

IBM Z

Service Guide for Hardware Management Consoles and Support Elements

GC28-6983-01 Level 01b



IBM Z

Service Guide for Hardware Management Consoles and Support Elements

GC28-6983-01

Note:

Before using this information and the product it supports, read the information in "Safety" on page v, "Notices," on page 183, and *IBM Systems Environmental Notices and User Guide*, Z125–5823.

This edition, GC28-6983-01b, applies to IBM Z and IBM LinuxONE servers. This edition replaces GC28-6983-01a.

There might be a newer version of this document in a PDF file available on **Resource Link**. Go to http://www.ibm.com/servers/resourcelink and click on **Library** on the navigation bar.

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Safety

Safety notices

Safety notices may be printed throughout this guide. **DANGER** notices warn you of conditions or procedures that can result in death or severe personal injury. **CAUTION** notices warn you of conditions or procedures that can cause personal injury that is neither lethal nor extremely hazardous. **Attention** notices warn you of conditions or procedures that can cause damage to machines, equipment, or programs.

World trade safety information

Several countries require the safety information contained in product publications to be presented in their translation. If this requirement applies to your country, a safety information booklet is included in the publications package shipped with the product. The booklet contains the translated safety information with references to the US English source. Before using a US English publication to install, operate, or service this product, you must first become familiar with the related safety information in the *Systems Safety Notices*, G229-9054. You should also refer to the booklet any time you do not clearly understand any safety information in the US English publications.

Danger notices

The following **DANGER** notices appear in this manual.

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:

- If IBM supplied a power cord(s), 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.
- Do not attempt to switch on power to the machine until all possible unsafe conditions are corrected.
- Assume that an electrical safety hazard is present. Perform all continuity, grounding, and power checks specified during the subsystem installation procedures to ensure that the machine meets safety requirements.
- Do not continue with the inspection if any unsafe conditions are present.
- 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.
- Sharp edges, corners and joints may be present in and around the system. Use care when handling equipment to avoid cuts, scrapes and pinching. (D005)

Laser safety information

All IBM Z^{\otimes} (Z) and IBM LinuxONETM (LinuxONE) models can use I/O cards such as FICON[®], Open Systems Adapter (OSA), InterSystem Channel-3 (ISC-3), zHyperLink Express, or other I/O features which are fiber optic based and utilize lasers (short wavelength or long wavelength lasers).

Laser compliance

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

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)

Level 01b

About this publication

Intended audience

This guide is for system service representatives who perform problem isolation and repair actions on all IBM Z^{B} (Z) and IBM LinuxONETM (LinuxONE) Hardware Management Consoles and Support Elements.

Revisions

A technical change from the previous edition of this document is indicated by a vertical line (1) to the left of the change.

General comments

- There are representations of windows displayed throughout this manual. These are displayed to help you recognize the information that you will see while performing the procedures in this manual. The information displayed in these representations may not agree with that displayed on your system. Always use the instructions and data displayed on your system.
- There may be product features represented in this manual that are not installed on your server and, although announced, may not be available at the time of publication. There may be product features on your server that are not represented in this manual.

Where to start

Start all service activity at Chapter 1, "Start of call," on page 1

Accessibility

Accessible publications for this product are offered in EPUB format and can be downloaded from Resource Link[®] at http://www.ibm.com/servers/resourcelink.

If you experience any difficulty with the accessibility of any IBM Z[®] and IBM LinuxONE information, go to Resource Link at http://www.ibm.com/servers/resourcelink and click **Feedback** from the navigation bar on the left. In the **Comments** input area, state your question or comment, the publication title and number, choose **General comment** as the category and click **Submit**. You can also send an email to reslink@us.ibm.com providing the same information.

When you send information to IBM[®], you grant IBM a nonexclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

Accessibility features

The following list includes the major accessibility features in IBM Z and IBM LinuxONE documentation, and on the Hardware Management Console and Support Element console:

- Keyboard-only operation
- Interfaces that are commonly used by screen readers
- Customizable display attributes such as color, contrast, and font size
- · Communication of information independent of color
- · Interfaces commonly used by screen magnifiers
- Interfaces that are free of flashing lights that could induce seizures due to photo-sensitivity.

Level 01b

Keyboard navigation

This product uses standard Microsoft Windows navigation keys.

Consult assistive technologies

Assistive technology products such as screen readers function with our publications, the Hardware Management Console, and the Support Element console. Consult the product information for the specific assistive technology product that is used to access the EPUB format publication or console.

IBM and accessibility

See http://www.ibm.com/able for more information about the commitment that IBM has to accessibility.

How to send your comments

Your feedback is important in helping to provide the most accurate and high-quality information. Send your comments by using Resource Link at http://www.ibm.com/servers/resourcelink. Click **Feedback** on the navigation bar on the left. You can also send an email to reslink@us.ibm.com. Be sure to include the name of the book, the form number of the book, the version of the book, if applicable, and the specific location of the text you are commenting on (for example, a page number, table number, or a heading).

Related publications

For all IBM Z servers, go to *http://www.ibm.com/servers/resourcelink* and click on **Library** on the navigation bar to locate the following documents:

- ICSF Trusted Key Entry PCIX Workstation User's Guide, SC14-7511
- Safety Notices, G229-9054
- Installation Manual
- Service Guide
- Installation Manual for Physical Planning
- Safety Inspection
- Service Guide for 2461 Hardware Management Console, GC28-6981
- Service Guide for 2461 Support Element, GC28-6982

Summary of changes

Summary of changes for the Service Guide for Hardware Management Consoles and Support Elements, GC28-6983.

Table 1. Summary of changes

Release level	Date	Changes in level	
01b	01/2019	Updated the link in the 7327 service tips section.	
01a	10/2018	This revision contains editorial changes and the following technical changes:Added information for 7327, 7382, and 7914 servers that a bootable CD is required when the system board has been replaced.	
01	5/2018	This revision contains editorial changes and the following technical changes:Removed 2461 Support Element information and pointed to the <i>Service Guide for</i> 2461 Support Element document	

Level 01b

Chapter 1. Start of call

The term *console* throughout this guide means either a Hardware Management Console (HMC) or Support Element (SE).

Figures in this service guide illustrate concepts and are not necessarily accurate in content or appearance.

General information

Before performing any service or starting a call, you should be aware of the following:

- After reading through this chapter and prior to starting any service procedure, it is recommended that you review the information in "Service tips for Hardware Management Consoles" on page 7 or "Service tips for Support Elements" on page 83.
- Depending on your server's configuration, when you are directed to exchange FRUs, run tests, or change configuration data, the customer's interface to the system hardware may not be available. Before starting any of these tasks, notify the customer.
- If you are working on a Hardware Management Console, the defined CPCs continue to run; however, the customer may not see the status messages for the defined CPCs or the local area network (LAN).
- If you are working on a remote Hardware Management Console and the problem is not a PC hardware error, ask the customer to test the communication network.
- When you exchange a system board, battery, or adapter in a Hardware Management Console, follow "CMOS configuration procedures for Hardware Management Consoles" on page 37 to ensure correct operation. When you exchange a system board, battery, or adapter in a ThinkPad-based Support Element, follow "CMOS configuration procedures for ThinkPad-based Support Elements" on page 102 or, for a server-based Support Element, follow "CMOS configuration procedures for server-based Support Elements" on page 134 to ensure correct operation.
- When you exchange a hard drive in either a Hardware Management Console or Support Element, ensure the licensed internal code is loaded on the new drive. Load the Licensed Internal Code and
- restore the back-up data. For IBM z13[®], IBM z13s[®], and IBM z14[™] servers, refer to "Hard disk errors"
 on page 160 for the hard disk restore information. For servers prior to z13[®], refer to "Restore Hardware Management Console hard disk information" or "Restore Support Element hard disk information" in Chapter 2. Console information in the *Service Guide* for the server to which this console is connected. The *Service Guide* can be found on Resource Link. From the left navigation, click Library and then select your server.
 - Removing power from an HMC or SE may cause loss of data on the hard disk. If power must be removed, shut down the console. For instructions, refer to "Console shut down" on page 182.
 - Information about removing batteries is located on Resource Link (*http://www.ibm.com/servers/ resourcelink*). On the left navigation pane, click **Library**. Then under "Library shortcuts," click **Battery removal documents**.

• Attention:

Diagnostics supporting the Hardware Management Console, Support Element, and network adapters are available on the Hardware Management Console/Support Element Diagnostic CD-ROM, P/N 12R9120. The CD-ROM is bootable and the Hardware Management Console, Support Element, and network adapter option diagnostics are menu-driven. The CD-ROM also contains a Service subdirectory with Hardware Maintenance Manuals (HMMs) for various consoles in PDF format and diskette images in ARDI executable format.

The system board, adapters, memory modules, and the alternate-microprocessor can be damaged by electrostatic discharge. If you are directed to exchange FRUs in a Hardware Management Console or Support Element, refer to "Handling Electrostatic Discharge (ESD) Sensitive Devices" in the Hardware Maintenance Manual found in the Hardware Management Console/Support Element Diagnostic CD-ROM's Service subdirectory.

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.
- Sharp edges, corners and joints may be present in and around the system. Use care when handling equipment to avoid cuts, scrapes and pinching.

(D005)

Identifying the console

This guide supports the following console machine types:

- HMCs:
 - 8305
 - 8187
 - 8141
 - 8485
 - 4362

- 4367
- 7327
- 7382
- 7914
- 2461 Go to the *Service Guide for 2461 Hardware Management Console* for all service information on the 2461 HMC.
- Support Elements:
 - 2373 (T42)
 - 2668 (T43)
 - 2007 (T60)
 - 8889 (T61)
 - 2055 (T500)
 - 4349 (T510)
 - 4242 (T520)
 - 4282 (W520)
 - 2394 (T530)

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- 7914 (x3550 M4)
- 2461 Go to the Service Guide for 2461 Support Element for all service information on the 2461 Support Element.

Hardware Maintenance Manuals (HMMs)

It is highly recommended and in some cases required to access the latest HMM. For this document release, it is assumed the latest HMM is being referenced from the following sites:

HMC Hardware Maintenance Manuals

The 8305, 8187, 8141, 8485, and 4362 HMMs are available on the Hardware Management Console/Support Element Diagnostic CD-ROM's Service subdirectory (PDF format).

- Tower HMCs
 - For 8485 (x206m), 4362 (x3200), 4367 (x3200 mM2), and 7327 (x3200 M3), from *http://www.ibm.com*, search on "Problem Determination and Service Guide *xxxx*" where *xxxx* is:
 - 8485
 - 4362
 - 4367
 - 7327
 - For the 7382 (x3300 M4), from *http://www.ibm.com* search on "System x3300 M4 Type 7382 Installation and Service Guide"
- Desktop HMCs
 - For 8305, 8187, and 8141, from *http://www.lenovo.com*, search on "Hardware Maintenance Manual *xxxx*" where "*xxxx*" is:
 - 8305 (IBM NetVista)
 - 8187 (ThinkCentre M50)
 - 8141 (ThinkCentre M51)
 - For the 2461 Hardware Management Console, see the Service Guide for 2461 Hardware Management Console located on Resource Link at http://www.ibm.com/servers/resourcelink
- 1U HMCs

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- For the 7914 (x3550 M4), from *http://www.ibm.com*, search on "Installation and Service Guide for x3550 M4 (7914)"
- 4 Service guide for consoles

- For the 2461 Hardware Management Console, see the *Service Guide for 2461 Hardware Management Console* located on Resource Link at *http://www.ibm.com/servers/resourcelink*

Support Element Hardware Maintenance Manuals

The 2373 and 2668 HMMs are available on the Hardware Management Console/Support Element Diagnostic CD-ROM's Service subdirectory (PDF format). Use Adobe Acrobat Reader on the SSR's ThinkPad to view the files.

ThinkPads receive power from the processor and do not have a battery pack installed. If you are directed to power off the ThinkPad, unplug the DC power cable connecting the ThinkPad.

Note: The ThinkPad may have to be removed from the tray.

Modifications have been made to ThinkPads used as Support Elements to keep the ThinkPad powered up with the server hardware. These modifications must be in place.

• Laptop Support Elements

For:

- 2373 (T42) "ThinkPad T40, T40p, T41, T41p, T42, T42p"
- 2668 (T43) "ThinkPad T43, T43p (2668, 2669, 2686, 2687)"
- 2007 (T60) "ThinkPad T60, T60p"
- 8889 (T61) "ThinkPad T61, T61p standard screen (type 8889...)"
- 2055 (T500) "ThinkPad T500 and W500"
- 4349 (T510) "ThinkPad T510, T510i, W510"
- 4242 (T520) "ThinkPad T520, T520i, W520"
- 4282 (W520) "ThinkPad T520, T520i, W520"
- 2394 (T530) "ThinkPad T530, T530i, W530"

from *http://www.lenovo.com*, click **Support**, then click **Download manuals**, then search on "*xxxx* ThinkPad" where "*xxxx*" is:

- 2373
- 2668
- 2007
- 8889
- 2055
- 4349
- 4242
- 4282
- 2394
- 1U Support Elements
 - For the 7914 (x3550 M4), from *http://www.ibm.com* search on "Installation and Service Guide for x3550 M4 (7914)"
 - For the 2461 Support Element, see the Service Guide for 2461 Support Element located on Resource Link at http://www.ibm.com/servers/resourcelink

USB flash memory drives

If you are instructed to use a USB flash memory drive for any procedure, the following drives have been tested and approved:

- P/N 22P9229 IBM USB 2.0 High Speed Memory Key 128 MB
- P/N 40Y8596 Lenovo USB 2.0 Memory Key 512 MB

- P/N 41U5118 Lenovo USB 2.0 Security Memory Key 1.0 GB (The security feature is not supported.)
- P/N 77P9278 Smart Modular Technology (SMT) 4GB Memory Key
- P/N 77P9279 Smart Modular Technology (SMT) 8GB Memory Key
- P/N 78P3777 Smart Modular Technology (SMT) 32GB Memory Key

Chapter 2. Start of repair for Hardware Management Consoles

Before performing any repair action, review the service tip information ("Service tips for Hardware Management Consoles"), then continue to "Failure table" on page 11.

Service tips for Hardware Management Consoles

8305 service tip

Ethernet Support

For the 8305, there are two possible Ethernet support configurations:

- A PCI Ethernet adapter **is** installed and the planar Ethernet is set to Disabled. (This is described in "CMOS configuration procedures for Hardware Management Consoles" on page 37.)
- A PCI Ethernet adapter is *not* installed and the planar Ethernet is set to Enabled. (This is described in "CMOS configuration procedures for Hardware Management Consoles" on page 37.)

Either the PCI adapter (if installed) or the PC's planar will provide Ethernet support.

If your console has an Ethernet PCI adapter, removing it will result in the loss of Hardware Management Console Ethernet support.

8187 service tip

There are no service tips available for the 8187.

8141 service tips

Cooling Fan Noise

The 8141 system unit cooling fan is located at the front of the unit. This fan operates at variable speed depending on ambient temperature and system utilization. Higher temperatures or heavy usage may increase fan velocity, which will create more fan noise. Since most processes requiring heavier processor utilization (such as DOS operations or diagnostic tests) are temporary, the increased fan noise should not be of concern.

Broadcom Ethernet Support

Planar 10/100/1000 Ethernet support is provided by a Broadcom (not Intel) chip set. The PCI adapter 10/100/1000 Ethernet support is provided by Intel. When performing diagnostic testing, be careful to follow instructions regarding which chip set you are testing.

Power Information

PCI Bus voltage is present even with the system powered-off. Unplug the AC voltage cord from its source before removing or installing any FRUs or adapters. Failure to remove all voltage from the system during removals or installations may result in unpredictable operation later.

Replace FRUs only with the power cord unplugged and all system unit LEDs unlit.

There are three LEDs to help determine if the power supply and system board of the 8141 are functioning correctly at power-on. The **POWER** LED is located on the front of the system unit and two **DIAGNOSTIC** LEDs are located on the rear of the system unit, above the voltage selector switch.

Level 01b

When powering on the 8141, press and hold the power-on pushbutton until the power indicator LED is lit. Failure to hold the power-on pushbutton long enough may result in the 8141 not powering-on completely. If this happens, press and hold the power-on pushbutton for a longer period of time, until the power indicator LED is lit.

After pressing the power-on pushbutton, observe the three LEDs and refer to the following table:

	Green	Yellow		
Power LED	Diagnostic LED	Diagnostic LED	Action	
On	On	Off	Normal condition - power is OK	
Off	Off	Off	 Make sure the power cord is firmly plugged into a working outlet Check the power cord for continuity 	
			 If the problem persists, replace the power supply 	
Off	On	Off	Replace the system board	
On	On	On	Replace the power supply	

Table 2. 8141 Power Status LEDs

8485 and 4362 service tips

Enhanced Serviceability

For enhanced serviceability, the 8485 and the 4362 support a mini Baseboard Management Controller (BMC). The BMC provides environmental monitoring for the server. If environmental conditions exceed thresholds or if system unit components fail, the BMC will light LED indicators on the motherboard and turn on the **System-error** LED located on the front of the server.

The POST error log contains the three most recent error codes and messages that were generated during POST. The BMC System Event log contains the BMC-generated messages. The system event/error log contains messages generated during POST and all system status messages from the BMC.

If the **System-error** LED is lit but there are no other error indications, clear the BMC system event log. This log does not clear itself, and if it begins to fill up, the **System-error** LED will be lit. After you complete a repair or correct an error, clear the BMC System Event log to turn off the **System-error** LED.

Procedures for managing the BMC and logs can be found in the *Problem Determination and Service Guide* (8485HMM.PDF or 4362HMM.PDF) in the Service subdirectory of the Diagnostic CD.

Ethernet Support

The PCI-Express and planar Ethernet support utilizes BroadCom chip sets. Use their respective MAC addresses to differentiate between the chip sets when running diagnostics.

Modem Support

For those countries where it is approved, modem support is through a PCI adapter. The modem is configured using customer data from the **Customize Customer Information** window under **Hardware Management Control Settings**. It is important this data be correct. A telephone (Telco) cable is provided for connection between the modem's RJ11 interface and the customer's phone system. There are two RJ11 connectors on the PCI adapter, labeled "Phone" and "Line". Be certain the Telco cable is plugged into the "Line" connector.

4367 service tips

System Diagnostics

System diagnostics have migrated from DOS to Linux based.

- 1. Insure the correct diagnostic CD is used: "HMC DIAGS CD", part number 45D3792.
- 2. Insure that the 4367 testing procedures are used.

Note: There are no 4367 configurations utilizing the Token Ring adapter or the internal floppy diskette drive.

7327 service tips

System Diagnostics

Dynamic System Analysis (DSA) Preboot diagnostic programs are resident on the 7327 and are invoked by pressing "F2" at the "<F2 > Diagnostics" prompt displayed during a cold boot.

In addition to DSA, there are Post error messages, error logs, event logs, and server LED's to help with failure analysis.

Refer to the "System x3200 M3 Types 7327 and 7328, Problem Determination and Service Guide" for additional information.

System Setup

The "BIOS Setup Utility" (CMOS Settings) has been replaced with the "Unified Extensible Firmware Interface" (UEFI). This "Setup Utility" is invokes by pressing "F1" at the "<F1> Setup" prompt displayed during a cold boot.

System Vital Product Data

UEFI (formally BIOS) settings are modified using the IBM Advanced Settings Utility (ASU) program. A bootable DVD image supporting the IBM Advance Setting Utility (ASU) and also containing the latest UEFI, IMM, and diagnostic firmware is available from the zSeries PE FTP site, ftp://

s390pcserv.endicott.ibm.com/S390PC/MFG/ISO.

To support, use CD P/N 00NK088, Control Level 1.

7382 service tips

System Diagnostics

Dynamic System Analysis (DSA) Preboot diagnostic programs are resident on the 7382 and are invoked by pressing "F2" at the "<F2 > Diagnostics" prompt displayed during a cold boot.

In addition to DSA, there are Post error messages, error logs, event logs, and server LED's to help with failure analysis.

Refer to the "System x3300 M4 Type 7382 Installation and Service Guide" for additional information.

System Setup

The "BIOS Setup Utility" (CMOS Settings) has been replaced with the "Unified Extensible Firmware Interface" (UEFI). This "Setup Utility" is invokes by pressing "F1" at the "<F1> Setup" prompt displayed during a cold boot.

System Vital Product Data

UEFI (formally BIOS) settings are modified using the IBM Advanced Settings Utility (ASU) program. A bootable DVD image supporting the IBM Advance Setting Utility (ASU) and also containing the latest UEFI, IMM, and diagnostic firmware is available from the zSeries PE FTP site, ftp://s390pcserv.endicott.ibm.com/S390PC/MFG/ISO.

To support, use CD P/N 00NK089, Control Level 3 for Driver 15 or CD P/N 00NK090, Control Level 3 for Driver 22.

7914 service tips

System Diagnostics

Dynamic System Analysis (DSA) Preboot diagnostic programs are resident on the 7914 and are invoked by pressing "F2" at the "<F2 > Diagnostics" prompt displayed during a cold boot.

In addition to DSA, there are Post error messages, error logs, event logs, and server LED's to help with failure analysis.

Refer to the "System x3550 M4 Type 7914 Installation and Service Guide" for additional information.

System Setup

The "BIOS Setup Utility" (CMOS Settings) has been replaced with the "Unified Extensible Firmware Interface" (UEFI). This "Setup Utility" is invoked by pressing "F1" at the "<F1> Setup" prompt displayed during a cold boot.

System Vital Product Data

UEFI (formally BIOS) settings are modified using the IBM Advanced Settings Utility (ASU) program.

To support, use CD P/N 00NK091, Control Level 3.

2461 service tips

Refer to the *Service Guide for 2461 Hardware Management Console* for information on servicing the 2461 HMC.

Installed adapters

From model to model, adapters performing the same function may require different bus support. Using the following table as a guide, select the correct adapter or bus when performing configuration and diagnostic test procedures.

Adapters	8305, 8187, 8141	8485, 4362	4367	7327
Token ring	PCI	PCI	N/A	N/A
Ethernet	PCI or planar	PCI-Express or planar	PCI-Express or planar	PCI-Express or planar
Modem (See note.)	External serial	PCI	PCI	PCI

Table 3. Adapter Bus Support

Note: The PCI modem is available only in those countries where it is approved. Otherwise an external serial modem is used.

Failure table

Find the appropriate item in the **Topic** column of the following table. Then, proceed to the information in the **Go To** column.

Table 4. Hardware Management Console Failure Table Topics and References

Торіс	Go To		
All Hardware Management Console procedures	For the 2461 Hardware Management Consoles, go to the Service Guide for 2461 Hardware Management Console.		
	For all other Hardware Management Consoles, go to "Failures on Hardware Management Consoles"		
Task procedures for HMCs	Help system on the Hardware Management Console		
Telecommunication problems	"Telecommunications errors" on page 17		
Checking modem settings	"External Modem Settings" on page 22.		
Network adapter LEDs	"Token-Ring network repair procedures" on page 169		
Network adapter terms	"Token Ring: general information" on page 169		
Hardware Management Console feature card and cable locations	Figure 6 on page 170		
Additional HMC or SE maintenance information	PC maintenance information shipped with the system		

Failures on Hardware Management Consoles

Use this chapter when you are directed here either by a Repair and Verify window (Support Element) or a Perform a Console Repair window (Hardware Management Console).

Note: If you are directed to exchange FRUs, refer to the corresponding HMM for FRU removal and replacement procedures.

- 1. Were you directed here by a Repair and Verify *or* a Perform a Console Repair window? If **YES**, go to step 3. If **NO**, go to step 2.
- 2. Go to "Operator detected errors for Hardware Management Consoles" on page 12.
- **3**. On the Repair and Verify or Perform a Console Repair window:
 - a. Write down the FRU list for the problem.
 - b. Select Continue in documentation or Delay the Repair.
 - c. If another Repair and Verify window displays, press Enter.
- 4. Find any **FRU Location** from the FRU list in the left column of Table 5 and follow the **Go To** in the right column.

Note:

- a. Before exchanging any FRUs, record the FRU part number, serial number, and engineering change (EC) level of the new FRU.
- b. Your FRU list may contain FRUs that are not in the table.
- **c.** The table shows most FRUs start with xxxx. For Hardware Management Console FRUs, the xxxx is replaced with A00M.

Table 5. FRU List

FRU Locations	Go To
xxxx_DVD_RAM	"DVD-RAM errors" on page 15
xxxx_FIXED_DISK	"Hard disk errors" on page 160

Table 5. FRU List (continued)

FRU Locations	Go To		
xxxx_DISKETTE xxxx_DISKETTE_DRIVE xxxx_DISKETTE_DRIVE_CBL	"Diskette errors" on page 167		
xxxx_COMM_ADAPTER LOCAL_MODEM xxxx_LOCAL_MODEM xxxx_MODEM_CABLE	"Telecommunications errors" on page 17		
xxxx_TOKEN_RING_ADAPTER xxxx_LAN_CABLE LAN_CONNECTOR_DEVICE xxxx_LAN_CONNECTOR_DEVICE	"Token-Ring LAN errors" on page 173		
xxxx_Ethernet_CABLE xxxx_Ethernet_ADAPTER	"Ethernet LAN errors" on page 178		
xxxxAA01	"Undetermined errors" on page 13		
No FRUs displayed	"Operator detected errors for Hardware Management Consoles"		

Operator detected errors for Hardware Management Consoles

Use this section when:

- Problem Analysis ran for a failure on a Support Element or Hardware Management Console and no FRUs were reported
- Problem Analysis could not be run because of the failure on the Support Element or Hardware Management Console
- Messages are displayed on the Support Element or Hardware Management Console.

Find the reason for the call under Problem Area Reported; then go to the page indicated.

Problem Area Reported	Go To
DVD RW (RAM) drive	"DVD-RAM errors" on page 15
"Smart Modular Technology"- USB Memory Key	"USB flash memory drive (UFD) errors" on page 16
Hard disk	"Hard disk errors" on page 160
Diskette drive	"Diskette errors" on page 167
Display	"Display problems" on page 24
Telecommunications feature: Serial Port-connected modem or PCI internal modem	"Telecommunications errors" on page 17
Ethernet LAN	"Ethernet LAN errors" on page 178
LAN error occurred because of any of the following: Lobe cable problem Beaconing condition Other communications problem	"Token-Ring LAN errors" on page 173
Operator reported Communication not active on a Hardware Management Console	"Token-Ring LAN errors" on page 173 or "Ethernet LAN errors" on page 178
Operator reported that either the Hardware Management Console or the TKE Workstation application did not start but there were no other error indications.	"Undetermined errors" on page 13

Table 6. Problem Area Reference

Problem Area Reported	Go To
Operator reported communication problems with a remotely connected Hardware Management Console.	"Token-Ring LAN errors" on page 173 or "Ethernet LAN errors" on page 178
All other problems (for example: parity errors, power, POST codes, blank display, mouse, keyboard, USB ports or devices)	"Undetermined errors"

Table 6. Problem Area Reference (continued)

Undetermined errors

Use this section when the operator detected a failure and Problem Analysis did not run automatically or Problem Analysis could not be run because of a problem on the Hardware Management Console.

The following procedure directs you to use the documents shipped with the Hardware Management Console to repair failures. Refer to "Information and test menu selection" on page 26. After making the repair, return to this procedure to complete the call.

For the locations of the feature cards, refer to Figure 6 on page 170.

Note: If you are directed to exchange FRUs, refer to the corresponding "Hardware Maintenance Manual" (HMM) or "Problem Dertermination and Service Guide" for FRU removal and replacement procedures.

- 1. Do you have *all* of the following symptoms during power on?
 - No POST error codes
 - One or two short beeps
 - Hardware Management Console or licensed internal code for the Hardware Management Console fails to start
 - No reference code or any other error information displayed.

If YES, go to step 2. If NO, go to step 7 on page 14.

After power on, the Hardware Management Console should be displayed, then the Logon window for the Hardware Management Console or support element.

- 2. Verify system unit configuration. Refer to "CMOS configuration procedures for Hardware Management Consoles" on page 37. Select **System Unit** configuration area. When configuration is complete, continue to the next step.
- **3.** If there were any resources that were not correctly configured (for example, USB Support Disabled instead of Enabled), retry the failing component. If the failure recurs or there were no configuration errors, go to step 4. Otherwise, go to step 18 on page 14.
- 4. Use the information in "Testing HMC consoles" on page 24 to test the PC. Select **System Unit** problem area and **Run All Tests**.

When the test is complete, go to step 5.

5. Did the tests detect any errors?

If YES, go to step 7 on page 14. If NO, go to step 6.

6. Restore the Hardware Management Console hard disk information. For servers prior to z13, refer to "Restore Hardware Management Console hard disk information" in **Chapter 2. Console information** in the *Service Guide* for the server to which this console is connected. For all other servers, use the information in Step 5 on page 160.

When the licensed internal code is restored, press and hold Ctrl and Alt, and then press Delete (Ctrl+Alt+Delete).

- If the licensed internal code in the Hardware Management Console starts correctly the problem is resolved. Close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.
- If the failure still occurs, call for assistance.

END OF PROCEDURE.

- 7. Use the diagnostics and FRU exchange procedures for this HMC machine type to isolate the failure and exchange FRUs.
- **8**. If you have not already done so, verify the repair. For instructions, see "Testing HMC consoles" on page 24. Make the appropriate selection for the unit under repair.

Note: If you were not able to isolate a failure, call for assistance.

Did the tests run without errors?

If YES, go to step 10. If NO, go to step 9.

9. Continue exchanging FRUs from the FRU list and testing with the diagnostic procedure until the problem is resolved.

Reinstall any FRUs that do not fix the problem.

When you resolve the problem, go to step 8.

If you cannot resolve the problem, call for assistance.

10. Did you exchange the system board or the battery?

If YES, go to step 11. If NO, go to step 12.

11. If you have not already done so, configure the system board.
Refer to "CMOS configuration procedures for Hardware Management Consoles" on page 37. Select System Unit configuration area.

When configuration is complete, go to step 12.

- Did you exchange any PCI, PCIX, or PCIE adapter feature card? If YES, go to step 13. If NO, go to step 14.
- **13**. Verify the replacement adapter is installed in the identical location.
- 14. Did you exchange the hard disk drive?If YES, go to step 15. If NO, go to step 16 if you replaced the system board or go to step 17 if you did not replace the system board..
- **15**. If there are jumpers or tab settings on the new hard drive, ensure the settings are the same as on the old drive.

In the HMM for your HMC machine type, refer to the section about hard disk drive jumper settings. When complete, go to step 16.

16. Load system licensed internal code on the new hard disk. This step copies system licensed internal code and customization information to the new hard disk.

For servers prior to z13, refer to "Restore Hardware Management Console hard disk information" in **Chapter 2. Console information** in the *Service Guide* for the server to which this console is connected. For all other servers, refer to Step 5 on page 160 for the hard disk restore information.

When hard disk or system board recovery is complete, go to step 17.

- Did you exchange the DVD-RAM drive?
 If YES, go to step 18. If NO, go to step 19.
- **18**. If there are jumpers or tab settings on the new DVD-RAM drive, ensure the settings are the same as on the old drive.

When complete, go to step 19.

- **19**. Create a backup media for hard disk data. For instructions, see the help system on the Hardware Management Console.
- When the backup is complete, go to step 20.

20. Do the following:

1

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- a. Ensure there are no diskettes in the diskette drive.
- b. Power the system unit off.
- c. Power the system unit on.
- 14 Service guide for consoles

d. Close the call.

For instructions, refer to the *Service Guide* for the server to which this console is connected.

END OF PROCEDURE.

DVD-RAM errors

Important!! Starting with machine type 2827, DVD-RAM media is no longer supported by the HMC.

Use this procedure when a Repair and Verify window directs you to this chapter and the FRU list contains xxxx_DVD_RW_DRIVE or xxxx_DVD_RW_DISK or the customer reports a DVD read/write problem on the Hardware Management Console.

Service Tips

- Unless the customer added drives or partitions, the DVD-RAM drive identifier is **G**:. The drive is accessible only from media tasks (Format Media, and so forth).
- Use Format Media only on the Hardware Management Console.
- There is no write protection support for DVD-RAM media (no cartridge).
- 1. The media is either a DVD-RAM or CD/DVD ROM. Clean the media:
 - Do not use benzine, thinners, or any other cleaners on the disk surface.
 - Hold the disk by its edge. Do not touch the surface.
 - Remove surface dust and fingerprints by wiping from the center to the outside using a dry, soft cloth.

Reinstall the disk, label side up.

Go to step 2.

2. Retry the failing task using the original media.

Did the failure occur again?

If **YES**, go to step 3. If **NO**, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.

- **3**. Leave the original media in the drive.
 - If you are trying a restore procedure, power off the HMC.
 - For any other operation, shut down the console, and then power off the HMC.

For instructions, refer to "Console shut down" on page 182.

Power on the PC and test the DVD-RAM drive using the procedure in "Testing HMC consoles" on page 24.

Select **System Unit** problem area, and then select the test for the DVD-RAM drive. If you cannot start the test because of errors or when the test is complete, continue to step 4.

4. Did the DVD-RAM test fail while testing with the original media?

Note: If you could not start the test because of errors, answer this question YES.

If YES, go to step 5. If NO, go to step 10 on page 16.

5. Exchange the original media with a new one.

Note: If you are replacing DVD-RAM media, the new media must be formatted. If possible, use another HMC-supporting DVD-RAM.

- a. Click **Tasks Index** from the left navigation pane.
 - b. Click Format Media.
 - c. Select the **Format Type** based on usage.
 - d. If the attempt to format the DVD fails, go to step 8 on page 16.
- 6. Test the DVD-RAM.

|

a. Power off the HMC.

- b. Power on the HMC and test the DVD-RAM drive with the new media. Use the procedure in "Testing HMC consoles" on page 24.
- c. Select **System Unit** problem area, and then select the test for the DVD-RAM drive.
- 7. Did the DVD-RAM tests fail when you used the new media?

Note: If you could not start the test because of errors, answer the question YES.

If **YES**, go to step 8.

If **NO**, the original media was defective. Close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.

- 8. Verify the following:
 - All DVD-RAM drive data and power cables are secure.
 - The DVD-RAM drive is jumpered as "Master" and is cabled to the "Secondary" IDE Bus.

If diagnostics continue to fail, exchange the DVD-RAM drive. When complete, run the DVD-RAM tests again.

Note: If there are any jumpers or tab settings on the new drive, ensure the settings are the same as on the old drive.

Did the DVD-RAM drive tests continue to fail?

If **YES**, go to step 9. If **NO**, the original DVD-RAM drive was defective. Close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.

9. Continue exchanging FRUs from the FRU list and running the DVD-RAM drive tests.

If the FRUs fix the problem, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected. If you cannot isolate the problem, go to step 10.

10. The HMC resources (example: interrupt, I/O address) may be configured incorrectly. Verify the PC resources are correctly configured using the procedure in "CMOS configuration procedures for Hardware Management Consoles" on page 37.

Select **System Unit** configuration area, and verify configuration for the server unit and all adapters. When you complete the verification, retry the failing procedure and continue on step 11.

11. Does the failing procedure continue to fail?

If **YES**, call for assistance. If **NO**, the resource settings were incorrect. Close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.

END OF PROCEDURE.

USB flash memory drive (UFD) errors

Use this procedure when a Repair and Verify window directs you to this chapter and the FRU list contains xxxx_USB_KEY_xx or the customer or service representative reports a problem using the "Smart Modular Technology" labeled USB Flash Memory Drive.

Note: "Service Tips"

- Inspect the USB drive for any signs of physical damage such as a bent/loose USB connector. Replace the USB Key if it has been damaged.
- Three beeps will be heard or a confirmation window displayed whenever a UFD is plugged into an HMC USB port. Either signifies the device has been recognized by the HMC LIC code. If your HMC model has a PC speaker, ensure the volume has been enabled and set to a noticeable level. For those HMC models that do not have a PC speaker, a pop-up confirmation window will appear if the UFD has been recognized by the console.

Proceed to the following Repair and Verify procedures:

1. Remove and reinstall the failing USB Flash Drive insuring the UFD is completely inserted in the USB socket. The PC will sound 3 "beeps" (wait 30 secs) or a confirmation window appears as it recognizes the UFD.

Did the three beeps occur or pop-up confirmation window appear?

If "YES", go to step 3.

If "NO", remove and insert the UFD into any available USB socket.

If three beeps did not occur or pop-up confirmation window does not appear, return the UFD to the original USB port and go to Step 2 (toc disp). Otherwise, go to Step 3.

- 2. Use this step to display the UFD label and contents.
 - a. Move the mouse cursor over to the blue desktop area.
 - b. Perform a mouse right click.
 - c. From the "Console" window, select: "List files on USB flash memory drive".
 - d. Verify that "Label:" and USB drive contents (if any) were displayed.
 - 1) A formatted USB drive containing data will display the assigned label (if any) and its contents. If the above was seen, go to Step 3.
 - 2) An unformatted USB drive or a formatted drive with no defined label and no contents will only display "Label: Volume has no label".

If the above was seen, go to Step 4.

3) If the USB drive was not recognized by the system, an empty window will quickly display then close.

If the above was seen, then replace the USB drive.

Note: If none of the above was seen, then replace the USB drive.

3. Retry the failing task using the original USB drive.

Did the failure occur again?

If "YES", then replace the USB drive.

If "NO" close the call. For instructions, refer to the Service Guide for the server to which this console is connected.

4. Reformat the key.

Attention: Reformatting the key erases all existing data. Use the following procedure to reformat the USB key.

- a. Click **Tasks Index** from the left navigation pane..
- b. Click Format Media.
 - c. Select the Format Type based on usage.
 - d. If the attempt to format the USB Key fails, then replace the USB key.
 - 5. Retry the failing task using the reformatted USB key.

Did the failure occur again?

If "YES", then replace the USB Key.

If "NO" close the call. For instructions, refer to the Service Guide for the server to which this console is connected.

END OF PROCEDURE

Telecommunications errors

Use this procedure when a Repair and Verify window directs you to this chapter and the FRU list contains xxxx_COMM_ADAPTER, LOCAL_MODEM, or xxxx_MODEM_CABLE or when the customer reports a problem communicating with a remote console or the IBM Support System.

The telecommunications feature can send service information to or retrieve licensed internal code fixes from the IBM Service Support system or can connect to the customer's remote console.

Service tips

Note: Starting with HMC code level 2.12.0, modems are no longer supported.

The telecommunications feature is implemented with the modem configured for asynchronous operation.

Starting with the x206m (8485) and depending on country approval, the HMC is shipped with either an internal PCI or external serial port modem.

For external asynchronous modem configuration, the modem is cabled to Serial Port B ("2" or "COM2") on the system board. The COMM port has a 9-pin D-Shell connector.

For internal asynchronous modem configuration, the PCI modem adapter has two RJ11 connectors labeled "Phone" and "Line". Be certain the Telco cable is plugged into the Line connector.

There are no standalone diagnostics for the internal modem. Cables connected to the modem should always be checked for secure connection before any FRU replacement. If a telecommunications problem is isolated to the internal modem, the modem card must be replaced and the failing procedure retried to verify the fix.

The modem is configured using customer data from the **Customize Customer Information** window under **Hardware Management Control Settings**. It is important this data be correct.

Ensure the customer's telephone line is working correctly. Obtain customer assistance if necessary.

The following figure shows how the telecommunications feature is connected to a Hardware Management Console.





Perform the following steps to investigate telecommunications errors:

- 1. Many telecommunications feature problems are caused by incorrect setup information. Check the following at the Hardware Management Console or Support Element:
 - a. Ensure Authorize Remote Connections is selected and that the remote customization information for all Support Elements is correct. For information, refer to the HMC install procedures in the *Installation Manual* for your server.
 - b. Check the modem setup. For information, refer to "External Modem Settings" on page 22. If the connection to the remote console is failing, have the customer verify that the communications software is correctly installed and configured on the remote console. Also ensure that the modem at the remote console end is set up correctly.
 - **c.** If a modem is disconnected or powered off or if the setup or console configuration data has changed, restart the console. To restart a console, ensure no diskettes are in the diskette drive. Press and hold Ctrl and Alt and press Delete (Ctrl+Alt+Delete).

Did you find a setup problem in step 1 on page 18?
 If YES, go to step 3. If NO, go to step 4.

Note: If you restarted the Hardware Management Console or remote console in the previous step, answer this question **YES**.

- **3**. Retry the failing operation.
 - If the telecommunications feature works correctly now, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.
 - If the telecommunications feature still fails, go to step 4.
- 4. The modem is configured for asynchronous operation. Use the information in "Serial port and modem Tests" on page 20 to test:
 - External Modem
 - Modem
 - Serial port
 - Modem feature cable

Note: There are no standalone diagnostics for the internal modem.

Select **Telecommunications Feature: Serial Port/Modem** under **Personal Computer: System Unit** for the problem area.

If the serial port or modem diagnostics fail, go to step 9 of this procedure. If they do not fail, go to step 5 of this procedure.

5.

If you suspect a failure with the asynchronous modem, exchange the failing FRUs in the Hardware Management Console one at a time and rerun the tests to verify the repair.

- If you replace a FRU, verify the replacement FRU's configuration. For information, refer to "CMOS configuration procedures for Hardware Management Consoles" on page 37.
- When you complete the repair, restart the Hardware Management Console. When complete, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.
- If you cannot isolate the problem, call for assistance.

The test instructions will assist you in isolating cable failures.

6. If an IBM-provided modem (such as the IBM 7852-400 or the MT5600BA-V92) is installed at the Hardware Management Console, use the procedures in the maintenance information for the modem to test the modem and the telecommunications network.

If the modem is not an IBM-provided modem, ask the customer to have the modem and network tested.

When complete, go to step 7.

7. Did the modem or network tests fail?

If YES, go to step 8. If NO, go to step 9.

8. If the tests indicate a failure in an IBM-provided modem, use the maintenance information for the modem to repair it.

If the tests indicate a failure in a modem not provided by IBM or a network failure, have the customer request service.

When complete, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.

- Does the error occur while trying to communicate with a remote operator console? If YES, go to step 10. If NO, go to step 11 on page 20.
- **10.** If possible, have the customer or another service representative test the telecommunications feature and modem at the remote console.

- If it is not possible to have the tests run at the remote console, go to step 12.
- Otherwise, when testing is complete, go to step 11.
- **11**. If the tests at the remote console failed, have the equipment at the remote location serviced. When complete, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected. Otherwise, proceed to step 12.
- 12. Test the Hardware Management Console using the procedure in "Testing HMC consoles" on page 24. Select **System Unit** problem area, and then select **Run All Selected**.
 - If the tests fail, isolate the problem using the procedures in the HMM (in PDF format) on the Diagnostic CD-ROM shipped with the console. When complete, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.
 - If the tests do not fail or if you cannot isolate the problem, call for assistance.

END OF PROCEDURE.

Serial port and modem Tests

Use this procedure to test the telecommunications serial port (system board) and modem feature.

- 1. Power the system unit off, and check for the following:
 - a. If present, disconnect any cable attached to the system unit Serial Port 1 ("COM1") and Universal Serial Bus ("USB").
 - b. Ensure the cable connecting Serial Port 2 ("COM2") and the modem is secure.
 - **c**. Ensure the modem is powered on and is correctly configured for asynchronous operation. For modem settings, refer to "External Modem Settings" on page 22.
 - d. Ensure the telephone line is active and connected to the modem's "Line" input. Diagnostics will fail if a disconnected or inactive phone line is detected. Request customer assistance if necessary.
 - e. Power on the console.
 - f. Insert the Diagnostic CD into the DVD-RAM drive.
 - g. Wait until the **Startup Menu** is displayed:
 - h. Select Desktop System Diagnostics.
 - i. Wait until a diagnostic selection menu is displayed, and then go to step 2.
- 2. The following procedure starts serial port and modem diagnostics.
 - a. Select the **Diagnostics** option on the tool bar, and press Enter.
 - b. Select the Other Devices option, and press Enter.
 - c. Select the Modem option, and press Enter.
- **3**. Did the test return an "N/A" (Not Available)?

If YES, go to step 4. If NO, go to step 6.

- 4. The system unit diagnostics did not detect a modem connected to "COM2". Check for the following:
 - The modem is configured for asynchronous operation and powered on.
 - The cable connecting the system unit and modem is secure.
 - Verify the preceding items and rerun **Modem** diagnostics. Go to step 5.
- 5. Did the test return an N/A (Not Available)?
- If YES, go to step 8 on page 21. If NO, go to step 6.
- Did the test return PASSED (No Failures)?
 If YES, go to step 14 on page 21. If NO, go to step 7.
- Did the test return FAILED (Failure)?
 If YES, go to step 8 on page 21. If NO, go to step 13 on page 21.

- 8. The Modem test returned either an "N/A" or "FAILED". The following steps verify system board serial port operation.
 - a. Press Esc until the initial diagnostics menu is displayed.
 - b. Select the **Diagnostics** option on the tool bar, and press Enter.
 - c. Select the Serial Ports option, and press Enter.
 - d. Under COM 2 verify these settings: Base: 2F8H and IRQ#: 3.

Were the preceding Configuration/Setup values present?

If YES, go to step 10. If NO, go to step 9.

9. Serial Port B ("COM 2") may not be enabled.

From the **Configuration/Setup** utility, ensure the following is present:

- Port Services and I/O Ports
 - Serial Port Setup
 - Serial Port B Address 2F8h
 - Serial Port B IRQ IRQ 3

Refer to the **Setup Utility Program** in the HMM for assistance.

If Serial Port B ("COM 2") was *not* configured, configure the port using the preceding values and save the configuration. Go to step 1 on page 20 to rerun diagnostics. Otherwise, the diagnostics failed to detect a configured **"COM 2"** port. Replace the system board using the procedures described in the HMM. Ensure the replacement system board **Configuration/Setup** values are correct. See "CMOS configuration procedures for Hardware Management Consoles" on page 37.

- 10. The diagnostics have detected Serial Port B (COM 2).
 - a. Disable "COM 1" testing by selecting the area to the right of each >> and pressing the space bar.
 - b. Enable all "COM 2" tests except **External Loopback** by selecting each option and pressing the space bar until the >>symbol appears to the left.
 - c. Run "COM 2" diagnostics by selecting Run Screen.

Go to step 11.

- 11. Did all selected "COM 2" diagnostic tests return PASSED?
 - If YES, go to step 13. If NO, go to step 12.
- 12. The system unit "COM 2" diagnostics have detected a hardware problem. Replace the system board using the procedures described in the HMM. Ensure the replacement system board Configuration/Setup values are correct. See "CMOS configuration procedures for Hardware Management Consoles" on page 37.

Go to step 14.

- **13**. The system unit "COM 2" port diagnostics have run error free. The problem may be in the modem cable or modem.
 - a. If wrap tool P/N 72X8546 is available, connect it to the PC/Modem cable, modem connector end. Select and run **External Loopback** diagnostics. If they fail, replace the modem cable. If they pass, replace the modem. Go to step 1 on page 20 and test the replacement FRUs.
 - b. Press Esc until the initial diagnostics menu is displayed.
 - **c**. Replace the PC/modem cable and modem, one at a time. Go to step 1 on page 20, and test the replacement FRUs.
- 14. Either the system board, modem cable, or modem have been exchanged and the diagnostics run error free or there was no problem with the original FRUs.

If you were instructed to **Run All Selected**, go to "Testing HMC consoles" on page 24 and test the remaining adapters. Otherwise, return to the procedure that directed you here.

END OF PROCEDURE.

External Modem Settings: Modems used with Hardware Management Consoles are configured for asynchronous communications. External Modems must have the modem cable plugged into serial port "B", "2", or "COM2". Internal Modems must have the Telco cable plugged into the PCI modem's RJ11 connector labeled "Line".

Internal modems are auto-configured and need no adjustment.

