

2.6

*IBM Tivoli Advanced Audit for DFSMSHsm
User Guide*



Note:

Before using this information and the product it supports, read the "Notices" topic at the end of this information.

Seven Edition (September 2023)

This edition applies to Version 2 Release 6 of IBM Tivoli Advanced Audit for DFSMSHsm (product number 5698-B12) and to all subsequent releases and modifications until otherwise indicated in new editions.

This edition replaces the *IBM Tivoli Advanced Audit for DFSMSHsm User Guide*, SC27-2347-06.

© **Copyright Rocket Software Inc. 1995, 2023. All Rights Reserved.**

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

© **Copyright International Business Machines Corporation .**

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

© **Rocket 1996, 2023.**

Contents

About this information.....	vii
Chapter 1. Introduction to Advanced Audit for DFSMSHsm.....	1
What does Advanced Audit for DFSMSHsm do?.....	1
Advanced Audit for DFSMSHsm components.....	1
Prerequisites.....	2
Accessibility features.....	2
What's new in this release?.....	2
Chapter 2. Product configuration.....	5
Running AKDCRRUN.....	5
Customizing the AKDCMD00 member of the product PARMLIB.....	5
Customizing the AKDINI member in the product PARMLIB.....	6
Customizing the JCL and CLST library members.....	6
Creating a PLANS library.....	6
Creating a user job card member.....	7
Adding AKD07735 program to the authorized programs list.....	7
Setting RACF READ authority for user IDs.....	7
Setting up ACF2 security.....	7
Defining an OMVS segment for the started task.....	7
Determining the possible impact of running the product with your EBCDIC code tables.....	8
APF authorizing the LOAD library.....	8
Starting the AKDMAIN started task.....	8
Creating the AKDSAVFT member in the JCL library.....	9
Editing procedures to support your tape management system.....	10
AKDCMD00 configuration values.....	11
AKDCMD00 syntax.....	11
AKDCMD00 keyword syntax and descriptions.....	12
Chapter 3. Using the Advanced Audit for DFSMSHsm interfaces.....	27
About the ISPF interface.....	27
ISPF scroller commands.....	28
SAVE command.....	29
FORMAT command.....	30
About the console interface.....	32
General console commands.....	32
Console commands for common address space usage.....	33
Chapter 4. Getting started.....	35
About the ISPF interface.....	35
Starting the ISPF interface.....	35
Advanced Audit for DFSMSHsm main menu.....	35
Viewing message documentation.....	36
Exiting Advanced Audit for DFSMSHsm.....	37
Filter pattern masks.....	37
Chapter 5. Performing audits.....	39
Running an audit procedure.....	39
Including and excluding catalogs from audit procedures.....	40
Including and excluding data sets from the AKDAUDSM audit procedure.....	41

Viewing audit results.....	41
What can I do with the audit result information?.....	42
Audit procedures for control data sets.....	43
AKDAUDAL audit procedure.....	43
AKDAUDBD audit procedure.....	43
AKDAUDCM audit procedure.....	43
AKDAUDCT audit procedure.....	43
AKDAUDGF audit procedure.....	44
AKDAUDHL audit procedure.....	44
AKDAUDMD audit procedure.....	44
AKDAUDOD audit procedure.....	44
AKDAUDRM audit procedure.....	44
AKDAUDSM audit procedure.....	45
AKDAUDTP audit procedure.....	45
AKDAUDZR audit procedure.....	45
Audit procedures for DFSMSHsm-owned tapes.....	46
AKDAUDFD audit procedure.....	46
AKDAUDFL audit procedure.....	46
AKDAUDFT audit procedure.....	46
Chapter 6. Gathering HSM host information.....	47
HSM Host Information report.....	47
Control Data Sets report.....	48
HSM CDS Backups report.....	49
Active Allocations report.....	49
Issuing HSM commands.....	50
Chapter 7. Performing administrative tasks.....	51
Customization of JCL parameters and data set names.....	51
Changing JCL parameter settings.....	51
Overriding data set name parameters.....	52
Testing user access to HSM commands.....	52
Listing PARMLIB data set members.....	52
Listing PLAN data set members.....	53
Listing CNTL data set members.....	53
Submitting audit jobs.....	53
Chapter 8. Viewing product information.....	55
Viewing version and release level data.....	55
Listing data sets used during processing.....	56
Listing data sets allocated to the address space.....	56
Listing enqueues held by the address space.....	57
Displaying address space virtual storage information.....	57
Displaying product message documentation.....	58
Displaying product work data set information.....	58
Displaying a list of system connections.....	58
Chapter 9. Auditing reports.....	59
Errors Cost report.....	59
Migrated Data Sets Audit report.....	61
SMS Volumes Audit report.....	63
Storage Groups Threshold Audit report.....	66
Migrated Data Sets Without a Backup.....	67
VSAM Data Sets Need a Backup report.....	69
Chapter 10. Correcting Errors.....	73
Automatic error correction.....	73

Error threshold monitoring.....	74
Automatic error correction quick reference.....	75
Analyzing and correcting errors manually.....	75
Browsing audit results.....	76
Modifying audit results.....	76
Using SDSF to monitor automatic fixes.....	77
Appendix A. Messages and codes for Advanced Audit for DFSMSHsm.....	79
Product error messages.....	79
Audit diagnostic messages.....	105
Appendix B. AKDINI configuration values.....	127
PRODUCT_INFO section tokens.....	128
CUSTOMER_ENVIRON section tokens.....	128
Appendix C. Snap dump utility.....	131
Appendix D. Advanced Audit for DFSMSHsm and HSM equivalents.....	133
Advanced Audit for DFSMSHsm and HSM audit equivalents.....	133
Advanced Audit for DFSMSHsm and HSM diagnostic error equivalents.....	134
Appendix E. Query Language feature.....	169
Query Language guidelines.....	169
CREATE.....	170
FROM.....	170
FROMKEY.....	171
JOIN.....	171
ORDER BY.....	175
SELECT.....	175
TOKEY.....	177
USING.....	177
WHERE.....	177
Notices.....	179
Trademarks.....	180
Terms and conditions for product documentation.....	180
Privacy policy considerations.....	181
Glossary.....	183
Index.....	187

About this information

This guide provides instructions for using IBM Tivoli Advanced Audit for DFSMSHsm. To use the procedures that are provided in this guide, you must have already installed IBM Tivoli Advanced Audit for DFSMSHsm by using the SMP/E installation process that came with the product.

This document provides instructions for configuring and using IBM Tivoli Advanced Audit for DFSMSHsm. The information is designed to help system administrators and system programs perform these tasks:

- Configure Advanced Audit for DFSMSHsm.
- Use Advanced Audit for DFSMSHsm.

Chapter 1. Introduction to Advanced Audit for DFSMSHsm

These topics introduce you to the functionality that is provided with Advanced Audit for DFSMSHsm, including its major components and some of the key benefits of using it.

What does Advanced Audit for DFSMSHsm do?

Advanced Audit for DFSMSHsm delivers a set of auditing commands that help support the health of the control data sets.

Without fast, accurate, and reliable audits, you risk losing access not only to your z/OS® data, but also all of your HSM migrated data. To avoid serious outages, you need a powerful data interrogation solution that keeps your z/OS environment trouble-free with high-speed, accurate, and flexible audits.

Advanced Audit for DFSMSHsm helps you keep your z/OS environment trouble-free with fast, accurate, and flexible audits. With Advanced Audit for DFSMSHsm, storage administrators can maintain healthy metadata environments and prevent temporary or permanent loss of data access. Advanced Audit for DFSMSHsm provides extremely fast and accurate audits and diagnostics, as well as automatic corrective actions to resolve error conditions

Advanced Audit for DFSMSHsm provides the following:

- Non-disruptive audits for the metadata structures in your environment: catalogs, DASD VTOC records, DFSMSHsm, and tape management systems.
- Easy-to-use online selection and submission of audits, diagnostic aids, and corrective actions.
- Easy online viewing of audit results.
- Automatic historical tracking of all audit errors found in the environment.
- Flexibility to create, save, and reuse your own customized diagnostic aids and corrective actions.
- Complete control over which meta data structures are audited.
- Complete control over which diagnostic aid or corrective action is implemented for your unique environment.
- Flexibility to edit JCL and corrective action commands to apply fix control statements to only the records you want to fix.
- Automatic application of fixes to reported errors.
- Capability to turn on or off individual error correction actions.
- Automatic halting of audits if a high threshold of errors is reported.
- Ability to apply automatic fixes to specific high-level qualifiers.
- Support for both DFSMSHsm standard TTOC and extended TTOC.

Advanced Audit for DFSMSHsm components

Advanced Audit for DFSMSHsm has two audit components: the auditing of HSM control data sets and DFSMSHsm-owned tapes.

Advanced Audit for DFSMSHsm evaluates the migration control data set (MCDS), backup control data set (BCDS), and the offline control data set (OCDS) to help resolve structural and logical discrepancies that can prevent migrated data from being recalled, or backup data from being restored. It correlates entries with the ICF catalog environment to help maintain consistency.

Advanced Audit for DFSMSHsm helps you audit and correct errors with your DFSMSHsm migration and backup tapes. It works outside of the DFSMSHsm environment to correct errors that it finds and has

customer-documented benchmark speeds faster than the traditional DFSMSHsm **AUDITMEDIACONTROLS** command.

Prerequisites

Advanced Audit for DFSMSHsm requires the following software levels:

- Any version of z/OS, V1R9 through V2R1
- DFSMSHsm running on z/OS

Accessibility features

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use a software product successfully.

The major accessibility features in Advanced Audit for DFSMSHsm make it possible to do all of the following:

- Use assistive technologies such as screen readers and screen magnifier software. Consult the assistive technology documentation for specific information when using it to access z/OS interfaces.
- Customize display attributes such as color, contrast, and font size.
- Operate specific or equivalent features by using only the keyboard. Refer to the following publications for information about accessing ISPF interfaces:
 - *z/OS ISPF User's Guide, Volume 1*
 - *z/OS TSO/E Primer*
 - *z/OS TSO/E User's Guide*

These guides describe how to use ISPF, including the use of keyboard shortcuts or function keys (PF keys), include the default settings for the PF keys, and explain how to modify their functions.

What's new in this release?

Advanced Audit for DFSMSHsm version 2.6 offers several enhancements and changes:

- New **Check for lost backups** filter in the "Migrated Data Sets Without a Backup" report. This new filter applies to migrated data sets that have non-zero 'Last Backup Date' in the associated MCD record, and checks whether a backup record actually exists in BCDS.
- New **Check for lost backups** filter in the "VSAM Data Sets Need a Backup" report. This new filter applies to VSAM data sets that have non-zero 'Last Backup Date' in the associated MCD record, and checks whether a backup record actually exists in BCDS.
- In the OCDS Audit there are four new error types which cover the auditing of the TCN (Tape Copy Needed) Record.
 - 4016W VOLUME HAS A (TCN) TAPE COPY NEEDED RECORD
 - 4017C TCN ENTRY IS MISSING THE TTOC ENTRY
 - 4018C TCN MIGRATE ENTRY IS MISSING THE MCV ENTRY
 - 4019C TCN BACKUP ENTRY IS MISSING THE MCT ENTRY
- In the SMS Audit there are three new error types which cover the SMS Storage Classes, Storage Groups and Data Classes. Auditing now looks at all the SMS classes and groups.
 - 9002I DATA CLASS MISMATCH BETWEEN DATA SET AND ACS ROUTINE
 - 9003I STORAGE CLASS MISMATCH BETWEEN DATA SET AND ACS ROUTINE
 - 9004I STORAGE GROUP MISMATCH BETWEEN DATA SET AND ACS ROUTINE
- Lowercase parameters are now supported in parameter values and plan descriptions.

- Various updates to reports have been implemented and some new help panel formatting has been added.

Chapter 2. Product configuration

After you have installed Advanced Audit for DFSMSHsm and applied any included maintenance according to the instructions in the *Program Directory*, there are some configuration tasks that must be completed before Advanced Audit for DFSMSHsm is ready for use.

About this task

These are the configuration tasks:

1. [“Running AKDCRRUN” on page 5](#)
2. [“Customizing the AKDCMD00 member of the product PARMLIB” on page 5](#)
3. [“Customizing the AKDINI member in the product PARMLIB” on page 6](#)
4. [“Customizing the JCL and CLST library members” on page 6](#)
5. [“Creating a PLANS library” on page 6](#)
6. [“Creating a user job card member” on page 7](#)
7. [“Adding AKD07735 program to the authorized programs list” on page 7](#)
8. [“Setting RACF READ authority for user IDs” on page 7](#)
9. [“Setting up ACF2 security” on page 7](#)
10. [“Defining an OMVS segment for the started task” on page 7](#)
11. [“Determining the possible impact of running the product with your EBCDIC code tables” on page 8](#)
12. [“APF authorizing the LOAD library” on page 8](#)
13. [“Starting the AKDMAIN started task” on page 8](#)
14. [“Creating the AKDSAVFT member in the JCL library” on page 9](#)
15. [“Editing procedures to support your tape management system” on page 10](#)

Running AKDCRRUN

The AKDCRRUN job creates a set of runtime libraries, using the target libraries as the source.

Procedure

1. Copy the AKDCRRUN JCL from the SAKDJCL target library and place it in a personal PDS.
2. Edit the TGTHLQ parameter so that it reflects the high-level qualifier of the target libraries.
3. Edit the PPFEX to reflect the high-level qualifier of the runtime libraries that this job creates.
4. Add valid job card information.
5. Submit the job.

You can complete the configuration using these newly created runtime libraries.

Customizing the AKDCMD00 member of the product PARMLIB

The AKDCMD00 member of the SAKDPARM library contains the parameters and values that control many Advanced Audit for DFSMSHsm functions.

About this task

AKDCMD00 configuration values provides detailed information about the parameters and value specification syntax and restrictions.

Procedure

1. For every data set that is listed in AKDCMD00, specify the appropriate Advanced Audit for DFSMSHsm library.
2. Add valid information for the job card lines.
3. For all AUD_ parameters, specify values that are appropriate for your site.
4. Save the changes that you made.

Customizing the AKDINI member in the product PARMLIB

The parameters in AKDINI must have values that are appropriate for your site.

Procedure

1. Open AKDINI in an ISPF Edit session.
2. If you are configuring an initial installation of Advanced Audit for DFSMSHsm, go to the PRODUCT_SECURITY section and specify your site-specific information for the LICENSES parameter.
Note: Your product license information was provided by the IBM sales representative or by the Support Center. If you do not have the necessary information, contact the Support Center.
3. Review all of the parameters in the member and assign to them appropriate values for your site.

Note: For detailed information about these parameters and specifying values for them, see [Appendix B, “AKDINI configuration values,”](#) on page 127.

Customizing the JCL and CLST library members

The SAKDJCL and SAKDCLST library members must be customized with values that you specified in the AKDCMD00 member of the parameter library.

About this task

Executing AKDJCUST customizes the members of the SAKDCLST and SAKDJCL libraries. AKDJCUST also allocates the GLOBAL SUMMARY database and adds the SYMBOLICS member to the SAKDCNTL library.

Note: If you are *recustomizing* your JCL and CLISTs, you must first do the following:

- Copy all of the JCL from your target JCL library to your runtime SAKDJCL library.
- Copy all of the CLISTs from your target CLST library to your runtime SAKDCLST.

Procedure

- Execute AKDJCUST by typing the following into ISPF option 6:

```
EX 'ppfx.SAKDCLST(AKDJCUST)'
```

Creating a PLANS library

The PLANS library contains the plans and fixes that are used by Advanced Audit for DFSMSHsm.

Procedure

- Run the JCL contained in the AKDPLANS member of the SAKDJCL library.

Creating a user job card member

Each person who will be executing corrective actions or diagnostic aids must have a unique member in *ppfx*.SAKDCNTL that contains job card information. However, if *ppfx*='sys1' then the Jobcard can also be present in *opfx*.SAKDCNTL to avoid re-typing the same jobcard when a new z/OS release is installed.

Procedure

- The unique job card member is referenced on the JOBCARD DD statement as *&USERID*.J of *&ppfx*.SAKDCNTL. The member name is the TSO user ID of the user concatenated with the letter J. For example, the job card member for TSO user ID DDAVEN would be DDAVENJ.

Some sites use security groups to provide sufficient authority to the user IDs under which programs are executed in batch mode.

Other sites provide sufficient authority by using a GROUP parameter on the job card (for example, GROUP=ARCCATGP), which requires the security administrator to add the appropriate user IDs to the group specified by the GROUP parameter. Using the GROUP parameter on the job card provides the proper authority to read ICF catalogs that is required for some of the audit procedures.

Note: The audit procedures only read ICF catalogs. However, ALTER access might be required. Security software and procedures vary, so consult your security administrator for the proper procedures to follow in your environment.

Adding AKD07735 program to the authorized programs list

AKD07735 is used by the automatic fix process to interrogate the HSM address space to determine how many commands may be safely submitted at one time.

Procedure

- Add AKD07735 to the AUTHPGM NAMES list of SYS1.PARMLIB member IKJTS000.

Setting RACF READ authority for user IDs

The user IDs under which Advanced Audit for DFSMSHsm procedures are performed must have RACF READ authority.

Procedure

- Ensure that all of the user IDs under which Advanced Audit for DFSMSHsm will be used have RACF READ authority.
Many of the Advanced Audit for DFSMSHsm procedures read, but do not alter, system catalogs.

Setting up ACF2 security

If your site uses ACF2 Security Software, you must add the AKDAPI command to the ACF2 Command Table. Otherwise, ignore this step.

Defining an OMVS segment for the started task

To take advantage of cross-system communication between Advanced Audit for DFSMSHsm instances that reside on different systems, you must define an OMVS segment for the started task.

Before you begin

The started task requires UNIX System Services access. The user ID under which the started task runs must have an OMVS segment in its RACF profile.

Procedure

1. Determine whether the relevant user ID has an OMVS segment in its RACF profile, issue this command:
`LU userid OMVS`, where *userid* is the user ID.
2. If the relevant user ID does not have an OMVS segment in its RACF profile, add one by issuing this command:
`ADDUSER ddfuid OMVS(UID(nnn))`

Determining the possible impact of running the product with your EBCDIC code tables

Advanced Audit for DFSMSHsm uses the U.S.A. EBCDIC code set for specification and display of EBCDIC characters and for the extended ACS masking character that are used for filtering.

About this task

If the code tables that are used by your installation are different, you need to enter the EBCDIC character peculiar to your code tables that results in the binary value for the EBCDIC character specified in the product documentation.

Procedure

- Data that is supplied as input to batch programs

For product code that is shipped in binary, when you are specifying input where the product takes special action based on specific characters, you must enter the EBCDIC character peculiar to your code tables that results in the binary value for the EBCDIC character that is specified in this guide, according to the U.S.A. EBCDIC code set.

For example, if an exclamation mark (!) is called for, and your code tables do not translate the ! character to a hexadecimal 5A, you must enter the character that your code table translates to 5A.

- Product output

Depictions of product output that are shown in the product documentation are based on the U.S.A. EBCDIC code set. Actual output might be different if you EBCDIC code tables are not U.S.A. EBCDIC.

- Extended ACS masking characters

Your installation might need to specify different masking characters to achieve the correct result if your code tables are different from the U.S.A. EBCDIC code set.

APF authorizing the LOAD library

The Advanced Audit for DFSMSHsm SAKDLOAD library requires explicit APF authorization, even if it appears in the system link list with the LINKAUTH=LNLST option.

About this task

If you copy the contents of the product SAKDLOAD library to another SAKDLOAD library, that target library must be APF authorized. Although SMS-managed load libraries can be assigned APF authorization, most installations prefer to have all authorized libraries reside on specific non-SMS managed volumes.

Starting the AKDMAIN started task

Customize the start-up JCL.

About this task

Sample JCL can be found from sample library member AKDJMAIN.

1. Change the STEPLIB to point to the library that contains the Advanced Audit load modules.

2. Change the PARMLIB to point to the library that contains the Advanced Audit parameter members.
 - If the product parameters are distributed across multiple data set members, then specify the parameter as follows in EXEC statement: **PARM= 'MEMBER=(AKDCMD00, AKDCMD01, . . . , AKDCMDnn) '** If this parameter is omitted in EXEC statement, then AKDCMD00 is considered as PARMLIB dataset member for product parameter.
 - For the MEMBER keyword values, specify appropriate member names that are separated by commas and enclosed within parentheses. In situations where the same parameter was specified in multiple members, Advanced Audit uses the first occurrence of the parameter specification that it encounters. The specifications for the same parameter that appear in subsequent members that were specified for the MEMBER keyword are ignored.
 - If the product parameters are distributed across multiple data sets, change the parameter library to point to a concatenation of the appropriate data set names.
3. Add the customized start up JCL to a system procedure library. This JCL can also be run as a batch job, but it is recommended that you run it as an address space.

At this point in the configuration process, you must start the AKDMAIN started task.

- Start AKDMAIN on every system on which users will access the Advanced Audit for DFSMSHsm ISPF interface.

Note: The started task must have the //STEPLIB DD statement coded in the JCL. The STEPLIB DD is used to build the LOAD= parameter when the audit jobs are submitted.

Creating the AKDSAVFT member in the JCL library

The AKDSAVFT member is used when you submit an audit error fix, to ensure that the JCL for the job is properly configured for your environment.

Before you begin

If you have previously saved a JCL library member named AKDSAVFT, you must delete that member before you can export your newly created AKDSAVFT.

Procedure

1. Start the ISPF interface:
 - If your site uses the AKDMAIN started task, issue this command: EX `'ppfx.SAKDCLST(AKDSTART) '` where *ppfx* is the product prefix that was assigned at installation time. If the AKDSTART CLIST has been copied to a system CLIST library, you can issue the %AKDSTART command.
 - If your site does not use the AKDMAIN started task, issue this command: EX `'ppfx.SAKDCLST(AKDAUDIT) '` where *ppfx* is the product prefix that was assigned at installation time. If the AKDAUDIT CLIST has been copied to a system CLIST library, you can issue the %AKDAUDIT command.
2. Type 3 in the **Command** line on the **Main Menu** to select **Administrative Tasks** and press Enter.
3. Type 6 in the **Command** line on the **Administrative Menu** to select **Audit Submission** and press Enter.
4. In the **Cmd** column on the **Audit Jobs** panel, type S next to AKDAUDIT **Full Tape Audit** and press Enter.
5. On the **JclPview** menu, type X and press Enter.
6. On the COPYDS panel, complete these steps:
 - a) In the **Destination Data Set** field, type the data set name of the SAKDJCL library.
 - b) In the **Destination member name** field, type AKDSAVFT.
 - c) Press Enter to export the JCL to the SAKDJCL library.

Editing procedures to support your tape management system

If you are using a Control/M Tape, ZARA, TLMS, or GFS/AFM tape management system, you must edit some of the Advanced Audit for DFSMSHsm procedures accordingly. If you are not using any of these tape management systems, you may ignore this step.

Procedure

- If you are using Control/M Tape, you must edit these procedures in the SAKDJCL library:

Procedure	Parameter	Parameter description
AKDAUDCM	CTLMENV=	Control/M Tape IOAENV environment data set
	CTLMLOD=	Control/M Tape LOAD library data set
	CTLMMDB=	Control/M Tape Database DATA portion
	CTLMMDI=	Control/M Tape Database INDEX portion
	CTLMPRM=	Control/M Tape parameter data set
	CTLMTRC=	Control/M Tape TRC (trace) data set
AKDCNMRP	CTLMENV=	Control/M Tape IOAENV environment data set
	CTLMLOD=	Control/M Tape LOAD library data set
	CTLMMDB=	Control/M Tape Database DATA portion
	CTLMMDI=	Control/M Tape Database INDEX portion
	CTLMPRM=	Control/M Tape parameter data set
	CTLMTRC=	Control/M Tape TRC (trace) data set
AKDCNMUP	CTLMCAL=	Control/M Tape CAL (calendar) data set
	CTLMENV=	Control/M Tape IOAENV environment data set
	CTLMLOD=	Control/M Tape LOAD library data set
	CTLMMDB=	Control/M Tape Database DATA portion
	CTLMMDI=	Control/M Tape Database INDEX portion
	CTLMPRM=	Control/M Tape parameter data set
	CTLMADB=	Control/M Tape Stacking Database DATA portion
	CTLMADI=	Control/M Tape Stacking Database INDEX portion
	CTLMTRC=	Control/M Tape TRC (trace) data set

- If you are using ZARA, you must edit the AKDAUDZR procedure in the SAKDJCL library to add the ZARA databases to the procedure parameters:

Parameter	Parameter description
ZARALOAD=	Zara Tape LOAD library data set
OASISLD=	Zara Tape OASIS LOAD library data set
ZARATMC=	Zara Tape management catalog
ZARAVLT=	Zara Tape VAULT library data set

- If you are using TLMS, you must edit the AKDCINQR procedure in the SAKDJCL library to add the TLMS libraries to the procedure parameters:

Parameter	Parameter description
CAILOAD=	TLMS load library
CAILIB=	TLMS Product Options
VMF=	TLMS Volume Master File
VMFI=	TLMS Volume Index File

- If you are using GFS, you must edit the AKDAUDGF member in the SAKDJCL library so that the following parameter point to the appropriate GFS/AFM libraries.

Parameter	Parameter description
AFMLOAD=	GFS/AFM load library
TOOLoad=	GFS/AFM Tool load library
AFMPARM=	GFS/AFM parameter library.

AKDCMD00 configuration values

This section describes the structure of the PARMLIB member, its syntax rules, and its keyword syntax and descriptions.

Important: If you change any of the configuration values in this PARMLIB member, be aware that you must restart AKDJMAIN before the changes take effect. Advanced Audit for DFSMSHsm supports the distribution of product parameters across multiple data sets or across multiple members of a single data set. Be sure you specify the appropriate concatenation of data sets and specify all appropriate data set members (in PARM parameter of EXEC statement) when you customize the start-up JCL (AKDJMAIN) during the configuration process.

AKDCMD00 syntax

PARMLIB member AKDCMD00 contains token assignment statements that have been organized into sections.

Syntax rules

This is the general format for a token statement:

```
KEYWORD=PARAMETER
```

or

```
KEYWORD=(PARAMETER1, PARAMETER2, ...PARAMETERn)
```

Leading blanks from the beginning of the logical card-image records are allowed for all statements. Syntax scan processing locates the first nonblank character in each logical record. The entire length of the 80-byte logical record is considered for valid data. Do not renumber the AKDCMD00 member; sequence numbers assigned in columns 73-80 will cause errors.

Continuation rules

Continuation is assumed to occur whenever data crosses from line to another, such as when you specify multiple values for the same parameter, as shown in this example:

```
ParameterKeyword=(value1, value2, value3, value5, value5)
```

Comments

Both line mode and block mode commenting are supported:

- An asterisk (*) in column 1 marks the entire line as a comment. A line that is entirely blank can also be considered to be a comment.
- Entire lines, blocks of lines, or portions of a line can be commented by beginning the comment with a forward slash and an asterisk (/*) and terminating the comment with an asterisk and a forward slash (*/).

AKDCMD00 keyword syntax and descriptions

These are the required and optional keywords for the AKDCMD00 member.

Required parameters

CLIST_DSN

Names of the product library or libraries containing CLIST/REXX members.

Default value	None
Syntax	CLIST_DSN= <i>clist.dsn.name</i>
Acceptable values	Specify any valid data set name.
Example	CLIST_DSN=AKD.SAKDCLST

CNTL_DSN

Name of the product library or libraries containing CNTL members.

Default value	None
Syntax	CNTL_DSN= <i>sample.dsn.name</i>
Acceptable values	Specify any valid data set name.
Example	CNTL_DSN=AKD.SAKDCNTL

MSGSDSN

Name of the product library or libraries containing the message members.

Default value	None
Syntax	MSGSDSN= <i>messages.dsn.name</i>
Acceptable values	Specify any valid data set name.
Example	MSGSDSN=AKD.SAKDMSG

OPFX

Operational prefix for the audit data set allocations.

Important: These data sets must not be allocated as extended physical sequential data sets. Use a proper high-level qualifier so that the ACS routine allocates these data sets as non-extended physical sequential.

Default value	None
Syntax	OPFX= <i>hlq1.hlq2</i>
Acceptable values	Specify any valid high-level qualifier, 1-13 bytes.

Example	OPFX=AKD.WORK
---------	---------------

PLANS_DSN

Name of the product library or libraries containing PLANS members. This is the data set name which is created in job AKDPLANS in the SAKDJCL library.

Default value	None
Syntax	PLANS_DSN= <i>plans.dsn.name</i>
Acceptable values	Specify any valid data set name.
Example	PLANS_DSN=AKD.PLANS

PLIB_DSN

Name of the product library or libraries containing ISPF panels.

Default value	None
Syntax	PLIB_DSN= <i>panels.dsn.name</i>
Acceptable values	Specify any valid data set name.
Example	PLIB_DSN=AKD.SAKDPENU

PFX

The prefix that you want used for user work files.

Default value	&SYSUID
Syntax	PFX= <i>user.id.prefix</i>
Acceptable values	Specify a 1- to 20-byte user prefix.
Example	PFX=&SYSUID._PRDJOB

Note: If your site does not allow the use of a user ID high-level qualifier for data set names, you must remove the comment asterisk (*) for PFX and specify an appropriate value for this parameter. Advanced Audit for DFSMSshm uses this prefix to allocate the &PFX.AKD.CNTL and &PFX.AKD.PLANS data sets.

PPFX

Product library prefix. Name of the product library prefix.

Default value	None
Syntax	PPFX= <i>hlq1.hlq2</i>
Acceptable values	Specify any valid high-level qualifier, 1-20 bytes.
Example	PPFX=AKD103.AKD

AUD_LARGEPRI

The primary space for sort DD cards in audit jobs.

Default value	100
Syntax	AUD_LARGEPRI= <i>100</i>
Acceptable values	1 to 99999 (The space type is always CYL)
Example	AUD_LARGEPRI=100

AUD_LARGESEC

The secondary space for sort DD cards in audit jobs.

Default value	200
Syntax	AUD_LARGESEC=200
Acceptable values	1 to 99999 (The space type is always CYL)
Example	AUD_LARGESEC=200

AUD_MCDS

The data set name of the MCDS. If you are using a split CDS, this keyword specifies the data set name for the first split.

Default value	NULLFILE
Syntax	AUD_MCDS=HSM.MCDS1
Acceptable values	Specify any valid data set name.
Example	AUD_MCDS=HSM.MCDS1

AUD_MCDS2

The data set name of the MCDS. If you are using a split CDS, this keyword specifies the data set name for the second split.

Default value	NULLFILE
Syntax	AUD_MCDS2=HSM.MCDS2
Acceptable values	Specify any valid data set name.
Example	AUD_MCDS2=HSM.MCDS2

AUD_MCDS3

The data set name of the MCDS. If you are using a split CDS, this keyword specifies the data set name for the third split.

Default value	NULLFILE
Syntax	AUD_MCDS3=HSM.MCDS3
Acceptable values	Specify any valid data set name.
Example	AUD_MCDS3=HSM.MCDS3

AUD_MCDS4

The data set name of the MCDS. If you are using a split CDS, this keyword specifies the data set name for the fourth split.

Default value	NULLFILE
Syntax	AUD_MCDS4=HSM.MCDS4
Acceptable values	Specify any valid data set name.
Example	AUD_MCDS4=HSM.MCDS4

AUD_BCDS

The data set name of the BCDS. If you are using a split CDS, this keyword specifies the data set name for the first split.

Default value	NULLFILE
Syntax	AUD_BCDS= <i>HSM.BCDS1</i>
Acceptable values	Specify any valid data set name.
Example	AUD_BCDS=HSM.BCDS1

AUD_BCDS2

The data set name of the BCDS. If you are using a split CDS, this keyword specifies the data set name for the second split.

Default value	NULLFILE
Syntax	AUD_BCDS2= <i>HSM.BCDS2</i>
Acceptable values	Specify any valid data set name.
Example	AUD_BCDS2=HSM.BCDS2

AUD_BCDS3

The data set name of the BCDS. If you are using a split CDS, this keyword specifies the data set name for the third split.

Default value	NULLFILE
Syntax	AUD_BCDS3= <i>HSM.BCDS3</i>
Acceptable values	Specify any valid data set name.
Example	AUD_BCDS3=HSM.BCDS3

AUD_BCDS4

The data set name of the BCDS. If you are using a split CDS, this keyword specifies the data set name for the fourth split.

Default value	NULLFILE
Syntax	AUD_BCDS4= <i>HSM.BCDS4</i>
Acceptable values	Specify any valid data set name.
Example	AUD_BCDS4=HSM.BCDS4

AUD_OCDS

The data set name of the OCDS.

Default value	NULLFILE
Syntax	AUD_OCDS= <i>HSM.OCDS</i>
Acceptable values	Specify any valid data set name.
Example	AUD_OCDS=HSM.OCDS

Optional parameters

JOB CARD1

First line to be used when creating JCL.

Default value	Not applicable
Syntax	JOB CARD1= ' <i>jobcard data</i> '
Acceptable values	3-60 bytes of data delimited by single quote (') marks.
Example	JOB CARD1= ' // AKDJOB JOB (Acct), "AKD job". '

JOB CARD2

Second line to be used when creating JCL.

Default value	Not applicable
Syntax	JOB CARD2= ' <i>jobcard data</i> '
Acceptable values	3-60 bytes of data delimited by single quote (') marks.
Example	JOB CARD2= ' // MSGCLASS=A, CLASS=B, '

JOB CARD3

Third line to be used when creating JCL.

Default value	Not applicable
Syntax	JOB CARD3= ' <i>jobcard data</i> '
Acceptable values	3-60 bytes of data delimited by single quote (') marks.
Example	JOB CARD3= ' // NOTIFY=&SYSUID '

JOB CARD4

Fourth line to be used when creating JCL.

Default value	Not applicable
Syntax	JOB CARD4= ' <i>jobcard data</i> '
Acceptable values	3-60 bytes of data delimited by single quote (') marks.
Example	JOB CARD4= ' // * '

JOB CARD5

Fifth line to be used when creating JCL.

Default value	Not applicable
Syntax	JOB CARD5= ' <i>jobcard data</i> '
Acceptable values	3-60 bytes of data delimited by single quote (') marks.
Example	JOB CARD5= ' // * '

HISTPRI

Primary Space for Global Summary History file (allocated in AKDJCUST customization REXX).

The space type used for allocation is CYL.

Default value	30
---------------	----

Syntax	HISTPRI= <i>n</i>
Acceptable values	Any integer in the range 1-99999
Example	HISTPRI=30

HISTSEC

Secondary Space for Global Summary History file (allocated in AKDJCUST customization REXX).

The space type used for allocation is CYL.

Default value	10
Syntax	HISTSEC= <i>n</i>
Acceptable values	Any integer in the range 0-99999.
Example	HISTSEC=10

WORKDC

SMS data class name to be used for file allocations.

Default value	None
Syntax	WORKDC= <i>dataclas</i>
Acceptable values	Any valid SMS data class, 1-8 bytes.
Example	WORKDC=DC001

WORKMC

SMS management class name to be used for file allocations.

Default value	None
Syntax	WORKMC= <i>mgmtclas</i>
Acceptable values	Any valid SMS management class, 1-8 bytes.
Example	WORKMC=MC008

WORKPRI

Primary allocation amount to be used for file allocations.

Default value	100
Syntax	WORKPRI= <i>n</i>
Acceptable values	Any integer in the range 1-99999.
Example	WORKPRI=50

WORKSEC

Secondary allocation amount to be used for file allocations.

Default value	100
Syntax	WORKSEC= <i>n</i>
Acceptable values	Any integer in the range 0-99999.
Example	WORKSEC=10

WORKSC

SMS storage class name to be used for file allocations.

Default value	None
Syntax	WORKSC= <i>storclas</i>
Acceptable values	Any valid SMS storage class, 1-8 bytes.
Example	WORKSC=SC002

WORKUNIT

UNIT name to be used for file allocations.

Default value	SYSALLDA
Syntax	WORKUNIT= <i>unitname</i>
Acceptable values	Any valid unit name, 1-8 bytes.
Example	WORKUNIT=AKDUNIT

Audit JCL parameters

The following parameters, all of which begin with AUD_, are used during JCL creation or submission (or both) of audit jobs in the Administration area of the ISPF interface.

AUD_FIXCDS_LIMIT

Maximum number of FIXCDS T statements issued. FIXCDS T statements are used to rebuild the TTOC.

Default value	3000000
Syntax	AUD_FIXCDS_LIMIT= <i>n</i>
Acceptable values	1-10000000.
Example	AUD_FIXCDS_LIMIT = 3000000

AUD_PRI

Primary Space for audit jobs.

Default value	100
Syntax	AUD_PRI= <i>n</i>
Acceptable values	1-99999 (The space type is defined by variable AUD_SPC).
Example	AUD_PRI = 100

AUD_SEC

Secondary Space for audit jobs.

Default value	200
Syntax	AUD_SEC= <i>n</i>
Acceptable values	0-99999 (The space type is defined by variable AUD_SPC).
Example	AUD_SEC = 200

AUD_SPC

Type of space allocation for audit jobs.

Default value	CYL
Syntax	AUD_SPC=CYL TRK BLK
Acceptable values	CYL, TRK, BLK.
Example	AUD_SPC=CYL

AUD_SYSOUT

Type of sysout for audit jobs.

Default value	*
Syntax	AUD_SYSOUT= <i>sysouttype</i>
Acceptable values	Any acceptable sysout type.
Example	AUD_SYSOUT=*

AUD_UNIT

Unit type of space allocation for permanent data sets created by the audit jobs.

Default value	SYSALLDA
Syntax	AUD_UNIT= <i>unittype</i>
Acceptable values	Any acceptable unit type.
Example	AUD_UNIT=SYSALLDA

AUD_WORK_UNIT

Unit type of space allocation for temporary data sets created by the audit jobs.

Default value	SYSALLDA
Syntax	AUD_WORK_UNIT= <i>unittype</i>
Acceptable values	Any acceptable unit type.
Example	AUD_WORK_UNIT=SYSALLDA

AUD_TTOC_ALIAS

Specifying YES turns on TTOC contents verification in the AKDAUDAL, AKDAUDMD, or AKDAUDBD audit jobs. Audit counts all the valid records in the TTOC extraction and compares it to the original block count from the TTOC record.

Default value	YES
Syntax	AUD_TTOC_ALIAS=YES NO
Acceptable values	YES, NO
Example	AUD_TTOC_ALIAS=YES

AUD_TAPE_VOL

The volser used to perform Audit Media Control analysis. Audit jobs AKDAUDFT and AKDAUDFL.

Default value	XXXXXX
Syntax	AUD_TAPE_VOL= <i>volser</i>
Acceptable values	Any six-character tape volser.

Example	AUD_TAPE_VOL=C10210
---------	---------------------

AUD_TAPE_UNIT

Tape Unit Type used to perform Audit Media Control analysis. Audit jobs AKDAUDFT and AKDAUDFL.

Default value	3590-1
Syntax	AUD_TAPE_UNIT= <i>unittype</i>
Acceptable values	Any acceptable tape unit type.
Example	AUD_TAPE_UNIT=3590-1

AUD_TAPE_ANALYSIS

For a description of options see the section “Audit Procedures for DFSMSHsm-Owned Tapes”. Audit jobs AKDAUDFT and AKDAUDFL.

Default value	FAST
Syntax	AUD_TAPE_ANALYSIS=FAST THOROUGH INTENSE
Acceptable values	FAST, THOROUGH, INTENSE
Example	AUD_TAPE_ANALYSIS=FAST

AUD_TTOC_DEVT

Device type used rebuilding records in the TTOC. Audit jobs AKDAUDFT and AKDAUDFD.

Default value	3590-1
Syntax	AUD_TTOC_DEVT= <i>tapedevicetype</i>
Acceptable values	Any acceptable tape device type.
Example	AUD_TTOC_DEVT=3590-1

AUD_RMM_MSG

If you are using RMM as your Tape Manager, this is the data set name of the RMM Message Library. Audit job AKDAUDRM.

Default value	RMM.SMS.MESSAGE
Syntax	AUD_RMM_MSG= <i>datasetname</i>
Acceptable values	Any valid data set name.
Example	AUD_RMM_MSG=RMM . SMS . MESSAGE

AUD_RMM_RPT

If you are using RMM as your Tape Manager, this is the data set name of the RMM Report Library. Audit job AKDAUDRM.

Default value	RMM.SMS.REPORT
Syntax	AUD_RMM_RPT= <i>datasetname</i>
Acceptable values	Any valid data set name.
Example	AUD_RMM_MSG=RMM . SMS . REPORT

AUD_CA1_TMC

If you are using CA1 TMS as your Tape Manager, this is the data set name of the CA1 TMC Library. Audit job AKDAUDTP.

