least one adapter. This can be done by using SMIT (**SMIT Devices → SCSI Adapter → Change/Show characteristics of an adapter**). You must make the changes to the database only, then reboot the system in order for the change to take effect.

Note: Diagnostics defaults to using ID 7 (it is recommended that this ID not be used in high availability configurations).

2. If RAID devices such as the 7135 or 7137 are attached, be sure to run the proper diagnostics for the device. If problems occur, contact your service support structure for assistance. If the diagnostics are run incorrectly on these devices, misleading SRNs can result.
3. Diagnostics cannot be run against OEM devices; doing so results in misleading SRNs.
4. Verify that all cables are connected securely and that both ends of the SCSI bus is terminated correctly.
5. Verify that the cabling configuration does not exceed the maximum cable length for the adapter in use. Refer to the SCSI Cabling section in the *RS/6000 eServer pSeries Adapters, Devices, and Cable Information for Multiple Bus Systems* for more details on SCSI cabling issues.
6. Verify that adapter and devices are at the appropriate microcode levels for the customer situation. If you need assistance with microcode issues, contact your service support structure.

SCSI-2 Single-Ended Adapter PTC Failure Isolation Procedure:

About this task

Before replacing a SCSI-2 single-ended adapter, use these procedures to determine if a short-circuit condition exists on the SCSI bus. The same positive temperature coefficient (PTC) resistor is used for both the internal and external buses. The PTC protects the SCSI bus from high currents due to shorts on the cable, terminator, or device. It is unlikely that the PTC can be tripped by a defective adapter. Unless instructed to do so by these procedures, do not replace the adapter because of a tripped PTC resistor.

A fault (short-circuit) causes an increase in PTC resistance and temperature. The increase in resistance causes the PTC to halt current flow. The PTC returns to a low resistive and low temperature state when the fault is removed from the SCSI bus or when the system is turned off. Wait 5 minutes for the PTC resistor to fully cool, then retest.

These procedures determine if the PTC resistor is still tripped and then determine if there is a short somewhere on the SCSI bus.

Determining Where to Start:

About this task

Use the following to determine the adapter configuration and select the proper procedure:

- If there are external cables attached to the adapter, start with the "External Bus PTC Isolation Procedure" for your type adapter. The procedures are found in this chapter.
- If there are no external cables attached, start with the "Internal SCSI-2 Single-Ended Bus PTC Isolation Procedure" on page 580.
- If there is a combination of external and internal cables start with the "External Bus PTC Isolation Procedure" for your type adapter. The procedures are found in this chapter. If this procedure does not resolve the problem, continue with the "Internal Bus PTC Isolation Procedure" for your type adapter. The procedures are found in this chapter.

External SCSI-2 Single-Ended Bus PTC Isolation Procedure:

About this task

Isolate the external SCSI bus PTC fault with the following procedure:

Note: The external bus is of single-ended design.

1. Ensure the system power and all externally attached device power is turned off. All testing is accomplished with the power off.
2. Disconnect any internal and external cables from the adapter and remove the adapter from the system.
3. Verify with a digital Ohmmeter that the internal PTC resistor, labeled Z1, (refer to the illustration after Internal SCSI-2 Single-Ended Bus PTC Isolation Procedure, step 3 on page 580) is cool and in a low resistance state, typically less than 1/2 Ohm. Measuring across, be sure to probe both sides of the PTC where the solder joints and board come together. The polarity of the test leads is not important. If necessary, allow the PTC resistor to cool and measure again.
4. This step determines if there is a short on the adapter. Locate Capacitor C1 and measure the resistance across it by using the following procedure:
 - a. Connect the positive lead to the side of the capacitor where the + is indicated on the board near C1. Be sure to probe at the solder joint where the capacitor and board come together.
 - b. Connect the negative lead to the opposite side of the capacitor marked "GND." Be sure to probe at the solder joint where the capacitor and board come together.
 - c. If there is no short present, then the resistance reading is high, typically hundreds of Ohms.

Note: Because this is a measurement across unpowered silicon devices, the reading is a function of the Ohmmeter used.

- If there is a fault, the resistance reading is low, typically below 10 Ohms. Because there are no cables attached, the fault is on the adapter. Replace the adapter.

Note: Some multi-function meters label the leads specifically for voltage measurements. When using this type of meter to measure resistance, the plus lead and negative lead may not be labeled correctly. If you are not sure that your meter leads accurately reflect the polarity for measuring resistance, repeat this step with the leads reversed. If the short circuit is not indicated with the leads reversed, the SCSI bus is not faulted (shorted).

- If the resistance measured was high, proceed to the next step.
5. Reattach the external cable to the adapter, then do the following:
 - a. Measure across C1 as previously described.
 - b. If the resistance is still high, in this case above 10 Ohms, then there is no apparent cause for a PTC failure from this bus. If there are internal cables attached continue to the "Internal SCSI-2 Single-Ended Bus PTC Isolation Procedure" on page 580.
 - c. If the resistance is less than 10 Ohms, there is a possibility of a fault on the external SCSI bus. Troubleshoot the external SCSI bus by disconnecting devices and terminators. Measure across C1 to determine if the fault has been removed. Replace the failing component. Go to MAP 0410: Repair checkout.

External SCSI-2 Single-Ended Bus Probable Tripped PTC Causes:

About this task

The following list provides some suggestions of things to check when the PTC is tripped:

- A shorted terminator or cable. Check for bent pins on each connector and removable terminator.
- Intermittent PTC failures can be caused by improperly seated cable connectors. Reseat the connector and flex the cable in an attempt to duplicate the fault condition across C1.
- Plugging or unplugging a cable or terminator while the system is turned on (hot plugging).

- A shorted device.
- Differential devices or terminators are attached to the single-ended SCSI bus.

Note: The SCSI-2 Fast/Wide and Ultra PCI Adapters use an onboard electronic terminator on the external SCSI bus. When power is removed from the adapter, as in the case of this procedure, the terminator goes to a high impedance state and the resistance measured cannot be verified, other than it is high. Some external terminators use an electronic terminator, which also goes to a high impedance state when power is removed. Therefore, this procedure is designed to find a short or low resistance fault as opposed to the presence of a terminator or a missing terminator.

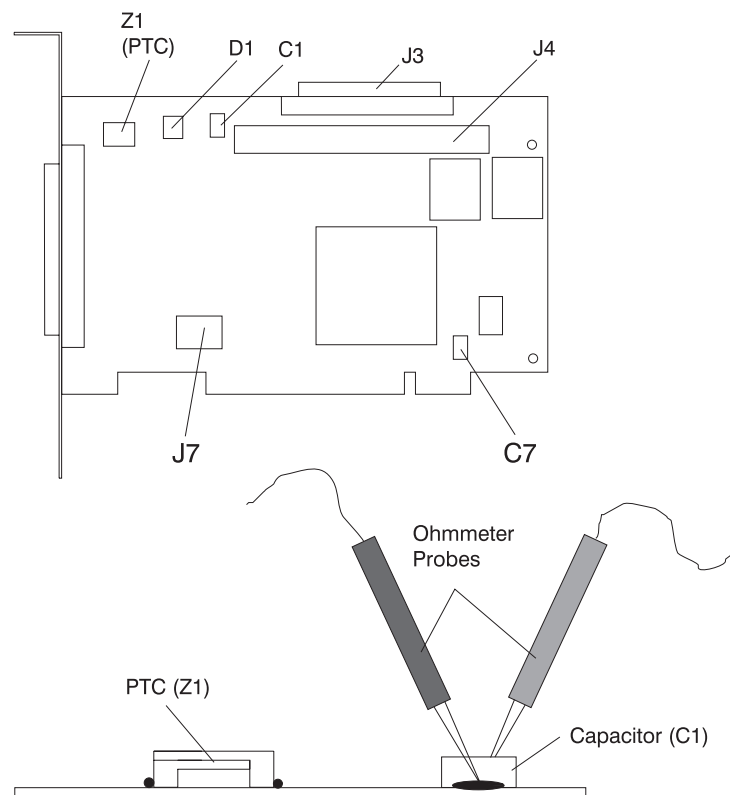
Internal SCSI-2 Single-Ended Bus PTC Isolation Procedure: About this task

Isolate the internal SCSI bus PTC resistor fault with the following procedure:

Note: The internal bus is single-ended.

1. Ensure that system power and all externally attached device power is turned off.
2. Disconnect any internal and external cables from the adapter then remove the adapter from the system.
3. Verify with a digital Ohmmeter, that the internal PTC resistor, labeled Z1, is cool and in a low resistance state, typically less than 1/2 Ohm. Measuring across, be sure to probe both sides of the PTC where the solder joints and board come together. The polarity of the test leads is not important. If necessary, allow the PTC to cool and measure again. Refer to the following illustration.

SCSI-2 Fast/Wide PCI Single-Ended Adapter



Note: Only the probe tips are touching the solder joints. Do not allow the probes to touch any other part of the component.

4. This step determines if there is a short on the adapter. Locate capacitor C1 and measure the resistance across it using the following procedure:
 - a. Connect the positive lead to the side of the capacitor where the + is indicated. Be sure to probe at the solder joint where the capacitor and board come together.
 - b. Connect the negative lead to the opposite side of the capacitor. Be sure to probe at the solder joint where the capacitor and board come together.
 - c. If there is no short present, the resistance reading is high, typically hundreds of Ohms.

Note: Because this is a measurement across unpowered silicon devices, the reading is a function of the Ohmmeter used.

- If there is a fault, the resistance reading is low, typically below 10 Ohms. Because there are no cables attached, the fault is on the adapter. Replace the adapter.

Note: Some multi-function meters label the leads specifically for voltage measurements. When using this type of meter to measure resistance, the plus lead and negative lead may not be labeled correctly. If you are not sure that your meter leads accurately reflect the polarity for measuring resistance, repeat this step with the leads reversed. Polarity is important in this measurement to prevent forward-biasing diodes which lead to a false low resistance reading. If the short circuit is not indicated with the leads reversed, the SCSI bus is not faulted (shorted).

- If the resistance is high and there is no internal cable to reattach, there is no apparent cause for the PTC resistor diagnostic failure.
 - If the resistance is high and there is an internal cable to reattach, proceed to the next step.
5. Reattach the internal cable to the adapter, then do the following:
 - a. Measure across C1 as described above.
 - b. If the resistance is still high, above 25 Ohms, there is no apparent cause for a PTC failure.
 - c. If the resistance is less than 10 Ohms, a fault on the internal SCSI bus is possible. Troubleshoot the internal SCSI bus by disconnecting devices and terminators. Measure across C1 to determine if the fault has been removed.

Note: Some internal cables have nonremovable terminators.

Internal SCSI-2 Single-Ended Bus Probable Tripped PTC Resistor Causes: About this task

The following list provides some suggestions of things to check when the PTC is tripped:

- A shorted terminator or cable. Check for bent pins on each connector and removable terminator.
- Intermittent PTC failures can be caused by incorrectly seated cable connectors. Reseat the connector and flex the cable in an attempt to duplicate the fault condition across C1.
- A shorted device.
- On some systems, the terminator is fixed to the internal cable and cannot be removed. If all devices are removed from the cable and the resistance is still low, then the cable should be replaced.

Note: The SCSI-2 Fast/Wide and Ultra PCI adapters use an onboard electronic terminator on the internal SCSI bus. When power is removed from the adapter, as in the case of this procedure, the terminator goes to a high impedance state and the resistance measured cannot be verified, other than it is high. Some internal terminators use an electronic terminator, which also goes to a high impedance state when power is removed. Therefore, this procedure is designed to find a short or low resistance fault as opposed to the presence of a terminator or a missing terminator.

SCSI-2 Differential Adapter PTC Failure Isolation Procedure:

About this task

Use this procedure when SRN xxx-240 or xxx-800 has been indicated.

The differential adapter can be identified by the 4-B or 4-L on the external bracket plate.

Before replacing a SCSI-2 differential adapter, use these procedures to determine if a short-circuit condition exists on the SCSI Bus. The PTC protects the SCSI bus from high currents due to shorts on the cable, terminator, or device. It is unlikely that the PTC can be tripped by a defective adapter. Unless instructed to do so by these procedures, do not replace the adapter because of a tripped PTC resistor.

A fault (short-circuit) causes an increase in PTC resistance and temperature. The increase in resistance causes the PTC to halt current flow. The PTC returns to a low resistive and low temperature state when the fault is removed from the SCSI bus or when the system is turned off. Wait 5 minutes for the PTC resistor to fully cool, then retest.

These procedures determine if the PTC resistor is still tripped and then determine if there is a short somewhere on the SCSI bus.

External SCSI-2 Differential Adapter Bus PTC Isolation Procedure:

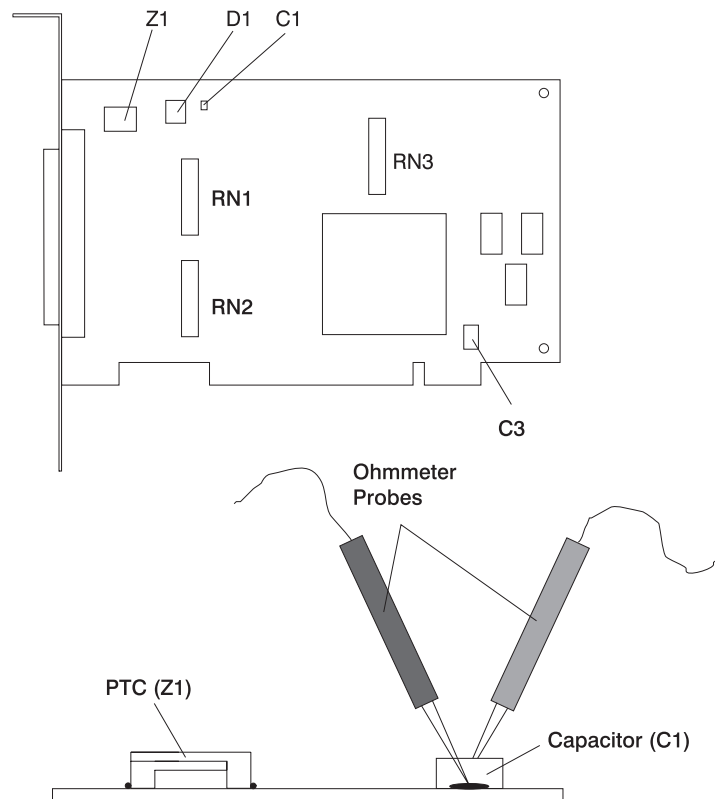
About this task

Isolate the external SCSI bus PTC fault with the following procedure:

Notes:

1. Only the probe tips are touching the solder joints. Do not allow the probes to touch any other part of the component.
2. The external bus is differential.
1. Ensure that system power and all externally attached device power is turned off.
2. Check to ensure all devices are marked SCSI Differential and that the terminator on the end of the SCSI bus is also marked differential. If not, you may have a single-ended SCSI device or terminator on the differential SCSI bus. Single-ended devices do not work on a differential SCSI bus and may cause a PTC type error to be reported. The entire SCSI bus may appear to be intermittent. After ensuring the system is completely differential, continue.
3. Disconnect the external cables from the adapter and remove the adapter from the system.
4. Verify with a digital Ohmmeter that the internal PTC resistor, labeled Z1, (refer to the illustration on page "External SCSI-2 Differential Adapter Bus PTC Isolation Procedure") is cool and in a low resistance state, typically less than 1/2 Ohm. Measuring across, be sure to probe both sides of the PTC resistor where the solder joints and board come together. The polarity of the test leads is not important. If necessary, allow the PTC resistor to cool and measure again.

SCSI-2 Differential Fast/Wide PCI Adapter



5. This step determines if there is a short on the adapter. Locate capacitor C1 and measure the resistance across it using the following procedure:
 - a. Connect the negative lead to the side of the capacitor marked "GND". Be sure to probe at the solder joint where the capacitor and board come together.
 - b. Connect the positive lead to the side of the capacitor marked "Cathode D1" on the board near C1. Be sure to probe at the solder joint where the capacitor and board come together.
 - If there is no fault present, then the resistance reading is 25 to 35 Ohms. The adapter is not faulty. Continue to the next step.
 - If the resistance measured is higher than 35 Ohms, check to see if RN1, RN2, and RN3 are plugged into their sockets. If these sockets are empty, you are working with a Multi-Initiators or High-Availability system. With these sockets empty, a resistive reading across C1 cannot be verified other than it measures a high resistance (not a short). If the resistance measurement is not low enough to be suspected as a fault (lower than 10 Ohms), continue to the next step.
 - If the resistance is high and there is no external cable to reattach, there is no apparent cause for the PTC diagnostic failure.
 - If the resistance reading is low, typically below 10 Ohms, there is a fault. Because there are no cables attached, the fault is on the adapter. Replace the adapter.
 - If the resistance measured was high and there is an external cable to reattach, proceed to the next step.
6. Reattach the external cable to the adapter.
 - a. Measure across C1 as previously described.
 - b. If the resistance is between 10 to 20 Ohms, there is no apparent cause for a PTC resistor failure.
 - c. If the resistance is less than 10 Ohms, there is a possibility of a fault on the external SCSI bus. Troubleshoot the external SCSI bus by disconnecting devices and terminators. Measure across C1 to determine if the fault has been removed.

SCSI-2 Differential Adapter Probable Tripped PTC Causes:

About this task

The following list provides some suggestions of things to check when the PTC is tripped:

- A shorted terminator or cable. Check for bent pins on each connector and removable terminator.
- Intermittent PTC failures can be caused by incorrectly seated cable connectors. Reseat the connector and flex the cable in an attempt to duplicate the fault condition across C1.
- Plugging or unplugging a cable or terminator while the system is turned on (hot-plugging).
- A shorted device.
- Single-ended devices are attached to the differential SCSI bus.

Dual-Channel Ultra SCSI Adapter PTC Failure Isolation Procedure:

About this task

Use the following procedures if diagnostics testing indicates a potential positive temperature coefficient (PTC) resistor fault or the TERMPWR Shorted LED is lit.

This procedure is used for SRNs 637-240 and 637-800 on the Dual-Channel Ultra SCSI Adapter. If the TERMPWR Shorted LED is lit, use this procedure to help isolate the source of the problem on the failing channel.

1. Identify the adapter by its label of 4-R on the external bracket. Then, determine if the failure is on channel A or channel B.
2. The same PTC is used for both the internal and external buses. The PTC protects the SCSI bus from high currents due to shorts on the cable, terminator, or device. It is unlikely that the PTC can be tripped by a defective adapter. A fault (short-circuit) causes an increase in PTC resistance and temperature. The increase in resistance causes the PTC to halt current flow. The PTC returns to a low resistive and low temperature state when the fault is removed from the SCSI bus or when the system is turned off.

Wait 5 minutes for the PTC resistor to fully cool, then retest.

3. If this same error persists, or the TERMPWR Shorted LED is lit, replace the components of the failing channel in the following order (wait five minutes between steps):
 - a. If the failure is on the external cable, replace the following:
 - 1) Cable
 - 2) Device
 - 3) Attached subsystem
 - 4) Adapter
 - b. If the failure is on the internal cable, replace the following:
 - 1) Cable
 - 2) Device
 - 3) Backplane
 - 4) Adapter
 - c. If the failure persists, verify that the parts exchanged are in the correct channel (internal or external, A or B).

If the errors are still occurring, continue isolating the problem by going to “MAP 0050: SCSI bus problems” on page 383.

64-bit PCI-X Dual Channel SCSI Adapter PTC Failure Isolation Procedure:

About this task

Use the following procedures if diagnostics testing indicates a potential self-resetting thermal fuse problem. This procedure is used for SRN 2524-702 on the integrated dual-channel SCSI adapter in a 7039/651 system.

1. Identify the adapter as the one embedded in the system board. Then, determine if the failure is on channel 0 or channel 1.
2. The thermal fuse protects the SCSI bus from high currents due to shorts on the terminator, cable, or device. It is unlikely that the thermal fuse can be tripped by a defective adapter. A fault (short-circuit) causes an increase in resistance and temperature of the thermal fuse. The increase in temperature causes the thermal fuse to halt current flow. The thermal fuse returns to a low resistive and low temperature state when the fault is removed from the SCSI bus or when the system is turned off. Wait 10 seconds for the thermal fuse to reset itself and recover, then retest.
3. If the same error persists, replace the components of the failing channel in the following order. Wait 10 seconds for the thermal fuse to reset itself between steps.
 - a. Cable
 - b. Device
 - c. DASD backplane (if present)
 - d. System board (adapter)
4. If the failure persists, verify that the parts exchanged are in the correct channel (0 or 1). If the errors are still occurring, continue isolating the problem by going to “MAP 0050: SCSI bus problems” on page 383.

Linux fast-path problem isolation

Use this information to help you isolate a hardware problem when using the Linux operating system.




Notes:

1. If the server or partition has an external SCSI disk drive enclosure attached and you have not been able to find a reference code or other symptom, go to “MAP 2010: 7031-D24 or 7031-T24 START” on page 45
2. If you are servicing an SP system, go to the Start of Call MAP 100 in the *SP System Service Guide*.
3. If you are servicing a clustered server, go to the Start of Call MAP 100 in the *Clustered Installation and Service Guide*.
4. If you are servicing a clustered server that has InfiniBand switch networks, go to the *Guide to Clustering systems using InfiniBand hardware*.



Linux fast path table

Locate the problem in the following table and then go to the action indicated for the problem.

Symptoms	Action
You have an eight-digit reference code.	Go to Reference codes, read the notes on the first page, and do the listed action for the eight-digit reference code.
You are trying to isolate a problem on a Linux server or a partition that is running Linux.	Note: This procedure is used to help display an eight-digit reference code using system log information. Before using this procedure, if you are having a problem with a media device such as a tape or DVD-ROM drive, continue through this table and follow the actions for the appropriate device. Go to “Linux problem isolation procedure” on page 588.
You suspect a problem with your server but you do not have any specific symptom.	Go to “MAP 0020: Problem determination procedure” on page 373 for problem determination procedures.

Symptoms	Action
You need to run the eServer standalone diagnostics	Go to Loading the AIX online and eServer standalone diagnostics.
SRNs	
You have an SRN.	Look up the SRN in the List of service request numbers and do the listed action.
An SRN is displayed when running the eServer standalone diagnostics.	<ol style="list-style-type: none"> 1. Record the SRN and location code. 2. Look up the SRN in the List of service request numbers and do the listed action.
Tape Drive Problems	
You suspect a tape drive problem.	<ol style="list-style-type: none"> 1. Refer to the tape drive documentation and clean the tape drive. 2. Refer to the tape drive documentation and do any listed problem determination procedures. 3. Go to "MAP 0020: Problem determination procedure" on page 373 for problem determination procedures. 4. Refer to the device section of <i>RS/6000 eServer pSeries Adapters, Devices, and Cable Information for Multiple Bus Systems</i> for additional information (IBM eServer pSeries Information Center (http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base)).  <p>Note: Information on tape cleaning and tape-problem determination is normally either in the tape drive operator guide or the system operator guide.</p>
Optical Drive Problems	
You suspect an optical drive problem.	<ol style="list-style-type: none"> 1. Refer to the optical documentation and do any listed problem determination procedures. 2. Before servicing an optical Drive ensure that it is not in use and that the power connector is correctly attached to the drive. If the load or unload operation does not function, replace the optical drive. 3. Go to "MAP 0020: Problem determination procedure" on page 373 for problem determination procedures. 4. Refer to the device section of <i>RS/6000 eServer pSeries Adapters, Devices, and Cable Information for Multiple Bus Systems</i> for additional information (IBM eServer pSeries Information Center (http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base)).  <p>Note: If the optical has its own user documentation, follow any problem determination for the optical drive.</p>
SCSI Disk Drive Problems	
<p>You suspect a disk drive problem.</p> <p>Disk problems are logged in the error log and are analyzed when the standalone disk diagnostics are run in problem determination mode. Problems are reported if the number of errors is above defined thresholds.</p>	<ol style="list-style-type: none"> 1. Go to "MAP 0020: Problem determination procedure" on page 373 for problem determination procedures. 2. Refer to the device section of <i>RS/6000 eServer pSeries Adapters, Devices, and Cable Information for Multiple Bus Systems</i> for additional information (IBM eServer pSeries Information Center (http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base)). 
Diskette Drive Problems	

Symptoms	Action
You suspect a diskette drive problem.	1. Go to "MAP 0020: Problem determination procedure" on page 373 for problem determination procedures.
Token-Ring Problems	
You suspect a token-ring adapter or network problem.	<ol style="list-style-type: none"> 1. Check with the network administrator for known problems. 2. Go to "MAP 0020: Problem determination procedure" on page 373 for problem determination procedures.
Ethernet Problems	
You suspect an Ethernet adapter or network problem.	<ol style="list-style-type: none"> 1. Check with the network administrator for known problems. 2. Go to "MAP 0020: Problem determination procedure" on page 373 for problem determination procedures.
Display Problems	
You suspect a display problem.	<ol style="list-style-type: none"> 1. If your display is connected to a KVM switch, go to Troubleshooting the keyboard, video, and mouse (KVM) switch for the 1x8 and 2x8 console manager. If you are still having display problems after performing the KVM switch procedures, come back here and continue with step 2. 2. If you are using the Hardware Management Console, go to the Managing your server using the Hardware Management Console section. 3. If you are using a graphics display: <ol style="list-style-type: none"> a. Go to the problem determination procedures for the display. b. If you do not find a problem: <ul style="list-style-type: none"> • Replace the graphics display adapter. Refer to Removing and replacing parts. • Replace the backplane into which the graphics display adapter is plugged. Refer to Removing and replacing parts.
Keyboard or Mouse	
You suspect a keyboard or mouse problem.	<p>If your keyboard is connected to a KVM switch, go to Troubleshooting the keyboard, video, and mouse (KVM) switch for the 1x8 and 2x8 console manager. If you are still having keyboard problems after performing the KVM switch procedures, come back here and continue to the next paragraph. Go to "MAP 0020: Problem determination procedure" on page 373 for problem determination procedures.</p> <p>If you are unable to run diagnostics because the system does not respond to the keyboard, replace the keyboard or system planar.</p> <p>Note: If the problem is with the keyboard it could be caused by the mouse device. To check, unplug the mouse and then recheck the keyboard. If the keyboard works, replace the mouse.</p>
System Messages	
A System Message is displayed.	<ol style="list-style-type: none"> 1. If the message describes the cause of the problem, attempt to correct it. 2. Look for another symptom to use.
System Hangs or Loops When Running the OS or Diagnostics	
The system hangs in the same application.	<p>Suspect the application. To check the system:</p> <ol style="list-style-type: none"> 1. Power off the system. 2. Go to "MAP 0020: Problem determination procedure" on page 373 for problem determination procedures. 3. If an SRN is displayed at anytime, record the SRN and location code. 4. Look up the SRN in the List of service request numbers and do the listed action.

Symptoms	Action
The system hangs in various applications.	<ol style="list-style-type: none"> 1. Power off the system. 2. Go to "MAP 0020: Problem determination procedure" on page 373 for problem determination procedures. 3. If an SRN is displayed at anytime, record the SRN and location code. 4. Look up the SRN in the List of service request numbers and do the listed action.
The system hangs when running diagnostics.	Replace the resource that is being tested.
Exchanged FRUs Did Not Fix the Problem	
A FRU or FRUs you exchanged did not fix the problem.	Go to "MAP 0020: Problem determination procedure" on page 373.
RAID Problems	
You suspect a problem with a RAID.	<p>A potential problem with a RAID adapter exists. Run diagnostics on the RAID adapter. Refer to the <i>RAID Adapters User's Guide and Maintenance Information</i>, refer to IBM eServer pSeries Information Center (http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base)</p> <p>If the RAID adapter is a PCI-X RAID adapter, refer to the <i>PCI-X SCSI RAID Controller Reference Guide for AIX</i> in the IBM eServer pSeries Information Center (http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base)</p> 
SSA Problems	
You suspect an SSA problem.	<p>A potential problem with an SSA adapter exists. Run diagnostics on the SSA adapter. If the system has external SSA drives, refer to the <i>SSA Adapters User's Guide and Maintenance Information</i> (IBM eServer pSeries Information Center (http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base))</p>  <p>, or the service guide for your disk subsystem.</p>
You Cannot Find the Symptom in This Table	
All other problems.	Go to "MAP 0020: Problem determination procedure" on page 373.

Linux problem isolation procedure

Use this procedure when servicing a Linux partition or a server that has Linux as its only operating system.

About this task

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

These procedures define the steps to take when servicing a Linux partition or a server that has Linux as its only operating system.

Before continuing with this procedure it is recommended that you review the additional software available to enhance your Linux solutions. This software is available at: Linux on POWER Web site at

<http://techsupport.services.ibm.com/server/lopdiags> .

Note: If the server is attached to an HMC and Service Focal Point is enabled, the various codes that might display on the HMC are all listed as reference codes by Service Focal Point (SFP). Use the following table to help you identify the type of error information that might be displayed when you are using this procedure.

Number of digits in reference code	Reference code	Name or code type
Any	Contains # (pound sign)	Menu goal
Any	Contains - (hyphen)	Service request number (SRN)

Number of digits in reference code	Reference code	Name or code type
5	Does not contain # or -	SRN
8	Does not contain # or -	Service reference code (SRC)

1. Is the server managed by an HMC that is running Service Focal Point (SFP)?

No Go to step 3.

Yes Go to step 2.

2. Servers with Service Focal Point

Look at the service action event log in SFP for errors. Focus on those errors with a timestamp near the time at which the error occurred. Follow the steps indicated in the error log entry to resolve the problem. If the problem is not resolved, continue with step 3.

3. Look for and record all reference code information or software messages on the operator panel and in the service processor error log (which is accessible by viewing the ASMI menus).
4. Choose a Linux partition that is running correctly (preferably the partition with the problem).

Is Linux usable in any partition with Linux installed?

No Go to step 11 on page 594.

Yes Go to step 5.

5. Do the following steps:

Attention: Items 5 through 16 on page 595 must be performed on a server or partition running the Linux operating system.

- a. Determine if there is a file named **platform** under **/var/log** directory of the server or partition. Log into the server or partition as the root user and enter the following command:

```
ls -l /var/log/platform
```

Does the **/var/log/platform** file exist?

No Continue with substep 5b.

Yes Go to substep 5c on page 591.

- b. Record that, for this Linux partition, you performed substep 5b of 5 for later steps. Examine the Linux system log by entering the following command:

```
cat /var/log/messages |grep RTAS |more
```

Linux run-time RTAS error messages are logged in the **messages** file under **/var/log**. The following is an example of the Linux system RTAS error log messages.

```
Aug 27 18:13:41 rasler kernel: RTAS: ----- event-scan begin -----
Aug 27 18:13:41 rasler kernel: RTAS: Location Code: U0.1-P1-C1
Aug 27 18:13:41 rasler kernel: RTAS: WARNING: (FULLY RECOVERED) type: INTERN_DEV_FAIL
Aug 27 18:13:41 rasler kernel: RTAS: initiator: UNKNOWN target: UNKNOWN
Aug 27 18:13:41 rasler kernel: RTAS: Status: predictive new
Aug 27 18:13:41 rasler kernel: RTAS: Date/Time: 20020827 18134000
Aug 27 18:13:41 rasler kernel: RTAS: CPU Failure
Aug 27 18:13:41 rasler kernel: RTAS: CPU id: 0
Aug 27 18:13:41 rasler kernel: RTAS: Failing element: 0x0000
Aug 27 18:13:41 rasler kernel: RTAS: A reboot of the system may correct the problem
Aug 27 18:13:41 rasler kernel: RTAS: ----- event-scan end -----
```

Did you find any RTAS error log messages that are similar to the above messages?

No Go to Using AIX online and standalone diagnostics and run the eServer standalone diagnostics on the server or partition. If you receive a reference code go to the reference code list. If you cannot determine the problem using the diagnostic programs, contact your next level of support.

Yes Go to step 6 on page 593.

- c. Record that for this Linux partition, you performed substep 5c of 5 on page 590 for later steps.
Use the following command to list diagela messages recorded in the Linux system log:
`cat /var/log/platform |grep diagela |more`

Linux run-time diagela error messages are logged in the **platform** file under **/var/log**.
The following is an example of the Linux system error log diagela messages.

```
Aug 13 09:38:45 larry diagela: 08/13/2003 09:38:44
Aug 13 09:38:45 larry diagela: Automatic Error Log Analysis has detected a problem.
Aug 13 09:38:45 larry diagela: Aug 13 09:38:45 larry diagela: The Service Request
Number(s)/Probable Cause(s)
Aug 13 09:38:45 larry diagela: (causes are listed in descending order of probability):
Aug 13 09:38:45 larry diagela:
Aug 13 09:38:45 larry diagela: 651-880: The CEC or SPCN reported an error. Report the
SRN and the following reference and physical location codes to your service provider.
Aug 13 09:38:45 larry diagela: Location: n/a FRU: n/a Ref-Code: B1004699
Aug 13 09:38:45 larry diagela:
Aug 13 09:38:45 larry diagela: Analysis of Error log sequence number: 3
Aug 29 07:13:04 larry diagela: 08/29/2003 07:13:04
Aug 29 07:13:04 larry diagela: Automatic Error Log Analysis has detected a problem.
Aug 29 07:13:04 larry diagela:
Aug 29 07:13:04 larry diagela: The Service Request Number(s)/Probable Cause(s)
Aug 29 07:13:04 larry diagela: (causes are listed in descending order of probability):
Aug 29 07:13:04 larry diagela:
Aug 29 07:13:04 larry diagela: 651-880: The CEC or SPCN reported an error. Report the
SRN and the following reference and physical location codes to your service provider.
Aug 29 07:13:04 larry diagela: Location: U0.1-F4 FRU: 09P5866 Ref-Code: 10117661
Aug 29 07:13:04 larry diagela:
Aug 29 07:13:04 larry diagela: Analysis of /var/log/platform sequence number: 24
Sep 4 06:00:55 larry diagela: 09/04/2003 06:00:55
Sep 4 06:00:55 larry diagela: Automatic Error Log Analysis reports the following:
Sep 4 06:00:55 larry diagela:
Sep 4 06:00:55 larry diagela: 651204 ANALYZING SYSTEM ERROR LOG
Sep 4 06:00:55 larry diagela: A loss of redundancy on input power was detected.
Sep 4 06:00:55 larry diagela:
Sep 4 06:00:55 larry diagela: Check for the following:
Sep 4 06:00:55 larry diagela: 1. Loose or disconnected power source connections.
Sep 4 06:00:55 larry diagela: 2. Loss of the power source.
Sep 4 06:00:55 larry diagela: 3. For multiple enclosure systems, loose or
Sep 4 06:00:55 larry diagela: disconnected power and/or signal connections
Sep 4 06:00:55 larry diagela: between enclosures.
Sep 4 06:00:55 larry diagela:
Sep 4 06:00:55 larry diagela: Supporting data:
Sep 4 06:00:55 larry diagela: Ref. Code: 10111520
Sep 4 06:00:55 larry diagela: Location Codes: P1 P2
Sep 4 06:00:55 larry diagela:
Sep 4 06:00:55 larry diagela: Analysis of /var/log/platform sequence number: 13
```

- d. Also use the following command to list RTAS messages recorded in the Linux system log:
`cat /var/log/platform |grep RTAS |more`

Linux RTAS error messages are logged in the **platform** file under **/var/log**. The following is an example of RTAS messages in the Linux system error log.

```

Aug 27 12:16:33 larry kernel: RTAS: 15 ----- RTAS event begin -----
Aug 27 12:16:33 larry kernel: RTAS 0: 04440040 000003f8 96008508 19155800
Aug 27 12:16:33 larry kernel: RTAS 1: 20030827 00000001 20000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 2: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 3: 49424d00 55302e31 2d463400 00503034
Aug 27 12:16:33 larry kernel: RTAS 4: 10117661 04a0005d 10110000 00000000
Aug 27 12:16:33 larry kernel: RTAS 5: 00007701 000000e0 00000003 000000e3
Aug 27 12:16:33 larry kernel: RTAS 6: 00000000 01000000 00000000 31303131
Aug 27 12:16:33 larry kernel: RTAS 7: 37363631 20202020 20202020 55302e31
Aug 27 12:16:33 larry kernel: RTAS 8: 2d463420 20202020 20202020 03705a39
Aug 27 12:16:33 larry kernel: RTAS 9: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 10: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 11: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 12: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 13: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 14: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 15: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 16: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 17: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 18: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 19: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 20: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 21: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 22: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 23: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 24: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 25: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 26: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 27: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 28: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 29: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 30: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 31: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 32: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 33: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 34: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 35: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 36: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 37: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 38: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 39: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 40: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 41: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 42: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 43: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 44: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 45: 00000000 00000000 00000000 00000000

```

```

Aug 27 12:16:33 larry kernel: RTAS 46: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 47: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 48: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 49: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 50: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 51: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 52: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 53: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 54: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 55: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 56: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 57: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 58: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 59: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 60: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 61: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 62: 00000000 00000000 00000000 00000000
Aug 27 12:16:33 larry kernel: RTAS 63: 00000000 00000000 00000000 00020000
Aug 27 12:16:33 larry kernel: RTAS: 15 ----- RTAS event end -----

```

Reference codes and location codes may appear as RTAS messages. The extended data is also provided in the form of an RTAS message. The extended data contains other reference code words that help in isolating the correct FRUs. The start of the extended data is marked, for example, by the line: Aug 27 12:16:33 larry kernel: RTAS: 15 ----- RTAS event begin -----

The number after the colon is a sequence number that correlates this data with any diagela data having the same sequence number. The end of the extended data is marked by the line:

```
Aug 27 12:16:33 larry kernel: RTAS: 15 ----- RTAS event end -----
```

with the same sequence number. Word 13 and word 19 are found in the RTAS messages. For example, to find word 13, first find the reference code in the left column of words of the extended data, 10117661. In this example, we find the reference code to the right of "RTAS 4:". This is also word 11. To get word 13, 10110000, simply count the words left-to-right, beginning at word 11.

6. If you performed substep 5b on page 590 of step 5 on page 590, then record any RTAS messages found in the Linux system log in step 5 on page 590. Or, if you performed substep 5c on page 591 of step 5 on page 590, then record any RTAS and diagela messages found in the Linux system log in step 5 on page 590, and also record any extended data found in the RTAS messages, especially word 13 and word 19. Ignore all other messages in the Linux system log.

If the system is configured with more than one logical partition with Linux installed, repeat step 5 on page 590 and step 6 for all logical partitions that have Linux installed.

7. If you performed substep 5c on page 591 of step 5 on page 590 for the current Linux partition, go to step 8 on page 594, and when asked in step 8 on page 594, do not record any RTAS messages from step 7 for the current Linux partition.

Examine the Linux boot (IPL) log by logging in to the system as the root user and entering the following command:

```
cat /var/log/boot.msg |grep RTAS |more
```

Linux boot (IPL) error messages are logged into the **boot.msg** file under **/var/log**. The following is an example of the Linux boot error log.

8. Record any RTAS messages found in the Linux boot (IPL) log in step 7 on page 593. Ignore all other messages in the Linux boot (IPL) log. If the system is configured with more than one logical partition with Linux installed, repeat step 7 on page 593 and step 8 for all logical partitions that have Linux installed.
9. If you performed substep 5c on page 591 of 5 on page 590 for the current Linux partition, go to step 10, and when asked in step 10, do not record any additional extended data from step 7 on page 593 for the current Linux partition.

Examine the extended data in both logs.

The following is an example of the Linux extended data.

10. Record any extended data found in the Linux system log in Step 5 on page 590 or the Linux boot (IPL) log in step 7 on page 593. Be sure to record word 13.

Note: The line(s) in the Linux extended data that begin with "<4>RTAS: Log Debug: 04" contain the reference code listed in the next 8 hex characters. In the previous example, "4b27 26fb" is a reference code. The reference code is also known as word 11. Each 4 bytes after the reference code in the Linux extended data is another word (for example, "04a0 0011" is word 12, and "702c 0014" is word 13, and so on).

If the system is configured with more than one logical partition with Linux installed, repeat step 9 and step 10 for all logical partitions that have Linux installed.
11. Were any reference codes or checkpoints recorded in steps 3 on page 590, 6 on page 593, 8, or 10?

No Go to step 12.

Yes Go to the Linux fast-path problem isolation with each reference code that was recorded. Perform the indicated actions one at a time for each reference code until the problem has been corrected. If all recorded reference codes have been processed and the problem has not been corrected, go to step 12.

12. If no additional error information is available and the problem has not been corrected, do the following:
- Shut down the system.
 - If an HMC is not attached, see Accessing the Advanced System Management Interface (ASMI) for instructions to access the ASMI.

Note: The ASMI functions can also be accessed by using a personal computer connected to system port 1.

You need a personal computer (and cable, part number 62H4857) capable of connecting to system port 1 on the system unit. (The Linux login prompt cannot be seen on a personal computer connected to system port 1.) If the ASMI functions are not otherwise available, use the following procedure:

- 1) Attach the personal computer and cable to system port 1 on the system unit.
- 2) With 01 displayed in the operator panel, press a key on the virtual terminal on the personal computer. The service ASMI menus are available on the attached personal computer.
- 3) If the service processor menus are not available on the personal computer, perform the following steps:
 - Examine and correct all connections to the service processor.
 - Replace the service processor.

Note: The service processor might be contained on a separate card or board; in some systems, the service processor is built into the system backplane. Contact your next level of support for help before replacing a system backplane.

- Examine the service processor error log. Record all reference codes and messages written to the service processor error log. Go to step 13.

13. Were any reference codes recorded in step 12?

No Go to step 21 on page 597.

Yes Go to the Linux fast-path problem isolation with each reference code or symptom you have recorded. Perform the indicated actions, one at a time, until the problem has been corrected. If all recorded reference codes have been processed and the problem has not been corrected, go to 21 on page 597.

14. Reboot the system and bring all partitions to the login prompt. If Linux is not usable in all partitions, go to step 18 on page 596.
15. Use the `lscfg` command to list all resources assigned to all partitions. Record the adapter and the partition for each resource.
16. To determine if any device(s) or adapter(s) are missing, compare the list of partition assignments, and resources found, to the customer's known configuration. Record the location of any missing devices. Also record any differences in the descriptions or the locations of devices.

You may also compare this list of resources that were found to a prior version of the device tree as follows:

Note: Every time that the partition is booted, the `update-device-tree` command is run and the device tree is stored in the `/var/lib/lsvpd/` directory in a file with the file name device-tree-YYYY-

MM-DD-HH:MM:SS, where YYYY is the year, MM is the month, DD is the day, and HH, MM, and SS are the hour, minute and second, respectively, of the date of creation.

- At the command line, type the following:

```
cd /var/lib/lsvpd/
```

- At the command line, type the following:

```
lscfg -vpd db-2003-03-31-12:26:31.
```

This displays the device tree created on 03/31/2003 at 12:26:31.

The **diff** command offers a way to compare the output from a current **lscfg** command to the output from an older **lscfg** command. If the file names for the current and old device trees are **current.out** and **old.out**, respectively, type: `diff old.out current.out`. Any lines that exist in the old, but not in the current will be listed and preceded by a less-than symbol (<). Any lines that exist in the current, but not in the old will be listed and preceded by a greater-than symbol (>). Lines that are the same in both files are not listed; for example, files that are identical will produce no output from the **diff** command. If the location or description changes, lines preceded by both < and > will be output.

If the system is configured with more than one logical partition with Linux installed, repeat 15 on page 595 and 16 on page 595 for all logical partitions that have Linux installed.

17. Was the location of one and only one device recorded in 16 on page 595?

No If you previously answered Yes to step 17, return the system to its original configuration. This ends the procedure. Go to MAP 0410: Repair checkout.

If you did not previously answer Yes to step 17, go to step 18.

Yes Perform the following steps one at a time. Power off the system before performing each step. After performing each step, power on the system and go to step 14 on page 595.

- a. Check all connections from the system to the device.
- b. Replace the device (for example, tape or DASD)
- c. If applicable, replace the device backplane.
- d. Replace the device cable.
- e. Replace the adapter.
- f. If the adapter resides in an I/O drawer, replace the I/O backplane.
- g. If the device adapter resides in the CEC, replace the I/O riser card, or the CEC backplane in which the adapter is plugged.
- h. Call service support. Do not go to step 14 on page 595.

18. Does the system appear to stop or hang before reaching the login prompt or did you record any problems with resources in step 16 on page 595?

Note: If the system console or VTERM window is always blank, choose NO. If you are sure the console or VTERM is operational and connected correctly, answer the question for this step.

No Go to step 19.

Yes There may be a problem with an I/O device. Go to PFW1542: I/O problem isolation procedure. When instructed to boot the system, boot a full system partition.

19. Boot the eServer standalone diagnostics, refer to Using AIX online and standalone diagnostics. Run diagnostics in problem determination mode on all resources. Be sure to boot a full system partition. Ensure that AIX diagnostics were run on all known resources. You may need to select each resource individually and run diagnostics on each resource one at a time.

Did standalone diagnostics find a problem?

No Go to step 23 on page 597.

Yes Go to the Reference codes and perform the actions for each reference code you have recorded. For each reference code not already processed in step 17, repeat this action until

the problem has been corrected. Perform the indicated actions, one at a time. If all recorded reference codes have been processed and the problem has not been corrected, go to step 23.

20. Does the system have Linux installed on one or more partitions?

No Return to the Start-of-call isolation procedure.

Yes Go to step 3 on page 590.

21. Were any location codes recorded in steps 3 on page 590, 6 on page 593, 8 on page 594, 10 on page 594, 11 on page 594, or 12 on page 595?

No Go to step 14 on page 595.

Yes Replace, one at a time, all parts whose location code was recorded in steps 3 on page 590, 6 on page 593, 8 on page 594, 10 on page 594, 11 on page 594, or 12 on page 595 that have not been replaced. Power off the system before replacing a part. After replacing the part, power on the system to check if the problem has been corrected. Go to step 22 when the problem has been corrected, or all parts in the location codes list have been replaced.

22. Was the problem corrected in step 21?

No Go to step 14 on page 595.

Yes Return the system to its original configuration. This ends the procedure. Go to MAP 0410: Repair checkout.

23. Were any other symptoms recorded in step 3 on page 590?

No Call support.

Yes Go to the Start-of-call isolation procedure with each symptom you have recorded. Perform the indicated actions for all recorded symptoms, one at a time, until the problem has been corrected. If all recorded symptoms have been processed and the problem has not been corrected, call your next level of support.

HMC isolation procedures

Use this information to diagnose and repair problems that are related to the Hardware Management Console (HMC).

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

You should use these procedures if you were directed here from the Start of call procedure. Go to HMC problem isolation.

Using failing item codes

This information is a list of failing item codes.

In the following table, if only a type number is listed, go to Part number catalog to determine the part number.

Failing item code	Description/Action
FI00015	FI00015 is not supported on these models. Continue with the next FRU in the list.
FI00017	FI00017 is not supported on these models. Continue with the next FRU in the list.
FI00020	FI00020 is not supported on these models. Continue with the next FRU in the list.
FI00021	FI00021 indicates that the combined function I/O processor (CFIOP) is the failing item. Use the CFIOP type to determine the part number.

Failing item code	Description/Action
FI00022	<p>FI00022 indicates that the Licensed Internal Code for the service processor may be the failing item.</p> <p>Ask your next level of support for assistance.</p>
FI00040	See the symbolic FRU "BACKPLN" on page 622.
FI00047	FI00047 is not supported on these models. Continue with the next FRU in the list.
FI00050	FI00050 is not supported on these models. Continue with the next FRU in the list.
FI00055	<p>FI00055 indicates that a primary optical link cable is the failing item.</p> <p>This is either the optical bus cable for the bus you are working with or its paired bus cable on the optical link card.</p>
FI00056	FI00056 indicates that any optical bus cable or a missing optical bus wrap connector is the failing item.
FI00057	<p>FI00057 indicates that the secondary optical link cable is the failing item.</p> <p>This is the optical cable that runs between the bus expansion adapter cards in two separate expansion units.</p>
FI00060	FI00060 is not supported on these models. Continue with the next FRU in the list.
FI00062	FI00062 is not supported on these models. Continue with the next FRU in the list.
FI00065	FI00065 is not supported on these models. Continue with the next FRU in the list.
FI00070	<p>FI00070 indicates that a storage device attached to the IPL device IOP is the failing item.</p> <p>Determine the IPL device that is failing by doing the following:</p> <ol style="list-style-type: none"> 1. In the Navigation Area, open Server and Partition. 2. Select Server Management. 3. In the contents area, open the server on which the logical partition is located. 4. Open Partitions. 5. Right-click the logical partition and select Properties. 6. In the Properties window, click the Settings tab. <p>If the IPL storage device is not the failing item, then any storage device attached to the IPL device IOP may be the failing item.</p>
FI00072	<p>FI00072 indicates that the load-source media is the failing item.</p> <ol style="list-style-type: none"> 1. Choose from the following options: <ul style="list-style-type: none"> • If the load source is tape, exchange the tape in the alternate IPL tape unit. • If the load source is an optical storage unit, exchange the compact disk. • If the load source is a hard disk drive, exchange the hard disk drive. 2. If replacing the media does not work, try replacing the drive.
FI00090	<p>FI00090 indicates that the removable media device for an alternate IPL is the failing item.</p> <p>Note: Determine if the system has logical partitions. Go to Determining if the system has logical partitions before continuing with this procedure.</p> <p>Determine the device that is failing by doing the following:</p> <ol style="list-style-type: none"> 1. Select function 01 (Select IPL) on the control panel and press Enter to verify that the active IPL type is D. <p>Note: Use the system configuration list to identify the device. See Hardware Service Manager for details.</p> <p>The possible failing devices are the following type numbers: 3490, 3570, 3590, 632x, 6382, 6383, 6386, 6387, 63A0, 7208, 9348, and 9427.</p> 2. Use the service information for the specific removable media unit for an alternate IPL to analyze the device failure.

Failing item code	Description/Action
FI00092	<p>FI00092 indicates that the load source for an alternate IPL or the interface to the load source is the failing item. Perform the following steps:</p> <ol style="list-style-type: none"> 1. Determine if the system has logical partitions. Go to Determining if the system has logical partitions before continuing with this procedure. 2. If the load source is an optical unit, you may need to perform function 3 to IPL the system again. This will make the unit ready. 3. To locate the alternate load source for a system, see Load-source disks and alternate IPL devices. 4. Use the device type to determine the part.
FI00096	<p>FI00096 indicates that the IOP attached to the load-source device is the failing item.</p> <ol style="list-style-type: none"> 1. Determine if the system has logical partitions. Go to Determining if the system has logical partitions before continuing with this procedure. 2. Verify that the IPL type is correct by choosing one of the following: <ul style="list-style-type: none"> • If you are using a control panel: Select function 01 on the control panel and press Enter to display the present IPL mode. • If you are using the HMC, perform the following steps: <ol style="list-style-type: none"> a. In the Navigation Area, open Server and Partition. b. Select Server Management. c. In the contents area, open the server on which the logical partition is located. d. Open Partitions. e. Right-click the logical partition and select Properties. f. In the Properties window, click the Settings tab. 3. The failing CFIOP or IOP may have a removable storage I/O adapter FRU. Replace the storage IOA using symbolic FRU "STORIOA" on page 757. 4. To locate the load source for a system, see Load-source disks and alternate IPL devices.
FI00098	<p>FI00098 indicates that the load-source disk device is the failing item.</p> <ol style="list-style-type: none"> 1. Determine if the system has logical partitions. Go to Determining if the system has logical partitions before continuing with this procedure. 2. Determine the disk unit 1 type number. It is printed on a label on the front of the system frame. 3. If the system does not have a label that identifies the disk unit type, you can determine the part number of the disk unit by looking at a label located on the disk unit. You must remove the disk unit to see this label. 4. Exchange the disk drive and logic card for the disk unit type you have. See System parts. 5. To locate the load source for a system, see Load-source disks and alternate IPL devices.
FI00099	<p>FI00099 indicates that the Licensed Internal Code failed or responded in an unpredictable way.</p> <p>Ask your next level of support for assistance.</p>
FI00121	<p>FI00121 indicates that any tape or optical storage device attached to the I/O (SCSI) bus of this IOP may be the failing item.</p> <p>Use the device type to determine the part.</p>
FI00122	<p>FI00122 indicates that a reserved IOA port on the IOP is the failing item.</p> <p>If the IOP is type 2624, the failing item is type 6146 IOA.</p>
FI00123	<p>See symbolic FRU "DEVTERM" on page 642.</p>
FI00124	<p>FI00124 is not supported on these models. Continue with the next FRU in the list.</p>

Failing item code	Description/Action
FI00130	<p>FI00130 indicates that the Licensed Internal Code for one of the IOPs or IOAs is the failing item.</p> <p>Determine the IOP or IOA type and location:</p> <ol style="list-style-type: none"> 1. Determine the address of the IOP or IOA card. See System reference code (SRC) address formats. 2. Determine the location of the IOP or IOA card. See Finding part locations for the model you are working on, and get the type from the card at that address. 3. Look for PTFs associated with the reference code and the identified hardware type and have the customer apply them.
FI00131	<p>FI00131 indicates that one of the IOPs or IOAs, if active, is the failing item.</p> <p>Determine the IOP or IOA type and location:</p> <ol style="list-style-type: none"> 1. Determine the address of the IOP or IOA card. See System reference code (SRC) address formats. 2. Determine the location of the IOP or IOA card. See Finding part locations for the model you are working on and get the type from the card at that address. 3. Use the IOP or IOA type to determine the part.
FI00132	<p>FI00132 indicates that one of the IOAs is the failing item.</p> <p>Perform "MABIP06" on page 136 to isolate the failing IOA.</p>
FI00141	<p>FI00141 indicates that the IOP for the 7208 tape drive is the failing item.</p> <p>The failing IOP is the type 2621 IOP.</p>
FI00142	FI00142 is not supported on these models. Continue with the next FRU in the list.
FI00180	FI00180 is not supported on these models. Continue with the next FRU in the list.
FI00182	<p>For Models 270 and 820, FI00182 indicates that the local optical link card is the failing item. For Models 830, 840, SB2, and SB3, FI00182 indicates that the SPD optical bus driver is the failing item.</p> <ul style="list-style-type: none"> • If the fifth character of word 5 (xxxx <u>xxxx</u>) is 1, 5, 9, or D-2686 (266 MB/s) • If the fifth character of word 5 (xxxx <u>xxxx</u>) is 3, 7, B, or F-2688 (1062 MB/s)
FI00185	FI00185 indicates that the 12-port ASCII workstation attachment cable is the failing item.
FI00186	<ul style="list-style-type: none"> • For the Model 270 and 820, FI00186 indicates that the optical cable in the top position (even bus) of the optical link card is the failing item. • For the Model 830, 840, SB2, and SB3, FI00186 indicates that the optical cable in the top position (lower number bus) of the SPD optical Bus Driver is the failing item.
FI00187	FI00187 is not supported on these models. Continue with the next FRU in the list.
FI00189	FI00189 is not supported on these models. Continue with the next FRU in the list.
FI00200	<p>FI00200 indicates that the ac module or the removable power cable is the failing item.</p> <p>The following list shows the possible failing ac modules. See System parts for part numbers:</p> <ul style="list-style-type: none"> • System unit – part SPNLCRD • System unit expansion (FC 5070, 5072), storage expansion unit (FC 5080, 5082) • System unit expansion (FC 5071, 5073), storage expansion tower (FC 5081, 5083) <p>See Plan for cables in the Planning topic for more information.</p>

Failing item code	Description/Action
FI00203	<p>For the Models 270 and 820, FI00203 indicates that the remote bus expansion adapter card in the bus expansion unit is the failing item.</p> <p>Use the adapter card type in the bus expansion unit to determine the part.</p> <p>For Models 830, 840, SB2, and SB3, FI00203 indicates that the remote SPD optical bus receiver card in the expansion tower is the failing item.</p> <p>Use the receiver card type in the expansion tower to determine the part.</p>
FI00204	<p>For Models 270 and 830, FI00204 indicates that the bus cable between the system unit and the bus expansion unit is the failing item.</p> <p>For Models 830, 840, SB2, and SB3, FI00204 indicates that the bus cable between the migrated tower and the expansion tower is the failing item.</p>
FI00205	<p>For Models 270 and 830, FI00205 indicates that the remote bus expansion adapter for the paired bus is the failing item. Use the adapter card type in the bus expansion unit to determine the part.</p> <p>For Models 830, 840, SB2, and SB3, FI00205 indicates that the remote SPD optical bus receiver on the paired bus is the failing item. Use the receiver card type in the expansion unit bus to determine the part.</p>
FI00206	FI00206 is not supported on these models. Continue with the next FRU in the list.
FI00230	<p>FI00230 indicates that the Licensed Internal Code for the failing node is the failing item and needs to be restored.</p> <p>Determine the type of node and select the Licensed Internal Code load.</p> <ul style="list-style-type: none"> • Primary node - AJSFDJ04 • Secondary node - AJSFDJ05
FI00235	<p>FI00235 indicates that an SPCN cable that connects two frames or a frame to a node is the failing item. This failing item is applicable only if an SPCN cable is installed.</p> <p>The following list shows the lengths of the possible failing items. Click the device description to go to the part number in the Cables topic.</p> <ul style="list-style-type: none"> • SPCN cable (6 meters) • SPCN cable (15 meters) • SPCN cable (30 meters) • SPCN cable (60 meters) • Optical SPCN cable (100 meters) • SPCN optical adapter • SPCN port cable (frame-to-node) • Frame-to-frame cable • SPCN optical adapter
FI00236	FI00236 is not supported on these models. Continue with the next FRU in the list.
FI00237	FI00237 is not supported on these models. Continue with the next FRU in the list.
FI00238	FI00238 is not supported on these models. Continue with the next FRU in the list.
FI00239	FI00239 is not supported on these models. Continue with the next FRU in the list.
FI00240	FI00240 is not supported on these models. Continue with the next FRU in the list.
FI00244	FI00244 is not supported on these models. Continue with the next FRU in the list.
FI00245	<p>FI00245 indicates that the card enclosure for an unknown unit type is the failing item.</p> <p>See symbolic FRU "BACKPLN" on page 622.</p>

Failing item code	Description/Action
FI00246	FI00246 is not supported on these models. Continue with the next FRU in the list.
FI00248	FI00248 is not supported on these models. Continue with the next FRU in the list.
FI00253	FI00253 is not supported on these models. Continue with the next FRU in the list.
FI00255	FI00255 is not supported on these models. Continue with the next FRU in the list.
FI00256	FI00256 is not supported on these models. Continue with the next FRU in the list.
FI00300	<p>FI00300 indicates that media is the failing item.</p> <p>If the load source is:</p> <ul style="list-style-type: none"> • Tape, exchange the tape in the alternate IPL tape unit. • An optical storage unit, exchange the compact disc. • A hard disk drive, exchange the hard disk drive. <p>If installing from:</p> <ul style="list-style-type: none"> • Tape, exchange the tape in the alternate IPL tape unit. • An optical storage unit, exchange the compact disc.
FI00301	<p>FI00301 indicates that the magnetic storage I/O processor (MSIOP) or the combined function I/O processor (CFIOP) is the failing item.</p> <p>Use the IOP type to determine the part.</p>
FI00302	<p>FI00302 indicates that the Licensed Internal Code for the magnetic storage I/O processor (MSIOP) or the combined function I/O processor (CFIOP) is the failing item.</p> <p>Ask your next level of support for assistance.</p>
FI00310	FI00310 is not supported on these models. Continue with the next FRU in the list.
FI00315	FI00315 indicates that the battery power unit installation time life has been exceeded.
FI00316	<p>FI00316 indicates that no I/O processors were found on the bus.</p> <p>Verify the configuration information for the system. If a bus is configured to be empty, there is no problem.</p>
FI00317	<p>FI00317 indicates that the I/O processor cards at consecutive direct select addresses appear to be failing.</p> <p>The I/O processor cards or a damaged backplane could cause this problem.</p>
FI00318	FI00318 indicates that an I/O adapter attached to an I/O processor card on the failing bus is the failing item.
FI00319	<p>FI00319 indicates that the Licensed Internal Code on an I/O processor is the failing item. Install a PTF to correct the problem.</p> <p>Ask your next level of support for assistance.</p>
FI00320	FI00320 indicates that the display station used as the console is the failing item.
FI00350	<p>For Models 830, 840, SB2, and SB3 only, FI00350 indicates that the alternate IPL device is the failing item.</p> <p>See the service information for the specific device type and model installed on the system to determine the part number.</p>
FI00360	FI00360 indicates that the IPL disk device is the failing item.
FI00380	On the bus with the system console or the failing logical partition's console, the failing item is the first workstation IOP card or the workstation IOA card. The bus with the system console is bus 0001. For systems with multiple logical partitions, the logical partition's console is on bus 0001 and the consoles for other logical partitions are determined by the LPAR configuration.