IBM 7855 TCP/IP settings: If you are using an IBM 7855, refer to the section on installation and configuration in *IBM 7855 Modem Guide to Operations*, GA33-0160. Follow the instructions to configure the modem for:

- Switched network operation
- Asynchronous operation
- DTE sending V.25bis commands

IBM 7857 and 7858 TCP/IP settings: If you are using an IBM 7857 or an IBM 7858:

- 1. Ensure that the modem cables are connected and the unit is powered on.
- 2. Press the down arrow (*i*) until **Configurations** displays on the top row.
- **3**. Press the right arrow (►) until **Select Factory** displays on the bottom row.
- 4. Press ENTER to select the option.
- 5. Press the up arrow ([↑]) until **0** displays.
- 6. Press ENTER to load the predefined factory configuration 0.
- 7. Press the down arrow (\downarrow) until **Configurations** displays on the top row.
- 8. Press the right arrow (>) until Save User Configuration displays on the bottom row.
- 9. Press ENTER to select the option.
- 10. Press the up arrow (\uparrow) until 1 displays.
- 11. Press ENTER to save factory configuration 0 as User configuration 1.

For more information, refer to the *IBM 7857 Modem Guide to Operations*, GA13-1839, or the *IBM 7858 Modem Guide to Operations*, GA13-1981.

IBM 7852 Model 400 TCP/IP settings: Set the modem switches to the following configuration for asynchronous operation:

Switch - Set To	Meaning
1 - Up	DTR dependant on interface
2 - Up	SDLC mode
3 - Down	Enable command responses (dial-up)
4 - Down	5853 emulation on
5 - Up	Enable automatic answer (dial-up)
6 - Up	Slave clocking off
7 - Up	RTS dependant on interface
8 - Down	Enable command mode
9 - Down	Remote digital loopback
10 - Up	Dial-up operation
11 - Down	Internal clocking
12 - Down	Asynchronous operation
13 - Up	28.8 Kbps

Table 7. Modem Switch Settings and Meanings
Table 7. Modem Switch Settings and Meanings (continued)

Switch - Set To	Meaning
14 - Up	28.8 Kbps
15 - Up	CD and DSR function normally
16 - Up	Two wire leased

For more information, refer to IBM 7852 Model 400 External Data/FAX Modem Technical Reference.

MultiTech MultiModem II Model MTS5600BA TCP/IP settings: The MTS5600BA modem is set for asynchronous operation and requires no additional configuration changes or software installation. The modem does not support synchronous operation.

Note: The MT5600BA-V92 closely resembles the MT5600BA-V90, but the power connector of the -V92 differs from that of the -V90. The -V92 uses a round, barrel power connector, and the -V90 uses a rectangular two-prong power connector.

Multitech: MT5600BA-V92

The MT5600BA-V92 is a global modem requiring configuration (country code) to support the defaults of the country for which it is being used.

To configure the country code use the LCD panel buttons. This is documented (in order of preference) in the following Multitech documentation enclosed with the modem:

- MT5600BA for IBM How to Set Your Country Code and IBM Specific AT Commands
- *MultiModemII Quick Start Guide* (hardcopy)
- MultiModemII Users Guide (CD-ROM MTECH subdirectory, 88302601.PDF).

From the factory, the country code should be set to "B5" supporting most countries. However it should be verified using the procedures in the preceding documentation.

For zSeries applications, this modem does not support synchronous operation and can be used only for asynchronous installations.

Multitech: MT5600BA-V90

The MT5600BA-V90 is set for asynchronous operation and requires no configuration changes or software installation. For zSeries applications, this modem does not support synchronous operation and can be used only for asynchronous installations.

For additional information refer to the (hardcopy) MultiModemII Quick Start Guide.

Internal modem: The internal modem is auto-configured using customer data from the **Customize Customer Information** task under **Hardware Management Control Settings**. It is important that this data is correct.

Other non-IBM modems: The **ATtention** (**AT**) command string equivalent required for the IBM 7857 is provided as a guide. The non-IBM modems may be different. The **AT** command string for the IBM 7857 is:

- Q0 Messages or return codes are sent to DTE
- V1 Selects Return Messages in English Words
- Y0 Long Break Disconnect disabled
- &AO Multistandard starting from the DTE speed, the handshake is attempted at the DTE data rate, if unsuccessful, the lower speeds are then tried until the connection is established.
- &C1 DSR(C107) and CD(C109) in normal mode

- &D2 The modem drops the line and goes off-line when a DTR(C108) transition ON to OFF is detected. Automatic answering or calling are disabled until DTR is turned ON.
- &E0 Error Correction Disabled
- $\& G2 \quad V.22 \mbox{ guard tone at } 1800 \mbox{Hz is generated.}$
- &HO Disables leased line auto-handshaking
- &I1 Asynchronous Data Buffering, constant DTE speed enabled. CONNECT message indicates the DTE data rate. Parity is transferred in transparent mode.
- &K3 XON/XOFF and CTS(C106) DTE flow control.
- &LO Select Switched Line
- &M3 Synchronous mode 3
 Off Line: Asynchronous mode.
 On Line: Synchronous mode.
 CTS(C106) is off until the connection with the remote modem
 is established, regardless of AT&R.
- &RO In the On Line condition, CTS(C106) follows RTS(C105) with the delay specified in register S26 (0 to 2.55 seconds). In the Off Line condition, CTS(C106) is ON.
- &UO Modem to DTE data flow control disabled.
- &V1 Command Mode access via Escape sequence (+++) disabled.
- &X0 Internal Synchronous DTE Transmit Clock
- *A0 Reverse answer tone for V32 or V32bis.
- *D0 DTR(C108/1) function is disabled.
- *E1 Data Compression V.42bis or MNP-5 enabled.
- *G1 Calling tone enabled.
- *M1 Select originate mode.
- *P1 DSR(C107) wink, after aborted call, DSR goes on for 200ms
- *Q1 Retrain on bad line quality
- *T3 TC1(C141) and TC2(C140) DTE Interface signals enabled.
- *V2 V25bis in C108/2 HDLC, NRZ, ASCII synchronous communications V25bis character format is 7 data bits with odd parity
- *X1 Transmit and Receive synchronous clocks at the DTE interface always active.
- *Y0 Transmit Break by the DTE is immediately passed through the modem, bypassing the buffers, (expedited, non-destructive).
- #A0 Autoreliable Buffer and Character disabled.
- #B0 Automatic switching from leased line to switched line disabled.
- #E0 LAPM protocol Detection Phase disabled.
- #F2 Trellis modulation disabled, Proprietary modulation enabled
- #J1 Pre-emphasis 1 (high frequency)
- #M1 V32/V32bis Fast Training Enabled.
- #P1 Handshake/Call break disabled.
- #W0 Prefix dialing disabled.
- #X0 All/xxxx return messages are disabled

Display problems

Use this procedure when the customer reports a display problem.

The display has no internal FRUs.

- 1. Test the display using the documentation shipped with it. If the problem is not resolved, replace the display.
- 2. Verify the repair using the procedure in "Testing HMC consoles." Select **System Unit** for the problem area, and then select **Display**. When the test and repair are complete, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.

END OF PROCEDURE.

Testing HMC consoles

This section describes diagnostics and configuration for Hardware Management Consoles.

Use the information in this section when you are directed to test the Hardware Management Console to isolate a problem or verify a repair.

Note:

- 1. Refer to "Hardware Maintenance Manuals (HMMs)" on page 4 for information on how to access the specific HMM for your Hardware Management Console (HMC).
- 2. Reference "System unit testing for 8305, 8187, 8141, 8485, 4362 Hardware Management Consoles" on page 27 for system unit diagnostic procedures for HMC models 8305, 8187, 8141, 8485, and 4362.
- **3.** The 4367 Hardware Management Console (HMC) System Diagnostics have migrated from DOS to Linux based requiring procedural changes. For all 4367 diagnostics (system unit and adapter), proceed to "System unit testing for 4367 Hardware Management Consoles" on page 27.
- 4. The 7327 Hardware Management Console (HMC) Linux-based diagnostics are resident in **Read Only Storage** requiring no bootable media. For all 7327 diagnostics (system unit and adapter), proceed to "System unit testing for 7327 Hardware Management Consoles" on page 29.
- The 7382 Hardware Management Console (HMC) Linux-based diagnostics are resident in Read Only Storage requiring no bootable media. For all 7382 diagnostics (system unit and adapter), proceed to "System unit testing for 7382 Hardware Management Consoles" on page 30.
- 6. The 7914 Hardware Management Console (HMC) Linux-based diagnostics are resident in **Read Only Storage** requiring no bootable media. For all 7914 diagnostics (system unit and adapter), proceed to "System unit testing for 7914 Hardware Management Consoles" on page 31.
- 7. The 2461 Hardware Management Console (HMC) UEFI-based diagnostics are resident in **Read Only Storage** requiring no bootable media. For all 2461 diagnostics (system unit and adapter), proceed to the *Service Guide for 2461 Hardware Management Console*.

Three diagnostic options supporting the Hardware Management Console, the Support Element, and network adapters are available on the *Diagnostic CD* (P/N 12R9120).

The CD-ROM is bootable, and each of the three options are menu-driven. The CD-ROM also contains a *Service* directory containing HMMs (in Adobe Acrobat PDF format) and diskette images (ARDI executable format). This manual will direct you into and out of the HMMs, diagnostics, and other repair or replace activities.

From model to model, adapters performing the same function may require different bus support. Use the following table as a guide to select the correct adapter or bus when performing configuration and diagnostic test procedures.

Adapters	8305, 8187, 8141	8485, 4362		
Token ring	PCI	PCI		
Ethernet	PCI or planar	PCI-Express or planar		
Modem (See note)	External serial	PCI		

Table 8. Adapter Bus Support

Note: The PCI modem is available only in those countries where it is approved. It is not available at all for the 7382 system unit.

Use Figure 6 on page 170 to help identify adapters.

Use "CMOS configuration procedures for Hardware Management Consoles" on page 37 if you are directed to configure or verify the configuration of a PCI adapter or system unit.

Note: If you are directed to **Run All Selected**, start with the **System Unit** diagnostic procedures for the console you are repairing.

Problem Area	Go To
Personal Computer: System Unit • Hard Disk • Display • Floppy Drives • CD-ROM Drive • DVD-RAM • Keyboard/Mouse • Memory • Power • Run All Selected	 "System unit testing for 8305, 8187, 8141, 8485, 4362 Hardware Management Consoles" on page 27 "System unit testing for 4367 Hardware Management Consoles" on page 27 "System unit testing for 7327 Hardware Management Consoles" on page 29 "System unit testing for 7382 Hardware Management Consoles" on page 30 "System unit testing for 7914 Hardware Management Consoles" on page 31 "Testing 2461 HMC (FC 0096) and 2461 HMC (FC 0095)" or "Testing 2461 HMC (FC 0083) and 2461 HMC (FC 0082)" in the Service Guide for 2461 Hardware Management Console
Personal Computer: Serial Port/Modem Telecommunications Feature: Serial Port 	"Serial port and modem Tests" on page 20
Personal Computer: PCI Adapters Token Ring 	"Token-Ring network repair procedures" on page 169
Personal Computer: PCI Adapters • Ethernet (planar board or adapter)	"Ethernet tests for PCI bus adapter" on page 33

Table 9. Diagnostic Procedures for Hardware Management Consoles

Information and test menu selection

Table 10. Information and Menu Selections

Information	Menu Selection
To test 8305 system units: Diagnostics , Hardware Maintenance Manual (8305HMM.PDF) located in the Service subdirectory of the zSeries Diagnostic CD-ROM	Desktop System Diagnostics
To test 8187 system units: Diagnostics , Hardware Maintenance Manual (8187HMM.PDF) located in the Service subdirectory of the zSeries Diagnostic CD-ROM	Desktop System Diagnostics
To test 8141 system units: Diagnostics , Hardware Maintenance Manual (8141HMM.PDF) located in the Service subdirectory of the zSeries Diagnostic CD-ROM	Desktop System Diagnostics
To test 8485 system units: Diagnostics , Hardware Maintenance Manual (8485HMM.PDF) located in the Service subdirectory of the z Systems [®] Diagnostic CD-ROM	Tower System Diagnostics
To test 4362 system units: Diagnostics , Hardware Maintenance Manual (4362HMM.PDF) located in the Service subdirectory of the z Systems Diagnostic CD-ROM	Tower System Diagnostics
"Token-Ring testing" on page 172	IBM PCI Token Ring Adapter LANAID and Diagnostics Diskette
"Ethernet tests for PCI bus adapter" on page 33	Intel PRO or Broadcom Ethernet Diagnostics
HMC system units: "Serial Port and Modem Tests" (8305, 8187, and 8141)	Desktop System Diagnostics
HMC system units: "Serial Port and Modem Tests" (8485, 4362, and newer)	Tower System Diagnostics

System unit testing for 8305, 8187, 8141, 8485, 4362 Hardware Management Consoles

All system diagnostics for the Hardware Management Console reside on the bootable Hardware Management Console and Support Element CD-ROM. Performing actions other than those specified in the following procedure may cause errors. Desktop PC diagnostics display **PC Doctor** as their source:

- 1. If you know which device is failing or you were sent here by another procedure, do the following:
 - a. Power on the PC
 - b. Insert the Diagnostic CD into DVD-RAM drive
 - c. Wait until the Startup Menu is displayed
 - d. Select either Desktop or Tower System Diagnostics from Table 10 on page 26
 - e. Wait until a diagnostic selection menu is displayed; then go to step 2.

Locate the corresponding documentation and menu selection for the console you are testing. Refer to "Information and test menu selection" on page 26.

If the Main Menu cannot be displayed because of a power or other PC failure, use the maintenance information shipped with the PC to correct the problem.

- 2. Select either **Diagnostics** or **Interactive Tests** for a list of devices to test.
 - If you select **Interactive Tests**, then select the device requiring manual intervention (keyboard, video, mouse, diskette, CD-ROM).
 - If you select **Diagnostics**, then select **Run Normal/Quick Test** for predefined test sequences or select the device that does not require manual intervention (CPU, system board, I/O ports, fixed disks, memory).

After you select devices or tests, follow the instructions to test. When the tests complete, return to the procedure that sent you here.

If you replace the system board or battery, you will have to configure the system unit. Refer to "CMOS configuration procedures for Hardware Management Consoles" on page 37.

END OF PROCEDURE.

System unit testing for 4367 Hardware Management Consoles

Note: xSeries diagnostics have migrated from DOS to Linux. Always use the "keyboard's" (vs keypad's) **Enter** key.

CDROM: HMC DIAGS CD P/N: 45D3792

Clean Run Time: Approximately 13 minutes.

Use the following procedure to test the 4367 system unit:

- 1. Power off the system unit.
- 2. Power on the system unit.
- 3. Install the HMC DIAGS CD diagnostic CDROM. The IBM Memory Test screen is displayed.
- 4. Select Quit then Quit to DSA. Otherwise, the Quick Memory Test will autostart requiring several minutes to complete.

Linux starts to boot. Allow several minutes to initialize. Linux initialization is successful when the following displays: Starting DSA Preboot v1.00 Extracting

Commands:

gui: Enter GUI Environment cmd: Enter Command Line Environment Level 01b

copy:	Copy DSA Results to removable media
exit:	Quit program Note: This will reboot the system
help:	Display this help message: Please enter a command. (Type help for commands)

5. Type gui. Press Enter.

The IBM Dynamic System Analysis screen is displayed.

Note: The following functions are not supported and should not be selected:

- Send System Information to IBM
- Copy System Information to Local Media
- **6**. For Adapter Diagnostics, proceed to "4367 optional adapters." For System Diagnostics, continue with the following procedure:

Select:	Diagnostics
Select:	Add Tests
Select:	I want to run all tests on all devices
Select:	Next (lower right hand corner)
Select:	Start Tests
Tests take	approximately 15 minutes to complete.
Fncumos	All entries in status column show Decod
Ensure:	All entries in status column snow Passed.
Select:	Back (upper left hand corner)
Select:	Home
Select:	Fxit
	2/110

7. At the command prompt type: exit and remove the diagnostic CD.

END OF PROCEDURE

4367 optional adapters

Note: There are no stand alone diagnostics for the following optional PCI and PCI-e adapters:

PCI-e(PCI-Express)	Gigabit Ethernet
PCI	Internal Modem

CDROM HMC DIAGS CD P/N: 45D3792

Clean Run Time: Approximately 5 minutes.

Use the following procedure to verify that the adapters are installed and correctly respond to identification queries:

1. Using the mouse

Select: Select:	System Information PCI Info	
Verify the following	devices:	
PCI Class	Description	Slot
Network	Ethernet controller: Broadcom Corporation NetXtreme II BCM5708 Gigabit Ethernet	Onboard Onboard Onboard
Simple Communications	Communication controller; Agere Systems Venus Modem (V90) 56K Flex	Slot4 PCI Slot4 PCI Slot4 PCI

- 2. Select Home.
- 3. Select Exit.
- 4. At the command prompt, type exit and remove the diagnostic CD.

END OF PROCEDURE

System unit testing for 7327 Hardware Management Consoles

Note: xSeries diagnostics have migrated from media to on-board ROM. No media is required.

Ensure:

- 2nd system board ethernet adapter and the PCIe ethernet adapter are connected to a switch or hub.
- DVD drive contains no bootable media (added later).

Use the following procedure to test the 7327 system unit.

- 1. Power[®] off the system unit.
- 2. Power on the system unit.
- 3. "System Initializing" appears in lower left-hand corner.
- 4. "IBM Server x/System Firmware" screen appears with "Configuring System" in lower left-hand corner.

Note: Hint: You can press "F2" now (only once) or wait for the next screen to display.

- a. "[F1] Setup [F2] Diagnostics [F12] Boot Device are displayed.
- b. Press "F2" to enter "Diagnostics".
- 5. The "IBM Memory Test" screen is displayed.

Attention:

- Do not touch the keyboard so the "Quick Memory Test" auto runs after 5 seconds.
- Do not touch the keyboard so the "Linux Boot" image stored ROS memory boots and initializes. This will take a minute or two.
- 6. Verify the following:

Commands:

- gui Enter Graphical User Interface...
- cmd Enter Command Line Interface...
- exit Quit Program.

Note: This will eject...

• help - Display this help message.

Please enter a command...

>_

- 7. Type "gui" to invoke diagnostics.
- 8. Verify the "Dynamic System Analysis" screen is displayed.

Note: Use the mouse to navigate screen selections.

- 9. Click on the "I accept the terms in the license agreement" link near the bottom of the blue window.
- 10. You will see a "Copying Schema, please wait a moment..." box appear. If this box does not clear itself within two minutes, power off and try again.
- 11. Click "Diagnostic" on the screen's left side.
- 12. From the "Diagnostic Screen" select "Add Test".
- 13. From the "Add Tests" Window:
 - Insure "Group by: Test" is selected and select "Add All".

Note: CPU and Memory Stress Tests each take > 5 minutes to complete. If time is a factor, perform the following procedure to remove the tests. If field fails dictate, these tests will become manditory. For now, they are optional.

Under the "Test Items" list select:

- CPU Stress Test Then select "Rem Sel"
- Memory Stress Test .. Then select "Rem Sel"
- 14. Insert "test media" into the DVD drive.
- 15. Select "Ok" & from the "Diagnostic" window, select "Start Test".
- 16. Verify "SUCCESS:ALL" in the "Information" window.
- 17. Remove "test media" from the DVD drive.
- **18**. Select "System Inventory", wait till inventory has completed. Then select "Manual" and insure only "Network Setting" is checked.
- 19. Select "Begin". When Status is "Complete" select "Network Setting".
- 20. Verify only two ethernet adapter information is displayed:
 - "eth0" Intel Copporation...
 - "eth1" NetXtreme II...
- 21. Select "Exit" and "Ok".
- 22. Type "exit" on the command line.
 - The system will fail in its attempt to boot (no bootable image).
- 23. Power off the system.

END OF PROCEDURE

System unit testing for 7382 Hardware Management Consoles

Note: xSeries diagnostics have migrated from media to on-board ROM. No media is required.

Make sure that all Ethernet ports are connected to an Ethernet switch. A Gigabit switch would be ideal, but a 10/100 switch will suffice.

Use the following procedure to test the 7382 system unit:

- 1. Power off the system unit.
- 2. Power on the system unit.
 - a. "System Initializing" appears in lower left-hand corner.
 - b. "IBM Server x/System Firmware" screen appears with "Connecting Boot Devices and Adapters" in lower left-hand corner.

Note: Hint: You can press "F2" now (only once) or wait for the next screen to display.

- 1) "[F1] Setup [F2] Diagnostics [F12] Boot Device are displayed.
- 2) Press "F2" to enter "Diagnostics".
- c. The "IBM Memory Test" screen is displayed.

Attention:

- Do not touch the keyboard so the "Quick Memory Test" auto runs after 5 seconds. The memory test will take about 5 minutes to run.
- Do not touch the keyboard so the "Linux Boot" image stored ROS memory boots and initializes. This will take a minute or two.
- d. Verify the following:

Commands:

- gui Enter Graphical User Interface...
- cmd Enter Command Line Interface...
- exit Quit Program.

Note: This will eject...

• help - Display this help message.

Please enter a command...

>_

- e. Type "gui" to invoke diagnostics.
 - 1) Verify the "Dynamic System Analysis" screen is displayed.

Note: Use the mouse to navigate screen selections.

- 2) Click on the "I accept the terms in the license agreement" link near the bottom of the blue window. You will see a "Copying Schema, please wait a moment..." box appear. If this box does not clear itself within two minutes, power off and try again.
- 3) Click "Diagnostic" on the screen's left side.
- 4) From the "Diagnostic Screen" select "Add Test".
- 5) From the "Add Tests" window, insure "Group by: Test" is selected and select "Add All".

Note: CPU and Memory Stress Tests each take > 5 minutes to complete. If time is a factor, perform the following procedure to remove the tests. If field fails dictate, these tests will become mandatory. For now, they are optional.

Under the "Test Items" list select:

- CPU Stress Test Then select "Rem Sel"
- Memory Stress Test .. Then select "Rem Sel"
- 6) Insert "test media" into the DVD-RAM drive.
 - a) Select "Ok" & from the "Diagnostic" window, select "Start Test".
 - b) Verify "SUCCESS:ALL" in the "Information" window. This will take about 15 minutes when the CPU and Memory Stress Tests are included. The DiskDefaultDiagnostic might show "Aborted" under the Status column.
- 7) Remove "test media" from the DVD-RAM drive.
- 8) Select "System Inventory". Then select "Manual" and insure only "Network Setting" is checked.
 - a) Verify the following Ethernet adapter information is displayed:
 - "eth0" Intel Corporation I350...
 - "eth1" Intel Corporation I350...
 - b) Select "Exit" and "Ok".
- **9)** Type "exit" on the command line. The system will fail in its attempt to boot (no bootable image).

10)

3. Power off the system.

END OF PROCEDURE

System unit testing for 7914 Hardware Management Consoles

Note: xSeries diagnostics have migrated from media to on-board ROM. No media is required.

Make sure that all Ethernet ports are connected to an Ethernet switch. A Gigabit switch would be ideal, but a 10/100 switch will suffice.

Use the following procedure to test the 7914 system unit:

- 1. Power off the system unit.
- 2. Power on the system unit.
 - a. "System Initializing" appears in lower left-hand corner.
 - b. "IBM Server x/System Firmware" screen appears with "Connecting Boot Devices and Adapters" in lower left-hand corner.

Note: Hint: You can press "F2" now (only once) or wait for the next screen to display.

- 1) "[F1] Setup [F2] Diagnostics [F12] Boot Device are displayed.
- 2) Press "F2" to enter "Diagnostics".
- c. The "IBM Memory Test" screen is displayed.

Attention:

- Do not touch the keyboard so the "Quick Memory Test" auto runs after 5 seconds. The memory test will take about 5 minutes to run. It will initially claim a run time of approximately 12 minutes but the estimated time will drop quickly.
- Do not touch the keyboard so the "Linux Boot" image boots and initializes. This will take a minute or two.
- d. Verify the following:

Commands:

- gui Enter Graphical User Interface...
- cmd Enter Command Line Interface...
- exit Quit Program.

Note: This will eject...

• help - Display this help message.

Please enter a command...

>_

- e. Type "gui" to invoke diagnostics.
 - 1) Verify the "Dynamic System Analysis" screen is displayed.

Note: Use the mouse to navigate screen selections.

- 2) Click on the "I Accept" button near the bottom of the window.
- 3) Click on "Customized Inventory Collection and Diagnosis"
- 4) Click on the "Network Setting" box on the left side group of selections.
- 5) Click on the "Diagnostic Tests" box on the right side group of selections. This will select all of the diagnostic tests. Insert a CD/DVD disk in the DVD drive for the optical drive tests.
- 6) Click on the "OK" button.
- 7) Verify "Completed" in the "Status" column. This will take about 13 minutes.
- 8) Remove the test media from the DVD drive.
- 9) Select "Network Setting" under "Collection and Diagnosis" to see the Ethernet port status.
- **10)** Verify the Ethernet adapter information is displayed.
- 11) Select "System Inventory". Then select "Manual" and insure only "Network Setting" is checked.

a)

• "eth0" Intel Corporation I350...

- "eth1" Intel Corporation I350...
- b) Click on "Exit" on the menu bar and then "OK".
- 12) Type "exit" on the command line. The system will fail in its attempt to boot (no bootable image).
- **3**. Power off the system.

END OF PROCEDURE

System unit testing for 2461 Hardware Management Consoles

Go to the *Service Guide for 2461 Hardware Management Console* for all service information on the 2461 HMCs. This includes information to test the 2461 HMC system unit, which is located in the "Testing 2461 HMC (FC 0096) and 2461 HMC (FC 0095)" or "Testing 2461 HMC (FC 0083) and 2461 HMC (FC 0082)" section in the *Service Guide for 2461 Hardware Management Console*.

Ethernet tests for PCI bus adapter

Use the following information to test the Ethernet network adapter.

Review "Service tips for Hardware Management Consoles" on page 7 and "Installed adapters" on page 10.

No Ethernet feature configuration is needed. The adapter auto-detects network ring speed and duplex (half or full) mode during power-on initialization. The adapter LEDs (near the external connector) provide information useful for monitoring Ethernet status and for problem solving. Refer to "Ethernet status LEDs" on page 179.

1. Power on the console.

Insert the Diagnostic CD into DVD-RAM drive. Wait until the **Startup Menu** is displayed.

- 2. Determine whether to use Broadcom or Intel diagnostics from your review of the "Service tips for Hardware Management Consoles" on page 7 and "Installed adapters" on page 10. At the **Startup Menu**, select one of the following:
 - Intel PRO Ethernet Diagnostics
 - Broadcom Ethernet Diagnostics.

Was a message displayed stating no Ethernet or supported devices were detected?

If YES, go to step 3. If NO, go to step 5 on page 34.

- **3**. If the diagnostics did not detect any Ethernet support, do the following:
 - For Ethernet adapter:
 - a. Verify the Ethernet adapter is securely installed and run the diagnostic again.
 - b. If the adapter is still not detected, it must be replaced. Go to step 13 on page 35.
 - For Ethernet planar:

Use the following procedure to verify Ethernet Support is enabled. Leave the Ethernet diagnostic diskette installed in the computer.

a. Power off the system unit.

Note: When the system unit is powered on, watch for the Press F1 for Configuration/Setup message.

- b. Power-on the computer.
- c. Start the Configuration and Setup Utility by pressing F1.
- d. Select the **Devices and I/O Ports** menu.
- e. Select the Ethernet Setup menu.

f. Verify that Ethernet Support is Enabled.

Was the Ethernet Support Enabled?

If YES, go to step 13 on page 35. If NO, go to step 4.

- 4. Diagnostics failed to detect Ethernet support because it was not enabled on the system unit.
 - Enable the Ethernet support by pressing the -> Key.
 - Save the configuration changes by repeatedly pressing the Esc key until only the **Configuration/Setup Utility** menu is displayed.
 - Select Save Settings, Exit Setup, Exit the Setup Utility.
 - The system will reboot from the Diagnostic CD.

Return to step 2 on page 33.

5. Ethernet support was successfully detected. In step 2 on page 33, were the BroadCom diagnostics selected?

If YES, go to step 7. If NO, go to step 6.

6. An Intel-based Ethernet adapter is being tested.

If both planar and adapter Ethernet support have the same manufacturer, an adapter selection menu is displayed.

Was a numbered list of detected Ethernet adapters displayed?

If YES, go to step 9. If NO, go to step 11 on page 35.

7. A BroadCom-based Ethernet adapter is being tested.

If both planar and adapter Ethernet support have the same manufacturer, an adapter selection menu is displayed based on the MAC address. Select the address for the adapter being tested.

A series of diagnostic tests will run automatically. Verify that all tests end with a result of **Passed** or **N/A**.

Were all test results either **Passed** or **N/A**?

If YES, go to step 8. If NO, go to step 13 on page 35.

- **8**. Broadcom Ethernet diagnostics have run successfully. Use the following procedure to verify network connectivity:
 - a. Connect the Ethernet network cable to the adapter you are testing and to the switch.
 - b. Ensure the switch is powered on and, if present, the switch cable detect LED is lit.
 - **c**. Ensure the adapter's network connectivity LED is lit. The LED is located to the left of the RJ45 network socket.

If either of the two previously described LEDs is not lit, replace the following FRUs in order:

- a. Network cable
- b. Ethernet adapter

c. Switch.

Verify LED operation after replacing each FRU. If all FRUs have been replaced and either LED is still unlit, call for assistance.

- **9**. Selection items referred to as **adapter** are PCI Ethernet adapters. Otherwise, the item refers to Ethernet support on the planar.
 - a. Select the device for test, and press Enter to continue.
 - b. Select Test Adapter from the Main Menu, and press Enter to continue.
 - The Test Menu displays. To support multiple Ethernet Test releases, answer the following:

Is Continuous Network Test present in the Test Menu?

If YES, go to step 12 on page 35. If NO, go to step 10.

10. Ethernet support has been detected.

To test the adapter:

a. Ensure the adapter is cabled to the network.

- b. Ensure theswitch is powered on.
- c. Ensure cable connection LED on the switch is on.
- d. Select Test Adapter from the Main Menu window.
- e. Select Begin Adapter Tests from the Test Menu.
- f. If additional messages are displayed before the tests start, select Continue.
- g. From the Test Adapter window, note the test results.
 - Replace the Ethernet adapter If any of the following tests fail:
 - Device Registers
 - FIFOs
 - EEPROM
 - Interrupt
 - MAC Loopback
 - Physical Loopback.

Go to step 13.

If all of the tests pass, continue as follows.

Note: Network tests require a second station (responder) to test station-to-station communication. Refer to the help windows for additional information.

Link and **Network Test** verify network connectivity. If they are not run automatically, do the following:

- 1) Press Esc to return to the Test Menu.
- 2) Select Change Test Options.
- 3) Select Link and Network Test.
- 4) Press Enter to enable the tests.
- 5) Press Esc to return to the Test Menu.
- 6) Select Begin Adapter Tests.

If either the **Link** or **Network Test** fails, there is a network connectivity problem. Go to step 15 on page 36 .

If all the tests pass, go to step 14 on page 36.

11. One Ethernet device was detected; testing may proceed.

To test the adapter, select Test Adapter from the Main Menu.

The Test Menu displays. To support multiple Ethernet test releases, answer the following:

Is Continuous Network Test present in the Test Menu?

If YES, go to step 12. If NO, go to step 10 on page 34.

12. Ethernet support was successfully detected; testing may proceed.

Note: If attached, disconnect the Ethernet network cable before proceeding.

a. Select Test Adapter from the Test Adapter window.

Note: If the Ethernet cable is connected to the system unit, a message requesting you to disconnect it is displayed.

- b. Select Continue from the Setup set the adapter's master memory message window.
- c. From the Test Adapter window, ensure the following tests passed:
 - Adapter tests
 - Loopback x, xxx Mbps.
- Did all tests indicate passed?

If YES, go to step 14 on page 36. If NO, go to step 13.

13. Ethernet support was not successfully verified.

Replace the Ethernet adapter or planar.

Note: For planar board replacement instructions, refer to the HMM for the console machine type.

If the planar board has been replaced, verify the system unit configuration using the "CMOS configuration procedures for Hardware Management Consoles" on page 37. Verify Ethernet support after replacing the failing FRU.

Go to step 14.

- 14. The computer's Ethernet support was successfully verified. Use the following procedure to verify network connectivity.
 - a. Press Enter to return to the Test Adapter menu.
 - b. Connect the Ethernet network cable to the system unit and the switch.
 - c. Ensure the switch is powered on and, if present, the switch's cable detect LED is lit.
 - d. Select Continuous Network test from the Test Adapter menu.

Note:

- 1) For additional information on **Continuous Network Test** select **View Help Files** from the **Main Menu**.
- 2) If the Ethernet cable is not connected to the system unit and switch, a message requesting the connection of the cable is displayed.
- **3)** For the **No responder** scenario, the Ethernet adapter will send test data to itself after verifying network connectivity.

Did you see either of the following?

- A message stating:
 - The adapter isn't receiving any test packets.
- A message requesting the connection of a cable
- If YES, go to step 15. If NO, go to step 16.
- 15. There is a problem with the Ethernet support communicating with the network.
 - a. Ensure the switch is powered on and, if present, the switch's cable-detect LED is lit.
 - b. Replace the Ethernet cable and test again. If the test continues to fail, call for assistance.
- 16. Allow the test to run for at least 15 seconds before pressing Esc.

Verify the following:

- Network data rate (10 Mbps, 100 Mbps, or 1000 Mbps) is displayed in the upper right-hand corner. If these values are not present, there may be a problem with the customer's network.
- Transmit Requests = Transmitted OK = Received OK. If these values are not identical and **No responder** has been used, there may be a problem with the Ethernet support on the system unit. Replace the planar.
 - a. Press Esc until the Main Menu is displayed.
 - b. Select Exit Setup to exit diagnostics.
 - **c**. Go to step 17.

17.

If you were instructed to **Run All Selected**, test all the installed adapters in the **Run All Selected** list, one at a time. Otherwise, return to the procedure that directed you here.

END OF PROCEDURE

CMOS configuration procedures for Hardware Management Consoles

Use Table 11 if you are directed to verify the configuration for a Hardware Management Console.

Configuration for Machine Type	Go To
8305 Personal Computer	"8305 PC configuration"
8187 Personal Computer	"8187 PC configuration" on page 40
8141 Personal Computer	"8141 PC configuration" on page 44
8485 Personal Computer	"8485 PC configuration" on page 47
4362 Personal Computer	"4362 PC configuration" on page 51
4367 Personal Computer	"4367 PC configuration" on page 54
7327 Personal Computer	"7327 PC configuration" on page 59
7382 Personal Computer	"7382 PC configuration" on page 65
7914	"7914 (x3550 M4) server configuration" on page 74
2461	"Appendix B. 2461 configuration" in the Service Guide for 2461 Hardware Management Console

Table 11. Configuration Procedures by Machine Type

8305 PC configuration

- 1. Power on the display.
- 2. Power on the system unit.
- 3. On the IBM Logo window, press F1 for Configuration/Setup.

Notes:

- a. The **IBM Setup Utility** window layout differs from previous releases. You can select main headings through a menu bar across the top of the window. **Ensure the Num Lock key is disabled.**
- b. Select means to select the heading from the top tool bar.
- c. There is no mouse support. Navigate by using the arrow and Enter keys.
- 4. Select Main. Verify the following under System Summary:

Product Data: Machine Type/Model:	8305kuu (or identical to front label)
Flash EEPROM Revision Level: Boot Block Revision Level: System Board Identifier:	24KT55AUS (minimum level) 2421A IBM (or up to 11 alphanumeric characters)
System Serial Number: BIOS Date:	Identical to front label 05/10/05

Notes:

- a. Flash BIOS release levels are upgraded on a continual basis. Ensure BIOS is at the latest level.
- b. If the Machine Type/Model/Serial number do not match the front panel values, use the BIOS diskette to change them.

System 1	Гime	(HH:MM:SS):	Set	to	correct	time	(24-hr.	clock)
System [Date	(MM/DD/YYYY):	Set	to	correct	date		

5. Select System Summary. Verify the following:

CPU Type: Intel (R) Pentium (R) 4 CPU 2.40G CPU Speed: 2.40 GHz Installed Memory: 1024 MB Memory Bus Speed: 133 MHz - DDR266 Active Video: Intel(r) 845G/845GL/845GE/8 Audio Support: **Disabled** Fan 1: (Not) Operating NotOperating Fan 2: 1.44 MB 3.5" Diskette A: IDE Drive 0: 400xx MB IDE Drive 1: Not Installed IDE Drive 2: CD/DVD-RAM IDE Drive 3: Not Installed 6. Press Esc. Select UUID. Verify the following: UUID BIOS/Model Dependent (Ensure not all FFs.) 7. Press Esc. Select Devices. Verify the following: PS/2 Mouse Automatic Diskette Drive Enabled 8. Select Serial Port Setup. Verify the following: Serial Port A: Enabled Base I/O Address: 3F8 Interrupt: IRQ 4 Serial Port B: Enabled (Note: Missing if required COM2 cable is not installed) Base I/O Address: 2F8 Interrupt: IRQ 3 9. Press Esc. Select **USB Setup**. Verify the following: USB Support: Enabled USB Device Support: Enabled 10. Press Esc. Select Parallel Port Setup. Verify the following: Parallel Port: Enabled Mode: ECP Base I/O Address: 378 Interrupt: IRQ 7 DMA Channel: DMA 3 11. Press Esc. Select Video Setup. Verify the following: Active Video: Intel(r) 845G/845GL/845GE/8 Shared System Memory: 8192K Select Active Video: Integrated 64 MB Graphics Aperture: 12. Press Esc. Select IDE Drives Setup. Verify the following: Local Bus IDE Adapter: Both 13. Press Esc. Select IDE Drive 0. Verify the following: 400xx MB Maximum Capacity: **IDE Performance:** High Performance 14. Press Esc. Select **IDE Drive 1**. Verify the following: Maximum Capacity: Not Installed **IDE Performance:** High Performance 15. Press Esc. Select IDE Drive 2. Verify the following: CD/DVD-ROM Type: IDE Performance: High Performance 16. Press Esc. Select IDE Drive 3. Verify the following: Not Installed Type: IDE Performance: High Performance 17. Press Esc twice. Select Audio Setup. Verify the following: Disabled Audio Support:

18.	Press	Esc.	Select	Network	Setup.	Verify	the follo	wing:
-----	-------	------	--------	---------	--------	--------	-----------	-------

System Board Ethernet:	Enabled
PXE Boot Agent:	Disabled
PXE Base Code:	Disabled
MAC Address:	Model Dependent(Ensure not all FFs
	or not available.)

19. Press Esc. Select **Startup**. Verify the following:

Keyboard Numlock State:	Off
Keyboard Speed:	Fast
Disketteless Operation:	Disabled
Keyboardless Operation Mode:	Disabled
Power On Self Test:	Enhanced
Power On Logo:	Disabled
Option Keys Display:	Enabled
Option Keys Display Style:	Legacy
Startup Device Menu Prompt:	Disabled
Virus Detection:	Disabled

20. Select Startup Sequence.

Note:

- a. To free desired selections, you may have to temporarily set selections to Disabled.
- b. Review Item Specific Help for additional instructions.

	Primary Startup Sequence:	
	First Startup Device:	Removable
	Second Startup Device:	CD/DVD-ROM
	Third Startup Device:	Hard Disk 0
	Fourth Startup Device:	Disabled
	Automatic Startup Sequence:	
	First Startup Device:	Disabled
	Second Startup Device:	Disabled
	Third Startup Device:	Disabled
	Fourth Startup Device:	Disabled
	Error Startup Sequence:	Disabled
21.	Select Removable Devices. Press Enter. V	erify the following:
	Removable Devices: Diskette Drive A:	
22.	Select Advanced. Verify the following:	
	PCI Parity: Plug and Play Operating System: Legacy Free: Processor 0 ID: Microcode Revision (MM/DD/YYYY):	Enabled No Disabled Processor Dependent Processor Dependent
	Legacy Fan Control:	Normal
23.	Select Security. Verify the following:	
	Adapter ROM Security:	No
24.	Select Security Profile by Device. Verify	the following:
	IDE Controller: Diskette Drive Access: Diskette Write Protect:	Enabled Enable Disabled
	Password to Request Before Booting: Removable Media Devices: Hard Disk Devices: Network Devices:	User User User
25.	Press Esc. Select Remote Administration.	Verify the following:

	Remote Administration:	Enabled
26.	Press Esc. Select Set Passwords. Verify the	e following:
	User Password: Set User Password: Password Prompt:	Note: Do not enter a password. Enter Dual
	Administrator Password: Set Administrator Password:	Note: Do not enter a password. Enter
	Require Admin. Pass. When Flashing: User password Changeable by User: Require User Password on Warm Boot:	No No No
27.	Press Esc. Select Power . Verify the following	ng:
	ACPI BIOS IRQ: ACPI Standby Mode:	IRQ 9 S1
	APM BIOS Mode: Standby Timeout: Hard Disk Timeout: After Power Loss:	Enabled Disabled Disabled Last State
28.	Select Low Power Entry Activity Monitor	. Verify the following:
	Diskette, Serial, and Parallel Ports: IDE Hard Disks: CD/DVD-ROM:	Disabled Disabled Disabled
29.	Press Esc. Select Low Power Exit Activity	Monitor. Verify the following:
	PS/2 Keyboard: PS/2 Mouse: Serial Port A: Serial Port B: LAN:	Disabled Disabled Disabled Disabled Disabled
30.	Press Esc. Select Automatic Power On. Ve	rify the following:
	Wake on LAN:	Disabled
	Serial Port A Ring Detect:	Disabled
	PCI Modem Ring Detect:	Disabled
	Wake Up on Alarm:	Disabled
	(Next item not available) PCI Wake Up:	Disabled
31.	Press Esc. Press PF10 (Save and Exit). Sele	ct Yes. The system will reboot.

END OF PROCEDURE.

8187 PC configuration

- 1. Power on the display.
- 2. Power on the system unit.
- 3. On the IBM Logo window, press F1 for Configuration/Setup.

Notes:

- a. The **IBM Setup Utility** window layout differs from previous releases. You can select main headings through a menu bar across the top of the window. **Ensure the Num Lock key is disabled.**
- b. Select means to select the heading from the top tool bar.
- c. There is no mouse support. Navigate by using the arrow and Enter keys.
- 4. Select Main. Verify the following:

System Summary:	
Machine Type/Model:	8187KUH (or identical to front label)
Flash EEPROM Revision Level:	2AKT51AUS
Boot Block Revision Level:	2A27A
System Board Identifier:	IBM (or 11 alphanumerics)
System Serial Number:	Identical to front label
BIOS Date:	07/06/05

Note: Flash BIOS release levels are upgraded on a continual basis. Ensure BIOS is at the latest level.

If the Machine Type/Model/Serial number do not match the front panel values, use the BIOS diskette to change them.

UUID:									
System	Time	(HH:MM:SS):	Set	to	correct	time	(24	hr.	clock)
System	Date	(MM/DD/YYYY):	Set	to	correct	date			

5. Select System Summary. Verify the following:

	CPU Type:	Intel (R) Pentium (R) 4 CPU 3.00G
	CPU Speed:	3.00 GHz
	CPU Bus Speed:	800 MHz
	Installed Memory:	1024 MB
	Memory: Speed:	333 MHz
	Memory Channels:	Single
	Active Video:	Intel(r) 865G Graphics Chip
	Audio Support	Disabled
	Fan 1:	(Not) Operating
	Fan Z: Diekette Ar	(NOT) Uperating
	DISKELLE A:	1.44 MB 3.5
	IDE Drive 0:	400XX MD Not Installod
	IDE Drive 1.	
	IDE Drive 2.	Not Installed
	IDE Drive J.	Not Installed
	IDE Drive 5:	Not Installed
6	Proce Eas Solast IIIID Varify t	he following:
0.	Tiess Esc. Select OOID. Verify t	
	UUID:	BIOS/Model Dependent
		(Ensure not all FFS.)
7.	Select Devices . Verify the follow	ving:
	PS/2 Mouse:	Automatic
	Diskette Drive A:	Enabled
8.	Select Serial Port Setup. Verify	the following:
	Serial Port A:	Enabled
	Base I/O Address:	3F8
	Interrupt:	IRQ 4
	Serial Port B:	Enabled
		(Note: Missing if required
		COM2 cable not installed.)
	Base I/O Address:	2F8
	Interrupt:	IRQ 3
9.	Press Esc.	
10.	Select USB Setup . Verify the fo	llowing:
	USB Support:	Enabled
	Front USB Ports:	Enabled
	USB Device Support:	Enabled
11.	Press Esc. Select Parallel Port S	etup. Verify the following:
	Parallel port:	Enabled
	Mode:	ECP
	Base I/O Address:	378
	Interrupt:	IRQ 7
	DMA Channel:	DMA 3

^{12.} Press Esc. Select Video Setup. Verify the following:

Chip

	Active Video: Shared System Memory: Select Active Video: Graphics Aperture:	Intel (r) 863G Graphics (8 MB Intergrated 64 MB
13.	Press Esc.	
14.	Select IDE Drive Setup. Verify the	e following:
	Parallel ATA: Serial ATA:	Enabled Disabled
15.	Press Esc. Select Audio Setup. Ver	rify the following:
	Audio Support:	Disabled
16.	Press Esc. Select Network Setup.	Verify the following:
	System Board Ethernet: PXE Boot Agent: PXE Base Code: MAC Address:	Enabled Enabled Enabled Model Dependent (Note: Ensure not all FFs or not available.)
17.	Press Esc. Select Startup. Verify th	ie following:
	Keyboard Numlock State: Keyboard Speed: Disketteless Operation: Keyboardless Operation Mode: Power On Self Test:	Off Fast Disabled Disabled Enhanced

Power On Logo:DisabledOption Keys Display:EnabledOption Keys Display Style:LegacyStartup Device Menu Prompt:DisabledVirus Detection:Disabled

18. Select Startup Sequence. Verify the following:

Note: To free desired selections, you may have to temporarily set selections to Disabled.

Review Item Specific Help for additional instructions.

	Primary Startup Sequence:	
	First Startup Device:	Removeable
	Second Startup Device:	CD/DVD-ROM
	Third Startup Device:	Hard Disk 0
	Fourth Startup Device:	Disabled
	Automatic Startup Sequence:	
	First Startup Device:	Disabled
	Second Startup Device:	Disabled
	Third Startup Device:	Disabled
	Fourth Startup Device:	Disabled
	Error Startup Sequence:	Disabled
19.	Select Removable Devices. Press Enter. V	/erify the following:
	Removable Devices:	Diskette Drive A
20.	Press Esc twice. Select Advanced. Verify	the following:
	PCI Parity:	Enabled
	Plug and Play Operating System:	No
	Legacy Free:	Disabled
	HyperThreading:	Enabled
	Processor 0 ID:	Processor Dependent
	Microcode Revision (MM/DD/YYYY):	Processor Dependent
	Legacy Fan Control:	Normal
21.	Select Security. Verify the following:	

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		Level 01b
	Access IBM Predesktop Area: Adapter ROM Security:	Disabled No
22.	Select Security Profile by Device. Verify t	he following:
	IDE Controller: Diskette Drive Access: Diskette Write Protect:	Enabled Enabled Disabled
	Password to Request Before Booting: Removable Media Devices: Hard Disk Devices: Network Device:	User User User
23.	Press Esc. Select Remote Administration .	Verify the following:
	Remote Administration:	Enabled
24.	Press Esc. Select Set Passwords. Verify the	e following:
	User Password: Set User Password: Password Prompt:	Note: Do not enter a password. Enter Dual
	Administrator Password: Set Administrator Password:	Note: Do not enter a password. Enter
	Require Admin. Pass. When Flashing: User password changeable by User: Require User Password on Warm Boot:	No No
25.	Press Esc. Select Power. Verify the following	ng:
	ACPI BIOS IRQ: ACPI Standby Mode: APM BIOS Mode: Standby Timeout: Hard Disk Timeout:	IRQ 9 S1 Enabled Disabled Disabled
	After Power Loss:	Last State
26.	Select Low Power Entry Activity Monitor	. Verify the following:
	Diskette, Serial, and Parallel Ports: IDE Hard Disks: CD/DVD-ROM:	Disabled Disabled Disabled
27.	Press Esc.	
28.	Select Low Power Exit Activity Monitor.	Verify the following:
	PS/2 Keyboard: PS/2 Mouse: Serial Port A: Serial Port B: LAN:	Disabled Disabled Disabled Disabled Disabled
29.	Press Esc. Select Automatic Power On. Ve	rify the following:
	Wake on LAN:	Disabled
	Serial Port A Ring Detect:	Disabled
	PCI Modem Ring Detect:	Disabled
	Wake Up on Alarm:	Disabled
	(Next item not available) PCI Wake UP:	Disabled

30. Press Esc. Press F10 (Save and Exit). Select **Yes**. The system will reboot.

END OF PROCEDURE.