Default value	TMS.TMC
Syntax	AUD_CA1_TMC= <i>datasetname</i>
Acceptable values	Any valid data set name.
Example	AUD_CA1_TMC=TMS . TMC

AUD_TLMS_VMF

If you are using using TLMS as your Tape Manager, this is the data set name of the TLMS Volume Master File. Audit job AKDAUDHL.

Default value	TLMS.VMF
Syntax	AUD_TLMS_VMF= <i>datasetname</i>
Acceptable values	Any valid data set name.
Example	AUD_TLMS_VMF=TLMS . VMF

AUD_SMS_LIMIT

Limits the SMS audit job AKDAUDSM to the number of data sets on which to perform the ACS Management Class comparison. The default value for this parameter is 9999, due to the number of resources that must be allocated to perform the ACS testing. If you specify a larger number for this parameter, you should increase the values that you set for parameters AUD_PRI, AUD_SEC and AUD_SPC.

Default value	9999
Syntax	AUD_SMS_LIMIT= <i>n</i>
Acceptable values	Any integer in the range 1-99999.
Example	AUD_SMS_LIMIT=999

AUD_SMS_CDS

The SCDS or ACDS data set name or the word ACTIVE. If you specify ACTIVE, the audit job uses the currently active ACS routine to test against.

Default value	ACTIVE
Syntax	AUD_SMS_CDS=ACTIVE <i>datasetname</i>
Acceptable values	ACTIVE or any valid SCDS/ACDS data set name.
Example	AUD_SMS_CDS=SYS1 . SMS . SCDS

AUD_SMS_DGTHLQ

The high-level qualifier of your installation's ISMF DGT libraries.

Default value	SYS1
Syntax	AUD_SMS_DGTHLQ= <i>qualifier</i>
Acceptable values	Specify any qualifier from 1-8 bytes.
Example	AUD_SMS_DGTHLQ=SYSX

AUD_SMS_ISPHLQ

The high-level qualifier of your installation's ISPF libraries.

Default value	ISP
Syntax	AUD_SMS_ISPHLQ= <i>qualifier</i>
Acceptable values	Specify any qualifier from 1-8 bytes.
Example	AUD_SMS_ISPHLQ=SYS1

COLLECT_HSM

Indicates whether you want DFSMSHsm activity data collection performed.

Default value	Yes
Syntax	COLLECT_HSM=YES Y NO N
Acceptable values	YES, Y, NO, or N
Example	COLLECT_HSM=YES

COLLECT_TIME

Advanced Audit for DFSMSHsm stores the DFSMSHsm activity data it collects in a common area before the data is written to the *opf*x.HSMACT data set (being allocated automatically). Use this parameter to specify the interval (in terms of seconds) in which this data is written to the data set.

Default value	3600 (1 hour)
Syntax	COLLECT_TIME= <i>n</i>
Acceptable values	Any integer in the range 10-86400.
Example	COLLECT_TIME=7200

You may issue the **COLLECT** command with parameters to Advanced Audit for DFSMSHsm through the MVS modify command in SDSF:

```
/F AKDJMAIN, COLLECT FUNC=START/STOP
```

AUD_CLNDAYS

When datasets are recalled, D records are not deleted from the MCDS until (recall date + 3 + #days unreferenced until migration.) which can cause D records to be kept for many years. Thus, new audit is added to identify such MCD records and provide a provision to display or delete those. This parameter would be used to identify the MCDs for the datasets which have been recalled more than AUD_CLNDAYS days before current date.

Default Value	365
Syntax	AUD_CLNDAYS= <i>n</i>
Acceptable values	Any integer in the range 1-9999
Example	AUD_CLNDAYS=730

Cost parameters

Initially, the cost parameters are taken from the AKDCMD00 member and can be overridden at the filtering panel of ERRSCOST report.

CPUCOST (CPU_COST alias is available)

A numeric parameter meaning cost of one CPU seconds, in cents.

Default value	25
Syntax	CPUCOST= <i>n</i>
Acceptable values	Any integer in the range 1-1000.
Example	CPUCOST=25

TAPECOST (TAPE_COST alias is available)

The cost of one tape cartridge, in cents.

Default value	10000
Syntax	TAPECOST= <i>n</i>
Acceptable values	Any integer in the range 100-100000.
Example	TAPECOST=10000

About cross-system communications

Advanced Audit for DFSMSHsm can use TCP/IP services to communicate with Advanced Audit for DFSMSHsm address spaces on multiple systems, which allows you to coordinate work on multiple systems by retrieving and distributing information across a multisystem complex.

If you intend to take advantage of cross-system communications, you need to specify appropriate values for the parameters that are described in this section. However, if you do not intend to use cross-system communications, there is no need to set up these parameters. If you intend to use the cross-system communication feature, be aware that an OMVS segment must be defined for the Advanced Audit for DFSMSHsm address space.

As it is used here, the generic term *network* is used to define whatever setup you find convenient. You can include all systems in your network or you can segregate some of your systems in any way that makes processing easier. In general, a network should be set up in such a way that it encompasses an entire DFSMSHsm configuration. Usually, the control data sets are shared within a SYSPLEX only. If there is more than one SYSPLEX at your site, you can establish a separate network for each DFSMSHsm complex.

When control data sets are shared between multiple systems (spanning multiple SYSPLEXes), the network must include all systems that are accessing that set of control data sets. When control data sets are shared *within* a SYSPLEX, it is recommended that you set up a separate network for each SYSPLEX.

AKDCMD00 provides several options to help facilitate network definition. The usage of system symbols is supported within the AKDCMD00 member, in any value. For example, if SYSNAME were defined to the name of the local system and the DNS token for all systems is the system name followed by MYSHOP . COM, only one LOCALCONN definition is needed in all AKDCMD00 member setups: LOCALCONN=&SYSNAME . . MYSHOP . COM.

Two conditional logic statements have been built into the AKDCMD00 member:

- Use the IF_SYSNAME statement to specify a condition based on the local system name.
- Use the IF_SYSPLEX statement to specify a condition based on the SYSPLEX name.

Note: You can use masking characters in your specifications for these conditional statements.

If a conditional statement is true, any parameters following the statement are accepted; if a conditional statement is false, any parameters following the statement are ignored.

Consider an example in which the goal is to use one AKDCMD00 member for all systems, but to specify different parameter values for each SYSPLEX:

```
LOCALCONN=&SYSNAME . . IP . ADDRESS
IF_SYSPLEX=PRODPLEX
CONNECTION=PROD1 . IP . ADDRESS
CONNECTION=PROD2 . IP . ADDRESS
IF_SYSPLEX=TESTPLEX
CONNECTION=TEST1 . IP . ADDRESS
CONNECTION=TEST2 . IP . ADDRESS
```

Alternatively, you could use a masking character to specify the SYSNAME:

```
IF_SYSNAME=P*
CONNECTION=PROD1 . IP . ADDRESS
CONNECTION=PROD2 . IP . ADDRESS
```

AKDCMD00 cross-system communication keyword syntax and descriptions

These are the required and optional keywords to enable cross-system communication.

Important: These three parameters, properly set up, are required to successfully setup cross-system communications:

- PORTNUM
- CONNECTION
- LOCALCONN

CONNECTION

One CONNECTION statement is needed for each system that is to be part of this network. You also need one for the local system connection.

Default value	None
Syntax	CONNECTION= <i>ip-address-or-dns-name</i>
Acceptable values	Specify any valid IP address or DNS name.
Example	CONNECTION=111.222.333.444

LOCALCONN

Local connection IP address or DNS name. This entry should also have a corresponding CONNECTION statement. To use this member for more than one system, use the following example to see how to code values for different systems.

Default value	None
Syntax	LOCALCONN= <i>ip-address-or-dns-name</i>
Acceptable values	Specify any valid IP address or DNS name.
Example	<pre>IF_SYSNAME=SYSTEM1 LOCALCONN=SYSTEM1 . DNS . NAME IF_SYSNAME=SYSTEM2 LOCALCONN=SYSTEM2 . IP . ADDRESS</pre>

PORTNUM

Port number to use for the connections. This should be the same number on every system.

Default value	None
---------------	------

Syntax	PORTNUM= <i>portnumber</i>
Acceptable values	Specify any valid port number.
Example	PORTNUM=27050

SYSCHKINTVL

System check interval time, in seconds.

Default value	15
Syntax	SYSCHKINTVL= <i>n</i>
Acceptable values	Specify any valid integer.
Example	SYSCHKINTVL=15

TIMEOUT

Timeout value, in minutes, for inactive systems.

Default value	60
Syntax	TIMEOUT= <i>n</i>
Acceptable values	Specify any valid integer.
Example	TIMEOUT=60

USEXSYS

For any cross-system processing to be attempted, this parameter must be set to YES.

Default value	NO
Syntax	USEXSYS=YES NO
Acceptable values	Specify YES or NO.
Example	USEXSYS=YES

USERWAIT

Wait time in seconds for user requests. If no response is received within this time interval, the request is ended early.

Default value	300
Syntax	USERWAIT= <i>n</i>
Acceptable values	Specify any valid integer.
Example	USERWAIT=300

Chapter 3. Using the Advanced Audit for DFSMSHsm interfaces

Advanced Audit for DFSMSHsm offers two interfaces: an ISPF interface and a console interface.

Note: If you want to walk through the ISPF interface features and console interface examples as you read the information in the following pages, you must first verify that the product started task is active. These commands are not available when you are viewing or working within the actual audit findings reports.

About the ISPF interface

Advanced Audit for DFSMSHsm provides an ISPF interface for generating and viewing reports, viewing product information, and performing administrative tasks.

The following figure shows an example report being displayed in the ISPF interface.

```
Menu Utilities Navigate Help
-----
HSMCDSS ----- IBM Tivoli Advanced Audit for DFSMSHsm V2.6 -----
Command ==>
Control Data Sets being used by DFSMSHsm: Row 1 of 10 More >
Line Commands are . . . : RLS LC VS
File      RLS      Job
Cmd      Data Set Name      Type      Volser      Flag      Name
RLS1.HSM.SPLIT2.MCDS1      MIGCAT      HSM001      Yes      HSM
RLS1.HSM.SPLIT2.MCDS2      MIGCAT2      HSM001      Yes      HSM
RLS1.HSM.SPLIT.BCDS1      BAKCAT      HSM001      Yes      HSM
RLS1.HSM.SPLIT.BCDS2      BAKCAT2      HSM001      Yes      HSM
RLS1.HSM.OCDS OFFCAT      HSM001      Yes      HSM
RLS1.HSM.SPLIT2.MCDS1      MIGCAT      HSM001      Yes      HSM2
RLS1.HSM.SPLIT2.MCDS2      MIGCAT2      HSM001      Yes      HSM2
RLS1.HSM.SPLIT.BCDS1      BAKCAT      HSM001      Yes      HSM2
RLS1.HSM.SPLIT.BCDS2      BAKCAT2      HSM001      Yes      HSM2
RLS1.HSM.OCDS OFFCAT      HSM001      Yes      HSM2
```

Report displays typically include all of the following areas:

Report name

The name of the report appears in abbreviated format in the upper left corner of the report, below the menu bar (in this case, HSMCDSS). You can also access any report by typing its name in the Command line on any panel within Advanced Audit for DFSMSHsm.

Local time

The upper right corner of the panel shows the local time, which was retrieved from the system where Advanced Audit for DFSMSHsm is running. In the example, the local time is 13:59.

Command line

From the Command line, you can invoke primary commands or type the name of a report to access that report directly. The command you enter can also be saved (using the FORMAT command) as a report layout.

Scroll amount

This setting specifies how much the screen scrolls when you use the scrolling commands. In the example, the scroll amount is PAGE.

Report description

This information appears below the **Command** line, in the upper left portion of the report display. This information provides a description of the data included in the report. In the example, the report description is Control Data Sets being used by DFSMSHsm.

Line command list

This feature appears immediately below the report description, in the upper left portion of the report display. This list shows the commands you can specify in the **Cmd** column for a selected row in the report. In the example, the line commands available for the report are RLS, LC, and VS.

Row counter

This feature appears below the scroll amount in the upper right portion of the report display. It shows both the top row number and the total line count for the report. In the example, the row count information is ROW 1 of 10.

Column scroll indicator

This feature appears to the immediate right of the row counter, with the character > or < indicating which direction to scroll the display to expose additional columns to view. In the example, the column scroll indicator shows More >, which means that there are additional columns to the right.

Cmd column

This feature is usually the leftmost column in the report display. Enter line commands in this column, next to the appropriate row.

Column headers

The report column headers provide very brief descriptions of the data displayed in their corresponding columns. In the example, the column headers are Data Set Name, Type, Volser, Flag, and Name.

Column data

The data that was retrieved and formatted for the report appears under the appropriate column headers.

ISPF scroller commands

This topic provides descriptions and syntax examples for the report scroller commands you can issue through the Advanced Audit for DFSMSHsm ISPF interface.

Command	Syntax	Description
COLOR	COLOR <columnname or number>	Changes the color of the column header and its data. Choose white, red, blue, green, turquoise, pink, or yellow. Use the RESET command to restore the default color to the column.
FILTERS	FILTERS	Changes the filters being used to selectively retrieve data.
FIX	FIX <columnname or number>	Anchors the specified column displayed on the left edge of the report as you scroll the report LEFT and RIGHT.
HIDE	HIDE <columnname or number>	Hides the specified column. The column remains hidden until it is restored using the SHOW command.
HILITE	HILITE <columnname or number> <effect>	Changes the highlight attribute for the column. Valid highlight values are Uscore, Reverse, or Blink. Use the RESET command to restore the default highlight value.
KILO	KILO=<1000 1024>	The value you specify here is used as a scaling factor to decrease a numeric value that is too long to fit within its column width. Note: Do not use this keyword if SCALE=OFF.
MOVE	MOVE <col_a> BEFORE AFTER <col_b>	Moves column A to a position before or after column B.
RESET	RESET	Restores the default layout, column order, and formatting to the display.

Command	Syntax	Description
SCALE	SCALE <ON OFF>	Enables or disables (respectively) the scaling of numerical values. When the numeric value is too large to fit within its report column, the value assigned to this keyword determines how the numeric value is formatted. If you specify OFF, an asterisk appears immediately to the left of the column value, indicating that the value has been truncated; if you specify ON, the overly large column value is divided repeatedly by the value you specify for the KILO command until the quotient fits in the report column. A marker to the right of the quotient shows the KILO value as K (kilo) or M (mega), and so on. Note: If the column width is less than 4 bytes, scaling might not be able to resolve the too-large value issue, and in this situation, an asterisk appears to the left of the column value.
SCOPE	SCOPE <systemname>	Restrict the report to data gathered from the system or systems identified by <i>systemname</i> , which can be an explicit system name or a mask. The data gathered from the system or systems are displayed together in the report.
SHOW	SHOW <columnname or number>	Makes the specified column visible if it is currently hidden. The column appears on the right side of the report.
SHOWALL	SHOWALL	Shows all hidden columns. The hidden columns appear at the right edge of the report when the command is invoked.
SIZE	SIZE <columnname or number> [size>	Specifies column width. Use the RESET command to restore the default column width.
SORT	SORT <colname colnum> <A D>	Sorts the displayed data into ascending or descending order, based on the values in the specified column name or number.
UNFIX	UNFIX <columnname or number>	Un-anchors the specified column from its fixed position on the left edge of the report so the column moves along with its neighbors as you scroll the report LEFT and RIGHT.

SAVE command

Use the **SAVE** command in the ISPF interface to write the information displayed in a report to a data set. You can specify the allocation information to append the report to an existing data set or create a new one.

When you use this command, all required parameters (except data set name) are supplied. The record length shown is the minimum necessary to successfully write an entire row of the data into the data set

without having to truncate any records. Decrease or increase the length as needed, but if you specify a length shorter than the default, data truncation results.

```
SAVE ----- IBM Tivoli Advanced Audit for DFSMSHsm V2R6 ----- 16:22
Command ==> Scroll ==> PAGE

Enter Values for the Following Command: Row 1 of 15
Enter data set allocation parameters:

Data Set Name . . . . .
Volume Serial Number. . . .
Disposition . . . . . NEW
Normal Disposition. . . . CATLG
Conditional Disposition . . KEEP
Record Length . . . . . 89
Block Size. . . . . 0
Record Format . . . . . FB
Unit Name . . . . . SYSALLDA
Data Class. . . . .
Management Class. . . . .
Storage Class . . . . .
Space Type. . . . . CYL
Primary Allocation Amount . 100
```

The **Data Set Name**, **Disposition**, **Normal Disposition**, **Conditional Disposition**, **Record Length**, **Block Size**, **Record Format**, and **Unit Name** parameters are required; the other parameters are optional. Use the HELP function key to display further information about each parameter.

FORMAT command

Use the **FORMAT** command in the ISPF interface to specify the name of the AKDPLANS member that will store in a plan the formatting information for the currently displayed report. The AKDFRMT panel appears, where you can specify appropriate values for the command parameters.

The AKDFRMT panel is shown in the following figure.

```
AKDFRMT ----- IBM Tivoli Advanced Audit for DFSMSHsm V2R6----- 16:27
Command ==> Scroll ==> PAGE

Enter Values for the Following Command: Row 1 of 3
Control Data Sets being used by DFSMSHsm:

Member Name . . . . . HSMCDSS
Replace Existing Member . . N
Description . . . . . CONTROL DATA SETS BEING USED BY DFSMSHSM:
```

Keep the following in mind as you complete these fields:

- If you want to replace an existing member with the formatting and layout information from the current report, type Y in the **Replace Existing Member** field.
- You cannot use member names that begin with AKD. Be careful about specifying a member name that has the same name as a report that is shipped with Advanced Audit for DFSMSHsm; if you do so, whenever a user requests that report, Advanced Audit for DFSMSHsm displays the customized report rather than the default report.

About the FORMAT command member

This section describes the layout of the member generated when you use the **FORMAT** command in the Advanced Audit for DFSMSHsm ISPF interface. Use this information to generate such a member manually, should you need to do so. The member contains two sections: Report Layout and Filters.

Report Layout section

The information that is necessary for changing the column order, colors, number of records, and other report parameters is stored in the Report Layout section of the **FORMAT** command member.

The <reportformat> and </reportformat> tags delimit the Report Layout section.

The Report Layout section contains these keywords:

REPORT

Identifies the report to invoke. This name must match a valid Advanced Audit for DFSMSHsm report name. If it does not, an error is generated and no data is returned when the report is invoked.

TITLES

Specifies whether the report column headings are visible. Valid values are ON or OFF.

LIMIT

Limits the number of records that can be returned for the report.

SCALE

Enables or disables scaling of numerical values. When the numeric value is too large to fit within its report column, the value assigned to this keyword determines how the numeric value is formatted. If you specify OFF, an asterisk (*) appears immediately to the left of the column value, indicating that the value has been truncated; if you specify ON, the overly large column value is divided repeatedly by the value you specify for the KILO keyword until the quotient fits in the column. A marker to the right of the quotient shows the KILO value as K (kilo) or M (mega), and so on.

Note: If the column width is less than 4 bytes, scaling might not be able to resolve the too-large value issue, and in this situation, an asterisk appears to the left of the column value.

KILO

Specifies a scaling factor used to decrease numeric report values that are too large to fit in their column. Do not use this parameter if SCALE=OFF.

COLOR

Changes the color of the column header and its data. The syntax is COLOR=(column_name, color). Valid values for color are white, read, blue, green, turq, pink, and yellow. Use the RESET command to restore the default color to the column.

HILITE

Changes the hilite attribute for the column. The syntax is HILITE=(column_name, hilite_value). Valid values for hilite_value are Uscore, Reverse, and Blink.

SIZE

Changes the width of the column. The syntax for this parameter is SIZE=(column_name, size).

HIDE

Hides the specified column so it does not appear in the report. You can use the SHOW parameter to restore the column to the report display. The syntax for this parameter is HIDE=column_name.

SHOW

Restores a previously hidden column to the report display. The restored column appears at the right side of the report. Syntax for this parameter is SHOW=column_name.

FIX

Anchors the specified column displayed on the left edge of the report as you scroll the report LEFT and RIGHT. Syntax for the parameter is FIX=column_name.

UNFIX

Un-anchors a column from its fixed position on the left side of the report so the column moves along with its neighbors as the report is scrolled LEFT and RIGHT. Syntax for the parameter is UNFIX=column_name.

COLUMN_ORDER

Specifies the order in which the columns appear in the report. The columns for which you specify an order will appear at the left side of the report. The syntax for this parameter is COLUMN_ORDER=(column_name1, column_name2, ...column_nameN).

Filter Values section

This section of the **FORMAT** command section is delimited by the <filters> and </filters> tags. Within the section is the information Advanced Audit for DFSMSHsm needs to determine which information to collect for the report.

To determine which filter names are available for a given report, complete these steps:

1. Using the ISPF interface menus, select the report.
2. When the filter parameters panel appears, place the cursor in the filter parameter field of interest.
3. Press the HELP function key to display the name of the column.

Sample *FORMAT* command member

This topic provides an example of a **FORMAT** command member, showing report layout section and the filter values section.

```
<reportformat>
REPORT=HSMHOSTS
DESC='MY SAMPLE HSMHOSTS REPORT'
HIDE=JOBNUM
COLUMN-ORDER=(JOBNAME TYPE HOST RELEASE)
</reportformat>
<filters>
JOBNAME EQ DFHSM
</filters>
```

About the console interface

You can use the console interface to issue commands for starting, stopping, and otherwise controlling the common address space usage feature.

General console commands

Use these commands to manipulate the Advanced Audit for DFSMShsm address space.

SHUTDOWN

Use the **SHUTDOWN** console command to have the address space begin the shutdown process. The address space removes Advanced Audit for DFSMShsm functions from the systems and ends.

Command	SHUTDOWN
Alias	SHUT
Syntax	SHUTDOWN

REFRESH

Use the **REFRESH** command to request that the address space refresh the data it has available after a parameter member is updated or a system event occurs.

Command	REFRESH
Alias	R
Syntax	REFRESH TYPE=CMD

Associated keywords	TYPE	Use this keyword to specify the type of information you want refreshed. Possible values for this keyword are as follows:	
		ALL	Refresh all available information.
		HSM	Refresh DFSMShsm host and data set information.
		CMD	Read the AKD command member and then apply the new parameter values to AKD processing. Be aware that not all parameter changes take effect immediately; some changes cannot be accepted until you stop the address space and then restart it.
		MSG	Read the AKD message member and apply the new parameter values to AKD processing.

Console commands for common address space usage

Use these console commands to start and stop the products sharing the common address space usage address space. These commands are relevant for sites that use the common address space.

SHUTDOWN

Use this console command to have the address space issue a **STOP** to every product currently active under the address space, and then shutdown the address space itself.

Command	SHUTDOWN
Alias	SHUT
Syntax	SHUTDOWN

Chapter 4. Getting started

This topic provides instructions for starting Advanced Audit for DFSMSHsm, , accessing its features, and using masks for filtering. Also included is a suggested workflow for new users.

Advanced Audit for DFSMSHsm has an ISPF-based interface that makes it easy to perform most tasks:

- Analyze and correct errors.
- View error message explanations and suggested remedies.
- If, during installation and configuration, you chose to use the AKDJMAIN started task, you can also use the ISPF interface to do the following:
 - View DFSMSHsm tasks that are running.
 - View DFSMSHsm control data set information.
 - View DFSMSHsm control data set backup information.
 - View Advanced Audit for DFSMSHsm product information.

About the ISPF interface

Advanced Audit for DFSMSHsm provides an ISPF-based interface that allows you to easily do the following tasks:

- Analyze and correct errors.
- View Advanced Audit for DFSMSHsm messages.
- If you configured Advanced Audit for DFSMSHsm to use the started task, you can also do all of the following:
 - View DFSMSHsm tasks which are running.
 - View DFSMSHsm control dataset information.
 - View DFSMSHsm control dataset backup information.
 - View Advanced Audit for DFSMSHsm product information.

Starting the ISPF interface

How you start the Advanced Audit for DFSMSHsm ISPF interface depends on whether you configured the product to use the Advanced Audit for DFSMSHsm started task.

Procedure

- If your site uses the Advanced Audit for DFSMSHsm started task, issue this command: EX `'ppfx.SAKDCLST(AKDSTART)'`
where *ppfx* is the product prefix that was assigned at installation time. If the AKDSTART CLIST has been copied to a system CLIST library, you can issue the %AKDSTART command.
- If your site does use the Advanced Audit for DFSMSHsm started task, issue this command: EX `'ppfx.SAKDCLST(AKDAUDIT)'`
where *ppfx* is the product prefix that was assigned at installation time. If the AKDAUDIT CLIST has been copied to a system CLIST library, you can issue the %AKDAUDIT command.

Advanced Audit for DFSMSHsm main menu

You can access all of the product features from the Advanced Audit for DFSMSHsm main menu.

The following figure shows the **Main Menu** panel.

```

MainMenu ----- IBM Tivoli Advanced Audit for DFSMSHsm V2R6 ----- 12:55
Command ==>                                         Scroll ==> CSR

Main Menu:                                         Row 1 of 6

Report Name          Description
1 Auditing           Auditing Data
2 HSM Host Information Information on DFSMSHsm Hosts
3 Administrative Tasks Administrative Functions
4 Product Information Product Information
5 Auditing Reports   Additional Audit Reports

```

The Main Menu panel offers these options:

Auditing

Display the results from running the audit procedures.

HSM Host Information

Display information about the DFSMSHsm Hosts that are actively running on this system, control data sets being used by DFSMSHsm, control data set backup versions, and data sets currently allocated to the DFSMSHsm host. You can also issue DFSMSHsm commands to a DFSMSHsm host.

Administrative Tasks

Customize the Advanced Audit for DFSMSHsm processing parameters, test user access to HSM commands, list the PARMLIB data sets, list PLAN data set members, list the CNTL data sets, and submit audit jobs.

Product Information

View Advanced Audit for DFSMSHsm version and release level information, display the data sets that are used for Advanced Audit for DFSMSHsm processing, see address space allocation, enqueue, and virtual storage information, view error message documentation, list the product work data sets, and show all remote systems that have been defined to Advanced Audit for DFSMSHsm.

Auditing Reports

Display reports that provide DFSMSHsm, DASD data set, SMS data set, and VSAM data set information that could help the storage administrator determine where their storage environment could be improved.

These options are described in detail in the following chapters.

Viewing message documentation

Advanced Audit for DFSMSHsm issues error, warning, and informational messages during processing. Every message has documentation that explains what condition caused the message to be issued and, whenever it is appropriate, suggests a corrective action.

About this task

There are two methods of viewing message documentation.

Procedure

- Use the **HELP** menu to view the message documentation:
 - a) Put the cursor on the **HELP** menu at the top of the Advanced Audit for DFSMSHsm panel and Press Enter.
 - b) Type 3 in the text entry area and press Enter to select **Product Messages** from the menu.
 - c) On the message viewing filter panel, do one of the following:
 - In the **Message ID** field, type the message identifier and leave the **Message Member** field blank. Press Enter to display the message text, explanation, and recommended user action.

- Leave all fields blank and press Enter to display a list of message identifiers, from which you can select the message for which you want to display the documentation.
- Alternatively, you can browse the relevant member in the message data set, *ppfx*.SAKDMSGs.

Exiting Advanced Audit for DFSMSHsm

To exit Advanced Audit for DFSMSHsm, either type END on the command line or press **PF3** from the **Main Menu** panel.

Filter pattern masks

Many commands allow you to specify powerful filtering masks using extended ACS masking characters, as shown in the following table.

Note: Your installation may need to specify different masking characters to achieve the desired result if your code tables are different from the U.S.A. EBCDIC code set.

Mask	Hex	Description
* (Single character)	5C	Can be used before an item or after an item (or both) to designate a wildcard character position. Consider the following example: *PROD An item is selected if the last four character end in PROD regardless of the starting characters. Using the * character before and after an item (*ZREM*) means that item is to be selected if any character string matches ZREM in its name. Note: You can not use an * in the middle portion of a single item (except for data set names). Use the % character (see below) for that purpose.
%	6C	Denotes a single character placeholder value, which can be alphanumeric or any special character. The % character can be used in any position order. Consider the following example: CRM%%ER6 An item is to be selected if it is 8 characters in length and the first three characters are CRM and the last three characters are ER6. The two middle placeholder values can be any characters.
<	4C	Similar to the % value, the < character denotes a placeholder value for alphabetic or national characters only. The < character can be used in any position order. Consider the following example: CR<<ER* An item is to be selected if the first two characters are CR, the third and fourth characters must be alphabetic or national characters, the fifth and sixth characters are ER, and any remaining characters are allowed.

Mask	Hex	Description
>	6E	Similar to the % value, the > character denotes a placeholder value for only numeric characters. The > character can be used in any position order. Consider the following example: CR>>ER* An item is to be selected if the first two characters are CR, the third and fourth characters must be numeric, the fifth and sixth characters are ER, with any remaining characters allowed.
	4F	Denotes a multiple character placeholder value for alphanumeric characters. The character can be used only in the final position of the mask to represent 'any number of alphanumeric characters.' Consider the following example: ABC.PROD1017. An item is to be selected if the first three characters are ABC, followed by a period (.), followed by the characters PROD1017, followed by a period (.), followed by one or more alphanumeric characters.
** (Double asterisk)	5C5C	Allows compatibility with standard ACS and DFSMSdss filtering masks. This mask is used only for partially qualified data set names. The * or ** characters can be used in any qualifier position to denote a wildcard node. Consider the following example: CRFM*. *VER. ** A data set entry is to be selected if it has at least two qualifiers and the first qualifier starts with CRFM, the second qualifier must end with VER, and any remaining qualifiers may contain any number of alphanumeric characters. Note: As with common data set name masking, any combination of *, **, %, < and > characters can be used for the item mask value.
!	5A	Similar to the % value, the ! character denotes a placeholder value for national characters only. The ! character can be used in any position order. National characters are @, #, and \$.

Chapter 5. Performing audits

Advanced Audit for DFSMSHsm features many audit procedures that you can run to provide reliable information about the health of your HSM control data sets and HSM-owned migration and backup tapes.

- For instructions for submitting an audit procedure for execution, see [“Running an audit procedure” on page 39](#).
- After the audit procedure has successfully completed, you can view the audit results. See [“Viewing audit results” on page 41](#), for more information.
- For information about the individual audit procedures, see the appropriate topic:
 - [“Audit procedures for control data sets” on page 43](#)
 - [“Audit procedures for DFSMSHsm-owned tapes” on page 46](#)

Running an audit procedure

Advanced Audit for DFSMSHsm provides audit procedures for control data sets and for DFSMSHsm-owned tapes.

Before you begin

Before you can run an audit procedure, you must have a job card member defined for running the procedure. The job card is necessary when you perform fixes from within Advanced Audit for DFSMSHsm. For information about creating the job card member, see [“Creating a user job card member” on page 7](#).

About this task

If your installation of Advanced Audit for DFSMSHsm was not configured to use the AKDJMAIN started task, you can use the sample job AKDAUSMP in the SAKDJCL library to submit audit jobs. Before submitting the job, you must edit the member to configure the audit procedure parameters.

It is suggested that all data sets that are allocated by the audit procedures run under SMS control. Several programs in the audit procedures create a data set, close it, and then another module is linked, which looks up the catalog for the data set that was just created. If that data set is not cataloged, the system issues a NOT CAT message. Data sets that are under SMS control must be cataloged upon creation, which circumvents this situation.

To avoid any possible reporting of false errors, consider running the audit procedures when HSM activity is lowest.

Note: Because data sets that are created by the audit procedures use EXCP processing to access the data efficiently, the extract data sets must not be allocated as extended physical sequential. Because of the EXCP processing, the extract data sets cannot use a data class assignment of DSNTYPE=LARGE.

.

Procedure

1. Review the information that is provided in [“Audit procedures for control data sets” on page 43](#), and [“Audit procedures for DFSMSHsm-owned tapes” on page 46](#) to determine which procedures you want to run.
2. Type 3 in the **Command** line on the **Main Menu** panel and press Enter to display the **Administrative Menu** panel.
3. Type 6 in the **Command** line on the **Administrative Menu** panel and press Enter to display the **Audit Jobs** panel.

4. In the **Cmd** column, type S next to the procedure that you want to run. To select a range of audit procedures, type SS in the **Cmd** column for the first procedure in the range and type SS in the **Cmd** column for the last procedure in the range.
5. Optional: If you need to include or exclude catalogs from the AKDAUDAL or AKDAUDCT audit procedures, or need to include or exclude data sets from AKDAUDSM audit, refer to [“Including and excluding data sets from the AKDAUDSM audit procedure” on page 41](#), or [“Including and excluding catalogs from audit procedures” on page 40](#), for more information.
6. Press Enter to display the **JclPview** panel, from which you can do any of the following:
 - Type B and press Enter to browse the generated JCL before submitting it.
 - Type E and press Enter to edit the generated JCL before submitting it.
 - Type S and press Enter to submit the generated JCL.
 - Type X and press Enter to copy the generated JCL to a specified data set.

Results

To view the result of the audit procedure or procedures, select the **Auditing** option from the **Main Menu** panel and then select the appropriate option from the AKD710 panel.

Including and excluding catalogs from audit procedures

You can include or exclude catalogs from the AKDAUDAL and AKDAUDCT audit procedures.

About this task

The exclude member for each audit procedure is in the *ppfx*.SAKDCNTL library.

- For the audit procedure AKDAUDAL, the exclude member is AKDZXCAL.
- For the audit procedure AKDAUDCT, the exclude member is AKDZXCCT.

To include or exclude specific catalogs from these audits:

Procedure

1. Modify the statement `//EXCLUDE DD DSN=&ppfx.SAKDCNTL (AKDZXCxx)` in the audit procedure so it refers to the proper exclude member.
2. Modify member AKDZXCxx in *ppfx*.SAKDCNTL with one of the following:
 - A list of catalogs to exclude after the `EXCLUDES FOLLOW` statement
 - A list of catalogs to include after the `INCLUDES FOLLOW` statement

See [“AKDAUDCT audit procedure” on page 43](#), or [“AKDAUDAL audit procedure” on page 43](#), for additional information on what to include or exclude for each audit procedure.

Example

The following shows an example list of included catalogs for an audit procedure:

```
INCLUDES FOLLOW
USERCAT. UCAT1
FACUCAT. FORTY. FOUR. BYTE. CATALOG. NAME. X000001
FACUCAT. FORTY. FOUR. BYTE. CATALOG. NAME. X000002
```

The following shows an example list of excluded catalogs for an audit procedure:

```
EXCLUDES FOLLOW
ICF. ZAPP02
CRTUCAT. EH. REORG01
```

If you use multicluster CDSs, you must:

- Include the names of all CDS splits in the JCL for each catalog procedure.
- Include the names of all splits in the AKDBATCH member of the *ppfx*.SAKDJCL library.

Including and excluding data sets from the AKDAUDSM audit procedure

You can explicitly include or exclude data sets from the AKDAUDSM audit procedure.

Procedure

1. Modify the DCOLLECT member AKDZSMS1 in the *ppfx*.SAKDCNTL library. See the *z/OS DFSMS Access Method Services* manual for proper DCOLLECT parameters. Use the STORAGEGROUP (Storage Group) parameter to collect data by storage group.
2. If you want to further filter data set results after the DCOLLECT step, modify member AKDZSMS2 in the *ppfx*.SAKDCNTL library by doing one or both of the following (by default, all results are included).
 - After the INCLUDES FOLLOW statement, provide a list of data sets or masks for data set names to include in the audit.
 - After the EXCLUDES FOLLOW statement, provide a list of data sets or masks for data set names to be excluded from the audit.

Example

The following shows an example list of explicitly included data sets and excluded data sets for the AKDAUDSM audit procedure:

```
INCLUDES FOLLOW
TEST.**
PROD.**
EXCLUDES FOLLOW
TEST.SYS*.**
```

The example would include in the audit all data sets that have TEST and PROD (from the DCOLLECT data extract) high-level qualifier and would exclude any data set whose name begins with TEST . SYS.

Viewing audit results

After you run an audit procedure, you can view the audit results from the Auditing menu panel.

Procedure

1. Type 1 in the **Command** line on the **Main Menu** panel and press Enter to display the Auditing menu panel (AKD710).

```
AKD710  ----- IBM Tivoli Advanced Audit for DFSMSshm V2R6----- 13:43
Command ==>                               Scroll ==> PAGE

 1 MCDS      Created by procs AKDAUDMD,AKDAUDCT,AKDAUDAL
 2 BCDS      Created by proc  AKDAUDBD
 3 OCDS      Created by proc  AKDAUDOD
 4 HSMTAPE   Created by procs AKDAUDTP,AKDAUDZR,AKDAUDRM,AKDAUDCM,
                        AKDAUDHL,AKDAUDGF
 5 MEDCTL    Created by procs AKDAUDFD,AKDAUDFL,AKDAUDFT
 6 SMS       Created by proc  AKDAUDSM
```

2. In the **Command** line on the Auditing menu panel, type the option number that corresponds to the procedure whose results you want to view and then press Enter.

MCDS

The AKDAUDMD procedure audits all MCDS components except the catalog.

The AKDAUDCT procedure audits all of the MCDS true name entries (MCD and MCO) against catalog entries with volser MIGRAT.

The AKDAUDAL procedure audits all of the MCDS migration components and the entries that are cataloged to volser MIGRAT.

BCDS

The AKDAUDBD procedure audits the BCDS backup components.

OCDS

The AKDAUDOD procedure audits the DFSMSHsm OCDS volume pointer chains, forward and backward.

HSMTAPE

The AKDAUDTP procedure audits the DFSMSHsm tape inventory OCDS against the CA1 TMS system.

The AKDAUDZR procedure audits the OCDS against the ZARA tape management system.

The AKDAUDRM procedure audits the OCDS against the IBM Removable Media Manager (RMM).

The AKDAUDCM procedure audits the OCDS against the BMC Control/M Tape (CNM).

The AKDAUDHL procedure audits the OCDS against the TLMS Tape Master Volume File.

The AKDAUDGF procedure audits the OCDS against the GFS/AFM tape management system.

MEDCTL

The AKDAUDFD procedure provides diagnostics that are useful in determining the health and contents of a tape before it is mounted and read.

The AKDAUDFL depends on the successful completion of the for a given tape volume. AKDAUDFL uses the data sets created by AKDAUDFD and runs additional diagnostics after reading the physical tape.

The AKDAUDFT procedure combines the functions of the AKDAUDFD and AKDAUDFL procedures to produce a single audit.

SMS

The AKDAUDSM procedure audits the management classes of data sets that are currently residing on DASD against the current ACS routine.

The AKD720 panel displays the audit results.

What can I do with the audit result information?

After you have viewed the audit results, you can fix the problems that were uncovered by the audit.

Advanced Audit for DFSMSHsm supports automatic error correction and manual error correction:

- Set up the audit procedures to automatically fix these problems the next time the audit is run. See [“Automatic error correction” on page 73](#). If you choose to implement automatic error correction, you can use SDSF to monitor the progress of the fixes. See [“Using SDSF to monitor automatic fixes” on page 77](#) topic in the *Error correction* chapter.
- You can manually correct the errors that were found by the audit. See [“Analyzing and correcting errors manually” on page 75](#) in the *Error correction* chapter.

Note: If you would prefer to test a fix on a single error before applying the fix to all occurrences of that error, use the procedure in [“Modifying audit results” on page 76](#), to so specify. You might also want to modify the audit results in situations where the audit discovered a very large number of errors in one category so that fewer fixes are generated.

Audit procedures for control data sets

The Advanced Audit for DFSMSHsm control data set audit procedures evaluate the control data sets to identify structural and logical discrepancies that can prevent migrated data from being recalled or backup data from being restored.

AKDAUDAL audit procedure

AKDAUDAL audits all of the MCDS migration components and the catalog entries that are cataloged to VOLSER MIGRAT.

AKDAUDAL procedure creates two data sets that are used in error analysis and correction.

- *pfx*.AUDIT.MCDS.ERRSUM - MCDS Audit Errors Summary
- *pfx*.AUDIT.MCDS.ERRORS - MCDS Audit Errors Detail

When you run the procedure, you can include and exclude specific catalogs.

- It is recommended that you exclude all master catalogs on the complex. You should check what you are excluding before running any procedures involving catalog extraction.
- It is also recommended that you do not exclude user catalogs. When a data set is found that is cataloged to an excluded user catalog, the situation is reported as though the data set were cataloged to the master catalog. Additionally, this will cause the audit to run considerably longer.

See [“Including and excluding catalogs from audit procedures”](#) on page 40, for more information.

AKDAUDBD audit procedure

The AKDAUDBD procedure audits the BCDS backup components.

This procedure creates two data sets that are used in error analysis and correction.

- *pfx*.AUDIT.BCDS.ERRSUM - BCDS Audit Errors Summary
- *pfx*.AUDIT.BCDS.ERRORS - BCDS Audit Errors Detail

Note: You must stop the EXPIREBV and the FREEVOL BACKUPVOL processes before running this audit procedure.