Failing item code	Description/Action
FI00500	See FI01140.
FI00580	FI00580 indicates that any storage device may be the failing item. The address of the failing storage device cannot be determined.
FI00581	FI00581 indicates that a storage device at the address identified by the problem isolation procedures for the reference code is the failing item. Use the service information of the I/O device to continue analyzing the problem.
FI00584	FI00584 indicates that any storage device may be the failing item. The address of the failing storage device cannot be determined.
FI00601	FI00601 indicates that the display station is the failing item. If a link protocol converter is used to connect the console to the system, the protocol converter is the failing item.
FI00602	FI00602 indicates that the cable between the workstation attachment and the device is the failing item.
FI00603	FI00603 indicates that the 5299 multiconnector is the failing item.
FI00604	FI00604 indicates that a printer is the failing item. Use the printer device information to analyze the problem.
FI00605	FI00605 indicates that a magnetic stripe reader on a display station is the failing item.
FI00606	FI00606 indicates that the storage media is the failing item.
FI00607	FI00607 indicates that a selector light pen attached to a display station is the failing item.
FI00608	FI00608 indicates that the link protocol converter is the failing item.
FI00610	FI00610 indicates that the twinaxial workstation IOP or the twinaxial workstation IOA attached to a combined function I/O processor (CFIOP), communications IOP, or combined function IOP is the failing item. Use the workstation IOP or IOA type to determine the part.
FI00611	FI00611 is not supported on these models. Continue with the next FRU in the list.
FI00612	FI00612 is not supported on these models. Continue with the next FRU in the list.
FI00613	FI00613 indicates that the display station used as the console is the failing item.
FI00614	FI00614 indicates that a unit reference code of FFFF was indicated when the user entered the ANZPRB (Analyze Problem) command from a workstation. The failing items for this error can be identified by running the complete ANZPRB command. The failing items are also in the problem log when the WRKPRB command is entered.
FI00615	FI00615 indicates that the twinaxial workstation attachment cable is the failing item. Check the twinaxial workstation attachment cable for the part number.
FI00616	FI00616 indicates that the 5259 migration data link is the failing item. Exchange the 5259 migration data link.
FI00626	FI00626 indicates that the modem on the failing port is the failing item. Exchange the modem.
FI00630	FI00630 indicates that the multi-line communications IOP is the failing item. Use the IOP type to determine the part.

Failing item code	Description/Action
FI00631	FI00631 indicates that a cable other than the cable from the workstation IOA to the first device is the failing item.
FI00632	FI00632 indicates that the cable from the workstation IOA to the first device is the failing item.
FI00700	FI00700 indicates that the remote data terminal equipment (DTE) or an attached device is the failing item. Report this problem to the operator of the remote equipment.
FI00701	FI00701 indicates that a local communications cable is the failing item. Use the cable to determine the part.
FI00702	FI00702 indicates that the local cable for the automatic call unit is the failing item. Check the automatic call unit interface cable for the part number.
FI00703	FI00703 indicates that the automatic call unit is the failing item.
FI00704	FI00704 indicates that the local data circuit-terminating equipment (DCE) is the failing item.
FI00705	FI00705 indicates that the remote data circuit-terminating equipment (DCE) is the failing item. Report this problem to the operator of the remote equipment.
FI00708	FI00708 indicates that the local communications cable (X.21 interface) is the failing item. Check the communications cable for the part number.
FI00709	FI00709 indicates that the local communications cable (V.35 interface) is the failing item. Check the communications cable for the part number.
FI00710	FI00710 indicates that the local communications cable (V.24 interface with remote power on) is the failing item. The remote power-on feature is given support by using an available pin on the EIA-232/V.24 enhanced or EIA-232/V.24 non-enhanced cables. Check the communications cable for the part number.
FI00711	FI00711 indicates that the local communications cable (token-ring interface cable) is the failing item. Note: An IBM Cabling System Patch Cable or a comparable cable may have been supplied by the user to increase the length of this cable. Any cable attached to the token-ring interface cable may also be the failing item.
FI00712	FI00712 indicates that the token-ring access unit is the failing item.
FI00716	FI00716 indicates that the EIA-232/V.24 enhanced cable is the failing item. Check the communications cable for the part number.
FI00717	FI00717 indicates that the EIA-232/V.24 non-enhanced cable is the failing item. Check the communications cable for the part number.
FI00718	FI00718 indicates that an IOP card is the failing item. Use the IOP type to determine the part.

Failing item code	Description/Action
FI00719	<p>FI00719 indicates that an IOA card is the failing item.</p> <ol style="list-style-type: none"> Is the IOA location information available in the Service Action Log entry, Hardware Service Manager (HSM), or in Service Focal Point on the Hardware Management Console? <ul style="list-style-type: none"> Yes: Exchange the IOA. See Finding part locations for the model you are working on and get the type from the card at that location. Use the type to look up the part number in System parts. The part locations table provides a link to the correct failing item remove and replace procedure. No: Continue with the next step. Determine the address of the IOA card. See System reference code (SRC) address formats. Determine the location of the IOA card. See Finding part locations for the model you are working on and get the type from the card at that address. Use the type to look up the part number in System parts. The part locations table provides a link to the correct failing item remove and replace procedure.
FI00720	<p>FI00720 indicates that the Ethernet transceiver is the failing item.</p> <p>Verify that the signal quality error switch in the transceiver that the Ethernet is attached to is set to active.</p> <p>See the transceiver operator's guide for the correct operation or the correct remove and replace procedure.</p>
FI00721	<p>FI00721 indicates that the token-ring IOA card is the failing item.</p> <p>Use the IOA type to determine the part.</p>
FI00722	<p>FI00722 indicates that the cable attached to the local area network IOA is the failing item.</p>
FI00723	<p>FI00723 indicates that the communications two-port adapter cable for the communications IOA card is the failing item.</p> <p>Exchange the communications two-port adapter cable.</p> <p>If this does not correct the problem, use the IOA type to determine the part.</p>
FI00725	<p>FI00725 indicates that the Ethernet IOA card is the failing item.</p> <p>Use the IOA type to determine the part.</p>
FI00726	<p>FI00726 indicates that a communications IOA card is the failing item:</p> <p>Use the IOA type to determine the part.</p>
FI00727	<p>FI00727 indicates that one of the IOAs attached to either a combined function I/O processor (CFIOP), multiline communications IOP or an Integrated xSeries Server (IXS) for iSeries server is the failing item.</p> <p>Perform "MABIP06" on page 136 to isolate the failing IOA.</p>
FI00728	<p>FI00728 indicates that the local communications cable (RS449/V.36 interface) is the failing item.</p> <p>Check the communications cable for the part number.</p>
FI00730	<p>FI00730 indicates that the Licensed Internal Code module for an I/O card may be the failing item.</p> <p>Ask your next level of support for assistance.</p>
FI00731	<p>FI00731 is not supported on these models. Continue with the next FRU in the list.</p>
FI00732	<p>FI00732 is not supported on these models. Continue with the next FRU in the list.</p>
FI00733	<p>FI00733 is not supported on these models. Continue with the next FRU in the list.</p>

Failing item code	Description/Action
FI00734	FI00734 is not supported on these models. Continue with the next FRU in the list.
FI00735	FI00735 is not supported on these models. Continue with the next FRU in the list.
FI00741	FI00741 indicates that the telephone cable to the wall outlet is the failing item. Check the cable for the part number.
FI00742	FI00742 indicates that the communications coupler is the failing item. Check the coupler for the part number.
FI00751	FI00751 indicates that the Licensed Internal Code module is the failing item. Ask your next level of support for assistance.
FI00810	FI00810 indicates that the magnetic tape is the failing item. Exchange the magnetic tape.
FI00830	FI00830 indicates that the external signal cable is the failing item. See “EXTSCSI” on page 650 for cable part numbers.
FI00832	FI00832 indicates that the external signal cable is the failing item. See “EXTSCSI” on page 650 for cable part numbers.
FI00841	FI00841 indicates that the terminating plug for the attached device is the failing item. • For tape devices—see FI00880
FI00842	FI00842 indicates that the external signal cable for the attached device is the failing item. See symbolic FRU “EXTSCSI” on page 650.
FI00844	FI00844 indicates that the device controller for the attached device is the failing item. • For tape devices see FI00882.
FI00845	FI00845 indicates that the external signal cable is the failing item. See symbolic FRU “EXTSCSI” on page 650.
FI00850	FI00850 indicates that the interface cables attached to the tape IOP are the failing items.
FI00851	FI00851 indicates that the I/O device attached to the tape IOP is the failing item. Use the service information of the I/O device to continue analyzing the problem.
FI00856	FI00856 indicates that an active tape IOP is the failing item. Use the IOP type to determine the part.
FI00870	FI00870 indicates that a storage device is the failing item. Use the device type to determine the part. If a device location is not listed in the Service Action Log entry or in Hardware Service Manager (HSM), then the failing device is either externally attached or the failing device may be part of an unsupported configuration. If the device is in a 3995 or 3996 optical library, refer to the Maintenance Information for the 3995 or 3996 optical library to replace the failing device. Note: The 636x tape unit is located in the FC 5032 removable storage unit.

Failing item code	Description/Action
FI00871	<p>FI00871 indicates that the attached tape device is the failing item.</p> <p>For part number information, select the type number to go to the part number information in the System parts.</p> <ul style="list-style-type: none"> • 3490 - External 1/2 inch cartridge drive: Refer to the device information to determine the part number to replace. • 3570 - External 3570 cartridge drive: Refer to the device information to determine the part number to replace. • 358x - External Ultrium drive: Refer to the device service information to determine the part number to replace. • 3590- External 1/2 cartridge tape drive: Refer to the device service information to determine the part number to replace. • 3592 - External 1/2 inch cartridge drive: Refer to the device service information to determine the part number to replace. • 4685 - VXA2 drive. • 6381 - Internal 1/4 inch cartridge drive with QIC-2GB (DC) on the door. • 6382 - Internal 1/4 inch cartridge drive with QIC-4GB (DC) on the door. • 6383 - Internal 1/4 inch cartridge drive with MLR1-S on the front cover. <i>Continued....</i>
FI00871	<p><i>Continued...</i></p> <p>FI00871 indicates that the attached tape device is the failing item.</p> <ul style="list-style-type: none"> • 6384 - Internal 1/4 inch cartridge drive with SLR60 on the front cover. • 6386 - Internal 1/4 inch cartridge drive with MLR3 on the front cover. • 6387 - Internal 1/4 inch cartridge drive with SLR100 on the front cover. • 7207 Model 122 - External 1/4 inch cartridge drive with QIC-4GB-DC on the door. • 7208 - External 8mm tape drive; refer to the device service information to determine the part number(s) to replace. • 7239 Model 308 - External 1/4 inch cartridge tape library. • 9348 - External 1/2 inch reel tape unit. Is one of the following status codes displayed anywhere on the 9348 control panel? (x = any number) <ul style="list-style-type: none"> - Exxx - Fxxx - ***xX - ***** <p>No: Refer to the 9348 Service Information and use the "Running Diagnostic Tests" procedure to run Diagnostic Test 1. If the test fails, use the 9348 Service Information to determine the failing items.</p> <p>Yes: Use the "Status Codes" section of the 9348 Service Information to determine the failing items.</p>
FI00872	<p>FI00872 indicates that the interface is the failing item.</p> <ul style="list-style-type: none"> • Internal device: See FI01140. • External device: See symbolic FRU "EXTSCSI" on page 650.

Failing item code	Description/Action
FI00880	<p>FI00880 indicates that a terminating plug on the device bus to this IOP is the failing item. Note: If the unit is a 9427, an internal terminating plug is used See the service information for the specific device.</p> <p>The following list shows the possible failing items:</p> <ul style="list-style-type: none"> • Terminating plug for 2440 Tape Unit – part 79X3795 • Terminating plug for 3490, 3570, 3590, and 7208 Model 342 Tape Units – part 61G8324 • SCSI differential terminating plug for 3995 iSeries Optical Library Dataserver – part 79X3795 • SCSI single-ended terminating plug for 3995 iSeries Optical Library Dataserver Models C4x – part 34H5608 • Terminator for 637x, 638x, and 6390 Tape Units – Terminator is part of the disk unit backplane. Use the IOA type and see the symbolic FRU “DEVTERM” on page 642 to determine the correct part. • Terminating plug for 63A0 Tape Unit – See device documentation. • Terminating plug for 7208 Model 002 Tape Drive – part 91F0721 • Terminating plug for 7208 Model 012 Tape Drive – part 46G2599 • Terminating plug for 7208 Model 222 Tape Drive – part 46G2599 • Terminating plug for 7208 Model 232 Tape Drive – part 79X3795 • Terminating plug for 7208 Model 234 Tape Drive – part 79X3795 • Terminating plug for 9348 Tape Unit – part 79X3795
FI00882	<p>FI00882 indicates that the addressed unit is the failing item.</p> <p>Determine the address and type of the failing unit System reference code (SRC) address formats.</p> <p>If one of the following device types is the failing item, see the service information for the device model installed on the system: * 2440 * 3490 * 3570 * 3590 * 3995 * 63A0 * 7208 * 9347* 9348 * 9427.</p>
FI00883	FI00883 indicates that a unit attached to the same IOP, other than the addressed unit identified by FI00882, is the failing item.
FI00884	<p>FI00884 indicates that any unit attached to the IOP may be the failing item.</p> <p>See FI00882 for the list of possible units.</p>
FI01040	FI01040 indicates that you have an OptiConnect system, and the error is on an iSeries server that is connected to it.
FI01101	<p>FI01101 indicates that the addressed IOA card on the I/O processor is the failing item.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> 1. Determine the address of the IOA card. See System reference code (SRC) address formats. 2. Determine the location of the IOA card. See Finding part locations. 3. Exchange the failing device. Use the device type to determine the part.
FI01103	<p>FI01103 and FI01104 indicate that an attached IOA card is the failing item.</p> <p>Perform “MABIP06” on page 136 to isolate the failing IOA.</p>
FI01104	See FI01103.

Failing item code	Description/Action
FI01105	<p>FI01105 indicates that the addressed storage device is the failing item.</p> <p>Perform the following steps:</p> <ol style="list-style-type: none"> 1. Is the device location information available in the Service Action Log? <ul style="list-style-type: none"> • No: Continue with the next step. • Yes: Exchange the failing item. See Disk unit recovery procedures. 2. Find the IOP address and the device address. See System reference code (SRC) address formats. 3. To determine the location of the I/O processor card, see Finding part locations and find the diagram of the system. Then find: <ul style="list-style-type: none"> • The IOP card location identified by the direct select address. • The addressed storage device location identified by the device address. 4. Exchange the failing device. Use the device type to determine the part.
FI01106	<p>FI01106 indicates that a storage device other than the addressed storage device is the failing item.</p> <ol style="list-style-type: none"> 1. See FI01105 to find the addressed device. The failing item could be any device with the same IOP address and I/O (SCSI) bus number but with a different device unit number. 2. If the reference code that called out this failing item does not have a problem analysis procedure, perform "IOPIP16" on page 179 to isolate the possible failing device.
FI01107	<p>FI01107 indicates that any storage device attached to the I/O (SCSI) bus of this IOP may be the failing item.</p> <p>Perform the following:</p> <ol style="list-style-type: none"> 1. Find the IOP address. See System reference code (SRC) address formats. 2. To determine the location of the I/O processor card, see Finding part locations. The unit reference code indicates the I/O (SCSI) bus that has the problem: <ul style="list-style-type: none"> • URC 3020, 3100 – I/O Bus 0 • URC 3021, 3101 – I/O Bus 1 • URC 3022, 3102 – I/O Bus 2 • URC 3023, 3103 – I/O Bus 3 • Any Other URC – Any I/O bus on the I/O card 3. See Finding part locations to find the diagram of the system unit or the expansion unit and find: <ul style="list-style-type: none"> • The IOP card location identified by the direct select address. • All the storage devices on the same I/O (SCSI) bus. Note: The I/O (SCSI) bus number is the first character of the device unit address. 4. Exchange the failing device. Use the device type to determine the part. 5. If the reference code that called out this failing item does not have a problem analysis procedure, perform "IOPIP16" on page 179 to isolate the possible failing device.
FI01108	<p>FI01108 indicates that the I/O (SCSI) bus or power cable is the failing item.</p> <p>See FI01140 and FI01141.</p>
FI01109	<p>A backplane or a connection to the backplane may be failing.</p> <p>See the symbolic FRU "BACKPLN" on page 622.</p>
FI01110	<p>FI01110 indicates that the diskette unit is the failing item.</p> <p>Use the diskette device type to determine the part.</p>

Failing item code	Description/Action
FI01112	<p>FI01112 indicates that the active IOP is the failing item.</p> <p>Perform the following steps:</p> <ol style="list-style-type: none"> 1. Find the IOP address. See System reference code (SRC) address formats. 2. To determine the location of the I/O processor card, see Finding part locations. 3. Use the IOP type to determine the part.
FI01117	<p>FI01117 indicates that any IOA, card, cable, or device attached to the IOP may be the failing item.</p> <ol style="list-style-type: none"> 1. Find the IOP address. See System reference code (SRC) address formats. 2. To determine the location of the I/O processor card, see Finding part locations. 3. Identify the IOAs, cards, cables, and devices attached to the IOP found in the preceding steps. 4. Exchange the IOAs, cards, cables, and devices attached to the IOP one at a time until you have corrected the problem.
FI01119	See symbolic FRU (BACKPLN).
FI01121	FI01121 is not supported on these models. Continue with the next FRU in the list.
FI01130	<p>For Models 270 and 820: FI01130 indicates that the disk drive and logic card is the failing item.</p> <p>Find the disk unit type number in the (Type, model, and part number list) to determine the part number.</p> <p>For Models 830, 840, SB2, and SB3: This failing item is in a migrated tower. See the failing item table for this failing item in the <i>(Analysis, Repair and Parts)</i> manual on the V5R1 Supplemental Manuals web site .</p>
FI01131	FI01131 is not supported on these models. Continue with the next FRU in the list.
FI01132	FI01132 is not supported on these models. Continue with the next FRU in the list.
FI01140	<p>FI01140 indicates that the I/O (SCSI) bus cable is the failing item.</p> <p>Perform the following steps:</p> <ol style="list-style-type: none"> 1. Are there external devices attached? <ul style="list-style-type: none"> • No: Continue with the next step. • Yes: Choose from the following options: <ul style="list-style-type: none"> – For SCSI attached external devices, see “EXTSCSI” on page 650. – For Fibre Channel attached external devices, see “FCCABLE” on page 652. 2. Find the IOP address. See System reference code (SRC) address formats. 3. To determine the location of the I/O processor card, see Finding part locations. 4. Exchange the failing item associated with the IOP address. <p>Note: Any of the SCSI cables or backplanes between the IOA and the device could be the failing item. See Cables.</p>

Failing item code	Description/Action
FI01141	<p>FI01141 indicates that a loss of power to an IOP, to an internal device, or to an external device may have occurred.</p> <ol style="list-style-type: none"> Are 0000 xxxx, 1xxx xxxx, or A6xx 698x SRCs displayed on the control panel? <ul style="list-style-type: none"> No: Continue with the next step. Yes: Go to the Reference codes topic and use the SRC displayed on the control panel. Did the SRC that directed you to this FI code involve an externally attached device or an IOP with an externally attached device? <ul style="list-style-type: none"> No: Continue with the next step. Yes: Verify that there is no obvious problem with power to the device. If you suspect a power problem with the device, go to the service information for that external device. The power supply cables or connections to internal disk units, tape units, diskette units, or optical storage units may be the failing item. <ul style="list-style-type: none"> For cable information, see Cables. For part numbers, see the System parts.
FI01201	<p>FI01201, FI01202, and FI01203 indicates that the disk drive and logic card is the failing item.</p> <p>Find the disk unit type number in the (Type, model, and part number list) to determine the part number.</p>
FI01202	See FI01201.
FI01203	See FI01201.
FI02092	See FI00092.
FI02112	<p>FI02112 indicates that the addressed storage device is the failing item.</p> <p>Perform the following steps:</p> <ol style="list-style-type: none"> Is the device location information available in the Service Action Log? <ul style="list-style-type: none"> No: Continue with the next step. Yes: Exchange the failing item. See Disk unit recovery procedures. Find the IOP address and the device address. See System reference code (SRC) address formats. To determine the location of the I/O processor card, see the Finding part locations and find the diagram of the system unit or the expansion unit. Then, find: <ul style="list-style-type: none"> The IOP card location identified by the direct select address. The addressed storage device location identified by the device address. Exchange the failing device. Possible failing addressed devices include disk, tape, optical, device backplane, or Auxiliary Cache IOA. Use the device type to determine the part.

Symbolic FRUs

This information is a list of symbolic field replaceable units (FRUs).

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

The procedures in this topic are listed alphabetically.

ACMODUL

Your server has suffered a power loss. This procedure will help you determine the source of the power loss condition that brought you here.

About this task

If the system or tower that exhibited the power loss powers on normally, or stays powered on after an ac power failure, replacement of parts might not be needed. Power failures can be caused by brown outs, building or room power receptacle power loss, loose or disconnected power cords, or possible hardware conditions.

1. Are you working with a model 575 or 59x?
 - **No:** Continue with the next step.

- **Yes:** Choose one of the following:
 - If you are here because of a 19" SPCN controlled expansion tower or drawer problem, continue with the next step.
 - If you are here because of a problem related to a 24" system unit, go to "PWR1912" on page 265.
- 2. Is the failing unit configured with a redundant power supply option (or dual line cord feature)?
 - **No:** Continue with the next step.
 - **Yes:** Go to "PWR1911" on page 260.
- 3. Are all the units powered on?
 - **Yes:** This error may have been caused by an ac outage. If the system will power on without an error, no parts need to be replaced. **This ends the procedure.**
 - **No:** On the unit that does not power on, perform the following :
 - a. Disconnect the ac line cord from the unit that does not power on.
 - b. Use a multimeter to measure the ac voltage at the system end of the ac line cord.
 - c. Is the ac voltage correct? (Refer to Table 52.)
 - **Yes:** Continue with the next step.
 - **No:** Go to step 7 on page 615.

Table 52. Correct AC voltage

Model or expansion unit	Correct AC voltage
Models 285, 505, 51x, 52x, 55x, 570, OpenPower 710, and OpenPower 720 or 5095, 0595, and 7311-D20 expansion units	100V to 127V or 200V to 240V
5074, 5079, 5088, 0588, 5094, 5294, 5790, 7311-D10, and 7311-D11 expansion units	200V to 240V

4. Are you working on model 285, 505, 51x, 52x, 55x, 570, OpenPower 710, OpenPower 720 or 5088, 0588, 5095, 0595, 5790, 7311-D10, 7311-D11 and 7311-D20 expansion unit?
 - **No:** Continue with the next step.
 - **Yes:** Perform the following:
 - a. Reconnect the ac line cord.
 - b. Verify that the failing system or tower fails to power on.
 - c. Replace the failing power supply (refer to Table 53).

Table 53. List of failing parts

Model or expansion unit	Failing part(s)	Link to locations
285 and 52x	Power supply E1	Locations — model 520, 52A, and 285
505	Power supply E1	Locations — Model 505
51x and OpenPower 710	Power supply E1	Locations — model 510 and OpenPower 710
55x and OpenPower 720	Power supply E1	Locations — model 550, 55A, and OpenPower 720
561 and 570	Power supply E1	Locations — model 561 and 570
5074 and 5079 (single line cord)	Power supply P01 Power supply P02 Power supply P03 AC module A01	Locations — 5074, 8079-002, and 8093-002 expansion units or Locations — 5079 expansion unit
5088 and 0588	Power supply P01	Locations — 0588 and 5088 expansion units

Table 53. List of failing parts (continued)

Model or expansion unit	Failing part(s)	Link to locations
5094	Power supply P01 Power supply P02 Power supply P03 AC module A01 AC module A02	Locations — 5094, 5294, and 8094-002 expansion units
5095 and 0595	Power supply P01	Locations — 0595 and 5095 expansion units
7311-D10, 7311-D11, 7311-D20, 5790	Power supply E1	Locations — 7311-D10 and 7311-D11 and 5790 expansion unit or Locations — 7311-D20 expansion unit

5. Perform the following:

- Reconnect the ac line cord to the ac module.
- Remove the ac jumper cables at the power supplies.
- Use a multimeter to measure the ac voltage at the jumper cable power supply end.

Is the ac voltage from 200V to 240V?

- No:** Continue with the next step.
- Yes:** Replace the failing power supply (refer to Table 53 on page 614). **This ends the procedure.**

6. Perform the following:

- Disconnect the ac jumper cable at the ac module output.
- Use a multimeter to measure the ac voltage at the ac module output.

Is the ac voltage from 200V to 240V?

- No:** Exchange the ac module (refer to Table 53 on page 614). **This ends the procedure.**
- Yes:** Replace the ac jumper cable (refer to Power and signal cables). **This ends the procedure.**

7. Perform the following:

- Disconnect the line cord from the customer's ac power outlet.
- Use a multimeter to measure the ac voltage at the customer's ac power outlet.

Is the ac voltage correct? (Refer to Table 52 on page 614.)

- Yes:** Exchange the failing ac line cord. **This ends the procedure.**
- No:** Perform the following:
 - Inform the customer that the ac voltage at the power outlet is not correct.
 - After the ac voltage at the power outlet is correct, reconnect the ac line cord to the power outlet. **This ends the procedure.**

AIRMOVR

A fan may be failing. Before replacing any field replaceable units (FRUs), ensure the fans and fan tray are fully seated into the fan connectors and that all cables are seated correctly.

Use the following tables to determine the failing fan. Then, see Finding part locations for the model you are working on to determine the location of the failing item, information on the part number, and a link to the removal and replacement procedure.

Table 54. For Models 285, 52x

Unit reference code	FRU
7610, 7611	A1
7620, 7621	A2

Table 54. For Models 285, 52x (continued)

Unit reference code	FRU
7630, 7631	A3

Table 55. For Model 505

Unit reference code	FRU
7610, 7611	A1
7620, 7621	A2
7630, 7631	A3
7640, 7641	A4

Table 56. For Models 55x, OpenPower 720

Unit reference code	FRU
7610, 7611	A3
7620, 7621	A4
7630, 7631	A2
7640, 7641	A1

Table 57. For Models 51x, 561, 570, OpenPower 710

Unit reference code	FRU
7610, 7611	A1
7620, 7621	A2

Table 58. For 5074, 5079, 5094, 5294 expansion units

Unit reference code	FRU
7610, 7611	B01
7620, 7621	B02

Table 59. For 5088, 0588 expansion units

Unit reference code	FRU
7610, 7611, 7620, 7621	B02 Cable fan controller card BB1
7630, 7631, 7640, 7641	B01 Cable fan controller card BB1

Table 60. For 5095 expansion unit

Unit reference code	FRU
7610, 7611	B01
7620, 7621	B02
7630, 7631	B03
7640, 7641	B04

Table 61. For D10, 7311-D11, 5790 expansion units

Unit reference code	FRU
7650, 7651	A5

Table 62. For D20 expansion unit

Unit reference code	FRU
7610, 7611	A1
7620, 7621	A2
7630, 7631	A3
7640, 7641	A4

This ends the procedure.

AJDGP01

Licensed Internal Code is the failing item. Look for PTFs associated with the reference code and have the customer apply them.

AJDG301

Licensed Internal Code is the failing item. Look for PTFs associated with the reference code and have the customer apply them.

AJEDA00

Licensed Internal Code is the failing item. Look for PTFs associated with the reference code and have the customer apply them.

AJEGP01

Licensed Internal Code is the failing item. Look for PTFs associated with the reference code and have the customer apply them.

AJEQU00

Licensed Internal Code is the failing item. Look for PTFs associated with the reference code and have the customer apply them.

AJGAM01

Licensed Internal Code is the failing item. Look for PTFs associated with the reference code and have the customer apply them.

AJGDF01

Licensed Internal Code is the failing item. Look for PTFs associated with the reference code and have the customer apply them.

AJGFN00

Licensed Internal Code is the failing item. Look for PTFs associated with the reference code and have the customer apply them.

AJGJQ01

Licensed Internal Code is the failing item. Look for PTFs associated with the reference code and have the customer apply them.

AJGLD01

Licensed Internal Code is the failing item. Look for PTFs associated with the reference code and have the customer apply them.

AJGJ601

Licensed Internal Code is the failing item. Look for PTFs associated with the reference code and have the customer apply them.

AJGW701

Licensed Internal Code is the failing item. Look for PTFs associated with the reference code and have the customer apply them.

AJLAF01

Licensed Internal Code is the failing item. Look for PTFs associated with the reference code and have the customer apply them.

AJLAG01

Licensed Internal Code is the failing item. Look for PTFs associated with the reference code and have the customer apply them.

AJLYC01

Licensed Internal Code is the failing item. Look for PTFs associated with the reference code and have the customer apply them.

AJLYD01

Licensed Internal Code is the failing item. Look for PTFs associated with the reference code and have the customer apply them.

AJSDJ01

Licensed Internal Code is the failing item. Look for PTFs associated with the reference code and have the customer apply them.

ALTMANL

An Integrated xSeries server (IXS) for iSeries service call may be needed to fix the problem on the IXS.

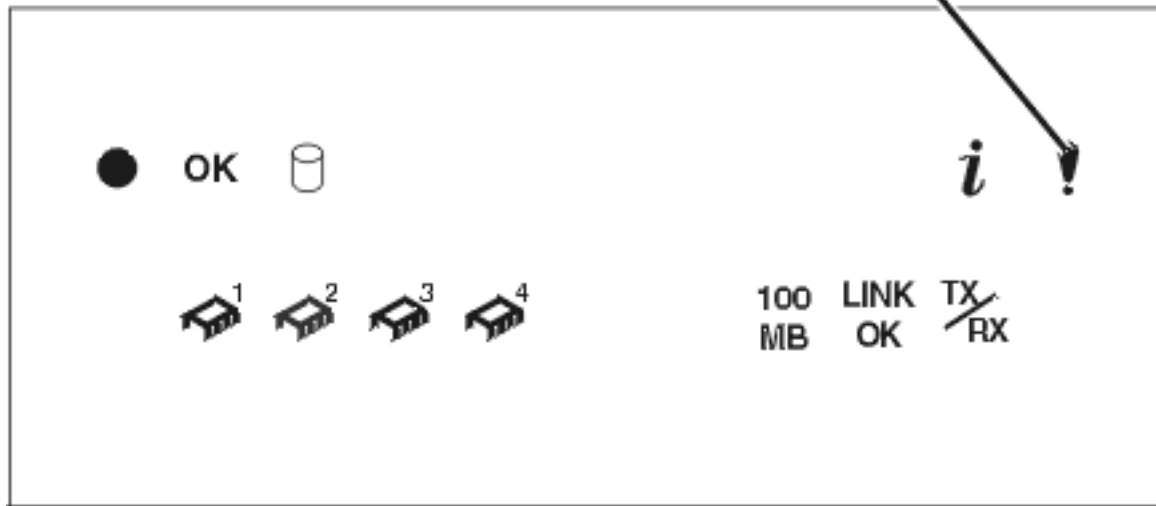
Note: An error condition is indicated by the blinking frame ID on the IXS card. When an error occurs, it can take up to ten minutes for the frame ID to start blinking, and up to one minute (after the error is reset) for the frame ID to stop blinking.

Use the following table to find instructions for the reference code you are experiencing.

Table 63. IXS reference codes and instructions

Reference code	Instructions
1xxx-8910	<p>Check the system error light (amber exclamation point, see figure below) on the IXS panel.</p> <ul style="list-style-type: none">• If the system error light is on, call the customer's IXS service provider.• If the system error light is not on, see "TWRCARD" on page 763. <p>Note: Removal of the ac line cord on the IXS unit is required to reset the flashing frame-indicating LEDs on the tower card.</p>
1xxx-8920	<p>Call the customer's IXS service provider.</p> <p>Note: Removal of the AC line cord on the IXS unit is required to reset the flashing frame-indicating LEDs on the tower card.</p>

System error light



RZAQ4802-0

This ends the procedure.

AMBTEMP

The system detected a room ambient over-temperature warning or fault.

1. Is the room ambient temperature within normal range (less than 35 degrees C or 95 degrees F)?
 - **No:** Notify the customer. The customer must bring the room temperature within normal range.
 - **Yes:** Continue with the next step.
2. Are the system front and rear doors free of obstructions?
 - **No:** Notify the customer. The system must be free of obstructions for proper air flow.
 - **Yes:** Continue with the next step.
3. Do all the positions in the processor subsystem contain processors or fillers?
 - **Yes:** Continue with the next step.
 - **No:** Fill any open positions with processors or fillers. Then go to Verifying the repair. **This ends the procedure.**
4. Do all the power supply positions contain power supplies or fillers?
 - **Yes:** Continue with the next step.
 - **No:** Fill any open positions with supplies or fan books. Then go to Verifying the repair. **This ends the procedure.**
5. Are you working with reference code 7201?
 - **Yes:** **This ends the procedure.**
 - **No:** Continue with the next step.
6. Are you working with reference code 7200?
 - **Yes:** Refer to the reference code error log for failing rack/unit location information, and then continue to next step. For information on displaying error logs refer to Displaying error and event logs
 - **No:** Continue with the next step.
7. Perform the following:

- For models 285, 505, 51x, 52x, 55x, OpenPower 710, OpenPower 720, exchange the control panel (see “CTLPNL” on page 640). Then continue with the next step.
 - For models 561 and 570, exchange processor 1 and processor 2, one at a time, until either the problem is resolved or you have replaced both processors (see Finding part locations). Then continue with the next step.
8. After each FRU is exchanged, is the error code that sent you to this procedure still reported?
- **No:** The problem has been corrected. Go to Verifying the repair. **This ends the procedure.**
 - **Yes:** Replace the next FRU on the list. If all FRUs on the list have been replaced, call your next level of support. **This ends the procedure.**

AMBTMP1

Ambient air temperature is too high for optimal performance.

About this task

Air used for cooling the unit is above the temperature at which the unit is designed to run at maximum performance. The following checks will help determine the problem:

- If the room temperature is above the specified range for the unit reporting this problem, then take steps to lower the room temperature.
- If the temperature of the air being drawn into the unit is above the specified range, either move the unit to a place where the air is within range, or take steps to reduce the temperature of the air surrounding the unit. This can be accomplished by moving the source of the air that is too warm.
- If the temperature of the air at the unit’s air intake is within the range specified contact your next level of support.

AMBTMP2

Ambient air temperature is back within range.

About this task

Ambient air temperature entering the system unit has returned to the nominal operational range for maximum performance. This message and/or symbolic FRU results when the temperature of the air entering the unit was previously reported to be above the unit’s specified range. This message and/or symbolic FRU is issued when the unit detects that the ambient air temperature has dropped to within the specified range for maximum performance. No action is necessary.

ANYBRDG

Find the location of the card reporting the problem and its corresponding PCI bridge set. Any cable, card, or card enclosure—not necessarily the card that reported the problem—connected to the PCI bridge set may be causing the problem.

ANYBUS

Any cable, card, or card enclosure may be causing an IOP-detected bus error, although the IOP that is reporting the problem may not be causing the problem.

ANYFC

Any IOA, hub, gateway, or device attached to the same Fibre Channel interface may be failing.

ANYPROC

The failing component is one of the system processors.

Use the table below to determine what FRU to replace and how to replace it.

Note: To simplify this information, secondary units on the 570 server are numbered 1 through 3-secondary unit 1 being nearest to the primary unit and secondary unit 3 being furthest.

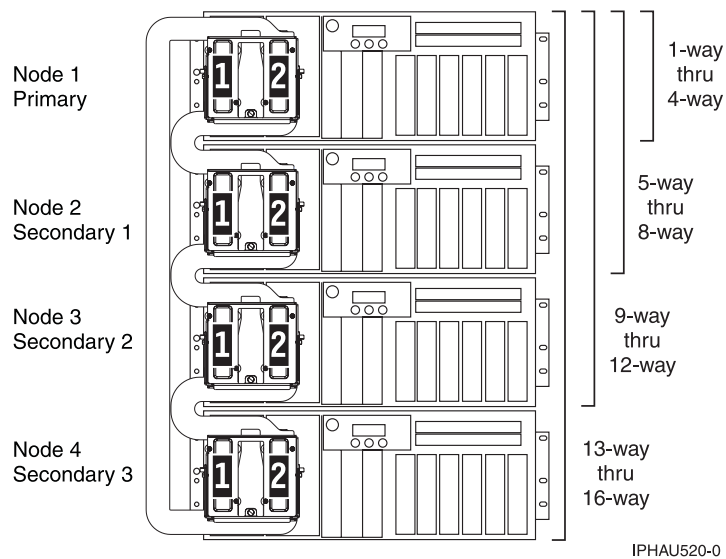


Table 64. ANYPROC failing components

System model	Name of symbolic FRU to locate	FRU name (replace in order, one at a time)	Link to locations information
505	ANYPROC	System backplane	Locations — model 505
510 and OpenPower 710	ANYPROC	System backplane	Locations — model 510 and OpenPower 710
515, 520, and 525	ANYPROC	System backplane	Locations — Model 515, 520, and 525
550 and OpenPower 720	ANYPROC	Processor card 1 Processor card 2	Locations — OpenPower 720 and Model 550
570	ANYPROC	For each unit, starting with the primary unit and then the secondary units:Processor card 1Processor card 2	Locations — Model 570
575	ANYPROC	Processor backplane	Locations — model 575
590 and 595	ANYPROC	For each node, starting with node 0:MCM 0MCM 1	Locations — model 590 and 595

This ends the procedure.

AS4NTDD

The Windows® server application processor device driver may be causing the problem.

Refer to Windows environment on iSeries in the iSeries information center, or contact your next level of support for assistance.

AUXCBL

Replace the SCSI cable that connects the auxiliary cache I/O adapter to the storage I/O adapter.

- Are you working on a 571F/575B combination storage and auxiliary cache IOA card set (uses two card slot locations)?
 - Yes:** This symbolic FRU does not apply. The SCSI cable is not a FRU on this card set. Go to the next item in the failing item list. **This ends the procedure.**

- **No:** Continue with the next step.
2. Find the location of the auxiliary cache I/O adapter:
 - a. Determine the address of the auxiliary cache I/O adapter. See System reference code (SRC) address formats.
 - b. Determine the location of the auxiliary cache I/O adapter. See Finding part locations for the model you are working on.
 3. Replace the SCSI cable that connects the auxiliary cache I/O adapter to the storage I/O adapter. See Part number catalog for cable part number information.

Results

This ends the procedure.

Note: In order to replace the SCSI cable concurrently, you **must** use concurrent maintenance to power off the auxiliary cache I/O adapter. Replace the cable and then use concurrent maintenance to power on the auxiliary cache I/O adapter. **Do NOT replace the cable when both adapters are powered on.**

AUXIOA

Replace the auxiliary I/O adapter.

If you are working on a 571F/575B combination storage and auxiliary cache IOA card set, which uses two card slot locations, then replace the entire card set.

Use the location information in the Service Action Log, if it is available. If the location information is not available, determine the address of the auxiliary cache I/O adapter. See System reference code (SRC) address formats. Use the address to find the location (see Finding part locations).

BACKPLN

A backplane or a connection to the backplane may be failing. Use this procedure to identify which backplane may be failing.

About this task

Note: Before replacing any parts, verify the connections to the backplane.

1. Were you sent here by a power reference code (1xxx xxxx)?
 - **No:** Continue with the next step.
 - **Yes:** Go to “SYSBKPL” on page 758. **This ends the procedure.**
2. Determine the location of the device by performing the following:
 - a. Use the location information in the error log if it is available. If no location information for the device is available, use the location information for the I/O adapter instead.
 - b. If no location information is available for either the device or the I/O adapter, find the address of the device or I/O adapter (see System reference code (SRC) address formats). Use the address to find the location (see Finding part locations).
 - c. Use Cables to locate the device, cable, and backplane. Any backplane connecting the device or I/O adapter may be the cause of the problem. For backplane part numbers and remove and replace procedures, see Finding part locations.

Results

This ends the procedure.

BATCHGR

A battery power unit charger is the failing item.

Exchange the battery power unit charger. See Part number catalog.

Note: When a part number is displayed on the control panel of a system or expansion unit, replace that part first.

This ends the procedure.

BATRY

The battery may be the failing item.

Note: When a part number is displayed on the control panel of a system or expansion unit, replace that part first.

The failing battery is in a 5074 or 5079 expansion I/O tower. The battery includes all four battery power units. See Finding part locations before exchanging the battery.

This ends the procedure.

BKPLEXT

Use this procedure when replacing the backplane extender on 570, 575, 590, or a 595.

About this task

The failing component is the backplane extender. Use the following table to determine what FRU to replace and how to replace it.

System model	Name of symbolic FRU to locate	FRU name (Replace FRUs one at a time, in the order listed, from top to bottom.)	Link to locations information
570	BKPLEXT	Regulator distribution connection backplane	Locations — model 561 and 570
Multiple 570's sequentially cabled together	BKPLEXT	Primary unit: Regulator distribution connection backplane	Locations — model 561 and 570
		Secondary unit 1: Regulator distribution connection backplane	
		Secondary unit 2: Regulator distribution connection backplane	
		Secondary unit 3: Regulator distribution connection backplane	
575	BKPLEXT	Processor backplane	../iphau/loc575.htm
590, 595	BKPLEXT	Node 0 backplane Node 1 backplane Node 2 backplane Node 3 backplane	../iphau/loc590.htm

BRDGSET

The multi-adapter bridge hardware is having a problem with one or more PCI cards or adapters in the PCI bridge set, but the exact card or adapter cannot be identified.

About this task

The problem may be with a card, a card slot, or an embedded adapter. The PCI bridge set is indicated by the Direct Select Address (DSA) in word 7 of the reference code. This symbolic FRU only appears in the serviceable event user interface when the LIC could not determine which PCI bridge set has the problem.

1. Are you working from a serviceable event user interface of an operating system, service processor, or the HMC that is giving you a card position or list of card positions for this FRU?

- **Yes:** Go to step 5.

Note: When there is a list of locations in this FRU's location code, the card locations will be separated by commas. A range of card positions will show the starting card position, a colon, and the ending card position.

- **No:** Perform the following:
 - Determine the location of the cards in the group using the DSA. Record the DSA (word 7 of the reference code) from the user interface you are using.
 - Locate the card(s) specified in the DSA by going to "MABIP53" on page 145. Return here and continue with the next step after locating the card(s).

2. Did "MABIP53" on page 145 identify a single card location?

- **Yes:** This is the location of the failing item. Go to step 5.
- **No:** Perform the following (refer to Removing and replacing parts and the table below):
 - a. Remove all of the adapter and/or IOP cards in the locations that are identified in the given range of card slots. Do not remove any FRUs with embedded adapters, only FRUs in PCI card slots.
 - b. Replace each card one at a time.

Note: For i5/OS adapters controlled by IOPs, replace the IOP before any of the adapters. Power on the unit after you replace each card until either the problem reappears or you have replaced each card. Then continue with the next step.

3. Did the problem reappear?

- **Yes:** The last card that you replaced before the problem reappeared is the failing item. **This ends the procedure.**
- **No:** Continue with the next step.

4. Did "MABIP53" on page 145 identify a FRU with embedded adapters?

- **Yes:** The problem is in the FRU with the embedded adapter. Continue with the next step and exchange that FRU using the following table to link to the service information for that FRU.
- **No:** The problem may be intermittent. Contact your next level of support. **This ends the procedure.**

5. Use the links in the following table to locate and replace the failing item(s).

Table 65. Failing items for symbolic FRU BRDGSET

Model, expansion unit, or machine type	Symbolic FRU to locate	Link to locations information
505	BRDGSET	Locations — model 505
515, 520, 525	BRDGSET	Locations — model 515, 520, 525
550 and OpenPower 720	BRDGSET	Locations — OpenPower 720 and model 550
570	BRDGSET for correct system unit (the primary or a secondary)	Locations — model 570
5074, 8079-002, 8093-002	BRDGSET	Locations — 5074, 8079-002, and 8093-002 expansion units
5079	BRDGSET	Locations — 5079 expansion unit

Table 65. Failing items for symbolic FRU BRDGSET (continued)

Model, expansion unit, or machine type	Symbolic FRU to locate	Link to locations information
5088, 0588	BRDGSET	Locations — 5088 and 0588 expansion units
5094, 5294, 8094-002	BRDGSET	Locations — 5094, 5294, and 8094-002 expansion units
5095, 0595	BRDGSET	Locations — 5095 and 0595 expansion units
Type 1519 — external xSeries server	BRDGSET	Locations — Integrated xSeries adapter card (IXA)
7311-D10, 7311-D11, and 5790	BRDGSET	Locations — 7311-D10, 7311-D11, and 5790 expansion units
7311-D20	BRDGSET	Locations — 7311-D20 expansion unit
5791, 5794, and 7040-7040-61D	BRDGSET	Locations — 5791, 5794, and 7040-7040-61D expansion units

Results

This ends the procedure.

BRDGST1

The multi-adapter bridge hardware is having a problem with one or more PCI cards or adapters in the first PCI bridge set in the enclosure, but the exact card or adapter cannot be identified.

About this task

The problem can be with a card, a card slot, or an embedded adapter. The PCI bridge set is indicated by the Direct Select Address (DSA) in word 7 of the reference code.

- Are you working from a serviceable event user interface of an operating system, service processor, or the HMC and there is a card position or list of card positions given for this FRU?
 - Yes:** Then the position(s) given is the location of the failing component(s). When there is a list of locations in this FRU's location code, the card locations will be separated by commas. A range of card positions will show the starting card position, a colon, and the ending card position. Go to step 5 on page 626.
 - No:** Perform the following:
 - Determine the location of the cards in the group using the DSA. Record the DSA, which is word 7 of the reference code, from the user interface you are using.
 - Locate the card(s) specified in the DSA by going to "MABIP53" on page 145. Return here after locating the card or cards and continue with the next step.
- Were you able to identify a single card position by performing "MABIP53" on page 145?
 - Yes:** This is the location of the failing item. Go to step 5 on page 626.
 - No:** Continue with the next step.
- Perform the following, referring to the removal and replacement procedures for each FRU location you determined (you can find links to the locations information, and from there to the removal and replacement procedures, in the table at the end of this procedure):
 - Remove all of the adapter and/or IOP cards in the locations that are identified in the given range of card slots. Do not remove any FRUs with embedded adapters, only FRUs in PCI card slots.
 - Replace each card one at a time.

Note: For i5/OS adapters controlled by IOPs, replace the IOP before any of the adapters. Power on the unit (as instructed in the removal and replacement procedure indicated by following the link in the following table) after you replace each card until either the problem reappears or you have replaced each card.

c. Did the problem reappear?

- **Yes:** The last card that you replaced before the problem appeared again is the failing item. **This ends the procedure.**
- **No:** Continue with the next step.

4. Did you identify a FRU with embedded adapters when performing “MABIP53” on page 145?

- **Yes:** The problem is in the FRU with the embedded adapter. Continue with the next step and exchange that FRU.
- **No:** The problem may be intermittent. Contact your next level of support. **This ends the procedure.**

5. Use the links in the following table to locate and replace the failing item(s).

Table 66. Failing item for symbolic FRU BRDGST1

System model, expansion unit, or machine type	Symbolic FRU to locate	FRU name	Link to locations
505	BRDGST1	System backplane	Locations — model 505
520	BRDGST1	PCI bridge set 1	Locations — model 520
550 and OpenPower 720	BRDGST1	PCI bridge set 1	Locations — OpenPower 720 and model 550
570	BRDGST1	PCI bridge set 1 (for correct system unit)	Locations — model 570
5074, 8079-002, 8093-002	BRDGST1	PCI bridge set 1	Locations — 5074, 8079-002, and 8093-002 expansion units
5079	BRDGST1	PCI bridge set 1	Locations — 5079 expansion unit
5088, 0588	BRDGST1	PCI bridge set 1	Locations — 5088 and 0588 expansion units
5094, 5294, 8094-002	BRDGST1	PCI bridge set 1	Locations — 5094, 5294, and 8094-002 expansion units
5095, 0595	BRDGST1	PCI bridge set 1	Locations — 5095 and 0595 expansion units
Type 1519 — external xSeries server	BRDGST1	Follow RIO/HSL cable	Locations — Integrated xSeries adapter card (IXA)
7311-D10, 7311-D11, and 5790	BRDGST1	PCI bridge set 1	Locations — 7311-D10, 7311-D11, and 5790 expansion units
7311-D20	BRDGST1	PCI bridge set 1	Locations — 7311-D20 expansion unit
5791, 5794, and 7040-7040-61D	BRDGST1	PCI bridge set 1 on backplane 1 (left side)	Locations — 5791, 5794, and 7040-7040-61D expansion units
	BRDGST1	PCI bridge set 1 on backplane 2 (right side)	

BRDGST2

PCI I/O card group in the second PCI bridge set (middle adapter card range when there are three PCI bridge sets and high adapter card range when there are two PCI bridge sets), IOAs and/or IOPs.

About this task

The multi-adapter bridge hardware is having a problem with one or more PCI cards or adapters in the second PCI bridge set in the enclosure, but the exact card or adapter cannot be identified. The problem can be with a card, a card slot, or an embedded adapter. The PCI bridge set is indicated by the Direct Select Address (DSA) in word 7 of the reference code.

- Are you working from a serviceable event user interface of an operating system, service processor, or the HMC and there is a card position or list of card positions given for this FRU?
 - Yes:** Then the position(s) given is the location of the failing component(s). When there is a list of locations in this FRU's location code, the card locations will be separated by commas. A range of card positions will show the starting card position, a colon, and the ending card position. Go to step 5.
 - No:** Perform the following:
 - Determine the location of the cards in the group using the DSA. Record the DSA, which is word 7 of the reference code, from the user interface you are using.
 - Locate the card(s) specified in the DSA by going to "MABIP53" on page 145. Return here after locating the card or cards and continue with the next step.
- Were you able to identify a single card position by performing "MABIP53" on page 145?
 - Yes:** This is the location of the failing item. Go to step 5.
 - No:** Continue with the next step.
- Perform the following, referring to the remove and replace procedures for each FRU location you determined (you can find links to the locations information, and from there to the remove and replace procedures, in the table at the end of this procedure):
 - Remove all of the adapter and/or IOP cards in the locations that are identified in the given range of card slots. Do not remove any FRUs with embedded adapters, only FRUs in PCI card slots.
 - Replace each card one at a time.

Note: For i5/OS adapters controlled by IOPs, replace the IOP before any of the adapters. Power on the unit (as instructed in the remove and replace procedure indicated by following the link in the following table) after you replace each card until either the problem reappears or you have replaced each card.

 - Did the problem reappear?
 - Yes:** The last card that you replaced before the problem appeared again is the failing item. **This ends the procedure.**
 - No:** Continue with the next step.
- Did you identify a FRU with embedded adapters when performing "MABIP53" on page 145?
 - Yes:** The problem is in the FRU with the embedded adapter. Continue with the next step and exchange that FRU.
 - No:** The problem may be intermittent. Contact your next level of support. **This ends the procedure.**
- Use the links in the table below to locate and replace the failing item(s).