8141 PC configuration

- 1. Power on the display.
- 2. Power on the system unit.
- 3. On the IBM Logo window, press F1 for Configuration/Setup.

Notes:

- **a**. If Press F1 for Setup is not displayed, observe the video status LED. Press F1 when the LED transitions from **amber** (no video signal present) to **green** (video signal detected).
- b. The IBM Setup Utility window layout differs from previous releases. You can select main headings through a menu bar across the top of the window. **Ensure the Num Lock key is disabled.**
- c. *Select* means to select the heading from the top tool bar.
- d. There is no mouse support. Navigate by using the arrow and Enter keys.
- 4. Select Main. Verify the following:

System Summary	
Machine Type/Model:	8141KUB (or identical
	to front label)
Flash EEPROM Revision Level	2BKT50AUS (minimum level)
Boot Block Revision Level	2B38A (minimum level)
System Board Identifier	IBM (or 11 Alphanumerics)
System Serial Number	Identical to front label
BIOS Date	04/27/06 (minimum level)

Note: Flash BIOS release levels are upgraded on a continual basis. Ensure BIOS is at the latest level.

If the Machine Type/Model/Serial number do not match the front panel values, use the BIOS diskette to change them.

UUID:

System Time	(HH:MM:SS):	Set to correct time (24 Hr cloc	:k)
System Date	(MM/DD/YYYY):	Set to correct date	

5. Select System Summary. Verify the following:

	0
CPU Type:	Intel(R) Pentium(R) 4
CPU Speed:	3.20 GHz
CPU Bus Speed:	800 MHz
Installed Memory:	1024 MB
Available to OS:	1014 MB
Used by Devices:	10 MB (may vary)
Memory Speed:	333 MHz
Active Video:	Intel(r) 915G/915GV/910GL G
Audio Support:	Disabled
Fan 1:	(Not) Operating
Fan 2:	(Not) Operating
Diskette A:	1.44 MB 3.5"
IDE Drive 0:	400xx MB SATA1
IDE Drive 1:	Not Installed
IDE Drive 2:	CD/DVD-ROM
IDE Drive 3:	Not Installed
IDE Drive 4:	Not Installed
IDE Drive 5:	Not Installed
at IIIID Varify the fellowing	

6. Select UUID. Verify the following:

UUID:	BIOS/Model Dependent (Ensure not all FFs.)
7. Select Devices . Verify the following:	
PS/2 Mouse:	Automatic

	Diskette Drive A:	Enabled
8.	Select Serial Port Setup.	Verify the following:

	Serial Port A: Base I/O Address: Interrupt: Serial Port B:	Enabled 3F8 IRQ 4 Enabled (Missing if COM2 cable is not installed)
	Base I/O Address: Interrupt:	2F8 IRQ 3
9.	Press Esc. Select USB Setup. Ver	ify the following:
	USB Support: Front USB Ports: USB Device Support:	Enabled Enabled Enabled
10.	Press Esc. Select Parallel Port Se	tup. Verify the following:
	Parallel Port: Mode: Base I/O Address: Interrupt: DMA Channel:	Enabled ECP 378 IRQ 7 DMA 1
11.	Press Esc. Select Video Setup. Ve	erify the following:
	Active Video: DVMT Graphics Memory:	Intel(r) 915G/915GV/ 120 MB
	Select Active Video: DVMT 3.0 Mode: Pre-Allocated Memory Size: Total Graphics Memory:	PEG DVMT 8 MB 128 MB
12.	Press Esc. Select IDE Drive Setu	p . Verify the following:
	Parallel ATA: Serial ATA: Native Mode Operation:	Enabled Enabled Automatic

Note: Native Mode Operation is not displayed when Serial ATA is set to Disabled.

13. Press Esc. Select Audio Setup. Verify the following:

Audio Support: Disabled 14. Press Esc. Select Network Setup. Verify the following: System Board Ethernet: Enabled PXE Boot Agent: Enabled PXE Base Code: Enabled MAC Address: Model Dependent (Ensure not all FFs or not available.)

Note: PXE Boot Agent and **PXE Base Code** may automatically be set to Enabled if the Network Setup window is displayed. Ensure they are reset to Disabled before you exit **Network Setup**.

15. Press Esc. Select Startup. Verify the following:

Keyboard Numlock State:	Off
Keyboard Speed:	Fast
Disketteless Operation:	Disabled
Keyboardless Operation Mode:	Disabled
Power On Self Test:	Enhanced
Power On Logo:	Disabled
Option Keys Display:	Enabled
Option Keys Display Style:	Legacy
Startup Device Menu Prompt:	Disabled
Automatic Startup Sequence:	Enabled

16. Select Startup Sequence. Verify the following:

Note: Review **Item Specific Help** for additional instructions. All three startup sequences are identical.

Level 01b

Startup Sequence: (Primary 1) (Automatic 2) (Error 3) 1: Diskette Drive A: 2: IDE CD: HL-DT-ST DVD-RAM... (IDE CD = DVD RAM Drive) 3: IDE 0: ST340014AS-(P1)... (IDE 0: = SATA HDD) 4: 5: 6: 7: 8: Excluded from boot order: IDE 1: : IDE 2: IDE 3: : IDE 4: : : IDE 5: : USB FDC: : USB HDD: : USB CDROM: : PCI LAN: xxxxxxxxx... PCI LAN: xxxxxxxxx... : : PCI SCSI: 17. Press Esc. Select Advanced. Verify the following: PCI Parity: Enabled Plug and Play Operating System: No Legacy Free: Disabled HyperThreading: Enabled Limit CPUID: **Disabled** No Execute Technology: **Disabled** C1 Enhanced Mode: Disabled Processor 0 ID: Processor Dependent Microcode Revision (MM/DD/YYYY): Processor Dependent Fan Control: Normal 18. Select **Security**. Verify the following: Access Host Protected Area: **Disabled** Adapter ROM Security: No **19**. Select **Security Profile by Device**. Verify the following: IDE Controller: Enabled Diskette Drive Access: Enable Diskette Write Protect: Disabled Password to Request Before Booting: Removable Media Devices: User Hard Disk Devices: User Network Device: User 20. Press Esc. Select Remote Administration. Verify the following: Remote Administration: Enabled 21. Press Esc. Select Set Passwords. Verify the following: User Password: Note: Do not enter a password. Set User Password: Enter Password Prompt: Dual Administrator Password: Note: Do not enter a password. Set Administrator Password: Enter Require Admin. Pass. When Flashing: No User Password Changeable by User: No Require User Password on Warm Boot: No 22. Select IDE Drive User Password. Verify the following: IDE Drive 0 Password: Disabled IDE Drive 2 Password: Not Supported

23.	Press Esc. Select IDE Drive Master Password. Verify the following:	
	IDE Drive 0 Master Password: IDE Drive 2 Master Password:	Disabled Not Supported
24.	Press Esc. Select Recover from Lost	User Password. Verify the following:
	Recover IDE Drive 0 Password: Recover IDE Drive 2 Password:	Disabled Not Supported
25.	Press Esc twice. Select IBM TCG Fe	ature Setup. Verify the following:
	IBM TCG Security Feature:	Disabled
	IBM TCG Reporting Options:	
	BIOS ROM String Reporting:	Disabled
	ESCD Reporting:	Disabled
	CMOS Reporting:	Disabled
	NVRAM Reporting:	Disabled
	SMBIOS Reporting:	Disabled
26. Press Esc. Select Power . Verify the following:		ollowing:
	ACPI BIOS IRQ:	IRO 9
	ACPI Standby Mode:	S1
	Hard Disk Timeout:	Disabled
	After Power Loss:	Last State
27.	Select Automatic Power On. Verify	the following:
	Wake on LAN:	Disabled
	Serial Port Ring Detect:	Disabled
	PCI Modem Ring Detect:	Disabled
	Wake Up on Alarm:	Disabled
	(Next item not available)	
	PCI Wake UP:	Disabled
~~		

28. Press Esc. Press F10 (Save and Exit). Select Yes. The system will reboot.

END OF PROCEDURE.

8485 PC configuration

- 1. Power on the display.
- 2. Power on the system unit.
- 3. On the IBM Logo window, press F1 for Configuration/Setup.

Notes:

- **a**. If Press F1 for Setup is not displayed, observe the video status LED. Press F1 when the LED transitions from **amber** (no video signal present) to **green** (video signal detected).
- b. The IBM Setup Utility window layout differs from previous releases. You can select main headings through a menu bar across the top of the window. **Ensure the Num Lock key is disabled.**
- c. Select means to select the heading from the top tool bar.
- d. There is no mouse support. Navigate by using the arrow and Enter keys.
- 4. Select Continue if a POST Startup Error(s) message is displayed.
- 5. Select System Summary. Verify the following:

Processor Summary:	
Extended Memory:	1024 KB
Internal Floppy Disk:	Installed
Hard Disk 0:	800xxMB SATA0
Hard Disk 1:	None
Hard Disk 2:	CD-ROM

	Hard Disk 3: Hard Disk 4: Mouse: System Memory Type:	None None Installed DDR2	
6.	Press Esc. Select Processor Summary	y. Select CPU IDs. Verify the following:	
	CPU IDs:	0F43	
7.	Press Esc. Select Platform IDs. Verif	y the following:	
	Platform IDs:	0010	
8.	Press Esc. Select Microcode revision	s. Verify the following:	
	Microcode Revisions:	0005	
9.	9. Press Esc. Select Processor Speeds. Verify the following:		
	Processor Speeds: Front-side Bus:	3.20 GHz 800 MHz	
10.	Press Esc. Select L2 Cache Sizes . Ve	erify the following:	
	L2 Cache Size:	2048 KB	
11.	Press Esc. Select System Information	n. Verify the following:	
	Machine Type/Model: System Serial Number: System UUID: System Board Identifier: System Asset Tag Number:	8485PAQ Identical to front label 32-digit hexadecimal number IBM (or alphanumerics) No Asset Tag	
	BIOS Version: BIOS Date (MM/DD/YY): BIOS Build Level:	1.29 (required level) 02/09/06 (required level) PAE129AUS (required level)	
	Note: Flach BIOS release levels are ungraded on a continual basis. Ensure BIO		

Note: Flash BIOS release levels are upgraded on a continual basis. Ensure BIOS is at the latest level.

12. Press Esc. Select **Devices and I/O Ports** . Verify the following:

	Serial Port A:	Port 3F8, IRQ4
Serial Port B:		Port 2F8, IRQ3
-Parallel Port Setup:		
	-Remote Console Redirection:	
	Internal Floppy Disk:	Enabled
	Mouse:	Installed
	Planar0 Ethernet:	Enabled
	-System MAC Addresses:	
	-Advanced Chipset Control:	
	-Video:	
	-IDE Primary/Master:	800xxMB SATA0
	-IDE Secondary/Master:	CD-ROM
	-IDE Secondary/Slave:	None
13.	Press Esc. Select Parallel Port Setup. Veri	fy the following:
	Parallel port:	Enabled
	Mode:	EPP and ECP
	Base I/O Address:	378
	Interrupt:	IRQ 7
	DMA:	DMA 1
14.	Press Esc. Select Remote Console Redired	tion. Verify the following:
	Remote Console Serial Port:	Disabled
	Baud Rate:	19.2K
	Console Type:	PC ANSI
	Flow Control:	CTS/RTS
	Console Connection:	Direct
	Continue C.R. after Post:	Off
15.	Press Esc. Select System MAC Addresses	. Verify the following:

Planar Ethernet MAC Addressc:	Hexidecimal
PCI-E slot 2 MAC Address:	Hexidecimal
	(if adapter installed)

16.	Pres	s Esc. Select Advanced Chipset Control Internal Floppy Disk: Parallel ATA:	. Verify the following: Installed Enabled
		Native Mode Operation: SATA Controller Mode Operation:	Auto Compatable
		USB Support: USB 2.0 Support: Clock Generator Spectrum:	Enabled Enabled Disabled
17.	Pres	s Esc. Select Video. Verify the following	
		Video Controller: Video Memory:	ATI ES1000 16 MB
18.	Sele	ct IDE Primary/Master. Verify the follow	ving:
	*	Type: LBA Format:	Auto
		Total Sectors:	15xxxxxx
		Maximum Capacity:	800xxMB SATA0
		IBA Mode Control.	ID Sectors Enabled
	*	32 Bit I/O:	Disabled
		Transfer Mode:	FPIO 4 / DMA 2
		Ultra DMA Mode:	Mode 5
	*	Changeable Values, the other values are exactly match.	"typical" but may not
19.	Pres	s Esc. Select IDE Secondary/Master. Ver	rify the following:
	*	Type:	Auto
		Multi-Sector Transfers:	Disabled
	+	LBA MODE CONTROL:	Disabled
	~	Transfer Mode:	FPIO 4 / DMA2
		Ultra DMA Mode:	Mode 4
	*	Changeable Values, the other values are exactly match.	"typical" but may not
20	Pres	s Esc. Select IDE Primary/Slave Verify	the following:
20.	*		Auto
		iype.	Auto
		Multi-Sector Transfers:	Disabled
		LBA Mode Control:	Disabled
	*	32 Bit I/O:	Disabled
		Illtra DMA Mode:	Disabled
		ortra bha noue.	
	*	Changeable Values, the other values are exactly match.	"typical" but may not
21.	Sele	ct IDE Secondary/Slave. Verify the follo	wing:
	*	Туре:	Auto
		Multi-Sector Transfers.	Disabled
		LBA Mode Control:	Disabled
	*	32 Bit I/O:	Disabled
		Transfer Mode:	Standard
		Ultra DMA Mode:	Disabled
	*	Changeable Values, the other values are exactly match.	"typical" but may not

22. Press Esc twice. Select Date and Time. Verify the following:

	System Date System Time	MM/DD/YYYY (Set to current date) HH:MM:SS (Set to current time, 24 hr.)
23.	Press Esc. Select System Security. Verify the	e following:
	Administrator Password: Power-On Password:	Clear Clear
	Administrator Password: Power-On Password:	Do not open Do not open
24.	Press Esc. Select Start Options. Verify the for	ollowing:
	- Startup Sequence Options: Planar Ethernet PXE/DHCP: Planar PXE/DHCP Priority: PCI Device Boot Priority: Displayless Operation: Keyboardless Operation: Leyboard NumLock State: Legacy USB Support: Boot on POST/BIO Error: Boot Fail Count: Automatic Power Restore: F12 Boot Menu Prompt:	Planar0 Ethernet High SAS/HostRAID Enabled Enabled Off Enable Disabled Enabled Last State Disabled
25.	Select Startup Sequence Options. Verify the	e following:
	Primary Startup Sequence: First Startup Device: Second Startup Device: Third Startup Device: Fourth Startup Device:	Removable CD/DVD-ROM Hard Disk Disabled
	Wake On Lan Startup Sequence:	Disable
	Wake On Lan Startup Sequence: First Startup Device: Second Startup Device: Third Startup Device: Fourth Startup Device:	Disabled Disabled Disabled Disabled
26.	Select Select the Boot DASD, Hard Drive.	Verify the following:
	-Hard Drive: WDC	(HDD Model)
27.	Press Esc. Select Select the Boot Removable	e Devices, Removable. Verify the following:
~~~	-Removable Devices: Diskette Drive A:	(1)
28.	Press Esc. Select Advanced Setup. Verify th	e following:
	Power Button: Wake-up from: - CPU Options: - PCI Bus Control: Baseboard Management Controllor (BMC) S	Enabled Normal
	Fourth Startup Device:	Disabled
29.	Select <b>CPU Options</b> . Verify the following:	
	Hyperthreading: Prefetch Queue: C1 Enhanced Mode: No Execute Mode Mem Protection:	Enabled Enabled Disabled Enabled
30.	Press Esc. Select PCI Bus Control. Verify the	e following:
	CI MLT: - PCI Interrupt Routing:	20h

31. Select PCI Interrupt Routing. Verify the following:

Level 01b

Ensure all instances of "Planar xxxx IRQ" are set to: "Auto Configure" or "No IRQ Requested" Ensure all instances of "PCI..." or "PCIX..." are set to: "Auto Configure" or "No IRQ Requested"

32. Press Esc twice. Select Baseboard Management Controller (BMC) Settings. Verify the following:

No Execute Mode Mem Protection: Enabled **IPMI Specification Version:** 1.5 BMC Hardware/Firmware Version: (Hexadecimal) Clear System Event Log: Disabled Existing Event Log Number: (Decimal) BIOS PORT Watchdog: Disabled Post WatchDog Timeout: 5 min - System Event Log: (Do not select)

- LAN Settings: (Do not select)
- 33. Press Esc twice. Select Error Logs. Verify the following:
  - Post Error Log (Do not select) - System Event/Error Log
- 34. Select **System Event/Error Log**. Verify the following:
  - Press "Enter" twice to clear the system Event/Error Log.
- 35. Press Esc twice. Press F10 (Save and Exit). Select Yes.
- 36. Select Save and exit the Setup Utility. Select Yes.
- 37. Select Configuration/Setup Utility: Save Settings. Select Yes.
- 38. Select Save Settings. Press Enter.

## END OF PROCEDURE.

## 4362 PC configuration

- 1. Power on the display.
- 2. Power on the system unit.
- 3. On the IBM Logo window, press F1 for Configuration/Setup.

#### Notes:

- **a.** If Press F1 for Setup is not displayed, observe the video status LED. Press F1 when the LED transitions from **amber** (no video signal present) to **green** (video signal detected).
- b. The IBM Setup Utility window layout differs from previous releases. You can select main headings through a menu bar across the top of the window. **Ensure the Num Lock key is disabled.**
- c. *Select* means to select the heading from the top tool bar.
- d. There is no mouse support. Navigate by using the arrow and Enter keys.
- 4. Select **Continue** if a POST Startup Error(s) message is displayed.
- 5. Select System Summary. Verify the following:

1024 KB
1023 KB
Installed
(may require setting later)
800xxMB SATA1
None
CD-ROM
None

	Hard Disk 4: Hard Disk 5: Mouse: System Memory Type:	None None Installed DDR2
6.	Press Esc. Select Processor Summary. V	erify the following:
	CPU ID: Plartform ID Microcode Revision Processor Speed Front-side Bus L2 Cache Size	06F5 (may vary) 0001 (may vary) 0033 (may vary) 1.86 GHz 1066 MHz 2048 KB
7.	Press Esc twice. Select System Informat	tion. Verify the following:
	Machine Type/Model: System Serial Number: System UUID: System Board Identifier: System Asset Tag Number:	4362PAU or 4362PAT Identical to front label 32-digit hexadecimal number IBM (or alphanumerics) No Asset Tag
	BIOS Version: BIOS Date (MM/DD/YY): BIOS Build Level:	1.26 (required level) 01/15/07 (required level) GBE126AUS (required level)

Note: Flash BIOS release levels are upgraded on a continual basis. Ensure BIOS is at the latest level.

8. Press Esc. Select Devices and I/O Ports . Verify the following:

	Serial Port A: Serial Port B: -Parallel Port Setup	Port 3F8, IRQ4 Port 2F8, IRQ3
	-Remote Console Redirection Internal Floppy Disk: Mouse: Planar Ethernet: System MAC Addresses	Enabled Enabled Enabled
	Parallel ATA: Serial ATA: Native Mode operation: SATA Controller Mode Option: -Video	Enabled Enabled Auto Compatible
9.	Press Esc. Select Parallel Port Setup. Ve	erify the following:
	Parallel port: Mode: Base I/O Address: Interrupt: DMA:	Enabled EPP and ECP Port 378 IRQ 7 DMA 1
10.	Press Esc. Select Remote Console Redi	<b>rection</b> . Verify the following:
	Remote Console Serial Port: Baud Rate: Console Type: Flow Control: Console Connection: Continue C.R. after Post:	Disabled 19.2K PC ANSI CTS/RTS Direct Off
11.	Press Esc. Select System MAC Address	es. Verify the following:
	Planar Ethernet MAC Addressc: PCI-E slot 2 MAC Address:	Hexidecimal Hexidecimal (if adapter installed)
12.	Press Esc. Select Video. Verify the follo	wing:
	Video Controller: Video Memory:	ATI ES1000 16 MB
13.	Press Esc twice. Select <b>Date and Time</b> .	Verity the following:

System System	Date Time	MM/DD/YYYY HH:MM:SS	(Set (Set 24 hr	to to	current current	date) time,
			24 m	• )		

14. Press Esc. Select System Security. Verify the following:

Administrator Password:	Clear
Power-On Password:	Clear
Administrator Password:	Do not open
Power-On Password:	Do not open

15. Press Esc. Select Start Options. Verify the following:

- Startup Sequence Options:

Planar Ethernet PXE/DHCP:	Planar Ethernet
Planar PXE/DHCP Priority:	High
PCI Device Boot Priority:	Mini PCI-E
Displayless Operation:	Enabled
Keyboardless Operation:	Enabled
Leyboard NumLock State:	Off
Legacy USB Support:	Enable
Boot on POST/BIO Error:	Disabled
Boot Fail Count:	Enabled
Automatic Power Restore:	Last State
F12 Boot Menu Prompt:	Disabled

## 16. Select Startup Sequence Options. Verify the following:

-Primary Startup Sequence:

	First Startup Device: Second Startup Device: Third Startup Device: Fourth Startup Device: Fifth Startup Device: Sixth Startup Device: Seventh Startup Device: Eighth Startup Device:	Internal FDD IDE CD: HL-DT-ST DVDRAM HDD: WDC WD800JD None None None None None
	Wake On Lan Startup Sequence:	Disabled
47	Wake On Lan Startup Sequence: First Startup Device: Second Startup Device: Third Startup Device: Fourth Startup Device:	None (greyed out) None (greyed out) None (greyed out) None (greyed out)
17.	Press Esc twice. Select Advanced Setup	CPU Options. Verify the following:
	Dual Core Processor Logic: C1 Enhanced Mode: Thermal Management 2: Execute-Disable Bit: EIST Feature:	Enabled Enabled Enabled Enabled Enabled
18.	Press Esc. Select PCI Bus Control. Verif	y the following:
	- PCI MLT: - PCI Interrupt Routing:	40h
19.	Select PCI Interrupt Routing. Verify the	e following:
	Ensure all instances of "Planar xxx	x IRQ" are set to:

"Auto Configure" or "No IRQ Requested" Ensure all instances of "Slotx INTA IRQ" are set to: "Auto Configure" or "No IRQ Requested"

20. Press Esc twice. Select IMPI. Verify the following:

IPMI Specification Version:	1.5
BMC Hardware/Firmware Version:	(Hexadecimal)
Clear System Event Log:	Disabled
Existing Event Log Number:	(Decimal)

	BIOS PORT Watchdog: Post WatchDog Timeout:	Disabled 5 min
	- System Event Log:	(Do not select)
	- LAN Settings:	
21.	Select LAN Settings. Verify the following	;:
	MINI-BMC MAC Address: IP Address: Subnet Mask: Gateway Address: Note: The last 3 fields must be set many the arrow keys to page from field	hh.hh.hh.hh.hh.hh (valid hex values) 000.000.000.000 000.000.000.000 000.000.000 ually. Type one "0" and use to field.
22.	Press Esc twice. Select NMI Option. Veri	fy the following:
	- Reboot System on NMI:	Enabled
23.	Press Esc twice. Select Memory Throttlin	g Option. Verify the following:
	- Memory Throttling Control:	Disabled
24.	Press Esc twice. Select Error Logs. Verify	the following:
	- Post Error Log - System Event/Error Log	(Do not select)
25.	Select System Event/Error Log. Do the fo	llowing:
	- Press "Enter" twice to clear the sys	tem Event/Error Log.
26.	Press Esc twice.	
27.	Select Save Settings. Press Enter.	
28.	Select Exit Setup.	

29. Select Yes, exit the Setup Utility.

## END OF PROCEDURE.

## 4367 PC configuration

- 1. Power on the display.
- 2. Power on the system unit.
- 3. On the IBM Logo window, press F1 for Configuration/Setup.

## Notes:

- **a.** If Press F1 for Setup is not displayed, observe the video status LED. Press F1 when the LED transitions from **amber** (no video signal present) to **green** (video signal detected).
- b. The IBM Setup Utility window layout differs from previous releases. You can select main headings through a menu bar across the top of the window. **Ensure the Num Lock key is disabled.**
- c. *Select* means to select the heading from the top tool bar.
- d. There is no mouse support. Navigate by using the arrow and Enter keys.
- 4. Select **Continue** if a POST Startup Error(s) message is displayed.
- 5. Select System Summary. Verify the following:

Processor Summary:	
Installed Memory:	1024 KB
Avaliable Memory	1022 KB
Internal Floppy Disk:	None
Device 0:	250GB SATAO (Note: Must be SATAO)
Device 1:	None
Device 2:	None
Device 3:	None

	Device 4: Device 5: Mouse: System Memory Type:	None CD/DVD-ROM Installed DDR2
6.	Press Esc. Select Processor Summary. V	erify the following:
	CPU ID: Plartform ID Microcode Revision Processor Speed Front-side Bus L2 Cache Size	0676 (may vary) 0001 (may vary) 0606 (may vary) 3.00 GHz 1333 MHz 6144 KB
7.	Press Esc twice. Select System Informat	ion. Verify the following:
	Machine Type/Model: System Serial Number: System UUID: System Board Identifier: System Asset Tag Number:	436732U (or PAA/PAM) Identical to front label 32-digit hexadecimal number 11 Alphanumerics N/A (May be Blank)
	BIOS Version: BIOS Date (MM/DD/YY): BIOS Build Level:	1.39 08/06/08 GUE139AUS

**Note:** Flash BIOS release levels are upgraded on a continual basis. Ensure BIOS is at the latest zSeries supported level.

8. Press Esc. Select Devices and I/O Ports . Verify the following:

9.

10.

11.

12.

13.

Serial Port 1: Serial Port 2: -Parallel Port Setup -Remote Console Redirection Internal Floppy Support: SATA Programming Interface Planar Ethernet -USB Support	Port 3F8, IRQ4 Port 2F8, IRQ3 Disabled Native Enabled		
-Video -System MAC Addresses			
Press Esc. Select Parallel Port Setup. Verify	the following:		
Parallel port: Parallel Port Mode: Parallel Port IRQ	Port 378 Standard IRQ 7		
Press Esc. Select Remote Console Redirecti	on. Verify the following:		
Remote Console Serial Port:	Disabled		
Note: the following are "greyed out".			
Baud Rate: Console Type: Flow Control: Remote Console Active After Boot	9600 VT100, 8bit None On		
Press Esc. Select <b>USB Support</b> . Verify the fo	ollowing:		
USB Controller	Enabled		
USB Port 1 USB Port 2 USB Port 3 USB Port 4 USB Port 5 USB Port 6	Enabled Enabled Enabled Enabled Enabled Enabled		
Press Esc. Select Video. Verify the following:			
Video Controller: Video Memory:	ATI ES1000 16 MB		
Press Esc twice. Select Date and Time. Verify the following:			

	System Time System Date	HH:MM:SS (Set to current time, 24Hr.) MM/DD/YYYY (Set to current date)
14.	Press Esc. Select System Security. Verify th	ne following:
	Administrator Password: Power-On Password:	Clear Clear
	Administrator Password: Power-On Password:	Do not open Do not open
15.	Press Esc. Select Start Options. Verify the	following:
	- Startup Sequence Options:	
	Planar Ethernet PXE/DHCP: Planar PXE/DHCP Priority: PCI Device Boot Priority: Displayless Operation: Keyboard NumLock State: Boot on POST/BIO Error: Boot Fail Count: Automatic Power Restore:	Enabled High Mini PCI-E Enabled Off Disabled Enabled Previous State
	F12 Boot Menu Prompt:	Disabled
	HDD S.M.A.R.T. Capability	Enabled
16.	Select Startup Sequence Options. Verify the	ne following:
	- Primary Startup Sequence:	
	First Startup Device: Second Startup Device:	CD/DVD-ROM: HL-DT-STDVD HDD(S0): Hitachi HDT(may vary)
	Inird Startup Device:	None
	Fifth Startup Device:	None
	Sixth Startup Device:	None
	Seventh Startup Device:	None
	Eighth Startup Device:	None
	Wake On Lan Startup Sequence:	Disabled
	Wake On Lan Startup Sequence:	Note: Set these to "None" prior to disabling WOL.
	First Startup Device:	None (Greyed out) None (Greyed out)
	Third Startup Device:	None (Greved out)
	Fourth Startup Device:	None (Greyed out)
17.	Press Esc twice. Select Advanced Setup	. Verify the following:
	- CPU Options - PCI Bus Control - Baseboard Management Controller (BMC High Precision Event Timer - WHFA Settings	C) Settings Enabled
18	Select <b>CPU Options</b> Verify the followin	σ.
10.	Core Multi Processing.	Enabled
	Execute-Disable Bit Capability: Intel EIST Feature: Hardware Prefetcher: Adjacent cache Line Prefetch: Intel Virtualization Technology:	Enabled Enabled Enabled Enabled Enabled Enabled
19.	Press Esc. Select PCI Bus Control. Verify t	he following:
	- PCI MLT: - PCI Interrupt Routing:	40h
20	- PUI KUM CONTROL EXECUTION Select PCI Interrupt Routing Verify the fo	llowing
20.	ochect i er mienupt Kouting. verny tile fe	nowing.

Ensure all instances of "USB x.x Controller x IRQ" are set to: "Auto Configure" Ensure all instances of "Planar Video IRQ" are set to: "Auto Configure" Ensure all instances of "Planar Ethernet IRQ" are set to: "Auto Configure" Ensure all instances of "Slotx INTA IRQ" are set to: "Auto Configure" or "No IRQ Requested" Ensure all instances of "Mini PCI-E IRQ" are set to: "Auto Configure" or "No IRQ Requested" Ensure all instances of "Mini PCI-E IRQ" are set to: "Auto Configure" or "No IRQ Requested" Ensure all instances of "Mini PCI-E IRQ" are set to: "Auto Configure" or "No IRQ Requested"

21. Press Esc. Select PCI ROM Control Execution.... Verify the following:

Slot	1	ROM	Control	Execution:	Enabled
Slot	2	ROM	Control	Execution:	Enabled
Slot	3	ROM	Control	Execution:	Enabled
Slot	4	ROM	Control	Execution:	Enabled
Slot	5	ROM	Control	Execution:	Enabled
Mini	P(	CI-E	ROM Cont	trol Execution:	Enabled

22. Press Esc twice. Select Baseboard Management Controller (BMC) Settings.... Verify the following:

IPMI Specification Version:	2.0
BMC Firmware Version:	1.06 (or greater)
BMC Build Date:	08/07/08 (or later)
BMC Build Level:	GUET16A (or greater)
Existing Event Log Number:	(Decimal)
BMC Post Watchdog:	Disabled
BMC Post Watchdog Timeout:	5 min. (Greyed out)
System - BMC Serial Port Sharing:	Enabled
BMC Serial Port Access Mode:	Disabled
Reboot System on NMI:	Enabled

- User Account Settings:

- BMC Network Configuration:

- BMC System Event Log:

Note: "BMC Serial Port Access Mode" may have to be set PRIOR to setting "System - BMC Serial Port Sharing".

The CMOS initialization utility does not alter **User Account Settings** values. These must be set manually using the following procedure.

23. Select User Account Settings. Verify the following:

UserID #	Enabled/Disabled
- UserID 1	Disabled
- UserID 2	Disabled
- UserID 3	Disabled
- UserID 4	Disabled

Note: This task is to ensure ALL UserIDs are DISABLED.

24.	Select	UserID	1.	Verify	the	following:	
-----	--------	--------	----	--------	-----	------------	--

UserID 1	Disabled
Privileged Limit	No ACCESS
Set BMC User Password	(Do not select)
< <save account="" bmc="" in="" settings="" user="">&gt;</save>	

## 25. Select <<Save User Account Settings in BMC>>

#### **26**. Select **Enter** to save the settings

_

27. Press Esc. Select UserID 2. Verify the following:

UserID 2	Disabled
Privileged Limit	No ACCESS
<ul> <li>Set BMC User Password</li> <li>&lt;<save account="" bmc="" in="" settings="" user="">&gt;</save></li> </ul>	(Do not select)

#### 28. Select <<Save User Account Settings in BMC>>

- 29. Select Enter to save the settings
- 30. Press Esc. Select UserID 3. Verify the following:

UserID 3	Disabled
User Name	
Privileged Limit	No ACCESS
- Set BMC User Password	(Do not select)
< <save account="" bmc="" in="" settings="" user="">&gt;</save>	

#### 31. Select <<Save User Account Settings in BMC>>

- **32**. Select **Enter** to save the settings
- 33. Press Esc. Select UserID 4. Verify the following:

UserID 4	Disabled
User Name	
Privileged Limit	No ACCESS
- Set BMC User Password	(Do not select)
< <save account="" bmc="" in="" settings="" user="">&gt;</save>	

#### 34. Select <<Save User Account Settings in BMC>>

- 35. Select Enter to save the settings
- 36. Press Esc twice. Select BMC Network Configuration. Verify the following:

MINI-BMC MAC Address Host Name DHCP Control	hh.hh.hh.hh.hh.hh (Valid hex values) BMC_DHCP Static IP
Static IP Settings	
Static IP Address	000.000.000.000
Subnet Mask	000.000.000.000

000.000.000.000

Note: Last 3 fields must be set manually. Type one "0" and use the arrow keys to page from field to field.

## 37. Select Save Network Settings in BMC. Press Enter twice.

38. Press Esc. Select BMC System Event Log.

Note: If **BMC System Event Log** does not exist, key "Esc" until the **Advanced Setup**screen is displayed and proceed to the section.

- 39. Select Clear BMC SELs. Press Enter twice.
- 40. Press Esc twice. Select WHEA Settings. Verify the following: Error Injection Disabled
- 41. Press Esc twice.
- 42. Select Event/Error Logs.

Gateway

43. Select Clear System Logs. Perform the following:

Press Enter to clear the Event/Errror Log. Press Esc 2 times.

- 44. Select Save Settings. Press Enter.
- 45. Select Exit Setup.
- 46. Select Yes, exit the Setup Utility.

#### END OF PROCEDURE.
## 7327 PC configuration

Note: UEFI (formally BIOS) settings are applied using the IBM Advanced Settings Utility (ASU) program.
For the 7327 server, using a bootable CD is required when the system board has been replaced. The preferred method to apply the UEFI settings is to use CD part number 00NK088 Control Level 1. Otherwise, use the following:

Manual Configuration: Using IBM Setup Utility (F1 during boot)

- 1. Power on the display.
- 2. Power on the system unit.
  - a. "UEFI Starting" in upper left hand corner (FW level dependent)
  - b. "System initializing" in lower left hand corner
  - **c.** "IBM Server x / System Firmware" screen appears with "Configuring System" in lower left hand corner.
    - Hint: You can press "F1" now (only once) or wait for the next screen to display.
  - d. "[F1] Setup [F2] Diagnostics [F12] Boot Device" are displayed.
  - e. Press "F1" to enter "System Configuration and Boot Management"

## Note:

- a. > "Select...." means to select the heading.
- b. > There is no mouse support. Navigate by using the arrow and "Enter" keys.
- c. > There is no "typematic" support
- d. > Ignore (if displayed) the following: CAUTION:

Your TPM is asserted... Disable to remove.

# Trusted Platform Module's presence is asserted. Please disable this to remove potential security vulnerabilities.

### This is due to a firmware issue and is not displayed when firmware is updated.

e. > Some entries and data are dynamic depending if a feature is enabled or disabled.

Disabling a feature, for example an Ethernet port, will cause its configuration data not to be displayed the next time this utility is invoked.

**3**. Verify the following:

System Configuration and Boot Management

System Information System Settings Date and Time

Start Options Boot Manager

System Event Logs User Security

Save Settings Restore Settings Load Default Settings Exit Setup

4. Select "System Information". Verify the following:

System Information Product Data 5. Select "System Summary". Verify the following:

System (greyed) Machine Type/Model 7327PAA Serial Number 0604054 (varies per PC, ensure not all 0's) UUID Number 23 Hex (varies per PC) 10 Hex (varies per PC) Asset Tag Number none Processor (greyed) Installed CPU Packages 1 2.53GHz Processor Speed QPI Link Speed 4.8 GT/s Processor Details Memory (greyed) Memory Mode Independent Memory Speed 1333MHz or 800MHz Total Memory Size 16384MB 6. Select "Processor Details". Verify the following:

000106E5 (varies)
2.53GHz
00000006 (varies)
32KB
256KB
8192KB
Intel(R) Xeon(R) CPU
X3440 @ 2.53GHz

7. Press "Esc" 2 times. Select "Product Data". Verify the following:

Note: The following infomation will vary depending on the loaded firmware.

Host Firmware (greyed)	)
Build ID	GYE161BUS
Version	1.19
Build Date	12/05/2013
Integrated Management	Module (greyed)
Build ID	YUOOG2C
Version	1.42
Build Date	12/16/2013
Diagnostics (greyed) Build ID Version Build Date	DSYTC5C 9.42 11/05/2013

8. Press "Esc" 2 times. Select "System Settings". Verify the following:

Processors Memory Devices and I/O Ports Power Operating Modes Legacy Support Integrated Management Module System Security Adapters and UEFI Drivers Network

9. Select "Processors". Verify the following:

Turbo Mode<Disable>Proc Performance States<Enable>CPU C-States<Disable>Package ACPI C-State limit<ACPI C3> (greyed)C1 Enhanced Mode<Enable>

	Hyper Threading	<enable></enable>
	Intel Virtualization Technology	<enable></enable>
	Processor Data Prefre	sh <enable></enable>
10.	Press Esc. Select "Memory". Verif	y the following:
	Planar DIMM Details	
	Total Memory Size	16384MB (4096MB on TKEs)
	Memory Speed	<max performance=""></max>
	Thermal Mode Refresh rate	<normal> <single></single></normal>
11.	Select "Planar DIMM Details". \	Verify the following:
	Insure all "Present, E	inabled DIMMS" are:
	Proporty installe	and in uso
	- Capacity: 2048MB - Technology: DDR3	(4096MB in DIMM 3 and 6)
	DIMM 1 Present Fna	b]ed
	DIMM 2 Present, End	bled (zSeries MFG installs, HMCs)
	DIMM 3 Present, Ena DIMM 4 Present Ena	bled (zSeries MFG installs, HMCs)
	DIMM 5 Present, End	bled (zSeries MFG installs, HMCs)
	DIMM 6 Present, Ena	bled (zSeries MFG installs, HMCs)
12.	Press "Esc" 2 times. Select "Devic	es and I/O Ports". Verify the following:
	Configure SATA as	<ahci> (Important!!)</ahci>
	Enable / Disable onboo	ard device(s)
	Enable / Disable lega Set option ROM execut:	y RUM execution
	PCIe Gen1/Gen2 Speed S	Selection
	Serial Port A: 03F8 (	areyed)
	Serial Port B: 02F8 (	(reyed)
	Console Redirection Se	ettings
13.	Select "Enable/Disable onboard of	levice(s)". Verify the following:
	Ethernet 1 <disable Ethernet 2 <enable< th=""><th>2d&gt;  &gt;</th></enable<></disable 	2d>  >
14.	Press "Esc". Select <b>"Enable/Disab</b> l	e legacy ROM execution". Verify the following:
	Ethernet 2 <disable< th=""><th>2d&gt;</th></disable<>	2d>
	Slot 1 <enabled< th=""><th>l&gt;</th></enabled<>	l>
	Slot 2 <enabled Slot 3 <enabled< th=""><th> &gt;  &gt;</th></enabled<></enabled 	>  >
	Slot 4 <enabled< th=""><th> &gt;</th></enabled<>	>
	Slot 5 <enabled< th=""><th> &gt;</th></enabled<>	>
	Disabled Devices	(greyed)
15	Press "Fee" Select "Set ontion RC	M execution order" Verify the following:
15.	Set ontion ROM executiv	on <ethernet 1=""></ethernet>
	order	<ethernet 2=""></ethernet>
		<pcie sas=""></pcie>
		<slot 12<="" th=""></slot>
		<slot 3=""></slot>
	order	<pre><pcie sas=""> <slot 1=""> <slot 2=""> <slot 3=""> <slot 4=""></slot></slot></slot></slot></pcie></pre>

<Slot 5>
16. Press "Esc". Select "PCIe Gen1/Gen2 Speed Selection". Verify the following:

Slot 1	<gen1></gen1>	Important!
Slot 2	<gen1></gen1>	Important!

## 17. Press "Esc". Select "Console Redirection Settings". Verify the following:

COM Port 1	<enable></enable>
COM Port 2	<enable></enable>
Remote Console	<disable></disable>
Serial Port Sharing	<disable></disable>
Serial Port Access Mode	<disable></disable>
Legacy Option ROM Display	<com 1="" port=""></com>

COM 1 Settings

Baud Rate	<115200>
Data Bits	8
Parity	<none></none>
Stop Bits	<1>
Terminal Emulation	<ansi></ansi>
Active After Boot	<disable></disable>
Flow Control	<disable></disable>

18. Press "Esc" 2 times. Select "Power". Verify the following:

Choose Operating Mode

Active Energy	Manager	<capping disabled=""></capping>
Power Restore	Policy	<restore></restore>

**19**. Press "Esc". Select **"Operating Modes"**. Verify the following:

<Custom Mode>

Memory Refresh	<single></single>
Memory Speed	<max performance=""></max>
Proc Performance States	<enabled></enabled>
C1 Enhance Mode	<enabled></enabled>
Turbo Mode	<disabled></disabled>
Package ACPI C State Limit	<acpi c3=""></acpi>
CPU C-States	<disable></disable>

IPv6

<Disable>

20. Press "Esc". Select "Legacy Support". Verify the following:

Force Legacy Video on Boot <Enable> Rehook INT 19 <Disable> Legacy Thunk Support <Enable>

21. Press "Esc". Select "Integrated Management Module". Verify the following:

Post Watchdog	Timer	[]
Post Watchdog	Timer Value	[5] (greyed)
Reboot System	on NMI	<enable></enable>

Commands on USB Interface Preference

Network Configuration

Reset IMM to Defaults (don't select)

Reset IMM (don't select)

#### 22. Select "Commands on USB Interface Preference". Verify the following:

Commands on USB interface <Enabled>

#### 23. Press "Esc". Select "Network Configuration". Verify the following:

Network Interface Port	<shared></shared>	(greyed,
Burned-in MAC Address	00-21-5E-67-25-96	do not alter)
Hostname	IMM-00215E672596	

DHCP Control	<dhcp failo<="" th="" with=""><th>ver&gt;</th></dhcp>	ver>
IP Address	192.168.70.125	(greyed, do not alter)
Subnet Mask	255.255.255.0	(greyed)
Default Gateway	0.0.0.0	(greyed)
IP6	<disable></disable>	
Local Link Address	FE80::221:5EFF:F	E69:C8C8/64 (varies)
VLAN Support	<disable></disable>	
VLAN ID	[0]	(greyed)
Save Network Settings	(select only if	changes were made)

**Note:** If IP6 was already in the <Disable> state, the Local Link Address value will be ":". When you change any of the IMM network settings and run **Save Network Settings**, you will see the following popup: Network Settings have been saved successfully. However, changes will take effect only after the IMM is reset. Resetting will make the IMM inaccessible for several minutes. Press 'Y/y' to reset the IMM now. Press 'N/n' to return without resetting IMM. Press N at the popup to proceed.

24. Press "Esc" 2 times. Select "System Security". Verify the following:

TPM Physical Presence	Not Asserted
Refresh Physical Presence	State (don't select)
TPM enabled status	TPM Enabled/Activated
TPM Device	<enable></enable>
TPM State	<activate></activate>
TPM Force Clear	(don't select)

25. Press "Esc". Select "Adapters and UEFI Drivers". Verify the following:

**Note:** You may have to press "Enter" to refresh the page. If MFG configuration settings were previously saved and the system rebooted, the following Ethernet 1 "Pci(0x1C,0x5)" entry may not be displayed since it was disabled.

Intel (R) PRO/1000 4.6.17 PCI-E (greyed, varies)		
-PciRoot(0x0)/Pci(0x1C,0x5)Pci(0x0,0x0)	(don't	select)
(0. 0215E69C8C5,0x0)	(don't	select)

**Note:** The following Ethernet 2 entry will always be displayed if this is the very first time configuration is entered.

Intel (R) PR0/1000 4.6.17 PCI-E (greyed, varies)
|-PciRoot(0x0)/Pci(0x1C,0x7)Pci(0x0,0x0) (don't select)
|-|-PciRoot(0x0)/Pci(0x1C,0X7)/Pci(0x0,0x0)/MAC
(0 . 0215E69C8C5,0x0) (don't select, new UEFI format)

26. Press "Esc". Select "Network". Verify the following:

Network Boot Configuration iSCSI Configuration	(don't selec	t)
Network Device List		
MAC:00:21:5E:69:C8:C4 Onboa	rd PFA 11:0:0 (varies)	
MAC:00:21:5E:69:C8:C5 Onboa	rd PFA 21:0:0 (varies)	

**Note:** If configuration settings are saved, only one MAC address will appear under the Network Device List.

27. Select "Network Boot Configuration". Verify the following:

MAC:00:21:5E:69:C8:C4 Onboard PFA 11:0:0 (MAC Address, varies) MAC:00:21:5E:69:C8:C5 Onboard PFA 21:0:0 (MAC Address, varies) **Note:** If you entered this setup program with the first Ethernet disabled, you will only see one MAC address.

28. Select "MAC:nn:nn:nn:nn:nn Onboard PFA 21:0:0". Verify the following:

PXE Mode Configuration (greyed) PXE Mode <Disabled> PXE Internet Protocol <IPV4> iSCSI Mode Configuration (greyed) Attempt not found Save Changes 29. Press "Esc" 4 times. Select "Date and Time". Verify the following: MM/DD/YYYY System Date System Time HH/MM/SS 30. Press "Esc". Select "Start Options". Verify the following: Hard Disk 0 31. Press "Esc". Select "Boot Manager". Verify the following: Primary Boot Sequence (greyed) Add Boot Option Delete Boot Option Change Boot Order Secondary (WOL) Boot Sequence (greyed) Add WOL Boot Option Delete WOL Boot Option Change WOL Boot Order Boot From File (don't select) Select Next One-Time Boot (don't select) Reset System (don't select) 32. Select "Delete Boot Option". Verify the following: Note: Order may vary. CD/DVD Rom [X] (press "space bar") (press "space bar") Floppy Disk [X] [] Hard Disk 0 PXE Network [X] (press "space bar") Note: After MFG configuration is completed, only "Hard Disk 0" is displayed. 33. Select "Commit Changes". Verify the following: Hard Disk 0 [] 34. Press "Esc". Select "Change Boot Order". Verify the following: Change the order <Hard Disk 0> Commit Changes 35. Press "Esc". Select "Delete WOL Boot Option". Verify the following: PXE Network [X] (press "space bar" (press "space bar") Floppy Disk [X] (press "space bar") CD/DVD Rom [X] Hard Disk 0 []

Note: After MFG configuration is completed, , only "Hard Disk 0" is displayed.

36. Select "Commit Changes". Verify the following:

Hard Disk 0 []

37. Press "Esc". Select "Change WOL Boot Order". Verify the following: Change the order Change the order

Commit Changes

**38**. Press "Esc" 2 times. Select **"System Event Logs"**. Verify the following:

Post Event Viewer

System Event Log Clear System Event Log

Note: If you wish, view the "Post Event Viewer" and "System Event Log".

- 39. Select "Clear System Event Log" and Press "Enter".
- 40. Press "Esc". Select "User Security". Verify the following:

Set Power-On Password Clear Power-On Password

Set Admin Password Clear Admin Password Select "Clear Power-On Password" and verify that it is not set.

Select "Clear Admin Password" and verify that it is not set.

- 41. Press "Esc". Select"Save Settings".
- 42. Select "Exit Setup".

Answer "Y" for the "Do you want to exit Setup Utility". The system will fail in its attempt to boot (no bootable image).

43. At the firmware screen, press "F2" to start diagnostics.

#### END OF PROCEDURE

## 7382 PC configuration

**Note:** UEFI (formally BIOS) settings are applied using the IBM Advanced Settings Utility (ASU) program. For the 7382 server, using a bootable CD is required when the system board has been replaced. The preferred method to apply the UEFI settings is to use CD part number 00NK089 Control Level 3 for Driver 15 and CD part number 00NK090 Control Level 3 for Drivers 22 and 27. Otherwise, use the following:

Manual Configuration: Using IBM Setup Utility (F1 during boot)

- 1. Power on the display.
- 2. Power on the system unit.
  - a. "System initializing" in lower left hand corner
  - b. "IBM Server x / System Firmware" screen appears with "Connecting Boot Devices and Adapters..." in lower left hand corner.

Hint: You can press "F1" now (only once) or wait for the next screen to display.

- c. "[F1] Setup [F2] Diagnostics [F12] Boot Device" are displayed.
- d. Press "F1" to enter "System Configuration and Boot Management"

#### Note:

- a. > "Select...." means to select the heading.
- b. > There is no mouse support. Navigate by using the arrow and "Enter" keys.
- c. > There is no "typematic" support
- d. > Ignore (if displayed) the following:

#### CAUTION:

Your TPM is asserted... Disable to remove.

Trusted Platform Module's presence is asserted. Please disable this to remove potential security vulnerabilities.

#### This is due to a firmware issue and is not displayed when firmware is updated.

e. > Some entries and data are dynamic depending if a feature is enabled or disabled.

Disabling a feature, for example an Ethernet port, will cause its configuration data not to be displayed the next time this utility is invoked.

3. Verify the following:

System Configuration and Boot Management

System Information System Settings Date and Time Start Options Boot Manager System Event Logs User Security Save Settings **Restore Settings** Load Default Settings Exit Setup Select "System Information". Verify the following: System Summary Product Data 5. Select "System Summary". Verify the following: System Identification Data (greyed) 7382PBC Machine Type/Model Serial Number O6ADNV2 (varies per PC, ensure not all 0's) UUID Number {8 Hex - 4 Hex - 4 Hex - 4 Hex - 12 Hex} (varies per PC) 11S00AM947YIBM0{serial number} Asset Tag Number Processor (greyed) Installed CPU Packages 1 Processor Speed 2.20 GHz QPI Link Speed 7.2 GT/s Processor Details Memory (greyed) Memory Mode Independent Memory Speed 1333 MHz Total Memory Size 16 GB Memory Voltage 1.35V 6. Select "Processor Details". Verify the following: Processor Socket Socket 1 Socket 2 Processor ID 000206D7 (varies) N/A 2.20GHz Processor Frequency N/A Processor Revision 0000070D (varies) N/A L1 Cache RAM 64KB N/A L2 Cache RAM 256KB N/A L3 Cache RAM 15MB N/A Supported Enabled Cores Per Socket 6 6

Threads Per Socket1212Processor 1 VersionIntel(R) Xeon(R) CPU E5<br/>-2430 0 @ 2.20GHzProcessor 2 VersionN/A

7. Press "Esc" 2 times. Select "Product Data". Verify the following:

Note: The following infomation will vary depending on the loaded firmware.

Host Firmware (greyed) YAE142BUS (varies) Build ID Version 1.40 (varies) Build Date 04/24/2015 (varies) Integrated Management Module (greyed) Build ID 1A0066M (varies) Version 4.97 (varies) Build Date 05/06/20153 (varies) Diagnostics (greyed) Build ID DSYTD8G (varies) Version 9.54 (varies) Build Date 04/17/2013 (varies) Core Root of Trust (greyed) Build ID YAE142BUS (varies) Version 1.40 (varies) Build Date 04/24/2015 (varies) 8. Press "Esc" 2 times. Select "System Settings". Verify the following: Adapters and uEFI Drivers Processors Memory Devices and I/O Ports Power Operating Modes Legacy Support System Security Integrated Management Module Recovery Storage Network Driver Health 9. Select Adapters and UEFI Drivers. Verify the following: **Note:** You may have to press "Enter" to refresh the page. Intel (R) PRO/1000 5.0.14 PCI-E (greyed, varies) -PciRoot(0x0)/Pci(0x1C,0x0)Pci(0x0,0x0) (don't select) - - PciRoot(0x0)/Pci(0x1C,0X0)/Pci(0x0,0x0)/MAC (don't select) (5 . CF3FCAE0D4D,0x0) Intel (R) PRO/1000 5.0.14 PCI-E (greyed, varies) -PciRoot(0x0)/Pci(0x1C,0x0)Pci(0x0,0x1) (don't select) - - PciRoot(0x0)/Pci(0x1C,0X0)/Pci(0x0,0x1)/MAC (5 . CF3FCAE0D4E,0x0) (don't select) 10. Press Esc. Select "Processors". Verify the following: Turbo Mode <Enable> (greved)

	"Lilubic" (gicycu)
Processor Performance	<enable> (greyed)</enable>
States	
C-States	<enable> (greyed)</enable>
Package ACPI C-State limit	<acpi c3=""> (greyed)</acpi>
C1 Enhanced Mode	<enable> (greyed)</enable>
Hyper-Threading	<enable></enable>

Execute Disable Bit	<enable></enable>
Intel Virtualization	<enable></enable>
Technology Hardware Prefetcher	<enable></enable>
Adjacent Cache Prefetch	<enable></enable>
DCU Streamer Prefetcher	<enable></enable>
DCU IP Prefetcher	<enable></enable>
Direct Cache Access (DCA)	<disable></disable>
Cores in CPU Package	<all></all>
QPI Link Frequency	<max performance=""> (greyed)</max>

11. Press "Esc". Select "Memory". Verify the following:

System Memory Details

Total Memory Size	16 GB
Memory Voltage	1.35V

Memory Mode	<independent></independent>
Memory Speed	<max performance="">(greyed)</max>
Memory Power Management	<disable>(greyed)</disable>
Socket Interleave	<numa></numa>
Patrol Scrub	<enable></enable>
Memory Data Scrambling	<enable></enable>
Page Policy	<adaptive></adaptive>
Memory Refresh	<1x>

#### 12. Select "System Memory Details" . Verify the following:

DIMM Details For Processor 1 DIMM Details for Processor 2

13. Select "DIMM Details for Processor 1". Verify the following:

DIMM	1	Present,	Enabled
DIMM	2	Present,	Enabled
DIMM	3	Present,	Enabled
DIMM	4	[EMPTY]	
DIMM	5	Present,	Enabled
DIMM	6	[EMPTY]	

#### Verify that each "Present, Enabled" DIMM has the characteristics: Capacity: 4 GB Technology: DDR3

14. Press "Esc". Select "DIMM Details for Processor 2". Verify the following:

DIMM	7	[EMPTY]
DIMM	8	[EMPTY]
DIMM	9	[EMPTY]
DIMM	10	[EMPTY]
DIMM	11	[EMPTY]
DIMM	12	[EMPTY]

15. Press "Esc" 3 times. Select "Devices and I/O Ports". Verify the following:

Configure the onboard SATA	<ahci></ahci>	[Changed from default]
ports as		
Active Video	<onboard device=""></onboard>	[Changed from default]
PCI Express Native Control	<disable></disable>	[Changed from default]
PCI 64-Bit Resource	<enable></enable>	[Changed from default]
Allocation		
MM Config Base	<2GB>	

Enable / Disable Onboard Devices(s) Enable / Disable Adapter Option ROM Support Set Option ROM Execution Order PCIe Gen1/Gen2/Gen3 Speed Selection

Console Redirection Settings

#### 16. Select "Enable / Disable Onboard Device(s)". Verify the following:

SCU	<enable></enable>
Ethernet	<enable></enable>
Slot 1	<enable></enable>
Slot 2	<enable></enable>
Slot 3	<enable></enable>
Slot 4	<enable></enable>
Slot 5	<enable></enable>
Slot 6	<enable></enable>

#### 17. Press "Esc" . Select "Enable / Disable Adapter Option ROM Support". Verify the following:

Enable / SCU Ethernet Ethernet Ethernet Video Slot 1 Slot 2 Slot 3 Slot 4 Slot 5	Disable 1 2 3 4	Legacy	Option <enab <ena <ena <ena <ena <ena <ena <ena <ena< th=""><th>ROM(s) le&gt; able&gt; able&gt; able&gt; able&gt; able&gt; able&gt; able&gt; able&gt; able&gt; able&gt;</th><th>(greyed)</th></ena<></ena </ena </ena </ena </ena </ena </ena </enab 	ROM(s) le> able> able> able> able> able> able> able> able> able> able>	(greyed)
Slot 6			<ena< td=""><td>able&gt;</td><td></td></ena<>	able>	
Enable / SCU Ethernet Ethernet Ethernet Video Slot 1 Slot 2 Slot 3 Slot 4 Slot 5 Slot 6	Disable 1 2 3 4	uEFI O	otion R( <enab <ena <ena <enal <ena <ena <ena <ena <ena< td=""><td>DM(s) le&gt; able&gt; able&gt; able&gt; able&gt; able&gt; able&gt; able&gt; able&gt;</td><td></td></ena<></ena </ena </ena </ena </enal </ena </ena </enab 	DM(s) le> able> able> able> able> able> able> able> able>	

18. Press "Esc" . Select "Set option ROM execution order". Verify the following:

Set o order	ption	ROM	execution	<	<scu> <ethern Ethern <ethern <video <slot 2<br=""><slot 2<="" th=""><th>net 1&gt; et 2&gt; net 3&gt; net 4&gt; &gt; 1&gt; 2&gt;</th></slot></slot></video </ethern </ethern </scu>	net 1> et 2> net 3> net 4> > 1> 2>
					<video></video>	>
					<slot 2<="" td=""><td>1&gt;</td></slot>	1>
					<slot 2<="" td=""><td><u>2</u>&gt;</td></slot>	<u>2</u> >
					<slot 3<="" td=""><td>3&gt;</td></slot>	3>
					<slot 4<="" td=""><td>4&gt;</td></slot>	4>
					<slot 5<="" td=""><td>5&gt;</td></slot>	5>
					<slot 6<="" td=""><td>5&gt;</td></slot>	5>

19. Press "Esc". Select "PCIe Gen1/Gen2/Gen3 Speed Selection". Verify the following:

Slot 1	<gen3></gen3>			
Slot 2	<gen3></gen3>			
Slot 3	<gen3></gen3>			
Slot 4	<gen3></gen3>			
Slot 5	<gen1></gen1>	Important!	[Changed	from default]
Slot 6	<gen2></gen2>			

20. Press "Esc". Select "Console Redirection Settings". Verify the following:

COM Port 1	<enable></enable>
COM Port 2	<enable></enable>
Remote Console	<disable></disable>
Serial Port Sharing	<disable></disable>
Serial Port Access Mode	<disable></disable>
Legacy Option ROM Display	<com 1="" port=""></com>

COM1 Settings Com1 Baud Rate <115200> Com1 Data Bits <8> Com1 Parity <None> Com1 Stop Bits <1> <ANSI> Com1 Terminal Emulation Com1 Active After Boot <Disable> Com1 Flow Control <Disable> COM2 Settings Com2 Baud Rate <115200> Com2 Data Bits <8> Com2 Parity <None> Com2 Stop Bits <1> Com2 Terminal Emulation <ANSI> Com2 Active After Boot <Disable> Com2 Flow Control <Disable> 21. Press "Esc" 2 times. Select "Power". Verify the following: <Capping Disabled> [Changed from default] Active Energy Manager Power/Performance Bias <Platform Controlled> (greyed) Platform Controlled Type <Efficiency - Favor Performance> (greyed) Workload Configuration <Balanced> 22. Press "Esc". Select "Operating Modes". Verify the following: <Custom Mode> [Changed from default] Choose Operating Mode Memory Speed <Max Performance> Memory Power Management <Disable> Proc Performance States <Enable> C1 Enhance Mode <Enable> QPI Link Frequency <Max Performance> Turbo Mode <Enable> CPU C-States <Enable> Package ACPI C-State Limit <ACPI C3> Power/Performance Bias <Platform Controlled> Platform Controlled Type <Efficiency - Favor Performance> Press "Esc". Select "Legacy Support". Verify the following: Force Legacy Video on Boot <Enable> Rehook INT 19h <Disable> Legacy Thunk Support <Enable> Infinite Boot Retry <Disable> BBS Boot <Enable> 23. Press "Esc". Select "System Security". Verify the following: [TPM Status] (greyed) TPM Physical Presence Not Asserted TPM Device State TPM Enabled/Activated TPM TXT Status TXT Disabled MOR Disabled MOR Status Refresh TPM Status [TPM Settings] (greyed) TPM Device <Enable> TPM State <Activate> TXT State <Disable> MOR State <Disable> (don't select) TPM Force Clear

24. Press "Esc". Select "Integrated Management Module". Verify the following:

Power Restore Policy<Restore>Commands on USB Interface<Enabled>

Network Configuration

Reset IMM to Defaults (don't select)

Reset IMM (don't select)

25. Select "Network Configuration". Verify the following:

Network Interface Port	<shared> [Changed from default]</shared>
Burned-in MAC Address	5C-F3-FC-AE-0D-51 (greyed)
Hostname	IMM2-e41f139511b4 (varies)
DHCP Control IP Address Subnet Mask Default Gateway	<pre><dhcp failover="" with=""> 192.168.70.125 (greyed) 255.255.255.0 (greyed) 0.0.0.0 (greyed)</dhcp></pre>
IP6	<enabled></enabled>
Local Link Address	FE80::5EF3:FCFF:FEAE:D51/64 (varies)
VLAN Support	(Disabled>

Save Network Settings (select only if changes were made)

26. Press "Esc" twice. Select "Recovery". Verify the following:

POST Attempts System Recovery Backup Bank Management

27. Select "POST Attempts". Verify the following:

POST Attempts Limit <3>

28. Press "Esc". Select "System Recovery". Verify the following:

POST Watchdog Timer	<disable></disable>			
POST Watchdog Time Value	[5] (greyed)			
Reboot System on NMI	<disable></disable>	[Changed	from	default]
Halt On Severe Error	<enable></enable>	[Changed	from	default]

29. Press "Esc". Select "Backup Bank Management". Verify the following:

Backup Bank Managment <User Managed> Method

30. Press "Esc" twice. Select "Storage". Verify the following:

LSI SAS2 MPT Controller SAS2004, PCISubDeviceId:0x40E, PCIBus:0x11, PCIDevice:0x0, PCIFunc:0x0, PCISlot:0x3)

31. Select "LSI SAS2". Verify the following:

LSI SAS2 MTP Controller Version 7.22.04.00

The version may vary, it must be at least 7.18.04.04.

#### Select "LSI SAS2 MTP". Verify the following:

Controller Management Physical Disk Management

#### 32. Select "Controller Management". Verify the following:

View Controller Properties Change Controller Properties Create Configuration Save Controller Events

33. Select "View Controller Properties". Verify the following:

Controller Properties	(greyed)
Controller Name	SAS2004
Controller Revision	3
PCI ID (Bus:Dev:Func)	0x11:0x0:0x0
PCI Slot Number	3
Host Interface	PCIe
Physical Disk Count	1
Virtual Disk Count	0
Firmware Type	IR
Firmware Version	15.0.0.0 (may vary)
Default NVData Version	F.0.0.15 (may vary)
Persistent NVData Version	F.0.0.15 (may vary)

34. Press "Esc" twice. Select "Physical Disk Management". Verify the following:

View Physical Disk Properties Select Physical Disk Operations

35. Select "View Physical Disk Properties". Verify the following:

Select Physical Disk <0:1:0> Physical Disk Properties (greyed) Physical Disk ID 0:1:0 State Ready Revision BB4A Device Type Direct Access Device SAS Address 4433221103000000 Disk Cache Setting Write Cache Enabled 931 GB Size Disk Protocol SATA Serial Number of Disk Z1N4AY9R (varies) Hardware Vendor ATA ST1000NM0011 Model Number Hard Disk Drive RPM [7202] Neg. Disk Transfer Speed 6 Gbps View More Physical Disk Properties

36. Select "View More Physical Disk Properties". Verify the following:

Physical Disk ID	0:1:0
SMART Status	No Errors
Hotspare	None
Associated Virtual [	Disk None

37. Press "Esc" six times. Select "Network". Verify the following:

Global Network Settings (greyed) Network Boot Configuartion (don't select) iSCSI Configuration (don't select)

Network Device List (greyed) MAC:5C:F3:FC:AE:0D:4D Onboard PFA 6:0:0 (varies) MAC:5C:F3:FC:AE:0D:4F Onboard PFA 6:0:1 (varies)

38. Press "Esc". Select "Driver Health". Verify the following:

The platform is: Healthy (greyed)

Driver/Controller Status: (greyed) POST Attempts Driver All managed controllers/devices - Healthy Intel (R) PRO/1000 5.0.14 PCI-E All managed controllers/devices - Healthy Intel (R) PRO/1000 5.0.14 PCI-E All managed controllers/devices - Healthy

39. Press "Esc" twice. Select "Date and Time". Verify the following:

System	Date	MM/DD/YYYY
System	Time	HH/MM/SS

40. Press "Esc". Select "Start Options". Verify the following:

Just verify a "Device Path" is listed for the CD/DVD Rom. Hard Disk 0

Do not press "Enter"

Note: The inital Start Option list will be different.

Note: The above list will be displayed after you have configured the Boot Manager options below.

41. Press "Esc". Select "Boot Manager". Verify the following:

		Primary Boot Sequence Add Boot Option Delete Boot Option Change Boot Order		(greyed)
		Secondary (WOL) Boot S Add WOL Boot Option Delete WOL Boot Optior Change WOL Boot Order	Sequence 1	e (greyed)
		Boot Other Boot From File Boot From Device Select Next One-Time B	Boot	(greyed) (don't select) (don't select) (don't select)
		System Boot Modes Reset System		(greyed) (don't select) (don't select)
42.	Select "De	lete Boot Option". Ver	rify the	following:
	Note: Ord	er may vary.		
		CD/DVD Rom Hard Disk 0 PXE Network	[ ] [ ] [X]	(press "space bar")
43.	Select "Co	mmit Changes". Verify	y the fo	llowing:
		CD/DVD Rom Hard Disk 0	[] []	
44.	Press "Esc'	'. Select <b>"Delete WOL</b>	Boot C	<b>Option</b> ". Verify the following:
		PXE Network CD/DVD Rom Hard Disk 0	[X] [ ] [ ]	(press "space bar"
45.	Select "Co	mmit Changes". Verify	y the fo	llowing:
		CD/DVD Rom Hard Disk 0	[] []	
46.	Press "Esc'	'. Select <b>"Boot Modes</b> "	. Verify	the following:
		System Boot Mode <le Optimized Boot &lt; Quiet Boot <e Driver Health Check &lt;</e </le 	egacy Or <enable> Enable&gt; <all></all></enable>	lly> [Changed from default] >
47.	Press "Esc'	2 times. Select "Syste	em Eve	nt Logs". Verify the following:
		Post Event Viewer		
		System Event Log Clear System Event Lo	og	

Note: If you wish, view the "Post Event Viewer" and "System Event Log".

- 48. Select "Clear System Event Log" and Press "Enter".
- 49. Press "Esc". Select "User Security". Verify the following:

Set Power-On Password Clear Power-On Password

Set Admin Password Clear Admin Password

- 50. Select "Clear Power-On Password" and verify that password does not exist.
- 51. Select "Clear Admin Password" and verify that password does not exist.
- 52. Press "Esc". Select"Save Settings".
- 53. Select "Exit Setup".

Answer "Y" for the "Do you want to exit Setup Utility".

## END OF PROCEDURE

## 7914 (x3550 M4) server configuration

**Note:** UEFI (formally BIOS) settings are applied using the IBM Advanced Settings Utility (ASU) program. For the 7914 server, using a bootable CD is required when the system board has been replaced. The preferred method to apply the UEFI settings is to use CD part number 00NK091 Control Level 3. Otherwise, use the following:

Manual Configuration: Using IBM Setup Utility (F1 during boot)

- 1. Power on the display.
- 2. Power on the system unit.
  - a. "System initializing" in lower left hand corner
  - b. "IBM Server x / System Firmware" screen appears with "Connecting Boot Devices and Adapters..." in lower left hand corner.

Hint: You can press "F1" now (only once) or wait for the next screen to display.

- c. "[F1] Setup [F2] Diagnostics [F12] Boot Device" are displayed.
- d. Press "F1" to enter "System Configuration and Boot Management"

### Note:

- a. "Select...." means to select the heading.
- b. There is no mouse support. Navigate by using the arrow and "Enter" keys.
- c. There is no "typematic" support.
- d. Ignore (if displayed) the following caution. It is due to a firmware issue and is not displayed when firmware is updated.

CAUTION:

Your TPM is asserted... Disable to remove.

# Trusted Platform Module's presence is asserted. Please disable this to remove potential security vulnerabilities.

- e. Some entries and data are dynamic depending if a feature is enabled or disabled. Disabling a feature, for example an Ethernet port, will cause its configuration data not to be displayed the next time this utility is invoked.
- **3**. Verify the following:

System Configuration and Boot Management

System Information System Settings Date and Time

Start Options

Boot Manager

System Event Logs User Security Save Settings Restore Settings Load Default Settings Exit Setup

- 4. Select.... "Load Default Settings". The screen will go blank for several seconds, then return to the choices.
- 5. Select "System Information". Verify the following:

System Summary Product Data

6. Select "System Summary". Verify the following:

	System Identification Machine Type/Model Serial Number UUID Number Asset Tag Number	<pre>m Identification Data (greyed) ne Type/Model 7914PKG l Number KQ6F04A (varies per PC, ensure not all 0's) Number {8 Hex - 4 Hex - 4 Hex - 12 Hex} (varies per PC) Tag Number {11S00LU413YIBM0<serial number=""> (varies per PC) Note: The Asset Tag Number may also be blank. It is set (or not) when the machine is built (originally by IBM System x, then by Lenovo starting 10ct2014).</serial></pre>			
	Processor (greyed) Installed CPU Package Processor Speed QPI Link Speed Processor Details	s 1 2.60 GHz 7.2 GT/s			
	Memory (greyed) Memory Mode Memory Speed Total Memory Size Memory Voltage	Independent 1600 MHz 32 GB 1.50V			
7. Select "Pro	cessor Details". Verify	the following:			
	Processor Socket	Socket 1	Socket 2		
	Processor ID Processor Frequency Processor Revision L1 Cache RAM L2 Cache RAM L3 Cache RAM	000306E4*(varies) 2.60GHz 00000428 (varies) 64KB 256KB 15MB	N/A N/A N/A N/A N/A		
		Supported Enabled			
	Cores Per Socket Threads Per Socket	6 6 12 12			
	Processor 1 Version	Intel(R) Xeon(R) CPU -2630 v2 @ 2.60GHz	J E5		
	Processor 2 Version	N/A			
• • • • • •					

8. Press "Esc" 2 times. Select "Product Data". Verify the following:

Note: The following infomation will vary depending on the loaded firmware.

Host Firmware	(greyed)
Build ID	D7E146CUS (varies)
Version	1.82 (varies)
Build Date	04/09/2015 (varies)

Integrated Management	Module (greyed)
Build ID	1A0066M (varies)
Version	4.97 (varies)
Build Date	05/06/2015 (varies)
Diagnostics (greyed) Build ID Version Build Date	DSYTC4M (varies) 9.41 (varies) 10/14/2013 (varies)
Core Root of Trust (gro	eyed)
Build ID D7	E146CUS (varies)
Version 1	.82 (varies)
Build Date 04,	/09/2015 (varies)

9. Press "Esc" 2 times. Select "System Settings". Verify the following:

```
Adapters and uEFI Drivers
Processors
Memory
Devices and I/O Ports
Power
Operating Modes
Legacy Support
System Security
Integrated Management Module
Recovery
Storage
Network
Driver Health
```

#### 10. Select Adapters and UEFI Drivers. Verify the following:

Note: You may have to press "Enter" to refresh the page.

Intel (R) PRO/1000 4.6.18 PCI-E (greyed, varie  -PciRoot(0x0)/Pci(0x1C,0x0)Pci(0x0,0x0)  - -PciRoot(0x0)/Pci(0x1C,0X0)/Pci(0x0,0x0)/MAC (E . 41F13EE99F2,0x0)	es) (don't select) (don't select)
Intel (R) PRO/1000 4.6.18 PCI-E (greyed, varie  -PciRoot(0x0)/Pci(0x1C,0x0)Pci(0x0,0x1)  - -PciRoot(0x0)/Pci(0x1C,0X0)/Pci(0x0,0x1)/MAC (E . 41F13EE99F3,0x0)	es) (don't select) (don't select)
Intel (R) PRO/1000 4.6.18 PCI-E (greyed, varie  -PciRoot(0x0)/Pci(0x1C,0x0)Pci(0x0,0x2)  - -PciRoot(0x0)/Pci(0x1C,0X0)/Pci(0x0,0x2)/MAC (E . 41F13EE99F4,0x0)	es) (don't select) (don't select)
<pre>Intel (R) PRO/1000 4.6.18 PCI-E (greyed, varie</pre>	es) (don't select) ; (don't select)

After the uEFI settings have been applied from the bootable CD, only the greyed top line of each Ethernet port will appear.

11. Press Esc. Select "Processors". Verify the following:

Turbo Mode	<enable> (greyed)</enable>
Processor Performance	<enable> (greyed)</enable>
States	
C-States	<enable> (greyed)</enable>
Package ACPI C-State limit	<acpi c3=""> (greyed)</acpi>
C1 Enhanced Mode	<enable> (greyed)</enable>
Hyper-Threading	<enable></enable>
Execute Disable Bit	<enable></enable>
Intel Virtualization	<enable></enable>
Technology	

Hardware Prefetcher Adiacent Cache Prefetch	<enable> <enable></enable></enable>
DCU Streamer Prefetcher	<enable></enable>
DCU IP Prefetcher	<enable></enable>
Direct Cache Access (DCA)	<disable></disable>
Cores in CPU Package	<a11></a11>
QPI Link Frequency	<max performance=""> (greyed)</max>

12. Press "Esc". Select "Memory". Verify the following:

System Memory Details

Total Memory Size	32 GB
Memory Voltage	1.5V

Memory Mode	<independent></independent>
Memory Speed	<max performance="">(greyed)</max>
Memory Power Management	<disable>(greyed)</disable>
Socket Interleave	<numa></numa>
Page Policy	<adaptive></adaptive>

13. Select "System Memory Details" . Verify the following:

DIMM Details For Processor 1 DIMM Details for Processor 2

#### 14. Select "DIMM Details for Processor 1". Verify the following:

DIMM	1	Present, Enabled
DIMM	2	[EMPTY]
DIMM	3	[EMPTY]
DIMM	4	Present, Enabled
DIMM	5	[EMPTY]
DIMM	6	[EMPTY]
DIMM	7	[EMPTY]
DIMM	8	[EMPTY]
DIMM	9	Present, Enabled
DIMM	10	[EMPTY]
DIMM	11	[EMPTY]
DIMM	12	Present, Enabled

Verify that each "Present, Enabled" DIMM has the characteristics: Capacity: 8 GB Technology: DDR3

15. Press "Esc". Select "DIMM Details for Processor 2". Verify the following:

DIMM 13	[EMPTY]
DIMM 14	[EMPTY]
DIMM 15	[EMPTY]
DIMM 16	[EMPTY]
DIMM 17	[EMPTY]
DIMM 18	[EMPTY]
DIMM 19	[EMPTY]
DIMM 20	[EMPTY]
DIMM 21	[EMPTY]
DIMM 22	[EMPTY]
DIMM 23	[EMPTY]
DIMM 24	[EMPTY]

16. Press "Esc" 3 times. Select "Devices and I/O Ports". Verify the following:

Configure the onboard SATA	<ahci></ahci>	(Important!!)
ports as		
Active Video	<onboard device=""></onboard>	[Changed from default]
PCI Express Native Control	<disable></disable>	[Changed from default]
PCI 64-Bit Resource	<enable></enable>	[Changed from default]
Allocation		
MM Config Base	<2GB>	

Enable / Disable Onboard Device(s) Enable / Disable Adapter Option ROM Support

Set Option ROM Execution Order PCIe Gen1/Gen2/Gen3 Speed Selection

Console Redirection Settings

17. Select "Enable / Disable Onboard Device(s)". Verify the following:

Ethernet 1	<enable></enable>			
Ethernet 2	<enable></enable>			
Ethernet 3	<disable></disable>	[Changed	from	default]
Ethernet 4	<disable></disable>	[Changed	from	default]
Slot 1	<enable></enable>			
Slot 2	<enable></enable>			
Slot 3	<enable></enable>			

#### 18. Press "Esc" . Select "Enable / Disable Adapter Option ROM Support". Verify the following:

Enable / Ethernet Ethernet Ethernet Slot 1 Slot 2 Slot 3	Disable 1 2 3 4	Legacy	Option ROM(s) <disable> <disable> <disable> <enable> <enable> <enable> <enable></enable></enable></enable></enable></disable></disable></disable>	(greyed) [Changed [Changed [Changed [Changed	from from from	default] default] default] default]
Enable / Ethernet Ethernet Ethernet Slot 1 Slot 2 Slot 3	Disable 1 2 3 4	uEFI O	otion ROM(s) <disable> <disable> <disable> <enable> <enable> <enable> <enable></enable></enable></enable></enable></disable></disable></disable>	[Changed [Changed [Changed [Changed	from from from	default] default] default] default]

19. Press "Esc" . Select "Set option ROM execution order". Verify the following:

Set option ROM execution <Ethernet 1> order <Ethernet 2> <Ethernet 3> <Ethernet 4> <Slot 1>

	-
<slot< td=""><td>2&gt;</td></slot<>	2>
<slot< td=""><td>3&gt;</td></slot<>	3>

#### 20. Press "Esc". Select "PCIe Gen1/Gen2/Gen3 Speed Selection". Verify the following:

Slot 1 <Gen3> Slot 2 <Gen3>

0.00	-	0.0.10
Slot	3	<gen3></gen3>

21. Press "Esc". Select "Console Redirection Settings". Verify the following:

COM Port 1 COM Port 2 Remote Console Serial Port Sharing Serial Port Access Mode Legacy Option ROM Display COM1 Settings	<enable> <enable> <disable> <disable> <disable> <com 1="" port=""></com></disable></disable></disable></enable></enable>
Coml Baud Rate Coml Data Bits Coml Parity Coml Stop Bits Coml Terminal Emulation Coml Active After Boot Coml Flow Control	<115200> <8> <none> &lt;1&gt; <ansi> <disable> <disable></disable></disable></ansi></none>
COM2 Settings	-115000
COMZ BAUG KATE	<115200>

22.	Com2 Data Bits Com2 Parity Com2 Stop Bits Com2 Terminal Emulation Com2 Active After Boot Com2 Flow Control Press "Esc" 2 times. Select <b>"Power"</b> . Ve	<8> <none> &lt;1&gt; <ansi> <disable> <disable> erify the following:</disable></disable></ansi></none>	
	Active Energy Manager Power/Performance Bias Platform Controlled Type	<pre><capping disabled=""> [Changed from default] <platform controlled=""> (greyed) <efficiency -="" favor="" performance=""> (greyed)</efficiency></platform></capping></pre>	
~~	Workload Configuration	<balanced></balanced>	
23.	B. Press "Esc". Select <b>"Operating Modes"</b> . Verify the following:		
	Choose Operating Mode	<custom mode=""> [Changed from default]</custom>	
	Memory Speed Memory Power Management Proc Performance States C1 Enhance Mode QPI Link Frequency Turbo Mode CPU C-States Package ACPI C-State Limit Power/Performance Bias Platform Controlled Type	<max performance=""> <disable> <enable> <max performance=""> <enable> <enable> <acpi c3=""> <platform controlled=""> <efficiency -="" favor<br="">Performance&gt;</efficiency></platform></acpi></enable></enable></max></enable></disable></max>	
	Press "Esc". Select "Legacy Support". Verify the following:		
	Force Legacy Video on Boot Rehook INT 19h Legacy Thunk Support Infinite Boot Retry BBS Boot	<enable> <disable> <enable> <disable> <enable></enable></disable></enable></disable></enable>	
24.	4. Press "Esc". Select "System Security". Verify the following:		
	[TPM Status] (greyed) TPM Physical Presence TPM Device State TPM TXT Status MOR Status	Not Asserted TPM Enabled/Activated TXT Disabled MOR Disabled	
	Refresh TPM Status		
	[TPM Settings](greyed) TPM Device TPM State TXT State MOR State TPM Force Clear	<enable> <activate> <disable> <disable> (don't select)</disable></disable></activate></enable>	
25.	Press "Esc". Select "Integrated Manag	ement Module". Verify the following:	
	Power Restore Policy Commands on USB Interface	<restore> <enabled></enabled></restore>	
	Network Configuration		
	Reset IMM to Defaults (don't	: select)	
	Reset IMM (don't	select)	
26.	Select "Network Configuration". Veri	fy the following:	

<dedicated></dedicated>	
<none></none>	
E4-1F-13-EE-99-F6	(greyed)
IMM2-e41f13ee99f6	(varies)
	<dedicated> <none> E4-1F-13-EE-99-F6 IMM2-e41f13ee99f6</none></dedicated>

DHCP Control <DHCP with Failover> IP Address 192.168.70.125 (greyed) Subnet Mask 255.255.255.0 (greyed) Default Gateway 0.0.0.0 (greyed) IP6 <Enabled> FE80::E61F:13FF:FEEE:99F6/64 (varies) Local Link Address VLAN Support <Disabled> Advanced IMM Ethernet Setup Save Network Settings (select only if changes were made) 27. Press "Esc" twice. Select "Recovery". Verify the following: **POST Attempts** System Recovery Backup Bank Management Disk GPT Recovery 28. Select "POST Attempts". Verify the following: POST Attempts Limit <3> 29. Press "Esc". Select "System Recovery". Verify the following: POST Watchdog Timer <Disable> [5] (greyed) POST Watchdog Time Value Reboot System on NMI <Enable> <Enable> [Changed from default] Halt On Severe Error 30. Press "Esc". Select "Backup Bank Management". Verify the following: Backup Bank Managment <User Managed> Method 31. Press "Esc". Select "Disk GPT Recovery". Verify the following: Disk GPT Recovery <Automatic> 32. Press "Esc" twice. Select "Storage". Verify the following: LSI SAS2 MPT Controller SAS2004, (do not select) PCISubDeviceId:0x40E, PCIBus:0x1B, PCIDevice:0x0, PCIFunc:0x0, PCISlot:0x3) 33. Press "Esc". Select "Network". Verify the following: Global Network Settings (greyed) Network Boot Configuration iSCSI Configuration (don't select) Network Device List (greyed) MAC:E4:1F:13:EE:99:F2 Onboard PFA 6:0:0 (varies) MAC:E4:1F:13:EE:99:F3 Onboard PFA 6:0:1 (varies) MAC:E4:1F:13:EE:99:F4 Onboard PFA 6:0:2 (varies) MAC:E4:1F:13:EE:99:F5 Onboard PFA 6:0:3 (varies) After the uEFI settings have been applied from the bootable CD, the Ethernet MAC addresses will no longer appear. 34. Select "Network Boot Configuration". Verify the following: MAC:E4:1F:13:EE:99:F2 Onboard PFA 6:0:0 (varies) MAC:E4:1F:13:EE:99:F3 Onboard PFA 6:0:1 (varies) MAC:E4:1F:13:EE:99:F4 Onboard PFA 6:0:2 (varies) MAC:E4:1F:13:EE:99:F5 Onboard PFA 6:0:3 (varies) 35. Select the first MAC address. Verify the following: PXE Mode Configuration (greved) PXE Mode <Disabled> [Changed from default]

<IPV4>

PXE Internet Protocol

iSCSI Mode Configuration (greyed) Attempt not found

Save Changes

**Note:** Select "Save Changes" if you changed the PXE Mode, then press "Esc" and make the same change on the other 3 MAC addresses. If you have applied the uEFI settings from the bootable CD, the "Network Boot Configuration" screen will have no selectable entries.

36. Press "Esc". Select "Driver Health". Verify the following:

The platform is: Healthy (greyed) Driver/Controller Status: (greved) POST Attempts Driver All managed controllers/devices - Healthy Partition Driver(MBR/GTP/El Torito) All managed controllers/devices - Healthy Intel (R) PRO/1000 4.6.18 PCI-E All managed controllers/devices - Healthy Intel (R) PRO/1000 4.6.18 PCI-E All managed controllers/devices - Healthy Intel (R) PRO/1000 4.6.18 PCI-E All managed controllers/devices - Healthy Intel (R) PRO/1000 4.6.18 PCI-E All managed controllers/devices - Healthy

37. Press "Esc" twice. Select "Date and Time". Verify the following:

System Date	MM/DD/YYYY	
System Time	HH/MM/SS	

38. Press "Esc". Select "Start Options". Verify the following:

Hard Disk O

**Note:** The initial Start Option list may be different. The above list will be displayed after you have configured the Boot Manager options below.

**39**. Press "Esc". Select "Boot Manager". Verify the following:

Primary Boot Sequence (greyed) Add Boot Option Delete Boot Option Change Boot Order Secondary (WOL) Boot Sequence (greyed) Add WOL Boot Option Delete WOL Boot Option Change WOL Boot Order Boot Other (greyed) Boot From File (don't select) (don't select) Boot From Device Select Next One-Time Boot (don't select)

System	(greyed)
Boot Modes	
Reset System	(don't select)

**40**. Select "**Delete Boot Option**". Verify the following:

Note: Order may vary.

Hard Disk $0$ []				
PXE Network [X] (press "space bar")				
41. Select "Commit Changes". Verify the following:				
Hard Disk 0 []				
42. Press "Esc". Select "Delete WOL Boot Option". Verify the following:				
PXE Network [X] (press "space bar") CD/DVD Rom [X] Hard Disk 0 [ ]				
43. Select "Commit Changes". Verify the following:				
Hard Disk 0 []				
44. Press "Esc". Select "Boot Modes". Verify the following:				
System Boot Mode <legacy only=""> [Changed from default] Optimized Boot <enable> Quiet Boot <enable></enable></enable></legacy>				
45. Press "Esc" 2 times. Select "System Event Logs". Verify the following:				
Post Event Viewer				
System Event Log Clear System Event Log				
Note: If you wish, view the "Post Event Viewer" and "System Event Lo	og".			
46. Select "Clear System Event Log" and Press "Enter".				
47. Press "Esc". Select "User Security". Verify the following:				
Set Power-On Password Clear Power-On Password				
Set Admin Password Clear Admin Password				
Select "Clear Power-On Password" and verify that it is not set.				
Select "Clear Admin Password" and verify that it is not set.				
48. Press "Esc". Select"Save Settings".				
49. Select "Exit Setup".				
Answer "Y" for the "Do you want to exit Setup Utility".				
The system will fail in its attempt to boot (no bootable image).				
At the firmware screen, press "F2" to start diagnostics.				
END OF PROCEDURE				
2461 configuration				

Go to the *Service Guide for 2461 Hardware Management Console* for all service information on the 2461 HMC. This includes information to verify the configuration for the 2461 HMC, which is located in "Appendix B. 2461 configuration" in the *Service Guide for 2461 Hardware Management Console*.

## Chapter 3. Start of repair for Support Elements

## **IMPORTANT!**

Prior to performing Support Element (SE) service procedures, ensure that:

- Service Status has been enabled from the primary Support Element. Refer to the step titled Setting service status in Procedure in the chapter titled Start in the *Service Guide* for your system.
- The Support Element under test has been logically defined as **Alternate**. Refer to **Switching Support Elements** in the chapter titled **Common service procedures** in the *Service Guide* for your system.

Failure to perform the above may result in the Support Element under test being automatically reinitialized during analysis.

Before performing any repair action, review the service tip information ("Service tips for Support Elements"), then continue to "Failure table" on page 86.

## Service tips for Support Elements

## T42 (2373) service tips

- There is a circuitry module attached to the docking station socket underneath the ThinkPad providing all power. The power-on push button is covered with a cap.
- The following FRUs can be replaced:
  - Memory DIMM
  - Backup battery
  - PC card network adapter (token ring or Ethernet)
  - CD-ROM/DVD-ROM drive
  - Network cable (token ring or Ethernet).

**Note:** For any FRUs not listed, the ThinkPad is to be replaced.

## T43 (2668) service tips

The T43 utilizes three new Ethernet adapters:

• Belkin 10/100 32-bit CardBus Ethernet adapter

The Belkin adapter is physically similar to the IBM CardBus Ethernet adapter used in previous ThinkPad Support Elements. The Ethernet cable is plugged into the socket at the end of the whip. The Belkin adapter is always plugged into the lower PC Card slot (ETH2).

• Xterasys 10/100/1000 ExpressCard Ethernet adapter

The Xterasys ExpressCard adapter is narrower than a CardBus adapter. The Ethernet cable is plugged directly to the adapter. The Xterasys adapter is always plugged into the upper PC Card slot (ETH1). See Figure 3 on page 100 and Figure 4 on page 100 for guidance on removing and replacing the clip on the Xterasys ExpressCard.

• SMC 10/100 USB Ethernet adapter

For countries complying with the **Restrictions on Hazardous Substances** (**RoHS**) standard, the USB Ethernet takes the place of the adapter in the lower PCI adapter slot (ETH2). The USB adapters are located to the left of the support elements, in a box mounted where the external diskette drives used to be on the SE gates for 2094 and 2096.

The adapters can be accessed by loosening the thumbscrew on the left side of the box and removing the box cover. The rightmost adapter connects to a USB port in the lower Support Element. The other adapter connects to the upper SE.

There are three status LEDs on the USB adapter:

- 100 indicates operation at 100 Mbps and network activity
- F/H indicates full or half duplex operation
- 10 indicates operation at 10 Mbps and network activity.

USB adapters must maintain connectivity between the USB port in the ThinkPad and the Ethernet LAN for the LEDs to operate. If the USB connection between the adapter and the ThinkPad is broken, the ThinkPad must be rebooted to configure the network connection.

The USB Ethernet adapter and the cable to connect the adapter to the USB port are combined under the **P/N 15R6846**. There are no adapter or cable diagnostics.

# T60 (2007), T61 (8889), T500 (2055), T510 (4349), T520 (4242), W520 (4282) and T530 (2394) service tips

Unlike previous ThinkPad Support Elements, these ThinkPads require 20 volts DC operating voltage. (Previous ThinkPads have used 16 volts DC.) This higher operating voltage is handled in different ways depending on the server where the Support Element is installed. For 2094/2096, a "ThinkPad 90 watt AC/DC Combo Adapter" increases the 16 volts DC supplied by the server to the required 20 volts DC. For the T500, T510, T520, W520 and T530 on the 2097/2098 or 2817/2818 or 2827/2828, voltage is supplied via the Bulk Power Controller (BPC).

## 7914 service tips

## **System Diagnostics**

Dynamic System Analysis (DSA) Preboot diagnostic programs are resident on the 7914 and are invoked by pressing "F2" at the "<F2 > Diagnostics" prompt displayed during a cold boot.

In addition to DSA, there are Post error messages, error logs, event logs, and server LED's to help with failure analysis.

Refer to the "System x3550 M4 Type 7914 Installation and Service Guide" for additional information.

### System Setup

The "BIOS Setup Utility" (CMOS Settings) has been replaced with the "Unified Extensible Firmware Interface" (UEFI). This "Setup Utility" is invoked by pressing "F1" at the "<F1> Setup" prompt displayed during a cold boot.

### System Vital Product Data

UEFI (formally BIOS) settings are modified using the IBM Advanced Settings Utility (ASU) program.

To support, use CD P/N 00NK091, Control Level 3.

## 2461 service tips

Refer to the Service Guide for 2461 Support Element for information on servicing the 2461 Support Element.

## **Installed** adapters

All network adapters are configured during ThinkPad Initialization.

- Token ring 16 Mbps fixed
- Ethernet Data rate and duplex are autodetected
  - 32-bit CardBus 10/100 Mbps, half or full duplex
  - ExpressCard 10/100/1000 Mbps, half or full duplex
  - T4x LOB 10/100/1000 Mbps, half or full duplex

## Adapters:

- CardBus (CB) and ExpressCard (EC):
  - For T42 (2373) ThinkPads, only 32-bit CardBus adapters are supported in the PC Card (top or bottom) slots. CardBus adapters have a gold band next to the I/O pins.
  - For T43 (2668) ThinkPads, CardBus, ExpressCard, and USB adapters are supported. ExpressCard
    adapters are narrower than CardBus adapters. USB adapters are mounted in a box on the left side of
    the SE gate in 2094 and 2096 servers.
- LAN on Board (LOB):
  - For the T42 (2373) and all follow-on ThinkPads, Ethernet adapter function is supported on the planar board. If the LOB Ethernet function fails, the ThinkPad must be replaced.

## Adapter Locations:

Legend:

- CB: CardBus
- EC: ExpressCard
- BEL: Belkin
- XTS: Xterasys
- SMC: USB adapter

## Table 12. Adapter Locations

ThinkPad	Token Ring and Ethernet	Ethernet and Ethernet
T42 - non-RoHS	Top: IBM CB token ring Bot: IBM CB Ethernet	Top: IBM CB Ethernet Bot: IBM CB Ethernet
T43 - non RoHS	Top: XTS EC Ethernet Bot: IBM CB token ring	Top: XTS EC Ethernet Bot: BEL CB Ethernet
T43 - RoHS	N/A	Top: XTS EC Ethernet USB: SMC Ethernet
T60 - non RoHS	Top: XTS EC Ethernet Bot: IBM CB token ring	N/A
T60 - RoHS	N/A	Top: XTS EC Ethernet USB: SMC Ethernet
T61 - RoHS	N/A	Top: XTS EC Ethernet USB: SMC Ethernet
T500, T510, T520 - RoHS	N/A	N/A
W520 - RoHS	N/A	N/A
T530 - RoHS	N/A	N/A
7914	N/A	N/A
2461	N/A	N/A

ThinkPad		Token Ring and Ethernet	Ethernet and Ethernet	
Notes:				
1.	1. The IBM CardBus Ethernet adapter is not RoHS (Removal of Hazardous Substances) compliant and cannot be used on the T43 and follow-on ThinkPads.			
2.	The IBM token-ring a	lapter and Belkin CardBus Ethernet adapte	r are not RoHS compliant and cannot be used	

- 2. The IBM token-ring adapter and Belkin CardBus Ethernet adapter are not RoHS compliant and cannot be used in those countries requiring RoHS compliance.
- 3. T500 and later ThinkPad Support Elements will not have any network adapters installed.

## Failure table

Find the appropriate item in the **Topic** column of the following table. Then proceed to the information referenced in the **Go To** column.

	Topic	Go To
	ThinkPad service tips	"Service tips for Support Elements" on page 83
	Repair a ThinkPad console problem	"Failures on the ThinkPad Support Element console"
	Replacing a T4x/T6x/T500 ThinkPad Support Element	"Replacing a T4x/T6x/T500 ThinkPad Support Element" on page 143
Ι	Replacing the 2461 Support Element	Go to the Service Guide for 2461 Support Element
	Remove and replace a T510/T520/W520/T530 ThinkPad console	"Replacing a T510/ T520/ W520/ T530 ThinkPad Support Element" on page 147
	Testing a ThinkPad console	"Testing Support Elements" on page 91
Ι	Task procedures for Support Elements	Help system on the Support Element
	Support Element feature card and cable locations	Table 12 on page 85
	Token ring adapter	"Token-Ring network repair procedures" on page 169
	Testing for CardBus Ethernet adapter	"Ethernet CardBus testing" on page 97
	Testing for PC Card (32-bit CardBus) Ethernet adapter	"PC card (32-Bit CardBus) Ethernet adapter" on page 97
	Testing for ExpressCard Ethernet adapter	"Ethernet ExpressCard testing" on page 99
	Testing for USB Ethernet adapter	"USB Ethernet testing" on page 101
	"Smart Modular Technology" - USB Memory Key	"USB flash memory drive (UFD) errors" on page 16
	Additional ThinkPad maintenance information.	HMMs on the Diagnostic CD-ROM

## Failures on the ThinkPad Support Element console

Use this information when you are directed here either by a Repair and Verify window, a Perform a Console Repair window, or from Chapter 1 of this manual to repair a problem on a Support Element.

**Note:** If you are directed to exchange FRUs, refer to the HMM on the Diagnostic CD for FRU removal and replacement instructions.

Only the FRUs in the following list should be replaced by you:

- Memory DIMM
- Backup battery
- PC card or USB network adapter (token ring or Ethernet)
- Network cable (token ring or Ethernet)

- Hard Disk (T2x and follow-ons)
- CD/DVD-ROM drive
- System power-on module

If you isolate the cause of the failure to any support element component that is not in the preceding list, go to "Replacing a T4x/T6x/T500 ThinkPad Support Element" on page 143 or "Replacing a T510/ T520/ W520/ T530 ThinkPad Support Element" on page 147/ to replace the Support Element.

1. Were you directed here by a Repair and Verify or a Perform a Console Repair window?

If YES, go to step 3. If NO, go to step 2.

- 2. Go to "Operator-detected errors."
- 3. On the Repair and Verify *or* Perform a Console Repair window:
  - a. Write the FRU list for the problem.
  - b. Select Continue in documentation or Delay the repair.
  - c. If another Repair and Verify window displays, press Enter.

Then find any FRU location from the FRU list in Table 14, and go to the page indicated.

## Note:

- a. Before exchanging any FRUs, record the FRU part number, serial number, and engineering change (EC) level of the new FRU.
- b. Your FRU list may contain FRUs that are not in the table.
- **c**. The table shows most FRUs starting with xxxx. For a Support Element, xxxx is replaced by A99S or A99B.

FRU Locations	Go To		
xxxx_FIXED_DISK	"Hard disk errors" on page 160		
xxxx_CD_ROM_Drive xxxx_CD_ROM_Media	"CD/DVD ROM errors" on page 90		
XXXX_TOKEN_RING_ADAPTER XXXX_LAN_CABLE LAN_CONNECTOR_DEVICE	"Token-Ring network repair procedures" on page 169		
xxxxAA01	"Undetermined errors" on page 88		
xxxx_ETHERNET_CABLE xxxx_ETHERNET_ADAPTER xxxx_ETHERNET_CB_CARD xxxx_ETHERNET_CB_CABLE xxxx_1_ETHERNET_CB_CABLE xxxx_2_ETHERNET_CB_CABLE xxxx_2_ETHERNET_CB_CABLE xxxx_2_ETHERNET_CB_CABLE xxxx_USB_ETHERNET (SMC USB Ethernet) xxxx_NET_ADAPT (MiniPCI Ethernet/LOB Ethernet)	<ul> <li>"Ethernet CardBus testing" on page 97</li> <li>"PC card (32-Bit CardBus) Ethernet adapter" on page 97</li> <li>"Ethernet ExpressCard testing" on page 99</li> <li>"USB Ethernet testing" on page 101</li> <li>Also see "Ethernet LAN errors" on page 178.</li> </ul>		
System power-on module	Use the <i>Service Guide</i> for the server to which the SE is connected.		
No FRUs displayed	"Operator-detected errors"		

Table 14. References for FRU Locations

## **Operator-detected errors**

Use this section when:

- Problem Analysis ran for a failure on a Support Element and no FRUs were reported.
- Problem Analysis could not be run because of the failure on the Support Element.
- There are messages displayed on the Support Element.

Find the reason for the call under **Problem Area Reported**; then go to the page indicated.

**Note:** If you have to remove a Support Element for service, refer to the removal procedures in "Replacing a T4x/T6x/T500 ThinkPad Support Element" on page 143 or "Replacing a T510/ T520/ W520/ T530 ThinkPad Support Element" on page 147.

Table 15	References	for	Problem Areas
Tuble 10	. 110101010000	101	110010111711043

Problem Area Reported	Go To
Hard disk	"Hard disk errors" on page 160
CD/DVD-ROM	"CD/DVD ROM errors" on page 90
"Smart Modular Technology" - USB Memory Key	"USB flash memory drive (UFD) errors" on page 16
Operator reported Communication not active on a ThinkPad console with a token-ring adapter.	"Token-Ring network repair procedures" on page 169
Operator reported Communication not active on a ThinkPad console with an Ethernet adapter.	<ul> <li>"Ethernet CardBus testing" on page 97</li> <li>"PC card (32-Bit CardBus) Ethernet adapter" on page 97</li> <li>"Ethernet ExpressCard testing" on page 99</li> <li>"USB Ethernet testing" on page 101</li> <li>Also see "Ethernet LAN errors" on page 178</li> </ul>
Operator reported that the Support Element application did not start, but there were no other error indications.	"Undetermined errors"
All other problems (for example: parity errors, power, POST codes, display, mouse, keyboard)	"Undetermined errors"

## **Undetermined errors**

Use this section when the operator detected a failure and Problem Analysis did not run automatically or when Problem Analysis could not be run because of the problem on the Support Element.

The following procedure will direct you to use the documents shipped with the Support Element to repair failures. Refer to "Information and test menu selection" on page 26. After making the repair, return to this procedure to complete the call.

For the locations of the feature cards, refer to Table 12 on page 85.

**Note:** If you are directed to replace FRUs, for removal and replacement instructions, refer to your specific machine type's HMM on the Diagnostic CD.

1. Do you have *all* the following symptoms during ThinkPad power on (initialization)?

**Note:** The ThinkPad is initialized by powering it off then on or pressing Ctrl+Alt+Del. When initialization is complete, the **Operator Logon** window should display.

- No POST error codes
- One or two short beeps
- SE Desktop or licensed internal code for the Support Element fails to start
- No reference code or any other error information displayed

If YES, go to step 2. If NO, go to step 5 on page 89.

- Use the information in "Testing Support Elements" on page 91 to test the Support Element. Select System Unit problem area, and then select the test for Run All Selected.
   When the test is complete, go to step 3.
- Did the tests detect any errors?
   If YES, go to step 5 on page 89. If NO, go to step 4 on page 89.

4. Reload the licensed internal code on the hard drive. For servers prior to z14, refer to "Restore Support Element hard disk information" in **Chapter 2. Console information** in the *Service Guide* for

## the server to which this console is connected. For all other servers, refer to the *Service Guide for* 2461 *Support Element*.

When the licensed internal code is restored, press Ctrl+Alt+Del.

- If the licensed internal code in the Support Element starts correctly, the problem is resolved. Close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.
- If the failure still occurs, call for assistance.
- 5. Use the information in "Testing Support Elements" on page 91 to test the Support Element. Select the failing problem area. If the problem area is not known, select **System Unit** problem area, and then select **Run All Selected**.

When the problem is repaired or if the problem cannot be isolated, continue with step 6.

6. If you have not already done so, verify the repair. For instructions, see "Testing Support Elements" on page 91. Make the appropriate selection for the unit under repair.

Note: If you were not able to isolate a failure, call for assistance.

Did the tests run without errors?

If YES, go to step 8. If NO, go to step 7.

7. Continue exchanging FRUs from the FRU list and testing with the diagnostic procedure until the problem is resolved.

Reinstall any FRUs that do not fix the problem.

When you resolve the problem, go to step 8.

If you cannot resolve the problem, call for assistance.

**8**. Did you exchange the system board?

If YES, go to step 9. If NO, go to step 10.

- 9. If you have not already done so, configure the Support Element:
  - Refer to "CMOS configuration procedures for ThinkPad-based Support Elements" on page 102. When configuration is complete, go to step 10.
- 10. Did you exchange the hard disk drive?

If YES, go to step 11. If NO, go to step 13.

11. If there are jumpers or tab settings on the new hard drive, ensure they have the same settings as on the old drive.

Note: The Support Element (ThinkPad) hard drive may not have jumpers or tab settings.

Refer to the section about hard disk drive jumper settings in the *Hardware Maintenance Manual* for the model on which you are working.

When complete, go to step 12.

|

12. Load system licensed internal code on the new hard disk. For servers prior to z14, refer to "Restore Support Element hard disk information" in **Chapter 2. Console information** in the *Service Guide* for the server to which this console is connected. For all other servers, refer to the *Service Guide for 2461 Support Element*.

When hard disk recovery is complete, go to step 13.

- 13. For the Support Element on which you were working:
  - a. Ensure there are no diskettes in the diskette drive.
  - b. Power the system unit off.
  - c. Power the system unit on.
  - d. Return the Support Element to the operating position.

14. Close the call.

## END OF PROCEDURE.

## **CD/DVD ROM errors**

Use this procedure when a Repair and Verify window directs you to this chapter and the FRU list contains xxxx_CD_ROM_DRIVE or xxxx_CD_ROM_MEDIA or the customer reports a DVD read/write problem on the ThinkPad support element.

**Note:** Both CD/DVD ROM and CD-RW/DVD ROM drives are used. There is no support for the CD-RW write function.

- 1. The media in the CD/DVD ROM drive is one of the following:
  - Compact Disk Recordable (CD-R) similar to a CD
  - CD/DVD ROM media (no cartridge)
  - DVD-RAM (no cartridge)
  - Clean the media as follows:
  - Do not use benzine, thinners, or any other cleaners on the disk surface.
  - Hold the disk by its edge. Do not touch the surface.
  - Remove surface dust and fingerprints by wiping from the center to the outside using a dry, soft cloth.

Reinstall the disk, label side up.

2. Retry the failing task using the original media.

Did the failure occur again?

If **YES**, go to step 3. If **NO**, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.

- **3**. Leave the original media in the drive.
  - If you are trying a restore procedure, power off the ThinkPad.
  - For any other operation, shut down and power off the ThinkPad.

For instructions, refer to "Console shut down" on page 182.

Power on the ThinkPad and test the CD/DVD ROM drive using the procedure in "Testing Support Elements" on page 91.

Note: If you cannot start the test because of errors, continue on step 5.

Select **System Unit** problem area, and then select the test for the CD/DVD ROM drive. If you cannot start the test because of errors or when the test is complete, continue to step4

4. Did the CD/DVD ROM test fail while testing with the original media?

Note: If you could not start the test because of errors, answer this question YES.

If **YES**, go to step 5. If **NO**, go to "CMOS configuration procedures for ThinkPad-based Support Elements" on page 102 and verify the Support Element configuration.

5. Exchange the original media with a new one.

**Note:** If you are replacing DVD RAM media, the new media must be formatted. If possible, use a Hardware Management Console supporting DVD RAM to do the formatting.

- a. Click Tasks Index from the left navigation pane..
- b. Click Format Media.

1

- c. Select the Format Type based on usage.
- 6. Test the CD/DVD ROM drive with the new media.
  - a. Power off the support element.
  - b. Power on the Support Element and test the CD/DVD ROM drive using the procedure in "Testing Support Elements" on page 91.

- c. Select **System Unit** problem area, and then select the test for the CD/DVD ROM drive.
- 7. Did the CD/DVD ROM tests fail when you used the new media?

**Note:** If you could not start the test because of errors, answer the question **YES**. If **YES**, call for assistance. If **NO**, the original media was defective. Close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.

## END OF PROCEDURE.

## **Testing Support Elements**

This section describes diagnostics and configuration for Support Elements.

For some Support Elements, diagnostic options, supporting the Hardware Management Console, the Support Element, and network adapters are available on the *Diagnostic CD* (P/N 12R9120).

For some Support Elements, the CD-R is bootable and each of the three options are menu driven. The CD also contains a Service subdirectory containing HMMs (in Adobe Acrobat PDF format) and diskette images (ARDI executable format). This manual will direct you into and out of the HMMs, diagnostics, and other repair or replace activities.

Use the information in this section when you are directed to test the Support Element to isolate a problem or verify a repair.

Use "Testing Support Elements" to test adapters.

Use "CMOS configuration procedures for ThinkPad-based Support Elements" on page 102 if you are directed to configure or verify the configuration of a PCI adapter or system unit.

**Note:** If you are directed to **Run All Selected**, start with the **System Unit** diagnostic procedures for the console you are repairing.

Problem Area	Go To
<ul> <li>ThinkPad: System Unit</li> <li>Hard Disk</li> <li>Display</li> <li>CD/DVD ROM</li> <li>Keyboard</li> <li>Memory</li> <li>Mouse</li> <li>Run All Selected</li> </ul>	<ul> <li>For T42, T43, T60, T61, T500, T510 ThinkPad system units, see "System unit testing for T42, T43, T60, T61, T500, T510 support elements" on page 93.</li> <li>For the T520 or W520 ThinkPad system unit, see "System unit testing for T520 or W520 support element" on page 94.</li> <li>For the T530 ThinkPad system unit, see "System unit testing for T530 Support Element" on page 95.</li> <li>For the 7914 system unit, see "System unit testing for 7914 Support Element" on page 95.</li> <li>For the 2461 system unit, see "Testing 2461 Support Element (Model</li> </ul>
	2461-SE1)" or "Testing 2461 Support Element (Model 2461-SE2) in the <i>Service Guide for 2461 Support Element</i> .
Ethernet CardBus adapters	"Ethernet CardBus testing" on page 97
PC Card (32-bit CardBus) Ethernet adapters	"PC card (32-Bit CardBus) Ethernet adapter" on page 97
ExpressCard adapters	"Ethernet ExpressCard testing" on page 99
USB Ethernet adapters	"USB Ethernet testing" on page 101

Table 16. Diagnostic Procedures for Support Elements.

## Information and test menu selection

Table 17. Information and Menu Selection (or Reference)

Information	Menu Selection
ThinkPad T42 (2373): Hardware Maintenance Manual, found in Support Element CD-ROM, Service subdirectory, filename: 2373HMM.PDF	T4x ThinkPad Configuration Utility
ThinkPad T43 (2668): Hardware Maintenance Manual, found in Support Element CD-ROM, Service subdirectory, filename: 2668HMM.PDF	T4x ThinkPad Configuration Utility
ThinkPad T60 (2007): Hardware Maintenance Manual, found in Support Element CD-ROM, Service subdirectory, filename: 2007HMM.PDF	T6x ThinkPad Configuration Utility
ThinkPad T61 (8889): Hardware Maintenance Manual, found in Support Element CD-ROM, Service subdirectory, filename: 8889HMM.PDF	T6x ThinkPad Configuration Utility
ThinkPad T500 (2055): Hardware Maintenance Manual T500 and W500, found in Lenovo support site: www.lenovo.com	T500 ThinkPad Configuration Utility
ThinkPad T510 (4349): Hardware Maintenance Manual T510, T510i, and W510, found in Lenovo support site: www.lenovo.com	T510 ThinkPad Configuration Utility
ThinkPad T520 (4242): Hardware Maintenance Manual T520, T520i, and W520, found in Lenovo support site: www.lenovo.com	T520 ThinkPad Configuration Utility
ThinkPad W520 (4282): Hardware Maintenance Manual T520, T520i, and W520, found in Lenovo support site: www.lenovo.com	W520 ThinkPad Configuration Utility
ThinkPad T530 (2394): Hardware Maintenance Manual T530, T530i, and W530, found in Lenovo support site: www.lenovo.com	T530 ThinkPad Configuration Utility
7914	"Installation and Service Guide for x3550 M4 (7914)" on http://www.ibm.com
2461	Service Guide for 2461 Support Element located on Resource Link at http://www.ibm.com/servers/resourcelink
ThinkPad T42 (2373) testing	ThinkPad System Diagnostics
ThinkPad T43 (2668) testing	ThinkPad System Diagnostics
ThinkPad T60 (2007) testing	ThinkPad System Diagnostics
ThinkPad T61 (8889) testing	ThinkPad System Diagnostics
ThinkPad T500 (2055) testing	Use the following CD-ROM: SE T500 ThinkPad DIAGNOSTICSPC Doctor for DOS P/N: 45D6224 EC: G43459
ThinkPad T510 (4349) testing	Use the following CD-ROM: SE T510 ThinkPad DIAGNOSTICSPC Doctor for DOS P/N: 45D8945 EC: N26912
ThinkPad T520 (4242) testing	Use the following CD-ROM: SE T520 ThinkPad DIAGNOSTICSPC Doctor for DOS P/N: 41U8046 EC: N48188 Before beginning, refer to "System unit testing for T520 or W520 support element" on page 94.

Information	Menu Selection
ThinkPad W520 (4282) testing	Use the following CD-ROM: SE T520 ThinkPad DIAGNOSTICSPC Doctor for DOS P/N: 41U8046 EC: N48188 Before beginning, refer to "System unit testing for T520 or W520 support element" on page 94.
ThinkPad T530 (2394) testing	No media required. Before beginning, refer to "System unit testing for T530 Support Element" on page 95.
7914 testing	"System unit testing for 7914 Support Element" on page 95
2461 testing	"Testing 2461 Support Element (Model 2461-SE1)" and "Testing 2461 Support Element (Model 2461-SE2)" sections in the <i>Service Guide for 2461 Support Element</i>
TR.ALL.EXE (Diagnostic CD-ROM)	"Token-Ring network repair procedures" on page 169
IBM Ethernet CardBus adapter extended diagnostics	"Ethernet CardBus testing" on page 97
ExpressCard adapter diagnostics	"Ethernet ExpressCard testing" on page 99
USB Ethernet diagnostics	None available

Table 17. Information and Menu Selection (or Reference) (continued)

# System unit testing for T42, T43, T60, T61, T500, T510 support elements

All system diagnostics for Support Elements reside on the bootable Hardware Management Console and Support Element CD-ROM. Performing actions other than those

specified in the following procedure may cause errors.

- 1. To run diagnostics, proceed as follows:
  - a. Power on the PC
  - b. Insert the Diagnostic CD into DVD-RAM drive.
  - c. Wait until the **Startup Menu** is displayed.
  - d. Select ThinkPad System Diagnostics, then select the ThinkPad model you are going to test.
  - e. Wait until a diagnostic selection menu is displayed, and then go to step 2.

Locate the corresponding documentation and menu selection for the console you are testing. Refer to "Information and test menu selection" on page 92.

If the Main Menu cannot be displayed because of a power or other PC failure, use the maintenance information shipped with the PC to correct the problem.

- 2. Select either **Diagnostics** or **Interactive Tests** for a list of devices to test.
  - If you select **Interactive Tests**, then select the device requiring manual intervention (keyboard, video, mouse, diskette, CD-ROM).
  - If you Select **Diagnostics**, then select **Run Normal/Quick Test** for predefined test sequences or select the device that does not require manual intervention (CPU, system board, I/O ports, fixed disks, memory).

Note: If a fixed disk is being tested, insure "Linear Verify" diagnostics are run.

- a. From the **PC Doctor** main screen, select **Diagnostics**.
- b. Select Fixed Disks.
- c. Select Linear Verify.

After you select devices or tests, follow the instructions.

If the device or test you have selected fails, go to step 3. Otherwise, go to step 4 on page 94.

**3**. If the diagnostics fail, refer to the XXXXHMM.PDF file located in the Service subdirectory of the z Systems or zSeries HWMCA-CDR for FRU replacement.

If you replaced the system or battery and you have not previously been directed to configure the system unit, do so now. Refer to "CMOS configuration procedures for ThinkPad-based Support Elements" on page 102.

4. If you were instructed to **Run All Selected**, continue with testing the network adapters on the following pages. Otherwise, return to the procedure that directed you here.

## END OF PROCEDURE.

## System unit testing for T520 or W520 support element

All system diagnostics for the T520 or W520 support element reside on the Support Element CD-ROM. Performing actions other than those specified in the following procedure may cause errors.

**Note:** The following procedure will result in a clean run time of 5-10 minutes. If you decide to run the 3 memory tests that are removed in the following procedure, you will experience an additional 90 minutes (approximately) of run time. Beyond that, an additional 165 minutes (approximately) of run time will occur if you also decide to run the 3 hard drive tests that are removed in the following procedure. **Attention:** 

- Always press "Esc" to terminate diagnostics, otherwise CMOS settings (date, time, I/O ports) will be reset.
- Connect the T520 or W520 ThinkPad to a Gigabit Ethernet Hub or Switch, otherwise diagnostics will fail.

Use the following procedure to test the T520 or W520 ThinkPad and LOB Ethernet support:

Power	On the ThinkPad
Insert	T520DIAG CDROM
Select	"1. ThinkPad T420/T520/W520" and press "Enter"
Select	"Diagnostics" on the top bar menu and press "Enter"
Select	"CPU/Coprocessor" on the drop-down menu and press "Enter"
Verify	That all tests in this category are selected (selected tests
	have a "double-arrow" to the left of the grey bars)
Press	PgDn to go to the System Memory Test category
Remove	The last 3 test selections (Random Pattern, Short Advanced
	Pattern, Extended Advanced Pattern Test) by hitting the down
	arrow to highlight the test, then pressing the space bar to
	remove the double-arrow
Press	PgDn to go to the System Board Test category
Verify	That all tests except for "USB Port External Loop" are selected
Remove	The DMA Channels and IEEE1394 Controller test selections
Press	PgDn to go to the Video Adapter Test category
Verify	That all 3 tests are selected
Press	PgDn to go to the Fixed Disk Test category
Remove	The last 3 test selections from the HDD-0 column (Linear Verify,
	Random Verify, Read Surface Scan)
Press	PgDn to go to the Diskette Test category
Verify	That all tests are not selected
Press	PgDn to go to the Miscellaneous Test category
Select	The Optical Drive, Conexant Audio, Intel Network, Intel Network
	Link tests (Optical Drive should be pre-selected)
Press	PgDn to go to the Thinkpad Devices Test category
Verify	That the Battery 1, Battery 2 and HDD Active Protection Test
	are selected
Press	PgDn to go to the Communication Test category
Remove	The Conexant Smart Modem test selection
Press	PgDn to go to the Wireless LAN Test category
Remove	All test selections (Scan Intel WiFi Link Devices, Intel WiFi
	Link Memory test, Intel WiFi Link Reg/Function, Realtek WiFi)
Press	F2 to bring up the Test Options menu
Select	"Halt On Errors" and press "Enter"
Select	"Enabled" and press "Enter"
Press	ESC to close the Test Options pop-up menu
Press	F5 to run your selections
Press.... Spacebar to continue, you have the Diagnostics disc in the drive Press.... Spacebar to continue, making sure that the Ethernet cable is connected Wait.... The diagnostics load and begin to run - this will take about 8 minutes Good Run: PC Doctor screen [Wireless LAN TEST CATEGORY (10/10)]

If you press the PgUp key several times, you'll see that all 36 tests that were run PASSED.

Bad Run: PC Doctor screen with the following displayed on a red background:

Halt on Errors

An error was detected during testing. Do you want to continue testing?

Press SPACE to continue or ESC to abort

END OF PROCEDURE.

## System unit testing for T530 Support Element

**Note:** The T530 Diagnostics are contained in the firmware, media is no longer required. Note that only the memory and hard drive are tested.

Clean Run Time: 12-15 minutes

Power	On the ThinkPad
Press	F10 at the "To interrupt normal startup, press Enter" prompt
Select	"Quick Memory Test" and press "Enter"
Verify	That the memory test passes. This test will normally run
	within 6 minutes, and you will see "PASSED" in green letters
	in the right side box next to "Advanced Integrity Test".
Press	ESC to go back to the Main Screen
Select	"Quick Storage Device Test" and press "Enter"
Verify	That all selections have an "X" (selected) and press "Enter"
Verify	That all hard drive tests pass. These six tests will normally
	run within 6 minutes, and you will see "PASSED" in green letters
	in the right side box next to each test as it completes.
Press	ESC to go back to the Main Screen
Select	"Exit Application" and press "Enter", the T530 will reboot.

END OF PROCEDURE

## System unit testing for 7914 Support Element

The following procedure tests the 7914 Support Element system unit:

Note: xSeries diagnostics have migrated from media to on-board ROM. No media is required.

Make sure that all Ethernet ports are connected to an Ethernet switch. A Gigabit switch would be ideal, but a 10/100 switch will suffice.

Use the following procedure to test the 7914 system unit:

1. Power off the system unit.

- **2**. Power on the system unit.
  - a. "System Initializing" appears in lower left-hand corner.
  - b. "IBM Server x/System Firmware" screen appears with "Connecting Boot Devices and Adapters" in lower left-hand corner.

Note: Hint: You can press "F2" now (only once) or wait for the next screen to display.

- 1) "[F1] Setup [F2] Diagnostics [F12] Boot Device are displayed.
- 2) Press "F2" to enter "Diagnostics".
- c. The "IBM Memory Test" screen is displayed.

### Attention:

- Do not touch the keyboard so the "Quick Memory Test" auto runs after 5 seconds. The memory test will take about 5 minutes to run. It will initially claim a run time of approximately 12 minutes but the estimated time will drop quickly.
- Do not touch the keyboard so the "Linux Boot" image boots and initializes. This will take a minute or two.
- d. Verify the following:

Commands:

- gui Enter Graphical User Interface...
- cmd Enter Command Line Interface...
- exit Quit Program.

Note: This will eject...

• help - Display this help message.

Please enter a command...

>_

- e. Type "gui" to invoke diagnostics.
  - 1) Verify the "Dynamic System Analysis" screen is displayed.

**Note:** Use the mouse to navigate screen selections.

- 2) Click on the "I Accept" button near the bottom of the window.
- 3) Click on "Customized Inventory Collection and Diagnosis"
- 4) Click on the "Network Setting" box on the left side group of selections.
- 5) Click on the "Diagnostic Tests" box on the right side group of selections. This will select all of the diagnostic tests. Insert a CD/DVD disk in the DVD drive for the optical drive tests.
- 6) Click on the "OK" button.
- 7) Verify "Completed" in the "Status" column. This will take about 13 minutes.
- 8) Remove the test media from the DVD drive.
- 9) Select "Network Setting" under "Collection and Diagnosis" to see the Ethernet port status.
- 10) Verify the Ethernet adapter information is displayed.
- 11) Select "System Inventory". Then select "Manual" and insure only "Network Setting" is checked.

a)

- "eth0" Intel Corporation I350...
- "eth1" Intel Corporation I350...
- "eth2" Intel Corporation I350...
- "eth3" Intel Corporation I350...
- b) Click on "Exit" on the menu bar and then "OK".

- 12) Type "exit" on the command line. The system will fail in its attempt to boot (no bootable image).
- **3**. Power off the system.

#### END OF PROCEDURE

# System unit testing for 2461 Support Element

Go to the *Service Guide for 2461 Support Element* for all service information on the 2461 Support Element.

This includes information to test the 2461 Support Element, which is located in the "Testing 2461 Support
 Element (Model 2461-SE1)" and "Testing 2461 Support Element (Model 2461-SE2)" sections in the *Service*

Guide for 2461 Sumort Flement

Guide for 2461 Support Element.

# **Ethernet CardBus testing**

### PC card (32-Bit CardBus) Ethernet adapter

Use the following procedure to test the 32-bit CardBus Ethernet adapter.

The Belkin CardBus adapter has no diagnostics test cases to run. If the Belkin CardBus adapter fails, replace the adapter and retry the failing process.

Note: The diagnostic contains an informational window containing additional help information.

The adapter LEDs on the external connector provide information useful for monitoring the status of the adapter and network activity. Refer to "Ethernet status LEDs" on page 179 for assistance in interpreting the LED status.

To be certain you are testing the correct adapter, back out the remaining adapter (token ring or Ethernet) from the Support Element before running the diagnostics.

- 1. Ensure the CardBus Ethernet adapter under test is the only PC Card installed in the ThinkPad and is cabled to the customer's network.
- 2. Power on the ThinkPad Support Element.
  - a. Insert the Diagnostic CD into the CD or DVD ROM drive.
  - b. Wait until the Startup Menu is displayed.
  - c. Select IBM Ethernet CardBus Adapter Extended Diagnostics.
  - d. Wait until a diagnostic selection menu is displayed.
- **3**. The CardBus Ethernet Diagnostics window is displayed. Take a minute to review the window. It contains a diagnostic run procedure and other helpful information. Press Enter to continue. The CardBus Test Utility window is displayed.
- 4. Hardware configuration information must be defined before tests are run.
  - a. Select Configure and then select Memory under Address Mode.
  - b. Type **D4000** in the address space then press **Del** until all remaining Fs are deleted.
  - c. Press Enter, and then select OK.
- 5. Select **Test** to start the diagnostics. The Test diagnostics are run.

Test results are displayed in the Test Results box of the Test window.

Did the diagnostics report The test completed successfully?

If YES, go to step 6. If NO, go to step 9 on page 98.

**6**. The Test diagnostics ran successfully. Verify adapter operation and internal loopback path by running **Advanced** diagnostics.

Select **Advanced** to start the diagnostics.

The Loopback test will count passes until you interrupt it by pressing Enter. Run at least 500 passes before stopping the test.

Did the Loopback Test Fail field count remain zero?

If YES, go to step 7. If NO, go to step 9.

7. Advanced diagnostics ran successfully. Verify connectivity to the switch by running **Network** diagnostics.

Select **Network** to start the diagnostics.

Did the **Link Status** field in the **Configuration** box change from Fail to Pass? (You may need to wait at least 20 to 30 seconds.)

If YES, go to step 8. If NO, go to step 10.

8. Locate the Line Speed and Line Mode results in Configuration. The adapter is set to autodetect the highest supported network speed (10/100 Mbps) and mode (half or full duplex). If the speed or mode is not correct, verify the switch is powered on and supports the desired network speed and mode. You may need to ask the customer's LAN administrator for assistance.

**Note:** The Link Integrity LED is green for 10 Mbps and amber for 100 Mbps network speed. Depending on the customer network activity, the green Transmission Activity LED may be blinking.

Go to step 12 on page 99.

- **9**. Verify the following:
  - a. The adapter being tested is a 10/100 Ethernet CardBus adapter.
  - b. Only one Ethernet CardBus adapter is installed in the two support element network adapter card slots.
  - c. The adapter is securely installed.

If there was a problem with any of the preceding checks, start at the beginning of this procedure to run diagnostics.

- If the tests do not fail, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.
- If the original test still fails, replace the adapter and start at the beginning of this procedure to verify the new adapter.

Go to step 11.

10. The Network diagnostics did not run successfully.

Verify the following:

- The adapter is securely installed.
- The adapter cable is securely connected at both the adapter and the switch.
- The switch is powered on.

If a cable problem is suspected:

- Plug the cable into a different switch port.
- Replace it with a known good cable.

If a problem is found with any of the preceding checks, start at the beginning of this procedure and run the network diagnostics again.

If the tests do not fail, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.

If the original test still fails, replace the adapter and the cable connecting the adapter to the network cable. Start at the beginning of this procedure to verify the new FRUs. Go to step 11.

- 11. If diagnostics still fail, run all ThinkPad diagnostics.
  - If the ThinkPad diagnostics do not fail and the original failure remains, call for assistance.

- If the ThinkPad diagnostics do not fail and the original failure does not occur, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.
- If the ThinkPad diagnostics fail, replace the ThinkPad.
- Go to step 12.
- **12**. Either FRUs were exchanged and the tests ran error free, or there were no hardware problems detected on the original FRUs.

If you were instructed to **Run All Selected**, test the remaining installed adapters one at a time. Otherwise, return to the procedure that directed you here.

### END OF PROCEDURE.

# Ethernet ExpressCard testing

Use the following procedure to test the 32-bit Xterasys ExpressCard Ethernet adapter.

#### **General Information**

- The Ethernet cable need not be plugged into the adapter for the adapter to be powered on.
- An ExpressCard adapter is narrower and longer than a CardBus adapter. The Ethernet cable plugs directly into the adapter. Do not force the connector into the adapter. The top connector mechanism may break.
- The ExpressCard adapter is always located in the top PCMCIA slot.
- The adapter LEDs on the external connector provide useful information for monitoring the adapter status and network activity. Refer to the following figure:



Figure 2. LED Locations

• You can run the diagnostics with the bottom adapter installed.

Perform the following steps to test the 32-bit Xterasys ExpressCard Ethernet adapter.

- 1. Ensure the adapter is securely plugged to the SE.
- 2. Remove and replace the clip as follows:
  - **a**. Remove the clip using the following illustration for guidance:





- b. Remove and reseat the adapter
- c. Position the SE as far to the right in the tray as possible.
- d. Hold the clip over the adapter, making certain it is centered side-to-side.
- e. Replace the clip using the following illustration for guidance:



#### Figure 4. Replacing the Clip

- **3**. Ensure the Ethernet cable is securely connected to the adapter and that the cable is securely connected to an Ethernet switch.
- 4. Power on the Support Element.
- 5. Insert the Diagnostic CD into the CD/DVD-ROM drive.
- 6. Wait until the **Startup Menu** is displayed, and then select **Xterasys ExpressCard Ethernet Diagnostics**.
- 7. Wait until a diagnostic selection menu is displayed. Was a Main Menu displaying Marvell Yukon 88E8053... displayed?

If YES, go to step 9 on page 101. If NO, go to step 8.

8. An Xterasys ExpressCard Ethernet adapter was not detected.

Ensure the adapter is present and firmly plugged into the top ExpressCard slot. Retry the diagnostics by pressing Ctrl+Alt+Del and following steps 1 on page 99 through 7. If you return to this step, replace the adapter.

Retest the new adapter, and then either close the call (for instructions, refer to the *Service Guide* for the server to which this console is connected) or follow the path for the test failure.

- 9. The ExpressCard Ethernet diagnostic **Main Menu** is displayed. Select **Diagnostics** and ensure the following:
  - The adapter's LEDs flash several times.
  - All diagnostic tests return the Passed message.
  - The switch connectivity LED flashes.
  - Did all the preceding events occur?

If YES, go to step 11. If NO, go to step 10.

- 10. The diagnostic tests did not complete successfully.
  - a. Replace the adapter and rerun the diagnostics to verify the repair.
  - b. Replace the Ethernet cable and rerun the diagnostics to verify the repair.
  - c. If the diagnostics continue to fail, run all ThinkPad diagnostics.
    - If the ThinkPad diagnostics do not fail and the original failure remains, call for assistance.
    - If the ThinkPad diagnostics do not fail and the original failure does not occur, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.
    - If the ThinkPad diagnostics fail, replace the ThinkPad.
- 11. The ExpressCard diagnostics run without error.
  - **a**. If a cable fault is suspected, replace the cable and retry the original task that failed.
  - b. If the original failure still occurs, run all ThinkPad diagnostics. If the ThinkPad diagnostics do not fail, call for assistance.
  - **c**. If the original failure does not occur, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.

If you were instructed to **Run All Selected**, test the remaining installed adapters one at a time. Otherwise, return to the procedure that directed you here.

# **USB Ethernet testing**

Use the following procedure to test the USB Ethernet adapter.

- 1. Ensure the following:
  - The ThinkPad is powered on (the POWER LED above the PF10 key is lit).
  - The USB cable is connected to the correct port at the ThinkPad.
  - The adapter is securely connected to both the USB cable at the ThinkPad and the short network cable containing the ferrite core.
  - The short network cable containing the ferrite core is securely connected to the USB adapter and the LAN cable.
  - The switch is powered on and this adapter's LAN cable is securely connected to the switch.
  - The USB Ethernet adapter (ETH2) is properly configured for this network with valid address and mask values.
- 2. Check the USB Ethernet status LEDs.

There are three status LEDs on the USB adapter:

- 100 indicates operation at 100 Mbps and network activity.
- F/H indicates full or half duplex operation.
- 10 indicates operation at 10 Mbps and network activity.
- Are all three LEDs *not* lit?

If **YES**, go to step 3. If **NO**, go to step 4 on page 102.

**3**. None of the three USB Ethernet adapter's LEDs are lit.

Note: USB adapters must maintain connectivity between the USB port in the ThinkPad and the Ethernet LAN for the LEDs to operate. If the LAN path is broken, the ThinkPad must be rebooted to configure the network connection.

Perform the following procedures one at a time to isolate the problem. If the LEDs begin to light, reboot the ThinkPad and retry the failing condition.

- a. Disconnect the short cable containing the ferrite core from both the adapter and the network cable. Connect the network cable directly to the adapter. If the LEDs are lit, replace the short cable containing the ferrite core.
- **b**. Try connecting to another port on the switch. If the LEDs are lit, there is a problem with the switch.
- **c**. Replace the LAN cable between the switch and the short cable containing the ferrite core. If the LEDs are lit, the LAN cable is defective.
- d. Replace the USB adapter and cable assembly (FRU P/N 15R6846). If the LEDs are lit, the adapter or USB cable assembly is failing.
- e. Replace the ThinkPad. If the LEDs are lit, the problem is in the ThinkPad USB port.

If you performed all five procedures in this step and the LEDs still do not light, use your support structure and call for assistance.

4. At least one of the USB Ethernet adapter's LEDs is lit.

**Note:** The LEDs that are lit match the network characteristics. For example, if the network operates at 100 Mbps, full duplex, the **100** LED is lit or flashing and the **F/H** LED is lit.

Consult the network administrator to determine the characteristics of your LAN. Answer **NO** to the following question if you cannot determine the network's speed and duplex operation.

Do the LEDs that are lit match the LAN's speed and duplex capability?

If YES, go to step 5. If NO, go to step 6.

5. The LEDs match the network's speed and duplex capability.

Reboot the ThinkPad and retry the failing function.

If the failure recurs, call for assistance. Otherwise, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.

6. The LEDs did *not* match the network's speed and duplex capability.

Replace the USB adapter and retry the failing function.

If the failure recurs, call for assistance. Otherwise, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.

### END OF PROCEDURE.

## **CMOS** configuration procedures for ThinkPad-based Support Elements

Use Table 18 if you are directed to verify the configuration for a Support Element.

Configuration for Machine Type	Go To
2373 (T42) ThinkPad	"2373 (T42) ThinkPad configuration" on page 103
2668 (T432) ThinkPad	"2668 (T43) ThinkPad configuration" on page 106
2007 (T60) ThinkPad	"2007 (T60) ThinkPad configuration" on page 110
8889 (T61) ThinkPad	"8889 (T61) ThinkPad configuration" on page 113
2055 (T500) ThinkPad	"2055 (T500) ThinkPad configuration" on page 117
4349 (T510) ThinkPad	"4349 (T510) ThinkPad configuration" on page 121
4242 (T520) ThinkPad	"4242 (T520) ThinkPad configuration" on page 125

Table 18. Configuration Procedures by Machine Type

Table 18. Configuration Procedures by Machine Type (continued)

Configuration for Machine Type	Go To
4282 (W520) ThinkPad	"4282 (W520) ThinkPad configuration" on page 128
2394 (T530) ThinkPad	"2394 (T530) ThinkPad configuration" on page 131

## 2373 (T42) ThinkPad configuration

**Note:** ThinkPad configuration must be verified if the backup battery is replaced. Use the following procedure to verify correct configuration.

- 1. Locate the Support Element, and move it to the service position.
- 2. Do the following:
  - a. Power on the Support Element.
  - b. Press and hold F1 when Press F1 to Enter Setup displays.
- **3**. Verify the following:

BIOS Version	3.05a (1RETC6WW) or greater
BIOS Date (Year-Month-Day)	2004-05-14 or greater
Embedded Controller Version	3.01a or greater
System-unit Serial Number	2373xxxxxxxxxx (2373-xxx)
System-board Serial Number	Varies per machine
СРИ Туре	<pre>Intel(r) Pentium (r) M processor</pre>
CPU Speed	1.70 GHz
Installed Memory	512MB
UUID	Varies per machine
MAC Address (Internal LAN)	Varies per machine

**Note:** If UUID is set to all Fs, run the **THINKCFG** diskette. When the 18x error is displayed, press **Esc** to bypass the error. When the diskette run is complete, return to this process.

If MAC Address is set to **Not Applicable** or consists of the same digit, there is a problem with the LOB Ethernet adapter.

4. Select Config. Select Network. Verify the following:

Wake on LAN	Disabled
Flash Over LAN	Disabled
Internal Network Option ROM	Enabled
Hard drive Direct Memory Access	Enabled
Internal Network Device	Enabled
Internal Wireless Device	Disabled

**5**. Press Esc to redisplay the **Config** window. Select **Serial port**. Press Enter to display the serial port information. Verify the following:

Serial Port	Enabled
Base I/O Address	3F8
Interrupt	IRQ4

6. Press Esc. Select Infrared. Press Enter. Verify the following:

Infrared..... Disabled

7. Press Esc. Select Parallel Port. Press Enter. Verify the following:

Parallel Port	Enabled
Mode	Bi-Directional
Base I/O Address	3BC
Interrupt	IR07

8. Press Esc. Select PCI. Press Enter. Verify the following:

INTA PC	I IRQ	 	• • •	11
INTB PC	I IRQ	 		11
INTC PC	I IRQ	 		11
INTD PC	I IRQ	 	•••	11

INTE PCI IRQ..... 11 INTF PCI IRQ..... 11 INTG PCI IRQ..... 11 INTH PCI IRQ..... 11 9. Press Esc. Select **USB**. Press Enter. Verify the following: USB BIOS Support..... Enabled 10. Press Esc. Select Floppy Drives. Press Enter. Verify the following: Legacy Floppy Drives..... Disabled 11. Press Esc. Select Keyboard/Mouse. Press Enter. Verify the following: TrackPoint..... Automatic Touch Pad..... Disabled Fn Key Lock..... Disabled NumLock..... Auto 12. Press Esc. Select Display. Press Enter. Verify the following: Default Primary Video Device..... AGP Boot Display Device..... VGA+LCD HV Expansion..... Off Brightness..... Normal **13**. Press Esc. Select **Power**. Press Enter. Verify the following: Power Mode for AC..... Customized Power Mode for Battery..... Customized Customize Processor Speed..... Fixed Max Suspend Timer..... Disabled LCD off Timer..... Disabled HDD off Timer..... 3 minutes Hibernate by Timer..... Disabled Low Battery Action..... Suspend Suspend When LCD Is Closed..... No Suspend Suspend/Hibernate While Docked... Disabled RediSafe..... Disabled Resume on Time..... Disabled Resume Time..... 00:00:00 Resume Date..... 00/00/0000 Resume on Modem Ring..... Disabled Intel (R) SpeedStep Technology... Enabled Mode for AC ..... Maximum Performance Mode for Battery ..... Maximum Performance Screen Blanking..... Disabled Power Switch Mode..... On/Off Suspend to Hibernation..... Disabled CDROM Speed..... Normal CPU Power Management..... Disable PCI Bus Power Management..... Disable 14. Press Esc. Select Alarm. Press Enter. Verify the following: Power Control Beep..... Enabled Low Battery Alarm..... Disabled Volume Beep..... Disabled Password Beep..... Disabled 15. Press Esc. Select Memory. Press Enter. Verify the following: Extended Memory Test..... Disabled 16. Press Esc twice. Select Date/Time. Press Enter. Verify the following: System Date..... Today's local date System Time..... Today's local time 17. Press Esc. Select Security. Select Password. Press Enter. Verify the following:

Using Passphrase	Enter
- Current Setting	Disabled
Supervisor Password	Disabled
Lock BIOS Settings	Enter
- Current Setting	Disabled
Set Minimum Length	Enter
- Current Setting	Disabled
Power-On Password	Disabled
Hard Disk1 Password	Disabled

18. Press Esc. Select IBM Security Chip.

**Note:** If this option does not exist, proceed to **IBM Predesktop Area**, step 19. Press Enter. Verify the following:

IBM Security Chip..... Enter - Current Setting..... Disabled

19. Press Esc. Select IBM Predesktop Area. Press Enter. Verify the following:

IBM Predesktop Area..... Enter - Current Setting..... Disabled

Note: If the Attention! (change verification) window is displayed, answer Yes.

20. Press Esc. Select BIOS Update. Press Enter. Verify the following:

Flash BIOS Updating by End-Users. Enter - Current Setting..... Enabled

21. Press Esc twice. Select Startup. Select Boot. Press Enter.

Perform the following steps:

- a. Press **1** to load the default boot sequence.
- b. Select Legacy Floppy Drives and press x.
- c. Select **USB CD** and press **x**.
- d. Select PCI LAN and press x.
- e. Select **-USB HDD** and press **x**.
- f. Select **IDE HDD1** and press **x**. Verify the following:

```
1: USB FDD: TEAC FD-05PUB-(USB) (May not exactly match)
2: ATAPI CDO:
3: IDE HDD0: TOSHIBA...
4-8: No data displayed
```

**Note:** Regarding the Boot Order:

- Y-E. . . may not be exact, but ensure it is not blank.
- Ensure no data is displayed after CD0.
- Ensure Toshiba... is displayed after HDD0.

Verify the following is excluded from the boot order (order here is not important):

```
: -USB HDD:

: IDE HDD1:

: IDE HDD2:

: Legacy Floppy Drives

: PCI LAN: IBA... (Ensure not blank.)

: ATAPI CD1:

: USB CD:

22. Press Esc. Select Network. Press Enter. Press 1.
```

- a. Select PCI LAN and press x.
- b. Select **Legacy Floppy Drives** and press **x**.
- c. Select USB CD and press x.

Verify the following:

1: USB FDD: TEAC FD-05PUB-(USB) (May not exactly match) 2: ATAPI CDO: 3: IDE HDDO: TOSHIBA... 4-8: No data displayed

Verify the following is excluded from the boot order (order here is not important):

```
: -USB HDD:

: IDE HDD1:

: IDE HDD2:

: Legacy Floppy Drives

: PCI LAN: IBA... (Ensure not blank.)