AKDAUDCM audit procedure

The AKDAUDCM procedure audits the DFSMSHsm tape inventory OCDS against the IBM® Control/M Tape (CNM).

If DFSMSHsm manages the tapes directly, this procedure can still be run; however, the diagnostic messages relating to the CNM tape inventory will have little value.

This procedure creates two data sets that are used in error analysis and correction.

- *pfx*.AUDIT.TAPE.ERRSUM - Tape Audit Errors Summary
- *pfx*.AUDIT.TAPE.ERRORS - Tape Audit Errors Detail

AKDAUDCT audit procedure

The AKDAUDCT procedure audits all of the MCDS true name entries (MCD and MCO) against catalog entries with VOLSER MIGRAT.

The MCDS error analysis contains only those errors that are related to the catalog extraction. For a full MCDS analysis, run the AKDAUDAL procedure, which reads both the MCDS and catalog records that are associated with migrated data.

This procedure creates two data sets that are used in error analysis and correction.

- *pfx*.AUDIT.MCDS.ERRSUM - MCDS Audit Errors Summary

- *pf*x.AUDIT.MCDS.ERRORS - MCDS Audit Errors Detail

If you include specific catalogs instead of excluding them, only those entries in DFSMSHsm that qualify for that catalog are audited. It is recommended that you exclude all master catalogs on the complex. You should check what you are excluding before running any procedures involving catalog extraction. For information about including and excluding catalogs, see [“Including and excluding catalogs from audit procedures”](#) on page 40.

AKDAUDGF audit procedure

The AKDAUDGF audit procedure provides support for the GFS/AFM tape management system by performing an audit between the AFMLIST extract and the DFSMSHsm control data sets.

The AKDAUDGF procedure creates two data sets that are used in error analysis and correction:

- *pf*x.AUDIT.TAPE.ERRSUM - Tape Audit Errors Summary
- *pf*x.AUDIT.TAPE.ERRORS - Tape Audit Errors Detail

AKDAUDHL audit procedure

The AKDAUDHL procedure audits the DFSMSHsm tape inventory OCDS against the TLMS Tape Master Volume File. If DFSMSHsm manages the tapes directly, you can still run this procedure; however, the diagnostic messages relating to the TLMS tape inventory will have little value.

This procedure creates two data sets that are used in error analysis and correction.

- *pf*x.AUDIT.TAPE.ERRSUM - Tape Audit Errors Summary
- *pf*x.AUDIT.TAPE.ERRORS - Tape Audit Errors Detail

AKDAUDMD audit procedure

AKDAUDMD audits all the MCDS components; excluding the catalog.

This procedure creates two data sets that are used in error analysis and correction.

- *pf*x.AUDIT.MCDS.ERRSUM - MCDS Audit Errors Summary
- *pf*x.AUDIT.MCDS.ERRORS - MCDS Audit Errors Detail

AKDAUDOD audit procedure

The AKDAUDOD procedure audits the DFSMSHsm OCDS volume pointer chains forward and backward.

An audit of this type is necessary to ensure that the tapes in the OCDS inventory can recycle properly. The AKDAUDOD audit not only examines the correct pointers, but it also verifies each data set in the pointer conflict to determine the correct pointer and provides the appropriate fixes.

This procedure creates two data sets that are used in error analysis and correction.

- *pf*x.AUDIT.OCDS.ERRSUM - TTOC Audit Errors Summary
- *pf*x.AUDIT.OCDS.ERRORS - TTOC Audit Errors Detail

AKDAUDRM audit procedure

The AKDAUDRM procedure audits the DFSMSHsm tape inventory OCDS against the IBM Removable Media Manager (RMM).

If DFSMSHsm manages the tapes directly, you can run the AKDAUDRM procedure, but the diagnostic messages relating to the RMM tape inventory will have little value.

This procedure creates two data sets that are used in error analysis and correction.

- *pf*x.AUDIT.TAPE.ERRSUM - Tape Audit Errors Summary
- *pf*x.AUDIT.TAPE.ERRORS - Tape Audit Errors Detail

AKDAUDSM audit procedure

The AKDAUDSM procedure audits SMS classes and storage groups of data sets that currently reside on DASD against the current ACS routine.

If the ACS routine shows a different SMS class or storage group than what would be used today, then the data set appears in the SMS audit results. The SMS audit procedure first collects data set information using DCOLLECT. The audit procedure then creates test cases that it feeds to batch ISMF. The default limit for test cases is 9999 (see parameter AUD_SMS_LIMIT). Data sets that have a mismatch between the current SMS class or storage group and ACS routine are displayed in the audit results.

This procedure creates two data sets that are used in error analysis and correction.

- *pfx*AUDIT.SMS.ERRSUM - SMS Audit Errors Summary
- *pfx*AUDIT.SMS.ERRORS - SMS Audit Errors Detail

You can explicitly include and exclude data sets. For more information, see [“Including and excluding data sets from the AKDAUDSM audit procedure”](#) on page 41.

Note: When you run the AKDAUDSM audit job, it is possible to see multiple condition codes for STEP04. The multiple codes are caused by executing ISMF in batch and numerous allocations running the test cases. These multiple condition codes are not the true condition code of the step and can be ignored. Only the first condition code is used to consider success of the step.

STEP	04	COND	CODE:	0	PROC01
STEP	04	COND	CODE:	2720	PROC01
STEP	04	COND	CODE:	2720	PROC01
STEP	04	COND	CODE:	2720	PROC01
STEP	04	COND	CODE:	2720	PROC01

Authorization

The user submitting this job must have the authority to run ISMF in batch.

AKDAUDTP audit procedure

The AKDAUDTP procedure audits the DFSMSHsm tape inventory OCDS against the CA1 TMS system.

This procedure is useful if your installation has installed the DFSMSHsm exit to allow CA1 to manage the tapes. If DFSMSHsm manages the tapes directly, you can run the AKDAUDTP procedure, but the diagnostic messages relating to the CA1 tape inventory will have little value.

This procedure creates two data sets that are used in error analysis and correction.

- *pfx*.AUDIT.TAPE.ERRSUM - Tape Audit Errors Summary
- *pfx*.AUDIT.TAPE.ERRORS - Tape Audit Errors Detail

AKDAUDZR audit procedure

The AKDAUDZR procedure audits the DFSMSHsm tape inventory OCDS against the ZARA tape management system.

This procedure is useful if your installation has installed the DFSMSHsm exit to allow ZARA to manage the tapes. If DFSMSHsm manages the tapes directly, you can run the AKDAUDZR procedure, but the diagnostic messages relating to the ZARA tape inventory will have little value.

This procedure creates two data sets that are used in error analysis and correction.

- *pfx*.AUDIT.TAPE.ERRSUM - Tape Audit Errors Summary
- *pfx*.AUDIT.TAPE.ERRORS - Tape Audit Errors Detail

Audit procedures for DFSMSHsm-owned tapes

The Advanced Audit for DFSMSHsm tape audit procedures identify errors with your DFSMSHsm migration and backup tapes.

AKDAUFD audit procedure

The AKDAUFD procedure is the equivalent of the IBM `AUDIT DIRECTORYCONTROLS VOLUMES` (*volser*) command and produces diagnostics that are helpful for determining the health and contents of a tape before it is mounted and read.

The TTOC information for the tape is extracted. If the tape is an DFSMSHsm ML2 volume, the MCDS is read and any MCD (migration control data set record) references to the volume are captured. If the tape is a DFSMSHsm backup volume, all MCC (backup control data set backup version record) references found in the BCDS are captured. No automatic corrections or TTOC rebuild statements are created in this procedure.

After examining the results of this audit, execute the AKDAUFL procedure, taking care to code the same TAPEVOL parameter.

AKDAUFL audit procedure

AKDAUFL depends upon the successful completion of procedure AKDAUFD for the same tape volume because AKDAUFL uses the data sets that were created by AKDAUFD and runs additional diagnostics after reading the physical tape.

The second part of the audit requires the tape to be mounted and read. After reading the contents of the tape, AKDAUFL performs further auditing and produces diagnostics messages. Further, AKDAUFL creates automatic error corrections for the MCD and MCC records and writes the corrections to the output data set `&pfx.MEDICTL.Vtttttt.FIXES`. All TTOC rebuilds and corrections are created and written to the output data set `&pfx.MEDICTL.Vtttttt.FIXTTOC`.

Repairing or recreating the entire TTOC for a volume might require thousands of `FIXCDS` `T` statements. To avoid flooding the DFSMSHsm `QUEUE`, a monitor is provided. Even with the monitor, an `AUD_FIXCDS_LIMIT` parameter is provided. The default value of `AUD_FIXCDS_LIMIT` is 3,000,000, which is typically enough to rebuild the TTOC successfully. The `OUTDATASET` space allocation also uses the `AUD_FIXCDS_LIMIT` value to allocate enough space to contain all of the resultant fix processes. Although you may lower the `AUD_FIXCDS_LIMIT` value, more than one job and set of control statements will be built, each of which requires separate job submission and monitoring.

You can control tape processing by using the processing options `FAST`, `THOROUGH`, and `INTENSE` on the `OPTION` keyword.

AKDAUFT audit procedure

The AKDAUFT procedure is the equivalent of the IBM `AUDIT MEDIACONTROLS VOLUMES` command. AKDAUFT combines the functions of the AKDAUFD and AKDAUFL procedures in a single audit procedure.

The AKDAUFT procedure is useful for reclaiming volumes that are in a failed create or failed recycle status when the TTOC has been damaged or deleted. It is also useful for rebuilding the entire TTOC for tapes that have been inadvertently scratched and are no longer under DFSMSHsm control, which is only possible if the tapes have not been overwritten.

You can control tape processing by using the processing options `FAST`, `THOROUGH`, and `INTENSE` on the `OPTION` keyword. If you specify `FAST` or `THOROUGH` and the audit detects errors on the tape, the program automatically invokes the `INTENSE` processing option.

Chapter 6. Gathering HSM host information

Advanced Audit for DFSMSHsm provides several reports that collect and display information about the DFSMSHsm hosts that are actively running on the system.

When you select the **HSM Host Information** option from the **Main Menu** panel, the **DFSMSHsm Host Reports** panel appears. From the **DFSMSHsm Host Reports** menu, you can select the report that you want to run.

The **DFSMSHsm Host Reports** menu also provides an option for issuing DFSMSHsm commands to a specified DFSMSHsm host.

```
HOSTMENU ----- IBM Tivoli Advanced Audit for DFSMSHsm V2R6 ----- 08:33
Command ==>                                         Scroll ==> PAGE

DFSMSHsm Host Reports:                               Row 1 of 6

  Report Name          Description
  1 HSM Host Information    Lists Active HSM Hosts
  2 Control Data Sets      HSM Control Data Set List
  3 HSM CDS Backups        Shows CDS Backup Versions
  4 Active Allocations     Data Sets Allocated to HSM Hosts
  5 Issue HSM Commands     Issue Command to DFSMSHsm Host
```

HSM Host Information

The HSM Host Information report displays a list of the DFSMSHsm hosts that are actively running on the system.

Control Data Sets

The Control Data Sets report displays a list of the control data sets that are being used by DFSMSHsm.

HSM CDS Backups

The HSM CDS Backups report displays a list of the backup versions of the control data sets and the journal.

Active Allocations

The Active Allocations report displays a list of data sets that are actively allocated to the DFSMSHsm host.

Issue HSM Commands

Select this option to issue a DFSMSHsm command to a DFSMSHsm host and display the messages that result from issuing the command.

HSM Host Information report

Select the **HSM Host Information** option from **DFSMSHsm Host Reports** menu to create an HSM Host Information report.

You can set up filters on DFSMSHsm job name or DFSMSHsm host ID (or both) so that the report includes only those hosts whose attributes match your filters. Report information includes one row for each DFSMSHsm host whose attributes match the specified filters. For each host, the report information includes the following:

- Job name and job number
- Host ID
- HSM release level and type
- HSM Mode (Full or Classic or File)
- Logging status

- MCTV address
- QCT and QCT element addresses
- Host AS ID
- Command suffix
- SMF number
- Migrate and Backup prefixes
- Maximum backup, migrate, dump, recall, interval migration, and recover tasks
- Maximum CSA usage
- Active and inactive request limits
- CSA used
- Percentage of allowed CSA currently being used
- Maximum number of work elements allowed to be in CSA
- Audit, autodump, autobackup, automigrate, backup, dump, list, migrate, recall, recover, recycle, and report status
- Tape DSN recall, tape DSN recover, tape DSN replace, and TSO tape DSN status information
- BCDS, MCDS, OCDS, and journal backup status information
- ID of the system or the sysplex from which the data was retrieved

Note: Press the HELP function key to display full online help that describes the report columns and the available line commands for this report. Use the function keys to scroll the display to show all report columns.

Control Data Sets report

Select the **Control Data Sets** option from **DFSMSHsm Host Reports** menu to create a Control Data Sets report.

You can set up filters on any combination of these attributes so that the report includes only those control data sets whose attributes match the filters:

- DFSMSHsm job name
- DFSMSHsm host ID
- Control data set name
- Type file
- RLS Managed
- Volume serial number

Report information includes one row for each control data set whose attributes match the specified filters. For each control data set, the report information includes the following:

- Data set name
- File type
- Volume serial number
- RLS flag
- Job name
- Job number
- DFSMSHsm host ID
- ID of the system or the sysplex from which the data was retrieved

Note: Press the HELP function key to display full online help that describes the report columns and the available line commands for this report. Use the function keys to scroll the display to show all report columns.

HSM CDS Backups report

Select the **HSM CDS Backups** option from **DFSMSHsm Host Reports** menu to create a Control Data Set Backup Information report that shows information about the backup copies of the control data sets and the journal.

For each backup copy, the report information includes the following:

- Type of process for which HSM used the original data set. This is the name of the DD to which the data set would be allocated.
- Name of the backup data set
- Date on which the backup version was created
- Time at which the backup version was created
- Number of days elapsed since the backup data set was created
- Name of the DFSMSHsm data set that was backed up
- Volser of the volume where this data set resided before being backed up

Note: Press the HELP function key to display full online help that describes the report columns and the available line commands for this report. Scroll the display by using the RIGHT and LEFT function keys to show all report columns.

Active Allocations report

Select the **Active Allocations** option from DFSMSHsm Host Reports menu to create an Active Allocations report that lists and displays information about data sets allocated to HSM hosts.

You can set up filters on any combination of these attributes, so that the report includes only those data sets whose attributes match the filters:

- DFSMSHsm host ID
- DFSMSHsm job name
- Data set name
- DD name
- Volume serial number

Report information includes one row for each data set whose attributes match the specified filters. For each data set, the report information includes the following:

- Data set name
- DD name
- Volume serial number
- Member name
- Allocation disposition
- Normal and conditional dispositions of the allocation
- EXCP count
- Job name and number
- Host ID

Note: Press the HELP function key to display full online help that describes the report columns and the available line commands for this report. Use the function keys to scroll the display to show all report columns.

Issuing HSM commands

Select the **Issue HSM Commands** option from the **DFSMSHsm Host Reports** menu to issue a command to an HSM host and view the messages that result from that command. You can issue any command that can be accepted by the **HSEND** command.

About this task

Note: The **Issue HSM Commands** option allows you to send commands to just one HSM host at a time. To send commands to additional hosts, you must return to the **DFSMSHsm Host Reports** menu, select the **Issue HSM Commands** option, and then complete the fields on the **DFSMSHsm Command Response** panel for each of the additional hosts.

Procedure

1. In the **Command** line on the **DFSMSHsm Host Reports** menu, type 5 and press Enter to display the **DFSMSHsm Command Response** panel.
2. In the **Job Name** field on the **DFSMSHsm Command Response** panel, type an address space.
3. In the **Host ID** field, type the identifier for the HSM host to which you want the command sent.
4. In the **Command** field, type the command that you want sent to the HSM host.
5. Press Enter.

Chapter 7. Performing administrative tasks

You can perform a variety of administrative tasks from the **Administrative Menu** panel, such as customizing product processing parameters, listing library members, testing HSM command access for user IDs, and submitting audit procedures.

When you select the **Administrative Tasks** option from the **Main Menu** panel, the **Administrative Menu** panel appears. From the **Administrative Menu**, you can select the task you want to perform.

```
AdmnMenu ----- IBM Tivoli Advanced Audit for DFSMSHsm V2R6 ----- 13:32
Command ==>                                         Scroll ==> CSR

Administrative Menu:                               Row 1 of 7

  Report Name                Description
  1 Customization             Customization Functions
  2 HSM Command Access        Test User Access to HSM Commands
  3 List Parmlib Members      Interact With Parmlib Members
  4 List PLAN Members         Interact with PLAN Members
  5 List CNTL Members         Interact with CNTL Members
  6 Audit Submission          Submit Audit Jobs
```

Customization

Select the **Customization** option to change the JCL processing parameters or override the names of the data sets that are used by the Advanced Audit for DFSMSHsm started task (or both).

HSM Command Access

Select the **HSM Command Access** option to determine whether a user ID has access to HSM commands.

List Parmlib Members

Select the **List Parmlib Members** option to display a filtered list of the members in the PARMLIB data set.

List PLAN Members

Select the **List PLAN Members** option to display a filtered list of the members in the PLANS data set. Members of the PLANS library contain fixes and sets of report formatting commands (plans).

List CNTL Members

Select the **List CNTL Members** option to display a filtered list of the members in the CNTL data set.

Audit Submission

Select this option to submit an audit procedure for execution.

Customization of JCL parameters and data set names

Select the **Customization** option from the **Administrative Menu** panel to modify JCL parameter settings and override the names of the data sets that are used by the Advanced Audit for DFSMSHsm started task.

Select the appropriate task from the **Customization Menu** panel.

Changing JCL parameter settings

Select the **JCL Parameters** option from the **Customization Menu** to change the values that are were assigned during product installation and configuration to the parameters that are used by the Advanced Audit for DFSMSHsm started task.

About this task

Note: These parameters are not used for JCL changes to the batch audit jobs in the SAKDJCL library.

Procedure

1. On the **JclParms** panel, type the new value over the old value for the parameter of interest. Press the HELP function key and use the online help to guide you as you specify new values for these parameters.
2. Press Enter to save the new parameter values.
3. Press the END function key to exit the **JclParms** panel and display the **Customization Menu** panel.

Overriding data set name parameters

Select the Data Set Name Parameters option from the Customization Menu to display the Data Set Name Overrides panel, where you can change the value that is assigned to any of the data sets that re used by the Advanced Audit for DFSMSHsm started task.

About this task

Note: These override values are not used for JCL changes to the batch audit jobs in the SAKDJCL library.

Procedure

1. On the **Data Set Name Overrides** panel, type the new data set name over the old data set name for the data set of interest. Press the HELP function key and use the online help to guide you as you specify the new values for the data set names.
2. Press Enter to save the new values.
3. Press the END function key to exit the **Data Set Name Overrides** panel and display the **Customization Menu** panel.

Testing user access to HSM commands

There might be occasions where it would be convenient to be able to see to which HSM commands a given user ID has access.

Procedure

1. Select the **HSM Command Access** option from the **Administrative Menu** to display the **User DFSMSHsm Access** panel.
2. On the **User DFSMSHsm Access** panel, enter the appropriate user ID in the **User ID** field and press Enter.
The HSM access information for that user ID is displayed.
3. Press END to exit the **User DFSMSHsm Access** panel and display the **Administrative Menu** panel.

Listing PARMLIB data set members

Select the **List Parmlib Members** option from the **Administrative Menu** to generate a filtered list of the members in the PARMLIB data set.

Procedure

1. Select the **List Parmlib Members** option from the **Administrative Menu** to display the **Members in the Parmlib Data Sets** panel.
2. In the **Member Name** field, specify a mask that matches the member names of interest.
3. In the **Data Set Name** field, specify a mask that matches the data set names of interest.
4. Press Enter to display the member list. Use the HELP function key to guide you as you make entries and use line commands on this panel.
5. Press the END key to return to the **Administrative Menu**.

Listing PLAN data set members

Select the **List PLAN Members** option from the **Administrative Menu** to generate a filtered list of the members in the PLAN data sets. The PLAN members contain fixes and saved report formats (plans).

Procedure

1. Select the **List PLAN Members** option from the **Administrative Menu** to display the **Members in the Plans Data Sets** panel.
2. In the **Member Name** field, specify a mask that matches the member names of interest.
3. In the **Data Set Name** field, specify a mask that matches the data set names of interest.
4. In the **New Format** field, specify either Y or N. Specify Y to display members uses the new plan format or specify N to display members uses the old plan format or some other type of member.

Note: New plan format is the members which are created via the FORMAT scroller command to customize different display panels as per the user's preferred view so that user won't have to customize the panel every time.

5. Press Enter to display the member list. Use the HELP function key to guide you as you make entries and use line commands on this panel.
6. Press the END key to exit the **Members in Plans Data Sets** panel and display the **Administrative Menu**.

Listing CNTL data set members

Select the **List CNTL Members** option from the **Administrative Menu** to generate a filtered list of the members in the CNTL data sets.

Procedure

1. Select the **List CNTL Members** option from the Administrative Menu to display the Members in the CNTL Data Sets panel.
2. In the **Member Name** field on the Members in the CNTL Data Sets panel, specify a mask that will match the member names of interest.
3. In the **Data Set Name** field, specify a mask that matches the data set names of interest.
4. Press Enter to display the member list. Use the HELP function key to guide you as you make entries and use line commands on this panel.
5. Press the END key to return to the Administrative Menu.

Submitting audit jobs

Select the **Audit Submission** option from the **Administrative Menu** to select an audit procedure from the **Audit Jobs** menu and submit the job for execution.

About this task

When you select an audit procedure form Audit Jobs menu, the JCL for the audit job is generated automatically, using the parameter values that were specified in the AKDCMD00 member as part of the product configuration process.

Important: Use a STEPLIB DD in the AKDJMAIN, rather than a LINKLIST.

Procedure

1. In the **Cmd** column on the **Audit Jobs** panel, type S next to the appropriate audit job and press Enter to display the **JclPview** panel.

2. On the **JclPview** panel, specify what you want done with the JCL by typing the appropriate letter in the **Command** line and pressing Enter:
 - Type B to browse the generated JCL for the audit job.
 - Type E to edit the generated JCL before submitting it.
 - Type S to submit the generated JCL immediately.
 - Type X to save the generated JCL to an external data set.
3. Optional: If you specified that you wanted the generated JCL copied to an external data set, complete these fields on the COPYDS panel:
 - a) In the **Destination Data Set** name field, type the name of the data set to which you want the generated JCL copied.
 - b) If the destination data set is a partitioned data set, type the name of the destination data set member to which you want the generated JCL copied.
 - c) Press Enter.

Results

When the audit job finishes execution, you can view the audit results by selecting the Auditing option from the Main Menu, then selecting the appropriate option on the AKD710 panel.

Chapter 8. Viewing product information

You can use the **Product Menu** to view various types of information about Advanced Audit for DFSMSHsm. Select the **View Product Information** option from the **Main Menu** to display the **Product Menu** panel.

```
PRDMenu  ----- IBM Tivoli Advanced Audit for DFSMSHsm V2R6 ----- 22:36
Command ===>                                     Scroll ===> CSR

Product Menu:                                     Row 1 of 8

  Report Name                Description
1 Version/Release Data      Product Name and Release Data
2 Product Data Sets         Data Sets Used by the Product
3 Address Space Allocations A/S Active Allocation List
4 Address Space Enq Data    Enqs Held by the Address Space
5 Address Space Memory      A/S Current Memory Usage
6 Product Messages          Product Message Documentation
7 Product Work Data Sets    Data Sets Used for Processing
8 System Connection List    Product Cross System Connections
```

Version/Release Data

Select the **Version/Release Data** option to display the currently installed version, release, and maintenance level for Advanced Audit for DFSMSHsm.

Product Data Sets

Select the **Product Data Sets** option to view a list of data sets that are being used by the products. For any data set in the list, you can browse, view, back up, and display LISTCAT information.

Address Space Allocations

Select the **Address Space Allocations** option to view a filtered list of the data sets that have been allocated to the product address space.

Address Space Enq Data

Select the **Address Space Enq Data** option to view extensive information about the enqueues that are being held against the product address space.

Address Space Memory

Select the **Address Space Memory** option to view job name, memory type description, and other data that is related to memory that is used by the product address space.

Product Messages

Select the **Product Messages** option to access error message documentation that includes the message identifier, an explanation of what might have caused the error, and a suggested course of action.

Product Work Data Sets

Select the **Product Work Data Sets** option to view information about the work data sets that Advanced Audit for DFSMSHsm uses for processing.

System Connection List

Select the **System Connection List** option to view information about the status of the cross-system connections that were set up within the product command member by the PORTNUM, CONNECTION, and LOCALCONN parameters.

Viewing version and release level data

Select the **Version/Release Data** option from the **Product Menu** to display the **Product Version/Release Information** panel.

This panel provides the version and release level for Advanced Audit for DFSMSHsm and shows copyright and trademark information.

To exit the panel and display the **Product Menu**, press the END function key.

Listing data sets used during processing

Select the **Product Data Sets** option from the **Product Menu** to display the **Data Sets Being Used by this Product** panel.

The **Data Sets Being Used by this Product** panel shows you the data set names, data set type, job name, and job number.

```
ProdDsns ----- IBM Tivoli Advanced Audit for DFSMSHsm V2R6 ----- 22:54
Command ==> Scroll ==> CSR

Data sets being used by this product: Row 1 of 8
Line Commands are . . . : B V HB LC

Cmd Data Set Name                               Dsn      Job      Job
                                         Type     Name     Number
AKD.JKS0206.LOADLIB                             STEPLIB  AKD0206  S0011133
AKDX.AKD0206.SMFALOAD                           STEPLIB  AKD0206  S0011133
AKDX.AKD0206.SMFACLS                                CLIST    AKD0206  S0011133
AKDX.AKD0206.SMFACNTL                           CNTL     AKD0206  S0011133
AKDX.AKD0206.SMFAMSGS                           MESSAGES AKD0206  S0011133
AKDX.AKD0206.PLANS                               PLANS    AKD0206  S0011133
AKDX.AKD0206.SMFAPENU                             PLIB     AKD0206  S0011133
AKDX.AKD0206.SMFAPARM                           PARMLIB  AKD0206  S0011133
```

By selecting an individual data set and using the appropriate line command, you can do any of the following from this panel:

- Browse the data set
- View the data set
- Back up the data set
- Display LISTCAT information for the data set

To exit the **PRODDSNS** panel and display the **Product Menu** panel, press the END function key.

Listing data sets allocated to the address space

Select the **Address Space Allocation** option from the **Product Menu** to display a list of the data sets that have been allocated to the product address space.

You can filter the data by data set name, DD name, volume serial number, or any combination of these attributes.

```
PRDAAlloc ----- IBM Tivoli Advanced Audit for DFSMSHsm V2R6 ----- 11:13
Command ==> Scroll ==> CSR

Data Sets Allocated to the Product Address Space: Row 1 of 7 More >
Line Commands are . . . : LC VOL

Cmd Data Set Name                               DD        Volser Member  Disp
                                         Name
AKD.JKS0206.LOADLIB                             STEPLIB  SMS022      SHR
AKDX.AKD0206.SAKDLOAD                           STEPLIB  SMS023      SHR
AKDX.AKD0206.SAKDPARM                           PARMLIB  SMS023      SHR
STC.AKD0206.S0011133.D0000101.?                 CEEDUMP          MOD
STC.AKD0206.S0011133.D0000102.?                 SYSOUT          MOD
STC.AKD0206.S0011133.D0000103.?                 AKDLOG          MOD
STC.AKD0206.S0011133.D0000104.?                 AKDVERS          MOD
```

For each data set, the following information is shown:

- Data set name
- Name of the DD statement to which the data set is allocated
- Serial number of the volume on which the data resides
- Name of the member allocated in the data set
- Disposition of allocation
- Normal and conditional dispositions of allocation
- Number of EXCPs to the data set

By selecting an individual data set and using the appropriate line command, you can do any of the following from this panel:

- Display primary volume information
- Display LISTCAT information for the data set

To exit the **Data Sets Allocated to Address Space** panel and display the **Product Menu**, press the END function key.

Listing enqueues held by the address space

Select the **Address Space Enq Data** option from the Product Menu to display extensive information about the enqueues that are being held against the product address space.

The **ENQ Information for Address Space** panel provides the following information for each enqueue:

- Major name and the first portion of the minor name
- Request type for the enqueue
- Name of the job issuing the request
- Address space ID of the job issuing the request
- System name associated with the enqueue
- Request level and request scope
- Request status
- Total number of users waiting for the resource, number of users waiting for exclusive use of the resource, and number of users waiting for shared use of the resource
- Number of resource owners for the enqueue
- TCB address associated with the enqueue
- SVRB address that issued the enqueue
- ECB address of the task that issued the enqueue request
- Whether the step must complete for the enqueue
- Device number associated with the enqueue
- The major and minor names in hexadecimal format

To exit the **ENQ Information for Address Space** panel and display the **Product Menu**, press the END function key.

Displaying address space virtual storage information

Select the **Address Space Memory** option from the **Product Menu** to view job name, memory type description, and other data that is related to memory that is used by the product address space.

To exit the **Address Space Memory Information** panel and display the **Product Menu**, press the END function key.

Displaying product message documentation

Select the **Product Messages** option from the **Product Menu** to display information about the messages generated during Advanced Audit for DFSMSHsm processing.

You can specify filters on message identifier, message library member name, data set name, or any combination of these attributes, so that the resulting report contains information for only those messages whose attributes match the filters.

Important:

- It is recommended that you leave the **Member Name** filter blank.
- You can leave all of the filters unspecified.

The Members in the Messages Data Sets panel shows the following information for each message:

- Message ID
- Name of the member that contains the message
- Name of the data set to which the member containing the message documentation belongs
- Data from the first line in the message member for the message

Use the HELP function key to display further information about the columns and commands available on the **Members in the Messages Data Sets** panel. Use the LEFT and RIGHT function keys to scroll the display to show all the columns.

Displaying product work data set information

Select the **Product Work Data Sets** option from the **Product Menu** to display information about work data sets that Advanced Audit for DFSMSHsm uses during processing.

For each work data set, the following information is displayed:

- Data set name
- Entry type for the data set
- Volume serial number for the first (or only) volume on which the data set resides



Attention: Use the HELP function key to display further information about the columns and commands available on the Data Set List panel.

Displaying a list of system connections

Select the **System Connection List** option from the **Product Information** menu to display information about the status of the cross-system connections that were set up within the product command member by the PORTNUM, CONNECTION, and LOCALCONN parameters.

This reports shows the status of the cross-system connections that have been set up within the command member.

The USEXSYS parameter must be set to YES for any cross-system processing to be attempted.

For each system that is to use cross-system communication, you must provide an IP address or domain name through a CONNECTION parameter. Use the LOCALCONN parameter to specify the local system's IP address or domain name. You must specify both a CONNECTION and LOCALCONN parameter for the local system. The PORTNUM value is used as the port number that all systems use to connect.

Press the HELP function key to display full descriptions of the columns and commands available for this report. Use the function keys to scroll the display to show all columns.

Chapter 9. Auditing reports

Advanced Audit for DFSMSHsm offers auditing reports that provide DFSMSHsm, DASD data set, SMS data set, and VSAM data set information that could help the storage administrator determine where storage could be improved.

These auditing reports are independent of the audit procedure results. Advanced Audit for DFSMSHsm does not provide any fixes to submit for the information that is provided in the auditing reports.

When you select the **Auditing Reports** option from the **Main Menu**, the Auditing Reports menu is displayed.

```
PRDMenu  ----- IBM Tivoli Advanced Audit for DFSMSHsm V2R6 ----- 22:36
Command ==>                                         Scroll ==> CSR

Auditing Reports:                                     Row 1 of 8

  Report Name                Description
1 Errors Cost Report         Estimated Corruption Costs Report
2 Migration Data Sets Audit  Migration Data Sets Thrashing Report
3 SMS Volumes Audit          SMS Managed Volumes Threshold Report
4 Storage Groups Audit       Storage Groups Threshold Report
5 Migrate Dsns Need Bkup     Migrate Dsns Needing a Backup Report
6 VSAM Dsns Need Bkup        VSAM Dsns Changed, Not Backed Up Report
```

From the **Auditing Reports** menu, you can select the report that you want to run.

Errors Cost Report

Select the **Errors Cost Report** option to display the estimated cost of the error that were discovered by the MCDS, BCDS, OCDS, and HSMTAPE auditing procedures. The total cost is calculated from the cost of one CPU second and the cost of one tape cartridge.

Migration Data Sets Audit

Select the **Migration Data Sets Audit** option to display information about the data sets that whose thrashing index is greater than 5.

SMS Volumes Audit

Select the **SMS Volumes Audit** option to display information about the SMS-managed volumes that have an occupancy percentage that exceeds the high threshold that was set for the storage group to which the volume belongs.

Storage Groups Audit

Select the **Storage Groups Audit** option to display information about storage groups that have an occupancy percentage that exceeds their high threshold.

Migrate Dsns Need Bkup

Select the **Migrate Dsns Need Bkup** option to display information about the migration data sets that are controlled by DFSMSHsm but do not have a backup copy available (the backup date in the MCD record contains only zeroes).

VSAM Dsns Need Bkup

Select the **VSAM Dsns Need Bkup** option to display information about VSAM data sets that have migration copies that are controlled by DFSMSHsm, but for which the backup copy either is obsolete (the data set was changed, but was not backed up in two or more days) or is nonexistent.

Errors Cost report

The Errors Cost Report reads the last available Audit ERRSUM file and the DFSMSHsm File Statistics Records (FSR), reporting the action in the appropriate group cost. The Errors Cost audit report is a useful tool for knowing and understanding the resource waste costs associated with the errors that are found in each DFSMSHsm Control Data Set and DFSMSHsm owned and managed tape.

Select the **Errors Cost Report** option from the Auditing Reports Menu to display a filter panel for the Auditing Errors Cost panel. You can specify filters on CPU cost, tape cost, FSR history usage, or any combination of these.

Note: If you specify multiple filters, AND logic is used when the filters are evaluated. All filters must be true for a candidate to be included in the report.

CPU Cost (per second)

The cost of one second of CPU time, in cents (hundredths of a dollar). The default of 25 cents (\$0.25 US) is used for the cost of a single CPU second that was used for reading the errors associated to the specific Control Data Set or HSM owned tape. You can change this cost variable to a new cost associated with your site. Use one of these formats for specifying the filter value:

- *nn* for costs of 01-99 cents (US). For example, to specify a cost of 75 cents, you would type 75. To specify a cost of 9 cents, you would type 09.
- *nnn* for costs that are equal to or greater than 1 dollar (US). For example, to specify a cost of \$3.80, you would type 380.

Tape Cost (per cartridge)

The cost of one tape cartridge, in cents (hundredths of a dollar). The default of 1 dollar (US) is used for the cost of a tape cartridge used for reading the errors associated to the specific Control Data Set or HSM owned tape. Use one of these formats for specifying the filter value:

- *nn* for costs of 01-99 dollars (US). For example, to specify a value of 9 dollars, you would type 09.
- *nnn* for costs that are equal to or greater than 100 dollars (US). For example, to specify a value of 170 dollars, you would type 170.

Use FSR History

The default value is N. Type Y if you want the FSR history that is collected to be used for reporting. Otherwise, a 24-hour period of the recent HSM activity is reported.

Type your filtering values and press Enter to proceed to the Auditing Errors Cost panel.

```
ErrsCost ----- IBM Tivoli Advanced Audit for DFSMSHsm V2R6 ----- 14:24
Command ==>                                         Scroll ==> CSR

Auditing Errors Cost:                               Row 1 of 5

Aud  CPU   Tape  Errors  Est. #   Est. #   # Tape  Estimated  Estimated
Type Cost   Cost  Count   CDS  Reads CPU  Sec  Vols  CPU Cost  Tape Cost
MCDS    25  10000   1216    305216    7    4    190    40000
BCDS    25  10000    139      0      0      0    0      0      0
OCDS    25  10000     0      0      0      0    0      0      0
HSMTAPE 25  10000     0      0      0      0    0      0      0
Total   25  10000   1355   305216    7    4    190    40000
```

The report includes the following information:

Aud Type

The type of auditing: MCDS, BCDS, OCDS and HSMTAPE.

CPU Cost

The cost of one CPU second, in hundredths of a dollar (cents), as it was specified in either a filter or the main parameter member.

Tape Cost

The cost of one tape cartridge, in hundredths of a dollar (cents), as it was specified in either a filter or the main parameter member.

Errors Count

Total number of errors discovered under the auditing option.

Est. # CDS Reads

Estimated number of times that errant records were read during the reporting period.

Est. # CPU Sec

Estimated number of CPU seconds that were used for reading errant records during the reporting period.

Tape Vols

Number of tape volumes in error that were discovered under the auditing option.

Estimated CPU Cost

Estimated CPU cost (in hundredths of a dollar) of the errors that were discovered under the auditing option, based on the CPU cost specified.

Estimated Tape Cost

Estimated tape cost (in hundredths of a dollar) of the errors that were discovered under the auditing option, based on the tape cost specified.

To exit the Auditing Errors Cost panel, press the END function key.

Migrated Data Sets Audit report

The Migration Data Set Audit interrogates the MCDS records, recording data sets that have a thrashing index that is equal to or greater than 5. A high thrashing index indicates that CPU resource seconds are being wasted migrating data sets and then recalling them.

All of the following situations can cause data set thrashing:

- Incorrect or aggressive SMS management class definition
- Users manually recalling migrated data sets
- Execution of a RECALL CLIST

Select the **Migration Data Sets Audit** option from the Auditing Reports Menu to display a filter panel for the Migrated Data Sets Audit panel. You can filter the report contents by data set name or management class name, migration level, valid migration copy existence, or any combination of these.

Note: If you specify multiple filters, AND logic is used when the filters are evaluated. All filters must be true for a candidate data set to be included in the report.

Data Set Name

You can specify a data set name explicitly, specify wildcard masks for a group of data sets, or a high-level qualifier or wildcard mask for a high-level qualifier. Leave this field blank if you do not want the report information restricted by data set name.

Management Class Name

You can specify a management class name explicitly or specify wildcard masks for a group of management classes. Leave this field blank if you do not want the report information restricted by management class name.

Migration Level

You can specify the migration level (0-2) to which the report data sets must belong. Leave this field blank if you do not want the report information restricted by migration level.

Valid Migration Copy

If you specify Y, only those data sets that have a valid migration copy are included in the report. Leave this field blank if you do not want the report information restricted by the existence of valid migration copies.

Type your filtering values and press Enter to proceed to the Migrated Data Sets Audit panel.

```

MgtAud  ----- IBM Tivoli Advanced Audit for DFSMSHsm V2R6 ----- 19:52
Command ==>                               Scroll ==> CSR

Migrated Data Sets Audit:                               Row 1 of 24 More  >
Line Commands are . . . : LC HRC HD

Cmd Data Set Name                               Thr Times  MgmtClas
                               Idx Migrtd  Name
PDUSER.V25.AUDIT.BCDS.ERRORS                9         3 MCAGGT
RJ01.MODULE.INSTJCL                          7        11 XFR
PDUSER.R10V3.AUDIT.BCDS.ERRORS              7         4 MCAGGT
RJ01.MODULE.XFRBIN                          7        10 XFR
JM.CKZ0202F.ASM                             6         4 TSODATA
CASE.BRM6063.METADATA.DUMP                  6         2 MCCASE
JM.CKZ0202F.MACLIB                          6         3 TSODATA
JM.CKZ0202F.DBRMLIB                         6         3 TSODATA
JM.CKZ0202F.JCL                             6         3 TSODATA
EDP.BMT.J030.OUT1                           6        15 TSODATA
PDDARR.R10V2.AUDIT.BCDS.FIXES               6         3 MCAGGT
MH.FLATCAT.SYST80.MASTER.CATALOG             6         6 TSODATA
MH.IEB.UNLOAD                               6         4 TSODATA
JM.CKZ0202F.LOADLIB                         6         3 TSODATA

```

You may use any of the valid line commands against data sets in the report.

Line command	Description
LC	Displays LISTCAT information for the selected data set.
HRC	Recall the selected data set.
HD	Delete the migration copy of the selected data set.

The following information is included for each data set that is included in the report:

Data Set Name

Name of the data set.

Thr Idx

Thrashing index for this data set.

Times Migrtd

Number of times that the data set has migrated since the current MCDS record was created.

MgmtClas Name

Name of the DFSMS management class to which the data set belongs. A value of NULL indicates that the data set has not been assigned a management class.

Date Migrated

Date on which this migration copy was made.

Date Recalled

Date on which the data set was last recalled.

Date Created

Date on which the data set was originally created.

Mig Lvl

Migration level on which this data set currently resides.

Val Ds

Indicates whether the data set is a valid DFSMSHsm migration copy.

SMS Mngd

Indicates whether the data set is managed by SMS.

To exit the Migrated Data Sets Audit panel, press the END function key.