Table 67. Failing item for symbolic FRU BRDGST2

System model, expansion unit, or machine type	Symbolic FRU to locate	FRU location	Link to locations
520	BRDGST2	PCI bridge set 2	Locations — model 520
550 and OpenPower 720	BRDGST2	PCI bridge set 2	Locations — OpenPower 720 and model 550
570	BRDGST2	PCI bridge set 2 for correct system unit (primary or secondary)	Locations — model 570

Table 67. Failing item for symbolic FRU BRDGST2 (continued)

System model, expansion unit, or machine type	Symbolic FRU to locate	FRU location	Link to locations
5074, 8079-002, 8093-002	BRDGST2	PCI bridge set 2	Locations — 5074, 8079-002, and 8093-002 expansion units
5079	BRDGST2	PCI bridge set 2	Locations — 5079 expansion unit
5088, 0588	BRDGST2	PCI bridge set 2	Locations — 5088 and 0588 expansion units
5094, 5294, 8094-002	BRDGST2	PCI bridge set 2	Locations — 5094, 5294, and 8094-002 expansion units
5095, 0595	BRDGST2	PCI bridge set 2	Locations — 5095 and 0595 expansion units
Type 1519 — external xSeries server	BRDGST2	Follow RIO/HSL cable	Locations — Integrated xSeries adapter card (IXA)
7311-D10, 7311-D11, and 5790	BRDGST2	PCI bridge set 2	Locations — 7311-D10 and 7311-D11 and 5790 expansion unit
7311-D20	BRDGST2	PCI bridge set 2	Locations — 7311-D20 expansion unit
5791, 5794, and 7040-7040-61D	BRDGST2	PCI bridge set 2 on backplane 1 (left side)	Locations — 5791, 5794, and 7040-7040-61D expansion unit
	BRDGST2	PCI bridge set 2 on backplane 2 (right side)	

Results

This ends the procedure.

BRDGST3

PCI I/O card group in the third PCI bridge set (highest adapter card range), IOAs and/or IOPs.

About this task

The multi-adapter bridge hardware is having a problem with one or more PCI cards or adapters in the third PCI bridge set in the enclosure, but the exact card or adapter cannot be identified. The problem can be with a card, a card slot, or an embedded adapter. The PCI bridge set is indicated by the Direct Select Address (DSA) in word 7 of the reference code.

- Are you working from a serviceable event user interface of an operating system, service processor, or the HMC, and there is a card position or list of card positions given for this FRU?
 - Yes:** Then the position(s) given is the location of the failing component(s). When there is a list of locations in this FRU's location code, the card locations will be separated by commas. A range of card positions will show the starting card position, a colon, and the ending card position. Go to step 5 on page 629.
 - No:** Perform the following:
 - Determine the location of the cards in the group using the DSA. Record the DSA, which is word 7 of the reference code, from the user interface you are using.
 - Locate the card(s) specified in the DSA by going to "MABIP53" on page 145. Return here after locating the card or cards and continue with the next step.

2. Were you able to identify a single card position by performing “MABIP53” on page 145?
 - **Yes:** This is the location of the failing item. Go to step 5.
 - **No:** Continue with the next step.
3. Perform the following, referring to the remove and replace procedures for each FRU location you determined (you can find links to the locations information, and from there to the remove and replace procedures, in the table at the end of this procedure):
 - a. Remove all of the adapter and/or IOP cards in the locations that are identified in the given range of card slots. Do not remove any FRUs with embedded adapters, only FRUs in PCI card slots.
 - b. Replace each card one at a time.

Note: For i5/OS adapters controlled by IOPs, replace the IOP before any of the adapters. Power on the unit (as instructed in the remove and replace procedure indicated by following the link in the following table) after you replace each card until either the problem reappears or you have replaced each card.

- c. Did the problem reappear?

Yes: The last card that you replaced before the problem appeared again is the failing item. **This ends the procedure.**

No: Continue with the next step.

4. Did you identify a FRU with embedded adapters when performing “MABIP53” on page 145?
 - **Yes:** The problem is in the FRU with the embedded adapter. Continue with the next step and exchange that FRU.
 - **No:** The problem may be intermittent. Contact your next level of support. **This ends the procedure.**
5. Use the links in the following table below to locate and replace the failing item(s).

Table 68. Failing item for symbolic FRU BRDGST3

System model, expansion unit, or machine type	Symbolic FRU to locate	FRU name	Link to locations
520 and 285	BRDGST3	PCI bridge set 3	Locations — Model 520 and 285
550 and OpenPower 720	BRDGST3	PCI bridge set 3	Locations — Model 550 and OpenPower 720
570	BRDGST3	PCI bridge set 3 (on primary or secondary unit)	Locations — Model 570
5074, 8079-002, 8093-002	BRDGST3	PCI bridge set 3	Locations — 5074, 8079-002, and 8093-002 expansion I/O units
5079	BRDGST3	PCI bridge set 3	Locations — 5079 expansion I/O unit
5088, 0588	BRDGST3	PCI bridge set 3	Locations — 5088 and 0588 expansion I/O units
5094, 5294, 8094-002	BRDGST3	PCI bridge set 3	Locations — 5094, 5294, and 8094-002 expansion I/O units
Type 1519 — external xSeries server	BRDGST3	Follow RIO/HSL cable	Locations — Integrated xSeries adapter card (IXA)
5791, 5794, and 7040-7040-61D	BRDGST3 (left side)	PCI bridge set 3 on backplane 1	Locations — 5791, 5794, and 7040-7040-61D expansion unit
	BRDGST3 (right side)	PCI bridge set 3 on backplane 2	

Results

This ends the procedure.

BPC

The Bulk power controller (BPC) may be failing.

1. Is the SRC 1xxx-8735?
 - **No:** Continue with the next step.
 - **Yes:** Go to “HMC isolation procedures” on page 597. Once you verify that the communications is working, return here. Verify that the communications cables are connected and properly routed between the Hardware Management Console (HMC), BPC, and the service processor. See Model 590 and 595 cables. (For model 575, that has a BPH between the BPC and the service processor, verify that the BPC is connected and functioning. See Model 575 cables.) For frame to HMC cables, see External cables. If you still have the problem, replace the BPC. (Go to Locations — model 575 or Locations — model 590 and 595.)

Note: If you are getting a 8720 or 8721 Refcode:

For 575:

- Ensure all HubA (T5) ethernet cables on the Service Processors are routed to the same BPA on one side of the system and HubB (T6) cables are routed to the other BPA.

For 590/595:

- Ensure Service Processor J3 ethernet cables are routed to the BPA on one side of the system and J4 cables to the BPA (if present) on the opposite side.

Communications problems will result if cabling is mixed during repair or installation.

2. Use the following table to perform the appropriate action for the SRC you are working with.

SRC	Replace this FRU	Link to locations information
1xxx8720 or 1xxx8740	BPC A (front)	Locations — model 575 or Locations — model 590 and 595
1xxx8721 or 1xxx8741	BPC B (rear)	

Results

This ends the procedure.

BPCHANG

The system is stopped on one of the base motherboard controller checkpoints.

If the system hangs on one of the base motherboard controller checkpoints, do the following:

1. Remove the AC cord, then reattach it to the system.
2. Watch the control panel display. If 01 appears in the upper left hand corner of the display, power on the system.

If the system continues to hang on a base motherboard controller checkpoint, replace the system backplane (see “SYSBKP2” on page 759).

BSTWRPL

This symbolic FRU is no longer supported.

BUSVPD

This is the VPD (vital product data) for a PCI bus at the multi-adapter bridge end of the primary PCI bus.

1. Are you working from the serviceable event view and a card location is listed with this failing item?

- **Yes:** Then the error is at that card location. Continue with the next step.
- **No:** Perform the following:
 - a. Record the bus number value (BBBB) from word 7 of the reference code (see “Breaking down a RIO/HSL or PCI bus reference code” on page 95 for help in determining the bus number).
 - b. Search for the bus number in the HMC’s or operating system’s resource and configuration interfaces, or in the system configuration listing, to determine which unit contains the failing item. Record the frame or unit type and then continue with the next step.

2. Use the following table to determine the appropriate service action.

Frame or unit containing the failing item	Go to this symbolic FRU
520	“SYSBKPL” on page 758
570	“SYSBKPL” on page 758
5074, 8079-002, 8093-002	“TWRPLNR” on page 765
5079	“TWRPLNR” on page 765
5088, 0588	“TWRPLNR” on page 765
5094, 5294, 8094-002	“TWRPLNR” on page 765
5095, 0595	“TWRBKPL” on page 763
External xSeries server	“SIADPCD” on page 734
5791, 5794, and 7040-7040-61D	“TWRPLNR” on page 765
7311-D10, 7311-D11, and 5790	“TWRPLNR” on page 765
7311-D20	“TWRPLNR” on page 765

Results

This ends the procedure.

CABLEH

Use this information to perform the appropriate action for the SRC you are working with.

About this task

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

Use the following table to perform the appropriate action for the SRC you are working with.

Attention: Before replacing any cables, ensure that the cables are properly routed and securely plugged.

Attention:

1. If you are servicing a BPC and get a 1xxx 8720 or 8721 SRC for any BPC, ignore the error until you have the BPC powered on again.
2. If you are servicing the front BPC and you do not have a redundant HMC, you will not get errors from your 24-inch expansion units until the service is complete.
1. Is the SRC 1xxx-8720 or 8721?
 - **Yes:** Continue with the next step.
 - **No:** Go to step 3 on page 633.
2. Note: If you are getting a 8720 or 8721 Refcode:
For 575:

- Ensure all HubA (System P1-T5) ethernet cables on the Service Processors are routed to the same BPA on one side of the system and HubB (System P1-T6) cables are routed to the other BPA.

For 590/595:

- Ensure Service Processor J3 ethernet cables are routed to the BPA on one side of the system and J4 cables to the BPA (if present) on the opposite side.

Communications problems will result if cabling is mixed during repair or installation.

In this step you will be measuring voltages on one of the bulk power assemblies (BPAs). If the SRC is 1xxx8720, then you should measure the voltage on BPA-A (front). If the SRC is 1xxx8721, then you should measure the voltage on BPA-B (rear).

Using the labeled test points on the face of the BPA, measure the voltages between the following:

- phase A and phase B
- phase B and phase C
- phase C and phase A

Are all of the meter readings greater than 180 V ac?

Yes: Go to step 3.

No: Inform the customer that power voltage at the input to the BPA is either missing or too low and needs to be corrected. **This ends the procedure.**

3. Use the following table to perform the appropriate action for the SRC you are working with.

Results

SRC	Action	Link to locations information
1xxx1D04	Replace the cables between the front light strip and the service processors.	Locations — model 590 and 595 Model 590 and 595 cables
1xxx1D05	Replace the cables between the rear light strip and the service processors.	
1xxx8720	Replace the cables between the front BPC and the service processors. (For model 575, that has a BPH between the BPC and the service processor, verify that the cable is connected and functioning.)	Locations — model 575 Model 575 cables or Locations — model 590 and 595 Model 590 and 595 cables. For frame to HMC cables, see External cables.
1xxx8721	Replace the cables between the rear BPC and the service processors. (For model 575, that has a BPH between the BPC and the service processor, verify that the cable is connected and functioning.)	
1xxx8731 1xxx8732 1xxx8733 1xxx8734	Replace the cables between both BPCs and the service processors. (For model 575, that has a BPH between the BPC and the service processor, verify that the cable is connected and functioning.)	

CACHBAT

The cache battery pack may be failing.

1. Use the cache battery pack location information in the service action log (SAL) if it is available. If the location is not available, use the address of the storage IOA (see System reference code (SRC) address formats) to find the location (see Finding part locations).

2. Using the type number of the storage IOA at the location you found, go to Part number catalog to determine the cache battery pack part number.

Note: The 571F/575B combination storage and auxiliary cache IOA card set uses two card slot locations. The battery pack is located on the 575B side of the card set, regardless of the location found in the previous steps.

3. To exchange the cache battery pack, see Replacing the cache battery pack on type 2748, 2757, 2763, 2778, 2780, 2782, 5703, 5708, 5709, 571B, 571E, 571F, 573D, 574F, 575B cards.

Results

This ends the procedure.

CACHE

This symbolic FRU is no longer supported.

CAPACTY

The failing component is the VPD card.

After the part has been replaced and before powering on the system, make sure the system vital product data is restored (see Programming vital product data); otherwise, the system will fail to IPL.

Use this table to identify and replace the VPD card.

System model	Name of symbolic FRU to locate	FRU name	Link to locations information
505	CAPACTY	VPD Card	Locations — model 505
510, 51A and OpenPower 710	CAPACTY	VPD card	Locations — model 510, 51A, and OpenPower 710
515, 520, 525, and 9111-285	CAPACTY	VPD card	Locations — Model 520 and 285
55x and OpenPower 720	CAPACTY	VPD card	Locations — model 55x and OpenPower 720
561 and 570	CAPACTY	VPD card (on the primary unit or any of the secondary units)	Locations — model 561 and 570
575	CAPACTY	VPD card	Locations — model 575
590 and 595	CAPACTY	VPD card	Locations — model 590 and 595

CARDFLT

Use this information to perform the appropriate action for the SRC you are working with.

Model	SRC	Replace this FRU	Link to locations information
590 and 595	1xxx1D00	Service processor 0	Locations — model 590 and 595
	1xxx1D01	Service processor 1	
	1xxx1D04 or 1xxx1D05	Try replacing each service processor, one at a time, until the problem is resolved.	
	1xxx1D02	Oscillator 0	
	1xxx1D03	Oscillator 1	
	1xxx1D10	Multiplexer card	
	1xxx1D11 through 1xxx1D18	Bus adapter <i>x</i> , where <i>x</i> is the final digit in the SRC (1xxx 1D1 <i>x</i>)	
575	1xxx1D00, 1xxx1D11, or 1xxx1D12	System backplane	Locations — model 575

CARDTMP

The cryptographic adapter has detected a voltage and/or temperature change in its physical operating environment.

Correct the voltage and/or temperature condition. Vary off the cryptographic device description associated with the device resource on the adapter resource and vary it back on.

CBLALL

A power cable may be the failing item.

About this task

When there is a location and part number displayed on the control panel of a system or expansion tower, replace that FRU first.

Perform the following to determine the part number of the failing part.

- Is the reference code 1xxx 1502, 1512, 1522, or 1532?
 - No:** Continue with the next step.
 - Yes:** Exchange the following one at a time (see Finding part locations):

For 5088, 0588:

- SPCN cable PWRC03
- SPCN cable PWRC02
- Power distribution card

For D10, 7311-D11, 7311-D20, and 5790:

- SPCN cable
- I/O unit backplane

For all other units:

- SPCN cable
- Power distribution card

This ends the procedure.

- Is the reference code 1xxx 4410, 4411, 4412, 4413, 4414, 4415, or 4417?
 - No:** Continue with the next step.

- **Yes:** Exchange the following one at a time (see Finding part locations):
- Cable from charger A01 to batteries T01–T04
- Cable from charger to power supply 1, 2, or 3

This ends the procedure.

3. Is the reference code 1xxx 2612, 9012, 9013, 90F0, 90F2, 9135, 9231, 9232, 9233, 9235, 9236, 9280, 9281, 9282, or C62E?
 - **No:** Continue with the next step.
 - **Yes:** The failing item is the SPCN frame-to-frame cable or adapter. The following list shows the possible failing items, and the cable or adapter lengths when appropriate (see Part number catalog):
 - 6.0 meters
 - 15.0 meters
 - 30.0 meters
 - 60.0 meters
 - SPCN optical cable (100.0 meters)
 - SPCN optical adapter
 - SPCN port cable (frame-to-node)
 - Integrated xSeries server SPCN-Y cable assembly

This ends the procedure.

4. Is the reference code 1xxx 2613?
 - **No:** Continue with the next step.
 - **Yes:** This configuration requires 200 V ac (or -48V dc if your system is specially configured to operate with this voltage). If the system has 2 power supplies, both power supplies must be at the same line voltage. Go to Determine line cord, plug, and receptacle type in the Planning topic to determine the power cable part number for systems in your country or region. **This ends the procedure.**
5. Is the reference code 1xxx 8940, 8941, 8942, or 8943?
 - **Yes:** Continue with the next step.
 - **No:** Go to step 8.
6. Reseat the RS-485 cable.

Note: It may take up to one minute for the frame ID to stop blinking.

Does this correct the problem?

- **Yes: This ends the procedure.**
 - **No:** Continue with the next step.
7. Exchange the RS-485 cable assembly (see Part number catalog).

Note: It may take up to one minute for the frame ID to stop blinking.

Does this correct the problem?

- **Yes: This ends the procedure.**
 - **No:** Call your integrated xSeries server (IXS) service provider. **This ends the procedure.**
8. Is the reference code 1xxx9133?
 - **No:** Go to step 11 on page 637.
 - **Yes:** Continue with the next step.
 9. Verify that the expansion units are cabled correctly with both RIO/HSL cables and power network connections (see Finding part locations) and that they are powered on and not indicating an error condition. Resolve any problems you discover. Does the SRC persist?

- **No: This ends the procedure.**
 - **Yes:** Continue with the next step.
10. There may be a problem in the power network connection. Check the error log for another 1xxxxxxx SRC that surfaced around the same time as the 1xxx9133 SRC. Is such an SRC present?
- **No:** Contact your next level of support. **This ends the procedure.**
 - **Yes:** Return to the “Start of call procedure” on page 2 and service the 1xxxxxxx SRC to resolve this problem. **This ends the procedure.**
11. Is the reference code 1xxx9137 or 1xxx9138?
- **No:** Return to the “Start of call procedure” on page 2. **This ends the procedure.**
 - **Yes:** Continue with the next step.

Note: If you are performing maintenance on your system and as a result are now experiencing a 1xxx9137 or 1xxx9138 reference code, ensure your maintenance actions did not cause the reference codes before replacing any additional parts. Ignore the 1xxx9137 or 1xxx9138 reference codes if you are doing concurrent maintenance on the affected tower or RIO/HSL associated with the affected tower, cable, or adapter.

12. Verify the following:
- RIO/HSL cables are connected and seated correctly.
 - If you are servicing a 570, ensure the flex cables if present, are connected and seated properly. Note that the flex cables are located on the front and back of the system.
 - All connected expansion units are powered on and not indicating an error condition.

Note: If a problem is found during any of these checks, resolve that problem. If your system is still producing an SRC, continue with the next step.

13. If your system produced SRC 1xxx9137, check the error log for SRC B700698x that surfaced around the same time as SRC 1xxx9137. Did your system produce SRC B700698x?
- **No:** Contact your next level of support. **This ends the procedure.**
 - **Yes:** Return to the “Start of call procedure” on page 2 and resolve SRC B700698x to solve the problem. **This ends the procedure.**

Note: If your system produced SRC 1xxx9138, you have a faulty location code or vital product data. Contact your next level of support. **This ends the procedure.**

CBLCONT

This symbolic FRU is used to show additional locations for the endpoints of cables.

This FRU appears in the serviceable event user interface of an operating system, service processor, or the HMC, and is associated with the cable FRU that precedes it in the list. The location code associated with this FRU is the location of another end of the same cable. Cable FRUs are shown in the display by listing the cable's part number or symbolic FRU first with the location code of one end of the cable. Each additional cable endpoint is represented as a "CBLCONT" FRU with a location code for another endpoint.

Note: If question marks (???) appear at the end of the location code, then the port could not be determined. Use the location code associated with the other end of the cable. If question marks appear for both port locations, use the isolation procedures suggested in the Description/Action column of the reference code table for this SRC.

CDAWKLD

Too many communications lines are in use.

CDTRAY

This symbolic FRU is not supported.

CHECK

Look here for information about the CHECK symbolic FRU.

About this task

If the attached device is an external device, do the following before exchanging any parts:

1. Ensure that the device is powered on.
2. Is there a SCSI interface between the IOP/IOA and the device?
 - **No:** Continue with the next step.
 - **Yes:** Perform the following:
 - If an interposer is required, make sure that it is connected between the I/O processor and the SCSI cable.
 - Ensure that the SCSI cable is seated correctly, and that there are no bent or damaged pins on the SCSI cable.
 - Ensure that a terminating plug is attached to the device end of the SCSI cable.
 - Continue with the next step.
3. Is there a Fibre Channel interface between the IOP/IOA and the device?
 - **No:** Continue with the next step.
 - **Yes:** Perform the following:
 - Verify that any hub or gateway devices are powered on.
 - Verify that the Fibre Channel cable is correctly connected to the ports.
 - If a cleaning kit is available, clean the Fibre Channel cable connectors.
 - Continue with the next step.
4. Perform the Verification procedures to see if the problem was corrected.

Results

This ends the procedure.

CLCKMOD

The logic oscillator is failing.

Use the table below to determine which FRU to replace and how to replace it.

System model	Name of symbolic FRU to locate	FRU name	Link to locations information
505	CLCKMOD	System backplane	Locations — model 505
510,51A, and OpenPower 710	CLCKMOD	System backplane	Locations — model 510, 51A, and OpenPower 710
515, 520, and 525	CLCKMOD	System backplane	Locations — Model 515, 520, and 525
550 and OpenPower 720	CLCKMOD	System backplane	Locations — OpenPower 720 and Model 550
570	CLCKMOD	I/O backplane (on primary unit or one of the secondary units)	Locations — Model 570
575	CLCKMOD	System backplane	Locations — model 575
590 and 595	CLCKMOD	Oscillator 1Oscillator 2	Locations — model 590 and 595

This ends the procedure.

CLRNVRM

A problem may exist with the service processor NVRAM.

About this task

Perform the following:

1. Is your system managed by the Hardware Management Console (HMC)?
 - **No:** Continue with the next step.
 - **Yes:** Continue with step 3.
2. Perform the following:
 - a. Power off the system.
 - b. Using ASMI, select **System Service Aids** → **Factory Configuration**.
 - c. Select **Continue** to clear the configuration.

Note: Clearing the configuration causes the loss of all the configured system settings (such as the HMC access and ASMI passwords, time of day, network configuration, hardware deconfiguration policies, and so on) that you might have set by using the user interfaces. Also, partition-related information and platform error logs are lost, and the service processor is reset. Before continuing with this operation, make sure that you manually record all settings that you need to preserve.

Make sure that the interface HMC1 or HMC2 not being used by ASMI is disconnected from the network. Follow the instructions in the system service publications to configure the network interfaces after the reset.

This ends the procedure.

3. Your system is managed by the HMC. Is your system a model 590 or 595?

Yes: Use "TOD_BAT" on page 760 to locate and remove the time of day battery.

No: Do not replace the battery! Instead, clear the NVRAM by removing the battery for five minutes and then reinstalling it.

Note: Clearing the configuration causes the loss of all the configured system settings (such as the HMC access and ASMI passwords, time of day, network configuration, hardware deconfiguration policies, and so on) that you might have set by using the user interfaces. Also, partition-related information and platform error logs are lost, and the service processor is reset. Before continuing with this operation, make sure that you manually record all settings that you need to preserve.

Make sure that the interface HMC1 or HMC2 not being used by ASMI or the HMC is disconnected from the network. Follow the instructions in the system service publications to configure the network interfaces after the reset.

This ends the procedure.

CMPRES1

The compressed device and the compression IOA are not compatible.

CNVTCRD

The card that converts SCSI to IDE may be failing. This procedure will help you determine the failing part.

Find the model and/or expansion unit in the table below. The link to locations information will provide you with all of the information you will need to replace the appropriate part.

System model or expansion unit	Failing part(s)	CCIN	Link to locations information
9406-520, 9406-525, 9407-515	Media drive backplane	291E	Locations — model 515, 52x, and 285
9406-550	Media drive backplane	291E	Locations — model OpenPower 720 and Model 550
9406-570	SCSI/IDE card	180A	Locations — model 561 and 570
For all other models or expansion units, this failing item does not apply.	None	N/A	N/A

This ends the procedure.

CRYPBAT

The batteries for the cryptographic adapter need to be replaced.

Refer to Part number catalog for battery replacement kit part number information. Then go to Replacing the battery on a type 4758 card or Replacing the battery on a type 4764 card to replace the batteries.

Attention: If you remove any of the batteries without first backing up the power with a fresh battery, the data in the card's protected memory could be lost, which would render the cryptographic adapter useless and require its replacement. Because the 4758-023 adapter contains 4 batteries, and the battery replacement kit contains only 2 batteries, *do not* attempt to remove or replace batteries unless you have two battery replacement kits. All other cryptographic adapters contain only 2 batteries, and therefore require only one battery replacement kit.

CRYPTLP

Cryptographic adapter licensed internal code problem.

The licensed internal code for the cryptographic adapter does not ship with the system.

For systems with Licensed Internal Code V5R4M5 or earlier it is contained within the licensed program 5733-CY1 Cryptographic Device Manager. For systems with Licensed Internal Code V6R1M0 or later it is contained within the licensed program 5733-CY2 Cryptographic Device Manager.

Do one of the following:

- **If the SRC is B0136615**, ensure that this licensed program is loaded on the system. If it is not, vary off the cryptographic adapter, apply the licensed program to the system, and then vary on the cryptographic adapter. The vary-on process might take up to 15 minutes.
- **If the SRC is B0136619**, vary off the cryptographic adapter, apply the most recent version of the licensed program to the system, and then vary on the cryptographic adapter. The vary-on process might take up to 15 minutes.

This ends the procedure.

CTLPNCD

This symbolic FRU is not supported on the system. Continue with the next FRU in the failing item list.

CTLPNL

A control panel or display panel may be failing.

Go to Finding part locations to locate and exchange the control or display panel on the system or expansion unit you are working with.

DASDBP

Use this procedure when determining what DASD backplane to replace on 520, 550, or a 570

About this task

The failing component is a direct access storage device (DASD) backplane. Use the following table to determine what FRU to replace and how to replace it.

System model	Name of symbolic FRU to locate	FRU name (Replace FRUs one at a time, in the order listed, from top to bottom.)	Link to locations information
520	DASDBP	Disk drive (1 - 4) backplane Disk drive (5 - 8) backplane	Locations — model 52x and 285
550	DASDBP	Disk drive (1 - 4) backplane Disk drive (5 - 8) backplane	Locations — model 55x and OpenPower 720
570	DASDBP	Disk drive backplane	Locations — model 561 and 570
Multiple 570's sequentially cabled together	DASDBP	Primary unit: Disk drive backplane	Locations — model 561 and 570
		Secondary unit 1: Disk drive backplane	
		Secondary unit 2: Disk drive backplane	
		Secondary unit 3: Disk drive backplane	

DCA

A DCA needs to be replaced.

Use the following table to determine which DCA to replace, and then follow the link to locations information to find the appropriate removal information.

Table 69. Model 575

SRC	FRU to replace	Link to locations information
1xxx8710	Power supply (E-1)	Locations — model 575

Table 70. Models 590 and 595

SRC	FRU to replace	Link to locations information
1xxx8710	DCA 01 on Node 0	Locations — model 590 and 595
1xxx8711	DCA 02 on Node 0	Locations — model 590 and 595

If the problem persists, check cable routing and connections. For more information, see Model 575 cables or Model 590 and 595 cables.

DEVBPLN

A device backplane may be failing.

About this task

Does the SRC that sent you here begin with a 506x or are you working with an attached 5786 or 5787 disk expansion unit?

No: Replace the device backplane, using the device backplane information in the Service Action Log. See Finding part locations for location, part number, and removal and replacement procedure information.

Yes: Replace the SCSI interface card of the 5786 or 5787 Disk Expansion Unit. For more information regarding location codes, go to Locations — 5786, 5787, 7031-D24, and 7031-T24 expansion unit. For information on replacing the SCSI interface card, go to PCI adapters. If replacing the SCSI interface card does not fix the problem, continue replacing the other failing items in the failing item list. If after replacing the other failing items did not fix the problem, replace the disk expansion unit chassis. For information on replacing a chassis, go to Exchanging the model 5786 chassis.

DEVICE

The addressed storage device is the failing item.

About this task

Perform the following.

1. Is the device location information available in the Service Action Log (SAL)?
 - **No:** Continue with the next step.
 - **Yes:** Exchange the failing item (see Starting disk service).
2. Find the IOP address and the device address (see System reference code (SRC) address formats).
3. To determine the location of the I/O processor card, see Finding part locations and find the diagram of the system unit or the expansion unit. Then, find:
 - The IOP card location identified by the direct select address.
 - The addressed storage device location identified by the device address.
4. Exchange the failing device. Use the device type to determine the part.

Results

This ends the procedure.

DEVTERM

The device terminating plug may be failing.

About this task

Perform the following.

1. Find the IOA type:
 - a. Find the IOA location information in the Service Action Log if it is available. If the location is not available, find the address of the IOA (see System reference code (SRC) address formats). Use the address to find the location (see Finding part locations).
 - b. Find the IOA card in the system and read the type number of the card at that location.
2. Use the information in the following list to determine the failing terminating plug:

Storage IOA type	Action
2749	For device types 3490, 3570, 3590, 3995, and 7208, see FI00880 in the Failing Item (FI) code table. For all other devices, use part 85F7887.
5702	Use part 19P0874.
All others	The terminator is integrated into the backplane and not a separate failing item.

3. Exchange the failing item.

Note: If the terminating plug is located on a backplane, go to symbolic FRU “BACKPLN” on page 622. Follow the procedure until the terminating plug is accessible and then remove or exchange the plug.

Results

This ends the procedure.

DIMM 0

Use this topic to view the locations of DIMM 0, DIMM 1, DIMM 2, and DIMM 3 on the 2890 and 2892 Integrated xSeries Server (IXS) cards.

In the following two figures, the first DIMM from the top of the IXS card (DIMM 0) is the failing item. To determine the part number, go to symbolic FRU “MEMORY” on page 712. **This ends the procedure.**

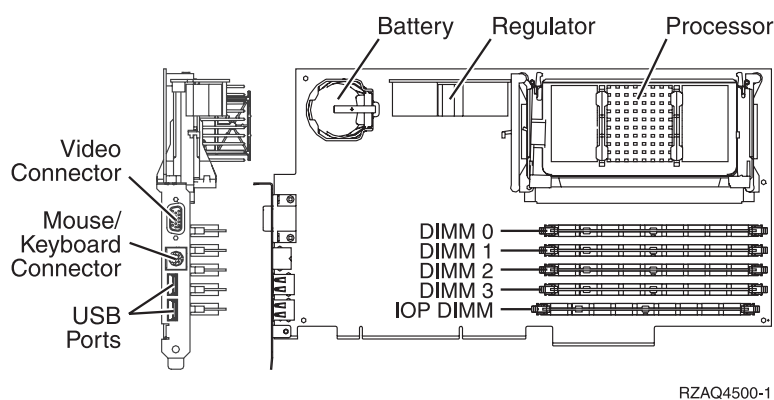


Figure 9. Locations of DIMM 0, DIMM 1, DIMM 2, and DIMM 3 on 2890 Integrated xSeries Server (IXS) card.

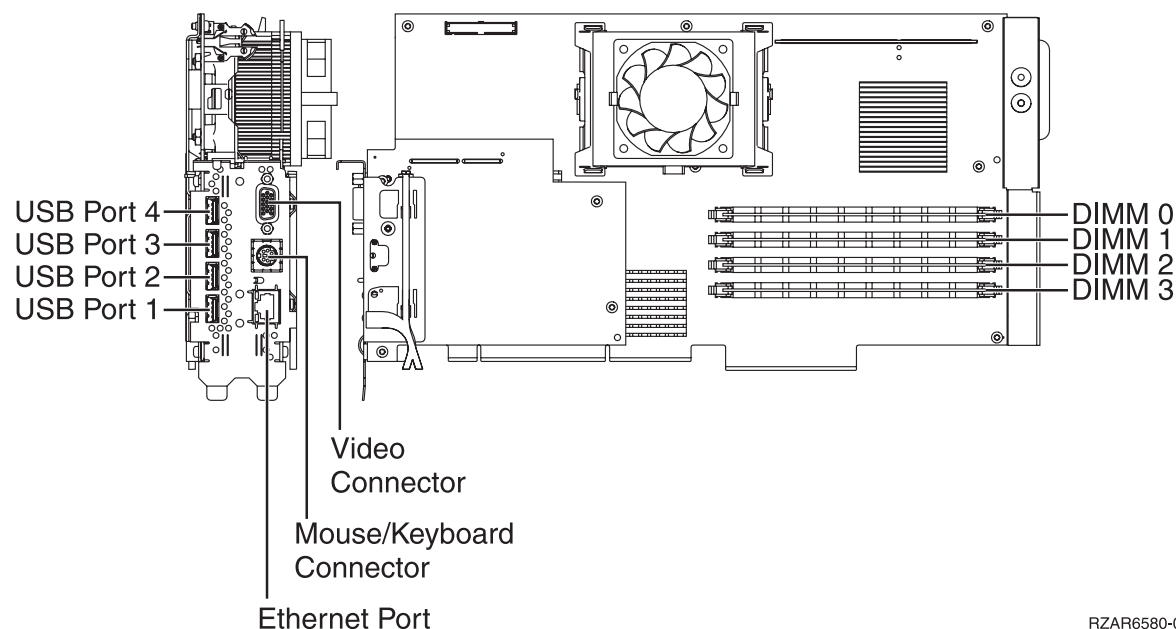


Figure 10. Locations of DIMM 0, DIMM 1, DIMM 2, and DIMM 3 on 2892 Integrated xSeries Server (IXS) card.

DIMM0_1

Use this topic to view the locations of DIMM 0, DIMM 1, DIMM 2, and DIMM 3 on 2892 Integrated xSeries Server (IXS) card.

The first or second DIMM from the top (DIMM 0 or DIMM 1) of the IXS card is the failing item. To determine the part number, go to symbolic FRU "MEMORY" on page 712. **This ends the procedure.**

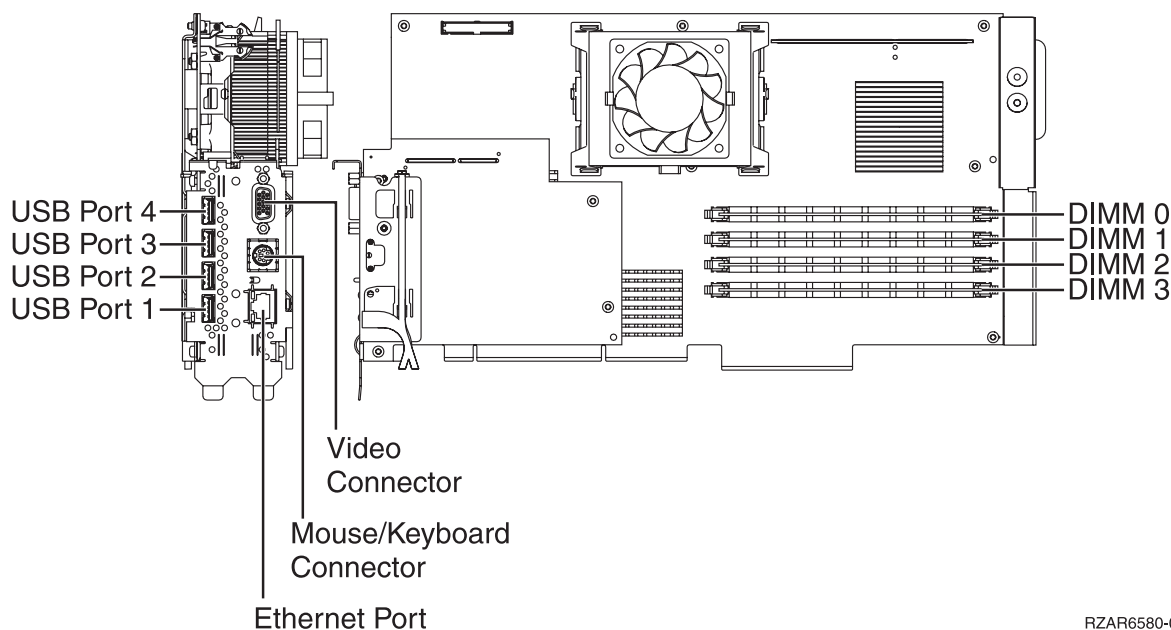


Figure 11. Locations of DIMM 0, DIMM 1, DIMM 2, and DIMM 3 on 2892 Integrated xSeries Server (IXS) card.

DIMM 1

Use this topic to view the locations of DIMM 0, DIMM 1, DIMM 2, and DIMM 3 on the 2890 and 2892 Integrated xSeries Server (IXS) cards.

In the following two figures, the second DIMM from the top of the IXS card (DIMM 1) is the failing item. To determine the part number, go to symbolic FRU "MEMORY" on page 712. **This ends the procedure.**

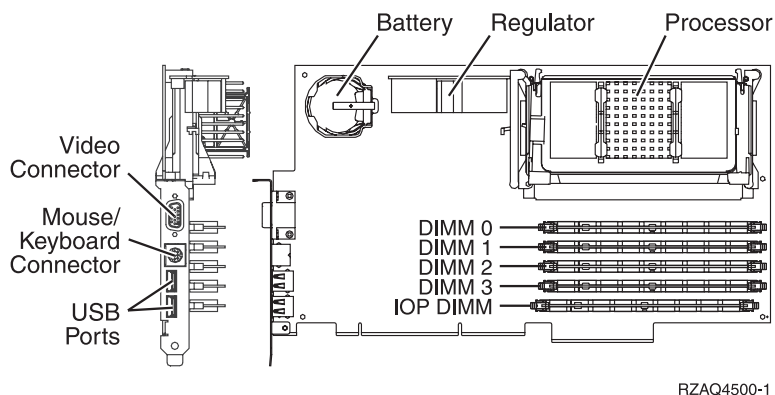
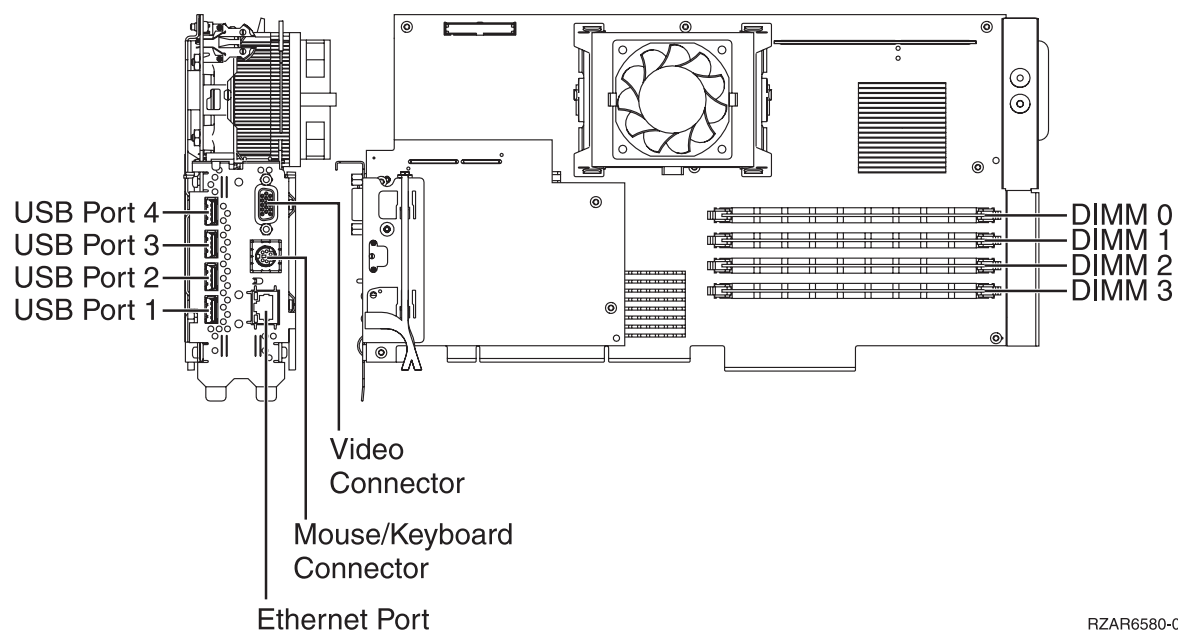


Figure 12. Locations of DIMM 0, DIMM 1, DIMM 2, and DIMM 3 on 2890 Integrated xSeries Server (IXS) card.



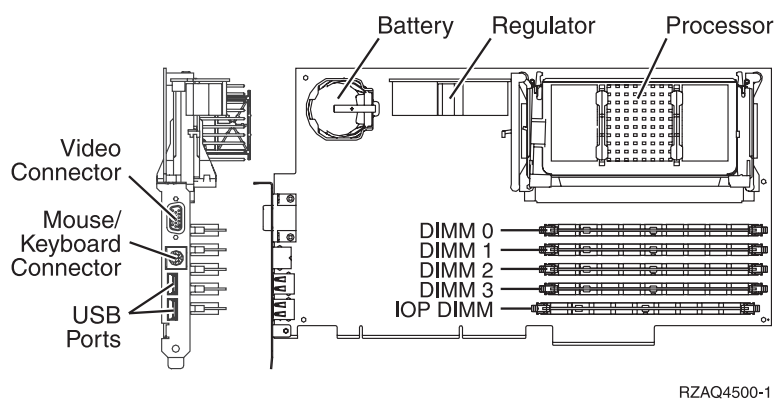
RZAR6580-0

Figure 13. Locations of DIMM 0, DIMM 1, DIMM 2, and DIMM 3 on 2892 Integrated xSeries Server (IXS) card.

DIMM 2

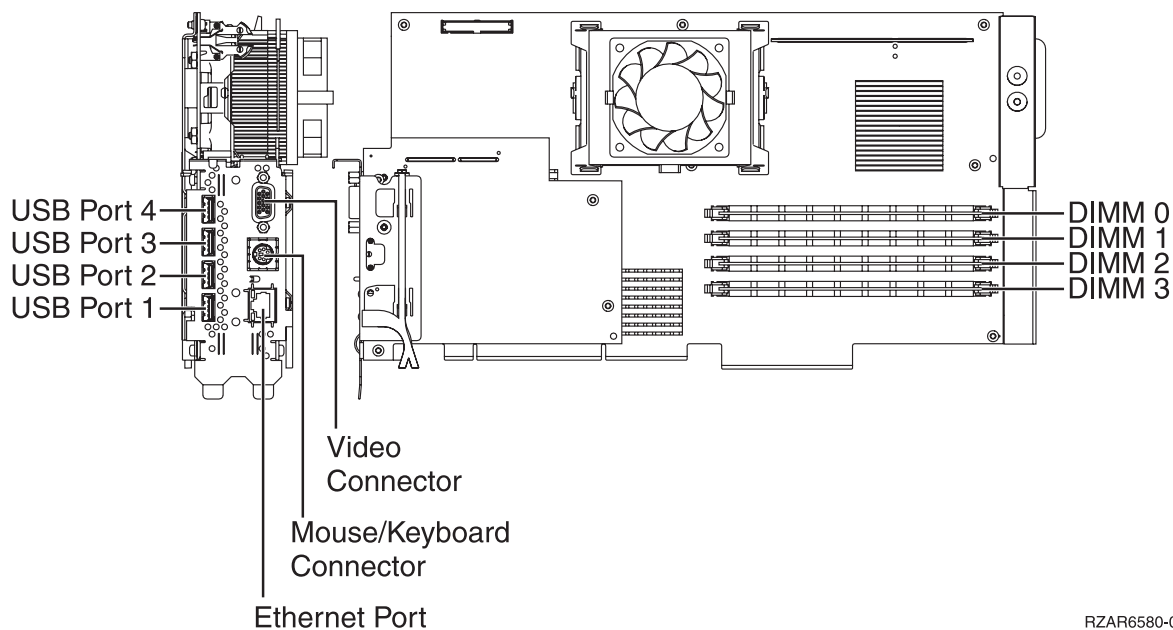
Use this topic to view the locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on the 2890 and 2892 Integrated xSeries Server (IXS) card.

In the following two figures, the third DIMM from the top (DIMM 2) of the IXS card is the failing item. To determine the part number, go to symbolic FRU "MEMORY" on page 712. **This ends the procedure.**



RZAQ4500-1

Figure 14. Locations of DIMM 0, DIMM 1, DIMM 2, and DIMM 3 on 2890 Integrated xSeries Server (IXS) card.



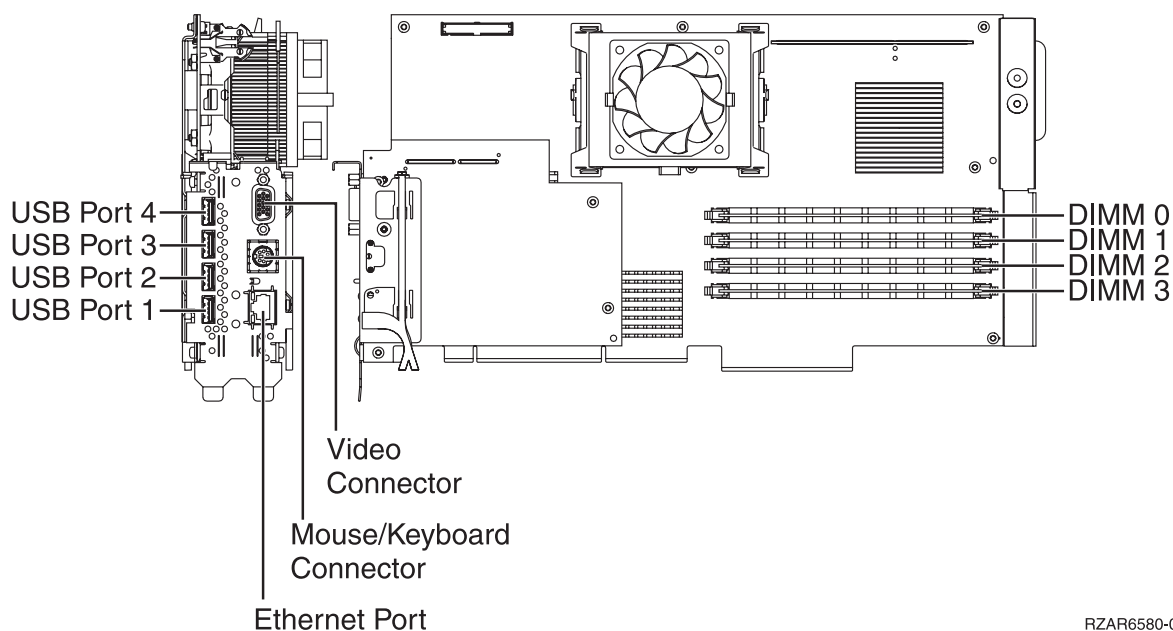
RZAR6580-0

Figure 15. Locations of DIMM 0, DIMM 1, DIMM 2, and DIMM 3 on 2892 Integrated xSeries Server (IXS) card.

DIMM2_3

Use this topic to view the locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2892 Integrated xSeries Server (IXS) card.

The third or fourth DIMM from the top (DIMM 0 or DIMM 1) of the IXS card is the failing item. To determine the part number, go to symbolic FRU "MEMORY" on page 712. **This ends the procedure.**



RZAR6580-0

Figure 16. Locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2892 Integrated xSeries Server (IXS) card.

DIMM 3

Use this topic to view the locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on the 2890 and 2892 Integrated xSeries Server (IXS) cards.

In the following two figures, the **fourth** DIMM from the top (DIMM 3) of the IXS card is the failing item. To determine the part number, go to symbolic FRU "MEMORY" on page 712.

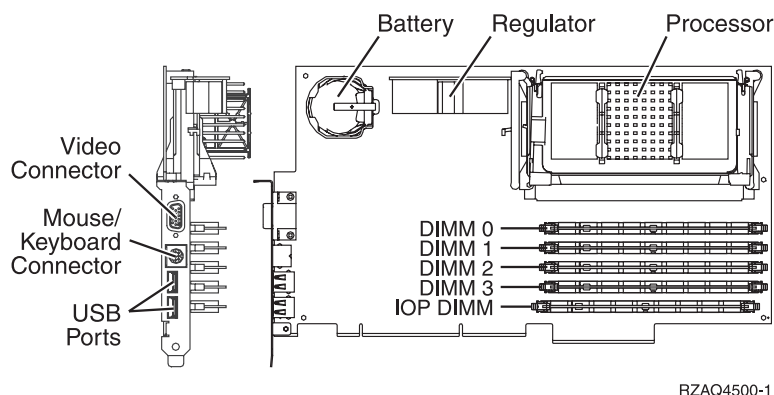


Figure 17. Locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2890 Integrated xSeries Server (IXS) card

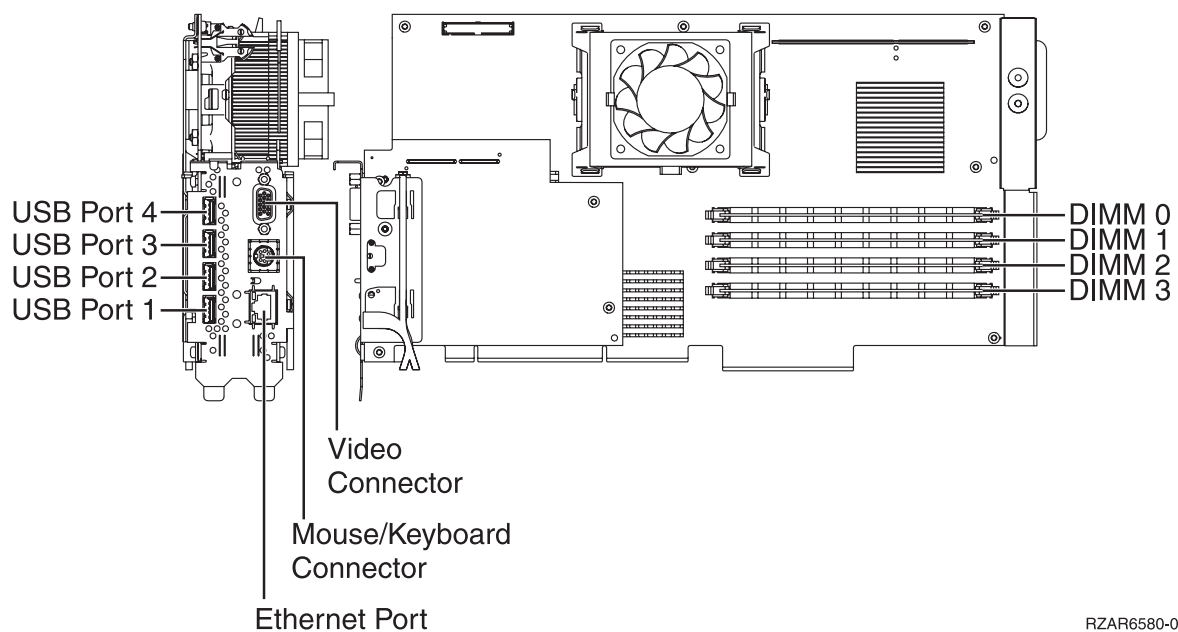


Figure 18. Locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2892 Integrated xSeries Server (IXS) card

DISKDRV

The disk drive might be failing.

1. Is the device location information available in the Service Action Log?
 - **No:** Continue with the next step.
 - **Yes:** To exchange the failing item, see Disk unit recovery procedures. **This ends the procedure.**
2. Find the direct select address and the device address. See System reference code (SRC) address formats.
3. See Finding part locations and find the diagram of the system unit or expansion unit. Use the direct select address and the device address to find the location of the disk unit.

4. Is the SRC reported on the control panel?
 - **No:** Continue with the next step.
 - **Yes:** See Hardware SRC formats. The two rightmost characters of word 2 define the SRC format. Use the correct SRC format to locate the function that contains the characters *tttt lmmm*, where:
 - *tttt* = Type number
 - *l* = Level
 - *mmm* = ModelThen go to step 6.
5. Remove the disk unit to determine the part number. To exchange the disk drive, see Disk unit recovery procedures. **This ends the procedure.**
6. Using the type information, go to Part number catalog to determine the part number. If you do not know the type, remove the disk unit to determine the part number. To exchange the disk drive, see Disk unit recovery procedures.

Results

This ends the procedure.

DISKFAN

A fan in a 5786 or 5787 expansion unit might be failing.

About this task

Perform the following:

1. Is the fan location available in the Service Action Log?
 - **Yes:** Replace the fan at the location provided in the Service Action Log. For more information regarding location codes, go to Locations — 5786, 5787, 7031-D24, and 7031-T24 expansion unit. For information on replacing a failing fan, go to Exchanging the 5786, 5787, 7031-D24, and 7031-T24 disk drive enclosure fans. **This ends the procedure.**
 - **No:** Continue with the next step.
2. Is the SRC that sent you here is 506x7611 or 506x7614?
 - **Yes:** Replace the fan located in Un-A1. For more information regarding location codes, go to Locations — 5786, 5787, 7031-D24, and 7031-T24 expansion unit. For information on replacing a failing fan, go to Exchanging the 5786, 5787, 7031-D24, and 7031-T24 disk drive enclosure fans. **This ends the procedure.**
 - **No:** Continue with the next step.
3. Is the SRC that sent you here is 506x7621 or 506x7624?
 - **Yes:** Replace the fan located in Un-A2. For more information regarding location codes, go to Locations — 5786, 5787, 7031-D24, and 7031-T24 expansion unit. For information on replacing a failing fan, go to Exchanging the 5786, 5787, 7031-D24, and 7031-T24 disk drive enclosure fans. **This ends the procedure.**
 - **No:** Continue with the next step.
4. Is the SRC that sent you here is 506x7631 or 506x7634?
 - **Yes:** Replace the fan located in Un-A3. For more information regarding location codes, go to Locations — 5786, 5787, 7031-D24, and 7031-T24 expansion unit. For information on replacing a failing fan, go to Exchanging the 5786, 5787, 7031-D24, and 7031-T24 disk drive enclosure fans. **This ends the procedure.**
 - **No:** Continue with the next step.
5. Replace the fans located in Un-A1, Un-A2, and Un-A3 one at a time until the problem is resolved. For more information regarding location codes, go to Locations — 5786, 5787, 7031-D24, and 7031-T24

expansion unit. For information on replacing a failing fan, go to Exchanging the 5786, 5787, 7031-D24, and 7031-T24 disk drive enclosure fans. **This ends the procedure.**

DISKIMG

There may be a problem with the Network Server Description (NWSD).

First, vary off and then vary back on the NWSD. If this does not correct the problem, delete and re-create the NWSD, or call your next level of support.

DISKPWR

A power supply in a 5786 or 5787 expansion unit might be failing.

About this task

Perform the following:


1. Is the system reference code (SRC) that sent you here 506x1511 or 506x1515?
 - **Yes:** Replace the power supply located in Un-E1. If you need more information regarding the location codes, go to Locations — 5786, 5787, 7031-D24, and 7031-T24 expansion unit. For information on replacing a power supply, go to Model 5786, 5787, 7031-D24, and 7031-T24 disk drive enclosure. If this does not fix the problem, replace the power supply located in Un-E2. **This ends the procedure.**
 - **No:** Continue with the next step.
2. Is the SRC that sent you here is 506x1521 or 506x1525?
 - **Yes:** Replace the power supply located in Un-E2. If you need more information regarding the location codes, go to Locations — 5786, 5787, 7031-D24, and 7031-T24 expansion unit. For information on replacing a power supply, go to Model 5786, 5787, 7031-D24, and 7031-T24 disk drive enclosure. If this does not fix the problem, replace the power supply located in Un-E1. **This ends the procedure.**
 - **No:** Continue with the next step.
3. Replace the power supplies located in Un-E1 and Un-E2 one at a time until the problem is resolved. If you need more information regarding the location codes, go to Locations — 5786, 5787, 7031-D24, and 7031-T24 expansion unit. For information on replacing a power supply, go to Model 5786, 5787, 7031-D24, and 7031-T24 disk drive enclosure. **This ends the procedure.**

DPAC

The two-port adapter cable (part number 21F9345) is the failing item.

DRVSWCH

The address switches on an optical disk drive in the optical library need to be checked and verified.

Refer to the All 3995 Publications and Documentation Web site (<http://snjln02.sanjose.ibm.com/tape/tapetec.nsf/pages/3995pub>)  for more information.

DSKTRY

This symbolic FRU is no longer supported.

DSKUNIT

DSKUNIT is similar to the symbolic FRU DISKDRV.

See symbolic FRU “DISKDRV” on page 647.

EACODE

An error occurred in the error analysis licensed internal code.