: ATAPI CD1:

: USB CD:
```

23. Press Esc. Verify the following:

Boot Mode..... Quick Options Keys Display..... Enabled

Boot device List F12 Option..... Enter - Current Setting..... Disabled

24. Press Esc. Select Restart. Press Enter. Verify the following:

Exit Saving Changes..... Only Selection Highlighted

25. Press F10 to display the **Setup Confirmation** window. Select **Yes**. Press Enter to save the settings and exit.

#### END OF PROCEDURE

## 2668 (T43) ThinkPad configuration

**Note:** ThinkPad configuration must be verified if the backup battery is replaced. Use the following procedure to verify correct configuration.

- 1. Locate the Support Element, and move it to the service position.
- 2. Do the following:
  - a. Power on the Support Element.
  - b. Press and hold F1 when Press F1 to Enter Setup displays.
- 3. Verify the following:

BIOS Version	1.24 (1YET59WW) or greater
BIOS Date (Year-Month-Day)	2005-11-07
Embedded Controller Version	1.04
System-unit Serial Number	2668xxxxxxxxxx
System-board Serial Number	Varies per machine
CPU Type	<pre>Intel(R) Pentium(R) M Processor</pre>
CPU Speed	1.86 GHz
Installed Memory	1024MB
UUID	Varies per machine
MAC Address (Internal LAN)	Varies per machine

4. Select Config. Select Network. Verify the following:

Wake on LAN	Disabled
Flash Over LAN	Disabled
Internal Network Option ROM	Enabled
Hard Drive Direct Memory Access	Enabled
Internal Network Device	Enabled
Internal Wireless Device	Hidden
Internal Bluetooth Device	Hidden

**5**. Press Esc to redisplay the **Config** window. Select **Serial port**. Press Enter to display the serial port information. Verify the following:

Serial Port..... Enabled Base I/O address.... 3F8 Interrupt..... IRQ4 6. Press Esc. Select Infrared. Press Enter. Verify the following: Infrared..... Hidden 7. Press Esc. Select Modem. Press Enter. Verify the following: Modem..... Hidden 8. Press Esc. Select Parallel Port. Press Enter. Verify the following: Parallel Port..... Enabled Mode..... Bi-Directional Base I/O address.... 3BC Interrupt..... IRQ7 9. Press Esc. Select PCI. Press Enter. Verify the following: INTA PCI IRQ..... 11 INTB PCI IRQ..... 11 INTC PCI IRQ..... 11 INTD PCI IRQ..... 11 INTE PCI IRQ..... 11 INTF PCI IRQ..... 11 INTG PCI IRQ..... 11 INTH PCI IRQ..... 11 10. Press Esc. Select USB. Press Enter. Verify the following: USB BIOS Support..... Enabled 11. Press Esc. Select Floppy Drives. Press Enter. Verify the following: Legacy Floppy Drives..... Disabled 12. Press Esc. Select Keyboard/Mouse. Press Enter. Verify the following: TrackPoint..... Automatic Touch Pad..... Disabled Fn Key Lock..... Disabled ThinkPad Numlock..... Svnchronized Power-On Numlock..... Auto 13. Press Esc. Select Display. Press Enter. Verify the following: Default Primary Video Device..... AGP Boot Display Device..... VGA+LCD HV Expansion..... Off Brightness..... Normal 14. Press Esc. Select **Power**. Press Enter. Verify the following: Power Mode for AC..... Customized Power Mode for Battery..... Customized Customize Processor Speed..... Fixed Max Suspend Timer..... Disabled LCD off Timer..... Disabled HDD off Timer..... 3 minutes Hibernate by Timer..... Disabled Timer Wake with Battery Operation..... Disabled Low Battery Action..... Suspend Suspend when LCD is Closed..... No Suspend Suspend/Hibernate While Docked..... Disabled RediSafe..... Disabled Resume on Time..... Disabled Resume Date..... 00/00/0000 Resume on Modem Ring..... Disabled

Intel (R) SpeedStep Technology... Enabled

	Mode for AC Mode for Battery	Maximum Performance Maximum Performance
	Adaptive Thermal Management Scheme for AC Scheme for Battery Screen Blanking Power Switch Mode Suspend to Hibernation CDROM Speed CPU Power Management PCI Bus Power Management	Maximum Performance Maximum Performance Disabled On/Off Disabled Normal Disable Disable
15.	Press Esc. Select Alarm. Press Enter. Ve	erify the following:
	Power Control Beep Low Battery Alarm Volume Beep Password Beep	Enabled Disabled Disabled Disabled
16.	Press Esc. Select Memory. Press Enter.	Verify the following:
	Extended Memory Test	Disabled
17.	Press Esc twice. Select Date/Time. Pres	s Enter. Verify the following:
	System Date System Time	Local date (MM/DD/YYYY) Local time (HH:MM:SS) (24 hour clock)
18.	Press Esc. Select Security. Select Passw	rord. Press Enter. Verify the following:
	Using Passphrase - Current Setting	Enter Disabled
	Supervisor Password Lock BIOS Settings - Current Setting	Disabled Enter Disabled
	Set Minimum Length - Current Setting Power-On Password Hard Disk1 Password Require Password after Hibernate.	Enter Disabled Disabled Disabled Disabled
19.	Press Esc. Select IBM Security Chip. P	ress Enter. Verify the following:
	IBM Security Chip - Current Setting	Enter Disabled
20.	Press Esc. Select IBM Predesktop Area	. Press Enter. Verify the following:
	IBM Predesktop Area - Current Setting	Enter Disabled
	Note: If the Attention! (change verification)	ation) window is displayed, answer <b>Yes</b> .
21.	Press Esc. Select <b>BIOS Update</b> . Press E	nter. Verify the following:
	Flash BIOS Updating by End-Users. - Current Setting	Enter Enabled
22.	Press Esc twice. Select Startup. Select E	Boot. Press Enter.
	<b>Note:</b> The following is an ordered list. order in which the items appear on the	Refer to the Item-Specific Help control to manipulate the list.

Perform the following steps:

- a. If Fujitsu. . . is not displayed under IDE HDD0, immediately notify Development Engineering.
- b. If IBM replacements are avilable, use the Hard Disk replacement procedure located in the HMM on the Diagnostic CD.
- c. Under **Boot Priority Order**, select entries **1** through **8**, one at a time, and press **x** to delete the entries.

- d. Under Excluded from Boot Order:
  - 1) Select **USB FDD** and press **x**.
  - 2) Select ATAPI CD0 and press x.
  - 3) Select IDE HDD0: Fujitsu and press x. Verify the following boot sequence:

1: USB FDD 2: ATAPI CDO: 3: IDE HDDO: Fujitsu... 4-8: No data displayed

Note: Regarding the Boot Order:

- 1:... may not be exact, but ensure it is not blank.
- Ensure no data is displayed after CD0.
- Ensure Fujitsu. . . is displayed after HDD0.
- 4) Verify the following is excluded from the boot order (order here is not important):

```
: -USB HDD:

: IDE HDD1:

: IDE HDD2:

: Legacy Floppy Drives

: PCI LAN: IBA... (Ensure not blank.)

: ATAPI CD1:

: USB CD:
```

23. Press Esc. Select Network. Press Enter.

Under **Boot Priority Order**, select entries **1** through **8**, one at a time, and press **x** to delete the entries. Under **Excluded from Boot Order**:

- a. Select **USB FDD** and press **x**.
- b. Select **ATAPI CD0** and press **x**.
- c. Select IDE HDD0: Fujitsu and press x.

Verify the following boot sequence:

```
1: USB FDD
2: ATAPI CDO:
3: IDE HDDO: Fujitsu...
4-8: No data displayed
```

Note: Regarding the Boot Order:

- 1:. . . may not be exact, but ensure it is not blank.
- Ensure no data is displayed after CD0.
- Ensure Fujitsu. . . is displayed after HDDO.

Verify the following is excluded from the boot order (order here is not important):

```
: -USB HDD:

: IDE HDD1:

: IDE HDD2:

: Legacy Floppy Drives

: PCI LAN: IBA... (Ensure not blank.)

: ATAPI CD1:

: USB CD:
```

24. Press Esc. Startup window displays. Verify the following "Current[®] setting":

```
Boot Mode.....Quick
Options Keys Display...... Enabled
Boot after message for HDD
Compatibility without
having to press ESC..... Continue
Boot Device List F12 Option.... Enter
- Current Setting..... Disabled
```

25. Press Esc. Select Restart. Press Enter. Verify the following:

Exit Saving Changes..... Only Selection Highlighted

26. Press F10 to display the **Setup Confirmation** window. Select **Yes**. Press Enter to save the settings and exit.

#### END OF PROCEDURE.

# 2007 (T60) ThinkPad configuration

#### Note:

- 1. ThinkPad configuration must be verified if the backup battery is replaced. Use the following procedure to verify correct configuration.
- 2. The TrackPoint and "mouse" buttons do not operate during this procedure. Selections are made using the arrow keys and the Enter button.
- 1. Locate the Support Element, and move it to the service position.
- 2. Do the following:
  - a. Power on the Support Element.
  - b. Press and hold F1 when Press F1 to Enter Setup displays.
- **3**. Verify the following:

BIOS Version	2.17 (79ETD7WW)
BIOS Date (Year-Month-Day)	2007-04-30
Embedded Controller Version	1.07
System-unit Serial Number	2007xxxxxxxxxx
System-board Serial Number	Varies per machine
СРИ Туре	Intel(R) Core(TM) 2 CPU T7200
CPU Speed	2.00 GHz
Installed Memory	1024MB
UUID	Varies per machine
MAC Address (Internal LAN)	12 hexadecimal digits

4. Select Config. Select Network. Verify the following:

Vake on LAN	Disabled
Flash Over LAN	Disabled
Internal Network Option ROM	Enabled
Hard Drive Direct Memory Access	Enabled
Internal Network Device	Enabled
Internal Wireless Device	Radio Off
Internal Bluetooth Device	Hidden
Internal Wireless WAN Device	Hidden

5. Press Esc to redisplay the **Config** window. Select **Serial port**. Press Enter to display the serial port information. Verify the following:

Serial Port..... Disabled

- 6. Press Esc. Select Infrared. Press Enter. Verify the following:
  - Infrared..... Hidden
- 7. Press Esc. Select Modem. Press Enter. Verify the following:
  - Modem..... Hidden
- 8. Press Esc. Select Parallel Port. Press Enter. Verify the following:

Parallel Port..... Disabled

- Mode.....Bi-Directional
- 9. Press Esc. Select PCI. Press Enter. Verify the following:

INTA	PCI	IRQ	11
INTB	PCI	IRQ	11
INTC	PCI	IRQ	11
INTD	PCI	IRQ	11

INTE PCI IRQ..... 11 INTF PCI IRQ..... 11 INTG PCI IRQ..... 11 INTH PCI IRQ..... 11 10. Press Esc. Select USB. Press Enter. Verify the following: USB BIOS Support..... Enabled 11. Press Esc. Select Keyboard/Mouse. Press Enter. Verify the following: TrackPoint..... Automatic Touch Pad..... Disabled Fn Key Lock..... Disabled ThinkPad Numlock..... Independent 12. Press Esc. Select **Display**. Press Enter. Verify the following: Default Primary Video Device..... Internal Boot Display Device..... VGA+LCD HV Expansion..... On Brightness..... Normal 13. Press Esc. Select Power. Press Enter. Verify the following: Timer Wake with Battery Operation..... Disabled Intel (R) SpeedStep Technology... Enabled Mode for AC ..... Maximum Performance Mode for Battery ..... Maximum Performance Adaptive Thermal Management Scheme for AC ..... Maximum Performance Scheme for Battery ..... Maximum Performance CDROM Speed..... Normal CPU Power Management..... Disable PCI Bus Power Management..... Disable 14. Press Esc. Select Alarm. Press Enter. Verify the following: Power Control Beep..... Enabled Low Battery Alarm..... Disabled Volume Beep..... Enabled Password Beep..... Disabled 15. Press Esc. Select Memory. Press Enter. Verify the following: Extended Memory Test..... Disabled 16. Press Esc. Select Serial ATA (SATA). Press Enter. Verify the following: SATA Controller Mode Operation... Compatibility 17. Press Esc. Select CPU. Press Enter. Verify the following: Core Multi-Processing..... Enabled Intel Virtualization Technology.. Enter - Current settibg..... Disabled 18. Press Esc twice. Select **Date/Time**. Press Enter. Verify the following: System Date..... Local date (MM/DD/YYYY) System Time..... Local time (HH:MM:SS) (24 hour clock) 19. Press Esc. Select Security. Select Password. Press Enter. Verify the following: Using Passphrase..... Enter - Current Setting..... Disabled Supervisor Password..... Disabled Lock BIOS Settings..... Enter - Current Setting..... Disabled Set Minimum Length..... Enter - Current Setting..... Disabled Power-On Password..... Disabled

Hard Disk1 Password	Disabled
Require Password after Hibernate.	Disabled
Password Reset Service	Enter
- Current Setting	Disabled

20. Press Esc. Select IBM Security Chip. Press Enter. Verify the following:

IBM Security Chip..... Enter

- Current Setting..... Disabled

21. Press Esc. Select IBM Predesktop Area. Press Enter. Verify the following:

IBM Predesktop Area..... Enter - Current Setting..... Disabled

Note: If the Attention! (change verification) window is displayed, answer Yes.

22. Press Esc. Select BIOS Update. Press Enter. Verify the following:

Flash BIOS Updating by End-Users. Enter - Current Setting..... Enabled

23. Press Esc. Select Memory Protection. Press Enter. Verify the following:

Execution prevention..... Enter - Current Setting..... Disabled

24. Press Esc twice. Select Startup. Select Boot. Press Enter.

**Note:** The following is an ordered list. Refer to the Item-Specific Help control to manipulate the order in which the items appear on the list.

Perform the following steps:

- a. If Fujitsu. . . is not displayed under ATA HDD0, immediately notify Development Engineering.
- b. Under **Boot Priority Order**, select entries **1** through **8**, one at a time, and press **x** to delete the entries.
- c. Under Excluded from Boot Order:
  - 1) Select **USB FDD** and press **x**.
  - 2) Select ATAPI CD0 and press x.
  - 3) Select IDE HDD0: Fujitsu and press x. Verify the following boot sequence:

```
1: USB FDD
2: ATAPI CDO:
3: IDE HDDO: Fujitsu...
4-8: No data displayed
```

Note: Regarding the Boot Order:

- 1:... may not be exact, but ensure it is not blank.
- Ensure Fujitsu. . . is displayed after HDD0.
- 4) Verify the following is excluded from the boot order (order here is not important):

```
: -USB HDD:
: ATA HDD1:
```

: ATA HDD2:

```
: PCI LAN: IBA... (Ensure not blank.)
```

- : ATAPI CD1: : USB CD:
- 25. Press Esc. Select Network. Press Enter.

Under **Boot Priority Order**, select entries **1** through **8**, one at a time, and press **x** to delete the entries. Under **Excluded from Boot Order**:

- a. Select **USB FDD** and press **x**.
- b. Select **ATAPI CD0** and press **x**.
- c. Select IDE HDD0: Fujitsu and press x.

Verify the following boot sequence:

1: USB FDD 2: ATAPI CDO: 3: IDE HDDO: Fujitsu... 4-8: No data displayed

Note: Regarding the Boot Order:

• 1:... may not be exact, but ensure it is not blank.

• Ensure Fujitsu. . . is displayed after HDD0.

Verify the following is excluded from the boot order (order here is not important):

```
: -USB HDD:

: ATA HDD1:

: ATA HDD2:

: PCI LAN: IBA... (Ensure not blank.)

: ATAPI CD1:

: USB CD:
```

26. Press Esc. Startup window displays. Verify the following "Current setting":

Boot Mode.....QuickOptions Keys Display.....EnabledBoot Device List F12 Option....Enter- Current Setting....Disabled

27. Press Esc. Select Restart. Press Enter. Verify the following:

Exit Saving Changes..... Only Selection Highlighted

28. Press F10 to display the **Setup Confirmation** window. Select **Yes**. Press Enter to save the settings and exit.

#### END OF PROCEDURE.

# 8889 (T61) ThinkPad configuration

Note:

- 1. ThinkPad configuration must be verified if the backup battery is replaced. Use the following procedure to verify correct configuration.
- 2. The TrackPoint and "mouse" buttons do not operate during this procedure. Selections are made using the arrow keys and the Enter button.
- 1. Locate the Support Element, and move it to the service position.
- 2. Do the following:
  - a. Power on the Support Element.
  - b. Press and hold F1 when Press F1 to Enter Setup displays.
- 3. Verify the following:

BIOS Version	1.22 (7LET52WW)
BIOS Date (Year-Month-Day)	2007-08-27
Embedded Controller Version	1.067
System-unit Serial Number	8889Axxxxxxxxx
System-board Serial Number	Varies per machine
СРИ Туре	Intel(R) Core(TM) 2 CPU T7300
CPU Speed	2.00 GHz
Installed Memory	1024MB
UUID	Varies per machine
MAC Address (Internal LAN)	12 hexadecimal digits

4. Select Config. Select Network. Verify the following:

Wake on LAN..... Disabled Flash Over LAN..... Disabled Ethernet LAN Option ROM..... Enabled Hard Drive Direct Memory Access.. Enabled Wireless Radio Frequency..... Off 5. Press Esc to redisplay the **Config** window. Select **Serial port**. Press Enter to display the serial port information. Verify the following: Serial Port..... Disabled 6. Press Esc. Select Parallel Port. Press Enter. Verify the following: Parallel Port..... Disabled Mode..... Bi-Directional 7. Press Esc. Select PCI. Press Enter. Verify the following: INTA PCI IRQ..... 11 INTB PCI IRQ..... 11 INTC PCI IRQ..... 11 INTD PCI IRQ..... 11 INTE PCI IRQ..... 11 INTF PCI IRQ..... 11 INTG PCI IRQ..... 11 INTH PCI IRQ..... 11 8. Press Esc. Select USB. Press Enter. Verify the following: USB BIOS Support..... Enabled Always On USB..... Enabled 9. Press Esc. Select Keyboard/Mouse. Press Enter. Verify the following: TrackPoint..... Automatic Touch Pad..... Disabled Fn Key Lock..... Disabled ThinkPad Numlock..... Independent 10. Press Esc. Select Display. Press Enter. Verify the following: Default Primary Video Device..... Internal Boot Display Device..... VGA+LCD Brightness..... Normal 11. Press Esc. Select Power. Press Enter. Verify the following: Timer Wake with Battery Operation..... Disabled Intel (R) SpeedStep Technology... Enabled Mode for AC ..... Maximum Performance Mode for Battery ..... Maximum Performance Adaptive Thermal Management Scheme for AC ..... Maximum Performance Scheme for Battery ..... Maximum Performance CDROM Speed..... Normal CPU Power Management..... Disable PCI Bus Power Management..... Disable 12. Press Esc. Select Alarm. Press Enter. Verify the following: Power Control Beep..... Disabled Low Battery Alarm..... Disabled Password Beep..... Enabled 13. Press Esc. Select Memory. Press Enter. Verify the following: Extended Memory Test..... Disabled 14. Press Esc. Select Serial ATA (SATA). Press Enter. Verify the following: SATA Controller Mode Operation... Compatibility 15. Press Esc. Select CPU. Press Enter. Verify the following:

Level 01b

Core Multi-Processing..... Enabled Intel Virtualization Technology.. Enter - Current settibg..... Disabled 16. Press Esc. Select Intel (R) AMT. Press Enter. Verify the following: Intel (R) AMT Control ..... Enabled 17. Press Esc twice. Select Date/Time. Press Enter. Verify the following: System Date..... Local date (MM/DD/YYYY) 18. Press Esc. Select Security. Select Password. Press Enter. Verify the following: Using Passphrase..... Enter - Current Setting..... Disabled Supervisor Password..... Disabled Lock BIOS Settings..... Enter - Current Setting..... Disabled Set Minimum Length..... Enter - Current Setting..... Disabled BIOS password at unattended boot. Enter - Current Setting..... Disabled Power-On Password..... Disabled Hard Disk1 Password..... Disabled Password Reset Service..... Enter - Current Setting..... Disabled 19. Press Esc. Select IBM Security Chip. Press Enter. Verify the following: IBM Security Chip..... Enter - Current Setting..... Disabled 20. Press Esc. Select **BIOS Update**. Press Enter. Verify the following: Flash BIOS Updating by End-Users. Enter - Current Setting..... Enabled 21. Press Esc. Select Memory Protection. Press Enter. Verify the following: Execution prevention..... Enter - Current Setting..... Disabled 22. Press Esc. Select I/O Port Access. Press Enter. Verify the following: Ethernet LAN ..... Enter - Current Setting..... Enabled Wireless LAN ..... Enter - Current Setting..... Disabled Wireless WAN ..... Enter - Current Setting..... Disabled ..... Enter Wireless USB - Current Setting..... Disabled ..... Enter Modem - Current Setting..... Disabled ..... Enter USB Port - Current Setting..... Ensabled IEEE 1394 ..... Enter - Current Setting..... Disabled Serial Port ..... Enter - Current Setting..... Disabled Parallel Port ..... Enter - Current Setting..... Disabled ..... Enter Cardbus Slot - Current Setting..... Enabled ExpressCard Slot ..... Enter - Current Setting..... Enabled PCI Express Slot ..... Enter - Current Setting..... Enabled

Ultrabay (HDD/Optical	Enter
- Current Setting	Enabled
Microphone	Enter
- Current Setting	Disabled

23. Press Esc twice. Select Startup. Select Boot. Press Enter.

**Note:** The following is an ordered list. Refer to the Item-Specific Help control to manipulate the order in which the items appear on the list.

Perform the following steps:

- a. If Fujitsu. . . is not displayed under ATA HDD0, immediately notify Development Engineering.
- b. Under **Boot Priority Order**, select entries **1** through **8**, one at a time, and press **x** to delete the entries.
- c. Under Excluded from Boot Order:
  - 1) Select **USB FDD** and press **x**.
  - 2) Select ATAPI CD0 and press x.
  - 3) Select IDE HDD0: Fujitsu and press x. Verify the following boot sequence:

```
1: USB FDD

2: ATAPI CDO:

3: IDE HDDO: Fujitsu MHW2080BS-(S1)...IMPORTANT - MUST VERIFY!

4-8: No data displayed
```

Note: Regarding the Boot Order:

- 1:"..." may not be exact, but ensure it is not blank.
- Ensure Fujitsu. . . is displayed after HDDO.
- 4) Verify the following is excluded from the boot order (order here is not important):
  - : -USB HDD: : ATA HDD1: : ATA HDD2: : PCI LAN : ATAPI CD1:
  - : USB CD:
- 24. Press Esc. Select Network. Press Enter.

Under **Boot Priority Order**, select entries **1** through **8**, one at a time, and press **x** to delete the entries. Under **Excluded from Boot Order**:

- a. Select **USB FDD** and press **x**.
- b. Select ATAPI CD0 and press x.
- c. Select IDE HDD0: Fujitsu and press x.

Verify the following boot sequence:

- 1: USB FDD 2: ATAPI CDO: 3: IDE HDDO: Fujitsu...
- 4-8: No data displayed

Note: Regarding the Boot Order:

- 1:"..." may not be exact, but ensure it is not blank.
- Ensure Fujitsu. . . is displayed after HDD0.

Verify the following is excluded from the boot order (order here is not important):

: -USB HDD: : ATA HDD1: : ATA HDD2: : PCI LAN: : ATAPI CD1: : USB CD:

25. Press Esc. Startup window displays. Verify the following "Current setting":

Boot Mode.....QuickOptions Keys Display.....EnabledBoot Device List F12 Option.....Enter- Current Setting.....Disabled

26. Press Esc. Select **Restart**. Press Enter. Verify the following:

Exit Saving Changes..... Only Selection Highlighted

- 27. Press F10 to display the **Setup Confirmation** window. Select **Yes**. Press Enter to save the settings and exit.
- 28. Remove installed media, if any.

#### END OF PROCEDURE.

## 2055 (T500) ThinkPad configuration

- 1. Power on the thinkpad.
- 2. Press the "F1" key when "Press F1 to enter SETUP" displays. The "IBM BIOS Setup Utility" screen is displayed.
- 3. Verify the following configuration values:

BIOS Version BIOS Date (Year-Month-Day).	3.01 (6FET71WW) 2009-05-15
Embedded Controller Version.	1.03
System-unit serial number	2055xxxxxxxx
System-board serial number	varies per machine
СРИ Туре	Intel (R) Core(TM) 2 Duo CPU T9400
CPU Speed	2.53GHz
Installed Memory	2048MB
UUID	varies per machine
MAC Address (Internal LAN)	12 Hexadecimal Digits (not all 0's)

4. Select Config then Network. Verify the following:

Wake on LAN....DisabledFlash Over LAN...DisabledEthernet LAN Option ROM....EnabledHard drive Direct Memory Access (DMA)...EnabledWireless LAN and WiMAX Radios.....Off

5. Press "Esc" redisplays the "Config" screen. Select Serial Port. Verify the following:

Serial Port..... Disabled

6. Press "Esc" redisplays the "Config" screen. Select Parallel Port. Verify the following:

Parallel	Port	Disabled
Mode		Bi-Directiona

7. Press "Esc" redisplays the "Config" screen. Select PCI. Verify the following:

INTA	PCI	IRQ	11
INTB	PCI	IRQ	11
INTC	PCI	IRQ	11
INTD	PCI	IRQ	11
INTE	PCI	IRQ	11
INTF	PCI	IRQ	11
INTG	PCI	IRQ	11
INTH	PCI	IRQ	11

8. Press "Esc" redisplays the "Config" screen. Select USB. Verify the following:

Level 01b

USB BIOS Support..... Enabled Enabled Always On USB..... 9. Press "Esc" redisplays the "Config" screen. Select Keyboard/Mouse. Verify the following: TrackPoint..... Automatic Touch Pad..... Disabled Disabled Fn Key Lock.... ThinkPad NumLock..... Independent 10. Press "Esc" redisplays the "Config" screen. Select **Display**. Verify the following: Default Primary Video Device Internal Boot Display Device..... ThinkPad LCD Graphics Device..... Integrated Graphics OS Detection for Switchable Graphics Disabled . . . . . 11. Press "Esc" redisplays the "Config" screen. Select Power. Verify the following: Timer Wake with Battery Operation Disabled . . . . . Intel(R) SpeedStep technology Enabled •••• Mode for AC ..... Maximum Performance Mode for Battery ..... Maximum Performance Adaptive Thernal Management Scheme for AC ..... Maximize Performance Scheme for Battery ..... Maximize Performance CDROM Speed..... Normal CPU Power Management..... Disable PCI Bus Power Management..... Disable PCI Express Power Management.. Disable 12. Press "Esc" redisplays the "Config" screen. Select Beep and Alarm. Verify the following: Enabled Power Control Beep..... Disabled Low Battery Alarm..... Pasword Beep.... Disabled Enabled Keyboard Beep.... 13. Press "Esc" redisplays the "Config" screen. Select Memory. Verify the following: Extended Memory Test..... Disabled 14. Press "Esc" redisplays the "Config" screen. Select Serial ATA (SATA). Verify the following: SATA Controller Mode Option.. Compatibility 15. Press "Esc" redisplays the "Config" screen. Select CPU. Verify the following: Core Multi-Procesing..... Enabled Intel (R) Virtualization Technology Enter Disabled - Current setting..... Intel (R) VT-d Feature Enter - Current setting..... Disabled 16. Press "Esc" redisplays the "Config" screen. Select Intel AMT. Verify the following: Intel (R) AMT Control..... Enabled AMT CIRCA Timeout..... 0 PC ANSI Console Type..... 17. Press "Esc" redisplays the "Config" screen. Select Docking Station. Verify the following: Legacy Devices on Mini Dock..... Enabled 18. Press "Esc" redisplays the "Config" screen. Press "Esc" again to redisplay the "Main" screen. Select Date/Time. Verify the following: System Date..... Local date (MM/DD/YYYY) System Time..... Local time (HH:MM:SS) (24 Hour)

19. Press "Esc" redisplays the "Main" screen. Select Security and then Password. Verify the following:

Hardware Password Manager..... Enter - Current Setting..... Disabled Using Passphrase..... Enter - Current Setting..... Disabled Supervisor Password..... **Disabled** Lock BIOS Settings..... Enter - Current Setting..... Disabled Set Minimum Length..... Enter - Current Setting..... Disabled BIOS password at unattended boot... Enter - Current Setting..... Disabled Power-On Password..... Disabled Hard Disk1 Password..... **Disabled** 20. Press "Esc" redisplays the "Security" screen. Select Security Chip. Verify the following: Security Chip..... Enter - Current Setting..... Disabled Firmware Update Mode..... Unattended Mode 21. Press "Esc" redisplays the "Security" screen. Select BIOS Update Option. Verify the following: Flash BIOS Updating by End-Users.... Enter - Current Setting..... Enabled 22. Press "Esc" redisplays the "Security" screen. Select **Memory Protection**. Verify the following: Execution Prevention..... Enter - Current Setting..... Disabled 23. Press "Esc" redisplays the "Security" screen. Select I/O Port Access. Verify the following: Ethernet LAN..... Enter - Current Setting..... Enabled Wireless LAN..... Enter - Current Setting..... **Disabled** WiMAX..... Enter - Current Setting..... Disabled Wireless WAN..... Enter - Current Setting..... Disabled Bluetooth..... Enter - Current Setting..... Disabled Wireless USB..... Enter - Current Setting..... Disabled Modem..... Enter - Current Setting..... **Disabled** USB Port..... Enter - Current Setting..... Fnabled IEEE 1394..... Enter - Current Setting..... **Disabled** Serial Port..... Enter - Current Setting..... Disabled Parallel Port..... Enter Disabled - Current Setting..... Cardbus Slot..... Enter - Current Setting..... Enabled ExpressCard Slot..... Enter - Current Setting..... Enabled PCI Express Slot..... Enter - Current Setting..... Enabled Ultrabay (HDD/Optical)... Enter - Current Setting..... Enabled Memory Card..... Enter - Current Setting..... Enabled

Microphone ..... Enter - Current Setting..... Disabled Fingerprint Reader..... Enter - Current Setting..... Disabled

24. Press "Esc" redisplays the "Security" screen. Select **Anti-Theft** and then **Computrace**. Verify the following:

Computrace Module Activation Enter - Current Setting..... Disabled - Current State..... Not Activated

25. Press "Esc" redisplays the "Anti-Theft" screen. Select ConstantSecure. Verify the following:

Full Theft Protection Module Activation

- Current Setting..... Disabled - Current State..... Not Activated

26. Press "Esc" redisplays the "Anti-Theft" screen. Press "Esc" again to redisplay the "Security" screen. Press "Esc" once more to redisplay the "Main" screen. Select **Startup** and then **Boot**.

**Note:** The following is an ordered list. Refer to the "Item-Specific Help" control to manipulate the order in which the items appear on the list.

Perform the following steps:

- a. If Fujitsu. . . is not displayed under ATA HDD0, immediately notify Development Engineering.
- b. Under **Boot Priority Order**, select entries **1** through **8**, one at a time, and press **x** to delete all entries.
- c. Under Excluded from Boot Order:
  - 1) Select **USB FDD** and press **x**.
  - 2) Select ATAPI CD0 and press x.
  - 3) Select IDE HDD0: Fujitsu and press x. Verify the following boot sequence:

```
1: USB FDD
2: ATAPI CDO:
3: IDE HDD0: Fujitsu MHW2080BK-(S1)...PLEASE VERIFY!
4-8: No data displayed
```

Note: Regarding the Boot Order:

- 1:"..." ensure it is not blank.
- 3:Ensure Fujitsu. . . is displayed after HDDO.
- 4) Verify the following is excluded from the boot order (order is not important):

```
: -USB HDD:
: ATA HDD1:
: ATA HDD2:
: PCI LAN
: ATAPI CD1:
: USB CD:
```

27. Press "Esc" redisplays the "Startup" screen. Select Network.

Under **"Boot Priority Order"**, select entries **1**: through **8**:, one at a time, and press **x** to delete all entries.

Under Excluded from Boot Order:

- a. Select **USB FDD:** ... and press **x**.
- b. Select ATAPI CD0: ... and press x.
- c. Select ATA HDD0: Fujitsu... and press x.

Verify the following boot sequence:

1: USB FDD 2: ATAPI CDO: 3: ATA HDD0: Fujitsu... 4-8: No data displayed

Note: Regarding the Boot Order:

- 1:"..." ensure it is not blank.
- 3:Ensure Fujitsu. . . is displayed after HDDO.

Verify the following is excluded from the boot order (order here is not important):

: -USB HDD: : ATA HDD1: : ATA HDD2: : PCI LAN: : ATAPI CD1: : USB CD:

28. Press "Esc" redisplays the Startup screen. Verify the following "Current Settings":

Boot Mode.....QuickOptions Keys Display.....EnabledBoot Device List F12 Option.....Enter- Current Setting.....Disabled

29. Press "Esc" redisplays the Main screen. Select Restart. Verify the following:

Exit Saving Changes..... Only Selection Highlighted

30. Select Yes. Press Enter to save the settings and exit.

#### END OF PROCEDURE.

### 4349 (T510) ThinkPad configuration

Verify the Thinkpad's Li-Ion battery used to update the flash Bios has been removed (if installed).

Note: The TrackPoint and "mouse" buttons do not operate during this procedure. "Selections" are made using arrow keys and "Enter".

- 1. Connect....The AC Adapter
- 2. Power..... Up the ThinkPad.
- 3. Press...... The "F1" key when:

"Press F1 to enter SETUP" displays.

> The "IBM BIOS Setup Utility" screen is displayed.

4. Verify the following configuration values:

```
> Config
> Date/Time
> Security
> Startup
> Restart
> HDD diagnostic program
  BIOS Version.....
                             1.46 (6MET86WW)
  BIOS Date (Year-Month-Day).
                             2011-05-24
  Embedded Controller Version. 1.20
  Machine Type Model..... 4349xxx
  System-unit serial number...
                             R9B04NP
                                       (Varies)
  System-board serial number.. 1ZJ9X11H1P6 (Varies)
  Asset Tag Information.....
                             No Asset Information
  CPU Type..... Intel (R) Core(TM) i5 CPU M540
  CPU Speed.....
                             2.53GHz
  Installed Memory.....
                             4096MB
                             Hex Data (Varies)
  UUID.....
                            12 Hex Digits (not all O's)
  MAC Address (Internal LAN)..
```

5. Select >Config>Network. Verify the following:

Wake on LAN	Disabled
Flash Over LAN	Disabled
Ethernet LAN Option ROM	Enabled
Hard drive Direct Memory Access (DMA)	Enabled
Wireless LAN and WiMAX Radios	Off

6. Press "Esc" redisplays the "Config" screen. Select >PCI. Verify the following:

INTA	PCI	IRQ	11
INTB	PCI	IRQ	11
INTC	PCI	IRQ	11
INTD	PCI	IRQ	11
INTE	PCI	IRQ	11
INTF	PCI	IRQ	11
INTG	PCI	IRQ	11
INTH	PCI	IRQ	11

7. Press "Esc" redisplays the "Config" screen. Select >USB. Verify the following:

USB BIOS Support	Enabled
Always On USB	Enabled
Always On USB Mode	Automatic

8. Press "Esc" redisplays the "Config" screen. Select >Keyboard/Mouse. Verify the following:

TrackPoint Touch Pad	Automatic Disabled
Fn and Ctrl Key swap	Disabled
FN Key LOCK	Disabled
ThinkPad NumLock	Independent

9. Press "Esc" redisplays the "Config" screen. Select >Display. Verify the following:

Boot Display Device..... ThinkPad LCD

10. Press "Esc" redisplays the "Config" screen. Select >Power. Verify the following:

Timer Wake with Battery Operation

..... Disabled

Intel(R) SpeedStep technology ..... Enabled

Mode	for	AC	Maximum	Performance
Mode	for	Battery	Maximum	Performance

Adaptive Thernal Management		
Scheme for AC	Maximize	Performance
Scheme for Battery	Maximize	Performance
CDROM Speed	Normal	
CPU Power Management	Disable	
PCI Bus Power Management	Disable	
PCI Express Power Management	Disable	
Power On with AC Attach	Disabled	

11. Press "Esc" redisplays the "Config" screen. Select >Beep and Alarm. Verify the following:

ed
ł
ł

12. Press "Esc" redisplays the "Config" screen. Select >Memory. Verify the following:

Extended Memory Test..... Disabled

13. Press "Esc" redisplays the "Config" screen. Select >Serial ATA (SATA). Verify the following: SATA Controller Mode Option. AHCI

Enabled

- 14. Press "Esc" redisplays the "Config" screen. Select >CPU. Verify the following:
  - Core Multi-Procesing.....
  - Intel (R) Hyperthreading Technology Enabled

	Intel (R) Virtualization Technology - Current setting	Enter Disabled
	Intel (R) VT-d Feature - Current setting	Enter Disabled
15.	Press "Esc" redisplays the "Config" screen. Sele	ect >Intel AMT. Verify the following:
	Intel (R) AMT Control AMT CIRCA Timeout Console Type	Enabled 0 PC ANSI
16.	Press "Esc" redisplays the "Config" screen. Pre >Date/Time. Verify the following:	ss "Esc" again redisplays the "Setup" screen. Select
	System Date Local System Time Local	date (MM/DD/YYYY) time (HH:MM:SS) (24 Hour)
17.	Press "Esc" redisplays the "Setup" screen. Select following:	ct > <b>Security</b> and then select > <b>Password</b> . Verify the
	Hardware Password Manager - Current Setting	Enter Disabled
	Using Passphrase - Current Setting	Enter Disabled
	Supervisor Password Lock BIOS Settings	Disabled Enter
	- Current Setting	Disabled
	Set Minimum Length	Enter
	BIOS password at unattended boot	Enter
	- Current Setting	Disabled
	Power-On Password Hard Disk1 Password	Disabled Disabled
18.	Press "Esc" redisplays the "Security" screen. Se	elect > <b>Security Chip</b> . Verify the following:
	Security Chip - Current Setting	Enter Disabled
19.	Press "Esc" redisplays the "Security" screen. Se	elect > <b>BIOS Update Option</b> . Verify the following:
	Flash BIOS Updating by End-Users - Current Setting	Enter Enabled
20.	Press "Esc" redisplays the "Security" screen. Se	elect > <b>Memory Protection</b> . Verify the following:
	Execution Prevention E - Current Setting D	nter isabled
21.	Press "Esc" redisplays the "Security" screen. Se	elect > <b>I/O Port Access</b> . Verify the following:
	Note: Some "Ports" may not be display	ed
	Ethernet LAN Enter	
	- Current Setting Enabled	
	- Current Setting Disabled	
	WiMAX Enter	
	- Current Setting Disabled	
	- Current Setting Disabled	
	Modem Enter	
	- current setting Disabled USB Port	
	- Current Setting Enabled	
	IEEE 1394 Enter	
	- current setting Disabled ExpressCard Slot Enter	
	- Current Setting Enabled	
	Ultrabay (HDD/Optical) Enter	

```
Current Setting..... Enabled
eSATA Port.... Enter
Current Setting..... Disabled
Memory Card.... Enter
Current Setting.... Enabled
Smart Card Slot... Enter
Current Setting... Enabled
Microphone .... Enter
Current Setting... Disabled
Fingerprint Reader... Enter
Current Setting... Disabled
```

- 22. Press "Esc" redisplays the "Security" screen. Select >Anti-Theft. Verify the following:
  - Intel AT Module Activation

		Enter		
-	Current	Setting	Disa	abled
_	Current	State	Not	Activated

- 23. Select >Computrace. Verify the following:
  - Computrace Module Activation
  - Enter - Current Setting..... Disabled - Current State..... Not Activated
- 24. Press "Esc" redisplays the "Anti-Theft" screen.
- 25. Press "Esc" redisplays the "Security" screen.
- 26. Press "Esc" redisplays the "Setup" screen.
- 27. Select >**Startup** and then select >**Boot**.

**Note:** The following is an "ordered list". Refer to the "Item-Specific Help" control to manipulate the order by which items appear on the list.

Perform the following steps:

- a. If Fujitsu. . . is not displayed under ATA HDD0:, immediately notify Development Engineering.
- b. Under **Boot Priority Order**, select entries **1** through **8** one at a time, and press **x** to delete all entries.
- c. Under Excluded from Boot Order:
  - 1) Select **USB FDD**: and press **x**.
  - 2) Select ATAPI CD0: and press x.
  - 3) Select ATA HDD0: FUJITSU or TOSHIBA and press x. Verify the following boot sequence:
    - 1: USB FDD:
    - 2: ATAPI CDO: 3: ATA HDDO: FUJITSU MHZ2080BK-(S1)OR
    - 3: ATA HDD0: TOSHIBA MK1661GSYB
    - 4-8: No data displayed

Note: Regarding the Boot Order:

- 1:"..." ensure it is not blank.
- 3:Ensure FUJITSU. . . or TOSHIBA. . . is displayed after HDD0:.
- 4) Verify the following is excluded from the boot order (order is not important):
  - : -USB HDD: : ATA HDD1: : ATA HDD2: : ATA HDD2: : PCI LAN : ATAPI CD1: : ATAPI CD2: : USB CD:
- 28. Press "Esc" redisplays the "Startup" screen. Select >Network.

Under **"Boot Priority Order"**, select entries **1**: through **8**:, one at a time, and press **x** to delete all entries.

Under Excluded from Boot Order:

- a. Select USB FDD: ... and press x.
- b. Select **ATAPI CD0:** ... and press **x**.
- c. Select ATA HDD0: ... and press x.

Verify the following boot sequence:

```
1: USB FDD:
2: ATAPI CDO:
3: ATA HDDO: ...
4-8: No data displayed
```

Note: Regarding the Boot Order:

- 1:"..." ensure it is not blank.
- 3:Ensure FUJITSU. . . or TOSHIBA. . . is displayed after HDD0:.

Verify the following is excluded from the boot order (order here is not important):