SMS Volumes Audit report

The SMS Volumes Audit reads the DFSMS definitions, searching for storage groups whose current occupancy is above the defined storage group high threshold limit.

This type of information is useful for ensuring that critical storage groups have sufficient free space available for new allocations. Storage groups identified by the SMS Volumes Audit report should be reviewed to determine what action is needed.

Select the **SMS Volumes Audit** option from the **Auditing Reports Menu** to display a filter panel for the **Volumes Audit** panel. You can specify filters for volume serial number, storage group name, or both.

Note: If you specify multiple filters, AND logic is used when the filters are evaluated. All filters must be true for a candidate data set to be included in the report.

Volume Serial Number

You can specify a volume serial number explicitly or you can use wildcard masks to specify a group of volumes to include in the report.

Storage Group Name

You can specify a storage group name explicitly or you can use wildcard masks to specify multiple storage groups.

Type your filtering values and press Enter to proceed to the **Volumes Audit** panel.

```
VolsAud  ----- IBM Tivoli Advanced Audit for DFSMSHsm V2R6 ----- 20:10
Command ==>                                         Scroll ==> CSR

Volumes Audit:                                     Row 1 of 46 More  >
Line Commands are . . . : VOL
```

Cmd	Volser	Storage Group	Used Percent	High Thresh	Total Tracks	Free Tracks	Sms Status	Frag Index
	ARCHVF	ARCHIVE	100	85	50085	154	Enabled	489
	ARCHV5	ARCHIVE	100	85	50085	207	Enabled	504
	DMTGT2	DSMTGT	93	85	150255	10654	Enabled	0
	NOBKP1	SGNOBK	91	85	150255	13844	Enabled	283
	NOBKP2	SGNOBK	98	85	150255	3838	Enabled	297
	ARCHV1	ARCHIVE	100	85	50085	344	Enabled	682
	ARCHV3	ARCHIVE	100	85	50085	462	Enabled	676
	CRTS00	SGCRTS	89	85	50085	5928	Enabled	390
	TS0003	TSODATA	88	85	50085	6162	Enabled	403
	ARCHVA	ARCHIVE	100	85	50085	112	Enabled	500
	DMSRC4	DSMSRC	92	85	50085	4430	Enabled	19
	TSTSM1	SGT1	98	85	50085	1312	Enabled	749
	TSTSM2	SGT1	98	85	50085	1267	Enabled	714
	TSTSM3	SGT1	99	85	50085	526	Enabled	785

The following information is included in the report:

Volser

Volume serial number.

Storage Group

Storage group in which the volume belongs.

Used Percent

Percentage of the volume that is occupied by data.

High Thresh

High threshold level that was set for the storage group.

Total Tracks

Total tracks that are available on the volume.

Free Tracks

Total free tracks that are available on the volume.

Sms Status

SMS status of the volume.

Frag Index

Fragmentation index of the volume.

Track Capacity

(SMS volumes only) Volume track capacity.

Num Users

Number of users of the volume.

To exit the **Volumes Audit** panel, press the END function key. You can also use the **VOL** line command for a selected volume to display the **Volumes List** panel, which is shown in the following figure.

```

VolList  ----- IBM Tivoli Advanced Audit for DFSMSHsm V2R6 ----- 20:20
Command ==>                                     Scroll ==> CSR

Volumes List:                                     Row 1 of 1 More   >

      Device      Device  Dev Type  Used    Total    Free
Volser Number Status  Type    Hex    Percent Tracks  Tracks
DMTGT2 A109   Online  3390-9  3010200F    93    150255    10654

```

The following information is shown for the selected volume:

Volser

Volume serial number.

Device Number

Device number for the volume serial number.

Status

Current status of the volume.

Device Type

Character representation of the volume's device type.

Dev Type Hex

Hexadecimal representation of the volume's device type.

Used Percent

Percentage of volume that is occupied by data.

Total Tracks

Total tracks that are available on the volume.

Free Tracks

Total number of free tracks that are available on the volume.

Largest Free Trks

The largest contiguous extent of free tracks on the volume.

Total Cylinders

Total number of cylinders that are available on the volume.

Free Cylinders

Total number of free cylinders that are available on the volume.

Largest Free Cyls

The largest contiguous extent of free cylinders on the volume.

Free DSCBs

Total number of free DSCBs on the volume.

Tracks Per Cyl

Number of tracks per cylinder on the volume.

Track Length

Usable length of a track on the volume.

Free Extents

Number of free extents on the volume.

Free VIRs

The number of free VTOC index records (VIRs) on the volume.

Mount Status

The volume's mount attribute.

UCB Address

Address of the UCB for this volume.

UCB Common Ext Addr

Address of the UCB common extension for this volume.

UCB Prefix Ext Addr

Address of the UCB prefix extension for this volume.

Index Vtoc

Volume indexed VTOC indicator.

In Use

Volume is in use.

Page Vol

An active page data set resides on this volume.

Shr Vol

Volume is defined as being shared amongst multiple CPUs.

Sms Mng

Volume is SMS managed.

Sms Status

SMS status of volume.

Sms Phys Status

SMS physical status of volume.

- Non SMS - The volume is not SMS managed.
- Convert - The volume has been converted to SMS.
- Initial - The volume is a new SMS volume but may contain non-SMS data sets.
- Unknown - The physical SMS status of the volume could not be determined.

Frag Index

Fragmentation index of the volume.

Storage Group

Storage group this volume belongs in.

Last Upd User

(SMS managed volumes only) Last user to update volume definition.

Last Upd Date

(SMS managed volumes only) Date of the last update to the volume definition.

Last Upd Time

(SMS managed volumes only) Time of the last update to the volume definition.

DCBs Open

DCBs open to the volume.

Num Users

Number of users of the volume.

Track Size

Physical size of a track on the volume.

Unit Name

Name of the unit in which the volume belongs.

Track Capacity

(SMS managed volumes only) Volume track capacity.

Volume Capacity

(SMS managed volumes only) Total capacity of volume, in megabytes.

Free Space

(SMS managed volumes only) Total free space on volume, in megabytes.

Largest Free Extent

(SMS managed volumes only) Largest free extent on volume, in megabytes.

Storage Groups Threshold Audit report

The Storage Groups Threshold Audit Report reads the SMS definitions for storage group occupancy and searches every volume for storage groups that have volumes that are above the defined high threshold limit.

Select the **Storage Groups Audit** option from the **Auditing Reports Menu** to display a filter panel for the Storage Groups Audit panel. you can filter the report information by storage group name.

Storage Group Name

You can specify a storage group name explicitly or you can use a wildcard mask for storage group name to specify multiple storage groups.

Type your filtering value and press Enter to proceed to the **Storage Groups Audit** panel.

```
StgrsAud ----- IBM Tivoli Advanced Audit for DFSMSHsm V2R6 ----- 20:48
Command ==> Scroll ==> CSR
```

```
Storage Groups Audit: Row 1 of 7
Line Commands are . . . : VOL
```

Cmd	Storage Group	Num Volumes	Used Percent	High Thresh	Free Cylinders	Total Cylinders
	ARCHIVE	15	95	85	3080	56763
	SGCRTS	2	94	85	435	6678
	SGHSM	1	85	85	519	3339
	SGMRGC	3	93	85	1222	16695
	SGNOBK	3	96	85	1329	30051
	SGT1	15	98	85	1732	83475
	TSODATA	4	88	85	1542	13356

The following information is included in the report:

Storage Group

Name of the storage group.

Num Volumes

Number of volumes in the storage group.

Used Percent

Occupancy percentage level for the entire storage group.

High Thresh

High threshold level set for the storage group.

Free Cylinders

Total number of free cylinders that are available in the storage group.

Total Cylinders

Total number of cylinders that are available in the storage group.

To exit the **Storage Groups Audit** panel, press the END function key. To display the **Volumes List** panel, use the **VOL** line command for a selected volume.

```

VolLists ----- IBM Tivoli Advanced Audit for DFSMSHsm V2.6 ----- 13:34
Command ==> Scroll ==> PAGE

```

Volumes List: Row 1 of 15

Volser	Device Number	Device Type	Used Percent	Total Cylinders	Free Cylinders	Storage Group
ARCHVA	6175	3390	100	3339	6	ARCHIVE
ARCHVB	6259	3390	100	3339	3	ARCHIVE
ARCHVC	6265	3390	100	3339	3	ARCHIVE
ARCHVD	6266	3390	100	3339	5	ARCHIVE
ARCHVE	6290	3390	100	3339	6	ARCHIVE
ARCHVF	6095	3390	100	3339	9	ARCHIVE
ARCHV1	6160	3390	100	3339	14	ARCHIVE
ARCHV2	6255	3390	100	3339	17	ARCHIVE
ARCHV3	616E	3390	100	3339	19	ARCHIVE
ARCHV4	6256	3390	100	3339	12	ARCHIVE
ARCHV5	609B	3390	100	3339	3	ARCHIVE
ARCHV6	610E	3390	100	10017	4	ARCHIVE
ARCHV7	6190	3390	100	3339	10	ARCHIVE
ARCHV8	6192	3390	100	3339	2	ARCHIVE
ARCHV9	629E	3390	100	3339	5	ARCHIVE

The following information is shown for the selected volume:

Volser

Volume serial number.

Device Number

Device number for the volume serial number.

Device Type

Character representation of the volume's device type.

Used Percent

Percentage of volume that is occupied by data.

Total Cylinders

Total number of cylinders that are available on volume.

Free Cylinders

Total number of free cylinders that are available on volume.

Storage \Group

Storage group in which the volume belongs.

Migrated Data Sets Without a Backup

This report lists data sets that have migration copies controlled by DFSMSHsm but do not have a backup copy available. These data sets have a null backup date in the associated MCD records. Data sets that are reported in this audit are considered to be critical errors, due to the increased risk for loss of data due to corruption or loss of data due to human or hardware error or malfunction.

Select the **Migrate Dsns Need Bkup** option from the Auditing Reports Menu to display a filter panel for the Migrated Data Sets Without a Backup panel.

You can filter by data set name, management class name, date of last reference, migration date, whether the data set has changed, or migration level, or any combination of these.

Note: If you specify multiple filters, AND logic is used when the filters are evaluated. All filters must be true for a candidate to be included in the report.

Data Set Name

You can specify a data set name explicitly, specify wildcard masks for a group of data sets, or a high-level qualifier or wildcard mask for a high-level qualifier. Leave this field blank if you do not want the report information restricted by data set name.

Management Class Name

You can specify a management class name explicitly or specify wildcard masks for a group of management classes. Leave this field blank if you do not want the report information restricted by management class name.

Last Ref Date (YYYYDDD)

Date on which the data set was last referenced on primary DASD. This is a relative date field. Explicit dates or relative dates can be entered.

- * can be used to represent the current date.
- *-# or *+# indicate a past date or a future date, respectively.
- Use Y, M, or D to subtract or add years, months, or days (respectively). For example, *-2 or *-2D indicates a date that is 2 days in the past, and *+3M indicates a date that is 3 months in the future.

Migration Date (YYYYDDD)

Date the migration copy was made. This is a relative date field. Explicit dates or relative dates can be entered.

- * can be used to represent the current date.
- *-# or *+# indicate a past date or a future date, respectively.
- Use Y, M, or D to subtract or add years, months, or days (respectively). For example, *-2 or *-2D indicates a date that is 2 days in the past, and *+3M indicates a date that is 3 months in the future.

Data set changed

The data set has been opened for other than read-only processing since this flag was last reset in VTOC. The data set needed to be backed up at the time of the migration.

Migration Level

Migration level on which this data set currently resides.

Check for lost backups

For migrated data sets that have non-zero 'Last Backup Date' in the associated MCD record, check whether a backup record actually exists in BCDS.

Note: If the **Check for lost backups** flag is set to Y, then the report also lists data sets that have a non-zero backup date in MCD but do not have an actual backup record in BCDS.

Type your filtering values and press Enter to display the **Migrated Data Sets Without a Backup** panel.

Migrated Data Sets Without a Backup panel

```
NoBkpAud ----- IBM Tivoli Advanced Audit for DFSMSHsm V2R6 ----- 21:31
Command ==> Scroll ==> CSR
```

```
Migrated Data Sets Without a Backup: Row 1 of 16714 More >
Line Commands are . . . : LC HRC HD
```

Cmd	Data Set Name	MgmtClas	Chng	Date
		Name	flag	Created
	AB01.ISPF.ISPPROF.TST	TSODATA	N	2010/06/25
	AB01.MFA.CNTL	TSODATA	N	2011/07/11
	AE.ABRACDI.TAMESP1.INJCL	TSODATA	N	2010/02/11
	AE.BKM0201.BASE.ASMSAMP	TSODATA	Y	2007/12/11
	AE.BKM0201.BASE.ISPMLIB	TSODATA	Y	2007/12/11
	AE.BKM0201.BASE.ISPPLIB	TSODATA	Y	2007/12/12
	AE.BKM0201.BASE.ISPTLIB	TSODATA	Y	2007/12/11
	AE.BKM0201.BASE.LOAD	TSODATA	Y	2007/12/12
	AE.BKM0201.BASE.MESSAGES	TSODATA	Y	2007/12/12
	AE.BKM0201.BASE.PARMLIB	TSODATA	Y	2007/12/11
	AE.BKM0203.BASE.DBRM	TSODATA	N	2011/06/01
	AE.BROKEN.IDS.BKUP	TSODATA	N	2010/08/24
	AE.ISPF.ISPPROF	TSODATA	Y	2005/12/05
	AE.MNT.ISPPROF	TSODATA	N	2009/01/29

You may use any of the valid line commands against data sets in the report.

Line command	Description
LC	Displays LISTCAT information for the selected data set.
HRC	Recall the selected data set.
HD	Delete the migration copy of the selected data set (HDELETE).

The following information is included for each data set that is included in the report:

Data Set Name

Name of the data set for which the information is provided.

MgmtClas Name

Name of the DFSMS management class to which the data set belongs. A value of NULL indicates that the data set has not been assigned a management class.

Chng flag

The data set has been opened for other than read-only processing since this flag was last reset in the VTOC. The data set needed to be backed up at the time of the migration.

Date Created

Date on which the data set was created.

Date Last Used

Date on which the data set was last referenced on primary DASD.

Date Last Backup

Date on which the data set was last backed up.

Date Migrated

Date this migration copy was made.

Mig Lvl

Migration level on which this data set currently resides.

SMS Mngd

This data set is SMS managed.

Date Last Updated(VSAM)

Date on which the data set was last updated (VSAM data sets only).

To exit the **Migrated Data Sets Without a Backup** panel, press the END function key.

VSAM Data Sets Need a Backup report

This report lists VSAM data sets that have migration copies controlled by DFSMSHsm but the associated backup copy does not exist or is obsolete. Backup copies are considered obsolete when the data set was changed but not backed up in two or more days. The results of the report are based on the date of the last backup from MCD records associated with the reported data sets.

Select the **VSAM Dsns Need Bkup** option from the **Auditing Reports** Menu to display a filter panel for the **VSAM Data Sets Need A Backup** panel.

You can filter the report results by data set name, management class name, backup date, update date, or whether the data set has been changed, or any combination of these attributes.

Note: If you specify multiple filters, AND logic is used when the filters are evaluated. All filters must be true for a candidate data set to be included in the report.

Data Set Name

You can specify a data set name explicitly, specify wildcard masks for a group of data sets, or a high-level qualifier or wildcard mask for a high-level qualifier. Leave this field blank if you do not want the report information restricted by data set name.

Management Class Name

You can specify a management class name explicitly or specify wildcard masks for a group of management classes. Leave this field blank if you do not want the report information restricted by management class name.

Date of Backup (YYYYDDD)

Date on which the data set was last backed up. This is a relative date field. Explicit dates or relative dates can be entered.

- * can be used to represent the current date.
- *-# or *+# indicate a past date or a future date, respectively.
- Use Y, M, or D to subtract or add years, months, or days (respectively). For example, *-2 or *-2D indicates a date that is 2 days in the past, and *+3M indicates a date that is 3 months in the future.

Date Updated (YYYYDDD)

Date on which the data set was last updated. This is a relative date field. Explicit dates or relative dates can be entered.

- * can be used to represent the current date.
- *-# or *+# indicate a past date or a future date, respectively.
- Use Y, M, or D to subtract or add years, months, or days (respectively). For example, *-2 or *-2D indicates a date that is 2 days in the past, and *+3M indicates a date that is 3 months in the future.

Data set changed

The data set has been opened for other than read-only processing since this flag was last reset in the VTOC. The data set needed to be backed up at the time of the migration.

Check for lost backups

For VSAM data sets that have non-zero 'Last Backup Date' in the associated MCD record, this filter checks whether a backup record actually exists in BCDS.

Note: If the **Check for lost backups** flag is set to Y, the report also checks if a backup exists in BCDS. As a result, the report might include some data sets that appear to have a good backup according to their backup date, but do not have an actual MCB record in BCDS.

Type your filtering values and press Enter to proceed to the **VSAM Data Sets Need A Backup** panel.

VSAM Data Sets Need A Backup panel

```
VSAMAud  ----- IBM Tivoli Advanced Audit for DFSMSHsm V2R6 ----- 21:49
Command ==>                                         Scroll ==> CSR
```

```
VSAM Data Sets Need A Backup:                      Row 1 of 28 More  >
Line Commands are . . . : LC HRC HD
```

Cmd	Data Set Name	Date Last Backup	Date Last Updated (VSAM)
	ARH.MNT0203.AUDIT.OLD	2009/10/06	2010/02/01
	BK.ASAPTEST.KSDS	2008/05/01	2011/06/27
	BKM0202X.BK.ACDIDB	2008/12/05	2010/07/21
	DANR.DDIR	2011/03/22	2011/03/25
	DANR.MAP0C4	2011/01/27	2011/03/11
	DANR.V1.SIMPLE	2008/10/11	2010/06/02
	EDP.IPCSGTF.DVLP	2011/01/28	2011/02/18
	EDP9.LAB.NOBACKUP.TEST1.KSDS	2002/03/13	2006/05/23
	EH.IMBED.ONEVOL	2000/08/24	2006/09/11
	EH.IMBED.TWOVOL	2000/08/24	2005/12/23
	EH.KRNG	2009/05/12	2010/05/18
	JKS.TEMP.BCDS2	2008/10/10	2010/06/15
	JKS.TEMP.ESDS	2008/05/01	2008/11/16
	JKS.TEMP.ESDS2	2008/05/01	2008/11/16

You may use any of the valid line commands against data sets in the report.

Line command	Description
LC	Displays LISTCAT information for the selected data set.
HRC	Recall the selected data set.
HD	Delete the migration copy of the selected data set (HDELETE).

The following information is included for each data set that is included in the report:

Data Set Name

Name of the data set for which the information is provided.

Date Last Backup

Date on which the data set was last backed up.

Date Last Updated(VSAM)

Date on which the data set was last updated (VSAM data sets only).

MgmtClas Name

Name of the DFSMS management class to which the data set belongs. A value of NULL indicates that the data set has not been assigned a management class.

Chng flag

The data set has been opened for other than read-only processing since this flag was last reset in the VTOC. The data set needed to be backed up at the time of the migration.

Date Created

Date on which the data set was created.

Date Last Used

Date on which the data set was last referenced on primary DASD.

Date Migrated

Date on which this migration copy was made.

Mig \Lvl

Migration level on which this data set currently resides.

SMS Mngd

This data set is SMS managed.

To exit the **VSAM Data Sets Need A Backup** panel, press the END function key.

Chapter 10. Correcting Errors

You can set up your audit procedures to correct automatically the error situations that are encountered during the audit or you can use Advanced Audit for DFSMSHsm to analyze and correct errors manually. If you choose to use automatic error correction, you can use SDSF to monitor the automatic correction process.

Automatic error correction

You can select the fixes that most appropriately satisfy the requirements of your environment, make those selections the default, and then have Advanced Audit for DFSMSHsm apply them automatically.

Every audit procedure has a corresponding member in the *&ppfx*.SAKDCNTL library. These are the generic plans and automatic fix routines for each diagnostic error that can be repaired. The recommended fixes must be defined by the customer where appropriate. You should review the automatic fixes member and select the fixes that most appropriately satisfy your environment so only those fixes are applied when the audit procedure is run.

A plan for each diagnostic error is distributed with the product and resides in the *&ppfx*.PLANS library. The naming convention of each plan member is the five-digit diagnostic error preceded by a P. The naming convention of the preferred fix for that plan is a five-digit diagnostic error preceded by an F. The contents of a sample automatic fixes member is shown below.

This is an example of the AKDZAFxx member in the *&ppfx*.SAKDCNTL library.

```
***** Top of Data *****
* LIST OF AUTOMATIC FIXES FOR THE xxxx AUDIT (AKDAUDxx)
-----1-----2-----3-----4-----5-----6-----7--
* COLUMN 1 IS PLAN MEMBER TO EXECUTE, COLUMN 10 IS PREFERRED FIX
Pxxxxx Fxxxxx
```

Column 1 contains the start of the plan member name and column 10 contains the start of the fix to apply. If you do not want to apply a fix automatically, specify NONE for both the plan member to execute (starting in column 1) and the preferred fix (starting in column 10).

If automatic fixes have been turned on, a dataset named *&PFX*.AUDIT.&TYPE.FIXES contains the JCL and fix commands needed to fix the errors identified. *&PFX* is the runtime prefix set in the AKDINI member in the SAKDPARM library. *&TYPE* is determined based upon the type of audit performed (MCDS, BCDS, and so forth).

To apply the fixes automatically, you must make the following change to your audit procedure:

- Near the end of each audit job, there is an IEBGENER step that is commented out. When you uncomment this step, the automatic fixes created by the job are submitted to the internal reader.

Advanced Audit for DFSMSHsm can perform IBM recommended fixes automatically. This option is turned on by changing the IBM_AUTOFIX token in the AKDINI member in the SAKDPARM library (see the *AKDINI configuration values* appendix). If this parameter is set to YES, specific IBM-recommended fixes are generated when errors are found. These fixes are placed into a data set and can be sent to the internal reader for submission. It is highly recommended to have a relatively clean CDS environment before automatically submitting fixes to the internal reader. In the beginning, it is recommended to review the fixes before submitting them.

Error threshold monitoring

You can bypass automatic error correction if the number of errors exceeds a predefined threshold or based on filtering by high-level qualifier or group of high-level qualifiers.

The following example shows the default plan for diagnostic xxxx, where xxxx would be the diagnostic error.

```
***** ***** Top of Data *****
000001 PLAN PLAN01
000002 *
000003 *
000004 SELECT *
000005 FROM (dataset)
000006 USING dataset(member)
000007 CREATE dataset
000008 WHERE DIAGNOSTIC = 'xxxx'
000009 AND ERR-COUNT GT '0'
000010
000011 END PLAN01
000012 PLAN PLAN02 COND EQ 0 PLAN01
000013 * SAMPLE PLAN TO TEST A COPY OF ARGUMENTS
000014 SELECT *
000015 FROM (dataset)
000016 USING dataset(member)
000017 USE error dataset
000018 FROMKEY ERRNUM = 'xxxx'
000019 TOKEY ERRNUM = 'xxxx'
000020 WHERE ERRNUM = 'xxxx'
000021 * ANY COPY MEMBER STATEMENTS FOR ENHANCED PLANS WOULD GO HERE
000022 * COPY TESTLIST
000023 END PLAN02
```

PLAN01 determines whether any diagnostics have been detected with the logic in lines 8 and 10. If the answer is zero, the COND example in PLAN02 determines whether the second part of the plan should run. The syntax allows more than one condition to be tested before a condition is true. All conditions must be satisfied before the result is set to true.

In this case, if some diagnostics are detected, PLAN02 captures and spools the error detail to the *error dataset*.

If you do not want to run fixes when the error count exceeds a predefined threshold, you can add a statement in the example after line 10 similar to the following:

```
WHERE DIAGNOSTIC = 'xxxx'
AND ERR-COUNT GT '0'
AND ERR-COUNT LT '10000'
```

Lines 21 and 22 of the example plan show a comment about copying a member for more conditional setting. This is where you can enter data set name filter patterns to distinguish test from production data or any other criteria. You can add the statements directly in the plan or code them in a separate member in the PLANS library. An example of what you might specify for line 21 to test true on a specific DSN is shown below:

```
AND TDSN AE 'DCD.**'
OR TDSN AE 'EDP.**'
OR TDSN AE 'DANR.**'
```

The AE operation means ACS PATTERN EQUAL to the filter pattern presented in the argument. You can use the corresponding operation of AN (ACS PATTERN NOT EQUAL) for an exclusion test. See [Appendix E, “Query Language feature,”](#) on page 169, for more information.

If the same list of data sets are needed from plan to plan, you can create a member in the PLANS data set with these arguments in it and use the COPY statement to employ the member in each plan where needed. In the above example, COPY TESTLIST on line 22 is commented out. Create the member name and change the COPY statement to refer to that member. All the statements in the member TESTLIST will be placed after the WHERE statement and applied.

More than one selection plan can be processed against the same diagnostic. For example, if you have a list of data sets stored in member PRODLIST, an additional plan would be identical to the one shown

above except COPY PRODLIST would be specified. Assume that the fix to apply for production data sets is different than the test data sets. The SELECT DD statement of the audit procedure would contain a reference to the automatic fix member containing multiple plans and their fixes.

Automatic error correction quick reference

The SELECTS DD statement and the SELECTI DD statement reference various members of the SAKDCNTL library.

The SELECTS DD statement is used for customer-defined automatic fixes and the SELECTI DD statement is used by the IBM_AUTOFIX automatic fixes.

The SELECTI DD statement is used when the AKDINI parameter IBM_AUTOFIX is set to YES. See the *AKDINI configuration values* appendix for a description of the IBM_AUTOFIX parameter.

Table 1. SAKDCNTL members referred to by the SELECTS or SELECTI DD statement			
SAKDCNTL Member	Audit Procedure	Diagnostics	MAPS
AKDZAFMC, AKDZIFMC	AKDAUDAL	11D1C - 1128I	AKDZ0037
AKDZAFMC, AKDZIFMC	AKDAUDCT	11D1C - 1126I	AKDZ0037
AKDZAFMC, AKDZIFMC	AKDAUDMD	11D1C - 1128I	AKDZ0037
AKDZAFBC, AKDZIFBC	AKDAUDBD	2101W - 2118W	AKDZ0029
AKDZAFTC, AKDZIFTC	AKDAUDCM	3101W - 3114I	AKDZ0040
AKDZAFTL, AKDZIFTL	AKDAUDHL	3101W - 3116W	AKDZ0040
AKDZAFTR, AKDZIFTR	AKDAUDRM	3101W - 3116W	AKDZ0040
AKDZAFTR, AKDZIFTR	AKDAUDGF	3101W-3112W	AKDZ0040
AKDZAFTT, AKDZIFTT	AKDAUDTP	3101W - 3116W	AKDZ0040
AKDZAFOC, AKDZIFOC	AKDAUDOD	4001W - 4013I	AKDZ0039
AKDZAFAM, AKDZIFAM	AKDAUDFL	8000I - 8020I	AKDZ0038
AKDZAFAM, AKDZIFAM	AKDAUDFT	8000I - 8020I	AKDZ0038
AKDZAFSM, AKDZIFSM	AKDAUDSM	9001I	AKDZ0114

Analyzing and correcting errors manually

Advanced Audit for DFSMSHsm provides a method of analyzing and correcting audit errors after the audits have been executed and researched.

About this task

The audit error correction processes create TSO, DFSMSHsm, TMSBINQ, and TMSUPDTE commands. Advanced Audit for DFSMSHsm does not alter the control data sets (CDSs) other than by using the IBM-supported **FIXCDS** command. The selection and application of a particular fix strategy is your responsibility and should be applicable to your environment.

Note: Multiple users may apply fixes after an audit has been run.

Procedure

1. From the **Main Menu** panel, type 1 in the **Command** line and press Enter to display the AKD710 panel.
2. In the **Command** line on the AKD710 panel, type the number that corresponds to the audit procedure that you have just run, and then press Enter to display the **Error** (AKD720) panel.

3. On the AKD720 panel, type F next to the number of the error that you want to fix and press Enter to display the AKD715 panel.

Note: On the AKD715 and AKD720 panels, you can view additional information about a fix by typing H next to the fix and pressing Enter.

4. On the AKD715 panel, type F next to the member name and press Enter.

A sequential data set is automatically created with the JCL FIX control statements.

Note:

- If you do not already have a job card member defined for running jobs to fix audit errors, you are prompted to create a job card member for your user ID.
- To run fixes F1107VK, F1109VE, F1124WD, F1125WE, F2106VH, F2107VD, F2109VD, F4007VC, F4008C, F4009CB, or F4010WB, you must create JCL member AKDSAVFT in the SAKDJCL library. See [“Creating the AKDSAVFT member in the JCL library”](#) on page 9.

5. Make any necessary changes to the JCL and control statement prior to executing them.

6. Type SUBMIT on the **Command** line to run the JCL.

The results of the execution are placed in a data set prefixed with your TSO user ID. Consider an example in which data set FA390.FIXAUDIT.F11D1CA is created; the prefixed user ID is FA390 and F11D1CA is the error number and the fix option for the error.

7. Use ISPF option 3.4 to display the **Data Set List Utility** panel.

8. In the **DSNAME LEVEL** field, type the name of the results data set and press Enter to display the data set.

Browsing audit results

Advanced Audit for DFSMSHsm provides a method of browsing audit results after the audits have been executed and researched.

Procedure

1. In the **Command** line on the Main Menu panel, type 1 and press Enter to display the AKD710 panel.
2. On the AKD710 panel, in the **Command** line type the number of audit procedure whose results you want to view and press Enter.

Tip: To view additional details about a fix, type H next to the fix and press Enter.

3. On the **Error** (AKD720) panel for the selected audit procedure, type B next to an error number and press Enter.

The data set is displayed in browse mode. You can scroll right to see any additional information

4. Press End (PF3) to return to the **Error** (AKD720) panel.

Modifying audit results

Advanced Audit for DFSMSHsm provides a method of modifying audit results after the audits have been executed.

About this task

When you modify the audit results, you are not making permanent changes to the results. The modified data is made within a temporary data set. Any data that is deleted or corrected is still accessible by Advanced Audit for DFSMSHsm and is not updated until the audit is run again.

To modify audit results:

Procedure

1. From the MAINMENU panel, select **Option 1 Auditing**. After selecting Option 1 you will see the (AKD710) panel. Type the option on the command line that applies to the audit procedure you have just run and press Enter.
The **Error** (AKD720) panel for the selected audit procedure is displayed.
2. Type M (modify) next to an error number and press Enter.
The data set is displayed in edit mode within a temporary data set. You can scroll right to see any additional information
3. Make any deletions or modifications to the audit results and save your changes.
4. Press End (PF3) to advance to the **Fixes** (AKD715) panel.

Using SDSF to monitor automatic fixes

You can use SDSF to monitor the progress of automatic fixes of an active batch job.

About this task

The Monitor examines the command input stream and estimates the number of commands it will process. Also, it determines what the OUTDATASET is that HSM will use to record the activity. The default command limit is 1,000. Depending on the HSM COMMAND STORAGE AREA (CSA) the number of commands may be reduced. Whenever the Monitor wakes up to process another series of commands, it examines the number of extents of the ODS data set. The AKDMONTR013 message is issued so you can watch the progress of extents taken. At completion of the input stream, the AKDMONTR014 message is issued to show the actual commands processed and the expected estimated commands.

To monitor the SYSTSPRT data:

Procedure

1. On the **SDSF Held Output Display** panel, type ? (question mark) to the left of the fix job and press Enter.
2. On the **SDSF Job Data Set Display** panel, type S to the left of SYSTSPRT and the current contents of SYSTSPRT will be displayed.
3. Optionally, press Enter again to display any additional messages as they occur.

Appendix A. Messages and codes for Advanced Audit for DFSMSHsm

This appendix provides explanations and suggested user responses for the messages and error codes that are issued by Advanced Audit for DFSMSHsm.

All of the messages that are generated by Advanced Audit for DFSMSHsm have a severity code printed as the last character of the message ID. The severity codes are described in the following table.

Severity code	Description
I	Information only. No action is required.
W	Warning message. Results might not be as expected.
E	Error message. Some error situations are user-correctable. The User response information provides a suggested course of action.

Product error messages

This topic documents the error messages that might be issued by Advanced Audit for DFSMSHsm processing.

AKD10501E **xxxxxxx VSAM Point failed for DDNAME**

Explanation:

VSAM processing failed during a POINT command.

User response:

Validate that your JCL is correct. If you can't resolve this problem, call support.

AKD10502E **xxxxxxx VSAM Point failed for DDNAME**

Explanation:

VSAM processing failed during a POINT command.

User response:

Validate that your JCL is correct. If you can't resolve this problem, call support.

AKD10701E **VSAM open error, process ended**

Explanation:

VSAM open failed. Processing is terminated.

User response:

Validate that your JCL is correct. If you can't resolve this problem, call support.

AKD10702E **INPUT open error, process ended**

Explanation:

VSAM open for input failed. Processing is terminated.

User response:

Validate that your JCL is correct. If you can't resolve this problem, call support.

AKD10703E **OUTPUT open error, process ended**

Explanation:

VSAM open for output failed. Processing is terminated.

User response:

Validate that your JCL is correct. If you can't resolve this problem, call support.

AKD10901E **ERR1 key not found**

Explanation:

VSAM key read failed. Processing is terminated.

User response:

Validate that your JCL is correct. If you can't resolve this problem, call support.

AKD10902E **xxxxxxx close failed for DDNAME**

Explanation:

Check dataset for DDNAME.

User response:

If you can't resolve this problem, call support.

AKD11101E **Key not found**

Explanation:

The Multi-CDS processor was unable to read a key in the split CDS.

User response:

Check to see if the order of the split dsnames in the catalog procedure is correct.

AKD11102E **xxxxxxx close failed for DDNAME**

Explanation:

The Multi-CDS processor was unable to close DDNAME xxxxxxxx.

User response:

Check to see if the order of the split dsnames in the catalog procedure is correct.

AKD11301E Key not found**Explanation:**

VSAM key read failed. Processing is terminated.

User response:

Validate that your JCL is correct. If you can't resolve this problem, call support.

AKD11302E xxxxxxxx close failed for DDNAME**Explanation:**

VSAM close failed for the DDNAME.

User response:

Check dataset for DDNAME. If you can't resolve this problem, call support.

AKD11501E Key not found**Explanation:**

VSAM key read failed. Processing is terminated.

User response:

Validate that your JCL is correct. If you can't resolve this problem, call support.

AKD11502E xxxxxxxx close failed for DDNAME**Explanation:**

VSAM close failed for the DDNAME.

User response:

Check dataset for DDNAME. If you can't resolve this problem, call support.

AKD11701E Open failed for MCDS**Explanation:**

The request to open the MCDS has failed.

User response:

Check the spelling of the MCDS and its splits for accuracy. If the names are proper, call support.

AKD11702E Open failed for MCDS1**Explanation:**

The request to open the MCDS has failed.

User response:

Check the spelling of the MCDS and its splits for accuracy. If the names are proper, call support.

AKD11703E Open failed for MCDS2**Explanation:**

The request to open the MCDS has failed.

User response:

Check the spelling of the MCDS and its splits for accuracy. If the names are proper, call support.

AKD11704E Open failed for MCDS3**Explanation:**

The request to open the MCDS has failed.

User response:

Check the spelling of the MCDS and its splits for accuracy. If the names are proper, call support.

AKD11901E Open failed for OCDS**Explanation:**

The request to open the OCDS has failed.

User response:

Check the spelling of the MCDS and its splits for accuracy. If the names are proper, call support.

AKD11902E Open failed for OCDS1**Explanation:**

The request to open the OCDS has failed.

User response:

Check the spelling of the MCDS and its splits for accuracy. If the names are proper, call support.

AKD11903E Open failed for OCDS2**Explanation:**

The request to open the OCDS has failed.

User response:

Check the spelling of the MCDS and its splits for accuracy. If the names are proper, call support.

AKD11904E Open failed for OCDS3**Explanation:**

The request to open the OCDS has failed.

User response:

Check the spelling of the MCDS and its splits for accuracy. If the names are proper, call support.

AKD12101E xxxxxxxx failed to open**Explanation:**

The request to open ddname xxxxxxxx has failed.

User response:

Validate that your JCL is correct. Check to see if the order of the split dsnames in the cataloged procedure is correct. If you can't resolve this problem, call support.

AKD12102E xxxxxxxx DDNAME split out of order**Explanation:**

The split CDS was found out of order.

User response:

Validate that your JCL is correct. If you can't resolve this problem, call support.

AKD12103E No key for DDNAME was found.**Explanation:**

No key exists for this DDNAME.

User response:

Validate that your JCL is correct. If you can't resolve this problem, call support.

AKD12301E xxxxxxxx failed to open

Explanation:

The request to open ddname xxxxxxxx has failed.

User response:

Validate that your JCL is correct. Check to see if the order of the split dsnames in the cataloged procedure is correct. If you can't resolve this problem, call support.

AKD12302E xxxxxxxx DDNAME split out of order

Explanation:

The split CDS was found out of order.

User response:

Validate that your JCL is correct. If you can't resolve this problem, call support.

AKD12303E No key for DDNAME was found.

Explanation:

No key exists for this DDNAME.

User response:

Validate that your JCL is correct. If you can't resolve this problem, call support.

AKD12501E xxxxxxxx failed to open

Explanation:

The request to open ddname xxxxxxxx has failed.

User response:

Validate that your JCL is correct. Check to see if the order of the split dsnames in the cataloged procedure is correct. If you can't resolve this problem, call support.

AKD12502E xxxxxxxx DDNAME split out of order

Explanation:

The split CDS was found out of order.

User response:

Validate that your JCL is correct. If you can't resolve this problem, call support.

AKD12503E No key for DDNAME was found.

Explanation:

No key exists for this DDNAME.

User response:

Validate that your JCL is correct. If you can't resolve this problem, call support.

AKD12901E INI DD missing, cannot determine values

Explanation:

The request to open the INI DD has failed.

User response:

Validate that your JCL is correct. If you can't resolve this problem, call support.

AKD13101E No volume given at exec parm

Explanation:

No volume parm was given on the exec parameter.

User response:

Supply a valid volume parm in the JCL.

AKD13102I xxxx Length of TTOC record from R0

Explanation:

The length of the TTOC record is displayed.

User response:

No action required.

AKD13301E No CDS request found

Explanation:

An invalid CDS request name was given

User response:

Supply a valid CDS request of MCDS, BCDS, or OCDS.

AKD13901E xxxxxx was invalid function

Explanation:

An invalid function name was given

User response:

Supply a valid function name of OPEN, CLOSE or GET.

AKD13902E ERR1 key not found

Explanation:

VSAM key read failed. Processing is terminated.

User response:

Validate that your JCL is correct. If you can't resolve this problem, call support.

AKD14301E Failed to open MCV volume table

Explanation:

The MCV extraction module failed to open a file contaminating the extracted HSM volume inventory (MCV) table. This message is followed by user abend 1001.

User response:

Verify that the MCDS and its splits are spelled correctly and that it is truly the MCDS.

AKD14302E Bad return from AKD10149

Explanation:

The MCDS extraction module passes a list of ML1 volumes to AKD10149 was not successful in processing DCOLLECT statements to list their contents.

User response:

Contact support.

AKD14901E No volume list passed

Explanation:

Module AKD10149 formats DCOLLECT statements to list the contents of the ML1 volumes. In this instance the module found no ML1 volumes to list.

User response:

Contact support.

AKD15301E Bad return from date routine

Explanation:

An problem was encountered in date routine.

User response:

Supply a valid date to the date routine.

AKD15701I Locate failed for Master Catalog

Explanation:

A problem was encountered using locate for the Master Catalog. Processing continues.

User response:

None.

AKD16101I Locate failed for Master Catalog

Explanation:

A problem was encountered using locate for the Master Catalog. Processing continues.

User response:

None.

AKD16301E MASTRCAT Open failed

Explanation:

DDNAME MASTRCAT failed to open. Processing terminates.

User response:

Validate that your JCL is correct. If you can't resolve this problem, call support.

AKD16302E UCATS Open failed

Explanation:

DDNAME UCATS failed to open. Processing terminates.

User response:

Validate that your JCL is correct. If you can't resolve this problem, call support.

AKD16303I Locate failed for Master Catalog

Explanation:

A problem was encountered using locate for the Master Catalog. Processing continues.

User response:

None.

AKD16701I Found data component

Explanation:

Informational message.

User response:

None.

AKD16702W No length passed on data component

Explanation:

No length passed for data component.

User response:

None.

AKD17701E POINT on open failed

Explanation:

The catalog extraction module attempted to open a catalog but the VSAM read module failed to open it.

User response:

Probably an empty catalog. Perform an IDCAMS LISTC USERCAT UCAT command to verify the integrity of the catalog.