Ask your next level of support for assistance.

EXTREMD

An external removable media storage device may be failing.

1. Perform symbolic FRU "CHECK" on page 638 before removing or replacing parts. Return here if no problems are revealed.
2. Use the device type and refer to the appropriate service documentation for that device. This documentation will help you determine the part numbers and replacement procedures that you are to use during this repair action.
3. If you are unable to locate the documentation for your specific device, contact your next level of support for assistance.

Results

This ends the procedure.

EXTSCSI

The external signal cable may be failing.

About this task

Perform the following:

1. Is more than one device attached?
No: Continue with the next step.
Yes: See the device documentation for information about setting the device address. **This ends the procedure.**
2. Is the attached device in the system unit?
No: Continue with the next step.
Yes: Use symbolic FRU "BACKPLN" on page 622 to determine which signal cables to replace. **This ends the procedure.**
3. Find the IOA type:
 - a. Find the IOA location.
 - b. Use the location information of the IOA in the Service Action Log if it is available. If the location is not available, find the address. See System reference code (SRC) address formats. Use the address to find the location. See Finding part locations.
 - c. Find the IOA card in the system and read the type number of the card at that location.
4. Find the IOA type, the attached device, the cable length, and the cable part number in the following list.
5. Verify that the part number in the list is the same as the part number on the cable.
6. For external devices that are not found in the following list, use the device type and refer to the appropriate service documentation for that device. The service documentation for that device will help you determine the FRU part numbers and replacement procedures you are to use during this repair action. If you are unable to locate the documentation for your specific device, then contact your next level of support for assistance.

Table 71. External device and part numbers

IOP or IOA Type	Device	Lengths	Part Number
2749	3490, 3490/Exx, 3590	2.8 meters	05H4647

Table 71. External device and part numbers (continued)

IOP or IOA Type	Device	Lengths	Part Number
2749	3490, 3490/Exx, 3590	4.5 meters	05H4648
2749	3490, 3490/Exx, 3590	12.0 meters	05H4649
2749	3490, 3490/Exx, 3590	18.0 meters	05H4650
2749	3490, 3490/Exx, 3590	25.0 meters	05H4651
2749	3490/Fxx, 3570, 358x, 9427, 7208/342	0.5 meters	49G6456 Note: For 9427 see the note following this table.
2749	3490/Fxx, 3570, 358x, 9427, 7208/342	4.5 meters	49G6457 Note: For 9427 see the note below this table.
2749	3490/Fxx, 3570, 358x, 9427, 7208/342	12.0 meters	49G6458 Note: For 9427 see the note below this table.
2749	3490/Fxx, 3570, 358x, 9427, 7208/342	18.0 meters	49G6459 Note: For 9427 see the note below this table.
2749	63A0		See device documentation to determine cable part numbers
2749	7208/012, 7208/222	1.5 meters	52G0174
2749	7208/012, 7208/222	4.0 meters	59H3462
2749	7208/012, 7208/222	12.0 meters	59H3463
2749	7208/232, 7208/234, 9348	0.5 meters	06H6037
2749	7208/232, 7208/234, 9348	4.0 meters	59H3460
2749	7208/232, 7208/234, 9348	12.0 meters	05H5543
2749	3995	12.0 meters	05H5543
2782, 5702, 5703, 571A	358x, 7206/VX2, 7207/122, 7208/345, 7210/020, 7210/025	1.5 meters	19P4508, or 19P4506 with 19P0482 interposer cable
2782, 5702, 5703, 571A	358x, 7206/VX2, 7207/122, 7208/345, 7210/020, 7210/025	2.5 meters	19P0279, or 35L1307 with 19P0482 interposer cable
2782, 5702, 5703, 571A	358x, 7206/VX2, 7208/345	4.5 meters	19P0050
2782, 5702, 5703, 571A	358x, 7206/VX2, 7208/345	10 meters	19P0048
571B, 571F	5786 or 5787 expansion unit	1 meter	36R2585
571B, 571F	5786 or 5787 expansion unit	3 meters	36R2576
571B, 571F	5786 or 5787 expansion unit	5 meters	36R2577
571B, 571F	5786 or 5787 expansion unit	10 meters	36R2578
571B, 571F	5786 or 5787 expansion unit	20 meters	36R2579

Notes:

- All cables for the 9427 tape library must include an interposer (part 05H3834) on the device end of the cable.
- All cables for the 3996 and 399F attachment are the responsibility of the external device service.

- For specific 358X attachment cable information, refer to the specific device and model service documentation, or contact your next level of support.

Results

This ends the procedure.

FCCABLE

The fibre channel cable may be failing.

Use the part number on the cable to determine the part number to replace.

FCCODE

An error has been detected in the fibre channel gateway device licensed internal code.

See the gateway device service guide for possible corrective actions.

FCDEV

The attached fibre channel device or fiber channel gateway device is the failing item.

Is there a fibre channel gateway device between the fiber channel I/O adapter and the device?

No: See the attached device maintenance information to determine the parts to replace. **This ends the procedure.**

Yes: See symbolic FRU "FCGATE." **This ends the procedure.**

FCGATE

The fibre channel gateway device is the failing item.

Use the gateway device service guide to determine the parts to replace.

FCINTF

An error has been detected on the fibre channel interface.

The failure may be any component between and including the fibre channel IOA and the storage device. To continue diagnosis, use existing fibre channel service procedures or contact your next level of support.

FCIOA

The fibre channel I/O adapter is the failing item.

Replace the fibre channel I/O adapter using the I/O adapter location information in the Service Action Log if it is available. If the location is not available, find the address of the I/O adapter (see SRC address formats. Use the address to find the location (see Finding part locations). If an I/O Processor SRC sent you here, replace the fibre channel I/O adapter associated with the I/O processor that logged the SRC.

FCPORT

The Fibre Channel IOA port may be the failing item.

About this task

Perform the following:

1. If the system has logical partitions, perform this procedure from the logical partition that reported the problem. To determine if the system has logical partitions, go to Determining if the system has logical partitions before continuing with this procedure.
2. Access SST/DST by doing one of the following:

- a. If you can enter a command at the console, access system service tools (SST). See System Service Tools (SST).
 - b. If you cannot enter a command at the console, perform an IPL to DST. See Performing an IPL to DST.
 - c. If you cannot perform a type A or B IPL, perform a type D IPL from removable media.
3. Is the SRC 2765/2766/2787/280D/280E/2847/5704 3120 logged or been logged within 5 minutes of the SRC that sent you to this symbolic FRU?
- Yes:** Continue with the next step.
- No:** The Fibre Channel IOA port has not failed. See the next FRU in the SRC table. **This ends the procedure.**
4. Did you perform a D IPL to get to DST?
- Yes:** Continue with the next step.
- No:** Continue with step 6. **This ends the procedure.**
5. Use the Product Activity Log to get the resource name for the 3120 SRC. See Using the Product Activity Log. Using the resource name, perform the following steps in DST/SST:
- a. Select **Start a service tool** → **Hardware service manager** → **System bus resources**.
 - b. If the resource is an I/O processor, use Resources associated with IOP to find and display detail for the Fibre Channel I/O adapter. If the resource is a Fibre Channel I/O adapter, use Resources associated with the IOP for all type 2847 I/O processors to find and display the Fibre Channel I/O adapter.
 - c. Select the **Display additional port information** function key on the Auxiliary Storage Hardware Resource Detail display.
- Does the Port status field indicate that the port is active?
- Yes:** Continue with step 7.
- No:** Continue with step 9 on page 654. **This ends the procedure.**
6. Use the Service Action Log to get the resource name for the 3120 SRC. See “Using the Service Action Log” on page 32. Using the resource name, perform the following steps in DST/SST:
- a. Select **Start a service tool** → **Hardware service manager** → **Locate resource by resource name**.
 - b. Enter the resource name.
 - c. Select the **Display detail** option for the Fibre Channel I/O adapter on the Logical Hardware Resources display.
 - d. Select the **Display additional port information** function key on the Auxiliary Storage Hardware Resource Detail display.
- Does the Port status field indicate that the port is “active”?
- Yes:** Continue with the next step.
- No:** Go to step 9 on page 654.
7. The port is now active. Has a 1750/2105/2107 3002 SRC occurred around the time the problem was first reported?
- Yes:** Continue with the next step.
- No:** No further service actions are required. **This ends the procedure.**
8. A 1750/2105/2107 3002 has occurred, and the link has gone from not active to active. The Fibre Channel IOA port is functional. Choose from the following options:
- If the disk units that reported the 1750/2105/2107 3002 SRC are usable, then no further service actions are required. **This ends the procedure.**
 - If the disk units that reported the 1750/2105/2107 3002 SRC are not usable, then go back to the 1750/2105/2107 3002 FRU list and work with a FRU other than FCPORT. **This ends the procedure.**

9. Clean the Fibre Channel IOA wrap plug using the cleaning kit. See the Part number catalog for the part number. Follow the instructions in the Fiber Optic Cleaning Procedures (SY27-2604). If the wrap plug has been lost, order and clean a new one. See the Part number catalog for part number.
10. Perform the following steps:
 - a. Install the wrap plug on the Fibre Channel IOA.
 - b. After the wrap plug has been installed, wait 5 seconds.
 - c. Choose from the following options:
 - If you are on the Additional Port Information display, use the **Refresh** function key.
 - If you are not already on the Additional Port Information display, use the instructions from step 6 on page 653 to check if the port has become active.

Is the port status now "active"?

Yes: Continue with the next step.

No: Replace the Fibre Channel IOA. See symbolic FRU "FCIOA" on page 652 for further instructions. **This ends the procedure.**

11. Ask the customer whether the Fibre Channel IOA will attach devices now or whether the Fibre Channel IOA is to be used at a later time. Is the Fibre Channel IOA intended to attach devices at this time?
 - **No:** The wrap plug must be left installed on the Fibre Channel IOA when it is not in use. No further service actions are required. **This ends the procedure.**
 - **Yes:** Perform the following steps:
 - a. Unplug the wrap plug from the Fibre Channel IOA and wait until the port status becomes "Not active" using the Refresh function key on the Additional Port Information display. The failure has been isolated to the first link, which includes any of the cables or junctions between the Fibre Channel IOA port and the first Fibre Channel hub, switch, gateway, or device.
 - b. Use existing Fibre Channel service procedures to continue diagnosis of this first link until the port status becomes active, or contact your next level of support. **This ends the procedure.**

FRPORT

The RIO/HSL controller or adapter on one end of the link may be the failing item.

About this task

If you were sent to this procedure as a result of a B700 6985 SRC, and this is the only FRU in the FRU list, then the system cannot see any I/O units on a RIO/HSL loop and there is at least one cable attached to a port on that loop. In this case, go to (A7xx, B7xx) Licensed Internal Code (LIC) Reference Codes and work from the full FRU list provided there.

Note: The other end of the link is given in the symbolic FRU "TOPORT" on page 761.

Note: For this procedure, the terms "HSL I/O bridge" and "RIO adapter" are interchangeable.

1. Record the bus number (BBBB) in word 7 of the reference code (see "Breaking down a RIO/HSL or PCI bus reference code" on page 95).
2. Find the failing RIO/HSL node using one of the following procedures:
 - "Finding the failing RIO/HSL node using i5/OS"
 - "Finding the failing RIO/HSL node using AIX or Linux" on page 655
 - "Finding the failing RIO/HSL node using the HMC" on page 655

Finding the failing RIO/HSL node using i5/OS:

1. Sign on to SST or DST if you have not already done so.
2. Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **High-speed link (HSL) resources**.

3. Select **Include non-reporting resources** then click **Display detail** for the RIO/HSL loop that you want to examine. The loop number will be the number from word 7 of the reference code above.
4. The display that appears shows the port status of the Network Interface Controller (NIC) for the loop that you selected. Record the resource name, type-model, and serial number.
5. If the status of the "Leading port to next resource" is given as *operational*, then select **Follow Leading Port**. Repeat this action until the status changes to *failed*. Does the resource name ever match the one recorded in the previous step?

Yes: You have traveled around the loop and did not find a failed link. **This ends the procedure.**

No: Continue with the next step.

6. When the status is *failed*, you have found the *from* port.

Note: This screen will be the starting point for symbolic FRU "TOPORT" on page 761.

7. Record the following information of this resource:
 - a. Resource name, card type and model, and part number
 - b. Link status of each port (make sure to note if a port is designated as internal)
8. Select **Cancel**, to return to the Work with High-speed link (HSL) resources display.
9. For the loop with the failure, select **Resources associated with loop**.
10. For the HSL I/O bridge with the resource name that you recorded, select **Associated packaging resources**.
11. Select **Display detail** and record the location for the first failing resource.
12. Go to Finding part locations, select the model or expansion unit you are working with, and find the location in the locations tables to find the replacement procedure and physical location of the FRU. **This ends the procedure.**

Finding the failing RIO/HSL node using AIX or Linux:

1. Determine which RIO/HSL loop the failing node is on (see "Converting the loop number to NIC port location labels" on page 108).
2. Identify each unit in the loop by following the cable.
3. Power down the system and remove all expansion units in the loop that starts and ends at the ports given in the previous step. If there is a base I/O unit on that loop, leave only that unit connected to the system unit.
4. Power on the system to partition standby and check for the same SRC that sent you here. Did the SRC reoccur?

No: Power down the system and add the next unit in the original loop. Repeat step 3.

Yes: The RIO/HSL node in the last I/O unit added is possibly the failing item. Use the RIO/HSL adapter information in the locations tables for the unit with the possible failing RIO/HSL adapter and go to Finding part locations. Select the model or expansion unit you are working with, and find the location in the locations tables to determine the replacement procedure and physical location of the FRU. **This ends the procedure.**

Finding the failing RIO/HSL node using the HMC:

About this task

Perform the following from Service Focal Point on the HMC:

1. Select the **Service Utilities** task.
2. In the Service Utilities window, click the system you are working on. Then, from the selected drop down menu, select **View RIO Topology**.
3. In the Current Topology area, scroll down until you find data for the RIO/HSL loop number with which you are working.

4. Each line in that RIO/HSL loop represents a RIO/HSL node. Find the first one with a leading port status of *failed*. Use that adapter information, and go to Finding part locations. Select the model or expansion unit with which you are working, and find the location in the locations tables to determine the replacement procedure and physical location of the FRU.

Results

This ends the procedure.

FWADIPL

Look here for information about FWADIPL symbolic FRU.

About this task

Perform the following.

1. Contact your network administrator to verify that the bootp server is correctly configured for this client.
2. Check the network connection. If the network connections are OK, retry the operation. If there is no network connection, contact the network administrator.
3. If there are no problems with the bootp server or the network connections, replace the adapter from which you are trying to boot.

Results

This ends the procedure.

FWCD1

Look here for information about FWCD1 symbolic FRU.

About this task

Perform the following procedure.

1. If the problem persists, the CD in the USB CD-ROM drive might not be readable. Remove the CD and insert another CD.
2. If the problem persists after replacing the CD-ROM, replace the USB CD-ROM drive.
3. Replace the USB adapter the drive is attached to.

Results

This ends the procedure.

FWCD2

Look here for information about FWCD2 symbolic FRU.

About this task

Perform the following procedure.

1. Check for server firmware updates. Apply if available.
2. If the problem persists, replace the USB CD-ROM drive.
3. Replace the USB adapter to which the drive is attached.

Results

This ends the procedure.

FWCONS

Look here for information about FWCONS symbolic FRU.

About this task

Perform the following.

1. If your server has an attached console, but the console display is not working, go to one of the following:
 - All display problems in AIX server or AIX partition symptoms
 - All display problems in Linux server or Linux partition symptoms
2. If you can see selection screens on the terminals, press the appropriate key on the input device within 60 seconds. If the console does not respond to the keystroke:
 - a. If you are selecting the console with a keyboard attached to the system, replace the keyboard, then replace the service processor (see Finding part locations).
 - b. If you are selecting the console with an ASCII terminal, suspect the terminal. Use the problem determination procedures for the terminal.

Results

Note: The ASCII terminal settings should be:

- 19,200 baud
- No parity
- 8 data bits
- 1 stop bit

This ends the procedure.

FWENET

Look here for information about FWENET symbolic FRU.

About this task

Perform the following.

1. Verify that the MAC address is properly programmed in the adapter's EPROM.
2. Replace the adapter specified by the location code.

Results

This ends the procedure.

FWFLASH

Look here for information about FWFLASH symbolic FRU.

About this task

Perform the following.

1. Reboot the server or partition.
2. Reflash the server firmware (see Getting fixes).
3. Reboot the failing partition.

Results

This ends the procedure.

FWFWPBL

Look here for information about FWFWPBL symbolic FRU.

About this task

Perform the following.

1. Check for platform firmware updates. Apply if available.
2. Contact service support.

Results

This ends the procedure.

FWHANG

Symbolic FRU FWHANG is not supported at this time.

FWHOST

Look here for information about FWHOST symbolic FRU.

About this task

If the system is not connected to an active network or if the target server is inaccessible (this can also result from incorrect IP parameters being supplied), the system will still attempt to boot and, because timeout durations are necessarily long to accommodate retries, the system may appear to be hung.

Perform the following.

Restart the system and get to the SMS utilities. In the utilities menus, check the following:

- Is the intended boot device correctly specified in the boot list?
- Are the IP parameters correct?
- Verify the network connection (the network could be down).
- Have the network administrator verify the server configuration for this client.
- Attempt to "ping" the target server using the SMS Ping utility.

Results

This ends the procedure.

FWIDE1

Look here for information about FWIDE1 symbolic FRU.

About this task

Perform the following.

1. Replace the media in the device specified by the location code.
2. Replace the device specified by the location code.

Results

This ends the procedure.

FWIDE2

Look here for information about FWIDE2 symbolic FRU.

About this task

Perform the following.

1. Verify that the signal and power cables are properly attached to the device specified by the location code. After they have been verified and repaired if necessary, retry the operation.
2. If the problem persists, the media in the device might not be readable. Remove the media and try another copy.
3. Replace the device specified by the location code.

Results

This ends the procedure.

FWIPIPL

Look here for information about FWIPIPL symbolic FRU.

About this task

Perform the following.

1. Contact your network administrator to verify that the network addresses on the server and gateway are correct.
2. Use the System Management Services menu to correct them on the server if necessary.

Results

This ends the procedure.

FWLPAR

Look here for information about FWLPAR symbolic FRU.

About this task

Perform the following.

1. If a location code was reported with the error **Probing failed for the PCI slot connector**:
 - a. Replace the PCI card in the connector specified by the location code. If this does not resolve the problem, replace the I/O planar on which the slot connector is located.
 - b. Check for adapter firmware updates if this error occurred during a hot plug operation. Apply if available. If there are no updates available, replace the adapter. If this does not resolve the problem, replace the I/O planar on which the slot connector is located.
 - c. Check for platform firmware updates. Apply the update if there is one available.
2. If no location code was reported with the error: The connector was not found.
 - a. Check for platform firmware updates; apply if available.
 - b. If no updates are available, replace the I/O planar specified by the location code.

Results

This ends the procedure.

FWMBOOT

This checkpoint appears on the operator panel when partition firmware has entered the boot devices menu in the SMS because the multi-boot flag was turned on.

The firmware is waiting for input from the user. If the firmware console is not open, the user cannot see the boot devices menu. In this case, the user might mistakenly assume that the system is hung. System firmware only progresses past this point when the user provides the required input.

FWNIM

If this error occurs during the installation of AIX via a process called a NIM push, the *set_bootlist* attribute may not have been set correctly on the NIM master.

About this task

See the appropriate *AIX 5.x Installation Guide and Reference* for the level of AIX that is being installed for more information.

If this error occurs at any other time, perform the following:

1. Check for platform firmware updates. Apply if available.
2. Call service support.

Results

This ends the procedure.

FWNVR1

An error reported against the NVRAM can be caused by low battery voltage and (more rarely) power outages that occur during normal system usage.

With the exception of the BA170000 error, these errors are warnings that the NVRAM data content had to be reestablished and do not require a FRU replacement unless the error is persistent. When one of these errors occurs, system customization information (the boot list, for example) has been lost, and the system may need to be re-configured.

If the error is persistent, replace the service processor (see symbolic FRU “SVCPROC” on page 757).

This ends the procedure.

FWNVR2

Look here for information about FWNVR2 symbolic FRU.

If the error is persistent, replace the service processor (see symbolic FRU “SVCPROC” on page 757).

This ends the procedure.

FWNVR3

Execution of a command line within the nvram configuration variable *nvramrc*(script) resulted in a “throw” being executed.

About this task

This script can be modified by the system firmware SMS utilities, the operating system, PCI adapter ROM code or utility, or an operator (via the open firmware script editing command *nvedit*).

It may not be possible to resolve the problem without a detailed analysis of the NVRAM script, the current system configuration, and the device tree contents.

1. The problem can be caused by a SCSI adapter whose SCSI bus ID has been changed from the default setting no longer appearing in the system. This can be caused either by removing a SCSI adapter, or a problem with a SCSI adapter.
 - a. Select option 5, Change SCSI settings, on the SMS main menu. Then on the SCSI utilities menu, select option 2, Change SCSI ID.
 - 1) Verify the list of SCSI controllers/adapters. If the list is not correct, suspect a problem with the adapter(s) that are installed but not listed.
 - 2) Select the option to "Save" the configuration information.
 - 3) Restart the system.
 - b. If the problem persists, boot the operating system and verify the SCSI bus IDs of the SCSI controllers, and correct if necessary.
 - c. Restart the system.
2. Contact your service support representative for further assistance.

Results

This ends the procedure.

FWPCI1

Look here for information about FWPCI1 symbolic FRU.

About this task

Perform the following procedure.

1. If the location code identifies a slot:
 - a. Check for adapter firmware updates. Apply the update if one is available.
 - b. Replace the adapter.
 - c. Check for platform firmware updates. Apply the update if one is available.
2. If the location code identifies an I/O planar:
 - a. Check for platform firmware updates. Apply the update if one is available.
 - b. Replace the I/O planar.
3. Call service support.

Results

This ends the procedure.

FWPCI2

Look here for information about FWPCI2 symbolic FRU.

About this task

Perform the following procedure.

1. If the location code identifies a slot:
 - a. Check for adapter firmware updates. Apply the update if one is available.
 - b. Check the cabling to the adapter (in particular, the adapters that have serial ports). Serial ports may require null modems or special cabling configurations to avoid connecting driver outputs together. This may create a PCI power problem and force the adapter to be de-configured.

- c. Use the hot plug service aid to re-seat the adapter specified by the location code (see PCI adapter in the Installing features and replacing parts topic to exchange a PCI adapter while powered on). If re-seating the adapter fixes the problem, perform the repair checkout procedure. If the problem is not resolved, go to step 1d.
 - d. Use the hot plug task to move the adapter to another slot (behind another PCI bridge). The "I/O Subsystem PCI and PCI-X PHB and PCI and PCI-X Slot Locations" identifies the PCI bridges and associated slots.
2. If the adapter is successfully re-configured in the new slot (behind another PCI bridge), the slot in which the adapter was originally plugged is bad:
 - a. Replace the I/O backplane assembly that contains the slot in which the adapter was plugged.
 3. Replace the adapter if the adapter does not successfully re-configure into the new slot. **This ends the procedure.**
 4. If the adapter is successfully re-configured in the new slot (behind another PCI bridge), the slot in which the adapter was originally plugged is bad:
 - a. Replace the system backplane.
 5. Replace the adapter if the adapter does not successfully re-configure into the new slot. **This ends the procedure.**

FWPCI3

Look here for information about FWPCI3 symbolic FRU.

About this task

Perform the following procedure.

1. If the location code identifies a slot:
 - a. Check the cabling to the adapter (in particular, the adapters that have system ports). System ports may require null modems or special cabling configurations to avoid connecting driver outputs together. This may create a PCI power problem and force the adapter to be de-configured.
 - b. Move the adapter to another slot (behind another PCI bridge).
 - c. Check for adapter firmware updates. Apply the update if one is available.
 - d. Replace the adapter.
 - e. Check for platform firmware updates. Apply the update if one is available.
 - f. Replace the I/O backplane.
2. If the location identifies an I/O backplane:
 - a. Check for platform firmware updates. Apply the update if one is available.
 - b. Replace the I/O backplane.

Results

This ends the procedure.

FWPCI4

Look here for information about FWPCI4 symbolic FRU.

About this task

Perform the following.

1. If a location code is associated with the checkpoint, replace the adapter identified by the location code.
2. If no location code is specified, see "PFW1542: I/O Problem Isolation Procedure" on page 59.

Results

This ends the procedure.

FWPCI5

Look here for information about FWPCI5 symbolic FRU.

About this task

Perform the following.

Is a location code associated with the checkpoint?

- **No:** Go to “PFW1548: Memory and processor subsystem problem isolation procedure” on page 69. **This ends the procedure.**
- **Yes:** Replace the following, one at a time, until the problem is resolved (see Finding part locations):
 1. FRU identified by the location code
 2. I/O backplane

Results

This ends the procedure.

FWPCI6

Look here for information about FWPCI6 symbolic FRU.

About this task

The last character of the progress code (checkpoint) in which the system is hanging indicates which PCI slot the system was probing at the time the hang occurred. For example, E251 indicates PCI slot 1, E252 indicates slot 2, and so on.

For the PCI slot identified by the progress code, perform the following procedure:

1. Power down the system.
2. Reseat the adapter in the specified slot, then power up the system. Does the problem occur again?
 - **Yes:** Go to the next step.
 - **No: This ends the procedure.**
3. Power down the system and remove the adapter from the specified slot, then power on the system. Does the problem occur again?
 - **Yes:** Replace the system planar (see Finding part locations). Go to “MAP 0410: Repair checkout” on page 419.
 - **No:** Replace the adapter that you removed. Go to “MAP 0410: Repair checkout” on page 419.

Results

This ends the procedure.

FWPTR

Values normally found in nonvolatile storage that point to the location of an operating system were not found.

This can happen for two reasons: either your operating system doesn't support storing the values, or some events occurred that caused the system to lose non-volatile storage information (drainage or replacement of the battery). If you are running AIX, this information can be reconstructed by running the

bootlist command specifying the device that the operating system is installed on. Please refer to your AIX documentation for the syntax and usage of the bootlist command.

In order to boot the operating system so that the above-mentioned values can be reconstructed, power the system down and power it back up again. This should cause the system to look for the operating system in the device contained in the custom boot list or in the default boot list, depending on the condition of the system. If this is not successful, modify the boot sequence (also known as theboot list) to include devices that are known to contain a copy of the operating system. This can be accomplished by using the System Management Services menus. For example, select a hard disk known to have a copy of the operating system as the first and only device in the boot sequence (boot list) and boot the system.

This ends the procedure.

FWPWD

Look here for information about FWPWD symbolic FRU.

About this task

You should be able to see the system prompt on the hardware console.

If your server has an attached console, but the console display is not working, click the appropriate link for the operating system you are running:

- If your server is running AIX, Display problems in the AIX Fast Path MAP
- If your server or partition is running Linux, go to Display Problems in the Linux Fast Path MAP

This ends the procedure.

FWRIPL

Look here for information about FWRIPL symbolic FRU.

About this task

Perform the following.

If a supported adapter is installed:

1. Replace the adapter.
2. Replace the I/O drawer backplane in the drawer in which the adapter is plugged.

Results

If there are no supported LAN adapters installed in a full system partition, install one and reboot the system. If a supported LAN adapter is not assigned to the partition in a server running multiple partitions, deactivate the partition, assign one to the partition, then reactivate the partition.

This ends the procedure.

FWSCSI1

Look here for information about FWSCSI1 symbolic FRU.

About this task

Before replacing any system components:

1. Ensure that the controller and each device on the SCSI bus is assigned a unique SCSI ID.
2. Ensure that the SCSI bus is properly terminated.

3. Ensure that the SCSI signal and power cables are securely connected and are not damaged.

Results

The location code information is required to identify the ID of SCSI device failures as well as to indicate the location of the controller to which the device is attached. Check the system error logs to determine the location code information associated with the error code.

1. Replace the SCSI device.
2. Replace the SCSI cable.
3. Replace the SCSI controller.

This ends the procedure.

FWSCSI2

Look here for information about FWSCSI1 symbolic FRU.

About this task

Before replacing any system components:

1. Ensure that the controller and each device on the SCSI bus is assigned a unique SCSI ID.
2. Ensure that the SCSI bus is properly terminated.
3. Ensure that the SCSI signal and power cables are securely connected and are not damaged.

Results

The location code information is required to identify the ID of SCSI device failures as well as to indicate the location of the controller to which the device is attached. Check the system error logs to determine the location code information associated with the error code.

1. Replace the media (if it is a device with removable media).
2. Replace the SCSI device.

This ends the procedure.

FWSCSI3

Look here for information about FWSCSI1 symbolic FRU.

About this task

Before replacing any system components:

1. Ensure that the controller and each device on the SCSI bus is assigned a unique SCSI ID.
2. Ensure that the SCSI bus is properly terminated.
3. Ensure that the SCSI signal and power cables are securely connected and are not damaged.

Results

The location code information is required to identify the ID of SCSI device failures as well as to indicate the location of the controller to which the device is attached. Check the system error logs to determine the location code information associated with the error code.

1. Replace the SCSI device.

This ends the procedure.

FWSCSI4

Look here for information about FWSCSI1 symbolic FRU.

About this task

Before replacing any system components:

1. Ensure that the controller and each device on the SCSI bus is assigned a unique SCSI ID.
2. Ensure that the SCSI bus is properly terminated.
3. Ensure that the SCSI signal and power cables are securely connected and are not damaged.

Results

The location code information is required to identify the ID of SCSI device failures as well as to indicate the location of the controller to which the device is attached. Check the system error logs to determine the location code information associated with the error code.

1. Replace the media (if a device with removable media).
2. Replace the SCSI device.

This ends the procedure.

FWSCSI5

Look here for information about FWSCSI5 symbolic FRU.

About this task

Before replacing any system components:

1. Ensure that the controller and each device on the SCSI bus is assigned a unique SCSI ID.
2. Ensure that the SCSI bus is properly terminated.
3. Ensure that the SCSI signal and power cables are securely connected and are not damaged.

Results

The location code information is required to identify the ID of SCSI device failures as well as to indicate the location of the controller to which the device is attached. Check the system error logs to determine the location code information associated with the error code.

1. Replace the SCSI device.
2. Replace the SCSI cable.
3. If the missing SCSI devices are connected to the same backplane, replace the SCSI backplane.
4. Replace the SCSI controller.

This ends the procedure.

FWSCSIH

Look here for information about FWSCSIH symbolic FRU.

If a location code is available, follow the repair actions listed for error code BA090001 (see “FWSCSI1” on page 664).

If no location code is available, go to “PFW1548: Memory and processor subsystem problem isolation procedure” on page 69.

This ends the procedure.

FWVTHMC

Look here for information about FWVTHMC symbolic FRU.

1. The partition firmware is waiting for a virtual terminal to be opened on the HMC. Open a virtual terminal.
2. If a virtual terminal is open, the user might have entered a CTRL-S key sequence to stop the scrolling of data off the screen. If this is the case, enter a CTRL-Q key sequence to resume scrolling.
3. Check the ethernet connection between the HMC and the managed system.
4. Reboot the HMC.
5. There may be a hardware problem with the HMC. Refer to the HMC maintenance guide.
6. There may be a hardware problem with the service processor in the managed system. Check the service action event log in Service Focal Point for error codes that indicate a problem with the ethernet ports on the service processor. Take the appropriate actions based on the error codes that you find.

Results

This ends the procedure.

HCA

The failing component is the Host Channel Adapter.

About this task

Use the table below to determine what FRU to replace and how to replace it.

Model or expansion unit	Name of symbolic FRU to locate	Link to locations
515, 520, and 525	InfiniBand host channel adapter: System Backplane	Locations — model 515, 520, 525, and 285
550	InfiniBand host channel adapter: System Backplane	Locations — model 550, 550Q, and OpenPower 720
570	InfiniBand host channel adapter: Expansion card	Locations — model 570
575,	InfiniBand host channel adapter: System Backplane	Locations — model 575.
590 and 595	InfiniBand host channel adapter: Expansion card	Locations — model 590 and 595

HMCLIC

Firmware on the Hardware Management Console (HMC) must be replaced.

See HMC fixes to obtain a new level of HMC firmware.

HMCMTWK

Multiple connections to peer HMCs have been lost.

1. Perform the following from the HMC reporting the connection errors:
 - a. In the navigation area, select **Service Applications** → **Service Focal Point**.
 - b. Select **Service Utilities** from the Service Focal Point display.
 - c. View the **Actions** menu and select **View Network Topology**.
 - d. Are the peer HMCs with the missing connection present in the topology?

No: Continue with the next step.

Yes: The problem was temporary and has resolved itself. **This ends the procedure.**

2. Is the HMC that reported the connection errors also reporting a hardware error with a network adapter?
No: Continue with the next step.
Yes: Service this network adapter error. **This ends the procedure.**
3. Verify that each peer HMC with a missing connection is powered on and that its ethernet connections are secure and functioning. Does the problem persist?
No: **This ends the procedure.**
Yes: Continue with the next step.
4. Have the customer verify that their network is operating properly. If the problem still persists, contact your next level of support.

Results

This ends the procedure.

HMCNTWK

A connection to a peer HMC (indicated in the location code) has been lost.

1. Perform the following from the HMC reporting the connection error:
 - a. In the navigation area, select **Service Applications** → **Service Focal Point**.
 - b. Select **Service Utilities** from the Service Focal Point display.
 - c. View the **Actions** menu and select **View Network Topology**.
 - d. Is the peer HMC with the missing connection present in the topology?
No: Continue with the next step.
Yes: The problem was temporary and has resolved itself. **This ends the procedure.**
2. Verify that the peer HMC with the missing connection is powered on and that its ethernet connections are secure and functioning. Does the problem persist?
No: **This ends the procedure.**
Yes: Continue with the next step.
3. Is either the HMC that reported the problem or the peer HMC with the missing connection reporting a hardware error with a network adapter?
No: Continue with the next step.
Yes: Service this network adapter error. **This ends the procedure.**
4. Have the customer verify that their network is operating properly. If the problem still persists, contact your next level of support.

Results

This ends the procedure.

HMUX

Use this procedure to determine the failing error path and associated FRUs for 9116-561 or 9117-57x single and multi-drawer systems.

About this task

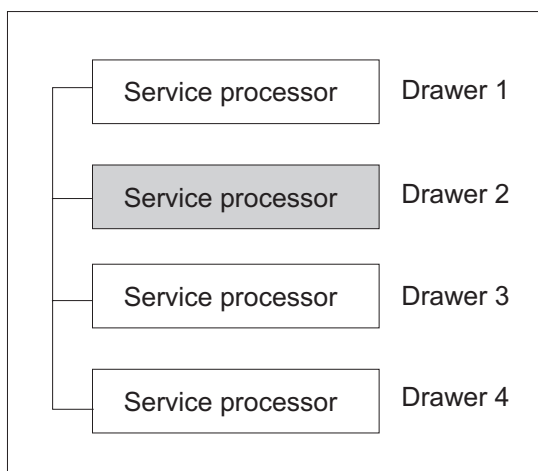
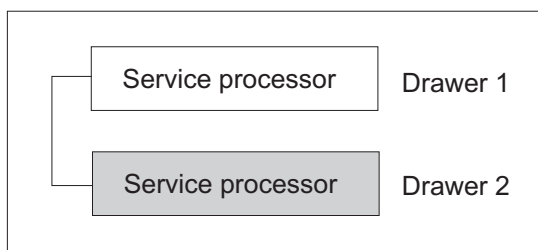
For reference codes associated with this symbolic FRU, the location code information in the associated error log will point to the service processor that generated the error. The reference code will point to the drawer the service processor suspects caused the error. Because of possible service processor failover in multiple service processor systems, use the location code information in the reference code error log to determine which service processor generated the error. Do not use the service processor that is currently active on the system to determine the error path and FRU list associated with this error.

1. Is the reference code you are working with 1xxx 3200, 1xxx 3201, 1xxx 3202, or 1xxx 3203?

No: Return to the “Start of call procedure” on page 2.

Yes: Perform the following:

- a. Determine which service processor indicated the error by matching location code information in the error log to the drawer.
- b. Determine which drawer the service processor believes caused the error. If the service processor generated reference code 1xxx 3200, go to drawer 1. If the service processor generated reference code 1xxx 3201, go to drawer 2. If the service processor generated reference code 1xxx 3202, go to drawer 3. If the service processor generated reference code 1xxx 3203, go to drawer 4. The following illustrations shows a two drawer 9116-561 and a four drawer 9117-57x.



iphau897

- c. To determine the potential error path and FRU list, compare the service processor location to the drawer error location.

Note: Your system problem might be caused by one of the following listed FRUs:

- The service processor cable connecting the drawers (ensure that both ends of this cable are correctly seated before replacing)
- The backplane of the tower indicated by the reference code
- The system backplane of the drawer the reporting service processor resides in
- The service processor that reported the error

2. Did your system produce reference code 1xxx 3200?

No: Continue to the next step.

Yes: Is your system a single drawer 9116-561 or 9117-57x with no service processor cable installed?

No: Continue to the next step.

Yes: Replace the system drawer system backplane. If the reference code persists, replace the service processor. If necessary, refer to Finding part locations.

Note: For information on understanding specific sections of a location code string refer to Understanding location codes.

3. Using the reference code, 1xxx 3200, 1xxx 3201, 1xxx 3202, or 1xxx 3203, determine which drawer the failure was reported against. Use error log location code information to determine which system drawer the service processor that reported the error is located in.
 - a. Replace the system drawer backplane in the system drawer the problem was reported against. If necessary, refer to Finding part locations.

Note: For information on understanding specific sections of a location code string refer to Understanding location codes.

- b. If the problem persists, replace the following parts, in the order listed, until the problem is resolved:
 - 1) Service processor cable connecting the system drawers

Note: *Do not* replace the service processor cable at this time if the system drawer contains the service processor that reported the error, and it is the same system drawer the service processor reported the error against.

- 2) The system backplane in the system drawer the service processor that reported the failure resides in
- 3) The service processor that reported the failure
- 4) If not previously replaced, the service processor cable connecting the system drawers

HEA

Not applicable.

HPSA575

This procedure refers to a high performance switch (HPS) switch network interface (SNI) in a 575 server.

About this task

You might find this FRU listed in the *Part number* field in the FRU list in a Serviceable Event Details panel. You need to follow this procedure only after you isolate the cause of the serviceable event to an HPS SNI. Two reasons occur for a Symbolic FRU to be displayed instead of a part number:

- The Vital Product Data (VPD) is unavailable, so the part number is unknown.
- The location code for the SNI is not fully known. In this case, the location code includes number sign characters (#) as placeholders. (for example, U####.###.#####-P#-C#).

Valid SNI location codes do not include any number sign characters. When you have a valid SNI code, look up the part number for a 2-port SNI in the Parts Catalog section of the *High Performance Switch Planning, Installation, and Service for eServer p5 servers* manual.

When the SNI location code is not valid or is not fully known, you need to determine both the location of the SNI and the part number. To help you determine the location of the SNI, you must use either the other side of the cable or the provided frame and slot location.

The basic flow of the following procedure consists of these actions:

1. Write down specific information about the frame, slot, reference code, and reference code extension.
2. Determine the location of the SNI.
3. Verify that you have identified the correct part.
4. Write down the part number.

Note: After you complete this procedure but before you continue with your service action, make sure to read the notes in “Before you proceed” on page 673.

To perform this procedure, complete the following steps:

1. Record the frame and slot information from the text in the Serviceable Event Details panel.
2. Record the reference code for the Serviceable Event.
3. Record the reference code extension for the Serviceable Event.
4. Review the information in the FRU list. Does the Serviceable Event list an SNI FRU and a switch port connection card (SPCC) FRU?

- **No:** Go to step 5 on page 672.

- **Yes:** Determine if you have a valid location code for the SPCC.

- a. Do you have a valid location code for the SPCC?

- **No:** Go to step 4b.

- **Yes:** Do the following:

- 1) Record the location of the SPCC that has a valid location.

- 2) Go to the HPSNM Switch Topology View on the CSM Management Server Console, find the SPCC location that you wrote down from the previous step, and click the SPCC location.

- 3) Click **Selected-Properties**.

- 4) Click the Connected-To tab.

- 5) Is the location code valid in the Connected-To tab?

Yes: The location code in the Connect-To tab is the location code for the SNI. **This ends the procedure.**

No: Refer to your cable planning documentation or a cable label to determine which SNI is connected to this SPCC port. **This ends the procedure.**

- b. You do not have a valid location code for either the SNI or the SPCC. Does the reference code that you wrote down in step 2 begin with BB10, BB20, or BB50?

- **No:** Go to step 4c.

- **Yes:** The frame and slot information that you wrote down in step 1 indicate the location of the switch.

Note: The SPCC card number (Cx) in the location code of the SPCC should be valid.

- 1) Go to the HPSNM Switch Topology View on the CSM Management Server Console and find the SPCC location that you recorded previously. Click on that row.

- 2) Click **Selected-Properties**.

- 3) Click the **Connected-To** tab. Is the location code valid in the **Connected-To** tab?

Yes: The location code listed in the Connected-To tab is the location code for the SNI. **This ends the procedure.**

No: Refer to your cable planning documentation or a cable label, or trace the cable to determine which SNI is connected to this SPCC port.

- c. You do not have a valid location code for either the SNI or the SPCC. Does the reference code that you wrote down in step 2 begin with BB30 or BB40?

- **No:** Go to step 5 on page 672.

- **Yes:** The reference code extension for the serviceable event that you wrote down in step 3 indicates the logical location of the port on the SNI that reported the problem.

- 1) Break down the reference code extension. Use “Breaking down a reference code for an SNI” on page 672 as a guide. Write down the frame number, slot number, chip number and port number.

- 2) Go to the HPSNM Endpoint View on the CSM Management Server and find the row that matches the reference code extension data from the previous step. (The chip number is labeled **Adapter number** in the GUI.) Click on that row.
- 3) Is the location code valid in the HPSNM Endpoint View?
 - **Yes:** The location code in the GUI is the location code of the SNI. **This ends the procedure.**
 - **No:** Do the following:
 - a) Click **Selected-Properties**.
 - b) Click the **Connected-To** tab. Is the location code valid in the Connected-To tab?
 - **Yes:** The location code listed in the **Connected-To** tab is the location code for the SPCC to which the SNI is connected. **This ends the procedure.**
 - **No:** Determine the SPCC to which the SNI is connected.
 - i. Write down the frame and slot of this SPCC. This frame and slot indicate the location of the switch planar to which the SPCC is connected.
 - ii. The SPCC card number (Cx) in the location code should be valid. Use this to find the specific SPCC card that is plugged into the switch planar that you identified in the previous step.
- 4) Use your cable planning documentation or a cable label, or trace the cable to determine which SNI is connected to this SPCC port. **This ends the procedure.**
5. Review the information in the FRU list. The Serviceable Event lists one SNI FRU and no SPCC FRU.

Note: The frame and slot in the Serviceable Event Text that you recorded in step 3 on page 671 indicates where to locate the server that contains the SNI.

- a. Break down the reference code extension. Use “Breaking down a reference code for an SNI” as a guide. Write down the frame number, slot number, chip number and port number.
- b. Go to the HPSNM Endpoint View on the CSM Management Server and find the row that matches the reference code extension data from the previous step. (The chip number is labeled **Adapter number** in the GUI.) Click on that row.
- c. Click **Selected-Properties**.
- d. Is the location code valid in the **Selected-Properties** panel?
 - **Yes:** The location code listed in the **Selected-Properties** panel is the location code for the SNI. **This ends the procedure.**
 - **No:** Does the server in the specified frame and slot contain more than one SNI card?
 - No:** Only one SNI card is in the server. The location code listed in the **Selected-Properties** panel is the location code for SNI. **This ends the procedure.**
 - Yes:** More than one SNI card is in the server. Call your next level of support to help find the correct SNI. **This ends the procedure.**

Breaking down a reference code for an SNI: About this task

The following table shows how to break down a sample reference code for a switch network interface (SNI): 0000000040512330. The data for this reference code are frame 4, slot 5, chip 3, port 0.

Table 72. Breaking down SNI reference code 0000000040512330

5 chars	1 char	3 chars	2 chars	2 chars	1 char	1 char	1 char
Reserved=0	Network	Frame number	Slot number	Reserved	Card	Chip	Port
00000	0	004	05	12	3	3	0

Before you proceed:
About this task

Notes:

1. Before you replace the SNI, make sure that you run diagnostics.
2. Try to verify the presence of a flashing LED on the SNI card that you are planning to service. The lack of a flashing LED is not a positive indicator that this is not the correct switch.
3. You can get the part number by looking on the part itself, then cross-referencing that number to the Parts Catalog section of the *High Performance Switch Planning, Installation, and Service for eServer p5 servers* manual. The part number should be for a 2-link SNI.

HPSA590

This procedure refers to a high performance switch (HPS) switch network interface (SNI) in an 590 or 595 server.

About this task

You might find this FRU listed in the *Part number* field in the FRU list in a Serviceable Event Details panel. You need to follow this procedure only after you isolate the cause of the serviceable event to an HPS SNI. Two reasons occur for a Symbolic FRU to be displayed instead of a part number:

- The Vital Product Data (VPD) is unavailable, so the part number is unknown.
- The location code for the SNI is not fully known. In this case, the location code includes number sign characters (#) as placeholders. (for example, U#####.###.#####-P#-C#).

Valid SNI location codes do not include any number sign characters. When you have a valid SNI code, look up the part number for a 1-port SNI in the Parts Catalog section of the *High Performance Switch Planning, Installation, and Service for eServer p5 servers* manual.

When the SNI location code is not valid or is not fully known, you need to determine both the location of the SNI and the part number. To help you determine the location of the SNI, you must use either the other side of the cable or the provided frame and slot location.

The basic flow of the following procedure consists of these actions:

1. Write down specific information about the frame, slot, reference code, and reference code extension.
2. Determine the location of the SNI.
3. Verify that you have identified the correct part.
4. Write down the part number.

Note: After you complete this procedure but before you continue with your service action, make sure to read the notes in “Before you proceed” on page 675.

To perform this procedure, complete the following steps:

1. Record the frame and slot information from the text in the Serviceable Event Details panel.
2. Record the reference code for the Serviceable Event.
3. Record the reference code extension for the Serviceable Event.
4. Review the information in the FRU list. Does the Serviceable Event list an SNI FRU and a switch port connection card (SPCC) FRU?
 - **No:** Go to step 5 on page 675.
 - **Yes:** Determine if you have a valid location code for the SPCC.
 - a. Do you have a valid location code for the SPCC?
 - **No:** Go to step 4b on page 674.
 - **Yes:** Do the following:

- 1) Record the location of the SPCC that has a valid location.
 - 2) Go to the HPSNM Switch Topology View on the CSM Management Server Console, find the SPCC location that you wrote down from the previous step, and click the SPCC location.
 - 3) Click **Selected-Properties**.
 - 4) Click the **Connected-To** tab.
 - 5) Is the location code valid in the **Connected-To** tab?
 - Yes:** The location code in the Connect-To tab is the location code for the SNI. **This ends the procedure.**
 - No:** Refer to your cable planning documentation or a cable label to determine which SNI is connected to this SPCC port. **This ends the procedure.**
- b. You do not have a valid location code for either the SNI or the SPCC. Does the reference code that you wrote down in step 2 on page 673 begin with BB10, BB20, or BB50?
- **No:** Go to step 4c.
 - **Yes:** The frame and slot information that you wrote down in step 1 on page 673 indicate the location of the switch.
- Note:** The SPCC card number (Cx) in the location code of the SPCC should be valid.
- 1) Go to the HPSNM Switch Topology View on the CSM Management Server Console and find the SPCC location that you recorded previously. Click on that row.
 - 2) Click **Selected-Properties**.
 - 3) Click the **Connected-To** tab. Is the location code valid in the Connected-To tab?
 - Yes:** The location code listed in the **Connected-To** tab is the location code for the SNI. **This ends the procedure.**
 - No:** Refer to your cable planning documentation or a cable label, or trace the cable to determine which SNI is connected to this SPCC port.
- c. You do not have a valid location code for either the SNI or the SPCC. Does the reference code that you wrote down in step 2 on page 673 begin with BB30 or BB40?
- **No:** Go to step 5 on page 675.
 - **Yes:** The reference code extension for the serviceable event that you wrote down in step 3 on page 673 indicates the logical location of the port on the SNI that reported the problem.
 - 1) Break down the reference code extension. Use “Breaking down a reference code for an SNI” on page 675 as a guide. Write down the frame number, slot number, chip number and port number.
 - 2) Go to the HPSNM Endpoint View on the CSM Management Server and find the row that matches the reference code extension data from the previous step. (The chip number is labeled **Adapter number** in the GUI.) Click on that row.
 - 3) Is the location code valid in the HPSNM Endpoint View?
 - **Yes:** The location code in the GUI is the location code of the SNI. **This ends the procedure.**
 - **No:** Do the following:
 - a) Click **Selected-Properties**.
 - b) Click the Connected-To tab. Is the location code valid in the Connected-To tab?
 - **Yes:** The location code listed in the Connected-To tab is the location code for the SPCC to which the SNI is connected. **This ends the procedure.**
 - **No:** Determine the SPCC to which the SNI is connected.
 - i. Write down the frame and slot of this SPCC. This frame and slot indicate the location of the switch planar to which the SPCC is connected.

- ii. The SPCC card number (Cx) in the location code should be valid. Use this to find the specific SPCC card that is plugged into the switch planar that you identified in the previous step.
- 4) Use your cable planning documentation or a cable label, or trace the cable to determine which SNI is connected to this SPCC port. **This ends the procedure.**
5. Review the information in the FRU list. The Serviceable Event lists one SNI FRU and no SPCC FRU.

Note: The frame and slot in the Serviceable Event Text that you recorded in step 3 on page 673 indicates where to locate the server that contains the SNI.

- a. Break down the reference code extension. Use “Breaking down a reference code for an SNI” as a guide. Write down the frame number, slot number, chip number and port number.
- b. Go to the HPSNM Endpoint View on the CSM Management Server and find the row that matches the reference code extension data from the previous step. (The chip number is labeled **Adapter number** in the GUI.) Click on that row.
- c. Click **Selected-Properties**.
- d. Is the location code valid in the **Selected-Properties** panel?
 - **Yes:** The location code listed in the **Selected-Properties** panel is the location code for the SNI. **This ends the procedure.**
 - **No:** Does the server in the specified frame and slot contain more than one SNI card?
 - No:** Only one SNI card is in the server. The location code listed in the **Selected-Properties** panel is the location code for SNI. **This ends the procedure.**
 - Yes:** More than one SNI card is in the server. Call your next level of support to help find the correct SNI. **This ends the procedure.**

Breaking down a reference code for an SNI:

About this task

The following table shows how to break down a sample reference code for a switch network interface (SNI): 0000000040512330. The data for this reference code are frame 4, slot 5, chip 3, port 0.

Table 73. Breaking down SNI reference code 0000000040512330

5 chars	1 char	3 chars	2 chars	2 chars	1 char	1 char	1 char
Reserved=0	Network	Frame number	Slot number	Reserved	Card	Chip	Port
00000	0	004	05	12	3	3	0

Before you proceed:

About this task

Notes:

1. Before you replace the SNI, make sure that you run diagnostics.
2. Try to verify the presence of a flashing LED on the SNI card that you are planning to service. The lack of a flashing LED is not a positive indicator that this is not the correct switch.
3. You can get the part number by looking on the part itself, then cross-referencing that number to the Parts Catalog section of the *High Performance Switch Planning, Installation, and Service for eServer p5 servers* manual. The part number should be for a 1-link SNI.

HPSASNI

This procedures refers to a high performance switch (HPS) switch network interface (SNI).

About this task

You might find this FRU listed in the *Part number* field in the FRU list in a Serviceable Event Details panel. You need to follow this procedure only after you isolate the cause of the serviceable event to an HPS SNI. Two reasons occur for a Symbolic FRU to be displayed instead of a part number:

- The Vital Product Data (VPD) is unavailable, so the part number is unknown.
- The location code for the SNI is not fully known. In this case, the location code includes number sign characters (#) as placeholders. (for example, U####.###.#####-P#-C#).

Valid SNI location codes do not include any number sign characters. When you have a valid SNI code, do the following:

1. Determine in which type of server this SNI is populated.
 - For 575 servers, use a 2-port SNI
 - For 590 or 595 servers, use a 1-port SNI
2. Look up the appropriate SNI part number in the Parts Catalog section of the *High Performance Switch Planning, Installation, and Service for eServer p5 servers* manual.

When the SNI location code is not valid or is not fully known, you need to determine both the location of the SNI and the part number. To help you determine the location of the SNI, you must use either the other side of the cable or the provided frame and slot location.

The basic flow of the following procedure consists of these actions:

1. Write down specific information about the frame, slot, reference code, and reference code extension.
2. Determine the location of the SNI.
3. Verify that you have identified the correct part.
4. Write down the part number.

Note: After you complete this procedure but before you continue with your service action, make sure to read the notes in “Before you proceed” on page 678.

To perform this procedure, complete the following steps:

1. Record the frame and slot information from the text in the Serviceable Event Details panel.
2. Record the reference code for the Serviceable Event.
3. Record the reference code extension for the Serviceable Event.
4. Review the information in the FRU list. Does the Serviceable Event list an SNI FRU and a switch port connection card (SPCC) FRU?
 - **No:** Go to step 5 on page 677.
 - **Yes:** Determine if you have a valid location code for the SPCC.
 - a. Do you have a valid location code for the SPCC?
 - **No:** Go to step 4b on page 677.
 - **Yes:** Do the following:
 - 1) Record the location of the SPCC that has a valid location.
 - 2) Go to the HPSNM Switch Topology View on the CSM Management Server Console, find the SPCC location that you wrote down from the previous step, and click the SPCC location.
 - 3) Click **Selected-Properties**.
 - 4) Click the **Connected-To** tab.
 - 5) Is the location code valid in the **Connected-To** tab?

Yes: The location code in the Connect-To tab is the location code for the SNI. **This ends the procedure.**

No: Refer to your cable planning documentation or a cable label to determine which SNI is connected to this SPCC port. **This ends the procedure.**

- b. You do not have a valid location code for either the SNI or the SPCC. Does the reference code that you wrote down in step 2 on page 676 begin with BB10, BB20, or BB50?
- **No:** Go to step 4c.
 - **Yes:** The frame and slot in the Serviceable Event Text indicate the location of the switch. Do the following

Note: The SPCC card number (Cx) in the location code of the SPCC should be valid.

- 1) Go to the HPSNM Switch Topology View on the CSM Management Server Console and find the SPCC location that you recorded previously. Click on that row.
- 2) Click **Selected-Properties**.
- 3) Click the **Connected-To** tab. Is the location code valid in the Connected-To tab?

Yes: The location code listed in the **Connected-To** tab is the location code for the SNI. **This ends the procedure.**

No: Refer to your cable planning documentation or a cable label, or trace the cable to determine which SNI is connected to this SPCC port.

- c. You do not have a valid location code for either the SNI or the SPCC. Does the reference code that you wrote down in step 2 on page 676 begin with BB30 or BB40?
- **No:** Go to step 5.
 - **Yes:** The reference code extension for the serviceable event that you wrote down in step 3 on page 676 indicates the logical location of the port on the SNI that reported the problem.
 - 1) Break down the reference code extension. Use “Breaking down a reference code for an SNI” on page 678 as a guide. Write down the frame number, slot number, chip number and port number.
 - 2) Go to the HPSNM Endpoint (The chip number is labeled **Adapter number** in the GUI.) View on the CSM Management Server and find the row that matches the reference code extension data from the previous step. Click on that row.
 - 3) Is the location code valid in the HPSNM Endpoint View?
 - **Yes:** The location code in the GUI is the location code of the SNI. **This ends the procedure.**
 - **No:** Do the following:
 - a) Click **Selected-Properties**
 - b) Click the **Connected-To** tab. Is the location code valid in the Connected-To tab?
 - **Yes:** The location code listed in the Connected-To tab is the location code for the SPCC to which the SNI is connected. Continue with step 4c4.
 - **No:** Do the following:
 - i. Write down the frame and slot of this SPCC. This frame and slot indicate the location of the switch planar to which the SPCC is connected.
 - ii. The SPCC card number (Cx) in the location code should be valid. Use this to find the specific SPCC card that is plugged into the switch planar that you identified in the previous step.
 - iii. Continue with step 4c4.
 - 4) Use your cable planning documentation or a cable label, or trace the cable to determine which SNI is connected to this SPCC port. **This ends the procedure.**

5. Review the information in the FRU list. The Serviceable Event lists one SNI FRU and no SPCC FRU.

Note: The frame and slot in the Serviceable Event Text that you recorded in step 3 on page 676 indicates where to locate the server that contains the SNI.