```
: -USB HDD:
: ATA HDD1:
: ATA HDD2:
: ATA HDD2:
: PCI LAN:
: ATAPI CD1:
: ATAPI CD2:
: USB CD:
```

29. Press "Esc" redisplays the "Startup" screen. Verify the following "Current Settings":

Boot Mode.....QuickOptions Keys Display.....EnabledBoot Device List F12 Option.....Enter- Current Setting.....Disabled

30. Press "Esc" redisplays the "Main" screen. Select >Restart. Verify the following:

Exit Saving Changes..... Only Selection Highlighted

31. Press "F10" to display the "Setup Confirmation" screen.

32. Select "Yes". Press "Enter" to save settings and exit.

END OF PROCEDURE.

### 4242 (T520) ThinkPad configuration

- 1. Power...Up the ThinkPad.
- 2. Press the "F1" key when:

Press F1 to enter "SETUP" displays.

> The "ThinkPad Setup" screen is displayed.

3. Verify the following "Main" configuration values:

UEFI BIOS Version	8AET55ww (1.35 )
UEFI BIOS Date (Year-Month-Day).	2011-11-24
Embedded Controller Version	8AHT37WW (1.19 )
Machine Type Model	4242BC5
System-unit serial number	R9CNDYZ (Varies)
System-board serial number	1ZJK213K7N1 (Varies)
Asset Tag Information	No Asset Information
CPU Type	Intel(R) Core(TM) i7-2620m CPU
CPU Speed	2.70GHz
Installed Memory	8192MB
UUID	Hex Data (Varies)
MAC Address (Internal LAN)	12 Hex Digits (not all O's)

4. Select >Config>Network. Verify the following: Wake on LAN..... AC Only Ethernet LAN Option ROM..... Enabled 5. Press "Esc" redisplays the "Config" screen. Select >**USB**. Verify the following: USB UEFI BIOS Support..... Enabled Always On USB..... Enabled Always On USB Charge in Off Mode.... Disabled 6. Press "Esc" redisplays the "Config" screen. Select >Keyboard/Mouse. Verify the following: TrackPoint..... Enabled Disabled Touch Pad..... Disabled Fn and Ctrl Key swap..... Fn Key Lock.... Disabled ThinkPad NumLock..... Independent 7. Press "Esc" redisplays the "Config" screen. Select >Display. Verify the following: Boot Display Device..... ThinkPad LCD 8. Press "Esc" redisplays the "Config" screen. Select >Power. Verify the following: Intel(R) SpeedStep technology... Enabled Mode for AC ..... Maximum Performance Mode for Battery ..... Maximum Performance Adaptive Thernal Management Scheme for AC ..... Maximize Performance Scheme for Battery ..... Maximize Performance Optical Drive Speed..... Normal CPU Power Management..... Disabled PCI Express Power Management.... Disabled Express Card Speed..... Automatic Power On with AC Attach..... Disabled Note: The "Power On" function is interesting but only "works" if a Li-Ion battery is installed. 9. Press "Esc" redisplays the "Config" screen. Select >Beep and Alarm. Verify the following: Power Control Beep..... Enabled Low Battery Alarm..... Disabled Password Beep..... Disabled Enabled Keyboard Beep.... 10. Press "Esc" redisplays the "Config" screen. Select >Serial ATA (SATA). Verify the following: SATA Controller Mode Option.. AHCI 11. Press "Esc" redisplays the "Config" screen. Select >CPU. Verify the following: Core Multi-Processing..... Enabled Intel (R) Hyper-Threading Technology Enabled 12. Press "Esc" redisplays the "Config" screen. Select >Date/Time. Verify the following: Local date (MM/DD/YYYY) System Date.... System Time..... Local time (HH:MM:SS) (24 Hour) 13. Select >Security and then select >Password. Verify the following: Hardware Password Manager..... Disabled Supervisor Password..... Enter - Password Status..... Disabled Lock UEFI BIOS Settings..... Disabled Set Minimum Length..... Disabled Password at unattended boot..... **Disabled** Password at restart.... Disabled Power-On Password..... Enter

	- Password Status Disabled Hard Disk1 Password Enter
11	- Password Status Disabled
14.	Predesktop Authentication Disabled Reader Priority Internal Only Security Mode Normal
	Reset Fingerprint Data Enter (Do not select)
15.	Press "Esc" redisplays the "Security" screen. Select >Security Chip. Verify the following:
	Security Chip Disabled
16.	Press "Esc" redisplays the "Security" screen. Select > <b>UEFI BIOS Update Option</b> . Verify the following:
	Flash BIOS Updating by End-Users Enabled
	Flash Over LAN Disabled
17.	Press "Esc" redisplays the "Security" screen. Select >Memory Protection. Verify the following:
	Execution Prevention Disabled
18.	Press "Esc" redisplays the "Security" screen. Select > <b>Virtualization</b> . Verify the following:
	Intel (R) Virtualization lechnology Disabled
	Intel (R) VT-d Feature Disabled
19.	Press "Esc" redisplays the "Security" screen. Select >I/O Port Access. Verify the following:
	Note: Some "Ports" may not be displayed
	Ethernet LANEnabledWireless LANDisabledWiMAXDisabledWireless WANDisabledBluetoothDisabledUSB PortEnabledIEEE 1394DisabledUltrabay (HDD/Optical)EnabledeSATA PortDisabledMemory Card SlotEnabledSmart Card SlotEnabledIntegrated CameraDisabledMicrophoneDisabledFingerprint ReaderDisabled
20.	Press "Esc" redisplays the "Security" screen. Select >Anti-Theft. Verify the following:
	Intel AT Module Activation Enter
	- Current Setting Disabled - Current State Not Activated
21.	Select >Computrace. Verify the following:
	Computrace Module Activation Enter
	- Current Setting Disabled - Current State Not Activated
22.	Press "Esc" redisplays the "Anti-Theft" screen.
23.	Press "Esc" redisplays the "Security" screen.
24.	Select >Startup and then select >Boot.

**Note:** The following is an "ordered list". Refer to the "Item-Specific Help" control to manipulate the order by which items appear on the list.

Perform the following steps:

- a. If "TOSHIBA. . . " is not displayed under "ATA HDD0:", immediately notify Development Engineering.
- b. Under "Boot Priority Order" use the following keys:
  - "+" or "-" to reorder
  - "!" ..... to move between included vs excluded list
- c. Create the following:
  - Boot Priority Order
  - 1) USB FDD
  - 2) ATAPI CD0 Optiarc DVD RW AD-7710H (or HL-DT-STDVDRAM GT33N or MATSHITADVD-RAM UJ8A0A)
  - ATA HDD0 TOSHIBA MK2561GSYB (or HITACHI HTS545025B9A300 or WDC WD2500BEVT-varies)

Note: For the Boot Priority Order, ensure that:

- item #2 is not blank
- "TOSHIBA MK2561GSYB" is displayed after HDD0
- 25. Press "Esc" redisplays the "Startup" screen. Verify the following "Current setting":

1 2	1	2				0	
Network Boot		F	PCI	LAN:	IBA	GE	S
UEFI/Legacy Boot	•••••	E	Botl	h			
UEFI/Legacy Boot Priori	ty	l	_ega	acy F	irst		
Boot Mode	•••••	(	)ui	ck			
Options Keys Display	•••••	E	Inal	bled			
Boot device List F12 Op	tion	[	)isa	abled			
Boot Order Lock	•••••	[	)isa	abled			

Reserve memory for UEFI Boot Manager.. Disabled

- 26. Press "Esc" redisplays the "Main" screen. Select >Restart. Verify the following: Exit Saving Changes...... Only Selection Highlighted
- 27. Press "F10" to display the "Setup Confirmation" screen.
- 28. Select "Yes". Press "Enter" to save settings and exit.

#### END OF PROCEDURE.

## 4282 (W520) ThinkPad configuration

- 1. Power...Up the ThinkPad.
- 2. Press the "F1" key when:
  - Press F1 to enter "SETUP" displays.
  - > The "ThinkPad Setup" screen is displayed.
- 3. Verify the following "Main" configuration values:

UEFI BIOS Version	8BET56w1 (1.36 )
UEFI BIOS Date (Year-Month-Day).	2012-01-19
Embedded Controller Version	8AHT38WW (1.20 )
Machine Type Model	4282W5A
System-unit serial number	R9KG7YD (Varies)
System-board serial number	1ZKBX1C32ZX (Varies)
Asset Tag Information	No Asset Information
СРИ Туре	Intel(R) Core(TM) i7-2760QM CPU
CPU Speed	2.40GHz

Level 01b

	Installed Memory 16384MB UUID
4.	Select >Config>Network. Verify the following:
	Wake on LAN AC Only Ethernet LAN Option ROM Enabled
5.	Press "Esc" redisplays the "Config" screen. Select >USB. Verify the following:
	USB UEFI BIOS Support Enabled Always On USB Enabled Always On USB Charge in Off Mode Disabled
6.	Press "Esc" redisplays the "Config" screen. Select >Keyboard/Mouse. Verify the following:
	TrackPoint Enabled Touch Pad Disabled
	Fn and Ctrl Key swap Disabled Fn Key Lock Disabled ThinkPad NumLock Independent
7.	Press "Esc" redisplays the "Config" screen. Select >Display. Verify the following:
	Boot Display Device ThinkPad LCD Graphics Device Integrated Graphics OS Detection for NVIDIA Optiumus Disabled
8.	Press "Esc" redisplays the "Config" screen. Select >Power. Verify the following:
	<pre>Intel(R) SpeedStep technology Enabled Mode for AC Maximum Performance Mode for Battery Maximum Performance Adaptive Thernal Management Scheme for AC Maximize Performance Scheme for Battery Maximize Performance Optical Drive Speed Normal CPU Power Management Disabled PCI Express Power Management Disabled Express Card Speed Automatic Power On with AC Attach Disabled</pre>
	Note: The "Power On" function is interesting but only "works" if a Li-Ion battery is installed.
9.	Press "Esc" redisplays the "Config" screen. Select >Beep and Alarm. Verify the following:
	Power Control Beep Enabled Low Battery Alarm Disabled Password Beep Disabled Keyboard Beep Enabled
10.	Press "Esc" redisplays the "Config" screen. Select >Serial ATA (SATA). Verify the following:
	SATA Controller Mode Option. AHCI
11.	Press "Esc" redisplays the "Config" screen. Select > <b>CPU</b> . Verify the following:
	Core Multi-Processing Enabled
	Intel (D) Human Threading Technology [nobled
10	Intel (R) Hyper-Inreading lecthology Enabled
12.	Press Esc redisplays the Setup screen. Select >Date/lime. verify the following:
	System Date Local date (MM/DD/YYYY) System Time Local time (HH:MM:SS) (24 Hour)
13.	Select > <b>Security</b> and then select > <b>Password</b> . Verify the following:
	Hardware Password Manager Disabled
	Supervisor Password Enter - Password Status Disabled
	Lock UEFI BIOS Settings Disabled Set Minimum Length Disabled

	Password at unattended boot Disabled Password at restart Disabled
	Power-On Password Enter - Password Status Disabled Hard Disk1 Password Enter - Password Status Disabled
14.	Press "Esc" redisplays the "Security" screen. Select >FingerPrint. Verify the following:
	Predesktop Authentication Disabled Reader Priority Internal Only Security Mode Normal
	Reset Fingerprint Data Enter (Do not select)
15.	Press "Esc" redisplays the "Security" screen. Select >Security Chip. Verify the following:
	Security Chip Disabled
16.	Press "Esc" redisplays the "Security" screen. Select > <b>UEFI BIOS Update Option</b> . Verify the following: Flash BIOS Updating by End-Users Enabled
	Flash Over LAN Disabled
17.	Press "Esc" redisplays the "Security" screen. Select >Memory Protection. Verify the following:
	Execution Prevention Disabled
18.	Press "Esc" redisplays the "Security" screen. Select >Virtualization. Verify the following:
	Intel (R) Virtualization Technology Disabled
	Intel (R) VT-d Feature Disabled
19.	Press "Esc" redisplays the "Security" screen. Select >I/O Port Access. Verify the following:
	Note: Some "Ports" may not be displayed
	Ethernet LAN Enabled Wireless LAN Disabled WiMAX Disabled Wireless WAN Disabled Bluetooth Disabled Modem Disabled USB Port Enabled IEEE 1394 Enabled Ultrabay (HDD/Optical) Enabled eSATA Port Disabled Memory Card Slot Enabled Smart Card Slot Enabled Integrated Camera Disabled Microphone Disabled Fingerprint Reader Disabled
20.	Press "Esc" redisplays the "Security" screen. Select >Anti-Theft. Verify the following:
	Intel AT Module Activation Fnter
	- Current Setting Disabled
21	Select Computate Verify the following:
21.	Computace Module Activation
	Enter
	- Current Setting Disabled - Current State Not Activated
22.	Press "Esc" redisplays the "Anti-Theft" screen.
23.	Press "Esc" redisplays the "Security" screen.
24.	Select > <b>Startup</b> and then select > <b>Boot</b> .
**Note:** The following is an "ordered list". Refer to the "Item-Specific Help" control to manipulate the order by which items appear on the list.

Perform the following steps:

- a. If "TOSHIBA..." is not displayed under "ATA HDD0:", immediately notify Development Engineering.
- b. Under "Boot Priority Order" use the following keys:
  - "+" or "-" to reorder
  - "!" ..... to move between included vs excluded list
- c. Create the following:
  - · Boot Priority Order
  - 1) USB FDD
  - 2) ATAPI CD0 Optiarc DVD RW AD-7710H (or HL-DT-STDVDRAM GT33N or HL-DT-ST DVDRAM GT50N varies)
  - 3) ATA HDD0 TOSHIBA MK2561GSYB (or ST9500420AS or HITACHI HTS545025B9A300 or WDC WD2500BEVT-varies)

Note: For the W520-B Boot Order, ensure that:

- item #2 is not blank
- "TOSHIBA MK2561GSYB" is displayed after HDD0
- 25. Press "Esc" redisplays the "Startup" screen. Verify the following "Current setting":

Network Boot	PCI LAN: IBA GE S
UEFI/Legacy Boot	Both
UEFI/Legacy Boot Priority	Legacy First
Boot Mode	Quick
Options Keys Display	Enabled
Boot device List F12 Option	Disabled
Boot Order Lock	Disabled

Reserve memory for UEFI Boot Manager.. Disabled

- **26.** Press "Esc" redisplays the "Main" screen. Select >**Restart**. Verify the following:
  - Exit Saving Changes..... Only Selection Highlighted
- 27. Press "F10" to display the "Setup Confirmation" screen.
- 28. Select "Yes". Press "Enter" to save settings and exit.

#### END OF PROCEDURE.

## 2394 (T530) ThinkPad configuration

- 1. Power...Up the ThinkPad.
- **2**. Press the "F1" key when:

Press F1 to enter "SETUP" displays.

> The "ThinkPad Setup" screen is displayed.

3. Verify the following "Main" configuration values:

UEFI BIOS Version	G4ET90WW (2.50 )
UEFI BIOS Date (Year-Month-Day).	2012-12-20
Embedded Controller Version	G4HT34WW (1.08 )
Machine Type Model	2394BF7
System-unit serial number	R9PLEKK (Varies)

System board serial number.....1ZLV226929S (Varies)Asset TagNo Asset InformationCPU Type.....Intel(R) Core(TM) i7-3720QM CPUCPU Speed.....2.60GHz Installed Memory..... 16384MB UUID..... Hex Data (Varies) MAC Address (Internal LAN)..... 12 Hex Digits (not all 0's) UEFI Secure Boot..... 0ff 4. Select > **Config** and then > **Network**. Verify the following: Wake on LAN..... AC Only Ethernet LAN Option ROM..... Enabled 5. Press "Esc" redisplays the "Config" screen. Select > USB. Verify the following: USB UEFI BIOS Support..... Enabled Always On USB..... Enabled Always On USB Charge in Off Mode.... Disabled USB 3.0 Mode..... Auto 6. Press "Esc" redisplays the "Config" screen. Select > Keyboard/Mouse. Verify the following: TrackPoint.... Enabled Touch Pad..... Disabled * Fn and Ctrl Key swap..... Disabled Fn Key Lock..... Disabled 7. Press "Esc" redisplays the "Config" screen. Select > **Display**. Verify the following: Boot Display Device..... ThinkPad LCD Graphics Device..... Integrated Graphics * OS Detection for NVIDIA Optiumus Disabled * 8. Press "Esc" redisplays the "Config" screen. Select > Power. Verify the following: Intel(R) SpeedStep technology... Enabled Mode for AC ..... Maximum Performance Mode for Battery ..... Maximum Performance * Adaptive Thernal Management Scheme for AC ..... Maximize Performance Scheme for Battery ..... Maximize Performance * Optical Drive Speed...... Normal CPU Power Management..... Disabled * PCI Express Power Management.... Disabled * Express Card Speed..... Automatic Power On with AC Attach..... Disabled Intel (R) Rapid Start Technology Disabled * Note: The "Power On" function is interesting but only "works" if a Li-Ion battery is installed. 9. Press "Esc" redisplays the "Config" screen. Select > Beep and Alarm . Verify the following: Password Beep..... Disabled Keyboard Beep..... Enabled 10. Press "Esc" redisplays the "Config" screen. Select > Serial ATA (SATA) . Verify the following: SATA Controller Mode Option.. AHCI 11. Press "Esc" redisplays the "Config" screen. Select > CPU. Verify the following: Enabled Core Multi-Processing..... Intel (R) Hyper-Threading Technology Enabled 12. Press "Esc" redisplays the "Setup" screen. Select > Date/Time. Verify the following: System Date.... Local date (MM/DD/YYYY) Local time (HH:MM:SS) (24 Hour) System Time..... 13. Select > Security and then select > Password . Verify the following: Hardware Password Manager..... Disabled * Supervisor Password..... Enter - Password Status..... Disabled

Lock UEFI BIOS Settings..... Disabled Disabled * Password at unattended boot..... Password at restart.... Disabled Set Minimum Length..... Disabled Power-On Password..... Enter - Password Status..... Disabled Hard Disk1 Password..... Enter - Password Status..... Disabled 14. Press "Esc" redisplays the "Security" screen. Select > FingerPrint. Verify the following: Predesktop Authentication..... Disabled * Reader Priority..... Internal Only * Security Mode..... Normal Reset Fingerprint Data..... Enter (Do not select) 15. Press "Esc" redisplays the "Security" screen. Select > Security Chip. Verify the following: Security Chip..... Disabled * Physical Presence for Provisioning. Disabled Physical Presence for Clear..... Enabled 16. Press "Esc" redisplays the "Security" screen. Select > UEFI BIOS Update Option . Verify the following: Flash BIOS Updating by End-Users.... Enabled Secure RollBack Prevention..... Disabled 17. Press "Esc" redisplays the "Security" screen. Select > Memory Protection. Verify the following: Execution Prevention..... Disabled * 18. Press "Esc" redisplays the "Security" screen. Select > Virtualization. Verify the following: Intel (R) Virtualization Technology... Disabled Intel (R) VT-d Feature..... Disabled 19. Press "Esc" redisplays the "Security" screen. Select > I/O Port Access. Verify the following: Note: Some "Ports" may not be displayed. Ethernet LAN..... Enabled Wireless LAN..... Disabled * Wireless WAN..... Disabled * Bluetooth..... Disabled * USB Port..... Enabled IEEE 1394..... Disabled * ExpressCard Slot..... Enabled Ultrabay (HDD/Optical)... Enabled eSATA Port..... Disabled Memory Card Slot..... Enabled Smart Card Slot..... Enabled Integrated Camera..... Disabled * Microphone ..... Disabled * Fingerprint Reader..... Disabled * 20. Press "Esc" redisplays the "Security" screen. Select > Anti-Theft. Verify the following: Intel(R) AT Module Activation - Current Setting..... Disabled * - Current State..... Not Activated 21. Select > Computrace. Verify the following: Computrace Module Activation - Current Setting..... Disabled * - Current State..... Not Activated

22. Press "Esc" redisplays the "Anti_Theft" screen. Then press "Esc" again to redisplay the "Security" screen. Select > Secure Boot. Verify the following:

Secure Boot..... Disabled Platform Mode..... User Mode Secure Boot Mode..... Standard Mode Reset to Setup Mode..... [Enter] (do not select) Restore Factory Keys.... [Enter] (do not select)

23. Press "Esc" redisplays the "Security" screen. Select > Startup and then select > Boot.

**Note:** The following is an "ordered list". Refer to the "Item Specific Help" control to manipulate the order by which items appear on the list.

Perform the following steps:

- a. If "TOSHIBA..." is not displayed under "ATA HDD0:", immediately notify Development Engineering.
- b. Under "Boot priority order", use the following keys:
  - "+" or "-" to reorder
  - "!" ..... to move between included vs excluded list
- c. Create the following:
  - Boot Priority Order
  - 1) USB FDD
  - 2) ATAPI CD0 Optiarc DVD RW AD-7740H
  - 3) ATA HDD0 TOSHIBA MK5061GSYB

24. Press "Esc" redisplays the "Startup" screen. Verify the following "Current setting":

Network Boot..... PCI LAN: IBA GE S

	UEFI/Legacy Boot - UEFI/Legacy Boot Priority - CMS Support	Both Legacy First Yes
	Boot Mode	Quick
	Options Keys Display	Enabled
	Boot device List F12 Option	Disabled *
	Boot Order Lock	Disabled
25.	Press "Esc" redisplays the "Main" screen. Selec	ct > <b>Restart</b> . Verify the following:

- Exit Saving Changes..... Only Selection Highlighted
- 26. Press "F10" displays the "Setup Confirmation" screen.
- 27. Remove installed media (if any).
- 28. Select "Yes". Then press "Enter" to save settings and exit.

#### END OF PROCEDURE

# **CMOS configuration procedures for server-based Support Elements**

Use Table 19 if you are directed to verify the configuration for a Support Element.

Table 19. Configuration Procedures by Machine Type

Configuration for Machine Type	Go To
7914 (x3550 M4) server	"7914 (x3550 M4) server configuration" on page 135

Table 19. Configuration Procedures by Machine Type (continued)

Configuration for Machine Type	Go To
2461	"Appendix B. 2461 configuration" in the <i>Service Guide for</i> 2461 <i>Support Element</i>

# 7914 (x3550 M4) server configuration

**Note:** UEFI (formally BIOS) settings are applied using the IBM Advanced Settings Utility (ASU) program. For the 7914 server, the preferred method to apply the UEFI settings is to use CD part number 00NK091 Control Level 3. Otherwise, use the following:

Manual Configuration: Using IBM Setup Utility (F1 during boot)

- 1. Power on the display.
- 2. Power on the system unit.
  - a. "System initializing" in lower left hand corner
  - b. "IBM Server x / System Firmware" screen appears with "Connecting Boot Devices and Adapters..." in lower left hand corner.

Hint: You can press "F1" now (only once) or wait for the next screen to display.

- c. "[F1] Setup [F2] Diagnostics [F12] Boot Device" are displayed.
- d. Press "F1" to enter "System Configuration and Boot Management"

#### Note:

- a. > "Select...." means to select the heading.
- b. > There is no mouse support. Navigate by using the arrow and "Enter" keys.
- c. > There is no "typematic" support
- d. > Ignore (if displayed) the following: **CAUTION:**

Your TPM is asserted... Disable to remove.

Trusted Platform Module's presence is asserted. Please disable this to remove potential security vulnerabilities.

#### This is due to a firmware issue and is not displayed when firmware is updated.

- e. > Some entries and data are dynamic depending if a feature is enabled or disabled. Disabling a feature, for example an Ethernet port, will cause its configuration data not to be displayed the next time this utility is invoked.
- 3. Verify the following:

System Configuration and Boot Management

System Information System Settings Date and Time Start Options Boot Manager System Event Logs

System Event Logs User Security