AKD17702E xxxxxxxx VSAM open failed

Explanation:

The catalog extraction module attempted to open a catalog but the VSAM read module failed to open it.

User response:

Probably an empty catalog. Perform an IDCAMS LISTC USERCAT UCAT command to verify the integrity of the catalog.

AKD17901E dsname Allocation failed

Explanation:

Audit attempts to extract information in the Small Data Set Packing data set for audit purposes. Sometimes the SDSP is temporarily in use by HSM and the allocation will fail. Audit attempts to allocate the data set again after all others have been processed (usually with success). If the dsname is displayed twice in the run time messages, the audit of the SDSP may not be accurate.

User response:

If the dsname above is displayed twice then Audit Error 1118C may be erroneously diagnosed. However audit extracts the SDSP information again for verification purposes to insure it's accuracy. If you see an unusually large number of 1118C errors in the MCDS audit, contact support.

AKD17902E SDSP open failed

Explanation:

Audit attempts to extract information in the Small Data Set Packing data set for audit purposes. In this case the allocation was successful but the open failed. Audit will attempt to open later after all others have been processed. If the dsname is displayed twice in the run time messages, the audit of the SDSP will not

be accurate. The SDSP is probably contaminated and is not in service.

User response:

Try to analyze why the SDSP is in trouble.

AKD17903E dsname Unallocate failed

Explanation:

Audit dynamically allocates and unallocates all SDSP datasets. In this instance the allocation was good but the unallocation failed. This is unlikely but is an indicator that the audit process is contaminated.

User response:

If you can't resolve this problem, call support.

AKD18101E Key not found.

Explanation:

Module AKD10181 issued an open to the SDSP VSAM cluster but the open failed with a POINT key.

User response:

Contact support.

AKD18102E Open failed on SDSP cluster

Explanation:

Module AKD10181 issued an open to the SDSP VSAM cluster, but the open failed. Probably a contaminated SDSP VSAM cluster.

User response:

Try to determine why the SDSP is contaminated.

AKD19701E SDSP Verify failed to open

Explanation:

Audit has reextracted the SDSP information into a sequential file. When attempting to verify the SDSP errors, the extracted file failed to open.

User response:

Contact support.

AKD19901E MCDS Open failed

Explanation:

The request to open the MCDS has failed.

User response:

Check the spelling of the MCDS and its splits for accuracy. If the names are proper contact support.

AKD22101E xxxxxxxx key was TTVKEY

Explanation:

The BCDS extraction module has abended while attempting to update the table of backup volumes where xxxxxxxx is the key of the table.

User response:

Contact support.

AKD23701E AKD10125 failed to load

Explanation:

One of the VSAM read modules failed a load attempt.

User response:

Check loadlib allocation or concatenation.

AKD27701E TTCVOLS table failed to open

Explanation:

An attempt to open a table failed contaminating the volumes extracted from the TTOC.

User response:

Contact support.

AKD28501E TTCVOLS table failed to open

Explanation:

An attempt to open a table failed contaminating the volumes extracted from the TTOC.

User response:

Contact support.

AKD28701E Bad return from date routine

Explanation:

The date conversion routine has encountered an invalid date.

User response:

Contact support.

AKD28702E Open failed for TMS extraction

Explanation:

An attempt to open a table failed contaminating the TMS extracted information.

User response:

Contact support.

AKD28703E Open failed for TTC extraction

Explanation:

An attempt to open a table failed contaminating the TTOC extracted information.

User response:

Contact support.

AKD28901E Bad return from date routine

Explanation:

The date conversion routine has encountered an invalid date.

User response:

Contact support.

AKD28902E xxx OCDS failed to open

Explanation:

An attempt to open the OCDS TTOC failed. The TMS extracted information.

User response:

Check the spelling of the OCDS dsn in the cataloged procedure.

AKD29501E	Table replace failed	AKD34903E	Extended TTOC found in OCDS but system is not at 1.7 or OCDS has maxlrecl LT 6140
Explanation: While auditing the TTOC chain, an attempted update to the TTOC extraction file failed.		Explanation: Audit found an extended TTOC in the OCDS, but because the system is not at level 1.7 OR the OCDS has a maxlrecl LT 6140 the audit can not continue.	
User response: Contact support.		User response: Check the extended TTOC setting for the HSM system.	
AKD29901E	Open failed for MCDS	AKD35301E	Internal Error 2
Explanation: An attempt was made to open the MCDS and it failed.		Explanation: An attempt to access the HSM address space information for the migration or backup prefix has failed.	
User response: Check the spelling of the MCDS and its splits.		User response: This might mean that HSM is not running on the same system as the audit job. Make sure HSM is active on the same system the audit is running on.	
AKD30901E	Sort of error records failed	AKD35302E	Internal Error 3
Explanation: An attempt to sort the error records failed.		Explanation: An attempt to access the HSM address space information for the migration or backup prefix has failed.	
User response: None.		User response: This might mean that HSM is not running on the same system as the audit job. Make sure HSM is active on the same system the audit is running on.	
AKD31501E	Allocation of catalog failed	AKD35501I	HSM is active, EXTENDED TTOC(Y) is set
Explanation: An attempt to allocate the catalog failed.		Explanation: Informational message showing the EXTENDED TTOC setting.	
User response: Check catalog name. If in error contact support.		User response: None.	
AKD31502E	Unallocation of catalog failed	AKD35502I	HSM is inactive, OCDS is eligible for XTTC
Explanation: An attempt to unallocate the catalog failed.		Explanation: Informational message showing HSM in inactive and the OCDS is eligible for XTTC processing.	
User response: Check catalog name. If in error contact support.		User response: None.	
AKD31701E	PARM is incorrect	AKD35503I	HSM is active, EXTENDED TTOC(N) is set
Explanation: An invalid parm was passed to the program.		Explanation: Informational message showing the EXTENDED TTOC setting.	
User response: Valid parms are NOTEMPS or INCTEMP.		User response: None.	
AKD34901E	No volume given at Exec parm		
Explanation: To perform an audit of a tape volume, a volume serial number must be supplied.			
User response: Make sure the cataloged procedure has not been altered and the execution parameter for program AKD10349 contains a valid volume serial number.			
AKD34902E	Bad return from date routine		
Explanation: The date conversion routine has encountered an invalid date.			
User response: Contact support.			

AKD35504E Internal Error 2**Explanation:**

An attempt to access the HSM address space information for the migration or backup prefix has failed.

User response:

This might mean that HSM is not running on the same system as the audit job. Make sure HSM is active on the same system the audit is running on.

AKD35505E Internal Error 3**Explanation:**

An attempt to access the HSM address space information for the migration or backup prefix has failed.

User response:

This might mean that HSM is not running on the same system as the audit job. Make sure HSM is active on the same system the audit is running on.

AKDU3556E Unable to open file Dsn=<dsn>, Rc=<rc>, Rs=<rs>, SubRs=<subrs>**Explanation:**

An error occurred while trying to open data set dsn.

User response:

Contact Technical Support for assistance.

AKD35701E xxxxxxxx open failed**Explanation:**

An attempt to open xxxxxxxx failed.

User response:

Check cataloged procedure for proper spelling of dsn for xxxxxxxx.

AKD36501I oooooooooo was the option**Explanation:**

This message is issued at the beginning of the tape audit. There are three options for the tape audit - FAST, THOROUGH or INTENSE. This message is useful when analyzing the results of the audit job.

User response:

Information only. Processing continues.

AKD36502E Bad read on first block**Explanation:**

The first block read on the tape failed. Further auditing is not possible.

User response:

Audit is terminating.

AKD36503W Audit changed to INTENSE process**Explanation:**

When navigating through the tape an expected data set name represented by the CDD eye catcher was not

found. This means the information about the data on the tape can not be used. The tape is backspaced to the last good position and every block of data is read for the remainder of the audit.

User response:

Auditing continues.

AKD36504E Bad read on first block**Explanation:**

The first block read on the tape failed. Further auditing is not possible.

User response:

Audit is terminating.

AKD36505I xxxxxxxx xxxxxxxx RQST FBID and NOTE results**Explanation:**

Informational message displaying location of the tape read module.

User response:

Auditing continues.

AKD36506W Option FAST mismatch FBID and NOTE**Explanation:**

Option FAST was unable to continue. The audit will change the option to THOROUGH and start over.

User response:

Auditing continues.

AKD36507W POINT failed to find *CDD****Explanation:**

Option FAST was requested for a tape audit but the File Block Identifier given for the last good block to skip to did not contain the CDD eye catcher.

User response:

The audit is restarted at the beginning of the tape with the option THOROUGH.

AKD36508W Option FAST mismatch DSN, THOROUGH started**Explanation:**

Option FAST was requested for a tape audit and the File Block Identifier CDD eye catcher was found, but the DSN did not match.

User response:

The audit is restarted at the beginning of the tape with the option THOROUGH.

AKD36509W Positioning failed**Explanation:**

Option FAST was requested for a tape audit but the POINT command physically failed for the tape.

User response:

The audit is restarted at the beginning of the tape with the option THOROUGH.

AKD36510I Audit method changed to THOROUGH

Explanation:

When option FAST is being changed to THOROUGH, the tape is closed with rewind and re-opened.

User response:

None. Information only.

AKD36511I Audit method changed to INTENSE

Explanation:

When navigating through the tape an expected data set name represented by the CDD eye catcher was not found. This means the information about the data on the tape can not be used. The tape is back-spaced to the last good position and every block of data is read for the remainder of the audit.

User response:

Auditing continues.

AKD36512E Audit tape OPEN failed

Explanation:

An audited tape failed to open. The audit can not be run.

User response:

Make sure the correct tape volser was coded on the cataloged procedure.

AKD36513W No HSM prefix, default to HSM.

Explanation:

An examination of the tape data set name has failed to find a prefix to use to assign HSM alias names.

User response:

The prefix of HSM. will be used as a default.

AKD36514W EODAD reached, Audit status not open

Explanation:

The tape encountered EOD on an OPEN or POSITIONING.

User response:

Audit continues.

AKD36515W CC LL ECB read warning, ECB list

Explanation:

A read error was detected on the tape. The CC represents the completion code and LL represents one of ten possible read commands the bad read occurred in. Usually the CC is 48, which represents a bad length block. When this is the case, end of data is assumed and normal termination processes are invoked.

User response:

Audit terminates normally.

AKD36516I nnnnnnnn Blocks audited

Explanation:

After every 200,000 blocks read, this message is issued. It is for progression purposes. Since tapes can contain over ten million blocks and the job can take several hours to complete, this message provides a convenient method of following the progress of the audit.

User response:

Auditing continues.

AKD36517E xxxx A bad length block has been found

Explanation:

Each block on the tape should be 16k in length. If the tape read process encounters a length that is not this size, it indicates the integrity of the data on tape has been compromised.

User response:

Auditing is terminated.

AKD36518W *CDD Missing after skip ahead**

Explanation:

Audit options FAST and THOROUGH skip over blocks for a number of blocks dictated by the block count in the TTOC. An expected data set name is searched. In this case the eye catcher CDD is not found so the data set can not be examined.

User response:

Auditing is changed to INTENSE and auditing continues.

AKD36519W Audit changed to INTENSE process

Explanation:

When navigating through the tape an expected data set name represented by the CDD eye catcher was not found. This means the information about the data on the tape can not be used. The tape is back-spaced to the last good position and every block of data is read for the remainder of the audit.

User response:

Auditing continues.

AKD36520I SYNAD exit entered

Explanation:

A SYNAD exit has been entered on behalf of the tape IO process.

User response:

The process is returned to terminate normally.

AKD36521E CCC RR DCB Abend exit entered

Explanation:

An abend has occurred where CCC is the abend code and RR is the reason code. This abend is trapped but

the DCB abend exit related to the HSM tape that is being processed.

User response:

The status of the audit is examined and reported. Depending on the status of the abend, normal termination is attempted otherwise the abend continues.

AKD36522I Audit completed OPEN

Explanation:

The tape file has been successfully opened.

User response:

Information only.

AKD36523I Tape EOD detected

Explanation:

The tape file has been read and the end of data condition has been detected. This means the tape has been read as far as possible. Any diagnostics for the audit will be valid.

User response:

Information only.

AKD36524I Audit files closed

Explanation:

All files except the tape file have been closed successfully.

User response:

Information only.

AKD36525I Audit errors sorted

Explanation:

All data sets found on the tape have been sorted successfully.

User response:

Information only.

AKD36526I Tape file close issued

Explanation:

A close to the tape file has been issued.

User response:

Information only.

AKD36527I Tape file close succeeded

Explanation:

A close to the tape file has been successful.

User response:

Information only.

AKD36528W Abend is being ignored

Explanation:

After examining the abend condition it has been determined that processing may continue.

User response:

Return to normal processing is taken.

AKD36529E Abend cannot be ignored, abend continues

Explanation:

After examining the abend condition it has been determined that further processing is impossible.

User response:

Return to continue the abend process.

AKD37501E Unable to decode execution parm

Explanation:

The parm was examined but the program could not decode it.

User response:

Check cataloged procedure for runtime parm.

AKD37502E Invalid AUD_FIXCDS_LIMIT value. Limit parm exceeds eight digits

Explanation:

The AUD_FIXCDS_LIMIT parm is invalid. Parm exceeds seven digits.

User response:

Check the AUD_FIXCDS_LIMIT parm.

AKD37503E No prefix given at Exec parm

Explanation:

To properly create the FIXTTOC data set, a user prefix is needed for the target ODS data set name. This prefix is passed through the execution parameter of AKD10375. This message is issued when the parm is missing.

User response:

Correct the runtime parameter.

AKD37901E Function passed is invalid, xxxxxxxx should be OPEN, CLOSE or FIXCDS

Explanation:

The parm was examined but the program could not decode it.

User response:

Check cataloged procedure for runtime parm.

AKD38501E VSAM open error, process ended

Explanation:

VSAM open encountered a problem during open processing.

User response:

Contact support.

AKD38502E INPUT open error, process ended

Explanation:

INPUT open encountered a problem during open processing.

User response:

Contact support.

AKD38503E OUTPUT open error, process ended**Explanation:**

OUTPUT open encountered a problem during open processing.

User response:

Contact support.

AKD38701E Failed to find proper format**Explanation:**

The PLAN formatter module encountered a format problem.

User response:

Check the PLAN for proper formatting.

AKD38702W Call to AKD07863 PUTX failed**Explanation:**

The formatter module encountered an error during a PUTX function.

User response:

Check sysout messages for the additional messages issued by the formatter module.

AKD38703E Failed to write reformatted record**Explanation:**

The formatter module encountered an error during a PUT function.

User response:

Check sysout messages for the additional messages issued by the formatter module.

AKD39701E Unable to obtain information about dsname**Explanation:**

A dsname was passed to this module but the module was unable to obtain any information about it.

User response:

Audit terminates.

AKD39702E Bad read on first block**Explanation:**

The first block read failed. Further auditing is not possible.

User response:

Auditing is terminated.

AKD39703W xxxx Point was no good**Explanation:**

A POINT command to block xxxx failed.

User response:

Auditing continues.

AKD39704W BBBB Read failed at this block**Explanation:**

A read was attempted at block *BBBB*. The wait ECB code was A.

User response:

Auditing continues.

AKD39705W Passed block contain zeros**Explanation:**

The block which was read contains zeros.

User response:

Auditing continues.

AKD39901E xxxxxxxx Open failed for ddname**Explanation:**

The ddname xxxxxxxx failed to open.

User response:

Check JCL for spelling of CDS or correct splits.

AKD39902E xxxxxxxx DDNAME split out of order**Explanation:**

The split CDS was found out of order.

User response:

Check if the CDS filenames (specified in CMD00 member) are specified in correct order.

AKD39903E No key for DDNAME was found**Explanation:**

Unable to read DDNAME file or it's null file.

User response:

Check if the CDS filenames specified in CMD00 member are NULL or HSM STC isn't active.

AKD40301I nnnnnnnn Dcollect Records Written | nnnnnnnn Dcollect Records Filtered Out**Explanation:**

Informational message stating the number of Dcollect records written and the number of Dcollect records filtered out.

User response:

See member AKDZSMS2 in the CNTL library to Include and Exclude Dcollect records by Data Set Name.

AKD41501I Following is the Dcollect statement used in this collection. Edit member AKDZSMS1 in the CNTL library to modify the parameters.**Explanation:**

Informational message showing the contents of the Dcollect parameter used during this job collection.

User response:

Edit member AKDZSMS1 in the CNTL library to modify the Dcollect parameters.

AKD70301E Allocation was unsuccessful

Explanation:

The generalized allocation routine encountered an error while attempting to allocate a dataset.

User response:

Contact Support.

AKD70302E Unallocation failed

Explanation:

The generalized allocation routine encountered an error while attempting to unallocate a dataset.

User response:

Contact Support.

AKD70303I Unallocation was good

Explanation:

The generalized allocation routine successfully unallocated the dataset.

User response:

Information only.

AKD70501E Audit type missing

Explanation:

Authorization processing has detected that the audit type parameter statement for this jobstep is missing.

User response:

Check that the appropriate audit type parameter is coded on the execution statement for this jobstep.

AKD70502E xxxxxxxx Support Module Missing.

Explanation:

Identified module is not in the load library.

User response:

Validate that your JCL is correct. If you can't resolve this problem, call support.

AKD70503E xxxx is an invalid auth Parm

Explanation:

Authorization processing has detected that the audit type parameter statement for this jobstep is invalid.

User response:

Check that the appropriate audit type parameter is coded on the execution statement for this jobstep.

AKD70504E Unable to initialize INI

Explanation:

During program start, one or more problems occurred during decoding of the //INI member. As the //INI provides vital information for this product, the program cannot continue execution.

User response:

Contact Support. Have available the listing that contains this message and the PARMLIB member that controls execution of this product.

AKD70505E No CONTROL DD statement

Explanation:

The program tried to determine what kind of tape is being audited but was unable to open the control dataset.

User response:

Contact support.

**AKD70506E The LOADLIB is not authorized.
The audit will terminate.**

Explanation:

The LOADLIB library is not added to APF list.

User response:

Use the SETPROG APF command to add library to APF list or contact your system administrator.

AKD70701I HSM audits are enabled

Explanation:

Informational message.

User response:

No action required.

AKD70801I SMS audits are enabled

Explanation:

Informational message.

User response:

No action required.

AKD70901I DASD audits are enabled

Explanation:

Informational message.

User response:

No action required.

AKD71101I Tape audits are enabled

Explanation:

Informational message.

User response:

No action required.

AKD71301I Catalog audits are enabled

Explanation:

Informational message.

User response:

No action required.

AKD71501I Audit MEDIACONTROLS audits are enabled

Explanation:

Informational message.

User response:
No action required.

AKD71701E Read JFCB failed on member list

Explanation:
An attempt to open the member list for the messages PDS failed.

User response:
Contact support.

AKD71702E Open of MESSAGE member failed

Explanation:
An attempt to open a message member in the messages PDS failed.

User response:
Contact support.

AKD71703E Open for MSGDIR failed

Explanation:
An attempt to open the DDNAME MSGDIR failed.

User response:
Contact support.

AKD72302E xxxxxxxx close failed

Explanation:
Program processing was unable to close the DFHSM Control Dataset.

User response:
Contact support.

AKD72702E Read of extension failed

Explanation:
An attempt was made to read the next extension of a data set.

User response:
Contact support.

AKD72703E Bad primary computation

Explanation:
The program encountered a problem when try to compute the total number of primary allocation trks of the ds.

User response:
Contact support.

AKD72901E xxxxxxxx had bad function call

Explanation:
The function code passed to program processing was inaccurate.

User response:
Contact support.

AKD73102E Failed to write reformatted record

Explanation:

The universal formatter routine did not successfully write out the record passed to it.

User response:
Contact support.

AKD73103E xxxx was the return code from format routine.

Explanation:
The universal formatter routine did not successfully write out the record passed to it.

User response:
Contact support.

AKD73104E Failed to process the JCL data set

Explanation

This error message indicates one of two possible error conditions:

1. Unable to open the JCL file, possibly an error with RDJFCB.
2. Reformat process failed. Look for other error messages providing additional information.

User response:
Contact support.

AKD73105E xxxxxxxx with this plan member

Explanation:
xxxxxxx is the plan member which access failed.

User response:
Contact support.

AKD73106E failed to find proper format

Explanation:
The function passed to the universal formatter was not found.

User response:
Contact support.

AKD73107E XXXXXXXX failed to find prescribed fix

Explanation:
PLANS dataset open processing failed; xxxxxxxx is the name of the fix member.

User response:
Contact support.

AKD73108E XXXXXXXX close failed processing fix

Explanation:
PLANS dataset close processing failed; xxxxxxxx is the name of the fix member.

User response:
Contact support.

AKD73109E failed to process PLANS JFCB

Explanation:

PLANS dataset rdjfcB processing failed.

User response:

Contact support.

AKD73110E Bad untranslated record

Explanation:

The universal formatter failed to put jcl record.

User response:

Contact support.

AKD73301E Selection of fixes failed

Explanation:

Selection of fix from INI member failed.

User response:

Contact support.

AKD73302E Failed to write reformatted record

Explanation:

The universal formatter routine did not successfully write out the record passed to it.

User response:

Contact support.

**AKD73303E xxxx was the return code from
format routine.**

Explanation:

The universal formatter routine did not successfully write out the record passed to it.

User response:

Contact support.

AKD73304E failed to process the JCL data set

Explanation:

The rdjfcB on the jcl file failed.

User response:

Contact support.

AKD73305E xxxxxxxx with this plan member

Explanation:

xxxxxxx is the plan member which access failed.

User response:

Contact support.

AKD73306E failed to find proper format

Explanation:

The function passed to the universal formatter was not found.

User response:

Contact support.

**AKD73307E XXXXXXXX failed to find
prescribed fix**

Explanation:

PLANS dataset open processing failed; xxxxxxxx is the name of the fix member.

User response:

Contact support.

**AKD73308E XXXXXXXX close failed processing
fix**

Explanation:

PLANS dataset close processing failed; xxxxxxxx is the name of the fix member.

User response:

Contact support.

AKD73309E failed to process PLANS JFCB

Explanation:

PLANS dataset rdjfcB processing failed.

User response:

Contact support.

AKD73310E Bad untranslated record

Explanation:

The universal formatter failed to put jcl record.

User response:

Contact support.

AKD73501E Internal Error 2

Explanation:

An attempt to access the HSM address space information for the migration or backup prefix has failed.

User response:

This might mean that HSM is not running on the same system as the audit job. Make sure HSM is active on the same system the audit is running on.

AKD73502E Internal Error 3

Explanation:

An attempt to access the HSM address space information for the migration or backup prefix has failed.

User response:

This might mean that HSM is not running on the same system as the audit job. Make sure HSM is active on the same system the audit is running on.

AKD74302E xxxxxxxx close failed

Explanation:

A VSAM close was attempted but failed. The DDNAME is xxxxxxxx.

User response:

Contact Support.

AKD74501I *pppppppp ffffffff* trace SELECTs

Explanation:

Informational message. *pppppppp* is the plan and *fffffff* is the fix.

User response:

None.

AKD74502E *pppppppp dddddddd* member in DDNAME failed

Explanation:

The plan *pppppppp* in DDNAME *dddddddd* has failed.

User response:

Examine the plan and ensure correct formatting.

AKD74902E *xxxxxx* Volume not found in system

Explanation:

UCBSCAN unable to locate the volume *xxxxxx*.

User response:

Check that the volume is online and available.

AKD74903E had a bad UCBSCAN

Explanation:

UCBSCAN encountered an error.

User response:

Check the UCBSCAN messages. Correct and resubmit.

AKD75101E Format 3 DSCB READ FAILED

Explanation:

An attempt to read the Format 3 DSCB failed.

User response:

Contact Support.

AKD75301E *xx* Excessive TIME parameter passed

Explanation:

A TIME parameter was passed to this program and its value is greater than 59.

User response:

Check the parameter and insure it is between 10 and 59 inclusive.

AKD75302I Setting 59 seconds as default

Explanation:

Informational message.

User response:

None.

AKD75303E Excessive TIME parameter passed

Explanation:

A TIME parameter was passed to this program and its value or format is not proper. Make sure the parameter is a value between 10 and 59 inclusive.

User response:

Check the parameter and insure it is between 10 and 59 inclusive.

AKD75304E Setting 10 seconds as default

Explanation:

Informational message.

User response:

None.

AKD75701E Unknown function requested

Explanation:

An unknown function was passed to the program. The function must be END, FIND, BUILD or IDCAMS.

User response:

Check the parameter being passed. Insure it is one of the values in the list.

AKD75702E Active SI27 table failed to close

Explanation:

A function of EOD was passed to the program signaling the program to close the table. The close failed.

User response:

Contact support.

AKD75901E AMSOPEN failed

Explanation:

An open to Access Method Services Failed.

User response:

Contact support.

AKD75902E *nnn* message number sent from AKD07759

Explanation:

An AMS message number *nnn* is issued.

User response:

Contact support.

AKD76701I xxxxxxxxxx processing option

Explanation:

xxxxxxx is the processing option.

User response:

Informational only.

AKD76703W Non-VSAM found for catalog

Explanation:

A non-VSAM data set was found for a catalog.

User response:

Processing continues.

AKD76704E xxx CAT number allocation failed

Explanation:

Audit retrieves a list of catalogs to read from the Master Catalog. Each catalog name is assigned a

number. In this instance the catalog could not be allocated. This may be a defunct catalog or otherwise legitimately not processable.

User response:

Browse data set PFX.AUDIT.CATLIST to determine the name of the catalog by the specified number. If this catalog is no longer in use this message may be ignored.

AKD76705E xxx CAT number obtain failed

Explanation:

The catalog extraction module attempts to verify that a catalog is on the volume it is cataloged to. In this instance the user catalog was not on the volume it was cataloged to.

User response:

Browse data set PFX.AUDIT.CATLIST to determine the name of the catalog by the specified number. If this catalog is no longer in use this message may be ignored.

**AKD76706E CAT xxx bad return code ccc,
 catalog abandoned**

Explanation:

Catalog extraction has found a catalog name in the Master Catalog but was unable to list its contents.

User response:

Browse data set PFX.AUDIT.CATLIST to determine the name of the catalog by the specified number. If this catalog is no longer in use this message may be ignored.

**AKD76711I xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 xx Allocate good**

Explanation:

The allocate for catalog xxxx was successful.

User response:

Informational message.

AKD76902E xxxxxxxx Support Module Missing.

Explanation:

Identified module is not in the load library.

User response:

Validate that your JCL is correct. If you can't resolve this problem, call support.

AKD76903E xxxx is an invalid auth Parm

Explanation:

Authorization processing has detected that the audit type parameter statement for this jobstep is invalid.

User response:

Check that the appropriate audit type parameter is coded on the execution statement for this jobstep.

AKD76904E Unable to initialize INI

Explanation:

During program start, one or more problems occurred during decoding of the //INI member. As the //INI provides vital information for this product, the program cannot continue execution.

User response:

Contact Support. Have available the listing that contains this message and the PARMLIB member that controls execution of this product.

AKD76905E No CONTROL DD statement

Explanation:

The program tried to determine what kind of tape is being audited but was unable to open the control dataset.

User response:

Contact Support.

AKD77101E LOCATE failed for master catalog

Explanation:

The catalog extraction module attempted to retrieve information from the master catalog but could not find it.

User response:

Browse data set PFX.AUDIT.CATLIST to determine the name of the Master Catalog indicated by a flag of M.

AKD77701E xxxxx function failed

Explanation:

The function passed to this program xxxxx, is unknown. It should be OPEN, CLOSE, or GET.

User response:

Contact support.

AKD78101W bad repl

Explanation:

An attempt was made to replace the key, but failed.

User response:

Processing continues.

AKD78102W Node count update had blank key

Explanation:

Informational message.

User response:

Processing continues.

AKD78103W Node count update had a 000 key

Explanation:

Informational message.

User response:

Processing continues.

AKD78104W Node count update had B FFF key

Explanation:

Informational message.

User response:

Processing continues.

AKD78105E **xxxxxxxxxx was bad repl key**

Explanation:

A replace was attempted with key xxxxxxxxxx but it failed.

User response:

Contact support.

AKD78301E **xxxxxxxxxx was bad repl key**

Explanation:

A replace was attempted with key xxxxxxxxxx but it failed.

User response:

Contact support.

AKD80301E **INCLUDE/EXCLUDE option
ambiguous**

Explanation:

The include/exclude processor found an option it could not interpret.

User response:

The first line in the Include/Exclude file must be either INCLUDES FOLLOW or EXCLUDES follow.

AKD80302E **xxxxxxxx**

Explanation:

The include/exclude processor found an option it could not interpret.

User response:

The first line in the Include/Exclude file must be either INCLUDES FOLLOW or EXCLUDES follow.

AKD80303E **xxxxxxxx was incorrect**

Explanation:

The ACS filter pattern was found to be incorrect.

User response:

Check the ACS filter pattern.

AKD80501E **INCLUDE/EXCLUDE option
ambiguous**

Explanation:

The include/exclude processor found an option it could not interpret.

User response:

The first line in the Include/Exclude file must be either INCLUDES FOLLOW or EXCLUDES follow.

AKD80502E **xxxxxxxx**

Explanation:

The include/exclude processor found an option it could not interpret.

User response:

The first line in the Include/Exclude file must be either INCLUDES FOLLOW or EXCLUDES follow.

AKD80503E **xxxxxxxx was incorrect**

Explanation:

The ACS filter pattern was found to be incorrect.

User response:

Check the ACS filter pattern.

AKD80902I **xxxxxxxx**

Explanation:

The first issue of the message is the catalog name that failed to open. Audit attempts to verify any diagnostic related to the catalog by verifying that the error condition still exists. It does so by allocating and individual catalog and reading each entry by key. If a catalog can not be allocated and opened, then verification will be performed by SVC 26. This can cause a very long run time.

User response:

It could be that a reorg or backup EXPORT was being performed. It may be better to rerun the audit than to wait for the verifications to complete. Make sure that maintenance activities are complete on the catalogs and resubmit the audit.

AKD80902I **Failed to allocate, verify by SVC 26**

Explanation:

The first issue of the message is the catalog name that failed to open. Audit attempts to verify any diagnostic related to the catalog by verifying that the error condition still exists. It does so by allocating and individual catalog and reading each entry by key. If a catalog can not be allocated and opened, then verification will be performed by SVC 26. This can cause a very long run time.

User response:

It could be that a reorg or backup EXPORT was being performed. It may be better to rerun the audit than to wait for the verifications to complete. Make sure that maintenance activities are complete on the catalogs and resubmit the audit.

AKD81101W **VOL GT 125**

Explanation:

The number of volumes has exceeded 125.

User response:

Informational message. Processing continues.

AKD81702E **xxxxxxxx Support Module Missing.**

Explanation:

Identified module is not in the load library.

User response:

Validate that your JCL is correct. If you can't resolve this problem, call support.

AKD81703E xxxx is an invalid auth Parm

Explanation:

Authorization processing has detected that the audit type parameter statement for this jobstep is invalid.

User response:

Check that the appropriate audit type parameter is coded on the execution statement for this jobstep.

AKD81704E Unable to initialize INI

Explanation:

During program start, one or more problems occurred during decoding of the //INI member. As the //INI provides vital information for this product, the program cannot continue execution.

User response:

Contact Support. Have available the listing that contains this message and the PARMLIB member that controls execution of this product.

AKD81705E No CONTROL DD statement

Explanation:

The program tried to determine what kind of tape is being audited but was unable to open the control dataset.

User response:

Contact Support.

AKD84501E TMSVOL replace failed, critical error

Explanation:

An attempt to replace a record with the catalog indicator switch failed.

User response:

Contact support.

AKD85901E R15 is lost, has zeroes

Explanation:

Unable to determine appropriate label.

User response:

Next label is processed. Processing continues.

AKD85902E xxxxxxxx label not found

Explanation:

Label xxxxxxxx was not found.

User response:

Contact support.

AKD86101E Values in line will exceed 255 characters

Explanation:

The limit of 255 character per line has been reached. The line will be truncated.

User response:

Processing continues.

AKD86102E label search ended prematurely

Explanation:

A search for a label ended prematurely.

User response:

Processing continues.

AKD86103E xxxxxxxx not found

Explanation:

The label with key xxxxxxxx was not found.

User response:

Processing continues.

AKD86104E premature end reached at INCR2

Explanation:

Progression message.

User response:

Processing continues.

AKD86105E xxx recomputed line length

Explanation:

Progression message.

User response:

Processing continues.

AKD86301E Found improper parameters

Explanation:

The processing program is unable to continue. The program was unable to find a proper parameter.

User response:

Contact support.

AKD86302E xxxxxxxx DDNAME not found

Explanation:

The DDNAME xxxxxxxx was not found. Insure JCL has this DDNAME coded.

User response:

Processing continues.

AKD86303E failed to find dictionary member

Explanation:

The dictionary member was not found in the PDS.

User response:

Processing continues.

AKD86304E Dictionary failed to open

Explanation:

Unable to open the dictionary member. Review the dictionary name for proper spelling.

User response:

If dictionary name is correct and present in the PDS, then contact support.

AKD86306E bad return from format

Explanation:

A call to the format routine received a non-zero return code. A message stating the number of records processed follows.

User response:

Contact Support.

AKD86307E xxxxxx was number of records processed

Explanation:

A call to the format routine received a non-zero return code. This message states the number of records that were processed.

User response:

Contact support.

AKD86501E xxxxx was invalid function

Explanation:

An invalid function name was given.

User response:

Supply a valid function name of OPEN, CLOSE or GET.

AKD86502E ERR1 key not found

Explanation:

VSAM key read failed. Processing is terminated.

User response:

Validate that your JCL is correct. If you can't resolve this problem, call support.

AKD90501I xxxxx is number of indices to print

Explanation:

Progression message.

User response:

None. Information only.

AKD90503I xxx xxxxxxxx is counted blocks/track

Explanation:

Progression message.

User response:

None. Information only.

AKD90504I xxx xxxxxxxx was calculated blocks/track

Explanation:

Progression message.

User response:

None. Information only.

AKD90505I xxxxx LL x blocks/track

Explanation:

Progression message.

User response:

None. Information only.

AKD90506I xxxxx last block on track

Explanation:

Progression message.

User response:

None. Information only.

AKD90507I xxxxx xxxxxxxxxxxx Max blocks in table

Explanation:

Progression message.

User response:

None. Information only.

AKD90508I xxxxx xxxxxxxxxxxx is kenlen+4

Explanation:

Progression message.

User response:

None. Information only.

AKD90509I xxxxx xxxxxxxxxxxx max index

Explanation:

Progression message.

User response:

None. Information only.

AKD90510I xxxxx xxxxxxxxxxxx is increment

Explanation:

Progression message.

User response:

None. Information only.

AKD90511I xxxxxxxx assigned xxx buffers

Explanation:

Progression message.

User response:

None. Information only.

AKD90512I xxx was binary index table

Explanation:

Progression message.

User response:

None. Information only.

AKD90512E XXXXXXXX empty file

Explanation:

DDNAME of xxxxxxxx is an empty file.

User response:

Abend 1111 occurs. Contact support.

AKD90512I xxxxxxxx FKEY last block

Explanation:

Progression message.

User response:

None. Information only.

AKD90513I **xxxxxxx xxxxxxxx Length of last block**

Explanation:

Progression message.

User response:

None. Information only.

AKD90514I **xxxxxxx LKEY EOD**

Explanation:

Progression message.

User response:

None. Information only.

AKD90515I **xxxxx xxxxxxxx was the index count**

Explanation:

Progression message.

User response:

None. Information only.

AKD90516I **xxxxxxx was index key**

Explanation:

Progression message.

User response:

None. Information only.

AKD90701I **XXXX end at relative block**

Explanation:

Progression message.

User response:

None. Information only.

AKD90702I **XXXX end at max blocks**

Explanation:

Progression message.

User response:

None. Information only.

AKD90703I **XXXXXXXXXXXXXXXXXXXX XXXXX
MAXBLKS key of ARG**

Explanation:

Progression message.

User response:

None. Information only.

AKD90704I **xxxxx xxxxxxxxxxxxxxxx THISBLK
LASTK IN BUF**

Explanation:

Progression message.

User response:

None. Information only.

AKD90705I **is last block length**

Explanation:

Progression message.

User response:

None. Information only.

AKD90901E **Buffer inventory has been overlaid**

Explanation:

There has been a problem in buffer management. Abend 130 follows.

User response:

Contact support.

AKD90902E **140 FOUND AT GOLOW**

Explanation:

A condition has been found at location GOLOW.

User response:

Processing continues.

AKD91001I **was number of index read**

Explanation:

Displays the number of index records read.

User response:

Informational message.

AKD91002E **lost in back**

Explanation:

This message is issued when the program encounters a situation it can not recover from. An abend follows.

User response:

Contact support.

AKD91002E **lost searching by 1**

Explanation:

This message is issued when the program encounters a situation it can not recover from. An abend follows.

User response:

Contact support.

AKD91002E **lost in next**

Explanation:

This message is issued when the program encounters a situation it can not recover from. An abend follows.

User response:

Contact support.

AKD91701I **Loading SUB MODULES**

Explanation:

Informational message.

User response:

None. Processing continues.

AKD91702E Dynamic table is exhausted

Explanation:

The end of the table has been reached. A return code of 12 has been issued.

User response:

Contact support.

AKD91703E Allocation of CATIN001 was bad

Explanation:

Allocation failed.

User response:

Contact support.

AKD91704E Deallocation of CATIN001 was bad

Explanation:

Deallocation failed.

User response:

Contact support.

AKD91901E xxxx failed allocation

Explanation:

Multivol allocation routine failed to allocate.

User response:

Contact support.

AKD91902E xxxxxx volume failed allocation

Explanation:

Multivol allocation failed. Volume is displayed.

User response:

Contact support.

AKD91903E xxxxxx DDNAME failed ALLOC

Explanation:

Multivol allocation failed. DDNAME is displayed.

User response:

Contact support.

AKD91904E xxxx DSN failed

Explanation:

Multivol allocation failed. DSN is displayed.

User response:

Contact support.

AKD91905E no parms found

Explanation:

No parameters were passed to the program.

User response:

Contact support.

AKD91907E Allocation was unsuccessful

Explanation:

Dynamic allocation was unsuccessful.

User response:

Contact support.

AKD91908E Unallocation failed

Explanation:

Unallocation of data set was unsuccessful.

User response:

Contact support.

AKD91910I Unallocation was good

Explanation:

Informational message.

User response:

None. Processing continues.

AKD92301I xxxxxxxx DSN

Explanation:

Informational message.

User response:

None. Processing continues.

AKD92302I xxxxxxxx List of VOLS

Explanation:

Informational message.

User response:

None. Processing continues.

AKD92303E DSN has exceeded five volumes

Explanation:

While attempting to open one of the extracted files for auditing, it was determined that the file exceeded the five volume limit. This message is followed by the DSN in question.

User response:

The calling program will abend with a user abend. Insure the extracts do not exceed five volumes.

AKD92303E xxxxxx

Explanation:

While attempting to open one of the extracted files for auditing, it was determined that the file exceeded the five volume limit. This message is followed by the DSN in question.

User response:

The calling program will abend with a user abend. Insure the extracts do not exceed five volumes.

AKD92305E xxxxxxxx not cataloged

Explanation:

The dataset xxxxxxxx is not cataloged.

User response:

Contact support.

AKD92306E DSNAME shows no volumes

Explanation:

The DSNAMES shows no volsters.

User response:

The dataset is not cataloged. Check the dataset.

AKD93101E xxxxxxxx Support module missing

Explanation:

Unable to load the support module xxxxxxxx.

User response:

Check the spelling or the concatenation of the loadlib.

AKD93102E Unable to initialize INI

Explanation:

An attempt was made to read the INI file. The program was unable to initialize the INI file.

User response:

Check the INI file allocated to the INI DDNAME.

AKD93301I Value of RLS parm: x

Explanation:

This message displays the value of the RLS setting in the INI file.

User response:

Information only.

AKD93302W RLS parm not found, default to NON-RLS

Explanation:

The INI file was searched for the RLS parm setting but it was not found. The program will continue with the default of NON-RLS.

User response:

Auditing continues.

AKD93303E INI DD missing, cannot determine values

Explanation:

The INI DD could not be opened.

User response:

Check the cataloged procedure and validate the INI DD statement.

AKD93401I IBM AUTO FIXES are in effect

Explanation:

This message declares that the IBM AUTO FIXES are in effect.

User response:

None. Informational only.

AKD93402W AUTOFIX_IBM parm not found, default to NON_IBM

Explanation:

The INI file was searched for the AUTOFIX_IBM parameter setting but it was not found. The program will continue with the default of NON-IBM.

User response:

None. Auditing continues.

AKD93403E INI DD missing, cannot determine values

Explanation:

The INI DD could not be opened.

User response:

Check the cataloged procedure and validate the INI DD statement.

AKD93801I KEEP_HISTORY_DAYS = xxxx

Explanation:

This message shows the value used for KEEP_HISTORY_DAYS.