- a. Break down the reference code extension. Use “Breaking down a reference code for an SNI” as a guide. Write down the frame number, slot number, chip number and port number.
- b. Go to the HPSNM Endpoint View on the CSM Management Server and find the row that matches the reference code extension data from the previous step. (The chip number is labeled **Adapter number** in the GUI.) Click on that row.
- c. Click **Selected-Properties**.
- d. Is the location code valid in the HPSNM Endpoint View?
 - **Yes:** The location code listed in the HPSNM Endpoint View is the location code for the SNI. **This ends the procedure.**
 - **No:** Does the server in the specified frame and slot contain more than one SNI card?
 - No:** Only one SNI card is in the server. The location code listed in the HPSNM Endpoint View is the location code for SNI. **This ends the procedure.**
 - Yes:** More than one SNI card is in the server. Call your next level of support to help find the correct SNI. **This ends the procedure.**

Breaking down a reference code for an SNI:

About this task

The following table shows how to break down a sample reference code for a switch network interface (SNI): 0000000040512330. The data for this reference code are frame 4, slot 5, chip 3, port 0.

Table 74. Breaking down SNI reference code 0000000040512330

5 chars	1 char	3 chars	2 chars	2 chars	1 char	1 char	1 char
Reserved=0	Network	Frame number	Slot number	Reserved	Card	Chip	Port
00000	0	004	05	12	3	3	0

Before you proceed:

About this task

Notes:

1. Before you replace the SNI, make sure that you run diagnostics.
2. Try to verify the presence of a flashing LED on the SNI card that you are planning to service. The lack of a flashing LED is not a positive indicator that this is not the correct switch.
3. You can get the part number by looking on the part itself, then cross-referencing that number to the Parts Catalog section of the *High Performance Switch Planning, Installation, and Service for eServer p5 servers* manual.

HPSCCAB

This procedure refers to a high performance switch (HPS) network cable. HPS network cables are fiber or copper and are available in several lengths.

About this task

To determine the type and precise length of an HPS cable, perform the following:

1. Examine the label on the cable.
2. Write down the cable part number.
3. To find the cable part number, refer to the Parts Catalog section of the *High Performance Switch Planning, Installation, and Service for eServer p5 servers* manual.

Results

This ends the procedure.

For more information and for remove and replace instructions, refer to the *High Performance Switch Planning, Installation, and Service for eServer p5 servers* manual.

HPSCCOP

This procedure refers to a copper cable used in the high performance switch (HPS) network. This type of copper cable is available in several lengths.

About this task

To determine the precise length of this cable, perform the following:

1. Examine the label on the cable.
2. Write down the cable part number.
3. To find the cable part number, refer to the Parts Catalog section of the *High Performance Switch Planning, Installation, and Service for eServer p5 servers* manual.

Results

This ends the procedure.

For more information and for remove and replace instructions, refer to the *High Performance Switch Planning, Installation, and Service for eServer p5 servers* manual.

HPSCFIB

This procedure refers to a fiber cable used in the high performance switch (HPS) network.

About this task

This type of fiber cable is available in several lengths. To determine the precise length of this cable, perform the following:

1. Examine the label on the cable.
2. Write down the cable part number.
3. To find the cable part number, refer to the Parts Catalog section of the *High Performance Switch Planning, Installation, and Service for eServer p5 servers* manual.

Results

This ends the procedure.

For more information and for remove and replace instructions, refer to the *High Performance Switch Planning, Installation, and Service for eServer p5 servers* manual.

HPSSPCC

This procedure refers to a high performance switch (HPS) switch port connection card (SPCC).

About this task

You might find this FRU listed in the *Part number* field in the FRU list in a Serviceable Event Details panel. You need to follow this procedure only after you isolate the cause of the serviceable event to an HPS SPCC. Two reasons occur for a Symbolic FRU to be displayed instead of a part number:

- The Vital Product Data (VPD) is unavailable, so the part number is unknown.

- The location code for the SPCC is not fully known. In this case, the location code includes number sign characters (#) as placeholders. (for example, U####.###.#####-P1-C5).

Note: The card number (Cx) always should be provided in the location code.

Valid SPCC location codes do not include any number sign characters. When you have a valid SPCC code, do the following:

1. Determine if this SPCC is for fiber cables or copper cables.
2. Look up the appropriate SPCC part number in the Parts Catalog section of the *High Performance Switch Planning, Installation, and Service for eServer p5 servers* manual.

When the SPCC location code is not valid or is not fully known, you need to determine both the location of the SPCC and the part number. To help you determine the location of the SPCC, you must use either the other side of the cable or the provided frame and slot location. You then use the card number to find the card.

The basic flow of the following procedure consists of these actions:

1. Write down specific information about the frame, slot, reference code, and reference code extension.
2. Identify the switch planar into which the SPCC is plugged.
3. Determine which card is the correct SPCC in the switch planar.
4. Verify that you have identified the correct part.
5. Write down the part number.

Note: After you complete this procedure but before you continue with your service action, make sure to read the notes in “Before you proceed” on page 682.

To perform this procedure, complete the following steps:

1. Record the frame and slot information from the text in the Serviceable Event Details panel.
2. Record the reference code for the Serviceable Event.
3. Record the reference code extension for the Serviceable Event.
4. Review the information in the FRU list. Does the Serviceable Event list two SPCC FRUs?
 - **No:** Go to step 5 on page 681.
 - **Yes:** Determine if you have a valid location code for the other switch planar.
 - a. Do you have a valid location code for the other SPCC?
 - **No:** Go to step 4b on page 681.
 - **Yes:** Do the following:
 - 1) Record the location of the SPCC that has a valid location.
 - 2) Go to the HPSNM Switch Topology View on the CSM Management Server Console, find the SPCC location that you wrote down from the previous step, and click the SPCC location.
 - 3) Click **Selected-Properties**.
 - 4) Click the **Connected-To** tab.
 - 5) Is the location code valid in the **Connected-To** tab?
 - **Yes:** The location code in the **Connected-To** tab is the location code for the SPCC. **This ends the procedure.**
 - **No:** Continue with the following steps:
 - a) Write down the frame and slot of the port on the other side of the cable. This frame and slot indicate the location of the switch planar into which the SPCC is plugged.
 - b) Continue with step 7 on page 682.

- b. You do not have a valid location code for either SPCC. Is this the first SPCC in the FRU list?

No: Go to step 4c.

Yes: The frame and slot information in the Serviceable Event text that you wrote down in step 1 on page 680 indicates the location of the switch into which the SPCC is plugged. Continue with step 7 on page 682.

- c. You do not have a valid location code for either SPCC. This is the second switch in the FRU list. Do the following:

Note: The reference code extension for the serviceable event that you wrote down in step 3 on page 680 indicates the location of the port on the other switch that reported the problem.

- 1) Break down the reference code extension. Use "Breaking down a reference code for a switch" on page 682 as a guide. Write down the frame number, slot number, chip number and port number.
- 2) Go to the HPSNM Switch Topology View on the CSM Management Server and find the row that matches the reference code extension data from the previous step. Click on that row.
- 3) Click **Selected-Properties**.
- 4) Click the **Connected-To** tab. Is the location code valid in the **Connected-To** tab?

Yes: The location code listed in the **Connected-To** tab is the location code for the SPCC. **This ends the procedure.**

No: Write down the frame and slot of the port on the other side of the cable. This frame and slot indicate the location of the switch planar into which the SPCC is plugged. Continue with step 7 on page 682.

5. Review the information in the FRU list. Does the Serviceable Event list one SPCC FRU and a switch network interface (SNI) card FRU?

- **No:** Go to step 6 on page 682.

- **Yes:** Check the SNI location code.

- a. Does the SNI have a valid location code?

- **Yes:** Do the following:

- 1) Write down the location code for the SNI.
- 2) Go to the HPSNM End-point View on the CSM Management Server and find the row that matches the SNI location code that you just wrote down. Click on that row.
- 3) Click **Selected-Properties**.
- 4) Click the **Connected-To** tab. Is the location code valid in the **Connected-To** tab?

Yes: The location code listed in the Connected-To tab is the location code for the SPCC. **This ends the procedure.**

No: Write down the frame and slot of the port on the other side of the cable. This frame and slot indicate the location of the switch planar into which the SPCC is plugged. Continue with step 7 on page 682.

- **No:** Look at the beginning characters of the reference code that you wrote down step 2 on page 680.

For reference codes that begin with BB10, BB20, or BB50: The frame and slot in the Serviceable Event Text indicate the location of the switch planar. Continue with step 7 on page 682.

For reference code that begin with BB30 or BB40: Do the following:

- 1) Break down the reference code extension. Use "Breaking down a reference code for an SNI" on page 682 as a guide. Write down the frame number, slot number, chip number, and port number.
- 2) Go to the HPSNM Endpoint View on the CSM Management Server and find the row that matches the reference code extension data from the previous step. (The chip number is labeled **Adapter number** in the GUI.) Click on that row.

3) Click **Selected-Properties**.

4) Click the **Connected-To** tab. Is the location code valid in the Connected-To tab?

Yes: The location code listed in the **Connected-To** tab is the location code for the SPCC. **This ends the procedure.**

No: Write down the frame and slot of the port on the other side of the cable. This frame and slot indicate the location of the switch planar into which the SPCC is plugged. Continue with step 7.

6. Review the information in the FRU list. The Serviceable Event lists only one SPCC FRU and does not include an SNI FRU.

The frame and slot in the Serviceable Event Text indicate where to locate the switch planar. **This ends the procedure.**

Note: You can double check this by going to the HPSNM Switch Topology View and finding the switch for the indicated frame and slot. Expand the ports and look to see if a valid location code exists for any of the ports. If you see a valid location code, drop the characters "-Cx-Ty" from the location code, then use that as the location code for the switch planar.

7. After you identify the switch planar into which the SPCC plugs, you can identify the SPCC. The card number (Cx) in the location code for the SPCC in question indicates which SPCC is plugged into the switch planar.

Note: It is possible that by the time you reach this step, you have found the entire location code for the SPCC.

Results

This ends the procedure.

Breaking down a reference code for a switch:

About this task

The following table shows how to break down a sample reference code for a switch: 0000000040303172. The data for this reference code are frame 4, slot 3, chip 7, port 2.

Table 75. Breaking down switch reference code 0000000040303172

5 chars	1 char	3 chars	2 chars	2 chars	1 char	1 char	1 char
Reserved=0	Network	Frame number	Slot number	Reserved	Card	Chip	Port
00000	0	004	03	03	1	7	2

Breaking down a reference code for an SNI:

About this task

The following table shows how to break down a sample reference code for a switch network interface (SNI): 0000000040512330. The data for this reference code are frame 4, slot 5, chip 3, port 0.

Table 76. Breaking down SNI reference code 0000000040512330

5 chars	1 char	3 chars	2 chars	2 chars	1 char	1 char	1 char
Reserved=0	Network	Frame number	Slot number	Reserved	Card	Chip	Port
00000	0	004	05	12	3	3	0

Before you proceed:

About this task

Notes:

1. Before you replace the switch planar, make sure that you run diagnostics.
2. If an SPCC appears in the FRU list, try to verify that presences of a flashing LED on the SPCC card in the same enclosure as the switch planar that you are going to service. The lack of a flashing LED is not a positive indicator that this is not the correct switch.
3. You can get the part number by looking on the part itself, then cross-referencing that number to the Parts Catalog section of the *High Performance Switch Planning, Installation, and Service for eServer p5 servers* manual.

HPSSSW

This procedure refers to a high performance switch (HPS) planar.

About this task

You might find this FRU listed in the *Part number* field in the FRU list in a Serviceable Event Details panel. You need to follow this procedure only after you isolate the cause of the serviceable event to a switch planar. Two reasons occur for a Symbolic FRU to be displayed instead of a part number:

- The Vital Product Data (VPD) is unavailable, so the part number is unknown.
- The location code for the switch planar is not fully known. In this case, the location code includes number sign characters (#) as placeholders. (for example, U#####.###.#####-P1).

Valid switch planar location codes do not include any number sign characters. When you have a valid switch planar code, look up the switch planar part number in the Parts Catalog section of the *High Performance Switch Planning, Installation, and Service for eServer p5 servers* manual.

When the switch planar location code is not valid or is not fully known, you need to determine the location of the switch planar. To help you determine the location of the switch planar, you must use either the other side of the cable or the provided frame and slot location.

The basic flow of the following procedure consists of these actions:

1. Write down specific information about the frame, slot, reference code, and reference code extension.
2. Determine the location code for the switch planar.
3. Verify that you have identified the correct part.
4. Write down the part number.

Note: After you complete this procedure but before you continue with your service action, make sure to read the notes in “Before you proceed” on page 685.

To perform this procedure, complete the following steps:

1. Record the frame and slot information from the text in the Serviceable Event Details panel.
2. Record the reference code for the Serviceable Event.
3. Record the reference code extension for the Serviceable Event.
4. Review the information in the FRU list. Does the Serviceable Event list two switch planar FRUs?
 - **No:** Go to step 5 on page 684.
 - **Yes:** Determine if you have a valid location code for the other switch planar.
 - a. Do you have a valid location code for the other switch planar?
 - **No:** Go to step 4b on page 684.
 - **Yes:** Do the following:

- 1) Find the SPCC that corresponds to the switch planar that has the valid location code. The SPCC has the same unit location as the switch planar: U7045.SW4.[serial number]. Record the location of the switch port connection card.
 - 2) Go to the HPSNM Switch Topology View on the CSM Management Server Console, find the SPCC location that you wrote down from the previous step, and click the SPCC location.
 - 3) Click **Selected-Properties**.
 - 4) Click the Connected-To tab.
 - 5) Write down the frame and slot of the port on the other side of the cable, which indicate the location of the switch planar. **This ends the procedure.**
- b. You do not have a valid location code for either switch planar. Is this the first switch in the FRU list?
- No:** Go to step 4c.
- Yes:** The frame and slot information in the Serviceable Event text that you wrote down in step 1 on page 683 indicates the location of the switch you are trying to find. **This ends the procedure.**
- c. You do not have a valid location code for either switch planar. This is the second switch in the FRU list. Do the following:
- Note:** The reference code extension for the serviceable event that you wrote down in step 3 on page 683 indicates the location of the port on the other switch that reported the problem.
- 1) Break down the reference code extension. Use "Breaking down a reference code for a switch" on page 685 as a guide. Write down the frame number, slot number, chip number and port number.
 - 2) Go to the HPSNM Switch Topology View on the CSM Management Server and find the row that matches the reference code extension data from the previous step. Click on that row.
 - 3) Click **Selected-Properties**.
 - 4) Click the **Connected-To** tab. Is the location code valid in the **Connected-To** tab?

Yes: Drop the characters "-Cx-Ty" from the location code in the **Connected-To** tab, then use that location code for the switch planar. **This ends the procedure.**

No: Write down the frame and slot of the port on the other side of the cable. This frame and slot indicate the location of the switch planar. **This ends the procedure.**
5. Review the information in the FRU list. Does the Serviceable Event list one switch planar FRU and a switch network interface (SNI) card FRU?
- **No:** Go to step 6 on page 685.
 - **Yes:** Check the SNI location code.
 - a. Does the SNI have a valid location code?
 - **Yes:** Do the following:
 - 1) Write down the location code for the SNI.
 - 2) Go to the HPSNM End-point View on the CSM Management Server and find the row that matches the SNI location code that you just wrote down. Click on that row.
 - 3) Click **Selected-Properties**.
 - 4) Click the **Connected-To** tab. Is the location code valid in the **Connected-To** tab?

Yes: Drop the characters "-Cx-Ty" from the location code in the **Connected-To** tab, then use that location code for the switch planar. **This ends the procedure.**

No: Write down the frame and slot of the port on the other side of the cable, which indicate the location of the switch planar. **This ends the procedure.**
 - **No:** Look at the beginning characters of the reference code that you wrote down step 2 on page 683.

For reference codes that begin with BB10, BB20, or BB50: The frame and slot in the Serviceable Event Text indicate the location of the switch planar. **This ends the procedure.**

For reference code that begin with BB30 or BB40: Do the following:

- 1) Break down the reference code extension. Use "Breaking down a reference code for an SNI" as a guide. Write down the frame number, slot number, chip number, and port number.
- 2) Go to the HPSNM Endpoint View on the CSM Management Server and find the row that matches the reference code extension data from the previous step. (The chip number is labeled **Adapter number** in the GUI.) Click on that row.
- 3) Click **Selected-Properties**.
- 4) Click the **Connected-To** tab. Is the location code valid in the **Connected-To** tab?

Yes: Drop the characters "-Cx-Ty" from the location code in the **Connected-To** tab, then use that location code for the switch planar. **This ends the procedure.**

No: Write down the frame and slot of the port on the other side of the cable. This frame and slot indicate the location of the switch planar. **This ends the procedure.**

6. Review the information in the FRU list. The Serviceable Event lists only one switch planar FRU and does not include an SNI FRU.

The frame and slot in the Serviceable Event Text indicate where to locate the switch planar. **This ends the procedure.**

Note: You can double check this by going to the HPSNM Switch Topology View and finding the switch for the indicated frame and slot. Expand the ports and look to see if a valid location code exists for any of the ports. If you see a valid location code, drop the characters "-Cx-Ty" from the location code, then use that as the location code for the switch planar.

Breaking down a reference code for a switch:

About this task

The following table shows how to break down a sample reference code for a switch: 0000000040303172. The data for this reference code are frame 4, slot 3, chip 7, port 2.

Table 77. Breaking down switch reference code 0000000040303172

5 chars	1 char	3 chars	2 chars	2 chars	1 char	1 char	1 char
Reserved=0	Network	Frame number	Slot number	Reserved	Card	Chip	Port
00000	0	004	03	03	1	7	2

Breaking down a reference code for an SNI:

About this task

The following table shows how to break down a sample reference code for a switch network interface (SNI): 0000000040512330. The data for this reference code are frame 4, slot 5, chip 3, port 0.

Table 78. Breaking down SNI reference code 0000000040512330

5 chars	1 char	3 chars	2 chars	2 chars	1 char	1 char	1 char
Reserved=0	Network	Frame number	Slot number	Reserved	Card	Chip	Port
00000	0	004	05	12	3	3	0

Before you proceed:

About this task

Notes:

1. Before you replace the switch planar, make sure that you run diagnostics.
2. If an SPCC appears in the FRU list, try to verify that presences of a flashing LED on the SPCC card in the same enclosure as the switch planar that you are going to service. The lack of a flashing LED is not a positive indicator that this is not the correct switch.
3. You can get the part number by looking on the part itself, then cross-referencing that number to the Parts Catalog section of the *High Performance Switch Planning, Installation, and Service for eServer p5 servers* manual.

HSLH

This is a hybrid HSL/RIO to HSL2/RIO-G copper cable where one end has an HSL/RIO yellow connector and the other end has an HSL2/RIO-G black connector.

Diagnostic code cannot determine the length of the cable. Diagnostic code will attempt to determine the location codes of cable ports at each end of the cable. Go to "HSL_LNK" on page 687 and follow the appropriate instructions.

This ends the procedure.

HSLH_xx

This is a hybrid HSL/RIO to HSL2/RIO-G copper cable where one end has an HSL/RIO yellow connector and the other end has an HSL2/RIO-G black connector.

The "xx" value indicates the length of the cable in meters. Go to "HSL_LNK" on page 687 and follow the appropriate instructions.

This ends the procedure.

HSLH_06

This is a hybrid HSL/RIO to HSL2/RIO-G copper cable where one end has an HSL/RIO yellow connector and the other end has an HSL2/RIO-G black connector.

The "06" value indicates the length of the cable is 6 meters. Go to "HSL_LNK" on page 687 and follow the appropriate instructions.

This ends the procedure.

HSLH_15

This is a hybrid HSL/RIO to HSL2/RIO-G copper cable where one end has an HSL/RIO yellow connector and the other end has an HSL2/RIO-G black connector.

The "15" value indicates the length of the cable is 15 meters. Go to "HSL_LNK" on page 687 and follow the appropriate instructions.

This ends the procedure.

HSL_I

This is an HSL/RIO interposer card for copper HSL2/RIO-G (black) connections or optical HSL/RIO connections.

Diagnostic code cannot determine the type of interposer card. Go to "HSL_LNK" on page 687 and follow the appropriate instructions.

This ends the procedure.

HSL_Ix

This is an HSL/RIO interposer card for copper HSL2/RIO-G (black) connections or optical HSL/RIO connections.

The "x" value indicates the type of interposer card. Go to "HSL_LNK" and follow the appropriate instructions.

This ends the procedure.

HSL_I2

The failing item is an HSL2/RIO-G interposer card on machine type 9406 model 825.

This interposer card is for copper HSL2/RIO-G cable connectors (black) on the system unit planar in location C08 or C09. Diagnostic code will attempt to include the card's location with the FRU in the serviceable event view. Go to "HSL_LNK" and follow the appropriate instructions.

This ends the procedure.

HSL_I3

The failing item is an HSL/RIO interposer card on machine type 9406 model 825.

This interposer card is for optical HSL/RIO cable connectors on the system unit planar in location C08 or C09. Diagnostic code will attempt to include the card's location with the FRU in the serviceable event view. Go to "HSL_LNK" and follow the appropriate instructions.

This ends the procedure.

HSL_I4

The failing item is an HSL2/RIO-G interposer card on a 7040-61D expansion unit.

This interposer card is for copper HSL2/RIO-G cable connectors (black) on the I/O unit planar in location -P1(riser) or -P2(riser). Diagnostic code will attempt to include the card's location with the FRU in the serviceable event view. Go to "HSL_LNK" and follow the appropriate instructions.

This ends the procedure.

HSL_LNK

When a RIO/HSL cable is disconnected, it may result in a lost connection between the units even after the cable is reconnected.

About this task

Attention: When a RIO/HSL cable is disconnected, it may result in a lost connection between the units even after the cable is reconnected. To fix this problem, you need to cycle power on the unit with the locked RIO/HSL connection (see Powering off an expansion unit). This problem does not occur with GX Dual-port 12x HCA cables.

Note: If question marks (???) appear at the end of the location code, then the port could not be determined. Use the location code associated with the other end of the cable. If question marks appear for both port locations, use the isolation procedures suggested in the reference code table for this SRC.

1. Choose from the following:

- If you were sent to this procedure from another symbolic FRU, locate that FRU in Table 79 on page 688 to see the description of the RIO/HSL 12X adapterFRU. Then continue with the next step for more information about the FRU.

- If you are working with this symbolic FRU in the FRU list, the failing component is an RIO/HSL 12X adapter connection. Diagnostic code could not determine what kind of hardware was involved. The RIO/HSL 12X adapter hardware can be any of the following:
 - Cable
 - Embedded RIO/HSL 12X adapter link in a FRU (a planar, for example)
 - RIO/HSL 12X adapter interposer card

The RIO/HSL 12X adapter link is on or between the other FRU or FRUs listed for the reference code. Continue with the next step.

Table 79. RIO/HSL 12X adapter symbolic FRUs

RIO/HSL 12X adapter FRU	Description
HSL_OPT	<p>This is an optical RIO/HSL 12X adapter cable.</p> <p>When exchanging optical RIO/HSL/12X cables, use the optical cleaning kit and procedures. See symbolic FRU "OPT_CLN" on page 720 for details.</p> <p>If an interposer card is called for, be sure the interposer type matches the cable type (optical or copper).</p>
HSL1	There is a standard copper RIO/HSL 12X adapter cable at both ends (yellow connectors).
HSL1_UN	There is a standard copper RIO/HSL 12X adapter cable (yellow connector) at the detecting end, and an unknown connector type at the other end.
HSL2	There is a copper HSL2/RIO-G cable at both ends (black connectors), but the length of the cable could not be sensed.
HSL2_xx	<p>There is a copper HSL2/RIO-G cable at both ends (black connectors). Use the xx value to determine the cable length from this list:</p> <ul style="list-style-type: none"> • HSL2_01 = 1 meter HSL2 cable • HSL2_03 = 3 meter HSL2 cable • HSL2_08 = 8 meter HSL2 cable • HSL2_10 = 10 meter HSL2 cable • HSL2_15 = 15 meter HSL2 cable • HSL2_17 = 1.75 meter HSL2 cable • HSL2_25 = 2.5 meter HSL2 cable
HSLH	There is a hybrid RIO/HSL 12X adapter to HSL2/RIO-G cable (yellow connector at one end and black connector at the other end), but the length of the cable could not be sensed.
HSL_IB	This is an 12X adapter cable (green connectors).
HSLH_xx	<p>There is a hybrid RIO/HSL 12X adapter to HSL2/RIO-G cable (yellow connector at one end and black connector at the other end). Use the xx value to determine the cable length from this list:</p> <ul style="list-style-type: none"> • HSLH_06 = 6 meter HSL/RIO to HSL2/RIO-G cable • HSLH_15 = 15 meter HSL/RIO to HSL2/RIO-G cable
HSL_I	There is a RIO/HSL 12X adapter interposer card for RIO/HSL 12X adapter cables (yellow connectors), HSL2/RIO-G cables (black connectors), or optical cables. The interposer card type could not be sensed.

Table 79. RIO/HSL 12X adapter symbolic FRUs (continued)

RIO/HSL 12X adapter FRU	Description
HSL_I2 HSL_I3 HSL_I4	<p>There is a RIO/HSL 12X adapter interposer card for HSL/RIO cables (yellow connectors), HSL2/RIO-G cables (black connectors), or optical cables. Use the x value to determine the interposer card type from this list:</p> <ul style="list-style-type: none"> • HSL_I2 = Copper HSL2/RIO-G interposer card for HSL2/RIO-G cable connectors (black) in the system unit backplane position C08 or C09 of machine type 9406 model 825. • HSL_I3 = Optical HSL/RIO interposer card for optical RIO/HSL 12X adapter cables in system unit backplane position C08 or C09 of machine type 9406 model 825. • HSL_I4 = HSL2/RIO-G interposer/riser card on a 7040-61D I/O unit in location -P1-(Riser) or -P2-(Riser).

- Choose from the following options:
 - If you are working from the serviceable event view, the location code or FRU description in the view will help determine the actual RIO/HSL 12X adapter hardware to exchange. Continue with the next step.
 - If you are not working from the serviceable event view, or the view does not have a location code or better FRU description, then determine the location code of other FRUs in the FRU list for the error. Then continue with the next step.
- Use the location code and the information from the preceding table to determine the machine type, model, or unit feature involved in the error. If necessary, use the location code for other FRUs listed in the FRU list for this error to determine the failing RIO/HSL 12X adapter connection and any related FRUs that are part of that connection. Use the following table to determine the part number for the field replaceable unit (FRU):

Note: If you exchange all of the FRUs in the FRU list, but the problem still exists, contact your next level of support. You may be directed to exchange additional RIO/HSL 12X adapter FRUs. "Additional RIO/HSL FRUs" on page 690 have more information about RIO/HSL 12X adapter FRUs on specific models and I/O units. Use this section when you are directed by your next level of support.

Table 80. RIO/HSL FRU parts

CCIN or FFC	Type and model	Part number	Description	Location code
	9117-MMA	See Table 82 on page 690	RIO/HSL cables	Un-P1-Cx-Ty
	9117-MMA	39J0792	RIO/HSL adapter	Un-P1-Cx-Ty
	9117-MMA	42R7352	I/O backplane	Un-P1
	7311-D11	03N5633	RIO/HSL adapter	Un-P1-C7
	7311-D11	80P6626	I/O backplane	Un-P1
	7311-D20	39J0523	RIO/HSL adapter	Un-P1-C05
	7311-D20	39J0515	I/O backplane	Un-P1
	7314-G30	10N7008	12X adapter	Un-P1-C7
	7314-G30	10N7677	I/O backplane	Un-P1

Use the following table to determine FRU part numbers for RIO/HSL cables. To locate part numbers for 12X adapter cables and any cables that are not listed here, see the Site and Hardware Planning Guide, order number SA76-0091.

Table 81. Cable part numbers

Description	Part number
RIO/HSL cable (3 meters) (1460)	44L0005
RIO/HSL cable (6 meters) (1461)	97H7490
RIO/HSL cable (15 meters) (1462)	04N7014
RIO/HSL optical cable (6 meters) (1470)	21P5014
RIO/HSL optical cable (30 meters) (1471)	21P5015
RIO/HSL optical cable (100 meters) (1472)	21P5016
RIO/HSL optical cable (250 meters) (1473)	21P6326
RIO/HSL to RIO/HSL-2 (6 meters) (1474)	21P5477
RIO/HSL to RIO/HSL-2 (10 meters) (1475)	21P5458
RIO/HSL-2 (1.2 meters) (1481, 3146)	21P5454
RIO/HSL-2 (1.75 meters) (1307, 3156)	00P5238
RIO/HSL-2 (1.75 meters) (1308, 3158)	00P5239
RIO/HSL-2 (3.5 meters) (1482, 3147)	53P2676
RIO/HSL-2 (10 meters) (1483, 3148)	21P5456
RIO/HSL-2 (15 meters) (1485)	21P5457
RIO/HSL (8 meters) (3170)	12R7503

Additional RIO/HSL FRUs:

About this task

The following are RIO/HSL 12X adapter FRUs by model and/or unit type. For the model or unit type you are working on, there may be additional RIO/HSL 12X adapter FRUs which were not listed in the FRU list of the error. Under the direction of your next level of support, you can try exchanging the additional FRUs.

1. In the following table, locate the unit type(s) on which you are working. Exchange the indicated RIO/HSL 12X adapter loop connections (external or embedded) or RIO/HSL 12X adapter interposer card.
2. Did the exchange correct the error?
 - **Yes:** The FRU you just replaced was the failing item. Go to Verifying the repair.
This ends the procedure.
 - **No:** Call your next level of support.
This ends the procedure.

Table 82. HSL/RIO 12X adapter cable or connections

System model or unit type	RIO/HSL 12X adapter cable or connections	Link to locations information
5074, 8079-002, 8093-002	HSL I/O bridge card in location C08	Locations — 5074, 8079-002, and 8093-002 expansion I/O units
5079	HSL I/O bridge card in location C08	Locations — 5079 expansion I/O unit
5088, 0588	HSL I/O bridge card in location C10	Locations — 5088 and 0588 expansion I/O units
5094, 8094-002	HSL I/O bridge card in location C10	Locations — 5094, 5294, and 8094-002 expansion I/O units

Table 82. HSL/RIO 12X adapter cable or connections (continued)

System model or unit type	RIO/HSL 12X adapter cable or connections	Link to locations information
5095, 0595	HSL I/O bridge card in location C05	Locations — 5095 and 0595 expansion I/O units
5294	HSL I/O bridge card in location C08	Locations — 5094, 5294, and 8094-002 expansion I/O units
Type 1519 — external xSeries server	Integrated xSeries Adapter	See table in card positions for xSeries
7311-D10, 7311-D11, and 5790	HSL I/O bridge card in location -P1.1	Locations — 7311-D10 and 7311-D11 and 5790 expansion unit
7040-61D	Interposer card in location -P1-(Riser) Planar in position -P1-(Planar) Interposer card in location -P2-(Riser) Planar in position -P2-(Planar)	Locations — 5791, 5794, and 7040-61D expansion units

HSL_OPT

This is an optical HSL/RIO cable.

When connecting or disconnecting these cables, use the optical cleaning kit described in “OPT_CLN” on page 720. Go to “HSL_LNK” on page 687 and follow the appropriate instructions.

This ends the procedure.

HSL1

This is a standard copper HSL/RIO cable at both ends.

Diagnostic code cannot determine the length of the cable. Go to “HSL_LNK” on page 687 and follow the appropriate instructions.

This ends the procedure.

HSL1_UN

This is a standard copper HSL/RIO cable at the end where an error was detected.

Diagnostic code cannot determine the length of the cable, or the type of connector at the other end. Go to “HSL_LNK” on page 687 and follow the appropriate instructions.

This ends the procedure.

HSL2

This is an HSL2/RIO-G copper HSL/RIO cable at both ends.

Diagnostic code cannot determine the length of the cable. Go to “HSL_LNK” on page 687 and follow the appropriate instructions.

This ends the procedure.

HSL2_xx

This is an HSL2/RIO-G copper HSL/RIO cable at both ends.

The xx value indicates the cable length in meters. Go to “HSL_LNK” on page 687 and follow the appropriate instructions. **This ends the procedure.**

HSL2_01

This is an HSL2/RIO-G copper HSL/RIO cable at both ends.

The 01 value indicates the cable is 1 meter long. Go to “HSL_LNK” on page 687 and follow the appropriate instructions.

This ends the procedure.

HSL2_03

This is an HSL2/RIO-G copper HSL/RIO cable at both ends.

The 03 value indicates the cable is 3 meters long. Go to “HSL_LNK” on page 687 and follow the appropriate instructions.

This ends the procedure.

HSL2_08

This is an HSL2/RIO-G copper HSL/RIO cable at both ends.

The 08 value indicates the cable is 8 meters long. Go to “HSL_LNK” on page 687 and follow the appropriate instructions.

This ends the procedure.

HSL2_10

This is an HSL2/RIO-G copper HSL/RIO cable at both ends.

The 10 value indicates the cable is 10 meters long. Go to “HSL_LNK” on page 687 and follow the appropriate instructions.

This ends the procedure.

HSL2_15

This is an HSL2/RIO-G copper HSL/RIO cable at both ends.

The 15 value indicates the cable is 15 meters long. Go to “HSL_LNK” on page 687 and follow the appropriate instructions.

This ends the procedure.

HSL2_17

This is an HSL2/RIO-G copper HSL/RIO cable at both ends.

The 17 value indicates that the cable is 1.75 meters long. Go to “HSL_LNK” on page 687 and follow the appropriate instructions.

HSL2_25

This is an HSL2/RIO-G copper HSL/RIO cable at both ends.

The 25 value indicates that the cable is 2.5 meters long. Go to “HSL_LNK” on page 687 and follow the appropriate instructions.

I2CBUS

A fault was detected on the I2C bus.

About this task

Choose the model or I/O expansion unit you are working on:

- “Instructions for Models 285, 505, 51x, 52x, 55x, 561 , 570, OpenPower 710, and OpenPower 720”
- “Instructions for 5095, 0595, 5790, 7311-D10, D11, and D20 I/O expansion units”
- “Instructions for all I/O expansion units except 5095, 0595, 5790, 7311-D10, D11, and D20” on page 694

Instructions for Models 285, 505, 51x, 52x, 55x, 561 , 570, OpenPower 710, and OpenPower 720:

1. Is the reference code 3114?

- **No:** Continue with the next step.
- **Yes:** Replace the following (see Finding part locations for part numbers and a link to the exchange procedure):
 - For models 285, 505, 51x, 52x, 55x, OpenPower 710, and OpenPower 720, replace the system backplane (SYSBKPL).
 - For models 561 and 570 (4-core), replace the I/O backplane (SYSBKPL).
 - For models 561 and 570 (8-core through 16-core), verify that the service processor cable is connected and seated properly on all units. If the reference code prevails, replace the following, one at a time, until the problem is resolved:
 - a. service processor cable (see Locations — model 561 and 570)
 - b. service processor (see Locations — model 561 and 570)
 - c. I/O backplane on the failing unit (see Locations — model 561 and 570)
 - For model 575, replace the system I/O backplane (see Locations — model 575)
 - For models 590 and 595, replace the FSP card (see Locations — model 590 and 595)

This ends the procedure.

2. Is the reference code 3109?

No: Continue with the next FRU in the list. **This ends the procedure.**

Yes: Replace the PCI backplane (see Locations — model 51x and OpenPower 710). **This ends the procedure.**

Instructions for 5095, 0595, 5790, 7311-D10, D11, and D20 I/O expansion units:

1. Is the reference code 3100, 3104, 3105, 3116, or 3118?

No: Continue with the next step.

Yes: Replace the backplane (TWRCARD). See Finding part locations for part numbers and a link to the exchange procedure. **This ends the procedure.**

2. Is the reference code 3101 or 3115?

- **No:** Continue with the next step.
- **Yes:** Replace the following FRUs one at a time (see Finding part locations for part numbers and a link to the exchange procedure):
 - Display panel (If the unit is a 5790 or a 7311-7311-D10, the left power supply is the failing FRU.)
 - Backplane (TWRCARD)
 - Signal cable SIGC01 (connecting the backplane to the display panel). **This ends the procedure.**

3. Is the reference code 3102, 3113, or 3114?

- **No:** Continue with the next step.
- **Yes:** Replace the following FRUs one at a time (see Finding part locations for part numbers and a link to the exchange procedure):
 - Backplane (TWRCARD)
 - Signal cable SIGC04 (connecting the SPCN card to the tower card). **This ends the procedure.**

4. Is the reference code 3103 or 3112?
 - **No:** Continue with the next step.
 - **Yes:** Replace the following FRUs one at a time:
 - Device board (see Finding part locations)
 - SPCN card (see “TWRCARD” on page 763). **This ends the procedure.**
5. Is the reference code 3121?
 - **No:** Return to “Start of call procedure” on page 2. **This ends the procedure.**
 - **Yes:** Is this for a FC5790 (7311-D11)?
 - **No:** Replace device board 1 (see Finding part locations for part numbers and a link to the exchange procedure). **This ends the procedure.**
 - **Yes:** Replace the following FRUs (see Finding part locations for part numbers and a link to the exchange procedure), one at a time, until the problem is resolved:
 - Rio-G Riser card
 - I/O Planar

This ends the procedure.

Instructions for all I/O expansion units except 5095, 0595, 5790, 7311-D10, D11, and D20:

1. Is the reference code 3101, 3105, 3115, or 3116?

No: Go to step 3.

Yes: Continue with the next step.
2. Are you working on a 5088 or 0588?
 - **No:** Replace the following FRUs (see Finding part locations):
 - Control panel NB1
 - Tower card CB1
 - Power cable PWR60 (connecting power distribution board PB1 to device board DB3).
 - Signal cable SIG63 (connecting control panel NB1 to device board DB3). **This ends the procedure.**
 - **Yes:** Replace the following FRUs (see Locations — 5088 and 0588 expansion I/O units):

For reference code 3101 or 3115:

 - Control panel NB1
 - Tower card CB1

For reference code 3105 or 3116:

 - Fan controller assembly BB1
 - Tower card CB1

This ends the procedure.
3. Is the reference code 3102?
 - **No:** Continue with the next step.
 - **Yes:** Replace the following FRUs one at a time (see Finding part locations):
 - HSL I/O bridge C08
 - Tower card CB1

This ends the procedure.
4. Is the reference code 3103?
 - **No:** Continue with the next step.
 - **Yes:** Replace the following FRUs one at a time (see Finding part locations):

For 5088 and 0588:

 - Tower card CB1

For 5074, 5079, 5094, and 5294:

- Device board DB1
- Device board 2
- Device board DB3
- Tower card CB1

This ends the procedure.

5. Is the reference code 3104, 3114, or 3118?
No: Continue with the next step.
Yes: Replace the tower card CB1 (see Finding part locations). **This ends the procedure.**
6. Is the reference code 3106?
No: Continue with the next step.
Yes: Replace the network interface controller (NIC) card M41. (see Finding part locations). **This ends the procedure.**
7. Is the reference code 3110, 3111, or 3112?
No: Go to step 11.
Yes: Continue with the next step.
8. Is the reference code 3110?
 - **No:** Continue with the next step.
 - **Yes:** Replace the following FRUs one at a time (see Finding part locations):
 - Device board DB1
 - Tower card CB1**This ends the procedure.**
9. Is the reference code 3111?
 - **No:** Continue with the next step.
 - **Yes:** Replace the following FRUs one at a time (see Finding part locations):
 - Device board 2
 - Tower card CB1**This ends the procedure.**
10. Is the reference code 3112?
 - **No:** Continue with the next step.
 - **Yes:** Replace the following FRUs one at a time (see Finding part locations):
 - Device board DB3
 - Tower card CB1**This ends the procedure.**
11. Is the reference code 3113?
No: Return to “Start of call procedure” on page 2. **This ends the procedure.**
Yes: Replace the HSL I/O bridge (see Finding part locations). **This ends the procedure.**

IDPART

A system unit part is failing.

1. Is the reference code 1xxx 8430, 8431, or 8432?
No: Continue with the next step.
Yes: Go to step 4 on page 696.
2. Is the reference code 1xxx 840D or 840E?
Yes: Continue with the next step.
No: Go to step 4 on page 696.

3. Is the reference code for an xSeries server unit?
 - No:** Perform “PWR1917” on page 268 for the correct configuration ID. **This ends the procedure.**
 - Yes:** Exchange the Integrated xSeries Adapter (IXA) (see Locations — Integrated xSeries adapter card (IXA)). **This ends the procedure.**
4. Perform “PWR1917” on page 268 for the correct configuration ID, and then return here and continue with the next step.
5. Is the reference code 1xxx 8430?
 - **No:** Continue with the next step.
 - **Yes:** Verify that the FSP cable is connected and seated correctly. If the reference code prevails, replace the following, one at a time, until the problem is resolved:
 - a. Service processor cable (see Model 570 cables for the part number and then Remove and replace the model 570 service processor cable)
 - b. Service processor card (see Locations — model 570)
 - c. I/O backplane (see Locations — model 570)**This ends the procedure.**
6. Is the reference code 1xxx 8431?
 - **No:** Continue with the next step.
 - **Yes:** Replace the following, one at a time, until the problem is resolved:
 - a. The service processor cable is not needed for this system configuration
 - b. Service processor card (see Locations — model 570)
 - c. I/O backplane (see Locations — model 570)**This ends the procedure.**
7. Is the reference code 1xxx 8432?
 - No:** The reference code has changed. Return to the “Start of call procedure” on page 2. **This ends the procedure.**
 - Yes:** Replace the service processor card (see Locations — model 570). **This ends the procedure.**

IOA

You need to determine the field replaceable unit (FRU) part number.

See FI00719 to determine the field replaceable unit (FRU) part number.

This ends the procedure.

IOACNFG

There is an IOA configuration problem.

Too many communications lines or IOAs are configured using the same IOP. See Hardware service manager in the Service functions for information about how to move an IOA to another IOP.

IOADPTR

The hardware, firmware, microcode, or device driver of an adapter or card slot detected an error.

About this task

The failing component is the adapter in the location specified in the SRC.

1. Are you working from the serviceable event view and is there a card location listed with this FRU?
 - Yes:** Use Table 83 on page 698 to replace the adapter identified by this location code. **This ends the procedure.**

No: Determine the location of the adapter by working with the customer or your next level of support. If you cannot determine the location of the failing adapter by using SRC or resource information or the device tree, then determine the adapter type from the SRC, SRC description, failing resources, or error message you are working with. Make a list of all the adapter locations of that type assigned to the partition. Continue with the next step.

2. Have you identified a single FRU location?

Yes: Use Table 83 on page 698 to replace the FRU you have identified. **This ends the procedure.**

No: Continue with the next step.

3. Using the location codes you have identified, determine which system unit and expansion units have PCI adapters of this type assigned to the partition you are working with. Starting with the expansion units first, remove all of the PCI adapters of this type from one of the units (use Table 83 on page 698 to guide you to the correct locations information and removal procedure).

Attention:

- Remove the PCI adapters from the system unit only after you have tried all of the expansion units first.
- Do **not** remove any FRUs with embedded adapters, only FRUs in PCI card slots.

Continue with the next step.

4. Reinstall one of the adapters (use Table 83 on page 698 to guide you to the correct removal procedure) and power on the unit. Continue with the next step.

5. Does the problem reoccur?

Yes: The adapter you just reinstalled is the failing item and needs to be replaced (use Table 83 on page 698 to guide you to the correct locations information and removal procedure). **This ends the procedure.**

No: Continue with the next step.

6. Have you reinstalled all of the adapters on the unit you're currently working with?

Yes: Continue with the next step.

No: Return to step 4 and reinstall the next adapter on this unit.

7. Are there any units (including the system unit) on which you have not yet removed and reinstalled the PCI adapters?

No: Continue with the next step.

Yes: Return to step 3 and work with another unit.

8. Go to "Card positions" on page 98 to determine if system unit or any of the expansion units has an embedded adapter of the type you are working with. Is there such an embedded adapter?

No: The problem may be intermittent. Contact your next level of support. **This ends the procedure.**

Yes: The FRU with the embedded adapter is the failing item and needs to be replaced. Use Table 83 on page 698 to exchange the FRU at the location specified in the card position table. Repeat this step for each expansion unit with an embedded adapter assigned to the partition, and then for the system unit. **This ends the procedure.**

Results

Table 83. Failing items for symbolic FRU IOADPTR

System model, expansion unit, or machine type	Symbolic FRU to locate	FRU location	Link to locations information
520	PCI IOA card in PCI bridge set 1	-P1-C1-P1-C2-P1-C4	Locations — model 520
	PCI IOA card in PCI bridge set 2	-P1-C3-P1-C5-P1-C6	
	Embedded adapters in system backplane, PCI bridge sets 1 and 2	-P1	
550 and OpenPower 720	PCI IOA card in PCI bridge set 1	-P1-C1-P1-C2	Locations — OpenPower 720 and model 550
	PCI IOA card in PCI bridge set 2	-P1-C3-P1-C4-P1-C5	
	Embedded adapters in system backplane, PCI bridge sets 1 and 2	-P1	
570	PCI IOA card in PCI bridge set 2	-P1-C1-P1-C2	Locations — model 570
	PCI IOA card in PCI bridge set 3	-P1-C3-P1-C4-P1-C5-P1-C6	
	Embedded adapters in I/O backplane, PCI bridge sets 1, 2, and 3	-P1	
5074, 8079-002, 8093-002	PCI IOA in PCI bridge set 1	C01C02C03C04	Locations — 5074, 8079-002, and 8093-002 expansion units
	PCI IOA in PCI bridge set 2	C05C06C07C09C10	
	PCI IOA in PCI bridge set 3	C11C12C13C14C15	
5079	PCI IOA in PCI bridge set 1	C01C02C03C04	Locations — 5079 expansion unit
	PCI IOA in PCI bridge set 2	C05C06C07C09C10	
	PCI IOA in PCI bridge set 3	C11C12C13C14C15	
5088, 0588	PCI IOA in PCI bridge set 1	C01C02C03C04	Locations — 5088 and 0588 expansion units
	PCI IOA in PCI bridge set 2	C05C06C07C08C09	
	PCI IOA in PCI bridge set 3	C11C12C13C14C15	
5094, 5294, 8094-002	PCI IOA in PCI bridge set 1	C01C02C03C04	Locations — 5094, 5294, and 8094-002 expansion units
	PCI IOA in PCI bridge set 2	C05C06C07C08C09	
	PCI IOA in PCI bridge set 3	C11C12C13C14C15	
5095, 0595	PCI IOA in PCI bridge set 1	C01C02C03C04	Locations — 5095 and 0595 expansion units
	PCI IOA in PCI bridge set 2	C06C07C08	
7311-D10, 7311-D11, and 5790	PCI IOA in PCI bridge set 1	-P1-I1-P1-I2-P1-I3	Locations — 7311-D10, 7311-D11, and 5790 expansion units
	PCI IOA in PCI bridge set 2	-P1-I4-P1-I5-P1-I6	
7311-D20	PCI IOA in PCI bridge set 1	C01C02C03C04	Locations — 7311-D20 expansion unit
	PCI IOA in PCI bridge set 2	C06C07C08	

Table 83. Failing items for symbolic FRU IOADPTR (continued)

System model, expansion unit, or machine type	Symbolic FRU to locate	FRU location	Link to locations information
5791, 5794, and 7040-7040-61D	PCI IOA in PCI bridge set 1	-P1-I1-P1-I2-P1-I3-P1-I4	Locations — 5791, 5794, and 7040-7040-61D expansion unit
	PCI IOA in PCI bridge set 2	-P1-I5-P1-I6-P1-I7	
	PCI IOA in PCI bridge set 3	-P1-I8-P1-I9-P1-I10	
	Embedded adapters in backplane 1 (left side), PCI bridge sets 2 and 3	-P1	
	PCI IOA in PCI bridge set 1	-P2-I1-P2-I2-P2-I3-P2-I4	
	PCI IOA in PCI bridge set 2	-P2-I5-P2-I6-P2-I7	
	PCI IOA in PCI bridge set 3	-P2-I8-P2-I9-P2-I10	
	Embedded adapters in backplane 2 (right side), PCI bridge sets 2 and 3	-P2	

IOBRDG

The failing component is the RIO/HSL I/O bridge on the IPL path.

Use the table below to determine which FRU to replace and how to replace it.

Table 84. IOBRDG failing components

System model	Name of symbolic FRU to locate	FRU name (replace in order, one at a time)	Link to locations information
505	IOBRDG	System backplane	Locations — model 505
510 and OpenPower 710	IOBRDG	System backplane	Locations — model 510 and OpenPower 710
520	IOBRDG	System backplane	Locations — Model 520
550 and OpenPower 720	IOBRDG	System backplane	Locations — OpenPower 720 and Model 550
570	IOBRDG	I/O backplane (primary unit) I/O backplane (secondary units 1–3)	Locations — Model 570
575	IOBRDG	System backplane	Locations — model 575
590 and 595	IOBRDG	Service processor card 0Service processor card 1	Locations — model 590 and 595

This ends the procedure.

IO_DEV

A storage device is the failing item.

About this task

Perform the following:

1. Is device location information available in the serviceable event view for this FRU?

Yes: Continue with the next step.

No: If the adapter controlling this device is listed in the FRU list then use that location code and continue with the next step. Otherwise work with the customer or your next level of support to

determine the location of the device or its adapter by using SRC information, failing resource information, device tree or error message information. Then continue with the next step.

2. Use the unit type information in the location code to identify the type of unit where the device or device adapter is located. Then use the following table to exchange the failing item. The link to locations information will guide you to the correct exchange procedure.

Note: The location listed may be a logical path instead of the physical device location. The known device logical location codes are handled in the locations information for each unit type.

Results

Model or expansion unit	FRU to location	Link to locations information
520	Disk unit	Locations — model 520
550 and OpenPower 720	Disk unit	Locations — OpenPower 720 and model 550
570	Disk unit	Locations — model 570
5074, 8079-002, 8093-002	Disk unit	Locations — 5074, 8079-002, and 8093-002 expansion units
5079	Disk unit	Locations — 5079 expansion unit
5088, 0588	Disk unit	Locations — 5088 and 0588 expansion units
5094, 5294, 8094-002	Disk unit	Locations — 5094, 5294, and 8094-002 expansion units
5095, 0595	Disk unit	Locations — 5095 and 0595 expansion units
5791, 5794, and 7040-7040-61D	Disk unit	Locations — 5791, 5794, and 7040-7040-61D expansion unit
7311-D10, 7311-D11, and 5790	Disk unit	Locations — 7311-D10, 7311-D11, and 5790 expansion units
7311-D20	Disk unit	Locations — 7311-D20 expansion unit

IO_HUB

The failing component is the RIO/HSL NIC on the IPL Path.

Use the table below to determine which FRU to replace and how to replace it.

Note: To simplify this information, secondary units on the 570 server are numbered 1 through 3-secondary unit 1 being nearest to the primary unit and secondary unit 3 being furthest.

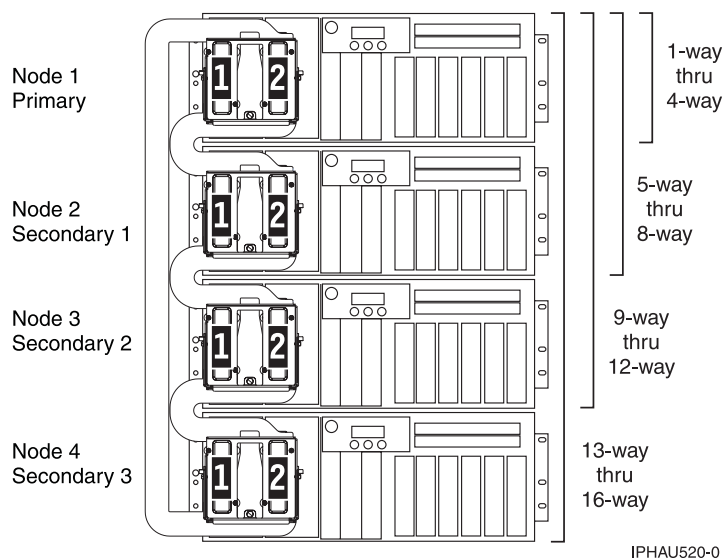


Table 85. IO_HUB failing components

System model	Name of symbolic FRU to locate	FRU name (replace in order, one at a time)	Link to locations information
505	IO_HUB	System backplane	Locations — model 505
510 and OpenPower 710	IO_HUB	System backplane	Locations — model 510 and OpenPower 710
520	IO_HUB	System backplane	Locations — Model 520
550 and OpenPower 720	IO_HUB	System backplane	Locations — OpenPower 720 and Model 550
570	IO_HUB	I/O backplane (primary unit) I/O backplane (secondary units 1–3)	Locations — Model 570
575	IO_HUB	System backplane	Locations — model 575
590 and 595	IO_HUB	For each node, starting with node 0: Bus adapter card 1 Bus adapter card 2 Bus adapter card 3 Bus adapter card 4 Bus adapter card 5 Bus adapter card 6 Bus adapter card 7 Bus adapter card 8	Locations — model 590 and 595

This ends the procedure.

IOP

Replace the I/O processor.

Use the I/O processor location information in the Service Action Log if it is available. If the location is not available, find the address of the I/O Processor. See System reference code (SRC) address formats. Use the address to find the location. See Finding part locations.

LBSADP1

This symbolic FRU is not supported on the system.

Continue with the next FRU in the failing item list.

LBSADP2

This symbolic FRU is not supported on the system.

Continue with the next FRU in the failing item list.

LBSADP3

This symbolic FRU is not supported on the system.

Continue with the next FRU in the failing item list.

LBSADP4

This symbolic FRU is not supported on the system.

Continue with the next FRU in the failing item list.

LBSADP5

This symbolic FRU is not supported on the system.

Continue with the next FRU in the failing item list.

LBUSADP

This symbolic FRU is not supported on the system.

Continue with the next FRU in the failing item list.

LICCODE

This procedure helps determine the preferred method of updating server firmware or Licensed Internal Code.

About this task

Note: In this procedure, server firmware is synonymous with Licensed Internal Code.

1. Check the current level of the server firmware. For details, see Viewing existing firmware (Licensed Internal Code) levels.

Is the server firmware at the latest available level?

Note: For information on the latest available firmware levels, refer to the Fix Central Web site at <http://www.ibm.com/eserver/support/fixes/>.

No: Continue with the next step.

Yes: This ends the procedure.

2. Is this the first time you are trying to update the server firmware while working on this problem?

Yes: Continue with the next step.

No: Choose from the following options:

- If you are a customer, contact your next level of support.
- If you are a service provider, go to symbolic FRU "SVCPROC" on page 757 to update the server firmware by replacing the service processor. **This ends the procedure.**

3. Is the system managed by an HMC?

No: Go to step 5 on page 703.

Yes: Continue with the next step.

4. Use the following table to determine the action you should take:

Table 86.