```
Save Settings
Restore Settings
Load Default Settings
Exit Setup
```

- 4. Select.... "Load Default Settings". The screen will go blank for several seconds, then return to the choices
- 5. Select "System Information". Verify the following:

System Summary Product Data

6. Select "System Summary". Verify the following:

		System Identificatior	Data (greye	d)			
		Machine Type/Model	7914PKG				
		Serial Number	KQ6F04A (v	aries per F	C, ensure no	t all 0's)	
		UUID Number	{8 Hex - 4	Hex - 4Hex	- 4 Hex - 12	Hex} (varies pe	r PC)
		Asset Tag Number	11S00LU413Y	IBM0 <serial< th=""><th>number&gt; (v</th><th>aries per PC)</th><th></th></serial<>	number> (v	aries per PC)	
			Note: The As when t Lenovo	set Tag Num he machine starting 1	ber may also is built (or Oct2014).	be blank. It is iginally by IBM S	set (or not) ystem x, then by
		Processor (greyed)		-	-		
		Installed CPU Package	es 1				
		Processor Speed	2.60 GHz				
		QPI Link Speed	7.2 GT/s				
		Processor Details					
		Memory (greved)					
		Memory Mode	Independent				
		Memory Speed	1600 MHz				
		Total Memory Size	32 GB				
		Memory Voltage	1.50V				
7.	Select "Pro	cessor Details". Verify	the followir	ıg:			
		Processor Socket	Socket 1	0	Socket 2		
		FIUCESSUI JUCKEL	JUCKEL I		JUCKEL Z		
		Processor ID	000306E4 (	varies)	N/A		
		Processor Frequency	2.60GHz		N/A		
		Processor Revision	00000427				
	(varies)	N/A					
		L1 Cache RAM	64KB		N/A		
		L2 Cache RAM	256KB		N/A		
		L3 Cache RAM	15MB		N/A		
			Supported	Enabled			
		Cores Per Socket	6	6			
		Threads Per Socket	12	12			
		Processor 1 Version	Intel(R) X -2630 v2 @	eon(R) CPU 2.60GHz	E5		
		Processor 2 Version	N/A				
Q	Proce "Fee"	2 times Salast "Drad	1at Data" Va	rify the fel	lowing		
υ.	TIESS ESC	2 miles. Select Flour	ici Dala . Ve	iny the lo	lowing.		

Note: The following infomation will vary depending on the loaded firmware.

Host Firmware (greyed)	)
Build ID	D7E142AUS (varies)
Version	1.71 (varies)
Build Date	06/09/2014 (varies)
Integrated Management	Module (greyed)
Build ID	1A0064S (varies)
Version	4.55 (varies)
Build Date	10/21/2014 (varies)

Diagnostics (	greyed)
Build ID	DSYTC4M (varies)
Version	9.41 (varies)
Build Date	10/14/2013 (varies)
Core Root of T	rust (greyed)
Build ID	D7E142AUS (varies)
Version	1.71 (varies)
Build Date	06/09/2014 (varies)

- 9. Press "Esc" 2 times. Select "System Settings". Verify the following:
  - Adapters and uEFI Drivers Processors Memory Devices and I/O Ports Power Operating Modes Legacy Support System Security Integrated Management Module Recovery Storage Network Driver Health

#### 10. Select Adapters and UEFI Drivers. Verify the following:

Note: You may have to press "Enter" to refresh the page.

<pre>Intel (R) PR0/1000 4.6.18 PCI-E (greyed, varies)  -PciRoot(0x0)/Pci(0x1C,0x0)Pci(0x0,0x0)  - -PciRoot(0x0)/Pci(0x1C,0X0)/Pci(0x0,0x0)/MAC (E . 41F13EE99F2,0x0)</pre>	(don't select) (don't select)
<pre>Intel (R) PR0/1000 4.6.18 PCI-E (greyed, varies)  -PciRoot(0x0)/Pci(0x1C,0x0)Pci(0x0,0x1)  - -PciRoot(0x0)/Pci(0x1C,0X0)/Pci(0x0,0x1)/MAC (E . 41F13EE99F3,0x0)</pre>	(don't select) (don't select)
<pre>Intel (R) PR0/1000 4.6.18 PCI-E (greyed, varies)  -PciRoot(0x0)/Pci(0x1C,0x0)Pci(0x0,0x2)  - -PciRoot(0x0)/Pci(0x1C,0X0)/Pci(0x0,0x2)/MAC (E . 41F13EE99F4,0x0)</pre>	(don't select) (don't select)
<pre>Intel (R) PRO/1000 4.6.18 PCI-E (greyed, varies)  -PciRoot(0x0)/Pci(0x1C,0x0)Pci(0x0,0x3)  - -PciRoot(0x0)/Pci(0x1C,0X0)/Pci(0x0,0x3)/MAC (E . 41F13EE99F5,0x0)</pre>	(don't select) (don't select)

After the uEFI settings have been applied from the bootable CD, only the greyed top line of each Ethernet port will appear.

#### 11. Press Esc. Select "Processors". Verify the following:

Turbo Mode	<enable> (greyed)</enable>
Processor Performance	<lnable> (greyed)</lnable>
States	
C-States	<enable> (greyed)</enable>
Package ACPI C-State limit	<acpi c3=""> (greyed)</acpi>
C1 Enhanced Mode	<enable> (greyed)</enable>
Hyper-Threading	<enable></enable>
Execute Disable Bit	<enable></enable>
Intel Virtualization	<enable></enable>
Technology	
Hardware Prefetcher	<enable></enable>
Adjacent Cache Prefetch	<enable></enable>
DCU Streamer Prefetcher	<enable></enable>
DCU IP Prefetcher	<enable></enable>

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Direct Cache Access (DCA)	<disable></disable>
Cores in CPU Package	<all></all>
QPI Link Frequency	<max performance=""> (greyed)</max>

12. Press "Esc". Select "Memory". Verify the following:

System Memory Details

Page Policy

32 GB
1.5V
<independent></independent>
<max performance="">(greyed)</max>
<disable>(greyed)</disable>
<numa></numa>

<Adaptive>

13. Select "System Memory Details" . Verify the following:

DIMM Details For Processor 1 DIMM Details for Processor 2

14. Select "DIMM Details for Processor 1". Verify the following:

DIMM	1	Present,	Enabled
DIMM	2	[EMPTY]	
DIMM	3	[EMPTY]	
DIMM	4	Present,	Enabled
DIMM	5	[EMPTY]	
DIMM	6	[EMPTY]	
DIMM	7	[EMPTY]	
DIMM	8	[EMPTY]	
DIMM	9	Present,	Enabled
DIMM	10	[EMPTY]	
DIMM	11	[EMPTY]	
DIMM	12	Present,	Enabled

Verify that each "Present, Enabled" DIMM has the characteristics: Capacity: 8 GB Technology: DDR3

#### 15. Press "Esc". Select "DIMM Details for Processor 2". Verify the following:

DIMM	13	[EMPTY]
DIMM	14	[EMPTY]
DIMM	15	[EMPTY]
DIMM	16	[EMPTY]
DIMM	17	[EMPTY]
DIMM	18	[EMPTY]
DIMM	19	[EMPTY]
DIMM	20	[EMPTY]
DIMM	21	[EMPTY]
DIMM	22	[EMPTY]
DIMM	23	[EMPTY]
DIMM	24	[EMPTY]

16. Press "Esc" 3 times. Select "Devices and I/O Ports". Verify the following:

Configure the onboard SATA <AHCI> (Important!!) ports as <Onboard Device> [Changed from default] Active Video PCI Express Native Control <Disable> [Changed from default] PCI 64-Bit Resource <Enable> [Changed from default] Allocation MM Config Base <2GB> Enable / Disable Onboard Devices(s) Enable / Disable Adapter Option ROM Support Set Option ROM Execution Order PCIe Gen1/Gen2/Gen3 Speed Selection Console Redirection Settings

17.	Select	"Enable	/ Disable	Onboard	Devices(s)".	Verify	the following:
-----	--------	---------	-----------	---------	--------------	--------	----------------

Ethernet	1	<enable></enable>
Ethernet	2	<enable></enable>
Ethernet	3	<enable></enable>
Ethernet	4	<enable></enable>
Slot 1		<enable></enable>
Slot 2		<enable></enable>
Slot 3		<enable></enable>

#### 18. Press "Esc" . Select "Enable / Disable Adapter Option ROM Support". Verify the following:

Enable / Ethernet Ethernet Ethernet Slot 1 Slot 2 Slot 3	Disable 1 2 3 4	Legacy	Option F <disa <disa <disa <disa <enat <enat <enat< th=""><th>ROM(s) hble&gt; hble&gt; hble&gt; hble&gt; hle&gt; hle&gt; hle&gt;</th><th>(greyed) [Changed [Changed [Changed [Changed</th><th>from from from from</th><th>default] default] default] default]</th></enat<></enat </enat </disa </disa </disa </disa 	ROM(s) hble> hble> hble> hble> hle> hle> hle>	(greyed) [Changed [Changed [Changed [Changed	from from from from	default] default] default] default]
Enable / Ethernet Ethernet Ethernet Slot 1 Slot 2 Slot 3	Disable 1 2 3 4	uEFI Op	tion ROM <disa <disa <disa <disa <enat <enat <enat< td=""><td>l(s) ble&gt; ble&gt; ble&gt; ble&gt; ble&gt; ble&gt; ble&gt; ble&gt;</td><td>[Changed [Changed [Changed [Changed</td><td>from from from from</td><td>default] default] default] default]</td></enat<></enat </enat </disa </disa </disa </disa 	l(s) ble> ble> ble> ble> ble> ble> ble> ble>	[Changed [Changed [Changed [Changed	from from from from	default] default] default] default]

19. Press "Esc" . Select "Set option ROM execution order". Verify the following:

Set option ROM execution <br/>
order <br/>

<pr

20. Press "Esc". Select "PCIe Gen1/Gen2/Gen3 Speed Selection". Verify the following:

Slot	1	<gen3></gen3>
Slot	2	<gen3></gen3>
Slot	3	<gen3></gen3>

21. Press "Esc". Select "Console Redirection Settings". Verify the following:

COM Port 1 COM Port 2 Remote Console Serial Port Sharing Serial Port Access Mode Legacy Option ROM Display COM1 Settings	<enable> <enable> <disable> <disable> <disable> <com 1="" port=""></com></disable></disable></disable></enable></enable>
Com1 Baud Rate Com1 Data Bits Com1 Parity Com1 Stop Bits Com1 Terminal Emulation Com1 Active After Boot Com1 Flow Control COM2 Settings	<115200> <8> <none> &lt;1&gt; <ansi> <disable> <disable></disable></disable></ansi></none>
Com2 Baud Rate Com2 Data Bits Com2 Parity Com2 Stop Bits	<115200> <8> <none> &lt;1&gt;</none>

Com2 Terminal Emulation	<ansi></ansi>
Com2 Active After Boot	<disable></disable>
Com2 Flow Control	<disable></disable>

22. Press "Esc" 2 times. Select "Power". Verify the following:

Active Energy Manager	<capping disabled=""> [Changed from default]</capping>
Power/Performance Bias	<platform controlled=""> (greyed)</platform>
Platform Controlled Type	<efficiency -="" favor<="" td=""></efficiency>
	Performance> (greyed)
Workload Configuration	<balanced></balanced>

23. Press "Esc". Select "Operating Modes". Verify the following:

Choose Operating Mode

<Custom Mode> [Changed from default]

<max performance=""></max>
<disable></disable>
<enable></enable>
<enable></enable>
<max performance=""></max>
<enable></enable>
<enable></enable>
<acpi c3=""></acpi>
<platform controlled=""></platform>
<efficiency -="" favor<="" td=""></efficiency>
Performance>

Press "Esc". Select "Legacy Support". Verify the following:

<enable></enable>
<disable></disable>
<enable></enable>
<disable></disable>
<enable></enable>

24. Press "Esc". Select "System Security". Verify the following:

[TPM Status] (greyed)	
TPM Physical Presence	Not Asserted
TPM Device State	TPM Enabled/Activated
TPM TXT Status	TXT Disabled
MOR Status	MOR Disabled

Refresh TPM Status

[TPM Settings](greyed)	
TPM Device	<enable></enable>
TPM State	<activate></activate>
TXT State	<disable></disable>
MOR State	<disable></disable>
TPM Force Clear	

25. Press "Esc". Select "Integrated Management Module". Verify the following:

Power Res	stor	re Po	olicy
Commands	on	USB	Interface

<Always On> <Enabled>

(don't select)

Network Configuration

Reset IMM to Defaults (don't select)

Reset IMM (don't select)

26. Select "Network Configuration". Verify the following:

Network Interface Port	<dedicated></dedicated>
Fail-Over Rule	<none></none>
Burned-in MAC Address	E4-1F-13-EE-99-F6 (greyed)
Hostname	IMM2-e41f13ee99f6 (varies)
DUCD Control	ADUCD with Faileways
DHLP CONTROL	<pre><dhcp failover="" with=""></dhcp></pre>
IP Address	192.168.70.125 (greyed)

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	Subnet Mask Default Gateway	255.255.255.0 0.0.0.0	(greyed) (greyed)
	IP6 Local Link Address	<enabled> FE80::E61F:13FF:F</enabled>	EEE:99F6/64 (varies)
	VLAN Support	<disabled></disabled>	
	Advanced IMM Ethernet Setup Save Network Settings	(select only if c	changes were made)
Press "Es	c" twice. Select <b>"Recovery"</b> . V	erify the followin	g:
	POST Attempts System Recovery Backup Bank Management Disk GPT Recovery		
Select "PO	<b>OST Attempts"</b> . Verify the fo	llowing:	
	POST Attempts Limit	<3>	
Press "Es	c". Select <b>"System Recovery"</b> .	Verify the follow	ing:
	POST Watchdog Timer POST Watchdog Time Value Reboot System on NMI Halt On Severe Error	<disable> [5] (greyed) <enable> <enable> [Cha</enable></enable></disable>	unged from default]
Press "Es	c". Select <mark>"Backup Bank Man</mark>	agement". Verify	the following:
	Backup Bank Managment Method	<user managed=""></user>	
Press "Es	c". Select <b>"Disk GPT Recove</b>	ry". Verify the foll	owing:
	Disk GPT Recovery	<automatic></automatic>	C
Press "Es	c" twice. Select <b>"Storage"</b> . Ver	rify the following:	
	LSI SAS2 MPT Controller SAS2 PCISubDeviceId:0x40E, PCIBus PCIFunc:0x0, PCISlot:0x3)	004, (do not :0x1B, PCIDevice:0	select) Dx0,
Press "Es	c". Select <b>"Network"</b> . Verify t	he following:	
	Global Network Settings Network Boot Configuration iSCSI Configuration	(greyed) (don't select)	
	Network Device List MAC:E4:1F:13:EE:99:F2 Onboa MAC:E4:1F:13:EE:99:F3 Onboa MAC:E4:1F:13:EE:99:F4 Onboa MAC:E4:1F:13:EE:99:F5 Onboa After the uEFI settings have	(greyed) rd PFA 6:0:0 rd PFA 6:0:1 rd PFA 6:0:2 rd PFA 6:0:3 been applied from	(varies) (varies) (varies) (varies) the bootable CD, the Ethernet
	MAC addresses will no longer	appear.	
Select "N	etwork Boot Configuration".	Verify the follow	'ing:
	MAC:E4:1F:13:EE:99:F2 Onboa MAC:E4:1F:13:EE:99:F3 Onboa MAC:E4:1F:13:EE:99:F4 Onboa MAC:E4:1F:13:EE:99:F5 Onboa	rd PFA 6:0:0 rd PFA 6:0:1 rd PFA 6:0:2 rd PFA 6:0:3	(varies) (varies) (varies) (varies)
Select the	e first MAC address. Verify the	he following:	
	PXE Mode Configuration PXE Mode PXE Internet Protocol	(greyed) <disabled> [ <ipv4></ipv4></disabled>	Changed from default]
	iSCSI Mode Configuration Attempt not found	(greyed)	

Save Changes

27.

28.

29.

30.

31.

32.

33.

34.

35.

**Note:** Select "Save Changes" if you changed the PXE Mode, then press "Esc" and make the same change on the other 3 MAC addresses. If you have applied the uEFI settings from the bootable CD, the "Network Boot Configuration" screen will have no selectable entries.

**36**. Press "Esc". Select "**Driver Health**". Verify the following:

The platform is: Healthy (greyed) Driver/Controller Status: (greyed) POST Attempts Driver All managed controllers/devices - Healthv Partition Driver(MBR/GTP/El Torito) All managed controllers/devices - Healthy Intel (R) PRO/1000 4.6.18 PCI-E All managed controllers/devices - Healthy Intel (R) PRO/1000 4.6.18 PCI-E All managed controllers/devices - Healthy Intel (R) PRO/1000 4.6.18 PCI-E All managed controllers/devices - Healthy Intel (R) PRO/1000 4.6.18 PCI-E All managed controllers/devices - Healthy 37. Press "Esc" twice. Select "Date and Time". Verify the following:

System Date MM/DD/YYYY

ystem Da	ate	ויויו/ 10/ אין א
ystem T	ime	HH/MM/SS

38. Press "Esc". Select "Start Options". Verify the following:

Hard Disk O

**Note:** The initial Start Option list may be different. The above list will be displayed after you have configured the Boot Manager options below.

39. Press "Esc". Select "Boot Manager". Verify the following:

Primary Boot Sequence (greyed) Add Boot Option Delete Boot Option Change Boot Order Secondary (WOL) Boot Sequence (greyed) Add WOL Boot Option Delete WOL Boot Option Change WOL Boot Order Boot Other (greyed) Boot From File (don't select) Boot From Device (don't select) Select Next One-Time Boot (don't select) System (greyed) Boot Modes Reset System (don't select)

40. Select "Delete Boot Option". Verify the following:

**Note:** Order may vary.

CD/DVD Rom	[X]	
Hard Disk 0	[]	/
PXE Network	[X]	(press "space bar")

41. Select "Commit Changes". Verify the following:

Hard Disk 0 []

42. Press "Esc". Select "Delete WOL Boot Option". Verify the following:

PXF Network	ГХЛ	(press "space bar")
		(hiess shace pair)
CD/DVD Rom	[X]	
Hard Disk 0	[]	

[]

**43**. Select "**Commit Changes**". Verify the following:

Hard Disk 0

44. Press "Esc". Select "Boot Modes". Verify the following:

System Boot Mode <Legacy Only> [Changed from default] Optimized Boot <Enable> Quiet Boot <Enable>

45. Press "Esc" 2 times. Select "System Event Logs". Verify the following:

Post Event Viewer

System Event Log Clear System Event Log

Note: If you wish, view the "Post Event Viewer" and "System Event Log".

- 46. Select "Clear System Event Log" and Press "Enter".
- 47. Press "Esc". Select "User Security". Verify the following:

Set Power-On Password Clear Power-On Password

Set Admin Password Clear Admin Password Select "Clear Power-On Password" and verify that it is not set. Select "Clear Admin Password" and verify that it is not set.

- 48. Press "Esc". Select"Save Settings".
- 49. Select "Exit Setup".

Answer "Y" for the "Do you want to exit Setup Utility". The system will fail in its attempt to boot (no bootable image). At the firmware screen, press "F2" to start diagnostics.

#### END OF PROCEDURE

## 2461 configuration

Go to the Service Guide for 2461 Support Element for all service information on the 2461 Support Element. 1

This includes information to verify the configuration for the 2461 Support Element, which is located in Т

+ the "Appendix B. 2461 configuration" in the Service Guide for 2461 Support Element.

## Replacing a T4x/T6x/T500 ThinkPad Support Element

Note: Before replacing a Support Element, use the procedure in "Failures on the ThinkPad Support Element console" on page 86 to isolate the failure. You should replace the ThinkPad only when you have isolated the failure to a ThinkPad component *not* in the following list:

- Memory DIMM
- Backup battery
- PC card network adapter (token ring or Ethernet)
- Network cable (token ring or Ethernet)
- Hard Disk
- CD or DVD-ROM drive
- System power-on module

- 1. Depending on the customer situation, you may want to order the ThinkPad now before proceeding. If possible, ensure that the following have been performed:
  - If directed, Licensed Internal Code has been reloaded.
  - ThinkPad configuration has been verified, and the Configuration Diskette has been run. See "CMOS configuration procedures for ThinkPad-based Support Elements" on page 102.
  - System unit diagnostics have been run.
  - Network adapter diagnostics have been run.
  - The failing FRU has been isolated to a ThinkPad and is not on the Replaceable ThinkPad FRUs list.
  - All removable media (diskettes, CDs, memory sticks) have been removed.
  - If you have verified all of the conditions in the list, go to step 2.
- 2. Remove the ThinkPad from the tray.

The T4x/T6x/T500 Support Element uses a retaining bracket mounted at the rear of the tray to secure the Support Element to the tray. Use the following procedure to remove a Support Element:

- **a**. At the left side of the Support Element, disconnect all cables and remove any adapters that protrude through the side of the tray.
- b. At the rear of the Support Element, disconnect the power cable.
- c. At the rear of the tray, use a 8mm nutdriver or 8mm socket on a rachet wrench to loosen the two screws 1 that hold the Support Element retaining bracket to the tray.



d. Slide the locking mechanism on the retaining bracket **2** toward you to release the body of the computer from the tray.



e. Lift the Support Element slowly out of the tray **3**.



- 3. From the ThinkPad Support Element, remove:
  - The network adapter cards (Ethernet or token ring) in the upper and lower PCMCIA slots (if installed).
  - The system power-on module from the bottom of the computer.
- 4. Install the new ThinkPad Support Element.

Before installing a Support Element, ensure the power-on module is securely connected to the bottom of the Support Element.

a. Place the Support Element slowly into the tray **1**.



b. Slide the locking mechanism on the retaining bracket **2** toward the server to secure the body of the computer to the tray.



c. At the rear of the tray, use a 8mm nutdriver or 8mm socket on a rachet wrench to tighten the two screws 3 that hold the Support Element retaining bracket to the tray.



- d. At the rear of the Support Element, connect the power cable.
- 5. Run diagnostics on the replacement ThinkPad using the ThinkPad's HMM.
- 6. Install the network adapter cards that you removed from the failing T4x ThinkPad into the replacement T4x ThinkPad. Reconnect all cables previously removed from the machine.

Note: T6x and T500 Thinkpads do not have removable network cards.

- 7. Configure the ThinkPad. Refer to "CMOS configuration procedures for ThinkPad-based Support Elements" on page 102.
- **8.** Load the Licensed Internal Code and restore the back-up data. Refer to "Restore Support Element hard disk information" in **Chapter 2. Console information** in the *Service Guide* for the server to which this console is connected.
- 9. Perform the following on the replacement ThinkPad:
  - Power off the ThinkPad.
  - If there is an external diskette drive connected to this ThinkPad, make certain there is no diskette in the drive.
  - Power on the ThinkPad.
  - Return the ThinkPad to the operating position.
- **10**. Close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.

## END OF PROCEDURE.

# Replacing a T510/ T520/ W520/ T530 ThinkPad Support Element

**Note:** Before replacing a Support Element, use the procedure in "Failures on the ThinkPad Support Element console" on page 86 to isolate the failure. You should replace the ThinkPad only when you have isolated the failure to a ThinkPad component *not* in the following list:

- Memory DIMM
- Backup battery
- Hard Disk
- CD or DVD-ROM drive
- System power-on module

## • Smart Card

- 1. Depending on the customer situation, you may want to order the ThinkPad now before proceeding. If possible, ensure that the following have been performed:
  - If directed, Licensed Internal Code has been reloaded.
  - ThinkPad configuration has been verified, and the Configuration Diskette has been run. See "CMOS configuration procedures for ThinkPad-based Support Elements" on page 102.
  - System unit diagnostics have been run.
  - The failing FRU has been isolated to a ThinkPad and is not on the Replaceable ThinkPad FRUs list.
  - All removable media (diskettes, CDs, memory sticks, smart cards) have been removed.

# Note: For those customers who have the Flash Express[®] feature installed, go to Step 2. Otherwise, proceed to Step 3 on page 149.

If you have verified all of the conditions in the list, go to step 3 on page 149.

2.

**Note:** Removal of the smart card media from the Support Element (either Primary or Alternate) should occur prior to removal of the ThinkPad from the tray.

a. Remove the smart card from the slot on the side of the Support Element. When you have completed this step, continue to Step 3 on page 149.



**3**. Remove the ThinkPad from the tray.

The T510, T520, W520, and T530 Support Elements use a retaining bracket mounted at the rear of the tray to secure the Support Element to the tray. Use the following procedure to remove a Support Element:

- **a.** At the right side of the Support Element, disconnect the Ethernet cable that protrudes through the side of the tray.
- b. At the rear of the Support Element, disconnect the power cable.
- c. At the rear of the tray, use a 8mm nutdriver or 8mm socket on a rachet wrench to loosen the two screws 1 that hold the Support Element retaining bracket to the tray.



d. Remove the M3 screw **2** located on the bottom of the tray.



e. Slide the locking mechanism on the retaining bracket 3 toward you to release the body of the computer from the tray.



f. Lift the Support Element slowly out of the tray **4**.



- 4. From the ThinkPad Support Element, remove:
  - The system power-on module from the bottom of the computer.
- 5. Install the new ThinkPad Support Element.

Before installing a Support Element, ensure the power-on module is securely connected to the bottom of the Support Element.

a. Place the Support Element slowly into the tray **1**.



b. Slide the locking mechanism on the retaining bracket **2** toward the server to secure the body of the computer to the tray.



c. At the rear of the tray, use a 8mm nutdriver or 8mm socket on a rachet wrench to tighten the two screws 3 that hold the Support Element retaining bracket to the tray.



d. Tighten the M3 screw 4 located on the bottom of the tray to secure the ThinkPad to the tray.



e. At the rear of the Support Element, connect the power cable.

- 6. Run diagnostics on the replacement ThinkPad using the ThinkPad's HMM.
- 7. Reconnect all cables previously removed from the machine.
- 8. Configure the ThinkPad. Refer to "CMOS configuration procedures for ThinkPad-based Support Elements" on page 102.
- **9**. Load the Licensed Internal Code, and restore the back-up data. Refer to "Restore Support Element hard disk information" in **Chapter 2. Console information** in the *Service Guide* for the server to which this console is connected.
- 10. Perform the following on the replacement ThinkPad:
  - Power off the ThinkPad.
  - If there is an external diskette drive connected to this ThinkPad, make certain there is no diskette in the drive.
  - Reinstall all removable media (diskettes, CDs, memory sticks, smart cards) previously removed.

Note: For smart card reinstallation, proceed as follows:

**a**. Position the smart card as shown so that the exposed chip is face-up and on the inside of the card. Insert the smart card into the slot on the side of the Support Element.



- Power on the ThinkPad.
- Return the ThinkPad to the operating position.
- **11**. Close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.

## END OF PROCEDURE.

# Chapter 4. Common information and procedures

This section contains procedures and information common to Hardware Management Consoles and Support Elements.

Table 20. Information Common to Hardware Management Consoles and Support Elements

Торіс	Go To
Hard disk errors	"Hard disk errors" on page 160
Diskette errors	"Diskette errors" on page 167
7914 Operator information panel	"7914 Operator information panel" on page 168
Token-ring LAN errors	"Token-Ring LAN errors" on page 173
Ethernet LAN errors	"Ethernet LAN errors" on page 178
Modem settings	"External Modem Settings" on page 22
Identifying network adapters	Figure 6 on page 170, Table 23 on page 178, and Table 24 on page 178
Token-ring adapter LEDs	"Token Ring: general information" on page 169
Ethernet adapter LEDs	"Ethernet status LEDs" on page 179
Task procedures for HMCs or SEs	Help system on the Hardware Management Console or Support Element
Shutting down a console	"Console shut down" on page 182
Closing a call	The <i>Service Guide</i> for the server to which the console is connected

# Procedure for 7327 Server IMM, DSA Firmware, VPD and uEFI Settings

**Note:** UEFI (formally BIOS) settings are modified using the IBM Advanced Settings Utility (ASU) program. For the 7327 server, use CD part number 00NK088 Control Level 1.

Boot the CD and make the appropriate selection from the menu:

1. Firmware - Flash IMM1, UEFI, DSA

|

Choice 1 is used when the system firmware is downlevel.

2. VPD - Alter Machine Type/Model and Serial Number

Choice 2 is used when the 7327 system board is replaced in the field.

 Setup - Initialize System Setup Data Choice 3 is used to apply the custom UEFI settings.

**Note:** As a general rule, we do not backlevel the system firmware. You should check the Product Data firmware levels as described in the "System Configuration" section determine your current firmware levels before you attempt to apply firmware updates.

Prior to running step 3 from the CD to apply the custom uEFI settings, perform the following steps:

- 1. Power on or reboot the server.
- **2**. Press the F1 key to enter SETUP when you see the "Configuring system" line appear below the System x splash screen.
- 3. Select the "Load Default Settings" choice on the System Configuration and Boot Management screen.

- 4. Place the bootable CD in the DVD drive, then select "Exit Setup" and reply "Y" when prompted.
- 5. Select 3 to apply the uEFI settings when the CD menu appears.

The next screen will list the IMM, UEFI and DSA firmware levels in effect when the UEFI settings were saved. System x uses name/value pairs to apply the UEFI settings, so it will usually be OK to apply the settings to later firmware levels. If a new level of IMM or UEFI firmware requires us to change a new default value, a new version of the CD will be released.

When you apply the UEFI settings, you will see the Advanced Settings Utility program start and a long list of name/value pairs will scroll across the screen. At the end you may see a few settings that fail to apply. This is normal. Shut down the 7327 when prompted, then remove the AC power cord, wait 30 seconds and insert the AC power cord. This forces an IMM reset to ensure that the IMM setting changes are applied.

The 7327 may power itself on automatically. If it does not, power it on so that you can remove the CD.

## END OF PROCEDURE

# Procedure for 7382 Server IMM, DSA Firmware, VPD and uEFI Settings

**Note:** UEFI (formally BIOS) settings are modified using the IBM Advanced Settings Utility (ASU) program. For the 7382 server, use CD part number 00NK089 Control Level 3 for Driver 15 and CD part number 00NK090 Control Level 3 for Drivers 22 and 27.

Boot the CD and make the appropriate selection from the menu:

1. Firmware - Flash IMM2, UEFI, DSA

Choice 1 is used when the system firmware is downlevel.

- 2. VPD Alter Machine Type/Model and Serial Number
- Choice 2 is used when the 7382 system board is replaced in the field.
- 3. Setup Initialize System Setup Data

Choice 3 is used to apply the custom UEFI settings.

**Note:** As a general rule, we do not backlevel the system firmware. You should check the Product Data firmware levels as described in the "System Configuration" section determine your current firmware levels before you attempt to apply firmware updates.

When the firmware is downlevel, you may find that the UXSPI (UpdateXpress System Pack Installer) code will apply all three firmware updates concurrently even though you specified to update just the IMM2 firmware. This is normal. After it completes and you pull and replace the AC power cords, check the firmware levels to see if they all applied and re-do any that failed.

Prior to running step 3 from the CD to apply the custom uEFI settings, perform the following steps:

- 1. Power on or reboot the server.
- 2. Press the F1 key to enter SETUP when you see the "Connecting Boot Devices and Adapters" line appear below the System x splash screen.
- 3. Select the "Load Default Settings" choice on the System Configuration and Boot Management screen.
- 4. Place the bootable CD in the DVD drive, then select "Exit Setup" and reply "Y" when prompted.
- 5. Select 3 to apply the uEFI settings when the CD menu appears.

The next screen will list the IMM2, UEFI and DSA firmware levels in effect when the UEFI settings were saved. System x uses name/value pairs to apply the UEFI settings, so it will usually be OK to apply the

settings to later firmware levels. If a new level of IMM2 or UEFI firmware requires us to change a new default value, a new version of the CD will be released.

# After the script sets the IMM userID and password, you will be prompted select either SE or HMC for this 7382 so that the script can select the appropriate uEFI settings file.

When you apply the UEFI settings, you will see the Advanced Settings Utility program start and a long list of name/value pairs will scroll across the screen. At the end you may see a few settings that fail to apply. This is normal. Shut down the 7382 when prompted, then remove the AC power cord, wait 30 seconds and insert the AC power cord. This forces an IMM reset to ensure that the IMM setting changes are applied.

The 7382 may power itself on automatically. If it does not, power it on so that you can remove the CD.

END OF PROCEDURE

## Procedure for 7914 Server IMM, DSA Firmware, VPD and uEFI Settings

**Note:** UEFI (formally BIOS) settings are modified using the IBM Advanced Settings Utility (ASU) program. For the 7914 server, use CD part number 00NK091 Control Level 3.

Boot the CD and make the appropriate selection from the menu:

- Firmware Flash IMM2, UEFI, DSA Choice 1 is used when the system firmware is downlevel.
- VPD Alter Machine Type/Model and Serial Number Choice 2 is used when the 7914 system board is replaced in the field.
- Setup Initialize System Setup Data Choice 3 is used to apply the custom UEFI settings.

**Note:** As a general rule, we do not backlevel the system firmware. You should check the Product Data firmware levels as described in the "System Configuration" section determine your current firmware levels before you attempt to apply firmware updates.

When the firmware is downlevel, you may find that the UXSPI (UpdateXpress System Pack Installer) code will apply all three firmware updates concurrently even though you specified to update just the IMM2 firmware. This is normal. After it completes and you pull and replace the AC power cords, check the firmware levels to see if they all applied and re-do any that failed.

Prior to running step 3 from the CD to apply the custom uEFI settings, perform the following steps:

- 1. Power on or reboot the server.
- 2. Press the F1 key to enter SETUP when you see the "Connecting Boot Devices and Adapters" line appear below the System x splash screen.
- 3. Select the "Load Default Settings" choice on the System Configuration and Boot Management screen.
- 4. Place the bootable CD in the DVD drive, then select "Exit Setup" and reply "Y" when prompted.
- 5. Select 3 to apply the uEFI settings when the CD menu appears.

The next screen will list the IMM2, UEFI and DSA firmware levels in effect when the UEFI settings were saved. System x uses name/value pairs to apply the UEFI settings, so it will usually be OK to apply the settings to later firmware levels. If a new level of IMM2 or UEFI firmware requires us to change a new default value, a new version of the CD will be released.

After the script sets the IMM userID and password, you will be prompted select either SE or HMC for this 7914 so that the script can select the appropriate uEFI settings file.

When you apply the UEFI settings, you will see the Advanced Settings Utility program start and a long list of name/value pairs will scroll across the screen. At the end you may see a few settings that fail to apply. This is normal. Shut down the 7914 when prompted, then remove the AC power cord, wait 30 seconds and insert the AC power cord. This forces an IMM reset to ensure that the IMM setting changes are applied.

The 7914 may power itself on automatically. If it does not, power it on so that you can remove the CD.

## END OF PROCEDURE

# Procedure for 7327 Server uEFI Setting Changes Booting from CD/DVD

The current uEFI settings applied by the bootable CD are "enhanced security" settings that will only boot from the hard drive. This section describes the changes/procedures required to boot from a CD or DVD so that we can load code on a blank hard drive.

1. Press the F1 key to enter SETUP when you see the "Configuring system" line appear below the System x splash screen.

**Note:** Note that a machine in the field may have a customer-assigned admin password. If this is the case, the customer will need to provide the password (or temporarily remove the admin password). If the customer has set an admin password, you will be prompted for it in order to change the uEFI settings.

- 2. Once you are on the "System Configuration and Boot Management" screen, select "Boot Manager" then select "Add Boot Option" followed by then "CD/DVD Rom". There will be a delay, then the screen will redraw and "CD/DVD Rom" will not be one of the choices.
- 3. Press "Esc" and select "Change Boot Order".
- 4. Press ENTER to make changes, then press the "-" (minus) key to move "Hard Disk 0" below "CD/DVD Rom".
- 5. Then press ENTER and select "Commit Changes". There will be a delay, then the screen will redraw.
- 6. Press "Esc" 2 times, then select "Save Settings". The screen will blank for a bit then return.
- 7. Now select **"Exit Setup"**, press "Y" to exit and the system will boot from a CD or DVD in the DVD drive.
- 8. To put the settings back to their original values, press the F1 as directed above while the machine is rebooting and enter the admin password if one is set.
- 9. Once you are back to the "System Configuration and Boot Management" screen, select "Boot Manager" then "Delete Boot Option".
- 10. Press the space bar to place an "x" next to the CD/DVD Rom entry.
- 11. Select "Commit Changes".
- 12. Press "Esc" 2 times then select "Save Settings".
- **13**. Select **"Exit Setup"** then press "Y" to reboot.

#### END OF PROCEDURE

# Procedure for 7382 Server uEFI Setting Changes Booting from CD/DVD

The current uEFI settings applied by the bootable CD are "enhanced security" settings that will only boot from the hard drive. This section describes the changes/procedures required to boot from a CD or DVD so that we can load code on a blank hard drive.

1. Press the F1 key to enter SETUP when you see the "Connecting Boot Devices and Adapters" line appear below the System x splash screen.

**Note:** Note that a machine in the field may have a customer-assigned admin password. If this is the case, the customer will need to provide the password (or temporarily remove the admin password). If the customer has set an admin password, you will be prompted for it in order to change the uEFI settings.

- 2. Once you are on the "System Configuration and Boot Management" screen, select "Boot Manager" then select "Add Boot Option" followed by "Generic Boot Option" then "CD/DVD Rom". There will be a delay, then the screen will redraw and "CD/DVD Rom" will not be one of the choices.
- 3. Press "Esc" 2 times and select "Change Boot Order".
- 4. Press ENTER to make changes, then press the "-" (minus) key to move "Hard Disk 0" below "CD/DVD Rom".
- 5. Then press ENTER and select "Commit Changes". There will be a delay, then the screen will redraw.
- 6. Press "Esc" 2 times, then select "Save Settings". The screen will blank for a bit then return.
- 7. Now select **"Exit Setup"**, press "Y" to exit and the system will boot from a CD or DVD in the DVD drive.
- 8. To put the settings back to their original values, press the F1 as directed above while the machine is rebooting and enter the admin password if one is set.
- 9. Once you are back to the "System Configuration and Boot Management" screen, select **"Boot Manager"** then **"Delete Boot Option"**.
- 10. Press the space bar to place an "x" next to the CD/DVD Rom entry.
- 11. Select "Commit Changes".
- 12. Press "Esc" 2 times then select "Save Settings".
- 13. Select "Exit Setup" then press "Y" to reboot.

#### END OF PROCEDURE

# Procedure for 7914 Server uEFI Setting Changes Booting from CD/DVD

The current uEFI settings applied by the bootable CD are "enhanced security" settings that will only boot from the hard drive. This section describes the changes/procedures required to boot from a CD or DVD so that we can load code on a blank hard drive.

1. Press the F1 key to enter SETUP when you see the "Connecting Boot Devices and Adapters" line appear below the System x splash screen.

**Note:** Note that a machine in the field may have a customer-assigned admin password. If this is the case, the customer will need to provide the password (or temporarily remove the admin password). If the customer has set an admin password, you will be prompted for it in order to change the uEFI settings.

- 2. Once you are on the "System Configuration and Boot Management" screen, select "Boot Manager" then select "Add Boot Option" followed by "Generic Boot Option" then "CD/DVD Rom". There will be a delay, then the screen will redraw and "CD/DVD Rom" will not be one of the choices.
- 3. Press "Esc" 2 times and select "Change Boot Order".
- 4. Press ENTER to make changes, then press the "-" (minus) key to move "Hard Disk 0" below "CD/DVD Rom".
- 5. Then press ENTER and select "Commit Changes". There will be a delay, then the screen will redraw.
- 6. Press "Esc" 2 times, then select "Save Settings". The screen will blank for a bit then return.
- 7. Now select **"Exit Setup"**, press "Y" to exit and the system will boot from a CD or DVD in the DVD drive.
- **8**. To put the settings back to their original values, press the F1 as directed above while the machine is rebooting and enter the admin password if one is set.

- 9. Once you are back to the "System Configuration and Boot Management" screen, select **"Boot Manager"** then **"Delete Boot Option"**.
- 10. Press the space bar to place an "x" next to the CD/DVD Rom entry.
- 11. Select "Commit Changes".
- 12. Press "Esc" 2 times then select "Save Settings".
- **13**. Select **"Exit Setup"** then press "Y" to reboot.

## END OF PROCEDURE

# Procedure for 2461 Server uEFI Setting Changes Booting from CD/DVD

Go to "Appendix A. Reloading the hard disk drive" in the Service Guide for 2461 Hardware Management
 Console or the Service Guide for 2461 Support Element for the appropriate information.

# Hard disk errors

Use this procedure when a Repair and Verify window directs you to this chapter and the FRU list contains xxxx_FIXED_DISK or when the customer reports a hard disk problem.

#### | Note:

- Go to the *Service Guide for 2461 Hardware Management Console* for all service information on the 2461 HMC. This includes hard disk error information for the 2461 HMC.
- Go to the *Service Guide for 2461 Support Element* for all service information on the 2461 Support

Element. This includes hard disk error information for the 2461 Support Element.

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1. Use the information in "Testing HMC consoles" on page 24 to test the HMC or "Testing Support Elements" on page 91 to test a Support Element. Select **Hard Disk** problem area.

## Return here when the test is complete, then continue below.

2. Did the hard disk tests fail?

If YES, go to step 3. If NO, go to step 5.

**3.** Exchange the FRUs called by the diagnostics one at a time. For FRU removal and replacement instructions, refer to "Hardware Maintenance Manuals (HMMs)" on page 4 for a list of service documents available for the appropriate machine type.

**Note:** The HMM may refer to the hard disk drive as a CRU. For IBM Z servers, the hard disk drive is always a FRU.

If you exchanged the hard disk, check to see if there are jumpers or tab settings on the new hard disk. **Ensure any jumper or tab settings are the same as on the old drive**.

After each FRU is exchanged, test the repair using the procedure in "Testing HMC consoles" on page 24 *or* in "Testing Support Elements" on page 91. Select **Hard Disk** problem area.

Return here when the test is complete, then continue below.

4. Did the hard disk tests continue to fail?

If YES, call for assistance.

If NO, continue with the next step to restore the licensed internal code.

5. You must **RESTORE the LICENSED INTERNAL CODE** and back up critical data to the new hard disk **USING the FOLLOWING PROCEDURES**:

Note: UFD indicates USB Flash Drive.

FOR A HARDWARE MANAGEMENT CONSOLE (EXCEPT FOR THE 2461 HMC), PROCEED AS FOLLOWS. For the 2461 HMC, go to the *Service Guide for 2461 Hardware Management Console*.

- a. Find the **HWMCA DVD-R** and the **Backup Critical Data UFD** for this HMC. HMC code level 2.13.0 has introduced backup to a FTP server as an alternative to UFD backup. If the HMC code level is 2.13.0 or higher and backup to an FTP server is selected, first ensure you have access to that server.
- b. Insert the **HWMCA DVD-R** in the HMC media reader. If the HMC code is level 2.13.0 or higher, perform the following steps to enable booting from the DVD drive. Otherwise, skip to Step c to boot from media.
  - 1) When you see the **Connecting Boot Devices and Adapters** or **Configuring system** line appear below the System x splash screen, press the **F1 key** to enter **SETUP**.

Note: Configuring system will only appear if the HMC is machine type 7327.

**Note:** A machine in the field may have a customer-assigned administrative password. In this case, the customer will need to provide the password or temporarily remove the password in order to change the uEFI settings.

2) Once you have successfully entered the administrative password and are on the **System Configuration and Boot Management screen**, select **Boot Manager**.

**Note:** In the following step, **Generic Boot Option** is not available if the HMC is machine type 7327.

- 3) Select Add Boot Option then Generic Boot Option followed by CD/DVD Rom. There will be a delay. The screen will then redraw and CD/DVD Rom will not be one of the choices.
- 4) Press Esc 1 time if the HMC is machine type 7327. Then select Change Boot Order. Otherwise, press Esc 2 times and select Change Boot Order.
- 5) Press ENTER to make changes and then press the (minus) key to move Hard Disk 0 below CD/DVD Rom.
- 6) Press **ENTER** and select **Commit Changes**. There will be a delay after which the screen will redraw.
- 7) Press Esc 2 times and select Save Settings. The screen will blank for a moment, then return.
- 8) Select **Exit Setup** and press **Y** to exit. The system will boot from a CD or DVD in the DVD drive.

Note: You will not have to press Ctrl-Alt-Del in the next step.

9) Continue to Step c.

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- c. To boot from media, initialize the HMC by holding down the **Ctrl** key and pressing the **Alt** and **Del** keys at the same time. The HMC will boot from the **HWMCA DVD-R**.
- d. Follow the Install/Recovery prompts on the HMC monitor to restore the Licensed Internal Code.
- e. After the LIC is loaded, you will be directed to insert the **Backup Critical Data UFD**. If the HMC code is level 2.13.0 or higher, select the location of the backup file: USB or FTP server. If the backup is stored in the USB backup, then the process is the same as the one described above. If the backup file is stored in an external FTP server, then select this option. On the next panel, complete the information for the network settings (IP address, gateway). Once this information is completed, then click OK. The next panel that is displayed is the FTP Backup server where you'll enter the information required to access the external backup server (IP address, userid, password, directory where the backup file is located). Once a communication is established to the FTP server, a list of backup files is displayed. Select the appropriate backup file and click OK.
- f. Follow the prompts on the HMC monitor to complete the restore. After the restore is complete, if the HMC code is level 2.13.0 or higher, perform the following steps to remove the DVD drive
- g. from the boot list:
  - 1) Press the **F1 key** while the machine is rebooting and enter the **Admin Password** if one is set.

- 2) Once you are back to the **System Configuration and Boot Management** screen, select **Boot Manager**, then **Delete Boot Option**.
- 3) Press the Space bar to place an X next to the CD/DVD Rom entry.
- 4) Select Commit Changes, press Esc 2 times.
- 5) Select Save Settings then Exit Setup.
- 6) Press **Y** to reboot.

## FOR A T510, T520, W520, or T530 SUPPORT ELEMENT, PROCEED AS FOLLOWS:

- a. Find the SE DVD-R and the Backup Critical Data UFD for this SE.
- b. Insert the **SE DVD-R** in the SE DVD drive.
- c. Initialize the SE by holding down the **Ctrl** key and pressing the **Alt** and **Del** keys at the same time. The SE will boot from the **SE DVD-R**.
- d. Follow the **Hard Disk Reload/Restore** prompts on the SE display panel to restore the Licensed Internal Code.
- e. After the LIC is loaded, you will be directed to insert the **Backup Critical Data UFD**. Follow the prompts on the SE display panel to complete the restore.

# FOR A T500, T6X, or T4X (Dr6X or Dr7X) SUPPORT ELEMENT WITH AN HMC AT Dr8X, PROCEED AS FOLLOWS:

- a. Restore the Base SE LIC using the SE Base Restore DVD.
- b. After successful completion of the SE Base LIC Restore, remove the **SE Base Restore DVD** and insert the **Dr6X/7X Add UFD Support for SE HDD Restore CD** and reboot.
- c. Following the instructions on the screen, remove the Dr6X/7X Add UFD Support for SE HDD Restore CD and insert the backup UFD.
- d. Reboot the SE.

#### FOR A 7914 SUPPORT ELEMENT, PROCEED AS FOLLOWS:

- a. Insert the **SE DVD-R** in the SE DVD drive. Perform the following steps to enable booting from the DVD drive:
  - 1) When you see the **Connecting Boot Devices and Adapters** line appear below the System x splash screen, press the **F1 key** to enter **SETUP**.

**Note:** A machine in the field may have a customer-assigned administrative password. In this case, the customer will need to provide the password or temporarily remove the password in order to change the uEFI settings.

- 2) Once you have successfully entered the administrative password and are on the **System Configuration and Boot Management screen**, select **Boot Manager**.
- 3) Select Add Boot Option then Generic Boot Option followed by CD/DVD Rom. There will be a delay. The screen will then redraw and CD/DVD Rom will not be one of the choices.
- 4) Press Esc 2 times and select Change Boot Order.
- 5) Press ENTER to make changes and then press the (minus) key to move Hard Disk 0 below CD/DVD Rom.
- 6) Press **ENTER** and select **Commit Changes**. There will be a delay after which the screen will redraw.
- 7) Press Esc 2 times and select Save Settings. The screen will blank for a moment, then return.
- 8) Select **Exit Setup** and press **Y** to exit. The system will boot from a CD or DVD in the DVD drive.
- b. The SE will boot from the SE DVD-R.
- **c.** Follow the Hard Disk Reload/Restore prompts on the SE display panel to restore the Licensed Internal Code.
- d. After the LIC is loaded, you will be directed to remove the SE DVD-R and reboot the system.
- e. Follow the prompts on the SE display panel to complete the restore.
- f. After the restore is complete, perform the following steps to remove the DVD drive from the boot list:
  - 1) Press the F1 key while the machine is rebooting and enter the Admin Password if one is set.
  - 2) Once you are back to the System Configuration and Boot Management screen, select Boot Manager, then Delete Boot Option.
  - 3) Press the Space bar to place an X next to the CD/DVD Rom entry.
  - 4) Select **Commit Changes**, press **Esc** 2 times.
  - 5) Select Save Settings then Exit Setup.
  - 6) Press **Y** to reboot

## FOR A 2461 SUPPORT ELEMENT, PROCEED AS FOLLOWS:

For a 2461 Support Element (Model 2461 SE-1 or Model 2461 SE-2), go to the *Service Guide for* 2461 *Support Element*.

## END OF CODE LOAD PROCEDURES

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6. Test using the procedure in "Testing HMC consoles" on page 24 *or* "Testing Support Elements" on page 91. Select **Run All Selected** problem area.

Return here when the test is complete, then continue below.

Did any of the hard disk tests fail?

If **YES**, exchange the FRUs called by the diagnostics one at a time. For FRU removal and replacement instructions, refer to the HMM for the appropriate machine type on the Diagnostic CD-ROM. When the problem is resolved, go to 7.

If **NO**, continue with the next step to close the call.

If the tests do not fail and the problem remains, call for assistance.

7. Close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.

#### END OF PROCEDURE.

## **Diskette errors**

Use this procedure when a Repair and Verify window directs you to this chapter and the FRU list contains xxxx_DISKETTE or xxxx_DISKETTE_DRIVE or the customer reports a diskette problem.

1. Test the diskette drive using the procedure in "Testing HMC consoles" on page 24. Select **System Unit** problem area, and select the test for **Diskette Drive**.

#### Note:

- a. Do not test with the diskette on which the errors occurred. Use a new diskette.
- b. If you cannot start the test because of the diskette drive failure, go to step 2 and answer the question **YES**.

#### Return here when the test is complete, then continue below.

2. Did the diskette tests fail while testing with the new diskette?

If YES, go to step 3. If NO, go to step 5.

3. Exchange the diskette drive.

When complete, run the diskette tests again.

Did the diskette tests fail again?

If **YES**, go to step 4. If **NO**, Close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.

- 4. Continue exchanging FRUs from the FRU list and running tests. For FRU removal and replacement procedures, refer to the HMC HMM. If the FRUs fix the problem, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected. If you cannot resolve the problem, call for assistance.
- 5. If the **original failure** occurred while **writing** to a diskette, retry the original task using a new diskette.

Note: You must format the new diskette before trying to write on it.

Does the diskette task still fail?

If YES, go to step 6.

If **NO**, the original diskette was defective. Close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.

6. Recreate the information on the diskette or get a new diskette with the information.

Retry the original task.

If the failure occurs again, go to step 7 on page 168. If no failures occur, close the call. For instructions, see the *Service Guide* for the server to which this console is connected.

7. Test using the procedure in "Testing HMC consoles" on page 24. Select **System Unit** problem area, and then select **Run All Selected**.

#### Return here when the test is complete, then continue below.

- If the tests fail, isolate the problem using the procedures in the HMM (in PDF format) on the Diagnostic CD-ROM shipped with the console. When complete, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.
- If the tests do not fail or if you cannot isolate the problem, call for assistance.

#### END OF PROCEDURE.

# 7914 Operator information panel

The following illustrations show the controls and LEDs on the operator information panel.



- **Power-control button and power-on LED:** Press this button to turn the server on and off manually. The states of the power-on LED are as follows:
  - Off: Power is not present or the power supply or the LED itself has failed.
  - **Flashing rapidly (4 times per second):** The server is turned off and is not ready to be turned on. The power-control button is disabled. This will last approximately 5 to 10 seconds.
  - **Flashing slowly (once per second):** The server is turned off and is ready to be turned on. You can press the power-control button to turn on the server.
  - Lit: The server is turned on.
- Ethernet activity LEDs: When any of these LEDs is lit, they indicate that the server is transmitting to or receiving signals from the Ethernet LAN that is connected to the Ethernet port that corresponds to that LED.
- **System-locator button/LED:** Use this blue LED to visually locate the server among other servers. A system-locator LED is also on the rear of the server. This LED is used as a presence detection button as well. You can use IBM Systems Director or IMM web interface to light this LED remotely. This LED is controlled by the IMM. The locator button is pressed to visually locate the server among the others servers.
- **Check log LED:** When this yellow LED is lit, it indicates that a system error has occurred. Check the event log for additional information.
- **System-error LED:** When this yellow LED is lit, it indicates that a system error has occurred. A system-error LED is also on the rear of the server. An LED on the light path diagnostics panel on the operator information panel or on the system board is also lit to help isolate the error. This LED is controlled by the IMM.

**Note:** The **Reset button** is on the operator information panel or the light path diagnostics panel located on the top of the operator information panel.

# **Token-Ring network repair procedures**

# Token Ring: general information

Figure 5 shows the PCI token-ring adapter.



Figure 5. PCI Token-Ring Adapter

Figure 6 on page 170 shows the token-ring adapter locations in Hardware Management Console machine types.

#### Level 01b



Figure 6. HMC Network Adapter Locations

PCI and CardBus token-ring adapter cards for desktop and ThinkPad consoles have two LED (green or yellow) status indicators. The LEDs provide useful problem solving information. To interpret LED status, use the following instructions.

If exchanging a desktop console token-ring feature card, verify the adapter configuration using instructions in "CMOS configuration procedures for Hardware Management Consoles" on page 37. ThinkPad token-ring configuration does not have to be checked.

For a desktop console that is not attached to a token-ring LAN network, install wrap plug (**P/N 615899**) on the token-ring adapter card.

Both 16- and 32-bit ThinkPad token-ring network adapters (if installed) are plugged into the top PCMCIA socket. Before the 2647 (T20) ThinkPad, the 16-bit PCMCIA token-ring adapter was used. The paddle connector for this adapter contains no status LEDs. The 32-bit CardBus adapter is used on the 2647 (T20) ThinkPad and contains a green (left) and yellow (right) status LED.

You may find the following definitions useful when dealing with token-ring problems:

#### Term Meaning

#### Auto-removal

A state in which a token-ring adapter removes itself from the network to perform tests and determine whether it is the cause of the hard error. If the tests pass, the adapter will reattach itself to the network.

#### Beaconing

A state that a token-ring adapter enters after it detects a hard error. The adapter reports the error condition to devices connected to the network.

#### Hard error

An error condition on a network that requires removing the error source or reconfiguring the network before it can resume reliable operation.

#### Initialization

A state in which the adapter is prepared for use after the PC is switched on or rebooted.

**Open** A state in which the adapter is attached to the ring.

#### Station

A device, either Hardware Management Console or Support Element, that provides one of the input/output points of the token-ring network.

#### Wire fault

An error condition caused by a break or short in the cable segment connecting the adapter to the MAU.

In Table 21 the first four LED states indicate the sequence that is displayed when the console is started and the adapter accesses the LAN successfully. Some of those states may be too brief to observe. The last three LED states indicate problems. Table 22 on page 172 lists recommended actions for the problem states.

Amber LED	Green LED	Explanation
Blinking	Blinking	<ul> <li>Slow - The adapter is waiting for initialization.</li> <li>Fast - The adapter has detected a wakeup frame and is trying to wake up the system.</li> </ul>
Off	Off	The adapter initialization is in progress, and the PC is switched off, or the adapter is not active. Verify the adapter configuration.
Off	Blinking	The adapter did not detect any problems during self-diagnostic tests and is waiting to open. If this LED state occurs after the adapter is open, the adapter has closed.
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Table 21. Meanings of Token-Ring LEDs

Amber LED	Green LED	Explanation
Off	On	The adapter is operating correctly.
On	Off	The adapter self-diagnostic tests failed; there is a problem with the adapter.
Blinking	Off	<ul><li>The adapter is closed. One of the following conditions exist:</li><li>The adapter open failed</li><li>The adapter detected a wire fault</li><li>The adapter failed the auto-removal test</li></ul>
Blinking	On	The adapter has detected beaconing or a hard error.
On	On	The adapter has failed before running the self-diagnostic tests.

Table 21. Meanings of Token-Ring LEDs (continued)

Table 22. Recommended Actions for Token Ring LED States Indicating Problems

Amber LED	Green LED	Recommended Action
On	Off or On	Test the adapter
Blinking	Off or On	Verify the following: The correct adapter cable is connected to the ring The adapter is firmly seated in its slot The adapter is correctly configured

# **Token-Ring testing**

Use the following procedure to test either the token-ring PCI adapter in a Hardware Management Console or the token-ring CardBus adapter in a ThinkPad Support Element.

The token-ring diagnostics are located on the TR_ALL.EXE diskette image. The image is located on the \Service\Disk subdirectory of the Diagnostic CD. To create a bootable diskette image:

- 1. Insert a write-enabled diskette into the diskette drive.
- 2. Run the TR_ALL.EXE located in the \Service\Disk subdirectory.
- 3. When the process completes, remove both the diskette and the Diagnostic CD.

To test the token-ring adapter:

- 1. Ensure the token-ring adapter is connected to the LAN network.
- 2. Power the system unit off. Ensure the test diskette (containing the TR_ALL.EXE image) is in the diskette drive. Power the system unit on.
- **3**. Do the following to run the token-ring tests:
  - a. At the PC DOS 7.0 Startup Menu, select Extended Diagnostics.
  - b. At the Hit any key to continue message, press Enter to continue.
  - c. At the IBM PCI Token Ring Adapter Diagnostic window, press Enter.
  - d. At the **Test Option Selection Menu**, select **On-ring Test**, and then press Enter. Did the tests fail?

If YES, go to step 4. If NO, go to step 10 on page 173.

4. Follow the instructions displayed during the test.

Note: The tests may fail if there are no other active stations on the ring.

If you are instructed to test the adapter and cable in wrap mode, go to step 5.

5. Use the following procedure to run wrap mode tests:

- a. At the Diagnostic Results window, press Enter.
- b. At the Test Option Selection window, select Wrap Test, and press Enter.
- Did the tests fail?
- If YES, go to step 6. If NO, go to step 9.
- 6. Locate the Multi-Station Access Unit (MAU) used by the failing station.

STP connectors are used in 8228 or equivalent MAUs. If you do not know the MAU connector type, answer **YES**.

Does the failing station's MAU use an RJ-45 (not STP) type connector?

If YES, go to step 8. If NO, go to step 7.

- 7. When disconnected, the STP connector provides a wrap path to verify cable operation. Use the following procedure to help isolate the problem:
  - Disconnect the failing station's STP connector from the MAU.
  - On the **Diagnostic Results** window, select **Test**.
  - On the **Test Option Selection** window, select **Wrap Test**, and press Enter.

Did the tests fail?

If YES, go to step 8. If NO, go to step 10.

8. Exchange the token-ring cable and run the tests again. If the tests run correctly, go to step 10. If the tests fail, exchange the token-ring adapter with a correctly configured adapter and run this test again.

Did the tests fail with the new adapter card?

If **YES**, call for assistance. If **NO**, go to step 9.

9. Either the card or cable has been exchanged and the tests run without errors, or there is no problem on the original FRUs.

If a FRU was exchanged, answer the question Did diagnostics fail as YES.

If no FRUs were exchanged, answer the question Did diagnostics fail as **NO**. Go to step 11.

- The tests found nothing wrong with the adapter or cable. The failure to connect is in the network or another station on the network. Answer the question Did diagnostics fail as N0. Go to step 11.
- 11. If you were instructed to **Run all selected**, test all the adapters in the list one at a time. Otherwise, return to the procedure that directed you here.

END OF PROCEDURE.

# **Token-Ring LAN errors**

Use this procedure when a Repair and Verify window directs you to this window and the FRU list contains:

- xxxx_TOKEN_RING_ADAPTER
- xxxx_TOKEN_RING_CABLE
- xxxx_LAN_CABLE

or when the customer reports a problem communicating with the token-ring LAN feature.

Common token-ring network problems include the following:

- Loose or faulty token-ring cable connections
- Defective token-ring adapter
- Defective token-ring cables
- Loose or faulty Ring In/Ring Out cable connections between MAUs

- Defective Ring In/Ring Out cables
- Defective MAU
- Token-ring configuration (HMC only)

As you follow the procedures to diagnose a network failure, when you are instructed to Restart the LAN test, use the following information:

- Make certain all of the LAN cables are reconnected.
- To restart a Hardware Management Console, ensure no media is in any drive. Then press and hold Ctrl and Alt and press Delete (Ctrl+Alt+Delete).
- To restart the Support Element, ensure no media is in any drive, and then power the system unit off and on.

Figure 7 shows a typical LAN. If the configuration shown is connected to other frame strings, the cable from Ring Out (RO) is connected to Ring IN (RI) of the other string and RO from the other string is connected to RI of the first string to close the loop.



Alternate Hardware Management Console

Figure 7. Typical Token-Ring LAN

1. Is only one LAN connection (Support Element or Hardware Management Console) failing?

**Note:** If you have only one Hardware Management Console and one Support Element, consider *both* as one failing device. Answer the question **YES** and continue as follows.

If YES, go to step 2. If NO, go to step 8 on page 176.

- 2. At the failing station, check the following:
  - The LAN adapter cable is securely connected to the LAN adapter card.
  - The LAN adapter cable is securely connected to the MAU.
  - Ring In (RI) and Ring Out (RO) cables are connected to the MAU.
- 3. Were all of the cables securely connected?

If YES, go to step 5 on page 175. If NO, go to step 4.

- 4. Restart the LAN test.
  - If the failure still occurs, go to step 6 on page 175.
  - If all devices on the LAN work correctly, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.

5. Check the token-ring adapter configuration for an HMC using "CMOS configuration procedures for Hardware Management Consoles" on page 37. (ThinkPad Support Element token-ring configuration does not have to be checked.)

After you verify the configuration, reconnect all cables and restart the LAN test. Use the procedure "Token-Ring testing" on page 172.

If directed by the diagnostics, disconnect the cable (at the MAU) that connects to the failing station (indicated by the X in each of the following figures).



Figure 8. MAU Cable Connecting to the Support Element



Management Console

Figure 9. MAU Cable Connecting to the Hardware Management Console

6. If the test still fails, exchange the token-ring LAN feature card and the LAN cable one at a time and rerun the tests to isolate the failure. (If you replace a token-ring adapter in an HMC, refer to "CMOS configuration procedures for Hardware Management Consoles" on page 37 to verify the network adapter settings.)

Notes:

- a. Exchange the FRUs in the sequence listed in the FRU list for this problem.
- b. The LAN adapter cable must be attached to the feature card or the test will fail.

When you complete the repair, restart the LAN test.

If you cannot isolate the problem, call for assistance.

If the problem is fixed, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.

- If the test still fails, plug the failing device in a different MAU location. Ensure any media is removed from the drive, and restart the device (Alt+Ctrl+Delete). Retry the failing operation.
  - If the device works now, exchange the MAU. Then, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.
  - If you cannot isolate the problem, call for assistance.
- 8. At each device in the LAN, check the following:
  - The LAN adapter cable is securely connected to the LAN adapter card.
  - The LAN adapter cable is securely connected to the MAU.
  - Ring In (RI) and Ring Out (RO) are connected in the MAU of the failing string.
- 9. Were all of the LAN adapter and RI or RO cables securely connected?

If YES, go to step 11. If NO, restart the LAN test.

If the test runs successfully, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected. If the test still fails, go to step 10.

10. If this is a new installation, verify the token-ring configuration on any new Hardware Management Consoles and verify that the Ring In/Ring Out cables are correctly connected for the entire string (refer to "CMOS configuration procedures for Hardware Management Consoles" on page 37 to verify the network adapter settings).

Restart the LAN test. Does the test fail?

If **YES**, go to step 11. If **NO**, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.

**11**. If you have additional strings attached to the LAN as shown in Figure 10 on page 177, try to isolate the failure by jumpering around the MAUs one at a time and retrying the failing operation.

**Note:** When the MAU with the Hardware Management Console is jumpered out, plug the Hardware Management Console into another MAU.

Level 01b



Figure 10. Bypassing a MAU

Did you isolate a failing MAU?

- If you cannot isolate a failing MAU, call for assistance.
- If you isolate a failing MAU, go to step 12.
- **12.** At the isolated MAU containing the failing stations, try to isolate a failing station by unplugging stations from the MAU one at a time and retrying the failing operation.
  - If you isolate a failing station, restart the LAN tests.
  - If you cannot isolate a failing station, exchange the MAU.
  - If you cannot isolate either a failing station or MAU, call for assistance.

#### END OF PROCEDURE

# Ethernet LAN errors

Use this procedure when:

- A Repair and Verify window directs you to this window and the FRU lists contain:
  - PCI/16-Bit PCMCIA (Desktop and ThinkPad)
    - xxxx_Ethernet_ADAPTER
    - xxxx_Ethernet_CABLE
  - 32-Bit CardBus (T2x ThinkPad)
    - xxxx_Ethernet_CB_CARD: Top or Bottom socket adapter
    - xxxx_1_Ethernet_CB_CARD: Top socket adapter
    - xxxx_1_Ethernet_CB_CABLE:
    - xxxx_2_Ethernet_CB_CARD: Bottom socket adapter
    - xxxx_2_Ethernet_CB_CABLE:
  - MiniPCI (T2x ThinkPad)
    - xxxx_NET_ADAPTxxxx_NET_ADAPT
- The customer reports a problem communicating with the Ethernet feature.

This is a common procedure to isolate Ethernet network problems involving PCI Hardware Management Consoles and ThinkPad Support Elements. The Ethernet feature provides connection to:

- The customer's Ethernet network. Normally, this supports a remote console connection or an additional path to a ThinkPad Support Element.
- The Hardware Management Console in those locations where there is no token-ring support or there is a requirement for greater than 16 Mbps connectivity.

Unlike token-ring network adapters, Ethernet adapters are configured by software during initialization of the device in which the adapter is plugged.

For T2x (2647) ThinkPads used on 9672 servers, one of the PCCard Ethernet adapters is replaced by the MiniPCI Ethernet adapter. For these ThinkPads, the bottom PCMCIA slot is always empty.

The MiniPCI Ethernet adapter is accessed behind a removable plate located on the bottom of the ThinkPad, directly above the Type/Model/SN label. The cable socket is at the rear of the ThinkPad, between the modem and DC barrel input connectors.

ThinkPad adapters for customer network use are located in the following slots. Adapter location depends on the server type and ThinkPad type/model.

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Table 23.	Network Adap	ter Locations	tor 12x	і піпкРаа	Support	Elements

Token-Ring and Ethernet Combination		Ethernet and Ethernet Combination		
Top slot	Token-ring adapter	Top slot	Ethernet adapter	
Bottom slot	Empty - Not used	Bottom slot	Empty - Not used	
MiniPCI slot	PCI bus Ethernet	MiniPCI slot	PCI bus Ethernet	

Table 24. Network Adapter Locations for All Other ThinkPad Support Elements

Token-Ring and Et	hernet Combination	Ethernet and Ethernet Combination		
Top slot	Token-ring adapter	Top slot	Ethernet adapter	
Bottom slot	Ethernet adapter	Bottom slot	Ethernet adapter	

Ethernet LEDs provide adapter and cable connectivity status. See "Ethernet status LEDs" on page 179 for assistance interpreting LED status.

For 10Base-T and 100Base-TX networks, the customer's switch may support a connectivity status indicator LED that is active when there is a good connection between the switch and active Ethernet adapter.

# **Ethernet status LEDs**

Adapter LEDs provide data traffic and link status network connectivity information. The link status LED is active only for a 10BASE-T or 100BASE-TX (RJ45) network.

The Link LED reports the following:

- The adapter is linked (connected) to an Ethernet switch.
- The adapter has power. If the adapter does not have power, the Link LED is not active.

**Note:** For the 7327 HMC, the bottom LED is the Link LED. When lit (green), there is an active connection.

If the Link LED is not lit, verify the following:

- The network adapter is securely plugged into the console's card socket.
- The Ethernet cable is securely connected between the network adapter and a switch.
- The switch is powered on.
- The Ethernet cable is not broken or damaged.

The Activity LED reports Ethernet adapter network data transmission and reception.

**Note:** For the 7327 HMC, the top LED is the Activity (transmit/receive) LED. When lit (amber), data is being transmitted over the network.

If the Link LED is lit and the Activity LED is not lit, verify the following:

- The Ethernet cable is securely connected between the network adapter and a switch.
- The switch is powered on.

## 8485 and 4362 (PCI planar Ethernet)

The status LEDs for the 8485 and 4362 tower planar board are located to the upper right (Link) and to the lower right (Activity) of the RJ45 connector. The planar board Ethernet connection supports 10/100/1000 Mbps data rates.

- Link Status: Green LED
- Activity Status: Green LED.

## 8485 and 4362 (PCI adapter Ethernet)

The status LEDs for the 8485 and 4362 PCI adapters are located above (Act/Link) and below (100TX) the RJ45 connector. The PCI adapter card supports 10/100 Mbps data rates.

- Data Traffic and Link Status (Act/Link): Green LED
- Data Rate (100 TX): Green LED, Off = 10 Mbps, On = 100 Mbps

## 8141 (PCI planar Ethernet)

The status LEDs for the 8141 Desktop planar board are located to the right (Link) and to the left (Data Traffic) of the RJ45 connector. The planar board Ethernet connection supports 10/100/1000 Mbps data rates.

- Link Status: Green LED
- Data Traffic: Yellow LED

## 8141 (PCI adapter Ethernet)

The status LEDs for the 8141 PCI adapter are located above (Act/Link) and below (Rate) the RJ45 connector. The PCI adapter card supports 10/100/1000 Mbps data rates.

• Data Traffic and Link Status (Act/Link): Green LED

- Data Rate:
  - Green LED-Off = 10 Mbps
  - Green LED-On = 100 Mbps
  - Yellow LED-On = 1000 Mbps

# 8187 and 8305 PC (planar Ethernet)

The status LEDs for the 8187 and 8305 planar board are located next to the RJ45 connector. The PCI planar connection supports 10/100/1000 Mbps date rate.

The following table lists the LEDs and data rates:

Table 25. LEDs and Data Rates

Right Yellow LED	Left Green LED	Detected Data Rate	
On	Off	10 Mbps	
On	On	100 Mbps	
Off	On	1000 Mbps	

#### 8187 and 8305 (PCI adapter Ethernet)

The status LEDs for the 8187 and 8305 PCI adapters are located above (Act/Link) and below (100TX) the RJ45 connector. The PCI adapter card supports 10/100 Mbps data rates.

- Data Traffic and Link Status (Act/Link): Green LED
- Data Rate (100 TX): Green LED, Off = 10 Mbps, On = 100 Mbps

### 2647 (T2x) ThinkPad (32-bit CardBus adapter Ethernet)

The status LEDs for the 32-bit CardBus Ethernet adapter are located on the dongle that plugs into the network cable. The adapter supports 10/100 Mbps data rates.

- Data Traffic: Green LED
- Link Status: Green (10 Mbps connect), Amber (100 Mbps)

#### 2647 (T2x) ThinkPad (MiniPCI Ethernet adapter)

The status LEDs for the MiniPCI Ethernet adapter are located next to the RJ-45 connector. The PCI adapter supports 10/100 Mbps data rates.

- Link Status: Green LED Connected to network
- Data Traffic: Amber LED

#### 26xx ThinkPad (16-Bit PCMCIA adapter Ethernet)

The status LEDs for the 16-bit PCMCIA Ethernet adapter are located on the paddle connector. The adapter supports a 10 Mbps data rate.

- Data Traffic: Amber LED (Circle and square connected by a line)
- Link Status: Green LED (Lightning bolt over OK)

#### 7060 Support Element: single board computer (SBC) integrated Ethernet

The status LEDs for the SBC Ethernet are located near the RJ-45 connector. The adapter supports 10/100 Mbps data rates.

- Link Status: Green LED
- Data Traffic: Red LED

#### 7060 Support Element: PCI Ethernet adapter

The three status LEDs for the PCI Ethernet adapter are located near the RJ-45 connector. The adapter supports 10 Mbps or 100 Mbps data rate.

- Link Status: Green LED (LNK)
- Data Traffic: Green LED (ACT)
- Data Rate: Green LED (100 TX)

# Ethernet repair procedure

In the following procedure, the term *station* refers to a device, either Hardware Management Console or Support Element, that provides one of the input/output points for the Ethernet network.

- 1. Is only one Ethernet connection failing?
  - If YES, go to step 3. If NO, go to step 2.
- 2. Remove the station you are working on from the network. If the network operates correctly, go to step 3. Otherwise, notify the network administrator of the network problem.
- **3**. At the failing station verify the following:
  - The adapter cable is securely connected to either the adapter card or the on-board (planar) adapter.
  - The adapter cable is securely connected to the network.
  - Depending on the type of connector used, verify one of the following:
  - 10Base T/100Base TX: Verify the Link LED is active and the network cable is connected to the switch.

**Note:** If the Link LED is not active, exchange the cable or plug the cable into a different switch port. If the Link LED remains inactive, go to step 5.

- 10Base2: Verify the station is connected to the adjacent station or stations.
- AUI: Verify the station is connected to the external transceiver.

Unless otherwise directed, continue on step 4.

4. Was the cable securely connected in step 3?

If YES, go to step 6. If NO, go to step 5.

5. Restart the failing station to test the Ethernet adapter.

To restart the failing station, ensure there are no diskettes in the diskette drive nor any bootable media in the DVD drive. Press and hold Ctrl and Alt; then press Delete (Ctrl+Alt+Delete).

- If the failure still occurs and you have not already done so, exchange the cable and test again. If the failure still occurs, go to step 6.
- If the Ethernet adapter connects to the customer's network, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected.
- 6. Test the Ethernet adapter card at the failing station.
  - For desktop (PCI bus based) consoles, refer to "Testing HMC consoles" on page 24. Select **Ethernet** as the problem area to test.
  - For ThinkPad consoles, refer to "Ethernet CardBus testing" on page 97, "PC card (32-Bit CardBus) Ethernet adapter" on page 97, "Ethernet ExpressCard testing" on page 99, or "USB Ethernet testing" on page 101.

When the test is complete, go to step 7.

7. Did the Ethernet tests fail?

If YES, go to step 8. If NO, go to step 9.

**8.** If you have not already done so, exchange the FRUs called by the diagnostics one at a time and rerun the tests to verify the repair.

When the repair is complete, remove any diskettes from the drive or bootable media in the DVD drive, and ensure the Ethernet cable is connected. Initialize the console by powering it off, then on.

9. Does the adapter work correctly on the customer's network?

If **YES**, close the call. For instructions, refer to the *Service Guide* for the server to which this console is connected. If **NO**, go to step 10.

- **10**. The Ethernet adapter runs all tests and is configured correctly but does not have connectivity to the customer's network.
  - Notify the customer's network administrator that the problem is on the Ethernet network.

• If necessary, call for assistance.

#### END OF PROCEDURE

# Console shut down

Use this procedure to avoid loss of data on the HMC or SE hard disks when AC power must be removed.

Prepare the console for power off as follows:

- 1. Have the customer verify that operations are complete on the console to power off.
- 2. Minimize all displayed windows by clicking on the minimize icons (in the upper right corner of the windows).
- **3**. When only the Desktop displays:
  - Click Tasks Index from the left navigation pane.
  - Click Shutdown or Restart.
- Select **Power-off console**.
- Select OK.

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When a message indicates shut down is complete, it is safe to power off the console.

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要領に基づく定格入力電力値:	Knowledge Centerの各製品の
	仕様ページ参照

For products less than or equal to 20 A per phase, the following statement applies:

# 高調波電流規格 JIS C 61000-3-2 適合品

For products greater than 20 A, single-phase, the following statements apply:

Level 01b

高調波電流規格	JIS	C 61000-3-2	準用品
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本装置は、「高圧又は特別高圧で受電する需要家の高調波抑制対 策ガイドライン」対象機器(高調波発生機器)です。 回路分類:6(単相、PFC回路付) 換算係数:0

For products greater than 20 A per phase, three-phase, the following statements apply:

高調波電流規格 JIS C 61000-3-2 準用品

本装置は、「高圧又は特別高圧で受電する需要家の高調波抑制対 策ガイドライン」対象機器(高調波発生機器)です。 回路分類 : 5(3相、PFC回路付) 換算係数 : 0

Electromagnetic Interference (EMI) Statement - People's Republic of China

声 明 此为A级产品,在生活环境中、 该产品可能会造成无线电干扰。 在这种情况下,可能需要用户对其 干扰采取切实可行的措施。

**Declaration:** This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may need to perform practical action.

# Electromagnetic Interference (EMI) Statement - Taiwan

警告使用者: 這是甲類的資訊產品,在 居住的環境中使用時,可 能會造成射頻干擾,在這 種情況下,使用者會被要 求採取某些適當的對策。

The following is a summary of the Taiwan EMI statement above:

**Warning:** This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user will be required to take adequate measures.

#### IBM Taiwan Contact Information:

台灣IBM產品服務聯絡方式: 台灣國際商業機器股份有限公司 台北市松仁路7號3樓 電話:0800-016-888

## Electromagnetic Interference (EMI) Statement - Korea

이 기기는 업무용(A급)으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

## **Germany Compliance Statement**

# Deutschsprachiger EU Hinweis: Hinweis für Geräte der Klasse A EU-Richtlinie zur Elektromagnetischen Verträglichkeit

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2014/30/EU zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55032 Klasse A ein.

Um dieses sicherzustellen, sind die Geräte wie in den Handbüchern beschrieben zu installieren und zu betreiben. Des Weiteren dürfen auch nur von der IBM empfohlene Kabel angeschlossen werden. IBM übernimmt keine Verantwortung für die Einhaltung der Schutzanforderungen, wenn das Produkt ohne Zustimmung von IBM verändert bzw. wenn Erweiterungskomponenten von Fremdherstellern ohne Empfehlung von IBM gesteckt/eingebaut werden.

EN 55032 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden:

"Warnung: Dieses ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funk-Störungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen zu ergreifen und dafür aufzukommen."

#### Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

Dieses Produkt entspricht dem "Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG)". Dies ist die Umsetzung der EU-Richtlinie 2014/30/EU in der Bundesrepublik Deutschland.

# Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC EG Richtlinie 2014/30/EU) für Geräte der Klasse A

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller: International Business Machines Corp. New Orchard Road Armonk, New York 10504 Tel: 914-499-1900

Der verantwortliche Ansprechpartner des Herstellers in der EU ist: IBM Deutschland GmbH Technical Regulations, Abteilung M372 IBM-Allee 1, 71139 Ehningen, Germany Tel: +49 (0) 800 225 5423 or +49 (0) 180 331 3233 email: halloibm@de.ibm.com

Generelle Informationen:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55032 Klasse A.

## Electromagnetic Interference (EMI) Statement - Russia

ВНИМАНИЕ! Настоящее изделие относится к классу А. В жилых помещениях оно может создавать радиопомехи, для снижения которых необходимы дополнительные меры Level 01b



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