User response:

Informational only.

AKD93802W KEEP_HISTORY_DAYS - invalid value, used value 999

Explanation:

The INI file was searched for the KEEP_HISTORY_DAYS parameter setting but it was not found or it is invalid. The program will continue with the default value of KEEP_HISTORY_DAYS.

User response:

Auditing continues.

AKD93803W INI DD missing, cannot determine values

Explanation:

The INI DD could not be opened.

User response:

Check the cataloged procedure and validate the INI DD statement.

AKD94201W MAX_VOLUMES - not found in the INI file

Explanation:

The INI file was searched for the MAX_VOLUMES parameter setting but it was not found or it is invalid. The program continues with the default value of MAX_VOLUMES.

User response:

Auditing continues.

AKD94202W MAX_VOLUMES - xxxx invalid value, used value 5

Explanation:

The INI file was searched for the MAX_VOLUMES parameter setting but it was not found or it is invalid.

The program continues with the default value of MAX_VOLUMES.

User response:

Auditing continues.

AKD94203W **INI DD missing, cannot determine values**

Explanation:

The INI DD could not be opened.

User response:

Check the cataloged procedure and validate the INI DD statement.

AKDI0101W **AKD already active in this session. AKD can only be entered once within a session.**

Explanation:

An attempt was made to enter AKD more than once (by invoking the CLIST AKDSTART) at the same time.

User response:

Use the active session of AKD. Contact the Support Center for further assistance.

AKDI0102E **The AKD address space is either not active or has not completed initializing.**

Explanation:

The AKD address space (program AKDAM001) must be active on the system to make requests to AKD.

User response:

Start the AKD address space. Sample JCL can be found in member AKDJMAIN. Contact the Support Center for further assistance.

AKDI0104E **Error retrieving Name/Token pair, Rc=rc Name='name'**

Explanation:

An attempt to retrieve the Name/Token pair of *name* failed with a return code of *rc*.

User response:

Exit AKD completely and attempt to re-enter the product to retry the request. Contact the Support Center for further assistance.

AKDI0105W **Access to AKD data restricted**

Explanation:

Access to AKD has been restricted.

User response:

Contact the Support Center for further assistance.

AKDI0250E **Error retrieving Name/Token pair, Rc=rc Name='name'**

Explanation:

An attempt to retrieve the Name/Token pair of *name* failed with a return code of *rc*.

User response:

Exit AKD completely and attempt to re-enter the product to retry the request. Contact Technical Support for further assistance.

AKDI0303E **Unable to allocate file to 'ddname' 'dsname'**

Explanation:

An error occurred while trying to allocate *dsname* to *ddname*.

User response:

Review other messages for a further explanation of why the data set could not be allocated. Contact the Support Center for further assistance.

AKDI2056W **An error occurred in report xxxxxxxx, Rc=rc**

Explanation:

An error occurred in report xxxxxxxx. The return code was Rc=*n*.

User response:

If the report name is @JCLPVW, Rc=C, the most likely cause of the problem is that the started task JCL does not have a //STEPLIB DD statement. The product requires the started task to have a steplib DD statement as it uses it to build the LOAD= parameter in the Audit jobs. Contact the Support Center for further assistance.

AKDI3099E **This service is no longer supported.**

Explanation:

The entry point AKDAI030 has been removed from the product.

User response:

Contact the Support Center if you still need to use this entry point.

AKDL3051W **Failed to open xxxxxx**

Explanation:

Unable to open one of the data sets containing audit results. All audits must be run before the ErrsCost report is opened. If the ErrsCost report is opened before all audits are complete, the data set containing the audit results might be locked or might not exist, and rows with missing audit data are displayed as zeroes in the ErrsCost report.

User response:

Ensure that the data set xxxxxx exists. If it does not exist, run the corresponding audit job. If the data set already exists, make sure that it is not locked by another job or user.

AKDM0001W **Non-Zero Return Code from program. Rc=rc, Rs=rs, SubRs=srs**

Explanation:

A Non-Zero return code was received from *program*. The return *rc* and reason codes *rs*, *srs* are listed.

User response:

Review other messages received with this message for a further explanation of the error. Contact the Support Center for further assistance.

AKDM0002W Non-Zero Return Code from function *func*. Rc=*rc*, Rs=*rs*, SubRs=*srs*

Explanation:

A Non-Zero return code was received from function *func*. The return *rc* and reason codes *rs*, *srs* are listed.

User response:

Review other messages received with this message for a further explanation of the error. Contact the Support Center for further assistance.

AKDM0003W Task is not running APF authorized

Explanation:

The current started task or batch job is not running with APF authorized libraries.

User response:

Verify that all libraries listed in STEPLIB are APF authorized and rerun process. Contact the Support Center for further assistance.

AKDM0004S *multiple possible messages listed below*

Explanation

Unable to obtain storage, Rc=*rc*, Length=*len*, Key=*key*, Subpool=*sp*

or

Unable to obtain storage, 64-bit memory objects not available.

or

Unable to obtain memory objects, Rc=*rc*, Rs=*rs*, Length=*len*, Key=*key*

AKD was unable to obtain storage during one or more of its processes.

User response:

Review the message, increase the Region size or MEMLIMIT, if appropriate, and rerun process. Contact the Support Center for further assistance.

AKDM0005W *multiple possible messages listed below*

Explanation

Error releasing storage, Rc=*rc*, Address=*adr*, Length=*len*, Subpool=*sp*, Key=*key*

or

Unable to release storage, Rc=*rc*, Address=*adr*, Length=*len*, Subpool=*sp*, Key=*key*

or

Unable to release memory objects, Rc=*rc*, Rs=*rs*, Token=*tok*

or

Unable to release memory object, Rc=*rc*, Rs=*rs*, Address=*adr*

AKD was unable to release storage during one or more of its processes.

User response:

Contact the Support Center if this persists.

AKDM0006I *A product release started task is already active in this system.*

Explanation:

An AKD started task is already running on this system. Only one copy of the AKD started task can be active on a system at a time.

User response:

Contact the Support Center for further assistance.

AKDM0007W Unable to setup recovery environment...Rc=*rc*

Explanation:

Abend recovery was not established.

User response:

Review messages for more information. Contact the Support Center for further assistance.

AKDM0008W Unable to remove recovery environment...Rc=*rc*

Explanation:

Abend recovery could not be removed.

User response:

Review messages for more information. Contact the Support Center for further assistance.

AKDM0010I *product release initialized on sysname*

Explanation:

This message indicates the product name *product* and release level *release* of the current process that has successfully initialized on system *sysname*.

User response:

None required.

AKDM0011W Error loading module '*mod*', Rc=*rc*, Rs=*rs*, SubRs=*srs*

Explanation:

Module *mod* was unable to be loaded. The return *rc* and reason codes *rs srs* provide diagnostic information about the failures.

User response:

Attempt to rerun the process that failed. Contact the Support Center for further assistance.

AKDM0012S **Error matching pattern, Rc=rc
Msg=msg | Pattern='pattern' |
String='string'**

Explanation:

An error occurred while trying to match a pattern *pattern* with a string *string*.

User response:

Refer to *msg*, *pattern*, and *string* to determine the error. Attempt to correct the error and rerun the process. Contact the Support Center for further assistance.

AKDM0013I **product release stopped on
sysname**

Explanation:

This message indicates the product name *product* and release level *release* of the current process that has stopped on system *sysname*.

User response:

None required.

AKDM0014I **product release starting on
sysname**

Explanation:

This message indicates the product name *product* and release level *release* of the current process that is attempting to start on system *sysname*.

User response:

None required.

AKDM0015I **product release terminating on
sysname**

Explanation:

This message indicates the product name *product* and release level *release* of the current process that is terminating on system *sysname*.

User response:

None required.

AKDM0016W **Unable to deallocate DD
'dd', R15=rc, S99ERROR=err,
S99INFO=info**

Explanation:

An error occurred while trying to deallocate *dd* from the current task.

User response:

Look in *MVS Programming: Authorized Assembler Services Guide* under *Requesting Dynamic Allocation Functions*. Use *rc*, *err*, and *info* to analyze the error that occurred. Contact the Support Center for further assistance.

AKDM0017I **text**

Explanation:

This message appears with other messages.

User response:

Refer to other messages that appear with this message for more information. Contact the Support Center for further assistance.

AKDM0018W **Unable to allocate DD 'dd' |
DSN 'dsn', R15=rc, S99ERROR=err,
S99INFO=info**

Explanation:

An error occurred while trying to allocate *dd* or *dsn* to the current task.

User response:

Look in *MVS Programming: Authorized Assembler Services Guide* under *Requesting Dynamic Allocation Functions*. Use *rc*, *err*, and *info* to analyze the error that occurred. Contact the Support Center for further assistance.

AKDM0020E **Unable to locate DSAB for
ddname, Rc=rc, Rs=rs**

Explanation:

An attempt to locate the DSAB pointer for *ddname* failed with return code *rc* and reason code *rs*.

User response:

Contact the Support Center for further assistance.

AKDM0021I **text**

Explanation:

An error occurred while trying to access AKD data.

User response:

Consult other AKD messages that were issued with this message for more information. Contact the Support Center for further assistance.

AKDM0022E **The AKD address space is no
longer available.**

Explanation:

Something has caused the AKD address space to no longer be available for services.

User response:

Consult other AKD messages that were issued with this message for more information and check the status of the AKD address space. Contact the Support Center for further assistance.

AKDM0023E **Unable to gain control of major/
minor, Rc=rc, Rs=rs**

Explanation:

A request to obtain control of a resource, *major/minor*, failed with return code *rc* and reason code *rs*.

User response:

Consult other AKD messages that were issued with this message for more information and check the

status of the AKD address space. Contact the Support Center for further assistance.

AKDM0024W Unable to release control of *major/minor*, Rc=*rc*, Rs=*rs*

Explanation:

A request to release control of a resource, *major/minor*, failed with return code *rc* and reason code *rs*.

User response:

Consult other AKD messages that were issued with this message for more information and check the status of the AKD address space. Contact the Support Center for further assistance.

AKDM0030E Unable to perform ALESERV/ADD for '*name*', Rc=*rc*

Explanation:

An attempt to gain access to the specified resource *name* using ALESERV failed with the return code *rc*.

User response:

Contact the Support Center for further assistance.

AKDM0031E Unable to perform ALESERV/DELETE for '*name*', Rc=*rc*

Explanation:

An attempt to remove the connection between the current address space and the resource failed with return code *rc*.

User response:

Consult other AKD messages that were issued with this message for more information. Contact the Support Center for further assistance.

AKDM0032E Unable to create data space, Rc=*rc*, Rs=*rs*

Explanation:

An attempt to create a new data space failed with return code *rc* and reason code *rs*.

User response:

Consult other AKD messages that were issued with this message for more information. Contact the Support Center for further assistance.

AKDM0033E Unable to delete data space *name*, Rc=*rc*, Rs=*rs*, Stoken=*stoken*

Explanation:

An attempt to delete an old data space failed with return code *rc* and reason code *rs*.

User response:

Consult other AKD messages that were issued with this message for more information. Contact the Support Center for further assistance.

AKDM0034E VGET failed, Rc=*rc*, Name=*name*

Explanation:

A request to retrieve the value of an ISPF variable failed with return code *rc*.

User response:

The name of the variable can be found in *name*. Consult other AKD messages that were issued with this message for more information. Contact the Support Center for further assistance.

AKDM0035E VPUT failed, Rc=*rc*, Name=*name*

Explanation:

A request to update an ISPF variable failed with return code *rc*.

User response:

The name of the variable can be found in *name*. Consult other AKD messages that were issued with this message for more information. Contact the Support Center for further assistance.

AKDM0036E TBADD failed for *table*, Rc=*rc*

Explanation:

A request to add a row to ISPF table *table* failed with return code *rc*.

User response:

Consult other AKD messages that were issued with this message for more information. Contact the Support Center for further assistance.

AKDM6204W Unable to establish connection with *connection : portnum*

Explanation:

The initial connection to *connection* failed.

User response:

If the secondary system that is identified by *connection* is not active yet, then this is okay. Contact the Support Center for further assistance.

AKDTRACE01I Program Entered: *pgm*, *asm date* *asm time*

Explanation:

This is a diagnostic message for Technical Support use only.

User response:

None required.

AKDTRACE02I Program Exited: *pgm*, Rc=*rc*, Rs=*rs*, SubRs=*srs*

Explanation:

This is a diagnostic message for Technical Support use only.

User response:

None required.

AKDTRACE03I Routine Entered: *routine*

Explanation:

This is a diagnostic message for Technical Support use only.

User response:
None required.

AKDTRACE04I **Routine Exited: *routine*, Rc=*rc*, Rs=*rs*, SubRs=*srs***

Explanation:
This is a diagnostic message for Technical Support use only.

User response:
None required.

AKDX0101E ***cmd* can only be run while in ISPF**

Explanation:
cmd was invoked in an environment that did not have ISPF services available.

User response:
Enter ISPF and re-invoke *cmd*. Contact the Support Center for further assistance.

AKDX0102E **Failure invoking command *cmd* ...Rc=*rc***

Explanation:
A severe error occurred in command *cmd* with a return code of *rc*.

User response:
Review any messages that may have appeared for more information. Contact the Support Center for further assistance.

AKDX0103W **AKD is not active**

Explanation:
The AKD primary started task (program AKDAM001) is not active.

User response:
Start the AKD primary started task (program AKDAM001) and rerun process. Contact the Support Center for further assistance.

AKDX0104E **Unable to allocate file(s) to *dd*...Rc=*rc***

Explanation:
Files could not be allocated to *dd*. *rc* is the return code from TSO's ALLOCATE command.

User response:
Review information on the TSO ALLOCATE command and rerun process. Contact the Support Center for further assistance.

AKDX0105E **Unable to setup library concatenation...Rc=*rc***

Explanation:
Access to AKD product files could not be established. *rc* is the return code from either ALTLIB or LIBDEF.

User response:

Review information on ALTLIB/LIBDEF and rerun process. Contact the Support Center for further assistance.

AKDX0201I **Number of Test Cases generated: *nnnnn***

Explanation:
Informational message about the number of test cases generated for the SMS audit.

User response:
None. Informational message only.

AKDX0202W **The limit was not specified, default to 9999**

Explanation:
The test case limit number was not specified. The parameter AUD_SMS_LIMIT = 9999 should be specified in the CMD00 member.

User response:
Ensure that the AUD_SMS_LIMIT parm is specified. Program will default to 9999.

AKDX0203E **Limit *nnnnn* is not number, default to 9999**

Explanation:
The limit number parm specified is not a number.

User response:
Ensure that the AUD_SMS_LIMIT parm is specified and is a number. Program will default to 9999.

AKDX0204W **Limit *nnnnn* is greater than 99999, default to 9999**

Explanation:
The test case limit number specified is greater than 99999. AUD_SMS_LIMIT = should be specified with a number not greater than 99999.

User response:
Ensure that the AUD_SMS_LIMIT parm is specified and is less than 99999.

AKDX0205I **Limit number of Test Cases: *nnnnn***

Explanation:
Informational message about the test case limit number.

User response:
None. Informational message only.

AKDX0206E **Problem with LMMADD: RC=*nn***

Explanation:
A problem has occurred with the adding of a Testcase member to the PDSE allocated to DDNAME CASEOUT. If the RC=20, then the problem is most likely the data set allocated to DDNAME CASEOUT is out of space.

User response:

Ensure that the data set allocated to DDNAME CASEOUT has ample space to add Testcase members.

AKDX230E **Session failed - addr(DNS or IP address)**

Explanation:

An attempt to communicate to another system using DNS or IP address was unsuccessful. This could be

caused by many reasons, with the most common cause being that the AKD address space is not active on the system indicated.

User response:

Contact the Support Center for further assistance.

Audit diagnostic messages

This topic documents the diagnostic messages that might be issued by audit processing.

11D1C **MCD ENTRY IS NOT CATALOGED**

Explanation:

Audit Suite has compared the MCDS MCD extraction against the Catalog extraction and has found an MCD entry with no catalog entry. When this condition occurs, Audit Suite verifies the catalog status by doing a direct catalog lookup.

User response

The recommended default fix is F11D1CA TSO CATALOG A MIGRATED DATASET TO VOLSER MIGRAT

Field #	Description	EXAMPLE
Field 1	Error number	11D1C
Field 2	dsname	BMOHN.ISPF.ISPPROFB
Field 3	HSM Generated name	HSM.HMIG.T350200.dsn
Field 4	HSM VOLSER	HM0069
Field 5	VSAM/NVSAM	N
Field 6	HSM Level	2

11D2C **MCD ENTRY IS CATALOGED ON DIFFERENT VOLUME**

Explanation:

Audit Suite has compared the MCDS MCD extraction against the Catalog extraction and has found an MCD entry but the catalog indicates that the data set is on a volume other than MIGRAT..

User response

The recommended default fix is F11D2CC HSM FIXCDS DELETE OF A AND D RECORD

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	11D2C
FIELD 2	DSNAME	IP01.PPROCLIB
FIELD 3	HSM GENERATED NAME	HSM.HMIG.T080300.dsn
FIELD 4	HSM VOLSER	HM0124
FIELD 5	VSAM/NVSAM	N
FIELD 6	HSM LEVEL	2
FIELD 7	CATALOGED VOLSER	MVSCTA
FIELD 8	CATALOG NAME	UCAT.TECH

11V1C **MCO VSAM COMPONENT IS NOT CATALOGED**

Explanation:

Audit Suite has compared the MCDS MCO extraction against the Catalog extraction and has found an MCO VSAM component with no catalog entry. When this condition occurs, Audit Suite verifies the catalog status by doing a direct catalog lookup. When DFSMSHsm migrates a VSAM cluster it creates an MCO record and an MCA record for the cluster's components. Each component 'looks like' a single migrated data set but it really isn't. Reference to the MCO entry is required any one of the components is referenced.

User response

The recommended default fix is F11V1CA TSO CATALOG A MIGRATED DATASET TO VOLSER MIGRAT

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	11V1C
FIELD 2	CLUSTER NAME	USERID.VSAM.CLUSTER
FIELD 3	COMPONENT NAME	USERID1.VSAM.DATA
FIELD 4	HSM GENERATED ALIAS	HSM.HMIG.T352004.dsn

11V2C **MCO VSAM COMPONENT ON DIFFERENT VOLUME**

Explanation:

Audit Suite has compared the MCDS MCO extraction against the Catalog extraction and has found an MCO entry but the catalog indicates that the VSAM component is on a volume other than MIGRAT.

User response

The recommended default fix is F11V2CF HSM GENERATE FIXCDS DELETE FOR CONFLICT MCO AND MCD

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	11V2C
FIELD 2	CLUSTER NAME	USERID.VSAM.CLUSTER
FIELD 3	COMPONENT NAME	USERID1.VSAM.DATA
FIELD 4	VOLSER FROM CATALOG	TS0002
FIELD 5	HSM GENERATED NAME	

HSM.HMIG.T472104.dsn FIELD 6 CATALOG NAME	UCAT.TECH
--	-----------

1103W MCD ENTRY IS MISSING THE MCA ENTRY

Explanation:

Audit Suite has compared the MCDS MCD extraction against the MCDS MCA extraction and has found an MCD entry but the MCA entry is missing. Although information in the MCA is not used during recall, it may be an indicator of the health of the MCDS inventory. A missing MCA can cause recycle to run very slowly because recycle must verify missing MCA entries.

User response

The recommended default fix is F1103WC HSM FIXCDS CREATE NEW MCA RECORD

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1103W
FIELD 2	DSNAME	
	DRS.ICS91102.CLIST	
FIELD 3	HSM GENERATED NAME	
	HSM.HMIG.T472104.dsn	
FIELD 4	HSM VOLSER	HM0017
FIELD 5	VSAM/NVSAM	N
FIELD 6	HSM LEVEL	2

1104C MCD LEVEL 1 ENTRY HAS NO VTOC ENTRY ON L1 VOLUME

Explanation:

Audit Suite has compared the MCDS MCD ML1 extraction towards the DFSMSHsm ML1 volume DCOLLECT extraction and has found an MCD entry but no VTOC entry. Audit Suite verifies this by doing an OBTAIN against the volume in question.

User response

The recommended default fix is F1104CC HSM FIXCDS COMMAND TO DELETE DSN MISSING ML1 VOL

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1104C
FIELD 2	DSNAME	
	XXX.XXXXXXXXXX.DSN	
FIELD 3	HSM GENERATED NAME	
	HSM.HMIG.T433206.dsn	
FIELD 4	HSM VOLSER	HSM001
FIELD 5	VSAM/NVSAM	N
FIELD 6	HSM LEVEL	1

1105W MCD VSAM BASE NAME IS MISSING IN MCO

Explanation:

Audit Suite has compared the MCDS MCD extraction towards the DFSMSHsm MCO extraction and was unable to find an MCO entry that contains the Base Cluster Name associated with the VSAM data set. The data set can probably be recalled but this might be

a health indicator of the VSAM inventory. Typically, VSAM components are not recalled independent of the cluster name; however, if they are, the recall might fail. Also note that this is a normal condition for multiple AIX VSAM files.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1105W
FIELD 2	DSNAME	
	DSN.VSAM.CLUSTER	
FIELD 3	HSM GENERATED NAME	
	HSM.HMIG.T233206.dsn	
FIELD 4	HSM VOLSER	MIGR01
FIELD 5	VSAM/NVSAM	V
FIELD 6	MIGRATION LEVEL	1

1106C MCD IS ON VOLUME WHICH HAS NO MCV ENTRY

Explanation:

Audit Suite has compared the MCDS MCD extraction towards the DFSMSHsm MCV extraction and has found an entry for a migration volume that is no longer managed by DFSMSHsm. This is a critical error; the data set can't be recalled. See 1106V for a summary of the volumes with this condition.

User response

See Default fix for related 1106V diagnostic.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1106C
FIELD 2	DSNAME	DSN.NOMCV.DSN
FIELD 3	HSM GENERATED NAME	
	HSM.HMIG.T433206.dsn	
FIELD 4	HSM VOLSER	MIGR01
FIELD 5	VSAM/NVSAM	N
FIELD 6	HSM LEVEL	1

1106V SUMMARY OF VOLUMES HAVING NO MCV ENTRY

Explanation:

This error is a summary by volumes of error 1106C. Research of this problem is easier to do at a volume level. Supporting fixes and interrogations at a volume level is supplied for this error.

User response

The recommended default fix is F1106VA HSM FIXCDS COMMAND TO VERIFY MISSING MCV RECORD

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1106V
FIELD 2	VOLSER	HM0061
FIELD 3	TAPE TYPE	L2
FIELD 4	DSN NUMBER	000009

1107V SUMMARY OF VOLUMES MISSING IN TTOC

Explanation:

This error is a summary by volumes of error 1107W. Research of this problem is easier to do at a volume level. Supporting fixes and interrogations at a volume level is supplied for this error.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1107V
FIELD 2	VOLSER	HM0060
FIELD 3	TAPE TYPE	L2
FIELD 4	DSN NUMBER	000024

1107W MCD LEVEL 2 IS ON VOLUME WHICH HAS NO TTOC ENTRY

Explanation:

Audit Suite has compared the MCDS MCD extraction (Level 2) against the HSM OCDS (TTOC) extraction and has found an entry for a volume that is not in the TTOC inventory. In other words, the root entry for the volume is not in the OCDS. The TTOC information is not used for Recall, however, these errors may reflect the general health of the HSM environment. For example: This error would indicate possible lost data if the tape volume had been returned to scratch status. See error message 1107V for a summary of volumes with this condition.

User response

See Default fix for related 1107V diagnostic.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1107W
FIELD 2	DSNAME	
	XAS.IXPV3R2.LOAD	
FIELD 3	HSM GENERATED NAME	
	HSM.HMIG.T040202.dsn	
FIELD 4	HSM VOLSER	HM0348
FIELD 5	VSAM/NVSAM	N
FIELD 6	HSM LEVEL	2

1108W MCA ENTRY IS MISSING MCO VSAM COMPONENT ENTRY

Explanation:

When auditing the MCA extraction against the MCD extraction, a VSAM component name was found but the cluster name was missing. This is not a critical error for Recall but if there are many of these, it indicates that the MCDS inventory may be corrupted.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1108W
FIELD 2	VSAM CUSTER NAME	
	DRS.ICS91102.CLUSTER	
FIELD 3	VSAM COMPONENT NAME	
	DRS.ICS91102.DATA	
FIELD 4	HSM VOLSER	UNK
FIELD 5	VSAM/NVSAM	V
FIELD 6	HSM LEVEL	U

1109V SUMMARY OF VOLUMES WHERE ALIAS IS NOT IN TTOC

Explanation:

This error is a summary by volumes of error 1109W. Research of this problem is easier to do at a volume level. Supporting fixes and interrogations at a volume level is supplied for this error.

User response

Run the AUDIT MEDIACONTROLS for complete analysis.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1109V
FIELD 2	VOLSER	HM0061
FIELD 3	TAPE TYPE	L2
FIELD 4	DSN NUMBER	000009

1109W MCD ALIAS IS NOT ON TTOC

Explanation

Audit Suite has compared the MCDS MCD extraction (Level 2) against the HSM OCDS TTOC extraction and has been unable to find a matching HSM generated alias name in the TTOC. HSM does not use the TTOC information during Recall but these errors may indicate a general health problem in the HSM environment. This can also be the result of an incomplete TTOC update resulting from an HSM ABEND or system crash or an IPL over a working HSM. This problem will impact the tape recycle process.

Note: Audit Suite does not verify these errors in real time. If recycle was running while the audit was extracting information, these errors may be erroneous. For best results, make sure recycle is not running at the same time as Audit Suite.

User response

Run the AUDIT MEDIACONTROLS for complete analysis.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1109W
FIELD 2	DSNAME	
	DRS.ICS91102.CLIST	
FIELD 3	HSM GENERATED NAME	
	HSM.HMIG.T472104.dsn	
FIELD 4	HSM VOLSER	HM0017

FIELD 5 VSAM/NVSAM	N
FIELD 6 HSM LEVEL	2

1110W MCD HAS DUPLICATE MCA ENTRY

Explanation:

Audit Suite has scanned the MCDS MCD alias names for duplicate names. This condition can happen on CPUs when the alias name is generated. It is possible that the data set can not be recalled.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1110W
FIELD 2	DSNAME	
	DRS.ICS91102.CLIST	
FIELD 3	HSM GENERATED NAME	
	HSM.HMIG.T472104.dsn	
FIELD 4	HSM VOLSER	HM0017
FIELD 5	VSAM/NVSAM	N
FIELD 6	HSM LEVEL	2

1111W MCA ENTRY IS MISSING MCD ENTRY

Explanation:

Audit Suite has compared the MCDS MCA extraction against the MCDS MCD extraction and has been unable to find a matching MCD true name. These errors will cause recycle of tapes to fail. In the field explanations below, the MCA has no VOLSER information and no HSM level information. Therefore, field 4 and field 6 values are unknown.

User response

The recommended default fix is F1111WC HSM FIXCDS DELETE ORPHANED MCA RECORD

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1111W
FIELD 2	DSNAME	
	TEST.MA.MA0525ED	
FIELD 3	HSM GENERATED NAME	
	HSM.HMIG.T582104.dsn	
FIELD 4	HSM VOLSER	UNK
FIELD 5	VSAM/NVSAM	N
FIELD 6	HSM LEVEL	U

1112W MCO VSAM BASE NAME IS MISSING IN MCD

Explanation:

Audit Suite has compared the MCDS MCO extraction against the MCDS MCD extraction and has been unable to find a matching VSAM Base name. This means that the MCO entry is orphaned and should be deleted.

User response

The recommended default fix is F1112WA HSM FIXCDS O DELETE FOR ORPHANED MCO RECORD

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1112W
FIELD 2	VSAM BASE NAME	
	MCO.BASE.CLUSTER	
FIELD 3	VSAM COMPONENT	
	MCO.BASE.DATA	
FIELD 4	MCO ALIAS NAME	
	HSM.HMIG.T473100.dsn	

1113W MCO VSAM COMPONENT NAME IS MISSING IN MCA

Explanation:

Audit Suite has compared the MCDS MCO extraction against the MCDS MCA extraction and has been unable to find a matching VSAM component. This means that the MCO entry is orphaned and should be deleted.

User response

The recommended default fix is F1113WB HSM FIXCDS DELETE OF MCO RECORD

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1113W
FIELD 2	VSAM BASE NAME	
	MCO.BASE.CLUSTER	
FIELD 3	VSAM COMPONENT	
	MCO.BASE.DATA	
FIELD 4	MCO ALIAS NAME	
	HSM.HMIG.T473100.dsn	

1114W ALIAS NAME EXISTS IN VTOC, MCA IS MISSING

Explanation:

Audit Suite has compared the VTOC extraction against the alias name found in the MCDS record (as opposed to the native MCA record). When Audit Suite verifies the problem, an MCA record really might be found. When this occurs, the true name field is replaced (usually it is unknown). However, this is still an orphaned record because the MCD (true name in HSM MCDS) doesn't match. This means that the entry in the VTOC is orphaned and should be deleted.

User response

The recommended default fix is F1114WR1 IDC CATALOG AND DELETE ORPHANED L1 HSM ALIAS W/O RECAT

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1114W
FIELD 2	DSNAME	UNKNOWN
FIELD 3	HSM ALIAS	
	HSM.HMIG.T070109.dsn	
FIELD 4	HSM VOLSER	HSM003
FIELD 5	HSM LEVEL	1
FIELD 6	VTOC ERR NUMBER	0

1115W VTOC ALIAS NAME HAS VTOC ERROR

Explanation:

Audit Suite has compared the VTOC extraction against the MCDS MCA extraction and has detected a Format 1 DSCB error on an ML1 volume. This means that even though the data set exists, the data set probably can not be recalled.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1115W
FIELD 2	DSNAME	
	SOURCE.PLSTCOB2.PROGRAMS	
FIELD 3	HSM ALIAS	
	HSM.HMIG.T473104.dsn	
FIELD 4	HSM VOLSER	HSM003
FIELD 5	HSM LEVEL	1
FIELD 6	VTOC ERR NUMBER	1

1116C CATALOG ENTRY HAS NO MCD/MCO ENTRY

Explanation:

Audit Suite has compared the catalog extraction against the MCDS MCD extraction and has determined that even though the data set is cataloged, the MCD does not exist and the data set can not be recalled. These entries should be deleted from the catalog. The data set could be recovered if a backup copy exists.

User response

The recommended default fix is F1116CA TSO DELETE NOSCRATCH FOR MIGRAT DSNs MISSING MCD

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1116C
FIELD 2	DSNAME	AMS.ASAMMLIB
FIELD 3	HSM VOLSER	MIGRAT
FIELD 4	CATALOG NAME	UCAT.TECH
FIELD 5	CREATION DATE	1999245

1117C CATALOG ENTRY IS NOT CONNECTED TO MASTER CAT

Explanation:

Audit Suite has compared the catalog extraction against the MCDS MCD extraction and has determined that even though the data set is cataloged, and the MCD exists, the high level node(s) of the data set is not connected to the master catalog and therefore can not be recalled. This error will also be generated for any data set that is cataloged in the master catalog that does not have a high level node of SYS1. Although these data sets can be recalled, IBM recommends that the master catalog should contain only entries for user catalogs, their aliases and system, or 'SYS1' data sets.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1117C
FIELD 2	DSNAME	XAS.VSAMMLIB
FIELD 3	HSM VOLSER	MIGRAT
FIELD 4	CATALOG NAME	UCAT.TECH
FIELD 5	CREATION DATE	2000198

1118C MIGRATED DATA SET IS MISSING IN SDSP CLUSTER

Explanation:

Audit Suite has compared the MCDS extraction against the Small Data Set Packing (SDSP) extraction and has determined that the data set is missing in the SDSP VSAM cluster on the Migration Level 1 volume. The data set can not be recalled.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1118C
FIELD 2	DSNAME	
	P00.CHG.QMFCERT.INUSE	
FIELD 3	ML1 VOLSER	ML1001
FIELD 4	MIG LEVEL	1

1119W ENTRY IN SDSP DATA SET IS MISSING IN MCDS

Explanation:

Audit Suite has compared the Small Data Set Packing (SDSP) extraction against the MCDS extraction and has determined that a data set is in the SDSP but has no MCD entry in the MCDS. The data set can not be recalled.

User response

The recommended default fix is F1119WD HSM AUDIT AKD725 FOR SDSP MISSING MCD

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1119W
FIELD 2	DSNAME	
	P00.CSB.QMFCERT.INUSE	
FIELD 3	SDSP DSNAME	
	HSM.SMALLDS.VML1003	
FIELD 4	ML1 VOLSER	ML1001
FIELD 5	MIG LEVEL	1

1120I TTOC VOLUME IS EMPTY

Explanation:

Audit Suite has found a tape in the TTOC inventory that has no entries. This is probably not an error but if there are a large number of these it is possible that the HSM ARCTVEXT exit for the TMS is not working properly. This tape information is useful to interrogate TMS to determine the DSN assigned to it. If TMS indicates that the data set is other than hlq.HMIGTAPE..., then there may be a conflict if HSM chooses one of these tapes to use in migration.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1120I
FIELD 2	TAPE VOLUME	010018
FIELD 3	TAPE TYPE	L2

1121W MIGRATION LEVEL 2 VOLUME HAS NO TTOC ENTRY

Explanation:

This error is similar to 1107V except that these volumes contain no migrated data. A tape is in the MCV inventory but no root record exists in the TTOC. The information in this error can be used to interrogate CA1 TMS and HSM TTOC information.

User response

For further analysis of the tape, run the AUDIT MEDIACONTROLS

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1121W
FIELD 2	TAPE VOLUME	010018
FIELD 3	TAPE TYPE	L2

1122W MCD ALIAS IS OWNED BY DIFFERENT MCD

Explanation:

Audit Suite has found an MCD record whose alias name (the MCA) record is owned by a different MCD.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1122W
FIELD 2	DSNAME	SOURCE.PLSTCOB2.dsn
FIELD 3	HSM ALIAS	HSM.HMIG.T473104.dsn
FIELD 4	HSM VOLSER	HSM003
FIELD 5	HSM LEVEL	1
FIELD 6	VTOC ERR NUMBER	1
FIELD 7	OWNING TRUENAME	SOURCE.PLSTCOB2.MACROS

1123W MCA TRUENAME RECORD IS MISMATCHED

Explanation:

Audit Suite has found an MCA record whose true name (the MCD) exists. The alias name in the MCD record contains a different alias name. That alias name in turn exists and points to the MCD. In other words, these MCA records are orphaned and should be deleted.

User response

F1123WB HSM FIXCDS DELETE CONFLICTING A RECORD		
FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1123W
FIELD 2	DSNAME (FROM MCA)	SOURCE.PLSTCOB2.PROGRAMS
FIELD 3	HSM ALIAS (FROM MCA)	HSM.HMIG.T473104.dsn
FIELD 4	HSM VOLSER	UNK
FIELD 5	VSAM/NVSAM	N
FIELD 6	HSM LEVEL	U
FIELD 7	CORRECT ALIAS NAME	HSM.HMIG.T500119.dsn

1124W VALID BLOCK COUNT IN TTOC DOES NOT AGREE

Explanation:

When the customer has requested TTOC contents verification in AKDAUDAL, AKDAUDMD or AKDAUDBD (TOPT=YES), Audit Suite counts all the valid records in the TTOC extraction and compares it to the original block count from the TTOC record. It reports on tapes that are ten days old or older. It then verifies that the record count is still off and reports this error.

User response

F1124WB HSM FIXCDS PATCH T FOR VOL WITH MISS MATCH BLOCK COUNT		
FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1124W
FIELD 2	TAPE VOLUME	010018
FIELD 3	TAPE TYPE	L2
FIELD 4	COUNTED VALID BLOCKS	0000005
FIELD 5	BLOCK COUNT (TTOC)	0000004-
FIELD 6	COUNTED BLKS (IN HEX)	00000005
FIELD 7	BLK CNT (TTOC IN HEX)	FFFFFFFF3
FIELD 8	DATE OF TTOC UPDATE	1997266
FIELD 9	DATE OF TTOC CREATE	1997252

1125W TTOC ENTRY MARKED INVALID, MCD/MCC EXISTS

Explanation:

Audit Suite has compared the MCDS MCD extraction or BCDS MCC extraction against the extracted TTOC and has found DSNAMEs in the TTOC that are marked invalid but the MCD/MCC exists. This can cause HSM to drop valid data if the tape is recycled. Special fields are captured in this error to allow you to patch the TTOC to be valid. Field 5 is the hex representation of the DSNAME flags as they exist in the TTOC. Field 6 is the hex representation of the DSNAME flags as they would be if patched valid. Field 7 is the offset in the TTOC extension record to the DSNAME in question and Field 8 is the offset in the TTOC to the Flags byte for the DSNAME.

User response

F1125WD HSM FIXCDS PATCH T MARK DSN
VALID

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1125W
FIELD 2	MIGRATION VOLUME	HM02225
FIELD 3	TAPE TYPE (L2, SP OR CY)	L2
FIELD 4	TTOC EXTENSION NUMBER	0001
FIELD 5	DSNAME FLAGS (IN HEX)	00
FIELD 6	DSNAME PATCH VALID (HEX)	04
FIELD 7	OFFSET TO DSNAME IN TTOC	0724
FIELD 8	OFFSET TO FLAG BYTE	0758
FIELD 9	ALIAS NAME IN TTOC	
	HSM.HMIG.dsn	
FIELD 10	TRUE NAME FROM MCD/MCC	
	DDAVENP.ZIP.EXEC	

1126I SUMMARY OF TTOC VOLUMES WITH INVALID DSNs

Explanation:

Audit Suite has examined the TTOC extraction and has found volumes containing DSNAMEs marked invalid. This is an unexpected condition since HSM no longer maintains the valid bit in the TTOC (since HSM 2.4). This is an information message and will allow you to research this condition.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1126I
FIELD 2	VOLSER	HM0002
FIELD 3	VOL TYPE (L2, SP OR CY)	L2

1127I MCD ENTRY IS MARKED INVALID WITH PERMANENT RETENTION

Explanation:

Audit Suite has found a dataset with an EXPIRE Date of X'99365' is migrated into HSM and then later recalled, the MCD record is marked as not valid and the EXPIRE Date remains X'99365" (Permanent Dataset - No expire). When Space Management runs, it does not delete the MCD record because of the 99365 Expire date. In a normal HSM situation, when a dataset is recalled, the MCD record is marked invalid, but when space management runs later frame, space management will delete the MCD record.

User response

Recommended default fix:

F1127IA HSM FIXCDS DISPLAY MCD RECORD

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1127I
FIELD 2	DSNAME	PDUSER.TEST1
FIELD 3	HSM GENERATED NAME	
	SM.HMIG.T052403.PDUSER.TEST1.A0056	
FIELD 4	HSM VOLSER	C10063

FIELD 5	VSAM/NVSAM	N
FIELD 6	HSM LEVEL	2

1128I MCD LEFTOVER FOR RECONNECT SINCE LONG

Explanation:

When the dataset is recalled the MCD record isn't deleted from the MCDS but it's marked not valid and migration copy is also kept. If recalled dataset is later migrated, then unnecessary data movement can be avoided. The duration for which MCD is kept depends on is calculated as (days since unreferenced before migration + reconnect days parameter of MIGRATIONCLEANUPDAYS). By this audit the user can review the long pending MCDs in the MCDS and delete those if needed.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	1128I
FIELD 2	DSNAME	PDUSER.TEST1
FIELD 3	HSM GENERATED NAME	
	SM.HMIG.T052403.PDUSER.TEST1.A0056	
FIELD 4	HSM VOLSER	C10063
FIELD 5	VSAM/NVSAM	N
FIELD 6	HSM LEVEL	2

2101W MCB IS CONTAMINATED

Explanation:

When Audit Suite was extracting the MCB records from the BCDS it found an entry that had the current number of backup copies field with an invalid number or HSM generated alias name was incorrect. The alias of the first backup entry is presented but the remaining entries, if any, are not audited.

User response

Recommended default fix:

F2101WB HSM FIXCDS DELETE B RECORD

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	2101W
FIELD 2	DSNAME	
	BMOHN.ISPF.ISPPROFB	
FIELD 3	2101W ERROR COUNTER	0000001
FIELD 4	DATE OF BACKUP	1994273
FIELD 5	VSAM/NONVSAM	N
FIELD 6	BACKUP VERSION	001
	(VERSION OF THIS BACKUP)	
FIELD 7	BACKUP GENERATION	02
FIELD 8	FROMVOL	V39999
	(VOLUME OF THE ORIGINAL DSNAME)	

2102W MCB HAS DUPLICATE MCC ENTRY

Explanation:

Audit Suite for the BCDS has found an HSM generated alias in the MCB that is a duplicate for a different MCB. Recover for one of these data sets might not be

possible. This error is presented in two lines. Line 1 shows the true name record and the generated alias name. Line 2 shows the true name and the duplicate generated alias name.