Type of server you are working on (with an HMC)	Action
Model 575 or 59x system or any IBM System p5 [®] , IBM eServer p5, OpenPower system, AIX, or Linux system managed by an HMC	You must use the HMC to install server firmware fixes. Refer to one of these procedures: <ul style="list-style-type: none">• Getting server and power subsystem firmware fixes through an HMC with an Internet connection• Getting server firmware and power subsystem firmware fixes through an HMC using a CD-ROM, FTP server, or hard drive

Table 86. (continued)

Type of server you are working on (with an HMC)	Action
IBM System i5® or IBM eServer i5 managed by an HMC (not including Model 575 or 59x systems)	<p>You can either apply the fix through the HMC or i5/OS. Refer to one of the following procedures:</p> <ul style="list-style-type: none"> Getting server and power subsystem firmware fixes through an HMC with an Internet connection Getting server firmware and power subsystem firmware fixes through an HMC using a CD-ROM, FTP server, or hard drive Getting server firmware fixes through i5/OS

5. Is the operating system running?

No: Continue with the next step.

Yes: Go to step 8.

6. Attempt to IPL the system from the side of the service processor from which you are currently booting, and start the operating system.

Note: For information about how to see from which side of the service processor you are booting, and to find out how to switch to the other side if necessary, see Working with the temporary and permanent side of the service processor.

Were you successful?

No: Continue with the next step.

Yes: Go to step 8.

7. Attempt to boot the system from the other side of the service processor, and start the operating system. Were you successful?

Yes: Go to step 8.

No: Choose from the following options:

- If you are a customer, contact your next level of support.
- If you are a service provider, go to symbolic FRU "SVCPROC" on page 757 to update the server firmware by replacing the service processor. **This ends the procedure.**

8. Use the following table to determine the action to take:

Table 87.

Type of partition on which you are working	Action
Integrated Virtualization Manager (IVM) managed system	Refer to Updating the Virtual I/O Server's firmware and device microcode and select the appropriate option.
AIX	Getting server firmware fixes through AIX or Linux without an HMC
i5/OS	Getting server firmware fixes through i5/OS
Linux	Getting server firmware fixes through AIX or Linux without an HMC

If you are still unable to update the server firmware, contact your next level of support.

Attention: Be aware that a newer level of server firmware might already have been downloaded before this problem occurred or when the problem was reported.

This ends the procedure.

LITSTRP

Look here for information about LITSTRP symbolic FRU.

Use the following table to perform the appropriate action for the SRC you are working with.

SRC	Replace this FRU	Link to locations information
1xxx1D04	Light strip (front)	Locations — model 590 and 595
1xxx1D05	Light strip (back)	

LOADCY1

Cryptographic adapter licensed internal code not loaded.

About this task

The licensed internal code for the cryptographic adapter does not ship with the system. The licensed program 5733-CY1 Cryptographic Device Manager contains the licensed internal code for the cryptographic adapter.

Ensure that this licensed program is loaded on the system. If the licensed program is not loaded on the system, complete the following steps:

1. Vary off the cryptographic adapter.
2. Apply the licensed program to the system.
3. Vary on the card.

Note: The vary on may take up to 15 minutes.

LOC_SYS

A problem has occurred on the local (this) system with i5/OS HSL OptiConnect.

The i5/OS Service Action Log (SAL) code will attempt to identify the HSL/RIO loop number as a portion of the FRU's part description for this symbolic FRU. Search the SAL of this system for hardware and LIC problems. Correct any problems that you find with LIC or Network Interface Controller (NIC) / RIO controller hardware.

This ends the procedure.

LPARCFG

There is a configuration problem with the system or a logical partition.

Perform any actions listed in the "Description/Action" column in the unit reference code table for the reference code.

Have the customer check processor and memory allocations of the system or to the partition. The customer must ensure that there are enough functioning processor and memory resources in the system for all the partitions. Processor or memory resources that failed during system IPL could have caused the IPL problem in the partition.

Have the customer check the bus and I/O processor allocations for the partition. The customer must ensure that the partition has load source and console I/O resources.

Have the customer check the IPL mode of the system or failing partition.

For further assistance, the customer should contact their software service provider, or see Partitioning the server for additional support.

This ends the procedure.

LPARSUP

There is either an IPL problem, a main storage dump problem, or a software error with a partition.

Perform any actions listed in the "Description/Action" column in the SRC table.

During the IPL or main storage dump of a partition, a complex problem was detected. The serviceable event view on the HMC has to be searched or the SRC history list on the HMC for the partition with the problem has to be analyzed in sequence. If the partition is a "Guest" partition, then the SRC history list of the "Hosting" partition must be analyzed.

Contact your next level of hardware support.

LSERROR

There was an error when the platform LIC attempted to locate the i5/OS partition's load source.

Choose from the following:

- If the load source is a tape or optical device, exchange the media. If replacing the media does not work, look in the serviceable event view for other errors.
- If the load source is a disk drive, perform a D-mode IPL. Correct any errors found.

This ends the procedure.

MA_BRDG

The problem is the multi-adapter bridge hardware on a system bus.

About this task

Perform the following:

1. Is the location information for this failing component available in the problem view you are working with of the serviceable event user interface of an operating system, service processor, or Hardware Management Console (HMC)?
No: Continue with the next step.
Yes: Use this location information and go to step 3.
2. Perform the following:
 - a. Record the bus number, which is in word 7 of the reference code (see "Breaking down a RIO/HSL or PCI bus reference code" on page 95 for help in determining the bus number).
 - b. To determine which enclosure, frame, or I/O unit contains the failing component, search for the bus number using one of the following interfaces:
 - HMC system configuration user interface
 - i5/OS Hardware Service Manager (HSM)
 - System configuration listing
 - c. Record the enclosure or unit's type/model or feature. Then continue with the next step.
3. The failing component is the FRU containing the multi-adapter bridge. Use the following table to identify the name of the FRU that is indicated by the location in the user interface you are working with, or by using the bus number you obtained previously in this procedure. Use the link to locations information to exchange the FRU.

Results

Table 88. FRU containing the multi-adapter bridge

Model or expansion unit	Name of FRU to exchange	Symbolic FRU to look for	Link to locations information
505	System backplane	MA_BRDG	Locations — model 505
510 and OpenPower 710	System backplane	MA_BRDG	Locations — model 510 and OpenPower 710
515, 520, and 525	System backplane	MA_BRDG	Locations — model 520, and 525
550 and OpenPower 720	System backplane	MA_BRDG	Locations — OpenPower 720 and model 550
570	I/O backplane on the primary unit or secondary unit	MA_BRDG	Locations — model 570
575	System backplane	MA_BRDG	Locations — model 575
5074, 8079-002, 8093-002	Expansion unit backplane	MA_BRDG	Locations — 5074, 8079-002, and 8093-002 expansion I/O units
5079	Expansion unit backplane	MA_BRDG	Locations — 5079 expansion I/O unit
5088, 0588	Expansion unit backplane	MA_BRDG	Locations — 5088 and 0588 expansion I/O units
5094, 5294, 8094-002	Expansion unit backplane	MA_BRDG	Locations — 5094, 5294, and 8094-002 expansion I/O units
5095, 0595	Backplane	MA_BRDG	Locations — 5095 and 0595 expansion I/O units
Type 1519 external xSeries server	Integrated xSeries adapter (IXA) card	Follow the RIO/HSL cables	Locations — Integrated xSeries adapter card (IXA)
7311-D10, 7311-D11, and 5790	I/O unit backplane	MA_BRDG	Locations — 7311-D10, 7311-D11, and 5790 expansion units
7311-D20	Backplane	MA_BRDG	Locations — 7311-D20 expansion unit
5791, 5794, and 7040-61D	Backplane 1	MA_BRDG	Locations — 5791, 5794, and 7040-61D expansion unit
	Backplane 2	MA_BRDG	

This ends procedure.

MABRCFG

The multi-adapter bridge hardware detected a configuration problem.

About this task

In some cases, the user interface view of the serviceable event will list more than one card position for this FRU's location. The problem may be with any one of the FRUs in those locations. When there is a list of locations in this FRU's location code, the card locations will be separated by commas. A range of card positions will show the starting card position, a colon, and the ending card position.

1. Are you working from the service event user interface from an operating system, service processor, or the HMC and there is a card position(s) listed with this failing item?

Yes: The listed card position(s) is where the error is located. Continue with the next step.

No: Go to “MABIP53” on page 145 to determine the card location where the multi-adapter bridge configuration error exists. Return here after locating the card, and continue with the next step.

2. Use the following table to determine the corrective action.

Results

Table 89. Multi-adapter bridge errors

Problem or message (these appear in uppercase in the console)	Meaning or corrective action
Multi-adapter bridge has no IOP for the I/O adapters.	<ol style="list-style-type: none"> 1. System code detected one or more I/O adapters under the multi-adapter bridge specified in the DSA, but no I/O processor to control them. The I/O adapters are not available to the system. The problem view lists the card locations controlled by the multi-adapter bridge. If you do not have the card locations listed in the problem view, find them by continuing with the next step. Otherwise, go to step 3. 2. To locate the I/O adapters, search for the card locations controlled by the multi-adapter bridge. The multi-adapter bridge number is in the DSA (see “DSA translation” on page 96). See “Card positions” on page 98 to determine all the card locations controlled by the multi-adapter bridge. 3. To make the I/O adapters available to the system, install an I/O processor in a card slot controlled by the multi-adapter bridge or move the I/O adapters to a multi-adapter bridge with an I/O processor. When adding an IOP, place it in a card position that is ahead of the IOAs according to the “IOA Assignment Rules” table located in Finding part locations for the frame type on which you are working.
Card type not supported in this slot.	<p>System code detected a card type that is not supported in the multi-adapter bridge card location in which it is installed. Move the card to a location that will support that card type (check the installation instructions for the card to determine which card locations can support it).</p> <p>For reference codes where word 1 is B6006964 and word 4 is xxxx2015, if the SAL does not show a card position for this error, then the card position can be determined by creating a Direct Select Address (DSA) from information in the reference code. To create the DSA, use the first 5 digits of word 7 and the 6th digit of word 5 followed by two zeros. Using this DSA, perform “MABIP53” on page 145 to determine the position of the card that is not supported in that slot.</p>
I/O processor removed from multi-adapter bridge card slot.	System code detected that an I/O processor card was located in that card location on the previous IPL. The I/O processor is no longer installed in that location.
I/O adapter unavailable due to moved I/O processor card.	System code detected that the I/O processor which controlled the I/O adapter card specified in the DSA has been moved since the last IPL. The I/O adapter card is unavailable to the system.
IOA removed from multi-adapter bridge slot.	System code detected that the card location specified in the DSA had an I/O adapter installed on the previous IPL. The I/O adapter is no longer installed in that card location.
I/O adapter replaced by I/O processor card.	System code detected that the card location specified in the DSA had an I/O adapter installed on the previous IPL. The I/O adapter has been replaced by an I/O processor.

Table 89. Multi-adapter bridge errors (continued)

Problem or message (these appear in uppercase in the console)	Meaning or corrective action
Multi-adapter bridge configuration change or error.	System code has detected a change in the multi-adapter bridge configuration or a configuration error since the last IPL.
PCI I/O processor rejected assignment or removal of an IOA.	<p>The I/O processor's (IOP) Licensed Internal Code (LIC) has rejected the assignment of an I/O adapter (IOA) to that IOP, or the IOP's LIC has rejected the removal of an IOA that the IOP owns.</p> <p>Word 5 of the reference code is the Direct Select Address (DSA) of the IOP. Word 7 of is the DSA of the IOA. To find the IOP and IOA, go to "MABIP53" on page 145 using the DSA.</p> <p>Use Hardware Service Manager (HSM) concurrent maintenance functions to assign or remove the IOA. See Hardware Service Manager for details.</p> <p>Assignment failures can result from either of the following conditions:</p> <ul style="list-style-type: none"> • The IOP is already at its capacity to accept IOA assignments. • The IOA is not a type supported by the IOP. <p>Corrective action:</p> <ul style="list-style-type: none"> • Add another IOP for LIC to assign the IOA to if necessary. • Reassign the IOA to another IOP using concurrent maintenance. <p>Removal failures:</p> <ul style="list-style-type: none"> • This is a LIC problem and should be reported. • Call your next level of support.
Linux-owned slot - no IOP is allowed.	An IOP card was found in a PCI bridge set that is allocated to a Linux partition. The IOP will not be supported in this card position.

This ends the procedure.

MAILBOX

Connection monitoring errors have been detected, indicating mailbox failures.

1. Are there any B1xxxxxx or B7xxxxxx SRCs from the system?

No: Continue with the next step.

Yes: Follow the service action for the first SRC that is listed. **This ends the procedure.**

2. There may be firmware fixes for this problem. Load and apply any platform firmware fixes or new levels of firmware using symbolic FRU "LICCODE" on page 702. Does the problem persist after updating the firmware?

No: This ends the procedure.

Yes: Continue to the next FRU in the list. **This ends the procedure.**

MASBUS

The multi-adapter bridge detected a problem with a connection to a PCI adapter that it controls either in a physical card location or embedded in a FRU.

About this task

The problem is either in the bus between the multi-adapter bridge and the adapter, or with the card slot. The card location may or may not have an installed card.

1. Are you working from the serviceable event view and a card location is listed with this FRU?

Yes: Then the listed card location is where the error is located. Continue with the next step.

No: Record the bus number value, BBBB, in word 7 of the reference code (see “Breaking down a RIO/HSL or PCI bus reference code” on page 95). Search for the bus number in the resource view available to you on the HMC or operating system, or in the System Configuration Listing, to determine which system unit or I/O unit contains the failing component. Record the unit’s machine type, model, or feature and continue with the next step.

2. The failing component is the FRU containing the physical or embedded card slot that is controlled by the multi-adapter bridge. Identify the system model, I/O unit, or machine type that is indicated by the location in the serviceable event view, or by using the bus number. Use the following table to find the appropriate service information.

Table 90. Failing component service information for MASBUS

Model or expansion unit	Name of FRU to exchange	FRU location	Link to locations information
515, 520, 525	System unit logic planar	-P1	Locations — Model 515, 520, 525
550 and OpenPower 720	System unit logic planar	-P1	Locations — OpenPower 720 and Model 550
570	Logic planar for system primary unit or secondary unit	-P1	Locations — Model 570
575	System backplane	-P1	Locations — model 575
5074, 8079-002, 8093-002 expansion I/O tower	Tower card	CB1	Locations — 5074, 8079-002, and 8093-002 expansion I/O units
5079 expansion tower	Tower card	CB1	Locations — 5079 expansion I/O unit
5088, 0588 expansion unit	Tower card	CB1	Locations — 5088 and 0588 expansion I/O units
5094, 5294, 8094-002 expansion I/O unit	Tower card	CB1	Locations — 5094, 5294, and 8094-002 expansion I/O units
5095, 0595 expansion tower	Tower card	CB1	Locations — 5095 and 0595 expansion I/O units
Type 1519 — external xSeries server	Integrated xSeries adapter card	Follow the RIO/HSL cables	Locations — Integrated xSeries adapter card (IXA)
7311-D10, 7311-D11, and 5790	I/O unit logic planar	-P1	Locations — 7311-D10 and 7311-D11 and 5790 expansion unit
7040-61D	I/O unit logic planar	-P1	Locations — 61D
		-P2	

Results

This ends the procedure.

MEDIA

The drive or media may be dirty, or the media may be defective.

1. Is the drive in a 3995 or 3996 optical library?

Yes: Try a different media. **This ends the procedure.**

No: Continue with the next step.

2. If it is a 6330 DVD-RAM, clean the drive. See the Part number catalog for the cleaning kit part number.
3. If it is a tape media, clean the recording head in the tape unit.
4. Attempt the failing operation again. Does the operation complete successfully?

No: Replace the media. **This ends the procedure.**

Yes: The problem has been corrected. **This ends the procedure.**

MEDIABP

Use this procedure to determine what Media backplane to replace on 520, 550, or a 570

About this task

The failing component is the media backplane. Use the following table to determine what FRU to replace and how to replace it.

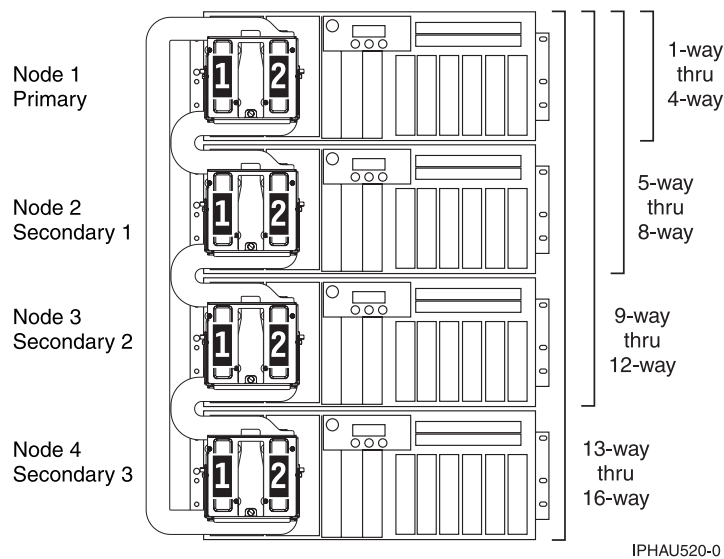
System model	Name of symbolic FRU to locate	FRU name (Replace FRUs one at a time, in the order listed, from top to bottom.)	Link to locations information
520	MEDIABP	Media drive backplane	../iphau/locsqsf2.htm
550, or OpenPower 720	MEDIABP	Media drive backplane	../iphau/loc550.htm
570	MEDIABP	Media drive backplane	../iphau/locsql4mlx.htm
Multiple 570's sequentially cabled together	MEDIABP	Primary unit: Media drive backplane	../iphau/locsql4mlx.htm
		Secondary unit 1: Media drive backplane	
		Secondary unit 2: Media drive backplane	
		Secondary unit 3: Media drive backplane	

MEMBRD

The failing component is the board the memory DIMMs plug into.

Use the following table to determine which FRU to replace and how to replace it.

Note: To simplify this information, secondary units on the 570 server are numbered 1 through 3-secondary unit 1 being nearest to the primary unit and secondary unit 3 being furthest.



System model	Symbolic FRU to find	FRU name (replace one at a time, in order from top to bottom)	Link to locations information
505	MEMBRD	system backplane	Locations — model 505
510 and OpenPower 710	MEMBRD	system backplane	Locations — model 510 and OpenPower 710
520	MEMBRD	system backplane	Locations — Model 520
550 and OpenPower 720	MEMBRD	processor card 1processor card 2	Locations — OpenPower 720 and Model 550
570	MEMBRD	For each unit, starting with the primary unit and then the secondary units:processor card 1processor card 2	Locations — Model 570
575	MEMBRD	processor backplane	Locations — model 575
590 and 595	MEMBRD	For each node starting with node 0:Memory card 1Memory card 2Memory card 3Memory card 4Memory card 5Memory card 6Memory card 7Memory card 8Memory card 9Memory card 10Memory card 11Memory card 12Memory card 13Memory card 14Memory card 15Memory card 16	Locations — model 590 and 595

MEMCTLR

The failing component is one of the memory controllers.

Use the following table to determine what FRU to replace and how to replace it.

Note: To simplify this information, secondary units on the 570 server are numbered 1 through 3-secondary unit 1 being nearest to the primary unit and secondary unit 3 being furthest.

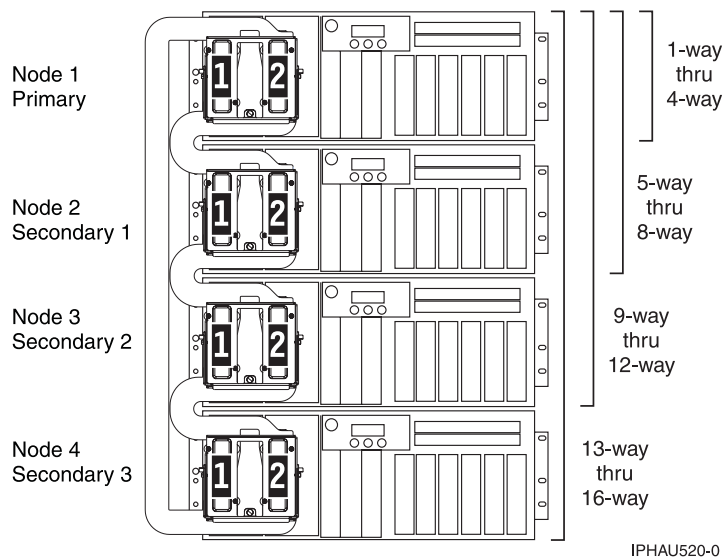


Table 91. MEMCTLR failing components

System model	Name of symbolic FRU to locate	FRU name (replace in order, one at a time)	Link to locations information
505	MEMCTLR	System backplane	Locations — model 505
510 and OpenPower 710	MEMCTLR	System backplane	Locations — model 510 and OpenPower 710
520	MEMCTLR	System backplane	Locations — Model 520
550 and OpenPower 720	MEMCTLR	Processor card 1Processor card 2	Locations — OpenPower 720 and Model 550
570	MEMCTLR	For each unit, starting with the primary unit and then the secondary units:Processor card 1Processor card 2	Locations — Model 570
575	MEMCTLR	Processor backplane	Locations — model 575
590 and 595	MEMCTLR	For each node starting with node 0:MCM 0MCM 1	Locations — model 590 and 595

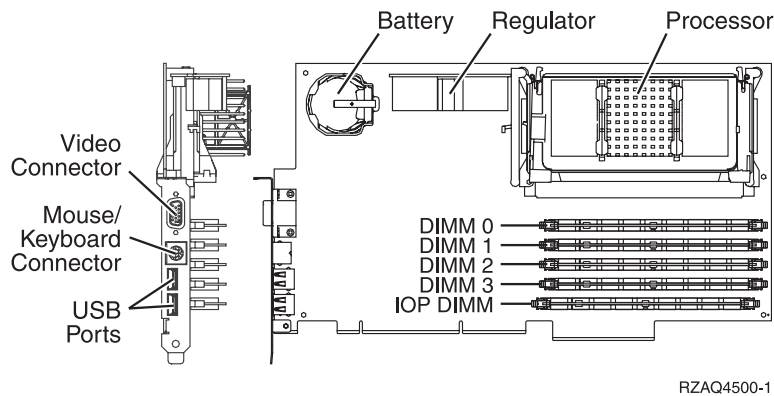
This ends the procedure.

MEMORY

Use this topic to view memory and location information for the 2890 and 2892 Integrated xSeries Server (IXS) cards.

Memory for 2890 Integrated xSeries Server (IXS) card

Figure 19. Locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2890 Integrated xSeries Server (IXS) card.



One of the Pentium® memory modules (DIMM 0, DIMM 1, DIMM 2, or DIMM 3) may be the failing item (see Finding part numbers).

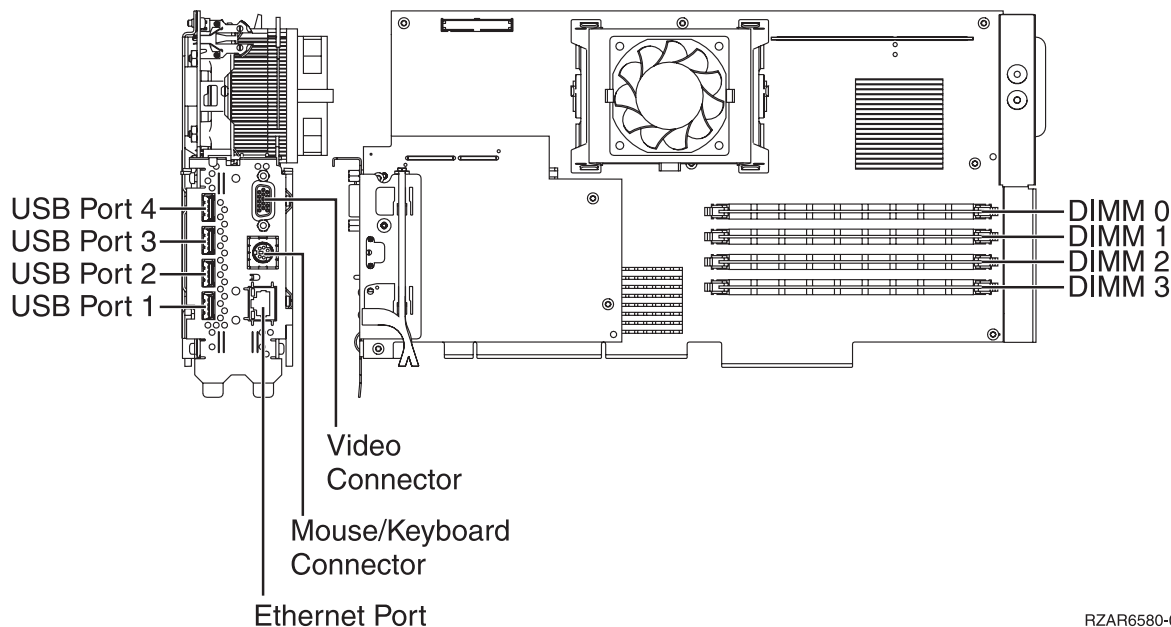
Feature	Size
2795/2895	128 MB
2796/2896	256 MB
2797/2897	1 GB

Notes:

1. At least 1 Pentium memory module is required in positions DIMM 0, DIMM 1, DIMM 2 or DIMM 3.
2. An IXS adapter card IOP (see Finding part numbers) is required in the IOP DIMM position. This IOP memory module is NOT interchangeable with the Pentium memory module(s) in positions DIMM 0, DIMM 1, DIMM 2 or DIMM 3.

Memory for 2892 Integrated xSeries Server (IXS) card

Figure 20. Locations of DIMM 0, DIMM 1, DIMM 2 and DIMM 3 on 2892 Integrated xSeries Server (IXS) card



One of the Pentium memory modules (DIMM 0, DIMM 1, DIMM 2, or DIMM 3) may be the failing item (see Finding part numbers).

Feature	Size
0426/0446	512 MB
0427/0447	1 GB

Note: At least **two** Pentium memory modules are required in positions DIMM 0 and DIMM 1, or positions DIMM 2 and DIMM 3.

MEMDIMM

The failing component is one of the memory DIMMs.

Use the following table to determine which FRUs to replace. The locations information will give the exact location codes as well as links to part numbers and exchange procedures.

Note: To simplify this information, secondary units on the 570 server are numbered 1 through 3-secondary unit 1 being nearest to the primary unit and secondary unit 3 being furthest.

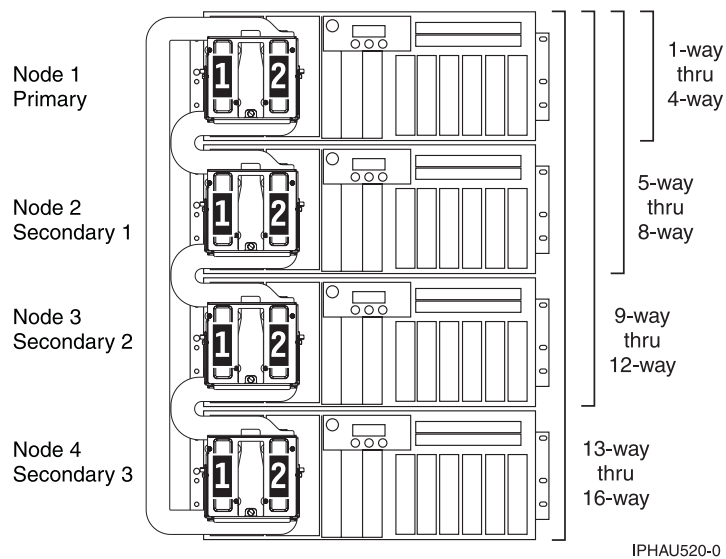


Table 92. MEMDIMM failing component

System model	Name of symbolic FRU to locate	FRU name (replace one at a time, top to bottom)	Link to locations information
510 and OpenPower 710	MEMDIMM	Memory module J0A Memory module J0B Memory module J0C Memory module J0D Memory module J2A Memory module J2B Memory module J2C Memory module J2D	Locations — model 510 and OpenPower 710
515, 520, 525	MEMDIMM	Memory module 1 Memory module 2 Memory module 3 Memory module 4 Memory module 5 Memory module 6 Memory module 7 Memory module 8	Locations — Model 515, 520, 525
550 and OpenPower 720	MEMDIMM	For each processor card, starting with processor card 1: Memory module 1 Memory module 2 Memory module 3 Memory module 4 Memory module 5 Memory module 6 Memory module 7 Memory module 8	Locations — OpenPower 720 and Model 550

Table 92. MEMDIMM failing component (continued)

System model	Name of symbolic FRU to locate	FRU name (replace one at a time, top to bottom)	Link to locations information
570	MEMDIMM	For each processor card (starting with processor card 1) on each unit (starting with the primary unit and then the secondary units): Memory module 1 Memory module 2 Memory module 3 Memory module 4 Memory module 5 Memory module 6 Memory module 7 Memory module 8	Locations — Model 570
575	MEMDIMM	Memory modules, beginning with module 1 and ending with module 64	Locations — model 575
590 and 595	MEMDIMM	For each node starting with node 0: Memory card 1 Memory card 2 Memory card 3 Memory card 4 Memory card 5 Memory card 6 Memory card 7 Memory card 8 Memory card 9 Memory card 10 Memory card 11 Memory card 12 Memory card 13 Memory card 14 Memory card 15 Memory card 16	Locations — model 590 and 595

This ends the procedure.

MESSAGE

Messages provided with this symbolic FRU's description appear in the i5/OS Service Action Log (SAL).

If the word MESSAGE is listed in the i5/OS SAL as a part number, the description field provides information regarding proper handling of the error.

The following descriptions are used in MESSAGE FRUs. Follow the instructions provided when dealing with an error and the associated FRUs.

Note: The following messages are displayed in uppercase in the SAL. This list may not be complete if the level of service documentation does not match the level of LIC.

- Work all B600 6906 (or B700 6906) errors before this one.
- Cycle frame power before exchanging FRUS.

- Note: Replace FRUs one at a time.
- Linux-owned slots - no IOP is allowed.


This ends the procedure.

MOVEIOA

An incorrect hardware configuration was detected.

The I/O adapter used by a guest partition is on the same PCI bridge set as an I/O processor in another partition. Guest partition data may be lost if any of the following occur:

- A primary partition type D IPL is performed.
- The I/O adapter is moved to an i5/OS partition.
- An error causes the logical partition (LPAR) configuration to not be used.

To correct the hardware configuration, either the I/O adapter or the I/O processor must be moved to a new card location. Use the LPAR Validation Tool (LVT) to create a valid configuration. For more information about the LPAR Validation Tool, see the Logical partitioning web site (www.ibm.com/eserver/series/lpar/) 

MSGxxxx

If you were sent here from a symbolic FRU with the format "MSGxxxx," use the following links to go to the message number's symbolic FRU.

Note: In i5/OS additional information about the FRU or problem may have been included as part of the description.

The following messages are displayed in uppercase in the i5/OS SAL view:

"MSG0001"

"MSG0002"

"MSG0003"

"MSG0005" on page 718

This ends the procedure.

MSG0001

This symbolic FRU represents a specific message to the service provider relative to the reference code or FRU list for cases where it is needed.

MSG0001: Work all B600 6906 (or B700 6906) errors before this one.

MSG0002

This symbolic FRU represents a specific message to the service provider relative to the reference code or FRU list for cases where it is needed.

MSG0002: Cycle frame power before exchanging FRUS.

MSG0003

This symbolic FRU represents a specific message to the service provider relative to the reference code or FRU list for cases where it is needed.

MSG0003: Note: Replace FRUs one at a time.

MSG0005

This symbolic FRU represents a specific message to the service provider relative to the reference code or FRU list for cases where it is needed.

MSG0005: Linux owned slots - no IOP is allowed.

NETSERV

The Integrated xSeries Server (IXS) is the failing item.

Call your Integrated xSeries Server (IXS) service provider.

NEXTLVL

Contact your next level of support.

NODEPL

The failing component is the node backplane.

Use the table below to determine which FRU to replace and how to replace it.

Note: To simplify this information, secondary units on the 570 server are numbered 1 through 3-secondary unit 1 being nearest to the primary unit and secondary unit 3 being furthest.

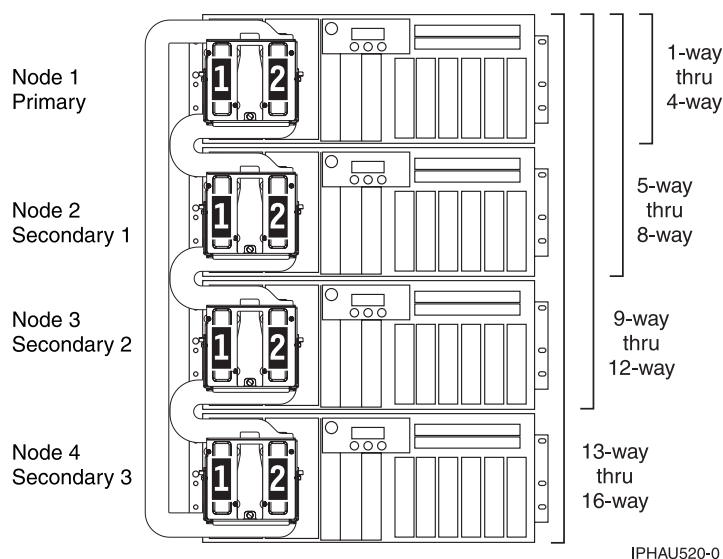


Table 93. NODEPL failing components

System model	Name of symbolic FRU to locate	FRU name (replace in order, one at a time)	Link to locations information
505	NODEPL	System backplane	Locations — model 505
510 and OpenPower 710	NODEPL	System backplane	Locations — model 510 and OpenPower 710
515,520, and 525	NODEPL	System backplane	Locations — Model 515,520, and 525
550 and OpenPower 720	NODEPL	System backplane	Locations — OpenPower 720 and Model 550

Table 93. NODEPL failing components (continued)

System model	Name of symbolic FRU to locate	FRU name (replace in order, one at a time)	Link to locations information
570	NODEPL	Primary unit, Regulator distribution connection backplane Secondary unit 1, Regulator distribution connection backplane Secondary unit 2, Regulator distribution connection backplane Secondary unit 3, Regulator distribution connection backplane	Locations — Model 570
575	NODEPL	Processor backplane	Locations — model 575
590 and 595	NODEPL	Node 0 backplane Node 1 backplane Node 2 backplane Node 3 backplane	Locations — model 590 and 595

This ends the procedure.

NOFRUS

No failing items are identified for the reference code.

NO_PNUM

Diagnostic firmware could not determine a part number for the FRU.

To determine the part number, exchange procedure, and other service information, record the location of the FRU from the user interface you are working with. Locate the machine type and model of the unit you are working with in the table below. Follow the link to the locations table for the machine type and model you are working with, and then match the location code you recorded to one in the locations table.

Model or expansion unit	Link to locations information
510 and OpenPower 710	Locations — model 510 and OpenPower 710
520	Locations — model 520
550 and OpenPower 720	Locations — OpenPower 720 and model 550
570	Locations — model 570
575	Locations — model 575
590 and 595	Locations — model 590 and 595
5074, 8079-002, 8093-002	Locations — 5074, 8079-002, and 8093-002 expansion units
5079	Locations — 5079 expansion unit
5088, 0588	Locations — 5088 and 0588 expansion units
5094, 5294, 8094-002	Locations — 5094, 5294, and 8094-002 expansion units
5095, 0595	Locations — 5095 and 0595 expansion units

Model or expansion unit	Link to locations information
Type 1519 — external xSeries server	Locations — Integrated xSeries adapter card (IXA)
5791, 5794, and 7040-7040-61D	Locations — 5791, 5794, and 7040-7040-61D expansion unit
7311-D10, 7311-D11, and 5790	Locations — 7311-D10, 7311-D11, and 5790 expansion units
7311-D20	Locations — 7311-D20 expansion unit

This ends the procedure.

NSCABLE

The cable between the Integrated xSeries Adapter (IXA) card and the RS-485 port on the Integrated xSeries Server (IXS) is the failing item.

NTDEVDR

The Windows server device driver may be causing the problem.

Refer to Windows environment on iSeries, which is located in the iSeries Information Center, or contact your next level of support for assistance.

NTLANDD

The Windows server virtual LAN device driver may be causing the problem.

Refer to Windows environment on iSeries, which is located in the iSeries Information Center, or contact your next level of support for assistance.

NTOPSYS

The Windows server operating system may be causing the problem.

Refer to Windows environment on iSeries, which is located in the iSeries Information Center, or contact your next level of support for assistance.

NTUSER

Indicates a Windows server user problem.

This problem may be caused by:

- User-initiated action
- A Windows user application
- No keyboard or mouse attached to the Integrated xSeries Server (IXS)

Refer to Windows environment on iSeries, which is located in the iSeries Information Center, or contact your next level of support for assistance.

NTVSCSI

The Windows server virtual SCSI device driver may be causing the problem.

Refer to Windows environment on iSeries, which is located in the iSeries Information Center, or contact your next level of support for assistance.

OPT_CLN

Use the fiber optic cleaning kit and the fiber optic cleaning procedures in "SY27-2604 Fiber Optic Cleaning Procedures" for all fiber channel connections such as those used in optical high speed link (HSL) connections or fibre channel attached devices.

See Part number catalog.

This ends the procedure.

OPTLCBL

The cabling for an optical disk drive in the optical library needs to be checked.

The cabling may be incorrectly installed, or it may be defective.

Refer to the All 3995 Publications and Documentation  Web site for more information.

OPTLDRV

An optical disk drive in the optical library is failing.

Refer to the All 3995 Publications and Documentation  Web site for more information.

OPUSER

The failing item indicates that the operator of the system console or the control panel performed an incorrect action.

Refer to the iSeries Information Center for more information.

OSLIC

An operating system has experienced a fatal error.

If the SRC that sent you here is of the form B6xx xxxx, then check for an i5/OS PTF to correct the problem.

If the SRC that sent you here is of the form BAxx xxxx, then check for an AIX or Linux code patch to correct the problem.

If you need help finding the correct patches, or if this does not correct the problem, contact your next level of support.

OSTERM

The operating system in a partition has terminated abnormally.

Use the HMC to look for a partition that has failed. It should have the same SRC in the SRC display history for the failed partition. Use the SRC given in this error to resolve the problem.

Note: This error has not been automatically sent to your service provider.

If problems continue, call your next level of support.

PGDPART

Look here for information about PGDPART symbolic FRU.

1. Power off the frame.
2. Check that the tower card is connected and seated properly. See "TWRCARD" on page 763.
3. Check that the power supplies are connected and seated properly. See "PWRSPPLY" on page 730.
4. Power on the frame.
5. Is there a reference code 1xxx 2600, 2601, or 2603?
 - **No: This ends the procedure.**
 - **Yes:** Exchange the following FRUs one at a time (see Finding part locations):
 - Tower card (TWRCARD)
 - Power supplies (PWRSPPLY)

- Memory cards (if installed)
- Processor cards (if installed)
- Backplane (SYSBKPL)

Results

This ends the procedure.

PIOCARD

The multi-adapter bridge hardware that controls PCI adapters and PCI card slots detected an error.

About this task

The failing component is the adapter in the location specified by the Direct Select Address (DSA) in the reference code. When possible, the diagnostic code will determine the FRU location for the serviceable event view.

1. Does the reference code start with B7xx?
 - **Yes:** Perform the following:
 - a. Record the DSA, which is word 7 of the reference code.
 - b. Locate the card specified in the DSA by going to “MABIP53” on page 145. Return here after locating the FRU and continue with the next step.
 - **No:** Continue with the next step..
2. Are you working from the serviceable event view and a card location is listed with this FRU?
 - **Yes:** The error is located at the listed card location. Go to step 6 on page 723.
 - **No:** Perform the following:
 - a. Record the DSA, which is word 7 of the reference code.
 - b. Locate the card specified in the DSA by going to “MABIP53” on page 145. Return here after locating the FRU and continue with the next step.
3. Did you identify a single FRU location by using “MABIP53” on page 145?

Yes: This is the location of the failing item. Go to step 6 on page 723.

No: Continue with the next step.
4. Perform the following, referring to the remove and replace procedures for each FRU location you determined (you can find links to the locations information, and from there to the remove and replace procedures, in the table at the end of this procedure):
 - a. Remove all of the adapter and/or IOP cards in the locations that are identified in the given range of card slots. Do not remove any FRUs with embedded adapters, only FRUs in PCI card slots.
 - b. Replace each card one at a time.

Note: For i5/OS adapters controlled by IOPs, replace the IOP before any of the adapters. Power on the unit (as instructed in the remove and replace procedure indicated by following the link in the following table) after you replace each card until either the problem reappears or you have replaced each card.
- c. Did the problem reappear?

Yes: The last card that you replaced before the problem appeared again is the failing item. **This ends the procedure.**

No: Continue with the next step.
5. Did you identify a FRU with embedded adapters when performing “MABIP53” on page 145?

Yes: The problem is in the FRU with the embedded adapter. Continue with the next step and exchange that FRU.

No: The problem may be intermittent. Contact your next level of support. **This ends the procedure.**

6. Use the links in the table below to locate and replace the failing item(s).

Table 94. Failing item for symbolic FRU PIOCARD

System model, expansion unit, or machine type	Name of FRU to exchange	FRU location	Link to locations information
505	PCIX adapter card	-P1-C12-C1 -P1-C13-C1	Locations — model 505
	Embedded adapters in system unit logic planar, PCI bridge set 0	P1	
510 and OpenPower 710	PCI IOP or IOA card in PCI bridge set 0	-P2-C1 -P2-C2 -P2-C3	Locations — model 510 and OpenPower 710
	Embedded adapters in system unit logic planar, PCI bridge sets 1 and 2	-P1	
515, 520, 525	Embedded adapters in system unit logic planar, PCI bridge sets 1 and 2	-P1-C1 -P1-C2 -P1-C4	Locations — model 515, 520, 525
	PCI IOP or IOA card in PCI bridge set 2	-P1-C3 -P1-C5 -P1-C6	
	Embedded adapters in system unit logic planar, PCI bridge sets 1 and 2	-P1	
550 and OpenPower 720	PCI IOP or IOA card in PCI bridge set 1	-P1-C1 -P1-C2	Locations — OpenPower 720 and model 550
	PCI IOP or IOA card in PCI bridge set 2	-P1-C3 -P1-C4 -P1-C5	
	Embedded adapters in system unit logic planar, PCI bridge sets 1 and 2	-P1	
570	PCI IOP or IOA card in PCI bridge set 2	-P1-C1 -P1-C2	Locations — model 570
	PCI IOP or IOA card in PCI bridge set 3	-P1-C3 -P1-C4 -P1-C5 -P1-C6	
	Embedded adapters in system unit logic planar, PCI bridge sets 1, 2, and 3	-P1	

Table 94. Failing item for symbolic FRU PIOCARD (continued)

System model, expansion unit, or machine type	Name of FRU to exchange	FRU location	Link to locations information
5074, 8079-002, 8093-002	PCI IOP or IOA in PCI bridge set 1	C01 C02 C03 C04	Locations — 5074, 8079-002, and 8093-002 expansion units
	PCI IOP or IOA in PCI bridge set 2	C05 C06 C07 C09 C10	
	PCI IOP or IOA in PCI bridge set 3	C11 C12 C13 C14 C15	
5079	PCI IOP or IOA in PCI bridge set 1	C01 C02 C03 C04	Locations — 5079 expansion unit
	PCI IOP or IOA in PCI bridge set 2	C05 C06 C07 C09 C10	
	PCI IOP or IOA in PCI bridge set 3	C11 C12 C13 C14 C15	
5088, 0588	PCI IOP or IOA in PCI bridge set 1	C01 C02 C03 C04	Locations — 5088 and 0588 expansion units
	PCI IOP or IOA in PCI bridge set 2	C05 C06 C07 C08 C09	
	PCI IOP or IOA in PCI bridge set 3	C11 C12 C13 C14 C15	

Table 94. Failing item for symbolic FRU PIOCARD (continued)

System model, expansion unit, or machine type	Name of FRU to exchange	FRU location	Link to locations information
5094, 5294, 8094-002	PCI IOP or IOA in PCI bridge set 1	C01 C02 C03 C04	Locations — 5094, 5294, and 8094-002 expansion units
	PCI IOP or IOA in PCI bridge set 2	C05 C06 C07 C08 C09	
	PCI IOP or IOA in PCI bridge set 3	C11 C12 C13 C14 C15	
5095, 0595	PCI IOP or IOA in PCI bridge set 1	C01 C02 C03 C04	Locations — 5095 and 0595 expansion units
	PCI IOP or IOA in PCI bridge set 2	C06 C07 C08	
Type 1519 — external xSeries server	Integrated xSeries adapter card	Follow RIO/HSL cable	Locations — Integrated xSeries adapter card (IXA)
7311-D10, 7311-D11, and 5790	PCI IOP or IOA in PCI bridge set 1	-P1-I1 -P1-I2 -P1-I3	Locations — 7311-D10, 7311-D11, and 5790 expansion units
	PCI IOP or IOA in PCI bridge set 2	-P1-I4 -P1-I5 -P1-I6	

Table 94. Failing item for symbolic FRU PIOCARD (continued)

System model, expansion unit, or machine type	Name of FRU to exchange	FRU location	Link to locations information
5791, 5794, and 7040-7040-61D	PCI IOP or IOA in PCI bridge set 1	-P1-I1 -P1-I2 -P1-I3 -P1-I4	Locations — 5791, 5794, and 7040-7040-61D expansion unit
	PCI IOP or IOA in PCI bridge set 2	-P1-I5 -P1-I6 -P1-I7	
	PCI IOP or IOA in PCI bridge set 3	-P1-I8 -P1-I9 -P1-I10	
	Embedded adapters in I/O unit logic planar (left side), PCI bridge sets 2 and 3	-P1	
	PCI IOP or IOA in PCI bridge set 1	-P2-I1 -P2-I2 -P2-I3 -P2-I4	
	PCI IOP or IOA in PCI bridge set 2	-P2-I5 -P2-I6 -P2-I7	
	PCI IOP or IOA in PCI bridge set 3	-P2-I8 -P2-I9 -P2-I10	
	Embedded adapters in I/O unit logic planar (right side), PCI bridge sets 2 and 3	-P2	

Results

This ends the procedure.

PLDUMP

A platform dump occurred.

- Find the SRC that occurred with the platform dump.
 - On the command line, enter the Start System Service Tools command STRSST. If you cannot get to SST, use function 21 to get to DST. Go to Dedicated Service Tools (DST) in the Service functions.
 - On the **Start Service Tools Sign On** display, type in a user ID with QSRV authority and password.
 - Select **Start a service tool** → **Main storage dump manager** → **Work with copies of main storage dumps**.
 - Display the platform dump summary for the time that the platform dump occurred.
 - The SRC is the value in the "SRC word 1" field of the Platform Dump Summary screen.
- Use the SRC from the Platform Dump Summary screen and find the SRC in the Service action log (see "Using the Service Action Log" on page 32). The SRC occurred at or before the time that the platform dump occurred.
- Did you find the SRC in the service action log?

Yes: Use the SRC to service the system. **This ends the procedure.**

No: The dump should be sent back to development for analysis, if it has not already been sent.
This ends the procedure.

PLUS

The list of possible failing items that are displayed online is not complete.

There is not enough space to display all of the failing items. See the complete list of possible failing items in the appropriate unit reference code table in Reference codes.

PPCIMIN

The affected component is a primary PCI bus in an I/O unit.

Use symbolic FRU "PRI_PCI" to determine the FRU(s) and service information.

This ends the procedure.

PPCISYS

The failing component is the primary PCI bus in a system unit.

Use symbolic FRU "PRI_PCI" to determine the FRU(s) and service information.

This ends the procedure.

PPCITWR

PPCITWR: Primary PCI bus in an I/O unit.

The failing component is the primary PCI bus under an HSL I/O bridge or RIO adapter in an I/O unit.
Use symbolic FRU "PRI_PCI" to determine the FRU(s) and service information.

This ends the procedure.

PRIMIOA

Replace the storage I/O adapter to which the auxiliary cache I/O adapter is connected.

1. Find the location of the auxiliary cache I/O adapter:
 - a. Determine the address of the auxiliary cache I/O adapter. See System reference code (SRC) address formats.
 - b. Determine the location of the auxiliary cache I/O adapter. See Finding part locations for the model you are working on.
2. Are you working on a 571F/575B combination storage and auxiliary cache IOA card set (uses two card slot locations)?
 - **Yes:** Replace the entire card set. See Finding part locations for links to part number and removal information. **This ends the procedure.**
 - **No:** Continue with the next step.
3. Trace the SCSI cable from the auxiliary cache I/O adapter to the storage I/O adapter. This is the storage I/O adapter that you should replace.
4. Replace the storage I/O adapter that you just identified. See Finding part locations for links to part number and removal information.

Results

This ends the procedure.

PRI_PCI

This is a primary PCI bus generated under a RIO adapter/HSL I/O bridge.

About this task

This bus can be in a system unit or I/O unit, and on some units this bus connects two FRUs.

1. Are you working from the serviceable event view and a card location is listed with this failing item?
 - **Yes:** Then the listed card location is where the error is located. Continue with the next step.
 - **No:** Record the bus number value, BBBB, in word 7 of the reference code (see “Breaking down a RIO/HSL or PCI bus reference code” on page 95). Search for the decimal bus number, using one of the following, to determine which frame or I/O unit contains the failing item.
 - i5/OS Hardware Service Manager (HSM)
 - System Configuration Listing

Record the unit type or feature and continue with the next step.

2. Use the table below to determine the appropriate service information.

Table 95. Symbolic FRU to perform for PRI_PCI

Model or expansion unit containing the failing item	Action
510, 515, 520, 525, 550, OpenPower 710, OpenPower 720, 570, 575	Perform “SYSBKPL” on page 758.
5074, 5079, 8079-002, 8093-002	There are two potential failing items. Perform “SIADPCD” on page 734. If the problem persists after powering on the frame or unit, then perform “TWRPLNR” on page 765. Attention: To prevent system VPD problems, do not replace both FRUs at the same time.
5088, 0588	There are two potential failing items. Perform “SIADPCD” on page 734. If the problem persists after powering on the frame or unit, then perform “TWRPLNR” on page 765. Attention: To prevent system VPD problems, do not replace both FRUs at the same time.
5094, 5294, 8094-002	There are two potential failing items. Perform “SIADPCD” on page 734. If the problem persists after powering on the frame or unit, then perform “TWRPLNR” on page 765. Attention: To prevent system VPD problems, do not replace both FRUs at the same time.
5095, 0595, 7311-D20	There are two potential failing items. Perform “SIADPCD” on page 734. If the problem persists after powering on the frame or unit, then perform “TWRPLNR” on page 765. Attention: To prevent system VPD problems, do not replace both FRUs at the same time.
External xSeries server	Perform “SIADPCD” on page 734.
7311-D10, 7311-D11, and 5790	There are two potential failing items. Perform “SIADPCD” on page 734. If the problem persists after powering on the frame or unit, then perform “TWRPLNR” on page 765. Attention: To prevent system VPD problems, do not replace both FRUs at the same time.
5791, 5794, and 7040-61D	Perform “TWRPLNR” on page 765.

Results

This ends the procedure.

PTFSRCH

Licensed Internal Code is the failing item. Look for fixes (PTFs) associated with the reference code and have the customer apply them.

PTNNTWK

One or more connections to a partition have been lost.

1. Is the HMC reporting any other reference codes that indicate a loss of communication with other partitions?
 - **No:** Choose from the following:
 - If the partition is running i5/OS, go to step 2.
 - If the partition is running AIX or Linux, go to step 3.
 - **Yes:** Go to Reference codes and resolve the first of these reference codes. **This ends the procedure.**
2. Open a 5250 console to the partition (see 5250 console). Enter the QSYSWRK command to check the status of the partition. There should be seven jobs running:
 - 4 of these jobs start with QCST*
 - 2 of these jobs start with QYUS*
 - 1 of these jobs start with QSVRM*

Are all seven of these jobs running?

- **Yes:** Go to step 4.
- **No:** End all of those jobs that are still running and then issue the following command:

```
SBMJOB CMD(CALL PGM(QSYS/QCSTCTSRCD)) JOBD(QSYS/QCSTSRCD) PRTDEV(*JOBDEV) OUTQ(*JOBDEV)
USER(*JOBDEV) PRTTXT(*JOBDEV) RTGDTA(RUNPTY50)
```

This ends the procedure.

3. Perform the following:
 - a. Open a virtual terminal console to the partition (see Virtual terminal).
 - b. Verify that Service Resource Manager (SRM) is running properly by entering the following command:

```
lssrc -a |grep ServiceRM
```

If the state given for SRM is "inactive" then SRM is not running and needs to be restarted. If the state given is "active", then go to step 4.

4. Has the partition logged any LAN adapter or other LAN reference codes?
 - No:** Work with the customer to find and resolve any network problems between the HMC and the partition. **This ends the procedure.**
 - Yes:** Go to Reference codes and resolve these reference codes. **This ends the procedure.**

PWRCBL

The failing item is the SPCN frame-to-frame cable or adapter.

The following list shows the possible failing items, and the cable or adapter lengths when appropriate (see Part number catalog):

- 6.0 meters
- 15.0 meters
- 30.0 meters
- SPCN optical cable (100.0 meters)

- SPCN optical adapter
- SPCN port cable (frame-to-node)
- Integrated xSeries server SPCN-Y cable assembly

This ends the procedure.

PWROC

The battery charger is reporting a load fault.

1. Is the reference code 4414?
 - **No:** Go to “Start of call procedure” on page 2.
This ends the procedure.
 - **Yes:** Perform the first four steps of “PWR1906” on page 252 to isolate the failing item, then return here and continue with the next step.
2. Is the reference code 4414 still present?
 - **No:** Continue with the next step.
 - **Yes:** Replace the battery power unit charger (see Part number catalog).
This ends the procedure.
3. Power on the system. Does the failing expansion unit power on successfully?
 - **Yes:** Continue with the next step.
 - **No:** Go to “Start of call procedure” on page 2.
This ends the procedure.
4. Remove the ac line cord from the outlet. Does a battery power unit charger fault occur?
 - **Yes:** Replace the battery power unit charger (see Part number catalog).
This ends the procedure.
 - **No:** **This ends the procedure.**

PWRSPLY

A power supply might be the failing item.

About this task

Attention: When replacing a redundant power supply, a 1xxx 1504, 1514, 1524, or 1534 reference code may surface in the error log. If you just removed and replaced the power supply in the location associated with this reference code, and the power supply came ready (ac power good LED is illuminated) after the install, disregard this reference code. If you had not previously removed and replaced a power supply, the power supply did not come ready after installation, or there are repeated fan fault errors after the power supply replacement, continue to follow this procedure.

Note:

- Mixed voltage power supplies are not supported for models 55x and OpenPower 720 systems with redundant (2) power supplies installed. Depending on your redundant configuration, you must have 2 -100V ac supplies, 2- 200V ac supplies or 2- (-48)V dc supplies installed.
- To prevent a 100015x2 reference code from being logged when adding or replacing a power supply on a 7311-D10, 7311-D20, 5094, 5294, or 5790, immediately (within 10 seconds) after installation apply ac power to the replacement power supply. For a new power supply installation, ac power should be applied to all power supplies within 10 seconds of power being supplied to the initial power supply. If you receive a 100015x2 reference code after a power supply installation and the power supply is in the ready state, disregard the reference code. If the power supply is not in the ready state and you received a 100015x2 reference code, follow the remainder of this procedure.