User response

There is no recommended default fix.

FIELD 1	ERROR NUMBER	2102W
FIELD 2	DSNAME	
	BMOHN.ISPF.CNTL.FILE	
FIELD 3	HSM GENERATED NAME	HSM.BACK.dsn
FIELD 4	DATE OF BACKUP	1994273
FIELD 5	VSAM/NONVSAM	N

2103C MCB ENTRY IS MISSING THE MCC ENTRY

Explanation:

Audit Suite failed to find the corresponding MCC (HSM generated alias name) in the BCDS. Information to recover the data set is contained in the MCC. The DSN can not be recovered.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	2103C
FIELD 2	DSNAME	
	APPL1.CRITICAL.FILE	
FIELD 3	HSM GENERATED NAME	HSM.BACK.dsn
FIELD 4	DATE OF BACKUP	1994273
FIELD 5	VSAM/NONVSAM	N
FIELD 6	BACKUP VERSION	001
FIELD 7	BACKUP GENERATION	02
FIELD 8	PRIMARY VOLUME	DVLP09

2104C MCC BACKUP TO LEVEL 1 HAS NO VTOC ENTRY

Explanation:

A data set that has been backed up to an HSM Migration Level 1 volume has no VTOC entry for the HSM generated alias name. This data set can not be recovered.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	2104C
FIELD 2	DSNAME	
	APPL1.CRITICAL.FILE	
FIELD 3	HSM GENERATED NAME	HSM.BACK.dsn
FIELD 4	VOLUME SERIAL	MIGR01
FIELD 5	DATE OF BACKUP	1994273
FIELD 6	VSAM/NONVSAM	N
FIELD 7	TAPE OR DASD	D
FIELD 8	BACKUP VERSION	001
FIELD 9	BACKUP GENERATION	03
FIELD 10	TYPE OF BKUP TAPE	SP

FIELD 11	TTOC EXTENSION NUM	0002
FIELD 12	PRIMARY VOLUME	STR002

2105W DUPLICATE BACK-UP VOLUMES FOUND

Explanation:

Audit has found two back-up volumes with the same volser. This condition is rarely encountered. It is recommended that the duplicate TTOC records be examined.

User response

F2105WA HSM FIXCDS COMMAND TO EXAMINE
DUPLICATE TTOC RECORDS

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	2105W
FIELD 2	VOLSER OF DUPLICATE	023455
FIELD 3	TTOC TYPE	SP
FIELD 4	FOUND FLAG	F
FIELD 5	CONFLICTING VOLSER	028733
FIELD 6	TTOC TYPE	SP
FIELD 7	FOUND FLAG	N

2106C MCC IS ON VOLUME WHICH HAS NO MCT ENTRY

Explanation:

A data set that has been backed up to an HSM backup volume that has no BCDS MCT record. The volume must exist in the MCT before the volume can be mounted for recover.

User response

See recommended fixes for 2106V

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	2106C
FIELD 2	DSNAME	APPL1.dsn
FIELD 3	HSM GENERATED NAME	HSM.BACK.dsn
FIELD 4	VOLUME SERIAL	025346
FIELD 5	DATE OF BACKUP	1994273
FIELD 6	VSAM/NONVSAM	N
FIELD 7	TAPE OR DASD	T
FIELD 8	BACKUP VERSION	001
FIELD 9	BACKUP GENERATION	03
FIELD 10	TYPE OF BKUP TAPE	SP
FIELD 11	TTOC EXTENSION NUM	0002
FIELD 12	PRIMARY VOLUME	STR002

2106V SUMMARY OF VOLUMES MISSING MCT ENTRY

Explanation:

This error is a summary by volumes of error 2106C. Research of this problem is easier to do at a volume level. Supporting fixes and interrogations at a volume level is supplied for this error.

User response

```
F2106VE          HSM ADDVOL FOR BACKUP
CYCLE TAPE
F2106VG          HSM ADDVOL FOR SPILL
TAPE
```

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	2106V
FIELD 2	VOLSER	HB0021
FIELD 3	TAPE TYPE	SP (<i>text</i>)
FIELD 4	DSN NUMBER	000009

(*text*)

2107V SUMMARY OF VOLUMES MISSING TTOC ENTRY

Explanation:

This error is a summary by volumes of error 2107W. Research of this problem is easier to do at a volume level. Supporting fixes and interrogations at a volume level is supplied for this error.

User response

Run the AUDIT MEDIACONTROL job for these volumes

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	2107V
FIELD 2	VOLSER	HB0022
FIELD 3	TAPE TYPE	SP (<i>text</i>)
FIELD 4	DSN NUMBER	000003

(*text*)

2107W MCC TAPE VOLUME HAS NO TTOC ENTRY

Explanation:

A data set has been backed up to an HSM tape backup volume that is not currently in the OCDS TTOC volume inventory. The data set on this volume might be able to be recovered, however, it is possible that this volume has been returned to the system scratch pool and has been written over.

User response

See the fixes in diagnostic 2107V

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	2107W
FIELD 2	DSNAME	
APPL1.CRITICAL.FILE		
FIELD 3	HSM GENERATED NAME	HSM.BACK. <i>dsn</i>
FIELD 4	VOLUME SERIAL	048751
FIELD 5	DATE OF BACKUP	1994273
FIELD 6	VSAM/NONVSAM	N
FIELD 7	TAPE OR DASD	T
FIELD 8	BACKUP VERSION	001
FIELD 9	BACKUP GENERATION	03
FIELD 10	TYPE OF BKUP TAPE	SP
FIELD 11	TTOC EXTENSION NUM	0002
FIELD 12	PRIMARY VOLUME	STR002

2109V SUMMARY OF VOLUMES MCC ALIAS MISSING TTOC ENTRY

Explanation:

This error is a summary by volumes of error 2109W. Research of this problem is easier to do at a volume level. Supporting fixes and interrogations at a volume level is supplied for this error.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	2109V
FIELD 2	VOLSER	HB0023
FIELD 3	TAPE TYPE	SP (<i>text</i>)
FIELD 4	DSN NUMBER	000003 (<i>text</i>)

2109W MCC ALIAS IS NOT ON TTOC

Explanation:

A data set has been backed up to an HSM tape backup volume. The HSM generated alias name is not in the alias name inventory in the TTOC for that volume. This can happen if HSM has abnormally terminated or the system has been IPLed before the TTOC information has been updated. The data set can probably be recovered but when the tape is recycled an error may occur. Also, if tape recycle was running, this condition might not be true. For best results, stop recycle while running the audit. Note: Audit Suite does not verify these errors in real time. If recycle was running while the audit was extracting information these errors may be erroneous. For best results make sure recycle is not running at the same time as Audit.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	2109W
FIELD 2	DSNAME	
APPL1.CRITICAL.FILE		
FIELD 3	HSM GENERATED NAME	HSM.BACK. <i>dsn</i>
FIELD 4	VOLUME SERIAL	048751
FIELD 5	DATE OF BACKUP	1994273
FIELD 6	VSAM/NONVSAM	N
FIELD 7	TAPE OR DASD	T
FIELD 8	BACKUP VERSION	001
FIELD 9	BACKUP GENERATION	03
FIELD 10	TYPE OF BKUP TAPE	SP
FIELD 11	TTOC EXTENSION NUM	0002
FIELD 12	PRIMARY VOLUME	STR002

2111W MCC ENTRY IS MISSING MCB ENTRY

Explanation:

Audit Suite has found an orphaned MCC entry. Either the MCB is missing altogether or the referenced MCC is not contained in the array of MCCs within the MCB record. The MCC is a record in the BCDS whose key is the HSM generated alias name of the backup. The MCC is required for a successful RECOVER of a data set. It contains all the information about what tape it is

on, its size, etc. In the MCC is a reference back to the true data set name or the MCB. The MCB is a record in the BCDS whose key is the true name of the data set that was backed up. It contains an array of HSM generated alias names which are the keys of the MCC record. The recycle of the tape volume containing this data set might fail. If it is successful, it will recycle data that is not RECOVERABLE. Since the true name does not exist, a RECOVER for this backup version will fail because HSM can not find the true name.

User response

F2111WB HSM FIXCDS DELETE C FOR MCC
MISSING MCB

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	2111W
FIELD 2	DSNAME	
APPL1.CRITICAL.FILE		
FIELD 3	HSM GENERATED NAME	HSM.BACK.dsn
FIELD 4	VOLUME SERIAL	048751
FIELD 5	DATE OF BACKUP	1994273
FIELD 6	VSAM/NONVSAM	N
FIELD 7	TAPE OR DASD	T
FIELD 8	BACKUP VERSION	007
FIELD 9	BACKUP GENERATION	03
FIELD 10	TYPE OF BKUP TAPE	SP
FIELD 11	TTOC EXTENSION NUM	0002
FIELD 12	PRIMARY VOLUME	STR002

2113I BACKUP TTOC VOLUME IS EMPTY

Explanation:

Audit Suite has found a volume entry in the TTOC that has no backup data sets. This is for information only. If there are a large number of these, they may need to be released for scratch.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	2113I
FIELD 2	VOLSER	HB0003
FIELD 3	TAPE TYPE	SP

2114W BACKUP NAME EXISTS ON VTOC, MCC IS MISSING

Explanation:

Audit Suite has found an HSM generated alias name on an ML1 volume VTOC for a backup version that has no corresponding entry in the BCDS MCC inventory. The alias name needs to be deleted from the VTOC.

User response

F2114WA TSO CATALOG AND DELETE
ORPHANED L1 MCC ALIAS

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	2114W

FIELD 2	DSNAME	UNKNOWN
(text)		
FIELD 3	HSM GENERATED NAME	HSM.BACK.dsn
FIELD 4	VOLUME SERIAL	MIGRL1
FIELD 5	DATE OF BACKUP	1994273
FIELD 6	VSAM/NONVSAM	N
FIELD 7	TAPE OR DASD	D
FIELD 8	VTOC ERR	0 (0
INDICATES NO ERROR)		

2115W VTOC BACKUP NAME HAS VTOC ERROR

Explanation:

Audit Suite has found an HSM generated alias name for a backup version. There is an error in the VTOC. The alias name needs to be deleted from the VTOC.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	2115W
FIELD 2	DSNAME	
APPL1.CRITICAL.FILE		
FIELD 3	HSM GENERATED NAME	HSM.BACK.dsn
FIELD 4	VOLUME SERIAL	MIGRL1
FIELD 5	DATE OF BACKUP	1994273
FIELD 6	VSAM/NONVSAM	N
FIELD 7	TAPE OR DASD	D
FIELD 8	VTOC ERR	5 (text)

2116W MCB TRUENAME IS MISMATCHED WITH MCC ENTRY

Explanation:

Audit Suite has found a backup true name (MCB) whose generated alias name is mismatched. The MCC record indicates that a different MCB true name owns it.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	2116W
FIELD 2	DSNAME	P00.ISI.dsn
FIELD 3	HSM GENERATED NAME	HSM.BACK.dsn
FIELD 4	DATE OF BACKUP	1998108
FIELD 5	TAPE OR DASD	D
FIELD 6	VSAM/NONVSAM	N
FIELD 7	BACKUP VERSION NUM	001
FIELD 8	REAL OWNER OF MCC	P00.ISI.dsn

2117W MCC ENTRY IS OWNED BY DIFFERENT MCB

Explanation:

Audit Suite has found a backup generated alias name (an MCC) whose true name record exists, but the MCC is owned by a different MCB than that indicated in the MCC.

User response

F2117WC HSM FIXCDS PATCH C WITH
CORRECT DSN

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	2117W
FIELD 2	DSNAME	CXTT.CLK.dsn
FIELD 3	HSM GENERATED NAME	HSM.BACK.dsn
FIELD 4	VOLSER	035228
FIELD 5	DATE OF BACKUP	1994273
FIELD 6	VSAM/NONVSAM	N
FIELD 7	TAPE OR DASD	T
FIELD 8	BACKUP VERSION NUM	001
FIELD 9	BACKUP GEN NUM	UN
FIELD 10	REAL OWNER OF MCC	CXTT.CLK.dsn

2118W MCB IS LINKED TO MCBR BUT MCBR RECORD NOT FOUND

Explanation:

Audit Suite has found a backup record (an MCB) that has a link to a retained backup record (an MCBR) but the MCBR record cannot be found in the BCDS. This condition means that non-active backup copies (retained backup copies) are not available. The storage administrator should be made aware of the situation. There is no recovery for these retained backup copies.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION
EXAMPLE	
FIELD 1	ERROR NUMBER
2118W	
FIELD 2	DSNAME
SYS1.SYSTEM2.DATASET	
FIELD 3	MCBR SEQUENCE NUMBER
FFFF	(Sequence Number found in MCB)
FIELD 4	MCBR KEY
D7C4C4C16592E31628CB503099FFFF	

(Field 4 is key of MCBR for fixcfs cmd)

3101W TAPE IS IN MCV/MCT, NOT IN TTOC

Explanation:

When Audit Suite extracts the tape information it examines the elements in HSM that control the tapes. The MCV is for Level 2 tapes, and the MCT is for cycle and spill tapes (backup). Recall or recover may be successful even though a TTOC record for the tape is missing. If a TTOC record is missing HSM can not recycle the tapes. If the tapes are under TMS control then there may be many tapes that are empty and should be scratched. The information in this error record may be used to interrogate TMS.

User response

F3101WE HSM DELETE MCV RECORD FROM MCDS

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	3101W
FIELD 2	VOLSER	010018
FIELD 3	TAPE TYPE	L2 (text)
FIELD 4	DSN COUNT	000034

3102C TAPE IS IN TTOC, NOT IN MCV/MCT

Explanation:

When Audit Suite extracts the tape information it examines the elements in HSM that control the tapes. It has found a TTOC entry that is not being managed by HSM. The entries on these tapes can not be recalled. In addition they may have been scratched and written over. Use this information to interrogate TMS. If the tapes still have HSM names the data might be reconstructed.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	3102C
FIELD 2	VOLSER	010020
FIELD 3	TAPE TYPE	L2 (text)
FIELD 4	DSN COUNT	000004

3103C TAPE IS NOT IN TTOC OR MCV/MCT BUT HAS ENTRIES

Explanation:

Audit Suite has discovered tapes that have Level 2 dump volumes or backup data sets, but the tape is not under HSM control. The tapes might still be managed by TMS. If this data is critical, use TMS to interrogate the status of these tapes. If no record of them is in TMS, the data sets referencing these tapes may be deleted from HSM.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	3103C
FIELD 2	VOLSER	010020
FIELD 3	TAPE TYPE	L2 (text)
FIELD 4	DSN COUNT	000004

3104W TAPE IS IN TTOC & MCV/MCT, NOT IN TMS (RMM, CNM, TLMS)

Explanation:

Audit Suite has compared the HSM tape extraction against the Tape Inventory extraction and has found HSM managed tapes that are not under Tape Inventory control. It is possible the tape has been written

over. Use the Tape Inventory interrogation system to find the current name of the tape. If the tape shows 'invalid' then it is not managed and the data is probably safe. If Tape Inventory shows a DSN name other than the appropriate HSM data set then the tape has probably been written on and the HSM data has been lost.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	3104W
FIELD 2	VOLSER	010021
FIELD 3	TAPE TYPE	L2 (text)
FIELD 4	DSN COUNT	000004

3110W TAPE IS PERMANENT IN TMS (RMM, CNM, TLMS), NOT IN TTOC

Explanation:

Audit Suite has compared the HSM tape extraction against the Tape Inventory extraction and has found Tape Inventory managed tapes marked as 'permanent'. HSM has no record of the tapes. It is possible that these tapes have been orphaned and may be scratched.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	3110W
FIELD 2	VOLSER	010021
FIELD 3	TAPE TYPE	L2 (text)
FIELD 4	DSN COUNT	000004
FIELD 5	EXPIRATION DATE	PERMANENT
FIELD 6	TAPE DSNNAME	(1999/365)
FIELD 7	CREATING JOB	HSM

3111W TAPE IS IN TMS (RMM, CNM, TLMS), VALID IN HSM, HAS NO ENTRIES

Explanation:

Audit Suite has compared the HSM tape extraction against the Tape Inventory extraction and has found Tape Inventory managed tapes marked as 'permanent'. HSM has all the appropriate records but no data is written on the tape. This probably is not an error. However, if there are a very large number of these tapes, the analyst should investigate why. Audit Suite has extracted all data sets on ML2, all backup versions on tape, and all volume dump tapes. When any tape volume is referenced it is marked as occupied. This warning message displays the tape volumes that have not been referenced, however, all the appropriate structures for tapes in the HSM

environment are correct and Tape Inventory indicates that HSM has control.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	3111W
FIELD 2	VOLSER	010022
FIELD 3	TAPE TYPE	L2 (text)
FIELD 4	DSN COUNT	000004
FIELD 5	EXPIRATION DATE	PERMANENT
FIELD 6	TAPE DSNNAME	(1999/365)
FIELD 7	CREATING JOB	HSM

3112W TAPE IS VALID IN HSM BUT EXPIRED IN TMS (RMM, CNM, TLMS)

Explanation:

Audit Suite has compared the HSM tape extraction against the Tape Inventory extraction and has found Tape Inventory managed tapes that are due to expire. These tapes could be written over and valid HSM data lost. It is possible that these tapes were released to Tape Inventory if recycle was running during the audit. If in doubt, rerun the audit when recycle is not executing. Examine the expiration date for the current Julian date to verify the scratch status. Other audit options may be necessary to determine the status of these tapes.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	3112W
FIELD 2	VOLSER	010024
FIELD 3	TAPE TYPE	SP (text)
FIELD 4	DSN COUNT	000004
FIELD 5	EXPIRATION DATE	15JUN1996
FIELD 6	TAPE DSNNAME	HSM
FIELD 7	CREATING JOB	HSM

3114I TAPE IS IN TMS (RMM, CNM, TLMS) SCRATCH STATUS

Explanation:

Audit Suite has compared the HSM tape extraction against the tape extraction and has found TMS managed tapes that have expired. There are no HSM references to these tapes and everything is working as it should. This message is for information only to review the pool of scratch tapes released by HSM but not yet selected for use by other applications.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	3114I
FIELD 2	VOLSER	010024
FIELD 3	DSN COUNT	000000
FIELD 4	EXPIRATION DATE	15JUN1996
FIELD 5	TAPE DSNNAME	
	HSM.HMIGTAPE.DATASET	
FIELD 6	CREATING JOB	HSM

3115I TAPE IS IN TMS DELETE STATUS

Explanation:

Audit Suite has compared the HSM tape extraction against the TMS extraction and has found TMS managed tapes that have been deleted. There are no HSM references to these tapes and everything is working as it should. This message is for information only to allow the Storage Manager to know the TMS delete status of HSM tapes.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	3115I
FIELD 2	VOLSER	010025
FIELD 3	DSN COUNT	000000
FIELD 4	EXPIRATION DATE	12JUN1995
FIELD 5	TAPE DSNNAME	
	HSM.HMIGTAPE.DATASET	
FIELD 6	CREATING JOB	HSM

3116W TAPE DOES NOT INDICATE EXTERNAL DATA MANAGEMENT

Explanation:

This error is for CA1 TMS only. The bit indicating external management has not been turned on by TMS. If the tape has truly been created on behalf of HSM and HSM is attempting to give the tape back, TMS may indicate it. This will result in tapes not being returned to the scratch pool.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	3116W
FIELD 2	VOLSER	010025
FIELD 3	DSN COUNT	000000
FIELD 4	EXPIRATION DATE	16JUN1997
FIELD 5	TAPE DSNNAME	
	HSM.HMIGTAPE.DATASET	
FIELD 6	CREATING JOB	HSM

4001W PREVIOUS VOLUME NOT FOUND IN OCDS

Explanation:

In the OCDS each tape has a root record called extension 0000. In this extension is a previous volume pointer, indicating that the first data set on the tape is continued from a previous volume. Audit Suite has looked up the detail of that first data set and has determined that it is valid and is continued from a previous volume. In this case the previous volume is different than the PVOL field in the OCDS. This error may be corrected by patching the previous volume field.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	4001W
FIELD 2	VOLSER	014673
FIELD 3	TAPE TYPE	L2 (<i>text</i>)
FIELD 4	TAPE CREATION DATE	1997214
FIELD 5	PVOL IN OCDS	014926
FIELD 6	CORRECT PVOL (IN HEX)	F0F1F4F5F4F5
FIELD 7	FIRST DSN ON TAPE	HSM.HMIG.dsn

4002W SUCCESSOR VOLUME NOT FOUND IN OCDS

Explanation:

In the OCDS each tape has a root record called extension 0000. In this extension is a successor volume pointer, indicating that the last data set on the tape is continued to a successor volume. Audit Suite has looked up the detail of that last data set and has determined that it is valid and is continued to a successor volume. In this case the successor volume is different than the SVOL field in the OCDS. This error may be corrected by patching the successor volume field.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	4002W
FIELD 2	VOLSER	014869
FIELD 3	TAPE TYPE	L2 (<i>text</i>)
FIELD 4	TAPE CREATION DATE	1997214
FIELD 5	SVOL IN OCDS	026898
FIELD 6	CORRECT SVOL (IN HEX)	F0F1F7F3F4F5
FIELD 7	LAST DSN ON TAPE	HSM.HMIG.dsn

4003W PREVIOUS VOLUME POINTER IS INCORRECT

Explanation:

This error message differs from 4001W because the previous volume pointer was found but was incorrect. In error 4001W, the previous volume was not in the OCDS inventory. Audit Suite has compared the first DSN on the extension 0000 record with the last DSN on the previous volume and has found a conflict. Audit Suite has looked up the detail about the data set and

has determined that the PVOL field in the OCDS is incorrect. This error may be corrected by patching the previous volume field.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	4003W
FIELD 2	VOLSER	011487
FIELD 3	TAPE TYPE	L2 (text)
FIELD 4	TAPE CREATION DATE	1997214
FIELD 5	PVOL IN OCDS	012247
FIELD 6	CORRECT PVOL (IN HEX)	F0F2F5F8F5F0

4004W SUCCESSOR VOLUME POINTER IS INCORRECT

Explanation:

This error messages differs from 4002W because the successor volume pointer was found but was incorrect. In error 4002W, the successor volume was not in the OCDS inventory. Audit Suite has compared the last DSN on the extension 0000 record with the first DSN on the successor volume and has found a conflict. Audit Suite has looked up the detail about the data set and has determined that the SVOL field in the OCDS is incorrect. This error may be corrected by patching the successor volume field.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	4004W
FIELD 2	VOLSER	011487
FIELD 3	TAPE TYPE	L2 (text)
FIELD 4	TAPE CREATION DATE	1997214
FIELD 5	PVOL IN OCDS	012247
FIELD 6	CORRECT PVOL (IN HEX)	F0F2F5F8F5F0

4005C TAPE HAS FAILED CREATE STATUS

Explanation:

The TTOC extraction process has found a tape marked as 'active in storage' and the last activity was more than 24 hours prior to the current time. TTOC activity is updated every 20 minutes or less. This is the criteria that LIST TTOC SELECT(FAILEDCREATE) uses to determine failed create status. Tapes in this status can only be reclaimed by performing an AUDIT MEDCTL. This diagnostic can be verified by submitting a LIST TTOC SELECT(FAILEDCREATE). The preferred fix is F4005CA AUDIT MEDCTL.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	4005C
FIELD 2	VOLSER	011529

FIELD 3	TAPE TYPE	SP (text)
FIELD 4	TAPE CREATION DATE	1997214

4007C TTOC RECORD HAS BROKEN SEQUENCE SET

Explanation:

Each tape in the OCDS inventory can have many extension records starting from extension 0000 to 9999. While Audit Suite processes the extensions for a volume, it counts the extensions and as each extension is read, its extension number is compared to the running count. If the count is different than the number in the extension record then recycle will fail for this volume. This error may be corrected by running AUDIT MEDIACONTROLS for the volume in error.

User response

See the recommended fix for 4007V

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	4007C
FIELD 2	VOLSER	011487
FIELD 3	TAPE TYPE	01 (text)
FIELD 4	TAPE CREATION DATE	1997214
FIELD 5	EXPECTED SEQUENCE	00013
FIELD 6	ENCOUNTERED SEQUENCE	00015

4007V VOLUME CONTAINS BROKEN SEQUENCE SET/SETS

Explanation:

For each tape identified in error 4007C (where the extension number of a tape extension record does not agree with the counted number of extensions for that tape (see error 4007C, above)), a single instance of error 4007V is generated. There is one 4007V error for each tape VOLSER identified in 4007C. This error may be corrected by running AUDIT MEDIACONTROLS for the volume in error.

User response

Run Audit MEDIACONTROLS for the tape.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	4007V
FIELD 2	VOLSER	011487
FIELD 3	TAPE TYPE	01 (text)
FIELD 4	TAPE CREATION DATE	1997214

4008C TTOC EXTENSION RECORDS ARE LESS THAN EXPECTED

Explanation:

Each tape in the OCDS inventory has an expected extension number in extension 0000. While Audit Suite was reading the extension records it encountered the end of extensions before the expected count was finished. This volume will probably fail recycle. This error may be corrected by

running AUDIT MEDIACONTROLS for the volume in error.

User response

Run Audit MEDIACONTROLS for the tape.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	4008C
FIELD 2	VOLSER	067487
FIELD 3	TAPE TYPE	02 (<i>text</i>)
FIELD 4	TAPE CREATION DATE	1997214
FIELD 5	EXPECTED EXTENSIONS	00013
FIELD 6	LAST EXTENSION READ	00009

4009C TTOC EXTENSION RECORDS ARE MORE THAN EXPECTED

Explanation:

Each tape in the OCDS inventory has an expected extension number in extension 0000. While Audit Suite was reading the extension records it found more extensions than was expected. This volume will probably fail recycle. This error may be corrected by running AUDIT MEDIACONTROLS for the volume in error.

User response

Run Audit MEDIACONTROLS for the tape.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	4009C
FIELD 2	VOLSER	067487
FIELD 3	TAPE TYPE	02 (<i>text</i>)
FIELD 4	TAPE CREATION DATE	1997214
FIELD 5	EXPECTED EXTENSIONS	00013
FIELD 6	LAST EXTENSION READ	00016

4010W 16K BLOCK COUNT DOES NOT MATCH COMPUTED BLKCNT

Explanation:

Extension 0000 for each volume in the OCDS contains a field indicating how many 16K blocks of data is written on that tape. Audit Suite has read the detail about the number of 16K blocks for each data set and has accumulated the totals. At the end of the extensions, these fields are compared and are found to have a mismatch. This tape will either not recycle or some of the data may not be recalled/recovered. Run AUDIT MEDIACONTROLS to examine and correct this tape volume.

User response

Run MCDS or BCDS audit. Diagnostic 1124W will correct the problem.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	4010W
FIELD 2	VOLSER	069260
FIELD 3	TAPE TYPE	30 (L2, SP OR CYCLE DAY)

FIELD 4	TAPE CREATION DATE	1997214
FIELD 5	EXPECTED BLK COUNT	019013
FIELD 6	ACCUMULATED BLK COUNT	018393
FIELD 7	EXPECTED BLK (HEX)	004A45
FIELD 8	ACCUMULATED BLK (HEX)	0047D9

4011W TAPE HAS FAILED RECYCLE

Explanation:

When Audit reads the OCDS inventory, in each TTOC record 0000 for each tape, it examines the field that indicates whether the tape has failed recycle. This is an indicator that something is in error on the tape and some corrective action is required before the tape can be successfully recycled. Run AUDIT MEDIACONTROLS to examine and correct this tape volume.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	4011W
FIELD 2	VOLSER	069260
FIELD 3	TAPE TYPE	SP (<i>text</i>)
FIELD 4	TAPE CREATION DATE	1997214

4012C TAPE IS NOT FULL AND WILL NOT BE SELECTED FOR RECYCLE

Explanation:

When Audit Suite reads the OCDS inventory, it looks for tapes that are eleven days old or older that have not been marked full. Usually this indicates that for some reason, such as an IPL before HSM could be shut down, the volume had been in use but the TTOC information in memory had not been rewritten to the OCDS. When HSM is restarted, these volumes are not selected for the various backup, migration, or recycle tasks. When the recycle process looks for tapes to mark as eligible for recycle, it looks only for full tapes. The volumes with these errors will never be marked eligible for recycle because they are not full. To recycle these tapes, issue the recycle command.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	4012C
FIELD 2	VOLSER	045092
FIELD 3	TAPE TYPE	SP (<i>text</i>)
FIELD 4	TAPE CREATION DATE	1997214

4013I THE RECYCLE FLAG FOR TAPE IS TURNED ON

Explanation:

When Audit Suite reads the OCDS inventory, it looks for tapes that have the recycle flag turned on. This is an information only message and is intended to be

used to indicate the health of the recycle process. If there are a large number of tapes in this condition, then perhaps more recycle tasks need to be assigned. A recycle command may be issued for these tapes.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	
EXAMPLE		
FIELD 1	ERROR NUMBER	
4013I		
FIELD 2	VOLSER	
069260		
FIELD 3	TAPE TYPE	SP
(L2, SP OR CYCLE DAY)		
FIELD 4	TAPE CREATION DATE	1997214
4016W	VOLUME HAS A (TCN) TAPE COPY NEEDED RECORD	

Explanation:

When Audit Suite read the OCDS inventory, it found a TCN record for these tapes. The TCN record is written to the OCDS when an exception condition occurs during tape duplexing that causes an internally generated TAPECOPY. This record is normally deleted when the TAPECOPY completes successfully.

User response

F4016WB TSO ISSUE TAPECOPY COMMAND FOR VOLUME

FIELD #	DESCRIPTION	
EXAMPLE		
FIELD 1	ERROR NUMBER	
4016W		
FIELD 2	VOLSER	
069260		
FIELD 3	TAPE TYPE	B
(B=BACKUP or M=MIGRATE)		
FIELD 4	IN TTOC?	
Y		
FIELD 5	IN CDS?	Y
FOR A BACKUP TYPE, MCT in BCDS?		
FOR A MIGRATE TYPE, MCV in MCDS?		
FIELD 6	TCN CREATION DATE	2014/223
FIELD 7	TCN CREATION TIME	13:45:19
4017C	TCN ENTRY IS MISSING THE TTOC ENTRY	

Explanation:

When Audit Suite read the OCDS inventory, it found a TCN record for these tapes. The TCN record is written to the OCDS when an exception condition

occurs during tape duplexing that causes an internally generated TAPECOPY. This record is normally deleted when the TAPECOPY completes successfully. This error is stating that a TCN record exists but a TTOC entry for the tape volume does not exist.

User response

Run Audit MEDIACONTROLS for the tape.

FIELD #	DESCRIPTION	
EXAMPLE		
FIELD 1	ERROR NUMBER	
4017C		
FIELD 2	VOLSER	
069260		
FIELD 3	TAPE TYPE	B
(B=BACKUP or M=MIGRATE)		
FIELD 4	IN TTOC?	N
FIELD 5	IN CDS?	Y
FOR A BACKUP TYPE, MCT in BCDS?		
FOR A MIGRATE TYPE, MCV in MCDS?		
FIELD 6	TCN CREATION DATE	2014/223
FIELD 7	TCN CREATION TIME	13:45:19
4018C	TCN MIGRATE ENTRY IS MISSING THE MCV ENTRY	

Explanation:

When Audit Suite read the OCDS inventory, it found a TCN record for these tapes. The TCN record is written to the OCDS when an exception condition occurs during tape duplexing that causes an internally generated TAPECOPY. This record is normally deleted when the TAPECOPY completes successfully. This error is stating that a TCN record exists but the MCV entry for the migrate tape volume does not exist.

User response

Run Audit MEDIACONTROLS for the tape.

FIELD #	DESCRIPTION	
EXAMPLE		
FIELD 1	ERROR NUMBER	
4018C		
FIELD 2	VOLSER	
069244		
FIELD 3	TAPE TYPE	M
(B=BACKUP or M=MIGRATE)		
FIELD 4	IN TTOC?	Y
FIELD 5	IN CDS?	N

FOR A BACKUP TYPE, MCT in BCDS?

FOR A MIGRATE TYPE, MCV in MCDS?
FIELD 6 TCN CREATION DATE
2014/223

FIELD 7 TCN CREATION TIME
13:45:19

4019C TCN BACKUP ENTRY IS MISSING THE MCT ENTRY

Explanation:

When Audit Suite read the OCDS inventory, it found a TCN record for these tapes. The TCN record is written to the OCDS when an exception condition occurs during tape duplexing that causes an internally generated TAPECOPY. This record is normally deleted when the TAPECOPY completes successfully. This error is stating that a TCN record exists but the MCT entry for the backup tape volume does not exist.

User response

Run Audit MEDIACONTROLS for the tape.

FIELD # DESCRIPTION
EXAMPLE

FIELD 1 ERROR NUMBER
4019C

FIELD 2 VOLSER
069245

FIELD 3 TAPE TYPE B
(B=BACKUP or M=MIGRATE)
FIELD 4 IN TTOC?
Y

FIELD 5 IN CDS? N
FOR A BACKUP TYPE, MCT in BCDS?

FOR A MIGRATE TYPE, MCV in MCDS?
FIELD 6 TCN CREATION DATE
2014/223

FIELD 7 TCN CREATION TIME 13:45:19

8000I LIST OF DATA SETS RECORDED IN MCDS/BCDS

Explanation:

Audit Suite has read the MCDS or BCDS and has found these data set references to the requested tape number. This diagnostic is informational and does not necessarily indicate an error. The user may run cataloged procedure AKDAUDFD to list these data sets and discover corresponding information that HSM has recorded about the tape. This information is displayed independent of the absence of other records about the tape such as TTOC, MCT or MCV.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	8000I
FIELD 2	TAPE VOLSER	CART05
FIELD 3	TAPE TYPE	(text)
FIELD 4	TRUE DSNAME	
	DEMO1.ML2.dsn	
FIELD 5	TTOC EXTENSION	0000
FIELD 6	BACK-UP VER (IF MCC)	001
FIELD 7	MIGRATED/RECALLED FLAG	MIGRATED OR RECALLED
FIELD 8	HSM GENERATED ALIAS	HSM.HMIG.dsn
FIELD 9	DATA COMPONENT IF VSAM	
	DEMO1.ML2.dsn	

8001C NO HSM REFERENCE FOUND FOR REQUESTED TAPE

Explanation:

Audit-MediaControls has read the DFSMSHsm CDSs and has found no references to the requested tape number. The tape volume may be mounted and read (if it's a DFSMSHsm formatted tape) and the TTOC contents may be rebuilt from the CDD records on the tape. This error condition can be resolved by executing AKDAUDFL or AKDAUDFT with the INTENSE option. The default is Level 2. EDIT &PFX.MEDIACTL.Vvvvvvvv.CONTROL to change backup type to SP or cycle number (01-07)

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	8001C
FIELD 2	TAPE VOLSER	FAKE05

8003C NO TTOC EXTENSION 0000 WAS FOUND FOR VOLSER

Explanation:

Audit-MediaControls has interrogated the OCDS and has found no TTOC (T) record for the requested VOLSER. Extension '0000' contains all the control information such as number of TTOC extensions, number of valid blocks, etc. Without this record, the TTOC information can't be verified. This error condition can be corrected by executing AKDAUDFL or AKDAUDFT with the INTENSE option. After the complete audit the TTOC is automatically rebuilt.

User response

The TTOC will be rebuilt to correct this condition.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	8003C
FIELD 2	TAPE VOLSER	FAKE05
FIELD 3	TYPE OF TAPE L2 SP CY	UN

8004W VOLUME IS IN FAILED CREATE STATUS

Explanation:

Audit-MediaControls has interrogated the OCDS and has found a volume in failed create status. This means DFSMSHsm might have been shut down or the system abnormally terminated before the information about the tape, stored in active memory, could be written to the tape's TTOC. This error condition is determined by reading the extension '0000' of the TTOC and examining the TTCFAIST bit in the second flag of the TTCFFLGs bytes. If the bit is on, and the record has not been updated in more than 24 hours, the volume is considered to be in failed create status. To resolve this error condition, execute AKDAUDFL with option FAST. After the tape has been physically read and audited, the corrections to the TTOC may be rebuilt by submitting the '&px.MEDICTL.Vttttt.FIXTTTC' data set which contains the automatically generated fixes.

User response

The TTOC will be rebuilt and the TTCFAIST bit set to zero.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	8004W
FIELD 2	TAPE VOLSER	FAKE05
FIELD 3	TYPE OF TAPE L2 SP CY	UN
FIELD 4	EXTENS IN XTN 0000	0000
FIELD 5	EXTENSIONS COUNTED	0000
FIELD 6	BLOCKS WRITTEN IN HEX)	00000005
FIELD 7	BLOCKS COUNTED (IN HEX)	00000005

8005W VOLUME IS IN FAILED RECYCLE STATUS

Explanation:

Audit-MediaControls interrogated the OCDS and has found a volume in failed recycle status. Input tapes are marked in error when one of the following occurs: * an I/O error on the input tape. * an OPEN failure for the input tape. * an allocation error for the input tape. * a deallocation error for the input tape. These errors prevent a successful recycle of the tape. The error condition is determined by reading the extension '0000' of the TTOC and examining the TTCFFAIL bit in the TTCFFLGs byte. To resolve this condition, execute AKDAUDFL with option THOROUGH or INTENSE. After the tape has been physically read and audited, the corrections to the TTOC may be implemented by submitting the '&px.MEDICTL.Vttttt.FIXTTTC' data set that contains the automatically generated fixes.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	8005W
FIELD 2	TAPE VOLSER	FAKE05

FIELD 3	TYPE OF TAPE L2 SP CY	UN
FIELD 4	EXTNTS IN 0000	0000
FIELD 5	EXTENSIONS COUNTED	0000
FIELD 6	RECORDED BLKS WRITTEN	00000005
FIELD 7	BLKS COUNTED (IN HEX)	00000005

8006C TTOC EXTENSION RECORDS ARE OUT OF SEQUENCE

Explanation:

Audit-MediaControls has interrogated the OCDS for the volume specified and has found TTOC extension records that are out of sequence. TTOC records are numbered sequentially from '0000' to '9999' and are incremented by one. If the TTOC extension records do not follow the sequence, then this diagnostic is declared. To resolve this condition, execute AKDAUDFL with option THOROUGH.

User response

The TTOC will be rebuilt to correct this condition.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	8006C
FIELD 2	TAPE VOLSER	CART05
FIELD 3	TYPE OF TAPE L2 SP CY	L2
FIELD 4	EXTNTS IN 0000	0005
FIELD 5	EXTENSIONS COUNTED	0007
FIELD 6	BLKS WRITTEN IN HEX	000000F2
FIELD 7	BLKS COUNTED (IN HEX)	000000F2

8007C TTOC EXTENSION RECORD IS CONTAMINATED

Explanation:

Audit-MediaControls has interrogated the OCDS for the volume specified and has found at least one TTOC extension record that contains erroneous information. This audit corrects the TTOC structure. To resolve this condition, execute AKDAUDFL with option THOROUGH.

User response

The TTOC will be rebuilt to correct this condition.

FIELD 1	ERROR NUMBER	8007C
FIELD 2	TAPE VOLSER	CART05
FIELD 3	TYPE OF TAPE L2 SP CY	L2
FIELD 4	EXTNTS IN 0000	0005
FIELD 5	EXTENSIONS COUNTED	0005
FIELD 6	BLKS WRITTEN IN HEX	00000005
FIELD 7	BLKS COUNTED (IN HEX)	000000F5

8008C TTOC EXTENSION RECORDS DO NOT MATCH EXPECTED COUNT

Explanation:

Audit-MediaControls has interrogated the OCDS for the volume specified and has determined that the number of extension records recorded in extension '0000' does not match the number of extension records read. This audit corrects the TTOC structure.

To resolve this condition, execute AKDAUDFL with option THOROUGH.

User response

The TTOC will be rebuilt to correct this condition.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	8008C
FIELD 2	TAPE VOLSER	CART05
FIELD 3	TYPE OF TAPE L2 SP CY	L2
FIELD 4	EXTNTS IN 0000	0005
FIELD 5	EXTENSIONS COUNTED	0007
FIELD 6	BLKS WRITTEN IN HEX	00000005
FIELD 7	BLKS COUNTED IN HEX	00000005

8009W 16K BLOCK COUNT DOES NOT MATCH COUNTED BLOCKS

Explanation:

Audit-MediaControls has interrogated the OCDS for the volume specified and has determined that the number of blocks written on the tape does not match the total number of blocks counted for each data set name record. To resolve this condition, execute AKDAUDFL with option THOROUGH. After executing this audit, the block counts will match what is actually on the tape.