1. Is the reference code 1xxx15xx or 1xxx71xx?

- **No:** Continue with substep 1.d.
 - **Yes:** Perform the following:
 - a. Find the unit reference code in one of the following tables to determine the failing power supply.
 - b. Ensure that the power cables are properly connected and seated. The green Power Good LED on the power supply will illuminate when power is correctly connected to the power supply.
 - c. Is the reference code 1xxx-1500, 1510, 1520, or 1530 and is the failing unit configured with a redundant power supply option (or dual line cord feature)?
 - **Yes:** Perform “PWR1911” on page 260 before replacing parts.
 - **No:** Continue with step 1d.
 - d. Refer to Finding part locations to determine the location and part number of the failing item.
 - e. Replace the failing power supply (see the following tables to determine which power supply to replace).
 - f. Perform the following if the new power supply does not fix the problem:
 - 1) Reinstall the original power supply.
 - 2) Try the new power supply in each of the other positions listed in the table.
 - 3) If the problem still is not fixed, reinstall the original power supply and go to the next FRU in the list.
 - 4) For reference codes 1xxx-1500, 1510, 1520, and 1530, exchange the power distribution backplane if a problem persists after replacing the power supply.
- Note:** If you are working on a Model 550 or OpenPower 720 and you have a reference code of 1xxx 1511 and/or 1521, but the system powered down or will not power up, you may have a power/processor interlock failure. Ensure the system power supply(s), processor(s), and processor filler are properly seated. If the system still will not power on, replace the following FRUs one at a time:
- a. Power supply 1 (for single-power-supply system only)
 - b. Processor 2 (or processor filler)
 - c. Processor 1
 - d. System backplane
 - e. Power supply 1
 - f. Power supply 2

Table 96. Models 285, 505, 51x, 52x, 55x, 9116-561, 570, OpenPower 710, and OpenPower 720

Unit reference code	Power supply
1510, 1511, 1512, 1513, 1514, 7110	E1
1520, 1521, 1522, 1523, 1524, 7120	E2

Table 97. Models 285, 52x Quiet Office Acoustic Feature installed

Unit reference code	Power supply
1520, 1521, 1522, 1523, 1524, 7120	E1

Note: 151x reference codes are not valid for the model 285 or the model 52x with the Quiet Office Acoustic Feature installed.

Attention: For reference codes 1500, 1510, 1520, and 1530, perform “PWR1911” on page 260 before replacing parts.

Table 98. 5088, 0588 expansion units

Unit reference code	Power supply
1510, 1511, 1512, 1513, 1514, 1516	P02
1520, 1521, 1522, 1523, 1524, 1526	P01

Attention: On a dual line cord system, for reference codes 1500, 1510, 1520, and 1530, perform “PWR1911” on page 260 before replacing parts. On a single line cord system, check the ac jumper to the power supply before replacing parts.

Table 99. 5074, 5079, 5094, 5294 I/O expansion units (single line cord)

Unit reference code	Power supply
1510, 1511, 1512, 1513, 1514, 1516	P01
1520, 1521, 1522, 1523, 1524, 1526	P02
1530, 1531, 1532, 1533, 1534, 1536	P03

Attention: On a dual line cord system, for reference codes 1500, 1510, 1520, and 1530, perform “PWR1911” on page 260 before replacing parts. On a single line cord system, check the ac jumper to the power supply before replacing parts.

Attention: For 5094, 5294 expansion units, do not install power supplies P00 and P01 ac jumper cables on the same ac input module.

Table 100. 5074, 5079, 5094, 5294 I/O expansion units (dual line cord)

Unit reference code	Power supply
1500, 1501, 1502, 1503	P00
1510, 1511, 1512, 1513, 1514, 1516	P01
1520, 1521, 1522, 1523, 1524, 1526	P02
1530, 1531, 1532, 1533	P03

Table 101. 5095, 0595, 5790, 7311-D10, 7311-D11, 7311-D20, expansion units

Unit reference code	Power supply
1510, 1511, 1512, 1513, 1514, 1516, 1517	P01/E1
1520, 1521, 1522, 1523, 1524, 1526, 1527	P02/E2

This ends the procedure.

2. Is the reference code 1xxx-2600, 2601, 2603, 2605, or 2606?
 - **No:** Continue with the next step.
 - **Yes:** Perform the following:
 - a. Refer to Finding part locations to determine the location and part number of the failing item.
 - b. Replace the failing power supply.
 - c. Perform the following if the new power supply does not fix the problem:
 - 1) Reinstall the original power supply.
 - 2) Try the new power supply in each of the other positions listed in the table.
 - 3) If the problem still is not fixed, reinstall the original power supply and go to the next FRU in the list.

Attention: Do not install power supplies P00 and P01 ac jumper cables on the same ac input module.

Table 102. Failing power supplies

System or feature code	Failing power supply
Models 285, 505, 51x, 52x, 55x, 9116-561, 570, and OpenPower 710, OpenPower 720	Un-E1, Un-E2
5074, 5079, 5094, 5294 (single line cord)	P01, P02, P03
5074, 5079, 5094, 5294 (dual line cord)	P00, P01, P02, P03
5088, 0588	P02, P01
5095, 0595	P01, P02
5790, 7311-D10, 7311-D11, 7311-D20	E1, E2

This ends the procedure.

3. Is the reference code 1xxx 7300?

- **No:** Continue with the next step.
- **Yes:** Perform the following:
 - a. The failing power supply is either E1 or E2.
 - b. Refer to Finding part locations to determine the location and part number of the failing item.
 - c. Replace the failing power supply.
 - d. Perform the following if the new power supply does not fix the problem:
 - 1) Reinstall the original power supply.
 - 2) Try the new power supply in the other position.
 - 3) If the problem still is not fixed, reinstall the original power supply and go to the next FRU in the list.

This ends the procedure.

4. Is the reference code 1xxx 8455 or 8456?

- **No:** Return to “Start of call procedure” on page 2. **This ends the procedure.**
- **Yes:** One of the power supplies is missing, and must be installed. Use the following table to determine which power supply is missing, and install the power supply (see Finding part locations to determine the part number and exchange procedure).

Reference code	Missing power supply
1xxx 8455	Un-E1
1xxx 8456	Un-E2

Results

This ends the procedure.

QDCCRLS

Licensed Internal Code is the failing item.

Look for PTFs associated with the reference code and have the customer apply them.


QSYSOPR

Look here for information about QSYSOPR symbolic FRU.

For more information, look in the System Operator message queue for a message with the same date and time. Perform any actions defined in the message.

REFER

Look here for information about REFER symbolic FRU.

If the first four characters of the SRC are 3995, consult the All 3995 Publications and Documentation  Web site. If the first four characters of the SRC are 3996, consult the 3996 Maintenance Information shipped with the 3996 Optical Library.

REM_NIC

One end of the failed link is a system unit other than the one reporting this error.

In a cluster, all system units should send a warning to the other system units in the cluster when they are about to perform a controlled power down. This error could occur when a system unit leaves the cluster without issuing any warning to other system units. If the system unit is not reporting due to a failed cable or HSL hardware, replacing the FRUs in this error log entry will correct the problem.

However, the system unit may have been powered down immediately, or powered down because of an error. If this is the case, service any errors in the other system unit, or power the other system unit back on. When the other system unit reports in, the loop will be complete and this error can be closed.

This ends the procedure.

REM_SYS

A problem has occurred in a remote system that is in an i5/OS HSL OptiConnect loop.

If the value of the first half of word 7 in the reference code is greater than or equal to 0680, then this value is the hexadecimal RIO/HSL loop number. The i5/OS Service Action Log (SAL) code will attempt to identify the RIO/HSL loop number of the local system and the serial number of the remote system as a portion of the part description for this symbolic FRU. If the SAL could not identify the serial number of the remote system, then check all the systems which are connected to the local RIO/HSL loop identified in the reference code or the SAL. Search the SAL of the remote system(s) for hardware and LIC problems. Correct any problems you find with LIC or Network Interface Controller (NIC) / RIO controller hardware.

This ends the procedure.

SIADPCD

The failing component is the HSL I/O bridge card or RIO adapter card in an I/O unit, or the integrated xSeries adapter card in an xSeries server.

1. Are you working from the serviceable event view and do you know the type, model or feature, and serial number of the I/O unit where this failing component is located?

Yes: Continue with the next step.

No: Record the bus number value (BBBB) in word 7 of the reference code (see “Breaking down a RIO/HSL or PCI bus reference code” on page 95). Then search for the bus number in the system configuration listing to determine which frame or I/O unit contains the failing component. Then continue with the next step.

2. Use the following table to find the appropriate service information.

Table 103. SIADPCD service information

Unit containing the failing item	Name of FRU to exchange	Symbolic FRU	Link to locations information
5074, 8079-002, 8093-002	RIO/HSL adapter card	SIADPCD	Locations — 5074, 8079-002, and 8093-002 expansion units
5079	RIO/HSL adapter card	SIADPCD	Locations — 5079 expansion unit
5088, 0588	RIO/HSL adapter card	SIADPCD	Locations — 5088 and 0588 expansion units
5094, 5294, 8094-002	RIO/HSL adapter card	SIADPCD	Locations — 5094, 5294, and 8094-002 expansion units
5095, 0595	RIO/HSL adapter card	SIADPCD	Locations — 5095 and 0595 expansion units
Type 1519 — external xSeries server	Integrated xSeries adapter card	Follow RIO/HSL cable	Locations — Integrated xSeries adapter card (IXA)
7311-D10, 7311-D11, and 5790	RIO/HSL adapter card	SIADPCD	Locations — 7311-D10, 7311-D11, and 5790 expansion units
7311-D20	RIO/HSL adapter	SIADPCD	Locations — 7311-D20 expansion unit
5791, 5794, and 7040-61D	Backplane 1 (not the riser)	SIADPCD	Locations — 5791, 5794, and 7040-61D expansion unit
	Backplane 2 (not the riser)	SIADPCD	

Results

This ends the procedure.

SI_CARD

The failing component is the RIO/HSL adapter card in the system unit.

Use this table to find the appropriate service information for the failing component.

System model	Symbolic FRU to find	Name of FRU to exchange	Link to locations
52x	SI_CARD	System backplane	Locations — model 520, 52A and 285
55x	SI_CARD	RIO/HSL adapter card	Locations — model 550, 55A, and OpenPower 720
570	SI_CARD	RIO/HSL adapter card (for the primary unit and each secondary unit)	Locations — model 561 and 570
575	SI_CARD	System backplane	Locations — model 575
59x	SI_CARD	Bus adapter card 1 through bus adapter card 8 (for each node)	Locations — model 590 and 595

This ends the procedure.

SICNTRL

The failing component is the network interface controller (NIC)/RIO controller.

1. Do you have a location code for this FRU in the serviceable event view?

No: Continue with the next step.

Yes: Go to step 4.

2. Is the first half of word 7 of the reference code greater than or equal to 0680?

No: Continue with the next step.

Yes: This is a valid loop number and can be correlated to a position using “Converting the loop number to NIC port location labels” on page 108. Record the location code and go to step 4.

3. Since the first four characters of word 7 are less than 0680, they represent the system bus number. Do you have access to a system configuration listing?

- **No:** Contact your next level of support.

This ends the procedure.

- **Yes:** Use the system configuration listing to determine which HSL/RIO loop number the system bus is connected to. Then, determine the FRU’s location using “Converting the loop number to NIC port location labels” on page 108. Once you have the FRU’s location, continue with the next step.

4. Use the table below to find the appropriate service information for this FRU.

Table 104. FRU containing the NIC/RIO controller

System model	Name of FRU to exchange	Symbolic FRU	Link to locations information
9111-520, 9405-520/9406-520 with integrated HSL ports	System backplane	SICNTRL	Locations — Model 515, 52x and 285
9111-285, 9407-515, 9405-520, 9406-520, 9406-525, 9131-52A, with HSL ports located on HSL card	HSL card	SICNTRL	Locations — Model 515, 52x and 285
52x	System backplane	SICNTRL	Locations — Model 52x and 285
570	I/O backplane	SICNTRL	Locations — Model 570
570 with secondary units	RIO/HSL adapter card	SICNTRL	Locations — Model 570
575	System backplane	SICNTRL	Locations — model 575
590 and 595	RIO/HSL or InfiniBand host channel adapter in node	SICNTRL	Locations — model 590 and 595

Results

This ends the procedure.

SIIOADP

SIIOADP: RIO adapter/HSL I/O bridge (in a system unit or I/O unit).

About this task

Note: In the following procedures, the term *RIO adapter* refers to either a RIO adapter or an HSL I/O bridge, depending on the system you are working on.

1. Is a location for this FRU given in the serviceable event view?

- **Yes:** Use that location and Table 105 on page 738 to find and replace the failing part. **This ends the procedure.**
- **No:** Continue with the next step.

Note: In most circumstances, the SRC logged by the system firmware calls out a FRU list. In very few circumstances (as in the following examples), the failure requires immediate system termination.

Example: Symptoms

```

1 B7006981 RIO/HSL (bridge) bus adapter failure SRC
2 B70069XX SRC Format 62
3 00010002 Component ID field must be an exact match
4 14993203 Code Model and PRC must be an exact match
5 FRUCALLO Decode this when the SRC is 6906 or 6907
6 FRUCALLO Decode this when the SRC is 6981
7 00000000

```

Example: SRC 6981

```

1 B7006981
2 00000062
3 00010002
4 14993203
6 00044000
7 00000000

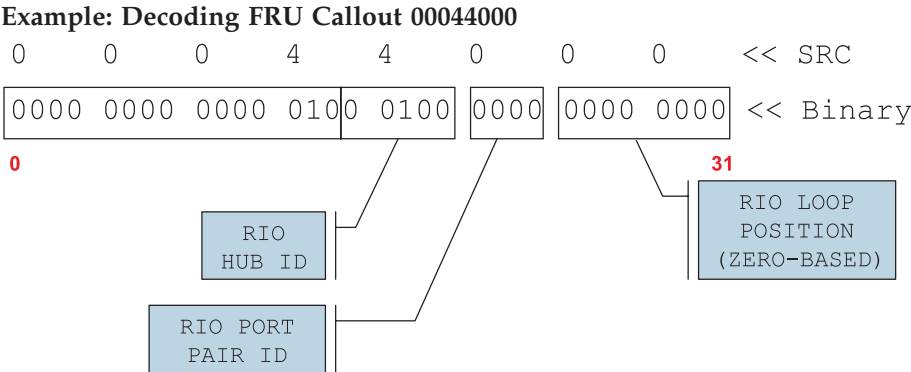
```

When immediate termination occurs, the SRC does not provide a FRU callout. The following steps describe how to determine the FRU callout.

2. Isolate the RIO adapter FRU indicated by the data in word 5 (when the SRC is 6906 or 6907) or word 6 (when the SRC is 6981) of the SRC by completing the following steps:

Note: Replace only the FRU with the RIO adapter FRU.

- a. Use the following example as a guide to locate and record the following binary values from word 5 or word 6 of the SRC:
 - RIO hub ID
 - RIO port pair ID
 - RIO loop position



IPHAU450-1

- b. Convert the binary values for the RIO hub ID, the RIO port pair ID, and the RIO loop position to decimal (use Table 106 on page 739). Record these values for later use.
3. Each RIO hub controls two RIO loops, specified as the *first* and *second* loop. Use the following list to determine and record which of these two RIO loops is indicated in word 6 of the SRC:

- When the binary value of the RIO port pair ID is 0000, the SRC indicates the **first** RIO loop
 - When the binary value of the RIO port pair ID is 0001, the SRC indicates the **second** RIO loop
4. To isolate the failing RIO adapter, you will walk the cabling for the specified RIO loop from the leading port to the trailing port. To determine the RIO loop number and RIO port location code for the leading port, do the following:
 - a. Make sure you have the following values at hand, then continue to the next step.
 - The decimal value for the RIO hub ID
 - The RIO loop indicated by the RIO port pair ID
 - b. Compare the values from the previous step to the location table and graphic for the model that you are working on. (From the following list, click the link for the model you are working on to display the appropriate table and graphic.) Refer to the location table and graphic and record the values for the RIO loop number and the RIO port location code. Then continue to the next step.
 - “Models 515 and 52x” on page 741
 - “Model 55x” on page 741
 - “Models 570 and 561” on page 742
 - “Model 575” on page 743
 - “Model 59x” on page 744
 5. Isolate the failing RIO adapter by walking the cabling for the specified RIO loop from the leading port to the trailing port. Do the following:
 - a. Begin walking the cabling by starting at the RIO loop number and RIO port location code that you recorded in step 4b.
 - b. Starting with 0 (zero) for the first RIO adapter on the loop, follow the loop cabling and count each RIO adapter in the order it is cabled. For example, the first RIO adapter is 0, the next is 1, the next is 2, and so on.
 - c. Continue this process until you count up to the decimal value of the RIO loop position. The RIO adapter that corresponds to the value of the RIO loop position is the failing RIO adapter.
- Note:** **Concurrent maintenance** requires that you make a change to the previous procedure for counting the RIO adapters on the loop. If concurrent maintenance was performed to attach one or more additional RIO adapters to this loop and the server has not been IPL'ed after the adapters were added, then **exclude the added RIO adapters as you make the initial count**. If the RIO loop position exceeds the number of RIO adapters, continue by counting the added RIO adapters in the order they were added to the loop.
6. Exchange the failing RIO adapter. To determine the FRU part number, the FRU location, and the exchange procedure for the FRU, use Table 105 to find and replace the failing part. **This ends the procedure.**

Results

Table 105. SIIOADP service information

Unit containing the failing item	Name of FRU to exchange	Symbolic FRU	Link to locations information
510 and OpenPower 710	System backplane	SIIOADP	Locations — model 510 and OpenPower 710
515, 520, 525	System backplane	SIIOADP	Locations — model 515, 520, 525
550 and OpenPower 720	System backplane	SIIOADP	Locations — OpenPower 720 and model 550
570	I/O backplane on system primary unit or a secondary unit	SIIOADP	Locations — model 570

Table 105. SIIOADP service information (continued)

Unit containing the failing item	Name of FRU to exchange	Symbolic FRU	Link to locations information
575	System backplane	SIIOADP	Locations — model 575
590 and 595	Logic planar for the system node	SIIOADP	Locations — model 590 and 595
5074, 8079-002, 8093-002	RIO/HSL adapter card	SIIOADP	Locations — 5074, 8079-002, and 8093-002 expansion units
5079	RIO/HSL adapter card	SIIOADP	Locations — 5079 expansion unit
5088, 0588	RIO/HSL adapter card	SIIOADP	Locations — 5088 and 0588 expansion units
5094, 5294, 8094-002	RIO/HSL adapter card	SIIOADP	Locations — 5094, 5294, and 8094-002 expansion units
5095, 0595	RIO/HSL adapter card	SIIOADP	Locations — 5095 and 0595 expansion units
Type 1519 — external xSeries server	Integrated xSeries adapter card	Follow RIO/HSL cable	Locations — Integrated xSeries adapter card (IXA)
7311-D10, 7311-D11, and 5790	RIO/HSL adapter card	SIIOADP	Locations — 7311-D10, 7311-D11, and 5790 expansion units
7311-D20	RIO/HSL adapter card	SIIOADP	Locations — 7311-D20 expansion unit
5791, 5794, 7040-61D	Backplane 1 (not the riser)	SIIOADP	Locations — 5791, 5794, and 7040-61D expansion units
	Backplane 2 (not the riser)	SIIOADP	

Table 106. Binary to decimal conversion for RIO hub ID and RIO loop position

RIO hub ID or RIO loop position binary value	Decimal conversion of binary value
xxx0 0000	0
xxx0 0001	1
xxx0 0010	2
xxx0 0011	3
xxx0 0100	4
xxx0 0101	5
xxx0 0110	6
xxx0 0111	7
xxx0 1000	8
xxx0 1001	9
xxx0 1010	10
xxx0 1011	11
xxx0 1100	12
xxx0 1101	13
xxx0 1110	14
xxx0 1111	15

Table 106. Binary to decimal conversion for RIO hub ID and RIO loop position (continued)

RIO hub ID or RIO loop position binary value	Decimal conversion of binary value
xxx1 0000	16
xxx1 0001	17
xxx1 0010	18
xxx1 0011	19
xxx1 0100	20
xxx1 0101	21
xxx1 0110	22
xxx1 0111	23
xxx1 1000	24
xxx1 1001	25
xxx1 1010	26
xxx1 1011	27
xxx1 1100	28
xxx1 1101	29
xxx1 1110	30
xxx1 1111	31

SIIOADP: RIO loop location information:

The FRU SIIOADP directed you to this page.

RIO loop SIIOADP

The following tables and diagrams provide hub, port, and location code information that you need to determine the RIO loop number and RIO port location code. To use the location information, you must have the following information that you recorded when performing FRU SIIOADP at hand:

- The decimal value for the RIO hub ID
- The RIO loop indicated by the RIO port pair ID

Compare those values to the location information for the model that you are working on. Refer to the following location table and graphic for the model you are working on, and record the values for the RIO loop number and the RIO port location code.

- “Models 515 and 52x” on page 741
- “Model 55x” on page 741
- “Models 570 and 561” on page 742
- “Model 575” on page 743
- “Model 59x” on page 744

Then, return to the step in FRU SIIOADP that sent you here.

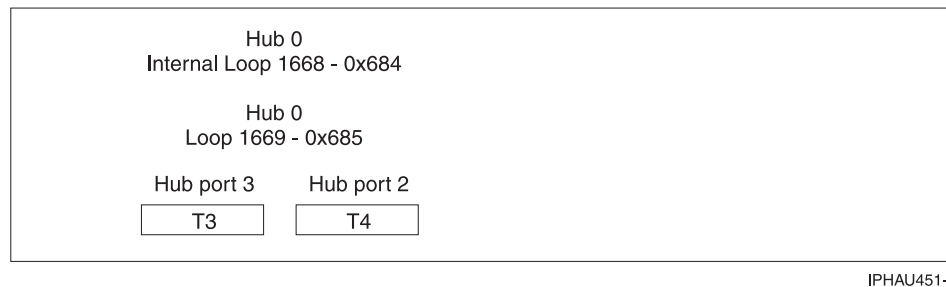
Models 515 and 52x

For clarity, the location information is provided as text (in the following table) and as a graphic diagram.

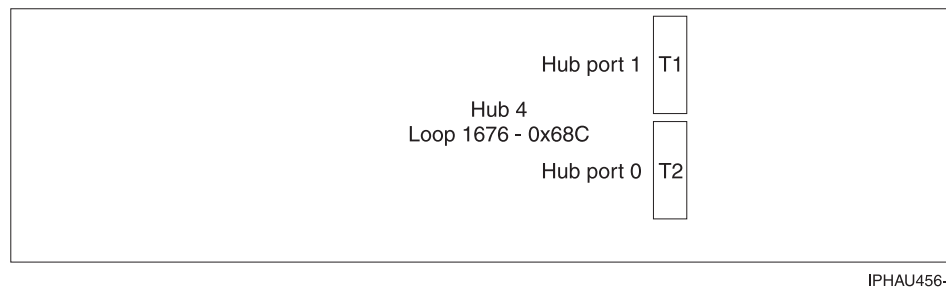
Table 107. Models 515 and 52x SIIOADP RIO loop location information

Hub (decimal)	Hub loop	Loop number	Location code for leading port of the loop
0	First	1668	Internal
0	Second	1669	P1-T4

Early version of model 520 RIO loop diagram. RIO connectors shown in horizontal position.



Later models 515 and 52x RIO loop diagram. RIO connectors shown in vertical position.



Model 55x

For clarity, the location information is provided as text (in the following table) and as a graphic diagram.

Table 108. Model 55x SIIOADP RIO loop location information

Hub (decimal)	Hub loop	Loop number	Location code for leading port of the loop
0	First	1668	Internal
0	Second	1669	P1-T12, not available on 9133-55A
4	First	1676	P1_C6-T2

Model 55x RIO loop diagram



Models 570 and 561

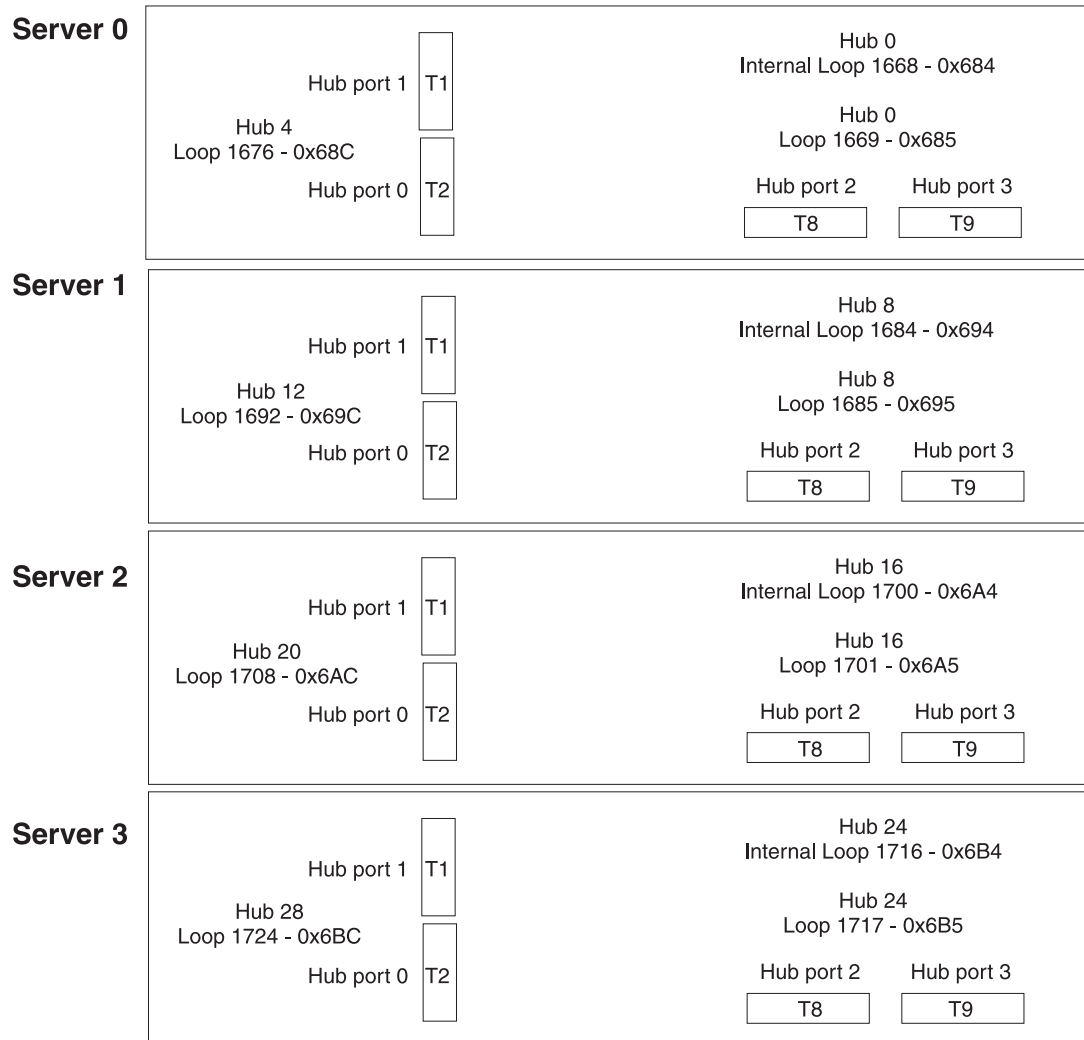
For clarity, the location information is provided as text (in the following table) and as a graphic diagram.

Table 109. Models 570 and 561 SIIODP RIO loop location information

System unit	Hub (decimal)	Hub loop	Loop number	Location code for leading port of the loop
0	0	First	1668	Internal (top unit)
0	0	Second	1669	P1-T12 (top unit)
0	4	First	1676	P1_C6-T2 (top unit)
1	8	First	1684	Internal (second unit*)
1	8	Second	1685	P1-T8 (second unit*)
1	12	First	1692	P1-C7-T2 (second unit*)
2	16	First	1700	Internal (third unit*)
2	16	Second	1701	P1-T8 (third unit*)
2	20	First	1708	P1-C7-T2 (third unit*)
3	24	First	1716	Internal (fourth unit*)
3	24	Second	1717	P1-T8 (fourth unit*)
3	28	First	1724	P1-C7-T2 (fourth unit*)

* (The second unit is immediately under the top unit, the third unit is immediately under the second unit, and the fourth unit is immediately under the third unit.)

Models 570 and 561 RIO loop diagram. RIO connectors T11 and T12 are for early version and connectors T1 and T2 for later version.



IPHAU453-0

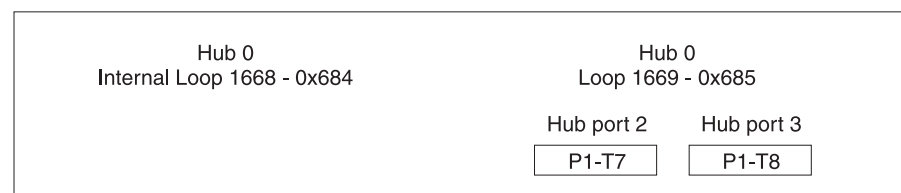
Model 575

For clarity, the location information is provided as text (in the following table) and as a graphic diagram.

Table 110. Model 575 SIIOADP RIO loop location information

Hub (decimal)	Hub loop	Loop number	Location code for leading port of the loop
0	First	1668	Internal
0	Second	1669	P1-T7

Model 575 RIO loop diagram



IPHAU454-1

Model 59x

For clarity, the location information is provided as text (in the following table) and as a graphic diagram.

Table 111. Model 59x RIO loop SIIODP location information

Hub (decimal)	Hub loop	Loop number	Location code for leading port of the loop
0	First	1668	Internal (with service processor A, leftmost node)
0	Second	1669	P2-C1-T1
1	First	1670	Internal
1	Second	1671	P2-C3-T1
4	Second	1676	P2-C8-T1
5	Second	1678	P2-C9-T1
6	Second	1680	P2-C11-T1
7	Second	1682	P2-C13-T1
8	First	1684	Internal (with service processor 'B', second node)
8	Second	1685	P3-C1-T1
9	First	1686	Internal
9	Second	1687	P3-C3-T1
12	Second	1692	P3-C8-T1
13	Second	1694	P3-C9-T1
14	Second	1696	P3-C11-T1
15	Second	1698	P3-C13-T1
16	Second	1700	P4-C1-T1 (third node)
17	Second	1702	P4-C3-T1
20	Second	1708	P4-C8-T1
21	Second	1710	P4-C9-T1
22	Second	1712	P4-C11-T1
23	Second	1714	P4-C13-T1
24	Second	1716	P4-C1-T1 (forth node)
25	Second	1718	P4-C3-T1
28	Second	1724	P4-C8-T1
29	Second	1726	P4-C9-T1
30	Second	1728	P4-C11-T1
31	Second	1730	P4-C13-T1

Model 59x RIO loop diagram

Server 0	Server 1	Server 2	Server 3
<p>Hub 0 Internal Loop 1668 - 0x684</p> <p>Hub 0 Loop 1669 - 0x685</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 1 Internal Loop 1670 - 0x686</p> <p>Hub 1 Loop 1671 - 0x687</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 2 Loop 1672 - 0x688</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 3 Loop 1674 - 0x68A</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 4 Loop 1676 - 0x68C</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 5 Loop 1678 - 0x68E</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 6 Loop 1680 - 0x690</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 7 Loop 1682 - 0x692</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p>	<p>Hub 8 Internal Loop 1684 - 0x694</p> <p>Hub 8 Loop 1685 - 0x695</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 9 Internal Loop 1686 - 0x696</p> <p>Hub 9 Loop 1687 - 0x697</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 10 Loop 1688 - 0x698</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 11 Loop 1690 - 0x69A</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 12 Loop 1692 - 0x69C</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 13 Loop 1694 - 0x69E</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 14 Loop 1696 - 0x6A0</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 15 Loop 1698 - 0x6A2</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p>	<p>Hub 16 Loop 1700 - 0x6A4</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 17 Loop 1702 - 0x6A6</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 18 Loop 1704 - 0x6A8</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 19 Loop 1706 - 0x6AA</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 20 Loop 1708 - 0x6AC</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 21 Loop 1710 - 0x6AE</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 22 Loop 1712 - 0x6B0</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 23 Loop 1714 - 0x6B2</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p>	<p>Hub 24 Loop 1716 - 0x6B4</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 25 Loop 1718 - 0x6B6</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 26 Loop 1720 - 0x6B8</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 27 Loop 1722 - 0x6BA</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 28 Loop 1724 - 0x6BC</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 29 Loop 1726 - 0x6BE</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 30 Loop 1728 - 0x6C0</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p> <p>Hub 31 Loop 1730 - 0x6C2</p> <p>Hub port 2 Hub port 3</p> <p>T1 T2</p>

IPHAU455-0

SI_PHB

The HSL I/O bridge/RIO adapter hardware in a system or I/O unit is failing.

About this task

Follow this procedure to identify the failing component to exchange.

1. Are you working from the serviceable event view and a card location is listed with this FRU?

- **Yes:** Then the listed card location is where the error is located. Continue with the next step.
- **No:** Record the bus number value, BBBB, in word 7 of the reference code (see “Breaking down a RIO/HSL or PCI bus reference code” on page 95). Search for the decimal bus number, using one of the following, to determine which frame or I/O unit contains the failing item.
 - the HMC’s system configuration user interface (if an HMC is controlling the system)
 - i5/OS Hardware Service Manager (HSM)
 - or the System Configuration Listing

Record the unit type or feature and continue with the next step.

2. Use the table below to determine the appropriate service information.

Table 112. SI_PHB service information

Unit containing the failing item	Name of FRU to exchange	Symbolic FRU	Link to locations information
515, 520, 525	System backplane	SI_PHB	Locations — model 515, 520, 525
550 and OpenPower 720	System backplane	SI_PHB	Locations — OpenPower 720 and model 550
570	I/O backplane on system primary unit or a secondary unit	SI_PHB	Locations — Model 570
590 and 595	Logic planar on the system unit node	SI_PHB	Locations — model 590 and 595
5074, 8079-002, 8093-002	RIO/HSL adapter card	SI_PHB	Locations — 5074, 8079-002, and 8093-002 expansion units
5079	RIO/HSL adapter card	SI_PHB	Locations — 5079 expansion unit
5088, 0588	RIO/HSL adapter card	SI_PHB	Locations — 5088 and 0588 expansion units
5094, 5294, 8094-002	RIO/HSL adapter card	SI_PHB	Locations — 5094, 5294, and 8094-002 expansion units
5095, 0595	RIO/HSL adapter card	SI_PHB	Locations — 5095 and 0595 expansion units
Type 1519 — external xSeries server	Integrated xSeries adapter card	Follow RIO/HSL cable	Locations — Integrated xSeries adapter card (IXA)
7311-D10, 7311-D11, and 5790	RIO/HSL adapter card	SI_PHB	Locations — 7311-D10, 7311-D11, and 5790 expansion units
7311-D20	RIO/HSL adapter card	SI_PHB	Locations — 7311-D20 expansion unit
5791, 5794, 7040-7040-61D	Backplane 1 (not the riser)	SI_PHB	Locations — 5791, 5794, and 7040-7040-61D expansion unit
	Backplane 2 (not the riser)	SI_PHB	

Results

This ends the procedure.

SIRGCBL

This symbolic FRU is not supported on the system.

Continue with the next FRU in the failing item list.

SIRGCFG

An invalid configuration was detected on an HSL/RIO loop during IPL.

The four rightmost characters of word 4 in the reference code represent the Program Return Code (PRC), which describes the problem detected. The four leftmost digits of word 7 represent the loop number in hexadecimal format. Convert the loop number to decimal format before comparing it to loop numbers shown in serviceable event views and service tools.

To determine the problem, find the PRC in the table below.

Note: The FRU description in the serviceable event view may already contain a message that identifies the problem.

Table 113. Correcting an invalid configuration on an HSL/RIO loop

PRC	Problem identified	Corrective action
xxxx 0008	System serial number not set	Set the serial number on the system unit. See Accessing the Advanced System Management Interface in the Installing hardware topic. If the problem persists contact your next level of support.
xxxx 3200	Clustered system(s) on loop with SPD migrated tower	Migration towers are not supported; remove them.
xxxx 3201	Clustered systems on multiple HSL/RIO loops	Ensure all clustered systems are on the same HSL/RIO loop.
xxxx 3202	Multiple SPD migrated towers detected	Migration towers are not supported; remove them.
xxxx 3207	SPD migrated tower not on first HSL/RIO loop	Migration towers are not supported; remove them.
xxxx 3212	NIC/RIO controller level does not support OptiConnect	The NIC/RIO controller hardware component does not support i5/OS HSL OptiConnect. The FRU containing the NIC/RIO controller component must be upgraded to a level that supports HSL OptiConnect. Examine the Service Action Log (SAL) of the IBM eServer i5 system on this loop for the same error. The SAL will call out the correct FRU to replace. Use the service tools and information for that system to correct the problem and close the problem on this system.

This ends the procedure.

SIRSTAT

A status indication for a RIO/HSL loop is identified in the reference code.

Use the table below to determine if the status indication requires a service action. Record the rightmost four characters of word 4 of the reference code. These characters are the program return code (PRC), which indicates the RIO/HSL status. The leftmost four characters of word 7 indicate the RIO/HSL loop number (in hexadecimal format).

Table 114. Status indicated by the PRC

PRC	Indicated status
3204	A RIO error was detected, indicating that a RIO link failed. <ol style="list-style-type: none"> 1. To diagnose the error read through the transport manager flight recorder. 2. Check the failing link. If the link shows not to have failed, check the devices connected to either end of the link.
3205	During IPL, LIC determined that the loop was not complete. <ul style="list-style-type: none"> • This is expected if there are no I/O units on the loop. • This error can also occur when an I/O unit, shared I/O unit, or another system on the loop did not complete powering on by the time this system's LIC checked the loop for completeness. As a result, you may see this error in the serviceable event view you are working with. • When you find the same reference code logged from the same IPL against the same resource with a PRC of 3206 or 3208, the problem no longer exists. This can happen because the error was recovered when RIO/HSL hardware came on line, was properly configured, or the diagnostic code determined that there was not a problem based on the combination of machine types, features, configuration, and topology. In this case, you may close the problem entry. • In i5/OS, this error may also appear in the serviceable event view if any I/O units were removed from the loop without deleting the RIO/HSL I/O bridge resources of those units from Hardware Service Manager (HSM). The service procedure identified with the reference code that sent you here will help you determine if the loop is functioning correctly or if service is required. • This error may also be caused by a problem in a rack, frame, or unit connected to the RIO/HSL loop if the problem prevents the unit from powering on or being detected by LIC. Follow the service procedures for this reference code. When necessary, you may be directed to work on other reference codes before returning to this procedure.
3206	During normal operation an RIO/HSL loop recovered its redundant path. The loop is now complete.
3208	During normal operation an RIO/HSL I/O bridge recovered a failed link on the loop.
3209	See Indicated status for PRC 3209 below.
3210	An RIO/HSL link switched to a slower speed. The link is designed to run at a faster speed based on the link's hardware and LIC levels at both ends. If there is a FRU list in the serviceable event view, use it to complete the repair action. If not, perform the following sections of this procedure below: <ol style="list-style-type: none"> 1. Determining the RIO/HSL port label 2. Replacing the link's failing end point FRUs (replace only the "From Frame ID" end point FRU)

Indicated status for PRC 3209

Recoverable CRC (cyclical redundancy check) errors have occurred on the loop. This error requires service action. An RIO/HSL cable or connection must be exchanged. Exchange only the cable that appears in the FRU list of this reference code in this document. If you are working from the serviceable event view, then only the FRU(s) required for this error will be displayed.

Choose from the following scenarios:

- If there is a serviceable event view entry with a cable FRU listed with a loop number, enclosure/unit ID, and port label identified with the cable FRU, then perform one of the following:
 - If the cable is optical, it is possible the optical connections need cleaning. You can choose either to clean the cable connections at each end without exchanging the cable, or to exchange the cable. Use symbolic FRU "OPT_CLN" on page 720 for information on cleaning the connections. See Exchanging RIO/HSL cables to exchange the cable.
 - If the cable is copper, examine the screws that hold the connector at the end of the cable identified in the reference code or the first cable location listed in the serviceable event view entry. It is possible to get CRC errors when the connector screws are not tight. You can choose to tighten the cable connector screws without exchanging the cable only if they are loose. Otherwise, you must exchange the cable (see Exchanging RIO/HSL cables).

- If neither of these actions resolves the problem, replace the FRUs in the serviceable event view one at a time. See Finding part locations for the model or unit you are working on.

This ends the procedure.

- If the serviceable event view entry does not list any cable FRUs, then exchange the failing items listed in the serviceable event view entry by following the normal service procedures for those FRUs. This will be the case when the RIO/HSL connection is embedded. See Finding part locations for the model or unit you're working on.

This ends the procedure.

- If the serviceable event view entry has cable FRU(s) listed, but the loop number, enclosure/unit ID, and port label are not all listed with the cable FRU, go to Determining the RIO/HSL port label below.

Determining the RIO/HSL port label

Retrieve and record the following information:

- **Loop number.** The loop number is displayed in hexadecimal format as the four leftmost digits of word 7 in the reference code. Convert the loop number to decimal format using "DSA translation" on page 96. Record both the hexadecimal and decimal formats of the loop number. If the loop is an internal loop on a 515, 520, 525, or 570 (loops 0680, 0683, 0686, 0689 hexadecimal or 1664, 1667, 1670, 1673 decimal), then record "Internal".
- **Frame ID.** The frame ID is displayed in hexadecimal format as the four leftmost digits of word 5 of the reference code. You must convert the frame ID to decimal format to match what is displayed in user interfaces and problem views. Record both the hexadecimal and decimal formats of the frame ID. If the frame ID is not zero, then translate the frame ID into the correct machine type, model, and serial number by performing the following:
 1. Log on to SST/DST.
Attention: Do not IPL to DST.
 2. Select **Hardware Service Manager**.
 3. Select **Packaging resources**.
 4. Selecting **Display details** for each unit listed until the frame ID matches the ID you are working with. Once you find the matching frame ID, record the unit's machine type, model, and serial number.

Note: The frame has an ID of 0000 at this point in the procedure. A frame ID of zero is indicating the NIC/RIO controller in a system unit.

- **Port number indicator.** The port number indicator is the four rightmost digits of word 5 of the reference code.

Use the frame ID and port number indicator in the following table to determine the RIO/HSL port label. If you are referred to "Converting the loop number to NIC port location labels" on page 108, the failing item is in a system unit. You will need the RIO/HSL loop number to determine the FRU.

The following tables provide hub, port, and location code information for each of the currently supported models. This data is used to determine which RIO loop to use for the B7006981. The asterisk in the "Port indicator number" column indicates the leading port of the port pair.

Table 115. Determining which RIO/HSL port label to use on a 515, 520, 525, and 550

Model number	Loop number	Hub	Port indicator number	Location code
515, 520, and 525	1668	0	0*	"Internal"
			1	"Internal"
	1669		2*	P1-T4
			3	P1-T3
550	1668	0	0*	"Internal"
			1	"Internal"
	1669		2*	P1-T12
			3	P1-T11
	1676	4	0	P1-C6-T2 (In an expansion card not-onboard)
			1	P1-C6-T1 (In an expansion card not-onboard)

Table 116. Determining which RIO/HSL port label to use on a 570

Model number	Loop number	CEC	Hub	Port indicator number	Location code
570	1668	0	0	0*	"Internal" (Top CEC)
				1	"Internal"
	1669	0	0	2*	P1-T8
				3	P1-T9
	1676	0	4	0*	P1-C7-T2
				1	P1-C7-T1
570	1684	1	8	0*	"Internal" (Second down)
				1	"Internal"
	1685	1	8	2*	P1-T8
				3	P1-T9
	1692	1	12	0	P1-C7-T2
				1	P1-C7-T1
570	1700	2	16	0*	"Internal" (Third down)
				1	"Internal"
	1701	2	16	2*	P1-T8
				3	P1-T9
	1708	2	20	0	P1-C7-T2
				1	P1-C7-T1

Table 116. Determining which RIO/HSL port label to use on a 570 (continued)

Model number	Loop number	CEC	Hub	Port indicator number	Location code
570	1716	3	24	0*	"Internal" (Fourth down)
				1	"Internal"
	1717	3	24	2*	P1-T8
				3	P1-T9
	1724	3	28	0	P1-C7-T2
				1	P1-C7-T1

Table 117. Determining which RIO/HSL port label to use on a 575

Model number	Loop number	Hub	Port indicator number	Location code
575	1668	0	0*	"Internal"
			1	"Internal"
	1669		2*	P1-T7
			3	P1-T8

Table 118. Determining which RIO/HSL port label to use on a 590 and 595

Model number	Loop number	Hub	Port indicator number	Location code
590 / 0595	1668	0	0*	"Internal" FSPA
			1	"Internal"
	1669	0	2*	P1-C1-T1
			3	P1-C1-T2
	1670	1	0*	"Internal" FSPB
			1	"Internal"
	1671	1	2*	P1-C3-T1
			3	P1-C3-T2
	1672	2	2*	P1-C5-T1
			3	P1-C5-T2
	1674	3	2*	P1-C6-T1
			3	P1-C6-T2
	1676	4	2*	P1-C8-T1
			3	P1-C8-T2
	1678	5	2*	P1-C9-T1
			3	P1-C9-T2
	1680	6	2*	P1-C11-T1
			3	P1-C11-T2
	1682	7	2*	P1-C13-T1
			3	P1-C13-T2

Table 118. Determining which RIO/HSL port label to use on a 590 and 595 (continued)

Model number	Loop number	Hub	Port indicator number	Location code
590 / 0595	1684	8	0*	"Internal" FSB (Second node position)
			1	"Internal"
	1685	8	2*	P1-C1-T1
			3	P1-C1-T2
	1686	9	0*	"Internal" FSPA
			1	"Internal"
	1687	9	2*	P2-C3-T1
			3	P2-C3-T1
	1688	10	2*	P2-C5-T1 (Optional card, no HSL)
			3	P2-C5-T2
	1690	11	2*	P2-C6-T1 (Required empty airflow)
			3	P2-C6-T2
	1692	12	2*	P2-C8-T1
			3	P2-C8-T2
	1694	13	2*	P2-C9-T1
			3	P2-C9-T2
	1696	14	2*	P2-C11-T1
			3	P2-C11-T2
	1698	15	2*	P2-C13-T1
			3	P2-C13-T2
590 / 0595	1700	16	2*	P3-C1-T1 (Third position)
			3	P3-C1-T2
	1702	17	2*	P3-C3-T1
			3	P3-C3-T2
	1704	18	2*	P3-C5-T1
			3	P3-C5-T2
	1706	19	2*	P3-C6-T1
			3	P3-C6-T2
	1708	20	2*	P3-C8-T1
			3	P3-C8-T2
	1710	21	2*	P3-C9-T1
			3	P3-C9-T2
	1712	22	2*	P3-C11-T1
			3	P3-C11-T2
	1714	23	2*	P3-C13-T2
			3	P3-C13-T2

Table 118. Determining which RIO/HSL port label to use on a 590 and 595 (continued)

Model number	Loop number	Hub	Port indicator number	Location code
590 / 0595	1716	24	2*	P4-C1-T1
			3	P4-C1-T2
	1718	25	2*	P4-C3-T1
			3	P4-C3-T2
	1720	26	2*	P4-C5-T1
			3	P4-C5-T2
	1722	27	2*	P4-C6-T1
			3	P4-C6-T2
	1724	28	2*	P4-C8-T1
			3	P4-C8-T2
	1726	29	2*	P4-C9-T1
			3	P4-C9-T2
	1728	30	2*	P4-C131-T1
			3	P4-C11-T2
	1730	31	2*	P4-C13-T1
			3	P4-C13-T2

Note: For 570, exchange the FRU on the correct unit (primary or secondary) by matching the serial number (if available in the FRU list on the serviceable event view) or by matching the loop number to the correct unit using “Converting the loop number to NIC port location labels” on page 108.

Determining if the cable is the cause of the problem

If there is a cable attached to the failing port:

- If the cable is optical, it is possible the optical connections need cleaning. You can choose either to clean the cable connections at each end without exchanging the cable, or to exchange the cable. Use symbolic FRU “OPT_CLN” on page 720 for information on cleaning the connections. See Exchanging RIO/HSL cables to exchange the cable.
- If the cable is copper, examine the screws that hold the connector at the end of the cable identified in the reference code or the first cable location listed in the serviceable event view entry. It is possible to get CRC errors when the connector screws are not tight. You can choose to tighten the cable connector screws without exchanging the cable only if they are loose. Otherwise, you must exchange the cable (see Exchanging RIO/HSL cables).
- If neither of these actions resolves the problem, replace the cable. Perform “RIOIP08” on page 129 to determine the frame ID and RIO/HSL port label of the other end of the cable you will be exchanging (if you do not already know). Does this correct the problem?

Yes: This ends the procedure.

No: Continue with replacing the FRUs that the cable is connected to, starting with the FRU listed first.

Replacing the link’s failing end point FRUs

Use the following table to determine the end point FRUs on the “From Frame ID” port. Replace the FRUs one at a time.

If replacing the end point FRUs for the "From Frame ID" port does not resolve the error, use the table below to replace the end point FRUs at the other end of the cable. Perform "RIOIP08" on page 129 to determine the system or I/O unit frame ID and RIO/HSL port label of the other end of the cable (if you do not already know).

Table 119. End point FRUs

Model	Loop number (hexadecimal / decimal)	End point FRUs
515, 520, 525, 570	0680 / 1664	The loop is embedded in the system unit planar. Exchange the system unit planar using symbolic FRU "SYSBKPL" on page 758.
515, 520, 525, 570	0681 / 1665	For all port number values, the loop's NIC/RIO controller is embedded in the system unit planar. Exchange the system unit planar using symbolic FRU "SYSBKPL" on page 758.
570	0682 / 1666	For all port number values, the loop's NIC/RIO controller is in the NIC/RIO controller card. Exchange the NIC/RIO controller using symbolic FRU "SICNTRL" on page 736.
570	0683 / 16670686 / 16700689 / 1673	The loop is embedded in the system unit planar. Exchange the system unit planar using symbolic FRU "SYSBKPL" on page 758. Note: Exchange the FRU on the correct unit (primary or secondary) by matching the serial number (if available in the FRU list on the serviceable event view) or by matching the loop number to the correct unit using "Converting the loop number to NIC port location labels" on page 108.

This ends the procedure.

SLOTERR

The multi-adapter bridge detected a problem with a card location that it controls.

About this task

The problem is in the controls for the card slot. The card location may or may not have an installed card. If there is a card installed in that location, it may be the source of the problem. In some cases, the user interface view of the serviceable event will list more than one card position for this FRU's location. The problem may be with any one of the FRU's in those locations. When there is a list of locations in this FRU's location code, the card locations will be separated by commas. A range of card positions will show the starting card position, a colon, and the ending card position.

Note: Any IOPs plugged into slots owned by a Linux partition will not power on. This error will be logged. Correct the situation by removing the IOP cards.

1. Is there a single card position listed in the serviceable event user interface of an operating system, service processor, or the HMC for this failing item?

No: Continue with the next step.

Yes: Go to step 5 on page 755.

2. Is there a range of card positions (PCI bridge set) listed in the problem view for this failing item?

- **No:** Continue with the next step.

- **Yes:** LIC could not identify the slot with the error. Perform "MABIP03" on page 153 to determine the card position with the failure.

This ends the procedure.

3. Record the Direct Select Address (DSA), which is word 7 of the reference code from the problem view display.

4. Examine the multi-adapter bridge function number in the DSA (see “DSA translation” on page 96). Is the multi-adapter bridge function number less than or equal to 7?
 - **Yes:** Go to “MABIP53” on page 145 to locate the card, and then continue with the next step.
 - **No:** LIC could not identify the slot with the error. Perform “MABIP03” on page 153 to determine the card position with the failure.

This ends the procedure.

5. Does the reference code that sent you here appear more than once, or does another reference code with this symbolic FRU appear from the same IPL and against the same resource?
 - **Yes:** The failure is at the multi-adapter bridge. Do not use this symbolic FRU; instead, go to the next failing item in the list.

This ends the procedure.

- **No:** Locate the message in the following table to determine the problem and necessary corrective action.

Results

Table 120. Card slot errors

Problem or message	Meaning or corrective action
Slot unavailable due to 64-bit card in adjacent slot.	<p>The card location specified in the DSA is unavailable for the card installed there. Do not use that card location.</p> <p>The card location with a multi-adapter bridge function number one less than the multi-adapter bridge function number in the DSA has a 64-bit card installed. The 64-bit card is using the 32-bit PCI bus of the card location specified in the DSA.</p> <p>To determine the multi-adapter bridge function numbers and the card locations they specify, see “DSA translation” on page 96.</p>
LED control failure, do not use slot.	System code has detected a problem with the controls for the LED at the card location specified by the DSA. Do not use that card location.
Power control failure, do not use slot.	System code has detected a problem with the power controls at the card location specified by the DSA. Do not use that card location.
Multi-adapter bridge card slot error, do not use card slot.	System code has detected a problem with the controls at the card location specified by the DSA. Do not use that card location.

This ends the procedure.

SLOTUSE

The card in the given slot is not available for use.

1. Is the unit reference code 2250 or 2300?

No: Continue with step 3.

Yes: The first two characters in word 4 of the reference code will identify the platform LIC component that has control of the slot. Continue with the next step.

2. What is the value of the first two characters of word 4 of the reference code?

- **81:** The component that has control of the slot is concurrent maintenance. The concurrent maintenance procedure must complete before the partition will IPL. **This ends the procedure.**
- **02 or 03:** The component that has control of the slot is HMC service or HMC configuration. Make sure that HMC functions are not using the slot. **This ends the procedure.**
- **Other:** Contact your next level of support. **This ends the procedure.**

3. Is the unit reference code 2475?

No: Contact your next level of support. **This ends the procedure.**

Yes: Continue with the next step.

4. Look in the serviceable event view for part numbers and location codes associated with the card slot.

Note: There will not be a part number if the card slot is empty.

If the reference code is on the control panel, look in the FRU callout section of the reference code for the location of the card slot. Use the location information to see if a card is physically present in the card slot. Is a card physically present?


Yes: Exchange the failing card. **This ends the procedure.**

No: Use symbolic FRU "LPARCFG" on page 704 to reconfigure the card slot so that it is not a required resource to IPL the partition. **This ends the procedure.**

SNSDATA

Look here for information about SNSDATA symbolic FRU.

This is a portion of the SCSI sense data associated with the unit reference code (URC); it is not a failing item in and of itself. This data is referenced by certain failure isolation procedures within the All 3995

Publications and Documentation  Web site or the 3996 Maintenance Information shipped with the 3996 Optical Library.

SPBUS

The path to the service processor may be the failing item.

Look in the serviceable event view. Fix all B700 697x errors that occurred at approximately the same time. One of them will implicate the hardware that communicates with the service processor.

This ends the procedure.

SPNETWK

A connection between an HMC and either a service processor or BPC has been lost. The location code will identify the unit to which contact was lost.

1. If the ethernet switch is set to auto detect mode, go to step 2, otherwise set the ethernet switch to auto detect mode. **This ends the procedure.**

2. Is the system receiving power?

Yes: Continue with the next step.

No: Take the necessary action to restore power to the system. **This ends the procedure.**

3. Verify the system's connections to the HMC by choosing one of the following:

- **If you are working on a model 590 or 595,** verify that the cables listed below are seated and functioning properly at both ends. See Locations — models 590 and 595 for diagrams and port location information, and Model 590 and 595 cables should you need to replace one of the cables.
 - BPC A (front) port J00A to the HMC.
 - BPC A (front) port J00B to service processor 2 (on the right) port J03.
 - BPC A (front) port J00C to service processor 1 (on the right) port J03.
 - BPC B (back) port J00A to the redundant HMC (if applicable).

Note: BPC B must not be connected to the same HMC as BPC A.

- BPC B (back) port J00B to service processor 2 (on the right) port J04.
- BPC B (back) port J00C to service processor 1 (on the right) port J04.

- **If you are working on any other model,** verify the network connection between the service processor and the HMC. See Finding part locations for diagrams and port location information.

Does the problem persist?

Yes: Continue with the next step.

No: This ends the procedure.

4. Shut down the operating system for the server in preparation to reboot the server.

Note: If the server is a 575, 590, or 595 you must first shut down the server and then remove the power by using the UEPO switch on the frame. Removing the power by using the UEPO switch (for these models) causes the BPC to also request a new IP address from the DHCP server when the server reboots.

Reapply the power and boot the server. Does the problem persist?

Yes: Continue with the next step.

No: This ends the procedure.

5. Use "SVCPROC" to replace the service processor. If the problem persists, contact your next level of support.

Note: If the server is a model 575, 590, or 595 contact your next level of support before replacing the service processor.

This ends the procedure.

SPNLCRD

This symbolic FRU is no longer supported.

SRCTB1X

There is a failure detected by the power subsystem.

The complete FRU part number, procedure ID, or symbolic FRU could not be determined by the power subsystem firmware. This FRU in the serviceable event view may have a partial or complete location code that will assist you in the repair action. Go to (1xxx) System power control network (SPCN) reference codes and locate the SRC you are working on to service this problem.

STORIOA

Replace the storage I/O adapter.

About this task

Use the I/O adapter location information in the Service Action Log if it is available. If the location is not available, find the address of the I/O adapter (see System reference code (SRC) address formats). Use the address to find the location (see Finding part locations). After finding the adapter location go to PCI adapter removal and replacement procedures.

SVCDPCS

Look here for information about SVCDPCS symbolic FRU.

This symbolic FRU means that the service action is to read the description of the system reference code (SRC) in the list of system reference codes and perform any actions indicated there.

If you linked to this FRU from the SRC description in the list of system reference codes, then go back to the SRC description. Otherwise, see List of system reference codes and locate the SRC you are working on. Perform any actions indicated there.

SVCPROC

The service processor is failing.

After you have replaced the part, set the configuration ID for SPCN before powering up, otherwise the machine will not IPL. For more information, see Changing the processing unit identifier.

Use the table below to identify your machine type, model, and FRU, then click the associated link to find the service information for the specified FRU.

For B1xx SRCs:

To determine which service processor to replace on a model 9116-561, 570, 590, or 595, use the last byte in word 3 of the primary SRC.

- If the last byte is a 10, then replace the primary unit service processor for model 9116-561 or 570, or service processor 0 for model 590 or 595.
- If the last byte is a 20, then replace the secondary unit 1, service processor for model 9116-561 or 570, or service processor 1 for model 590 or 595.
- If the last byte is a 30, use one of the following methods to determine which service processor you need to replace:

If you have access to the Advanced System Management Interface (ASMI), log on and display the details of the service processor error log. Using the Platform Event Log id (shown in the first table of each detail of the log), look at the first byte.

- If the first byte is a 50, then replace the primary unit service processor for model 9116-561 or 570, or service processor 0 for model 590 or 595.
- If the first byte is a 51, then replace the secondary unit 1 service processor for model 9116-561 or 570, or service processor 1 for model 590 or 595.

If you have access to an Hardware Management Console (HMC), log in as PE user and bring up Manage Serviceable Events under the Service Focal Point screen. Display the events for the corresponding service processor system, then double-click the system to see the details. Look at the Field Platform log ID, which contains a decimal value that you need to convert to a hexadecimal value.

- If the first byte of the hexadecimal value is a 50, then replace the primary unit service processor for model 9116-561 or 570, or service processor 0 for model 590 or 595.
- If the first byte of the hexadecimal value is a 51, then replace the secondary unit 1 service processor for model 9116-561 or 570, or service processor 1 for model 590 or 595.

System model	Name of symbolic FRU to locate	FRU name	Link to locations information
A50 and 185	SVCPROC	System backplane	Locations — model 185 and A50
505	SVCPROC	System backplane	Locations — model 505
510, 51A, and OpenPower 710	SVCPROC	System backplane	Locations — model 510, 51A, and OpenPower 710
515, 520, 525, and 285	SVCPROC	Service processor card	Locations — Model 515, 520, 525, and 285
55x and OpenPower 720	SVCPROC	System backplane	Locations — 550, 55A, and OpenPower 720
9116-561 and 570	SVCPROC	Primary unit, Service processor Secondary unit 1, Service processor	Locations — Model 561 and 570
575	SVCPROC	System backplane	Locations — model 575
59x	SVCPROC	Service processor card 0 Service processor card 1	Locations — model 590 and 595

This ends the procedure.

SYSBKPL

The failing component is the system backplane.

After you have replaced the part, make sure to set the enclosure serial number before powering up, otherwise the machine will not IPL. For more information, see [Configuring I/O enclosures](#).

Use the table below to identify your machine type, model, and FRU, then click the associated link to find the service information for the specified FRU.

For B1xx SRCs:

To determine which system backplane to replace on models 561 and 570, use the last byte in word 3 of the primary SRC.

- If the last byte is a 10, then replace the primary unit, I/O backplane.
- If the last byte is a 20, then replace the secondary unit 1, I/O backplane.
- If the last byte is a 30, use one of the following methods to determine which backplane to replace:
If you have access to the Advanced System Management Interface (ASMI), log on and display the details of the service processor error log. Using the Platform Event Log id (shown in the first table of each detail of the log), look at the first byte.
 - If the first byte is a 50, then replace the primary unit, I/O backplane.
 - If the first byte is a 51, then replace the secondary unit 1, I/O backplane.

If you have access to an Hardware Management Console (HMC), log in as PE user and bring up Manage Serviceable Events under the Service Focal Point screen. Display the events for the corresponding service processor system, then double-click the system to see the details. Look at the Field Platform log ID, which contains a decimal value that you need to convert to a hexadecimal value.

- If the first byte of the hexadecimal value is a 50, then replace the primary unit, I/O backplane.
- If the first byte of the hexadecimal value is a 51, then replace the secondary unit 1, I/O backplane.

Table 121. Backplane service information

System model	Symbolic FRU to find	FRU to exchange	Link to locations information
285, 515, and 52x	SYSBKPL	System backplane	Locations — model 515, 520, 525, 52A and 285
505	SYSBKPL	System backplane	Locations — model 505
510, 51A, and OpenPower 710	SYSBKPL	System backplane	Locations — model 510, 51A, and OpenPower 710
55x and OpenPower 720	SYSBKPL	System backplane	Locations — model 550, 55A, and OpenPower 720
561 and 570	SYSBKPL	Primary unit, I/O backplane Secondary unit, I/O backplane	Locations — model 561 and 570
575	SYSBKPL	System backplane	Locations — model 575
59x	SYSBKPL	System backplane	Locations — model 590 and 595

SYSBKPL2

The failing component is the system backplane.

Use the table below to identify your machine type, model, and FRU, then click the associated link to find the service information for the specified FRU.

Table 122. Backplane service information

System model	Symbolic FRU to find	FRU to exchange	Link to locations information
185 and A50	SYSBKPL	System backplane	Locations — model 185 and A50

SYSNTWK

There has been a network adapter failure on this HMC.

1. Check the amber port LEDs. Are all of the amber LEDs blinking?

Yes: One of the ports is not properly configured. Go to Configuring the HMC. **This ends the procedure.**

No: The port with the unlit amber LED is experiencing the problem. Continue with the next step.

2. Ensure that the port is properly defined.
3. Run PC Doctor diagnostics (see HMC diagnostics overview) to determine which resource is failing, and then replace that failing resource.

Results

This ends the procedure.

TAPCLN

Clean the tape unit.

TAPCNFG

Look here for information about TAPCNFG symbolic FRU.

One of the following configuration problems was detected:

- Tape and disk devices are attached to an I/O processor or IOA that does not support tape and disk devices at the same time.
- An unsupported device type or model is attached.

Correct the configuration problem before exchanging any parts.

TOD

This symbolic FRU is no longer supported.

See symbolic FRU “TOD_BAT” instead.

TOD_BAT

The battery for the time-of-day battery is low or failing.

Use the table below to determine which FRU to replace and how to replace it.

For B1xx SRCs:

To determine which Time-of-day (TOD) battery to replace on a model 570, 590, or 595, use the last byte in word 3 of the primary SRC.

- If the last byte is a 10, then replace the TOD battery on the primary unit, service processor for model 570 or service processor 0 for model 590 or 595.
- If the last byte is a 20, then replace the TOD battery on the secondary unit 1, service processor for model 570 or service processor 1 for model 590 or 595.

- If the last byte is a 30, use one of the following methods to determine which TOD battery you need to replace:

If you have access to the Advanced System Management Interface (ASMI), log on and display the details of the service processor error log. Using the Platform Event Log id (shown in the first table of each detail of the log), look at the first byte.

- If the first byte is a 50, then replace the TOD battery on the primary unit service processor for model 570 or the TOD battery on service processor 0 for model 590 or 595.
- If the first byte is a 51, then replace the TOD battery on the secondary unit 1 service processor for model 570 or the TOD battery on service processor 1 for model 590 or 595.

If you have access to an Hardware Management Console (HMC), log in as PE user and bring up Manage Serviceable Events under the Service Focal Point screen. Display the events for the corresponding service processor system, then double-click the system to see the details. Look at the Field Platform log ID, which contains a decimal value that you need to convert to a hexadecimal value.

- If the first byte of the hexadecimal value is a 50, then replace the TOD battery on the primary unit service processor for model 570 or the TOD battery on service processor 0 for model 590 or 595.
- If the first byte of the hexadecimal value is a 51, then replace the TOD battery on the secondary unit 1 service processor for model 570 or the TOD battery on service processor 1 for model 590 or 595.

System model	Name of symbolic FRU to locate	FRU name	Link to locations information
505	TOD_BAT	Time-of-day (TOD) battery	Locations — model 505
510 and OpenPower 710	TOD_BAT	Time-of-day (TOD) battery	Locations — model 510 and OpenPower 710
520	TOD_BAT	Time-of-day (TOD) battery	Locations — Model 520
550 and OpenPower 720	TOD_BAT	Time-of-day (TOD) battery	Locations — OpenPower 720 and Model 550
570	TOD_BAT	Primary unit, Time-of-day (TOD) battery Secondary unit 1, Time-of-day (TOD) battery	Locations — Model 570
575	TOD_BAT	Time-of-day (TOD) battery	Locations — model 575
590 and 595	TOD_BAT	Service processor card 0 Service processor card 1	Locations — model 590 and 595

This ends the procedure.

TOPORT

The RIO/HSL adapter or controller on one end of the link may be the failing item.

About this task

If you were sent to this procedure as a result of a B700 6985 SRC, and this is the only FRU in the FRU list, then the following conditions have occurred:

- The system cannot see any I/O units on a RIO/HSL loop
- At least one cable is attached to a port on that loop

In this case, go to (A7xx, B7xx) Licensed Internal Code (LIC) Reference Codes and work from the full FRU list provided there.

Note: The other end of the link may be given in the symbolic FRU “FRPORT” on page 654.

Note: For this procedure, the terms “HSL I/O bridge” and “RIO adapter” are interchangeable.

1. Record the bus number (BBBB) in word 7 of the reference code (see "Breaking down a RIO/HSL or PCI bus reference code" on page 95).
2. Use one of the following procedures to find the failing RIO/HSL adapter:
 - "Finding the failing RIO/HSL adapter using i5/OS"
 - "Finding the failing RIO/HSL adapter using AIX or Linux"
 - "Finding the failing RIO/HSL adapter using the HMC" on page 763

Finding the failing RIO/HSL adapter using i5/OS:

1. Sign on to SST or DST if you have not already done so.
2. Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **High-speed link (HSL) resources**.
3. Select **Include non-reporting resources** then click **Display detail** for the RIO/HSL loop that you want to examine. The loop number is the number from word 7 of the reference code above.
4. The display that appears shows the port status of the Network Interface Controller (NIC) for the loop that you selected. Record the resource name, type-model, and serial number.
5. If the status of the "Leading port to next resource" is *operational*, then select **Follow Leading Port**. Repeat this action until the status changes to *failed*. Does the resource name ever match the one recorded in the previous step?

Yes: You have traveled around the loop and did not find a failed link. **This ends the procedure.**

No: Continue with the next step.
6. When the status is *failed*, you have found the *from* port. Select **Follow Leading Port** one more time, which moves to the *to* port.
7. Record the following information of this resource:
 - a. Resource name, card type and model, and part number
 - b. Link status of each port (make sure to note if a port is designated as internal)
8. Select **Cancel** to return to the Work with High-speed link (HSL) resources display.
9. For the loop with the failure, select **Resources associated with loop**.
10. For the HSL I/O bridge with the resource name that you recorded, select **Associated packaging resources**.
11. Select **Display detail** and record the location for the first failing resource.
12. Go to Finding part locations, select the model or expansion unit you are working with, and find the location in the locations tables to find the replacement procedure and physical location of the FRU. **This ends the procedure.**

Finding the failing RIO/HSL adapter using AIX or Linux:

1. Determine which RIO/HSL loop the failing adapter is on (see "Converting the loop number to NIC port location labels" on page 108).
2. Identify each unit in the loop by following the cable.
3. Power down the system and remove all expansion units in the loop that starts and ends at the ports given in the previous step. If there is a base I/O unit on that loop, leave only that unit connected to the system unit.
4. Power on the system to partition standby and check for the same SRC that sent you here. Did the SRC reoccur?

No: Power down the system and add the next unit in the original loop. Repeat step 3.

Yes: The RIO/HSL adapter in the last I/O unit added is possibly the failing item. Use the RIO/HSL adapter information in the locations tables for the unit with the possible failing RIO/HSL adapter and go to Finding part locations. Select the model or expansion unit you are working with, and find the location in the locations tables to determine the replacement procedure and physical location of the FRU. **This ends the procedure.**

Finding the failing RIO/HSL adapter using the HMC:

1. Select the **Service Utilities** task.
2. In the Service Utilities window, click the system you are working on. Then, from the selected drop down menu, select **View RIO Topology**.
3. In the Current Topology area, scroll down until you find data for the RIO/HSL loop number with which you are working.
4. Each line in that RIO/HSL loop represents a RIO/HSL adapter. Find the first one with a trailing port status of *failed*. Use that adapter information, and go to Finding part locations. Select the model or expansion unit with which you are working, and find the location in the locations tables to determine the replacement procedure and physical location of the FRU.

Results

This ends the procedure.

TWRBKPL

The failing item is the tower card in an I/O unit.

1. Are you working from the serviceable event view and a card location is listed with this failing item?
Yes: Then the listed card location is where the error is located. Continue with the next step.
No: Record the bus number value, BBBB, in word 7 of the reference code (see “DSA translation” on page 96). Search for the bus number in the HMC’s or operating system’s resource and configuration interfaces or the System Configuration Listing to determine which unit contains the failing item. Continue with the next step.
2. The failing item is built into the backplane PCI card planar of the I/O unit. Use the table below to determine the appropriate service information.

I/O unit	FRU to exchange	Symbolic FRU	Link to locations information
5095, 0595	Backplane	TWRBKPL	Locations — 5095 and 0595 expansion units

Results

This ends the procedure.

TWRCARD

A SPCN card might be failing. The SPCN card can be on either an adapter style card or integrated on the system backplane.

About this task

Perform the following to service this FRU.

1. Are you here because your system produced system reference code (SRC) 1100 00AD?
 - **No:** Continue to the next step.
 - **Yes:** Yes.
 - The 1100 00AD SRC might be caused by the service processor being intentionally reset. An intentional reset is caused by actions like a pin hole reset, ASMI or part replacements. An intentional reset requires no service action.
 - If your system produced the 1100 00AD SRC and no intentional reset was the cause of this SRC, go to the next step.
2. A SPCN card might be failing. The SPCN card is located either on an adapter style card or integrated on the system backplane

Note:

Examine the location code of this FRU in the serviceable event screen you are working with to determine the unit's type and model (see Location codes). Locate the unit's type and model in the table below to determine the correct service action.

3. Is the system reference code (SRC) 1xxx 5000 or 1xxx 5001?
 - **No:** Continue to the next step.
 - **Yes:** Yes.
 - For SRC 1xxx 5000:
 - For model 9116-561 and 570, replace the service processor in Unit 1 (see Locations — model 570 locations information)
 - For model 59x, replace service processor 0 (see Locations — model 590 or 595)
 - For SRC 1xxx 5001:
 - For model 9116-561 or 570, replace the service processor in Unit 2 (see Locations — model 570 locations information)
 - For model 59x, replace service processor 1 (see Locations — model 590 or 595)
4. Verify that all cables are seated correctly.
5. Examine the location code of this FRU in the serviceable event view you are working with to determine the unit's type and model (see Location codes). Is the failing SPCN card in the system unit?
 - **No:** Go to step 7.
 - **Yes:** Choose from the following:
 - If you are working on a model 505, 510, 51A, 55x, OpenPower 710 or OpenPower 720, replace the system backplane (see “SYSBKPL” on page 758). **This ends the procedure.**
 - If you are working on a model 285, 515, 520, 525, 561, 570, or 59x, replace the service processor card (see Finding part locations to locate and replace the card) and then continue with the next step.
 - If you are working on a model 575, replace the system backplane (see Locations — model 575). **This ends the procedure.**
6. Does the same reference code still occur?
 - No: This ends the procedure.**
 - Yes:** Replace the backplane (see “SYSBKPL” on page 758). **This ends the procedure.**
7. The failing SPCN card is in a secondary expansion unit or base I/O unit. Find the failing unit in the following table, and use the link to locations information to locate and replace the failing item.

Attention: For SRC 1xxx 8910 or 8920, ac removal is required to reset the flashing (frame-indicating) LEDs that are located on the TWRCARD.

Expansion unit	Failing unit description	Symbolic FRU in locations table	Link to locations information
5074, 8079-002, 8093-002	The SPCN card is part of the tower backplane assembly.	TWRCARD	Locations — 5074, 8079-002, and 8093-002 expansion I/O units
5079	The SPCN card is part of the tower backplane assembly.	TWRCARD	Locations — 5079 expansion I/O unit
5088, 0588(If the last 4 characters of word 1 are 7610, 7611, 7620, 7621, 7630, 7631, 7640, or 7641.)	Replace the following one at a time: <ol style="list-style-type: none">1. AMD controller card2. Tower backplane	<ol style="list-style-type: none">1. AMDCTRL2. TWRCARD	Locations — 5088 and 0588 expansion I/O units

Expansion unit	Failing unit description	Symbolic FRU in locations table	Link to locations information
5088, 0588(If the last 4 characters of word 1 are not 7610, 7611, 7620, 7621, 7630, 7631, 7640, or 7641.)	The SPCN card is part of the tower backplane assembly.	TWRCARD	Locations — 5088 and 0588 expansion I/O units
5094, 5294, 8094-002	The SPCN card is part of the tower backplane assembly.	TWRCARD	Locations — 5094, 5294, and 8094-002 expansion I/O units
5095, 0595	The SPCN card is part of the tower backplane assembly.	TWRCARD	Locations — 5095 and 0595 expansion I/O units
7311-D10, 7311-D11, and 5790	The SPCN card is part of the I/O backplane.	TWRCARD	Locations — 7311-D10, 7311-D11, and 5790 expansion units
7311-D20	The SPCN card is part of the I/O backplane.	TWRCARD	Locations — D20 expansion unit
Type 1519 xSeries server	Integrated xSeries adapter card (IXA)		Locations — Integrated xSeries adapter card (IXA)

Results

This ends the procedure.

TWRPLNR

The failing component is in the PCI planar board of an I/O unit.

- Are you working from the serviceable event view and a card location is listed with this failing item?

Yes: Then the listed card location is where the error is located. Continue with the next step.

No: Record the bus number value, BBBB, in word 7 of the reference code (see “DSA translation” on page 96). Search for the bus number in the HMC’s or operating system’s resource and configuration interfaces or the System Configuration Listing to determine which unit contains the failing item. Record the unit type and model. Continue with the next step.

- Use the table below to determine the appropriate service information.

Table 123. Failing component service information for TWRPLNR

Unit type	Symbolic FRU to locate	FRU name	Link to locations information
5074, 8079-002, 8093-002	TWRPLNR	Expansion unit backplane	Locations — 5074, 8079-002, and 8093-002 expansion units
5079	TWRPLNR	Expansion unit backplane	Locations — 5079 expansion unit
5088, 0588	TWRPLNR	Expansion unit backplane	Locations — 0588 and 5088 expansion units
5094, 5294, 8094-002	TWRPLNR	Expansion unit backplane	Locations — 5094, 5294, and 8094-002 expansion units
5791, 5794, and 7040-7040-61D	TWRPLNR	Backplane 1 (not the riser)	Locations — 5791, 5794, and 7040-7040-61D expansion units
		Backplane 2 (not the riser)	
7311-D10, 7311-D11, and 5790	TWRPLNR	I/O backplane	Locations — 7311-D10, 7311-D11, and 5790 expansion units

Table 123. Failing component service information for TWRPLNR (continued)

Unit type	Symbolic FRU to locate	FRU name	Link to locations information
7311-D20	TWRPLNR	Backplane	Locations — 7311-D20 expansion unit

Results

This ends the procedure.

UC235

The problem may be that the card (a resource) was removed from the card enclosure without updating the system configuration records.

Note: If the system has OptiConnect, verify that the remote system was powered on at the time of the failure.

To update the system configuration records select **Hardware System Manager** → **Logical Hardware Resources** → **System Bus Resources** → **Non-reporting Resources** → **Remove**.

This ends the procedure.

UC236

The problem may be that the card (a resource) is not correctly plugged into the card enclosure.

Use the location information associated with this failing component in the Service Action Log entry and verify that the card is installed properly.

UG3AS

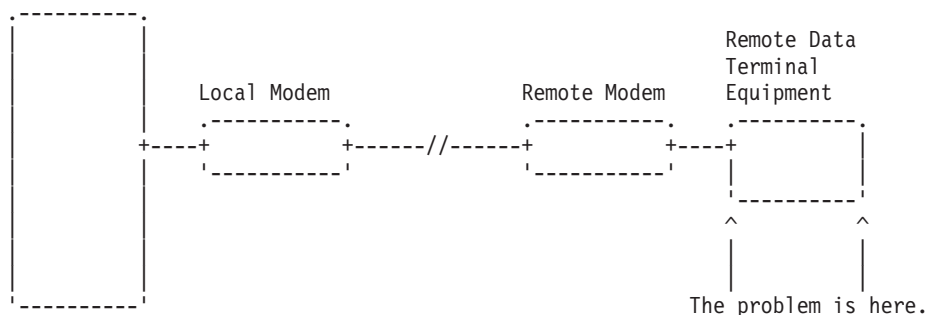
An error has been detected in the licensed internal code.

Contact your next level of support for possible corrective actions.

UJ0E2

The problem has been isolated to the remote data terminal equipment.

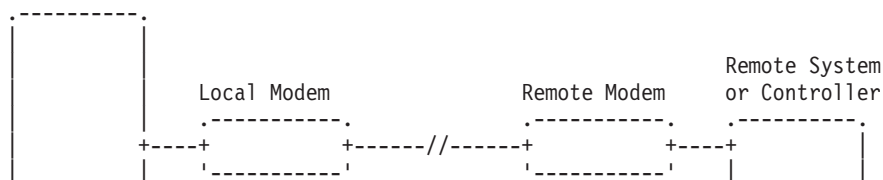
Local System

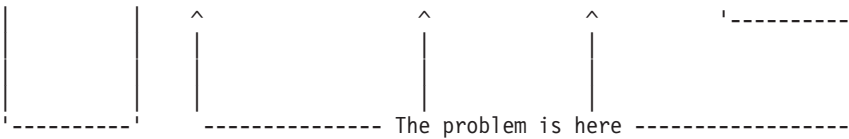


UJ0E3

The problem has been isolated to the local modem or the hardware that links to the remote end.

Local System

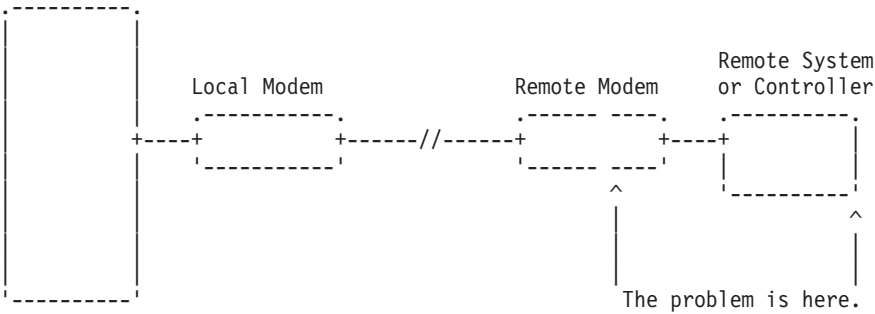




UJ0E6

The problem has been isolated to the remote modem, or the remote system or controller.

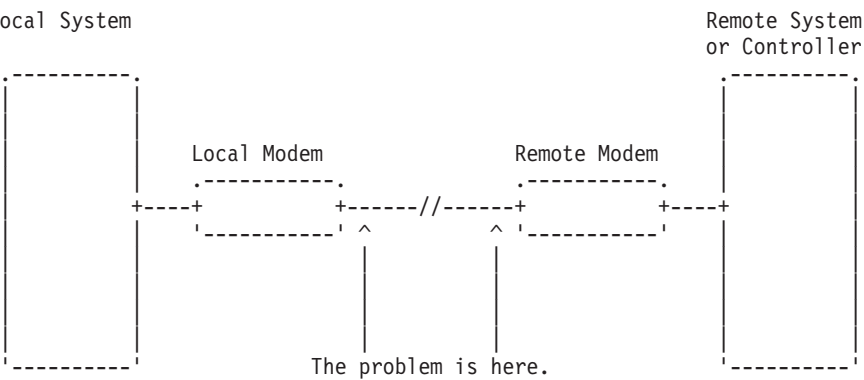
Local System



UJ0E7

The problem has been isolated to the telephone line equipment that links the local and the remote equipment.

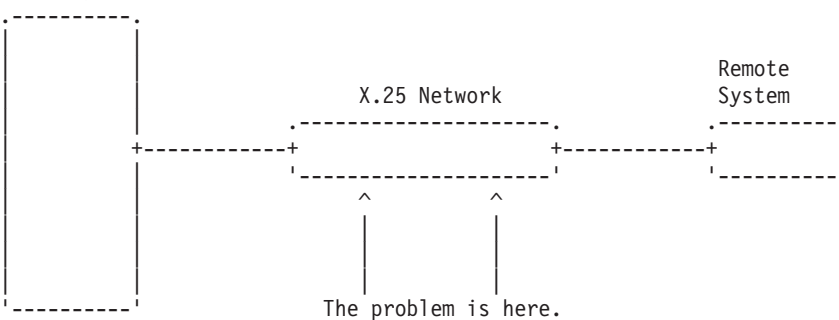
Local System



UJ0E9

The problem has been isolated to the X.25 network.

Local System



UJ6P3

An error occurred in the Facsimile Support/400 Licensed Program. Please contact your next level of support for possible corrective actions.

Find additional information on Facsimile Support for OS/400® in the Application System Facsimile Support for OS/400 User's Guide.

UJ9GC

The configuration for the wireless network has been identified as a cause of the problem.

The following parameters must be the same for the entire network:

- Frequency
- Data rate
- Radio system identifier

The configuration for one or more of the following will need to be changed:

- i5/OS line description
- Access points
- Remote devices

UJA32, UJC38

The communication line or the automatic call unit is already being used.

About this task

Perform the following:

1. Use the documentation that came with your automatic call unit to verify that the unit is configured correctly.
2. Make sure that the telephone line attached to your automatic call unit is not being used by another job.

Results

This ends the procedure.

UJA33, UJP37

The problem can be caused by too many active lines using the same input/output processor (IOP) card or by setting the line speed too high.

About this task

Perform the following to find which active lines use the same IOP, and to correct the problem:

1. Vary off the failing line using the VRYCFG command.
2. Vary the line on again, with the reset option of the VRYCFG command set to **Yes**. The active lines using that IOP will be displayed with their line speeds.
3. Determine if there are too many lines using the IOP, or if the line speeds are too high.
4. Correct the configuration as needed.

Results

This ends the procedure.

UJA34

A configuration parameter may be incorrect.

To determine the configuration parameter that was identified as a possible problem, search for the error in the Service Action Log (see “Using the Service Action Log” on page 32) and display the failing item information for the error. The failing item description associated with this symbolic FRU identifies the parameter that may be the problem.

The line configuration parameter that was identified as a possible problem can be changed by using the WRKLIND command. Determine if the suspected configuration parameter is wrong and change if necessary. For more information about commands related to communications, see CL command finder in the iSeries Information Center.

Some software problems can be temporarily solved by changing the configuration parameter, even if the original value was correct. Report this problem to your service representative if you use this temporary change.

UJA35

A configuration parameter may be incorrect.

To determine the configuration parameter that was identified as a possible problem, search for the error in the Service Action Log (see "Using the Service Action Log" on page 32) and display the failing item information for the error. The failing item description associated with this symbolic FRU identifies the parameter that may be the problem.

The configuration parameter that was identified as a possible problem can be verified by displaying the synchronous data link control (SDLC) controller description with the DSPCTLD command.

The controller description was created by the CRTCTLAPPC, CRTCTLFNC, CRTCTLHOST, or CRTCTLRWS command. You may need to review the appropriate command information to determine if the configuration parameter is wrong.

For more information about commands related to communications, see the CL command finder in the iSeries Information Center.

Some software problems can be temporarily solved by changing the configuration parameter, even if the original value was correct. Report this problem to your service representative if you use this temporary change.

UJA36

A configuration parameter may be incorrect.

To determine the configuration parameter that was identified as a possible problem, search for the error in the Service Action Log (see "Using the Service Action Log" on page 32) and display the failing item information for the error. The failing item description associated with this symbolic FRU identifies the parameter that may be the problem.

The configuration parameter that was identified as a possible problem can be verified by displaying the X.25 line description with the DSPLIND command.

The line description was created by the CRTLINX25 command. You may need to review the appropriate command information to determine if the configuration parameter is wrong.

For more information about commands related to communications, see the CL command finder in the iSeries Information Center.

Some software problems can be temporarily solved by changing the configuration parameter, even if the original value was correct. Report this problem to your service representative if you use this temporary change.

UJB35

A configuration parameter may be incorrect.

To determine the configuration parameter that was identified as a possible problem, search for the error in the Service Action Log (see “Using the Service Action Log” on page 32) and display the failing item information for the error. The failing item description associated with this symbolic FRU identifies the parameter that may be the problem.

The configuration parameter that was identified as a possible problem can be verified by displaying the binary synchronous line description with the DSPLIND command.

The line description was created by the CRTLINBSC command. You may need to review the appropriate command information to determine if the configuration parameter is wrong.

For more information about commands related to communications, see the CL command finder in the iSeries Information Center.

Some software problems can be temporarily solved by changing the configuration parameter, even if the original value was correct. Report this problem to your service representative if you use this temporary change.

UJB36

A configuration parameter may be incorrect.

To determine the configuration parameter that was identified as a possible problem, search for the error in the Service Action Log (see “Using the Service Action Log” on page 32) and display the failing item information for the error. The failing item description associated with this symbolic FRU identifies the parameter that may be the problem.

The configuration parameter that was identified as a possible problem can be verified by displaying the binary synchronous control unit description with the DSPCTLD command.

The controller description was created by the CRTCTLBSC command. You may need to review the appropriate command information to determine if the configuration parameter is wrong.

For more information about commands related to communications, see the CL command finder in the iSeries Information Center.

Some software problems can be temporarily solved by changing the configuration parameter, even if the original value was correct. Report this problem to your service representative if you use this temporary change.

UJC35

A configuration parameter may be incorrect.

To determine the configuration parameter that was identified as a possible problem, search for the error in the Service Action Log (see “Using the Service Action Log” on page 32) and display the failing item information for the error. The failing item description associated with this symbolic FRU identifies the parameter that may be the problem.

The configuration parameter that was identified as a possible problem can be verified by displaying the IDLC line description with the DSPLINID command.

The line description was created by the CRTLINASC command. You may need to review the CRTLINASC command information to determine if the configuration parameter is wrong.

Information about commands related to communications can be found in the following manuals:

- CL Programming, SC41-5721-03
- Communications Configuration, SC41-5401-00

Some software problems can be temporarily solved by changing the configuration parameter, even if the original value was correct. Report this problem to your service representative if you see this temporary change.

UJC36

A configuration parameter may be incorrect.

To determine the configuration parameter that was identified as a possible problem, search for the error in the Service Action Log (see “Using the Service Action Log” on page 32) and display the failing item information for the error. The failing item description associated with this symbolic FRU identifies the parameter that may be the problem.

The configuration parameter that was identified as a possible problem can be verified by displaying the asynchronous control unit description with the DSPCTLD command.

The control unit description was created by the CRTCTLASC command. You may need to review the CRTCTLASC command information to determine if the suspected configuration parameter is wrong.

Information about commands related to communications can be found in the following manuals:

- CL Programming, SC41-5721-03
- Communications Configuration, SC41-5401-00

Some software problems can be temporarily solved by changing the configuration parameter, even if the original value was correct. Report this problem to your service representative if you see this temporary change.

UJE31

There could be a problem with the Token-Ring Network Manager program.

Contact the token-ring administrator responsible for your network.

UJE32

There could be a problem with the Token-Ring Network Management function.

Contact the token-ring administrator responsible for your network.

UJE33

The token-ring adapter returned status information because it has received a beacon frame from the token-ring network.

The line is still operational; however, if this problem occurs often, you may want to refer to Physical site planning for information about the electrical requirements and noise problem considerations.

UJE34

The error message may have been logged from a temporary error that is not caused by equipment failure.

This type of error message sometimes contains information about system performance. See the original system message for cause and recovery information about the error.

UJE35

A configuration parameter may be incorrect.

To determine the configuration parameter that was identified as a possible problem, search for the error in the Service Action Log (see “Using the Service Action Log” on page 32) and display the failing item information for the error. The failing item description associated with this symbolic FRU identifies the parameter that may be the problem.

The configuration parameter that was identified as a possible problem can be verified by displaying the local area network line description with the DSPLIND command.

The line description was created by the CRTLINTRN, CRTLINETH, or CRTLINDDI command. You may need to review the appropriate command information to determine if the configuration parameter is wrong.

For more information about commands related to communications, see the CL command finder in the iSeries Information Center.

Some software problems can be temporarily solved by changing the configuration parameter, even if the original value was correct. Report this problem to your service representative if you use this temporary change.

UJE36

A configuration parameter may be incorrect.

To determine the configuration parameter that was identified as a possible problem, search for the error in the Service Action Log (see "Using the Service Action Log" on page 32) and display the failing item information for the error. The failing item description associated with this symbolic FRU identifies the parameter that may be the problem.

The configuration parameter that was identified as a possible problem can be verified by displaying the local area network control unit description with the DSPCTLD command.

The controller description was created by the CRTCTLAPPC, CRTCTLHOST, or CRTCTLRWS command. You may need to review the appropriate command information to determine if the configuration parameter is wrong.

For more information about commands related to communications, see the CL command finder in the iSeries Information Center.

Some software problems can be temporarily solved by changing the configuration parameter, even if the original value was correct. Report this problem to your service representative if you use this temporary change.

UJE37

The problem may be at the remote site.

About this task

Perform the following:

1. Ask the remote site operator to verify the following:
 - The remote equipment is powered on and ready.
 - The configuration values are correct.
 - The local area network cables are securely connected and are not damaged.
2. If the problem continues, run all available diagnostic tests on the remote equipment and perform the repair action specified.

Results

This ends the procedure.

UJE38

Too many jobs are running that use the communications controller.

About this task

Before you can run your communications job, you must do one or more of the following:

- End any diagnostic program that may be running, such as the Communications Trace Program.
- Vary off a line that is using the controller.
- Lower the speed of a line that uses the controller.

Perform the following to find which lines are using the controller:

1. Vary off the failing line using the VRYCFG command.
2. Vary the line on again, with the reset option of the VRYCFG command set to **Yes**. The names of the lines using the controller will be displayed.

Results

This ends the procedure.

UJE39

The problem may be at the remote site.

About this task

Perform the following:

1. Ask the remote site operator to verify the following:
 - The remote equipment is powered on and ready.
 - The configuration values are correct.
2. If the problem continues, run all available diagnostic tests on the remote equipment and perform the repair action specified.

Results

This ends the procedure.

UJE40

The problem may be at the remote site or on the network media.

About this task

Perform the following:

1. Ask the remote site operator to verify the following:
 - The remote equipment is powered on and ready.
 - The configuration values are correct.
 - The local area network cables are securely connected and are not damaged.
2. If the problem continues, run all available diagnostic tests on the remote equipment and perform the repair action specified.

Results

This ends the procedure.

UJJ35

A configuration parameter may be incorrect.

To determine the configuration parameter that was identified as a possible problem, search for the error in the Service Action Log (see “Using the Service Action Log” on page 32) and display the failing item information for the error. The failing item description associated with this symbolic FRU identifies the parameter that may be the problem.

The configuration parameter that was identified as a possible problem can be verified by displaying the X.25 line description with the DSPLIND command.

The line description was created by the CRTLINX25 command. You may need to review the appropriate command information to determine if the configuration parameter is wrong.

For more information about commands related to communications, see the CL command finder in the iSeries Information Center.

Some software problems can be temporarily solved by changing the configuration parameter, even if the original value was correct. Report this problem to your service representative if you use this temporary change.

UJJ36

A configuration parameter may be incorrect.

To determine the configuration parameter that was identified as a possible problem, search for the error in the Service Action Log (see “Using the Service Action Log” on page 32) and display the failing item information for the error. The failing item description associated with this symbolic FRU identifies the parameter that may be the problem.

The configuration parameter that was identified as a possible problem can be verified by displaying the X.25 control unit description with the DSPCTLD command.

The controller description was created by the CRTCTLAPPC, CRTCTLFNC, CRTCTLHOST, CRTCTLRWS, or CRTCTLASC command. You may need to review the appropriate command information to determine if the configuration parameter is wrong.

For more information about commands related to communications, see the CL command finder in the iSeries Information Center.

Some software problems can be temporarily solved by changing the configuration parameter, even if the original value was correct. Report this problem to your service representative if you use this temporary change.

UJJ37

The error message may have been logged from a temporary error that is not caused by equipment failure.

This type of error message sometimes contains information about system performance. See the original system message for cause and recovery information about the error.

UJJ38

A user specified X.25 facility, such as packet size, window size, reverse charging, or closed user group, may not have been correctly assigned.

UJJ39

Look here for information about UJJ39 symbolic FRU.

Refer to Configure your iSeries server for communications in the IBM eServer iSeries Information Center.

ULNZ3

The problem may be a communications line problem.

When a workstation is attached to the system through modems, it may fail or lose communication with the system for various lengths of time. This is due to a communications line problem. Refer to the modem service information to determine how to test the modems and verify that the communications line between the modems is working correctly.

ULNZ4

Independent workstation and SDLC support.

The system considers an independent workstation to be an attached remote system when it is attached using PC Support asynchronous communications on an ASCII workstation controller.

Perform the following:

- See the *ASCII Work Station Reference*, SA41-3130-00 information for instructions on how to verify that the remote system (independent workstation) that is attached to the failing port is a supported device.
- See the device hardware maintenance and service information for instructions on how to verify that the device is working correctly.

UNM31

A configuration parameter may be incorrect.

To determine the configuration parameter that was identified as a possible problem, search for the error in the Service Action Log (see "Using the Service Action Log" on page 32) and display the failing item information for the error. The failing item description associated with this symbolic FRU identifies the parameter that may be the problem.

The configuration parameter that was identified as a possible problem can be verified by displaying the ISDN network interface description with the DSPNWIISDN command.

The line description was created by the CRTNWIISDN command. You may need to review the appropriate command information to determine if the configuration parameter is wrong.

For more information about commands related to communications, see the CL command finder in the iSeries Information Center.

Some software problems can be temporarily solved by changing the configuration parameter, even if the original value was correct. Report this problem to your service representative if you use this temporary change.

UNM32

The licensed internal code of the communications I/O card cannot obtain a necessary resource because of a heavy workload.

This can be caused by too many configured stations, too many users, maximum inbound or outbound data sizes, as well as other considerations.

Try to reduce the total workload on the communications I/O controller card by performing one of the following:

- Change the communications configuration
- Vary off any unused lines
- End any service functions that are not needed

UNM35

There could be a problem at the remote U interface, between the NT1 node and the Integrated Services Digital Network (ISDN).

This interface is a 2-wire connection between the NT1 node and the ISDN. Contact your ISDN provider and have them verify the proper operation of the interface.

UNM36

There may be a problem in the Integrated Services Digital Network (ISDN).

Contact your ISDN service provider and report the problem.

UNM38

The required program temporary fix (PTF) is not installed.

To use the specified network type, you must first install a PTF. If the PTF has not been previously installed, install it and try the operation again.

UNP20

The internal code of the I/O card that detected the error may be defective.

About this task

Perform the following:

1. Replace the suspected card.
2. If the failure occurs again, contact your next level of support and report the problem.

Results

This ends the procedure.

UNU01

Electrical noise in the local environment can cause performance degradation or loss of an ISDN communications link.

About this task

Motors, electrical devices, power cables, communications cables, radio transmitters, and magnetic devices can cause noise or electrical interference.

Perform the following:

1. Inspect ISDN cables or wiring located near a source of possible noise or electrical interference.
2. Inspect ISDN cables for damage, incorrect connections, or loose connections.
3. Consult your local ISDN network provider or service representative for assistance in correcting the problem.

Results

This ends the procedure.

UNU02

The problem may be at the remote location.

About this task

Perform the following:

1. Have the remote site operator verify that the remote equipment is powered on and ready, and that the remote configuration values are correct and compatible with the local configuration.
2. If the problem continues, determine if data is being transferred over the remote ISDN interface. This can be done by either using a communications trace (STRSST), or attaching a protocol analyzer to the line.
 - If a line trace reveals that no data is being transferred, then run hardware and diagnostic tests on the remote equipment.
 - If data is crossing the ISDN interface, analyze the failing protocol procedures to determine which configuration parameters to change. Consult your service representative for help with this analysis.

Results

This ends the procedure.

UNU31

A configuration parameter may be incorrect.

To determine the configuration parameter that was identified as a possible problem, search for the error in the Service Action Log (see “Using the Service Action Log” on page 32) and display the failing item information for the error. The failing item description associated with this symbolic FRU identifies the parameter that may be the problem.

The configuration parameter that was identified as a possible problem can be verified by displaying the IDLC line description with the DSPLINIDLC command.

The line description was created by the CRTLINIDLC command. You may need to review the appropriate command information to determine if the configuration parameter is wrong.

For more information about commands related to communications, see the CL command finder in the iSeries Information Center.

Some software problems can be temporarily solved by changing the configuration parameter, even if the original value was correct. Report this problem to your service representative if you use this temporary change.

UNU32

A configuration parameter may be incorrect.

To determine the configuration parameter that was identified as a possible problem, search for the error in the Service Action Log (see “Using the Service Action Log” on page 32) and display the failing item information for the error. The failing item description associated with this symbolic FRU identifies the parameter that may be the problem.

The configuration parameter that was identified as a possible problem can be verified by displaying the IDLC controller description with the DSPCTLID command.

The controller description was created by the CRTCTLHOST, CRTCTLAPPC, or CRTCTLRWS command. You may need to review the appropriate command information to determine if the configuration parameter is wrong.

For more information about commands related to communications, see the CL command finder in the iSeries Information Center.

Some software problems can be temporarily solved by changing the configuration parameter, even if the original value was correct. Report this problem to your service representative if you use this temporary change.

UPLF1

The system may not have been able to complete the APPN session initiation due to the number of jobs that were active when the timeout occurred.

The timeout condition could have been caused by a system performance problem. System performance could be impacted by the capacity of the system. System performance can also be impacted by processing requests from other systems in the network.

For capacity planning and system performance information, refer to *eServer iSeries Performance Tools for iSeries* (SC41–5340).

UPSUNIT

The uninterruptible power supply (UPS) may be the failing component.

About this task

Perform the following:

1. Is the problem that the system has a UPS reference code, but the UPS does not have a fault code?
 - Yes:** Continue with the next step.
 - No:** Go to step 3.
2. Remove the UPS signal cable from the system connector. Does the system report a UPS reference code now?
 - **No:** Continue with the next step.
 - **Yes:** Replace the following, one at a time, until the problem is resolved:
 - a. Tower card (see “TWRCARD” on page 763)
 - b. Remote power controller (RPC)**This ends the procedure.**
3. Perform the following:
 - a. Verify the UPS signal cable, between the UPS and the system, is connected and seated properly.
 - b. Have the customer call the UPS provider for service if a problem is found.
 - c. Call service support if the problem prevails after the UPS is verified as working correctly.

Results

This ends the procedure.

USER

There has been a system operator error or user error. See the system operator information.

UX201

The printer definition table may be causing the problem. See the original system message for cause and recovery information about the error.

UX202

A problem was detected while downloading a device licensed internal code change to the device.

See the original system message for cause and recovery information about the error.

UY1Z1

Indicates possible cable problems

See the *IBM Technical Information Manual* for information on how to correct cabling problems. Problems that are associated with noise can cause a workstation to fail or lose communication with the system for various lengths of time. A motor or any device that is a source of electrical radiation can cause noise or electrical interference. The following are common causes for noise problems:

- Cables that are located near a source of electrical interference.
- Cables that are loose, damaged, or not correctly connected

UY1Z2

This error occurs if you attempted to activate more workstations than the amount allowed.

Perform one of the following to correct the problem:

- Turn off the power for the workstation that caused the error, or connect the workstation to a different controller.
- Turn off the power for a different workstation that is connected to the same workstation controller.

See the local workstation diagrams for the physical location of workstations.

This ends the procedure.

UY1Z3

This error is caused by a workstation that is connected to the port.

1. Perform the following:
 - a. Turn off the power for one workstation on the port
 - b. Check if the other workstations operate correctly.
 - c. Repeat this for each workstation on the port.
 - d. The workstation that causes the problem is the one that is turned off when the others are working correctly.
 - e. If you did not find the problem, continue with the next step.
2. Perform the following:
 - a. Turn off the power for all workstations on the port.
 - b. Then, turn on one workstation to check if it works when all other workstations are turned off.
 - c. Repeat this for each workstation on the port. The workstation that causes the problem is the one that works when all other workstations are turned off.

Results

This ends the procedure.

UY1Z4

An error occurred with the pass-through command between the workstation controller and the workstation.

A failure in the licensed internal code (LIC) in either the workstation or the workstation controller causes this type of error.

UY1Z5

The communication between the workstation controller and a workstation was interrupted during an active session.

Possible causes include:

- The power for the workstation was turned off, then on.
- A temporary loss of power to the workstation occurred.

VPDPART

Look here for information about VPDPART symbolic FRU.

1. Is the reference code 1xxx 8402?

No: Continue with the next step.

Yes: Prior to exchanging any parts, verify that the processors are installed. If you are in test mode and have removed all of the processors, disregard this reference code. Otherwise, correct the processors. If the processors are installed correctly, then exchange the service processor card (see "SVCPROC" on page 757). **This ends the procedure.**

2. Is the reference code 1xxx 8404, 8405, or 8406?

- **No:** Continue with the next step.
- **Yes:** Use the following table to find the correct action to take. See Finding part locations for part number and exchange information.

Reference code	Action
1xxx 8404	Processor card mismatch. Exchange processor card 2 in the primary unit.
1xxx 8405	Processor card mismatch. Exchange processor card 1 in a secondary unit.
1xxx 8406	Processor card mismatch. Exchange processor card 2 in a secondary unit.

This ends the procedure.

3. Is the reference code 1xxx 8409?

No: Continue with the next step.

Yes: No processors are installed. If you are in test mode and have removed all of the processors, disregard this reference code. Otherwise, correct the processors. If the processors are installed correctly, exchange all processors. See Finding part locations for part number and exchange information. **This ends the procedure.**

4. Is the reference code 1xxx 8413 or 8414?

- **No:** Continue with the next step.
- **Yes:** Perform the following:

Note: See Finding part locations for part and location information.

- For a model 285, 505, 51x, 52x, and OpenPower 710, replace the system unit backplane (see "SYSBKPL" on page 758).
- For a model 55x, 561, 570 , or OpenPower 720, use the reference code in the following table to find the FRU.

Reference code	Action
1xxx 8413	Exchange processor 1.
1xxx 8414	Exchange processor 2.

This ends the procedure.

5. Are you working on a model 575, 59x?

No: Continue with the next step.

Yes: Go to step 7 on page 781.

6. Is the reference code 1xxx 8423 or 8424?

- **No:** Go to step 8 on page 781.
- **Yes:** Perform the following:

Note: See Finding part locations for part and location information.

- For a model 285, 505, 51x, 52x, and OpenPower 710, replace the system unit backplane (see “SYSBKPL” on page 758).
- For a model 55x, 561, 570, and OpenPower 720, use the reference code in the following table to find the FRU.

Reference code	Action
1xxx 8423	Exchange processor 1.
1xxx 8424	Exchange processor 2.

If this replacement does not fix the problem, replace the system I/O backplane (see “SYSBKPL” on page 758). **This ends the procedure.**

7. Is the 1xxx reference code in one of the following ranges?

- 8410 through 8417
- 8420 through 8427
- 8470 through 8477
- **No:** Go to step 8.
- **Yes:** Use the following table to replace the appropriate FRU. **This ends the procedure.**

SRC	System model	FRU to replace	Link to locations
8410, 8420, 8470	575	Processor backplane	Locations — model 575
	59x	MCM 0 on node 0	Locations — model 590 and 595
8411, 8421, 8471	59x	MCM 1 on node 0	Locations — model 590 and 595
8412, 8422, 8472		MCM 0 on node 1	
8413, 8423, 8473		MCM 1 on node 1	
8414, 8424, 8474		MCM 0 on node 2	
8415, 8425, 8475		MCM 1 on node 2	
8416, 8426, 8476		MCM 0 on node 3	
8417, 8427, 8477		MCM 1 on node 3	

8. Is the reference code 1xxx 911C?

Yes: Two nodes have the same VPD. See System unique identifier in the **Service functions** to resolve the problem. **This ends the procedure.**

No: Return to “Start of call procedure” on page 2. **This ends the procedure.**

VRMOD

The system detected a voltage problem.

About this task

Perform the following to service this FRU.

1. Power off the system.
2. Unplug the AC.
3. Reseat the VRMs. (For more information, see Finding part locations.) Does that resolve the problem?
 - **Yes: This ends the procedure.**
 - **No:** Continue with the next step.
4. Replace the VRMs. (For more information, see Removing and replacing parts.)

Results

This ends the procedure.

Failing Function Codes (FFCs)

Failing function codes represent functions within the system unit.

Note: When replacing a FRU, use “MAP 0410: Repair checkout” on page 419 to verify the fix.

The failing function codes are listed in numerical sequence.

A function may not be physically packaged on the same FRU in various system units. When this condition exists, the FRU part number for each type of system unit is listed.

Column Heading Term Definitions

The columns in the failing function code list are as follows:

- **Failing function code** The failing function code number from the SRN list in “MAP 0260: System hangs during resource configuration” on page 405.
- **Machine type/model** This column is used when the failing function is on a FRU which differs by machine type and model. Use the part number for the type of system unit you are servicing. See “Machine Types” for the names of the machine types.

Note: Although the machine cover logo may depict the model number as four digits, the service and parts ordering system requires three-digit numbers. For example, if the cover logo depicts model number xxxx, service and parts documentation may refer to that model as xxx.

- **Part number** This column contains the part number of the FRU that contains the failing function. Use the part number for the type of system unit you are servicing.
- **Description and notes** This column contains the description of the FRU and any usage notes. The FRU description may be different in different system units. Use the one for the type of system unit you are servicing.

Select System parts to access the failing function code listing.

Machine Types

Look here for machine types and descriptions.

Machine Type	Description
3151	Display Terminal
3161	Display Terminal
3163	Display Terminal
3514	External Disk Array, Models 212 and 213
3812	Pageprinter
3852	Printer
4201	Proprinter II
4202	Proprinter XL
4207	Proprinter X24
4208	Proprinter XL24
4216	Personal Pageprinter
4224	Printer
4234	Printer
4869	5.25-Inch External Diskette Drive
5081	Color Display
5083	Tablet

Machine Type	Description
5085	Graphics Processor
5086	Graphics Processor
5088	Communications Controller
5202	Quietwriter Printer
5204	Quickwriter Printer
6094	Model 10, Dials
6094	Model 20, Lighted Program Function Keyboard (LPFK)
6094	Model 30, Spaceball™
6180	M1 color plotter
6182	Color Plotter
6184	Color Plotter
6185	Model 1 Color Plotter
6186	Color Plotter
6187	Plotter
7372	Plotter
7017	System Unit (Rack Mount), I/O Rack (with up to 4 I/O drawers)
7024	System Unit (Floor Standing)
7025	System Unit (Floor Standing)
7026	System Unit (Rack Mount)
7027	Disk Drive Drawer
7028	System Unit (Model 6C1, 6C4, 6E1, 6E4)
7029	System Unit (Model 6C3, 6E3)
7037	System Unit (A50)
7038	System Unit (Model 6M2)
7039	System Unit (Model 651)
7040	System Unit (Model 670, 690)
7043	System Unit (Models 140, 150, 240, 260)
7044	System Unit (Models 170, 270) Floor Standing
7046	System Unit (Model B50) Rack Mount
7047	System Unit (185)
7131	Model 105 SCSI Multi-Storage Tower
7134	High Density SCSI Disk Subsystem, Model 010.
7137	Disk Array Subsystem Models 412, 413, and 414
7135	RAIDiant Array SCSI Disk Drive Subsystem, Models 010 and 110
7203	External Portable Disk Drive
7204	External Disk Drive Model 320
7206	2.0 GB or 4.0 GB External 4 mm Tape Drive 24/48 GB DDS-2 4 mm Autotape Loader
7207	150 MB, 525 MB or 1.2 GB External 1/4-Inch Cartridge Tape Drive
7208	2.3 GB or 5.0 GB External 8 mm Tape Drive
7210	External CD-ROM Drive
7235	POWERgraphics GTO graphics subsystem
7250	POWERgraphics Accelerator
7311	I/O Drawer (Models D10, D20)
7317	System Unit, (Telco Rack Mounted)
7331	Model 205 8 mm Tape Library
7332	Model 005 4 mm Tape Library
8508	Monochrome Display
9076	SMP Thin/Wide Node
9076	Power3 SMP Thin/Wide Node
9076	Power3 SMP High Node
9110	System Unit (510, 51A)
9111	System Unit (285, 520)
9112	System Unit (Model 265)

Machine Type	Description
9113	System Unit (550)
9114	System Unit (Model 275)
9115	System Unit (505)
9116	System Unit (561)
9117	570
9118	System Unit (575)
9119	System Unit (590, 595)
9333	High-Performance Disk Drive Subsystem Models 010 and 011
9333	High-Performance Disk Drive Subsystem Models 500 and 501
9334	SCSI Expansion Unit Model 010 (Single-Ended), Model 011 (Differential)
9334	SCSI Expansion Unit Model 500 (Single-Ended), Model 501 (Differential)
9348	1/2-Inch 9-Track Tape Drive
9405	System Unit (520)
9406	System Unit (520, 550, 595)

Failing Function Code list

The failing function codes have been migrated into the tables located in System parts. This topic contains the link to the new location.

The Failing Function Code (FFC) table has been removed. The failing function codes have been migrated into the tables located in System parts along with the CCIN numbers, parts description, model or unit type and part numbers. Using the SRN tables to link to a specific FFC is the fastest way to access your FFC.

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Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

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Industry Canada Compliance Statement

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IBM Taiwan Contact Information

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The following Class B statements apply to model 9111-520 (stand-alone version), 9131-52A (stand-alone version), 7047-185 and the 9111-285.

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- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an IBM authorized dealer or service representative for help.

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For Taiwan: Please recycle batteries.



For California:

Perchlorate Material - special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate.

The foregoing notice is provided in accordance with California Code of Regulations Title 22, Division 4.5 Chapter 33. Best Management Practices for Perchlorate Materials. This product/part may include a lithium manganese dioxide battery which contains a perchlorate substance.

IBM Cryptographic Coprocessor Card Return Program

The following information applies only for systems originally sold prior to July 1, 2006:

This machine may contain an optional feature, the cryptographic coprocessor card, which includes a polyurethane material that contains mercury. Please follow local ordinances or regulations for disposal of this card. IBM has established a return program for certain IBM Cryptographic Coprocessor Cards. More information can be found at <http://www.ibm.com/ibm/environment/products/prp.shtml>.



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