User response

The TTOC will be rebuilt to correct this condition.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	8008C
FIELD 2	TAPE VOLSER	CART05
FIELD 3	TYPE OF TAPE L2 SP CY	L2
FIELD 4	EXTNTS IN 0000	0005
FIELD 5	EXTENSIONS COUNTED	0007
FIELD 6	BLKS WRITTEN IN HEX	00000005
FIELD 7	BLKS COUNTED IN HEX	00000007

8020I LIST OF DATA SETS ON TAPE

Explanation:

This diagnostic is for information only. If you have executed the AKDAUDFL audit procedure with the THOROUGH or INTENSE option, every CDD record encountered on the tape is listed here. If you execute AKDAUDFL with the FAST option, only those CDD records encountered after the starting point are listed. This diagnostic can be used to rebuild an MCC or an MCD record for the purposes of RECALL or RECOVER.

User response

There is no recommended default fix.

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	8020I
FIELD 2	TAPE VOLSER	CART05
FIELD 3	TRUE DSNAME IN CDD	MCD.DATA.SET
FIELD 4	TTOC EXTENSION	0001
FIELD 5	BLOCKS WRITTEN	00000005
FIELD 6	FBID FROM TAPE)	00000007
FIELD 7	ML0 VOL DATASET WAS ON	TS0003

FIELD 8	TRACKS ON ML0 VOL(HEX)	0000005F
FIELD 9	DSORG (HEX)	0200
FIELD 10	HSM ALIAS NAME	HSM.HMIG.dsn
FIELD 11	CLUSTER NAME IF VSAM	

8C02C NO MCT ENTRY WAS FOUND FOR REQUESTED TAPE

Explanation:

Audit-MediaControls has interrogated the BCDS and has found no MCT (X) record for the requested VOLSER. This error condition can be resolved by executing corrective action F8C02CB or F8C02CC. You must determine whether it is a backup SPILL or CYCLE tape before submitting a fix.

User response

F8C02CB or F8C02CC

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	8C02C
FIELD 2	TAPE VOLSER	FAKE05
FIELD 3	TAPE TYPE	SP

8C10C MCC EXISTS, NOT ON TAPE

Explanation:

Audit-MediaControls has found a valid MCC record in the BCDS with no matching true name record on the tape. This means that the MCC record is orphaned and should be deleted. Corrective action F8C10CA can be executed to delete the backup version.

User response

F8C10CA

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	8C10C
FIELD 2	TAPE VOLSER	BACK05
FIELD 3	TYPE OF TAPE L2 SP CY	SP
FIELD 4	TRUE DSNAME IN CDD	
	MCC.LIVE.DATASET	
FIELD 5	TTOC OFFSET IN MCC	0005
FIELD 6	BKUP VER NUMBER (HEX)	0002
FIELD 7	16K BLOCKS IN MCC(HEX)	00000005
FIELD 8	FBID IN MCC(HEX)	00000007

8C12C MCC MISMATCH FILE BLOCK IDENTIFIER

Explanation:

Audit-MediaControls, after reading the tape and issuing a NOTE macro to determine the position on tape, has found a mismatch of the File Block Identifier (FBID) as recorded in the corresponding MCC record. The FBID is used to position a tape to the block where the data set begins. Corrective action F8C11CA can be executed to patch the correct FBID in the MCC.

User response

F8C12CA

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	8C12C
FIELD 2	TAPE VOLSER	BACK05
FIELD 3	TYPE OF TAPE L2 SP CY	SP
FIELD 4	TRUE DSNAME IN CDD	MCC.DATA.SET
FIELD 5	FBID (FROM TAPE)	00000007
FIELD 6	HSM ALIAS NAME	HSM.BACK.dsn
FIELD 7	CLUSTER NAME IF VSAM	

8D02C NO MCV ENTRY WAS FOUND FOR REQUESTED TAPE

Explanation:

Audit-MediaControls has interrogated the MCDS and has found no MCV (V) record for the requested VOLSER. This error condition can be resolved by executing corrective action F8D02CA.

User response

F8D02CA

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	8D02C
FIELD 2	TAPE VOLSER	FAKE05
FIELD 3	TYPE OF TAPE	L2

8D10C MCD EXISTS, NOT ON TAPE

Explanation:

Audit-MediaControls has found a valid MCD record in the MCDS with no matching true name record on the tape. This means that the valid MCD record, which indicates the data set is migrated to this volume, is incorrect and should be deleted. Corrective action F8D10CA can be executed to delete this data set.

User response

F8D10CA

FIELD #	DESCRIPTION	EXAMPLE
FIELD 1	ERROR NUMBER	8D10C
FIELD 2	TAPE VOLSER	CART05
FIELD 3	TYPE OF TAPE L2 SP CY	L2
FIELD 4	TRUE DSNAME IN CDD	MCD.LIVE.DATA
FIELD 5	TT0C OFFSET IN MCD	0005
FIELD 6	16K BLOCKS IN MCD(HEX)	00000005
FIELD 7	FBID IN MCD(HEX)	00000007
FIELD 8	CLUSTER NAME IF VSAM	
	MCD.LIVE.CLUSTER	

8D12C MCD MISMATCH FILE BLOCK IDENTIFIER

Explanation:

Audit-MediaControls, after reading the tape and issuing a NOTE macro to determine the position on tape, has found a mismatch of the File Block Identifier (FBID) as recorded in the corresponding MCD record. The FBID is used to position a tape to the block where

the data set begins when a recall is issued. Corrective action F8D12CA can be executed to correct the FBID in the MCD.

User response

F8D12CA

FIELD 1	ERROR NUMBER	8D12C
FIELD 2	TAPE VOLSER	300038
FIELD 3	TYPE OF TAPE L2 SP CY	L2
FIELD 4	TRUE DSNAME IN CDD	MCD.DATA.SET
FIELD 5	FBID (FROM TAPE)	00000007
FIELD 6	HSM ALIAS NAME	HSM.HMIG.dsn
FIELD 7	CLUSTER NAME IF VSAM	

9001I MANAGEMENT CLASS MISMATCH BETWEEN VTOC AND ACS ROUTINE

Explanation:

The SMS audit job has detected data sets having a Management Class on VTOC that is different than what the current ACS routine would use during data set allocation. This is usually caused by data sets which were allocated before the current ACS routine was in place. These data sets are using the "old" Management Class and the Storage Administrator should be aware of this.

User response

Recommended default fix: F9001IB TSO ALTER MANAGEMENT CLASS TO NEW ACS MANAGEMENT CLASS

FIELD #	DESCRIPTION
EXAMPLE	
FIELD 1	ERROR NUMBER
9001I	
FIELD 2	DATA SET NAME
USERID.PDS.CNTL	
FIELD 3	CURRENT MGMT CLASS
TSODATA	
FIELD 4	MGMT CLASS FROM ACS
MCAGG	
FIELD 5	SMS CDS DSNAME
ACTIVE	

9002I DATA CLASS MISMATCH BETWEEN DATA SET AND ACS ROUTINE

Explanation:

The SMS audit job has detected data sets having a Data Class which is different than what the current ACS routine would use during data set allocation. This is usually caused by data sets which were allocated before the current ACS routine was in place. These data sets are using the old Data Class and the Storage Administrator should be made aware of this.

User response

There is no recommended default fix. The way to fix the data class is to back up the data set. Delete the data set. Reallocate the data set. Reload the data set.

```
FIELD # DESCRIPTION
EXAMPLE
FIELD 1 ERROR NUMBER
9002I
FIELD 2 DATA SET NAME
USERID.PDS.CNTL
FIELD 3 CURRENT DATA CLASS
DEFAULT
FIELD 4 DATA CLASS FROM ACS
PDS
FIELD 5 SMS CDS DSNAME
ACTIVE
```

9003I STORAGE CLASS MISMATCH BETWEEN DATA SET AND ACS ROUTINE

Explanation:

The SMS audit job has detected data sets having a Storage Class which is different than what the current ACS routine would use during data set allocation. This is usually caused by data sets which were allocated before the current ACS routine was in place. These data sets are using the old Data Class and the Storage Administrator should be made aware of this.

User response

F9003IB TSO ALTER STORAGE CLASS TO NEW ACS STORAGE CLASS

```
FIELD # DESCRIPTION
EXAMPLE

FIELD 1 ERROR NUMBER
9003I

FIELD 2 DATA SET NAME
USERID.PDS.CNTL
```

```
FIELD 3 CURRENT STRG CLASS
TSODATA
```

```
FIELD 4 STRG CLASS FROM ACS
SCT1
```

```
FIELD 5 SMS CDS DSNAME          ACTIVE
```

9004I STORAGE GROUP MISMATCH BETWEEN DATA SET AND ACS ROUTINE

Explanation:

The SMS audit job has detected data sets having a Storage Group which is different than what the current ACS routine would use during data set allocation. This is usually caused by data sets which were allocated before the current ACS routine was in place. These data sets are using the old Storage Group and the Storage Administrator should be made aware of this.

User response

F9004IB TSO MIGRATE AND RECALL DATA SET TO NEW STORAGE GROUP

```
FIELD # DESCRIPTION
EXAMPLE
```

```
FIELD 1 ERROR NUMBER
9004I
```

```
FIELD 2 DATA SET NAME
USERID.PDS.CNTL
```

```
FIELD 3 CURRENT STRG GROUP
TSODATA
```

```
FIELD 4 STRG GROUP FROM ACS
ARCHIVE
```

```
FIELD 5 SMS CDS DSNAME
ACTIVE
```

Appendix B. AKDINI configuration values

The AKDINI member (the product initialization member) of the SAKDPARM library is used to define global information regarding Advanced Audit for DFSMSHsm usage and options.

The AKDINI member is organized in sections. A *section name* is indicated by the colon character (:), immediately followed by the section name (:PRODUCT_INFO, for example). Do not change or add section names except under direction from Technical Support.

Each section contains a set of individual parameter specifications known as token statements. The general format for a token statement is:

```
Token = Value
```

Tokens are set with a value, specified by you or the Support Center, that is a set of strings to the right of the token's equal (=) sign. Token values may be keywords, user values, or a keyword with a user value, shown as VALUE(*uservalue*).

You can enclose values in either single (') or double (") quotes. The quotes are stripped away before the product uses the value. Quotes may be supplied as data by either of these methods:

- Using the opposite quote symbol as delimiters (for example, " ' " yields a single quote as data).
- Specifying two to get one (for example, ' ' ' yields a single quote as data).

Leading blanks from the beginning of the logical card-image records are allowed for all token statements. Syntax scan processing locates the first nonblank character in each logical record. The entire length of the 80-byte logical record is considered for valid data. Do not renumber the AKDINI member sequence numbers assigned in columns 73 through 80 because this will cause errors to occur.

Continuing a token statement

Token statements can be continued, using either a minus (-) or plus (+) character anywhere within the text. All data to the right of the continuation character on that logical record are interpreted as a comment and ignored.

Reading the token statements

The token statements shown in this document follow these rules:

- Default values are underlined.
- Multiple values are separated with a vertical bar (|). You must choose one.
- User-supplied values are in lowercase italic. For example, *text*.

Commenting Rules

Both line mode and block mode methods of commenting are supported:

- An asterisk (*) in column 1 marks the entire line as a comment. This style of comment is not allowed inside a continued /* */ type comment, but is allowed in a continued token/value statement.
- Entire lines, blocks of lines, or portions of a line may be commented by beginning the comment with a forward slash and an asterisk (/*) and terminating the comment with an asterisk and a forward slash (*). Nested comments are honored.

You can add a Notes token to document changes to any section including the initial or unnamed section. The AKDINIMG program retains these notes along with any comments that continue from the Notes token. For example:

```
Notes = /* Updated by Dan  
        on 2016/05/01 */
```

You can also use a portion of the section-statement line after the first space for documenting changes to that section. For a multi-image INI, the section name can be qualified by sysplex, system name, or both as shown below, except for the PRODUCT_INFO section:

- Sysplex-name and system-name qualification:

```
:section-name.sysplex-name.system-name
```

- Sysplex-name only qualification:

```
:section-name.sysplex-name
```

- System-name only qualification:

```
:section-name..system-name
```

The sysplex and system names must be explicitly specified with no wildcard characters allowed.

Those programs using the AKDINI use only the first matching section. All other variations of that section are ignored. You can specify qualified sections for those images with unique requirements, followed by an unqualified section that applies to all of the other images.

PRODUCT_INFO section tokens

This section of AKDINI sets product version and release information.

Important: Do not modify any tokens in the :PRODUCT_INFO section. These tokens are documented for your reference only.

AKD_REL = VvvRrr

The version and release of Advanced Audit for DFSMSHsm software currently running.

AKD_REL_DATE = dd mm yyyy

The date that the base level software currently installed was packaged.

AKD_MAINT_DATE = dd mm yyyy

The date that the maintenance level software currently applied was packaged.

AKD_TITLE1 = '...' and AKD_TITLE2 = '...' and AKD_TITLE3 = '...'

The copyright and release values that are used in ISPF and report displays.

CUSTOMER_ENVIRON section tokens

The tokens in this section of AKDINI set values that define the running environment.

AUTOFIX_IBM = N | Y

This token specifies whether you want to use IBM autfixes rather than customer-specified fixes. (See the *Correcting errors* chapter for more detailed information about IBM Autofixes.) It is recommended that the default of N be used until you understand the fixes which will be automatically submitted.

KEEP_HISTORY_DAYS = 999

This token specifies the number of days to keep history records in the Global Summary History File. Value can be 1 - 9999. Default is 999.

MAX_VOLUMES = 5

This token specifies the number of volumes that the CDS extract files are allowed to span. Value can be 1-15. The default value of 5 is recommended for performance reasons.

RLS = N | Y

This token specifies whether your HSM CDSs use Record Level Sharing (RLS).

Appendix C. Snap dump utility

The snap dump utility displays HSM records in a snap dump format.

The AKDBATCH JCL in the SAKDJCL library is a template you can use to run the snap dump utility. Do not modify the AKDBATCH member directly because it is used in the automatic error correction process. Make a copy of the AKDBATCH template as a member in your personal PDS and edit the copy by adding these two DD statements at the end:

```
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
(dump commands here)
```

The sample input shown in the following figure produces a dump format of the A record, which is the Alias Name Record (MCA) that resides in the HSM MCDS. A single character that represents the type of record in the CDS and the key of the record are the two input requirements.

```
//SYSIN DD *
DUMP A HSM.HMIG.T034211.TEST1.DUASMI.J3211
DUMP A HSM.HMIG.T392109.EDP.LAB.J3202
```

The following figure shows an example of the snap dump produced from that sample input.

```
0RECORD FOUND          DUMP A HSM.HMIG.T034211 .TEST1.DUASMI.J3211
DUMP FOLLOWS
00000000 C8E2D44B C8D4C9C7 4BE3F0F3 F4F2F1F1      4BE3C5E2 E3F14BC4 E4C1E2D4 C94BD1F3
*HSM.HMIG.T034211.TEST1.DUASMI.J3*
00000020 F2F1F140 40404040 40404040 00701100      B9CC096E 8F55D100 B9CC096E 8F55D100
*211          .....>...J...>...J.*
00000040 00000000 E3C5E2E3 F14BC4E4 C1E2D4C9      4BC7C4C7 4BC7F0F0 F0F1E5F0 F0404040
*...TEST1.DUASMI.GDG.G0001V00 *
00000060 40404040 40404040 40404040 40404040      00000000
*          ....          *

0RECORD FOUND          DUMP A HSM.HMIG.T392109.EDP.LAB.J3202
DUMP FOLLOWS
00000000 C8E2D44B C8D4C9C7 4BE3F3F9 F2F1F0F9      4BC5C4D7 4BD3C1C2 4BD1F3F2 F0F24040
*HSM.HMIG.T392109.EDP.LAB.J3202 *
00000020 40404040 40404040 40404040 00701100      B9C09943 BE0EC180 B9C09943 637AFC40      *          .....
{r...A..{r... *
00000040 00000000 C5C4D74B D3C1C24B D9C5D5C1      D4C54BD8 F0F0F0F2 4BC7F0F0 F0C14BD8
*...EDP.LAB.RENAME.Q0002.G000A.Q*
00000060 F0F0F0C2 4BD8F0F0 F0C34040 40404040      00000000
*000B.Q000C          ....          *
```

Snap Dump Example

This table shows the additional records that may display and in which control data set they are found.

Table 2. Additional records displayed		
Character	Record type	Control data set name
B	MCB	BCDS
C	MCC	BCDS
X	MCT	BCDS
Y	DVL	BCDS
A	MCA	MCDS
D	MCD	MCDS
O	MCO	MCDS
V	MCV	MCDS

<i>Table 2. Additional records displayed (continued)</i>		
Character	Record type	Control data set name
N	TCN	OCDS
T	TTOC	OCDS

Appendix D. Advanced Audit for DFSMShsm and HSM equivalents

This appendix provides the HSM equivalents for the Advanced Audit for DFSMShsm diagnostic errors and the audits.

Advanced Audit for DFSMShsm and HSM audit equivalents

The following table correlates each Advanced Audit for DFSMShsm audit procedure with its HSM audit type equivalent.

Advanced Audit for DFSMShsm Audit procedure	HSM audit type
AKDAUDAL	AUDIT MCDS AUDIT DIRECTORYCONTROLS VOLUMES(<i>allml1,allml2</i>) AUDIT VOLUMECONTROLS(MIGRATION) AUDIT DATASETCONTROLS(MIGRATION) AUDIT OCDS(ML2) AUDIT MEDIACONTROLS(SDSP) AUDIT MEDIACONTROLS VOLUMES(<i>allml1</i>) AUDIT MEDIACONTROLS VOLUMES(<i>allml2</i>) some analysis AUDIT MASTERCATALOG AUDIT USERCATALOG (all user catalogs)
AKDAUDBD	AUDIT BCDS AUDIT DIRECTORYCONTROLS VOLUMES(<i>allspill,allcycle</i>) AUDIT VOLUMECONTROLS(BACKUP) AUDIT DATASETCONTROLS(BACKUP) AUDIT OCDS(<i>spill,cycle</i>) AUDIT MEDIACONTROLS VOLUMES(<i>spill,cycle</i>) AUDIT MEDIACONTROLS VOLUMES(<i>ml1bkup</i>)
AKDAUDCT	AUDIT MCDS AUDIT MASTERCATALOG AUDIT USERCATALOG(<i>all-catalogs</i>)
AKDAUDFD	AUDIT DIRECTORYCONTROLS
AKDAUDFL	AUDIT MEDIACONTROLS
AKDAUDFT	AUDIT DIRECTORYCONTROLS and MEDIACONTROLS

Advanced Audit for DFSMSHsm Audit procedure	HSM audit type
AKDAUDMD	AUDIT DIRECTORYCONTROLS VOLUMES(<i>allml1,allml2</i>) AUDIT VOLUMECONTROLS(MIGRATION) AUDIT DATASETCONTROLS(MIGRATION) AUDIT OCDS(ML2) AUDIT MEDIACONTROLS(SDSP) AUDIT MEDIACONTROLS VOLUMES(<i>allml1</i>) AUDIT MEDIACONTROLS VOLUMES(<i>allml2</i>) some analysis MEDCTL(SDSP), VOLCTL(MIG) MEDCTL VOLUMES(ML2)
AKDAUDOD	AUDIT OCDS(DAILY) AUDIT OCDS(SPILL) AUDIT OCDS(ML2) AUDIT OCDS(ALL)
AKDAUDTP	AUDIT VOLUMECONTROLS(MIGRATION) AUDIT VOLUMECONTROLS(BACKUP) AUDIT VOLUMECONTROLS(RECOVERABLE)

Advanced Audit for DFSMSHsm and HSM diagnostic error equivalents

The following table correlates the Advanced Audit for DFSMSHsm audit diagnostics with the most closely related HSM AUDIT error.

The IBM-provided automatic fixes are listed in the **HSM auto-fix** column. The Advanced Audit for DFSMSHsm recommended default fix, listed in the **Advanced Audit for DFSMSHsm available fixes** column, is shown in boldface type.

Advanced Audit for DFSMShsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMShsm available fixes (recommended default fix in boldface type)
11D1C - MCD ENTRY IS NOT CATALOGED	ERR003	MCDS, BCDS, OCDS	Yes	F11D1CA TSO CATALOG A MIGRATED DATA SET TO VOLSER MIGRAT F11D1CB TSO HSEND DELETE MIGRATED DSN MISSING CATALOG F11D1CC TSO LISTC FOR DATA SET NOT CATALOGED F11D1CD HSA DISPLAY DUMP OFMCD RECORD F11D1CR1 HSM DELETE MCD RECORD WHEN UNABLE TO CATALOG MIGRA F11D1CR3 HSM FIXCDS PATCH ASSIGNED AND NEEDS SCRATCH

Advanced Audit for DFSMSshm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMSshm available fixes (recommended default fix in boldface type)
11V1C - MCO VSAM COMPONENT IS NOT CATALOGED	ERR003	MCDS, BCDS, OCDS	Yes	F11V1CA TSO CATALOG A MIGRATED DATASET TO VOLSER MIGRAT F11V1CB TSO HSEND DELETE MIGRATED DSN MISSING CATALOG F11V1CC TSO LISTC FOR DATA SET NOT CATALOGED F11V1CD HSA DISPLAY DUMP OF MCO RECORD F11V1CE HSM FIXCDS DELETE OF UNCATALOGED COMPONENT F11V1CF HSA DISPLAY DUMP OF ALIAS RECORD F11V1CG HSM FIXCDS DELETE OF MCO RECORD F11V1CH TSO RECALL JUST THE CLUSTER NAME F11V1CR1 HSM FIXCDS DELETE OF MCD FOR UNCAT COMP F11V1CR2 HSM DELETE ORPHANED MCO RECORDS F11V1CR3 HSM DELETE ORPHANED MCA RECORDS

Advanced Audit for DFSMSHsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMSHsm available fixes (recommended default fix in boldface type)
11D2C - MCD ENTRY IS CATALOGED ON DIFFERENT VOLUME	ERR007 ERR009 ERR018	VOLCTL MCDS, BCDS MCDS, BCDS, OCDS, DSCTL	No	F11D2CA TSO DELETE AND CATALOG DSN TO VOLSER MIGRAT F11D2CB TSO DELETE AN UNCATALOGED MIGRATED DATASET F11D2CC HSM FIXCDS DELETE OF A AND D RECORD F11D2CR1 HSM DELETE MCD RECORD WHEN DATA SET IS CATALOGED ONLINE F11D2CR3 HSM FIXCDS PATCH ASSIGNED AND NEEDS SCRATCH
11V2C - MCO VSAM COMPONENT ON DIFFERENT VOLUME	None			F11V2CA TSO DELETE AND CATALOG DSN TO VOLSER MIGRAT F11V2CB TSO DELETE AN UNCATALOGED MIGRATED DATA SET F11V2CE HSA DISPLAY DUMP OF MCO RECORD F11V2CF HSM GENERATE FIXCDS DELETE FOR CONFLICT MCO AND MCD

Advanced Audit for DFSMSHsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMSHsm available fixes (recommended default fix in boldface type)
1103W - MCD ENTRY IS MISSING THE MCA ENTRY	ERR022	DSCTL (MIG)		F1103WA HSM GENERATE FIXCDS DISPLAY FOR MISSING MCA RECORD F1103WB HSA VERIFY MCD AND MCA RECORDS F1103WC HSM FIXCDS CREATE NEW MCA RECORD F1103WR1 HSM GENERATE RECALL FOR DATA SETS F1103WR2 HSM GENERATE HMIG FOR DATA SETS F1103WR3 HSM GENERATE HSEND DELETES FOR DATA SETS
1104C - MCD LEVEL 1 ENTRY HAS NO VTOC ENTRY ON L1 VOLUME	ERR148 ERR149	DIRCT, MEDCTL DIRCTL, MEDCTL (SDSP), MEDCTL		F1104CA TSO DELETE AND RECOVER ML1 DSN F1104CB HSA DISPLAY DUMP OF MCD RECORD MISSING ML1 F1104CC HSM FIXCDS COMMAND TO DELETE DSN MISSING ML1 VOL F1104CR1 HSM RR-DELETE MCD RECORD WHEN ML1 MCV MISSING
1105W - MCD VSAM BASE NAME IS MISSING IN MCO	ERR023 ERR169	DSCTL (MIG) MEDCTL		F1105WA TSO DELETE AND RECOVER MISSING VSAM MCO F1105WB HSA DISPLAY MCO RECORD MISSING BASE NAME F1105WC TSO GENERATE RECALL FOR DATASETS

Advanced Audit for DFSMShsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMShsm available fixes (recommended default fix in boldface type)
1106C - MCD IS ON VOLUME WHICH HAS NO MCV ENTRY	ERR020 ERR042	DSCTL(MIG) MEDCTL	See 1106V for fixes.	F1106CA HSM FIXCDS COMMAND TO VERIFY MISSING MCV RECORD F1106CB TSO UNCATALOG AND RECOVER FOR DSN MISSING MCV F1106CC HSM FIXCDS DELETE OF MCD MISSING MCV F1106CD HSA DUMP DISPLAY D RECORD, VERIFY MCV RECORD F1106CE TSO HSEND DELETE (AFTER F1106VC) RAN F1106CF HSM FIXCDS COMMAND TO DELETE DSN MISSING ML2 VOL F1106CR1 HSM FIXCDS DELETE OF MCA MISSING MCV
1106V SUMMARY OF VOLUMES HAVING NO MCV ENTRY	ERR110	DIRCTL, MEDCTL		F1106VA HSM FIXCDS COMMAND TO VERIFY MISSING MCV RECORD F1106VB TMS INTERROGATE TMS FOR HSM TAPES MISSING MCV F1106VC HSM FIXCDS TO ADD NEW MCV LEVEL 2 RECORD F1106VD HSM FIXCDS TO DELETE MCV LEVEL 2 RECORD
1107W - MCD LEVEL 2 IS ON VOLUME WHICH HAS NO TTOC ENTRY	ERR029 ERR051 ERR115	DSCTL(MIG) MEDCTL, VOLCTL DIRCTL	Yes (see 1107V)	F1107WA HSM GENERATE FIXCDS DISPLAY FOR MISSING MCA RECORD

Advanced Audit for DFSMShsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMShsm available fixes (recommended default fix in boldface type)
1107V - SUMMARY OF VOLUMES MISSING IN TTOC	None			F1107VA HSM FIXCDS COMMAND TO VERIFY MISSING TTOC RECORD F1107VB HSM LIST TTOC FOR MISSING VOLUME F1107VC RMM INTERROGATE RMM FOR HSM TAPES F1107VD HSM FIXCDS DISPLAY TTOC RECORD EXTENTS 3 - 5 F1107VE HSM FIXCDS DISPLAY TTOC RECORD EXTENTS 6 - 8 F1107VF HSM FIXCDS DISPLAY TTOC RECORD EXTENTS 9 - 11 F1107VG HSM FIXCDS DISPLAY TTOC RECORD EXTENTS 12 - 14 F1107VH HSM FIXCDS DISPLAY TTOC RECORD EXTENTS 15-17 F1107VI TMS INTERROGATE TMS FOR HSM TAPES MISSING IN OCDS F1107VJ HSM AUDIT MEDIACONTROLS FOR MISSING TTOC F1107VK TSO SUBMIT AUDIT MEDIACONTROLS JOB AKDAUDFT

Advanced Audit for DFSMShsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMShsm available fixes (recommended default fix in boldface type)
1108W - MCA ENTRY IS MISSING MCO VSAM COMPONENT ENTRY	ERR024	DSCTL (MIG)	Yes (not critical) no default suggested	F1108WA HSM FIXCDS DISPLAY MCA RECORD MISSING MCO COMPONENT F1108WB HSM FIXCDS DELETE MCA MISSING MCO COMPONENT
1109W - - MCD ALIAS IS NOT ON TTOC	ERR016 ERR114 ERR147 ERR149	MCDS, BCDS DIRCTL DIRCTL, MEDCTL (SDSP) DIRCTL, MEDCTL (DSP), MEDCTL	No Yes Yes Yes (See default for 1109V)	F1109WA HSM LIST TTOC FOR DSN INFORMATION F1109WB HSM LIST DSN INFO FOR MCA MISSING IN TTOC F1109WC HSM FIXCDS DISPLAY D FOR ENTRY MISSING IN TTOC F1109WD HSM LIST VOLUMES FOR FAILEDCREATE F1109WE HSM RECALL FOR MISSING TTOC
1109V - SUMMARY OF VOLUMES WHERE ALIAS IS NOT IN TTOC	None			F1109VA HSM LIST TTOC FOR VOLUME HAVING MISSING MCA ENTRY F1109VB HSM FIXCDS DISPLAY T FOR VOL MISSING MCA ENTRY F1109VC HSM LIST TTOC VOLUMES FOR FAILEDCREATE F1109VD HSM AUDIT MEDIA CONTROL FOR MCA MISSING IN TTOC Note: It is recommended that you use Advanced Audit for DFSMShsm to rebuild the TTOC. F1109VE TSO SUBMIT AUDIT MEDIACONTROLS JOB AKDAUDFT

Advanced Audit for DFSMSHsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMSHsm available fixes (recommended default fix in boldface type)
1110W - MCD HAS DUPLICATE MCA ENTRY	None			F1110WA TSO LISTC FIXCDS D AND FIXCDS A TO ANALYZE MCA DUPLICATES F1110WB HSM RECALL FOR CONFLICTING ALIAS NAMES F1110WC HSM RECALL FOR CONFLICTING ALIAS NAMES
1111W - MCA ENTRY IS MISSING MCD ENTRY	ERR028 ERR113	DSCTL(MIG) DIRCTL	Yes	F1111WA HSM FIXCDS A, D AND O TO EXAMINE MISS MCD/MCO F1111WB HSM LIST TRUE NAME IN MCDS F1111WC HSM FIXCDS DELETE ORPHANED MCA RECORD F1111WR1 HSM FIXCDS D TO EXAMINE MISSING MCD/MCO F1111WR2 HSM FIX A/D/O DISP MISSING MCD/MCO ** ADD LOGONLY F1111WR3 HSM FIX A/O DELETE AFTER VERIFY D MISSING
1112W - MCO VSAM BASE NAME IS MISSING IN MCD	ERR027	DIRCTL	Yes	F1112WA HSM FIXCDS O DELETE FOR ORPHANED MCO RECORD F1112WB HSM LIST TRUE NAME IN MCDS F1112WC HSA DISPLAY DUMP OF MCO RECORD

Advanced Audit for DFSMSHsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMSHsm available fixes (recommended default fix in boldface type)
1113W – MCO VSAM COMPONENT NAME IS MISSING IN MCA	ERR025	DSCTL (MIG)	Yes	F1113WA TSO DELETE AND RECOVER VSAM CLUSTER MISSING MCA F1113WB HSM FIXCDS DELETE OF MCO RECORD
1114W - ALIAS NAME EXISTS IN VTOC, MCA IS MISSING	ERR115 ERR140	DIRCTL DIRCTL, MEDCTL	Yes	F1114WA HSM VERIFY MISSING MCA RECORD F1114WB TSO CATALOG AND DELETE ORPHANED L1 HSM ALIAS F1114WR1 IDC CATALOG AND DELETE ORPHANED L1 HSM ALIAS W/O RECAT
1115W - VTOC ALIAS NAME HAS VTOC ERROR	None			F1115WA TSO DEL NVR FOR FORMAT1 DSCB ERROR F1115WB VTC SCRATCH ENTRY FROM VTOC
1116C - CATALOG ENTRY HAS NO MCD/MCO ENTRY	ERR010 ERR011 ERR147	DSCTL, BCDS, OCDS MCDS, BCDS, OCDS DIRCTL, MEDCTL (SDSP)	Yes	F1116CA TSO DELETE NOSCRATCH FOR MIGRAT DSNS MISSING MCD F1116CB TSO LISTC TO VERIFY CATALOG STATUS OF DATA SET F1116CC HSM LIST COMMANDS TO VERIFY MISSING MCD
1117C - CATALOG ENTRY IS NOT CONNECTED TO MASTER CAT	None			F1117CA TSO DEL WITH CAT STATEMENT F1117CB TSO LISTC FOR DSN MISSING CONNECTOR F1117CE IDC DEL NOSCRATCH WITH CAT STATEMENT

Advanced Audit for DFSMSHsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMSHsm available fixes (recommended default fix in boldface type)
1118C - MIGRATED DATA SET IS MISSING IN SDSP CLUSTER	ERR148	DIRCTL, MEDCTL	No	F1118CA TSO DELETE AND RECOVER FOR SDSP MISSING F1118CB TSO UNCATALOG DSN FOR SDSP MISSING F1118CC HSM FIXCDS D DELETE FOR SDSP MISSING
1119W - ENTRY IN SDSP DATA SET IS MISSING IN MCDS	ERR160 ERR161 ERR162 ERR163	MEDCTL MEDCTL (SDSP) MEDCTL (SDSP) MEDCTL (SDSP)	Yes	F1119WA HSM FIXCDS D FOR TO VERIFY MISSING MCD IS REALLY SDSP F1119WB HSM LIST TRUE NAME IN MCDS F1119WC TSO LISTC FOR SDSP DATA SET F1119WD HSM AUDIT MEDCTL FOR SDSP MISSING MCD F1119WE HSA VERIFY MCD RECORD MISSING FOR SDSP CLUSTER F1119WF HSA DUMP MCD RECORD MISSING FOR SDSP CLUSTER
1120I TTOC VOLUME IS EMPTY	None			F1120IA HSM LIST TTOC FOR EMPTY VOLUME F1120IB TMS LIST EMPTY VOLSER IN TMS F1120IC RMM INTERROGATE RMM FOR HSM TAPES F1120ID HSM RECYCLE EMPTY VOLUMES

Advanced Audit for DFSMShsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMShsm available fixes (recommended default fix in boldface type)
1121W - MIGRATION LEVEL 2 VOLUME HAS NO TTOC ENTRY	ERR051	MEDCTL, VOLCTL	Yes	F1121WA TMS INTERROGATE LEVEL2 TAPE MISSING TTOC F1121WB HSM FIXCDS COMMAND TO VERIFY MISSING TTOC RECORD F1121WC HSM DELVOL PURGE FOR ML2 VOLUMES Note: It is recommended that you use Advanced Audit for DFSMShsm to rebuild the TTOC.
1122W - MCD ALIAS IS OWNED BY DIFFERENT MCD	None			F1122WA HSM AUDIT MEDIA CONTROL STATEMENT FOR HSM F1122WB HSM GENERATE RECALL FOR DATA SETS
1123W MCA TRUENAME RECORD IS MISMATCHED	ERR028	MEDCTL	Yes	F1123WA HSA DUMP MCD AND MCA RECORDS F1123WB HSM FIXCDS DELETE CONFLICTING A RECORD
1124W - VALID BLOCK COUNT IN TTOC DOES NOT AGREE	ERR137	MEDCTL	Yes	F1124WA HSA DISPLAY DUMP OF TTOC WITH MISMATCH VALID BLOCKS F1124WB HSM FIXCDS PATCH T FOR VOL WITH MISMATCH BLOCK COUNT F1124WC HSM AUDIT DIRCTL FOR MISMATCH BLOCK COUNT F1124WD TSO SUBMIT AUDIT MEDIACONTROLS JOB AKDAUDFT

Advanced Audit for DFSMSHsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMSHsm available fixes (recommended default fix in boldface type)
1125W TTOC ENTRY MARKED INVALID, MCD/MCC EXISTS	ERR136	MEDCTL	Yes	F1125WA HSM FIXCDS DISPLAY TTOC RECORD EXTENSION OF TAPE F1125WB HSM FIXCDS DISPLAY MCD RECORD F1125WC HSM FIXCDS DISPLAY MCA RECORD F1125WD HSM FIXCDS PATCH T MARK DSN VALID F1125WR1 HSM HSEND LIST DATASET F1125WE TSO SUBMIT AUDIT MEDIACONTROLS JOB AKDAUDFT
1126I - SUMMARY OF TTOC VOLUMES WITH INVALID DSNs	ERR136	MEDCTL		Information only
1127I - MCD ENTRY IS MARKED INVALID WITH PERMANENT RETENTION	None			F1127IA HSM FIXCDS DISPLAY MCD RECORD
1128I - MCD LEFTOVER FOR RECONNECT SINCE LONG	None			F1128IA HSM FIXCDS DISPLAY MCD RECORD F1128IB HSM DELETE MCD RECORD PENDING FOR RECONNECT
2101W - MCB IS CONTAMINATED	None			F2101WA HSM FIXCDS DISPLAY FOR CONTAMINATED MCB RECORD
2102W - MCB HAS DUPLICATE MCC ENTRY	None			F2102WA HSM FIXCDS DISPLAY FOR DUPLICATE MCC ENTRIES

Advanced Audit for DFSMShsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMShsm available fixes (recommended default fix in boldface type)
2103C - MCB ENTRY IS MISSING THE MCC ENTRY	ERR039	DSCTL (BACKUP)	No	F2103CA HSM FIXCDS DISPLAY FOR MCB MISSING MCC ENTRY F2103CB TSO BDELETE BACKUP F2103CC HSM LIST COMMANDS TO VERIFY MISSING MCC F2103CR1 HSM HBDELETES FOR MCB MISSING MCC ENTRY W/VER # F2103CR2 HSM FIXCDS DISPLAY FOR MCB MISSING MCC ENTRY F2103CR3 TSO LIST CAT FOR MCB MISSING MCC ENTRY F2103CR4 HSM RECALL FOR MCB MISSING MCC ENTRY F2103CR5 HSM BACKUP FOR MCB MISSING MCC ENTRY
2104C - MCC BKUP TO LEVEL 1 HAS NO VTOC ENTRY	ERR047	DSCTL (BACKUP)	No	F2104CA TSO HBDELETE BACKUP VERSION MISSING VTOC
2105W - DUPLICATE BACK-UP VOLUMES FOUND				F2105WA HSM FIXCDS COMMAND TO EXAMINE DUPLICATE TTOC RECORDS F2105WB HSM FIXCDS COMMAND TO DELETE FIRST DUPLICATE VOL F2105WC HSM FIXCDS COMMAND TO DELETE SECOND DUPLICATE VOL F2105WD HSM FIXCDS COMMAND TO DISPLAY MCT RECORD

Advanced Audit for DFSMShsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMShsm available fixes (recommended default fix in boldface type)
2106C - MCC IS ON VOLUME WHICH HAS NO MCT ENTRY	ERR041 ERR071	DSCTL (BACKUP) MEDCTL, VOLCTL	Yes (defaults in 2106V)	F2106CA TSO BDELETE BACK-UP VERSION MISSING MCT F2106CB HSM FIXCDS DISPLAY X FOR MISSING MCT F2106CC HSA VERIFY MCT RECORD MISSING F2106CD TSO BDELETE BACKUP VER USING VER AND FROMVOL F2106CR1 HSM RECALL MIGRATED DATA SET F2106CR2 HSM BACKUP DATA SET
2106V - SUMMARY OF VOLUMES MISSING MCT ENTRY	None		Yes	F2106VA TMS INTERROGATE TMS FOR HSM TAPES MISSING MCT F2106VB HSM FIXCDS DISPLAY X FOR MISSING MCT F2106VC HSM FIXCDS TO ADD NEW MCT SPILL RECORD F2106VD RMM INTERROGATE RMM FOR BACK-UP MISSING MCT F2106VE HSM ADDVOL FOR BACKUP CYCLE TAPE F2106VG HSM ADDVOL FOR BACKUP SPILL TAPE F2106VH TSO SUBMIT AUDIT MEDIACONTROLS JOB AKDAUDFT

Advanced Audit for DFSMShsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMShsm available fixes (recommended default fix in boldface type)
2107W - MCC TAPE VOLUME HAS NO TTOC ENTRY	ERR014 ERR045 ERR071	DSCTL (BACKUP) MEDCTL, VOLCTL MEDCTL, VOLCTL	Yes (see recommendation in 2107V)	F2107WA HSM LIST TTOC FOR BACK-UP DSN MISSING TTOC F2107WB TMS DISPLAY TMS STATUS FOR MISSING TTOC VOL F2107WC TSO BDELETE BACK-UP VERSION MISSING TTOC F2107WR1 HSM RECALL MIGRATED DATA SET F2107WR2 HSM BACKUP DATA SET
2107V - SUMMARY OF VOLUMES MISSING TTOC ENTRY	None			F2107VA HSM LIST TTOC FOR BACK-UP DSN MISSING TTOC F2107VB TMS DISPLAY TMS STATUS FOR MISSING TTOC VOL F2107VC RMM INTERROGATE RMM FOR HSM TAPES Note: It is recommended that you use Advanced Audit for DFSMShsm to rebuild the TTOC. F2107VD TSO SUBMIT AUDIT MEDIACONTROLS JOB AKDAUDFT

Advanced Audit for DFSMSHsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMSHsm available fixes (recommended default fix in boldface type)
2109W - MCC ALIAS IS NOT ON TTOC	ERR045	DSCTL (BACKUP)	No	F2109WA HSM LIST TTOC CONTENTS FOR MISSING MCC F2109WB TSO HBDELETE BACKUP VERSION MISSING TTOC F2109WC TSO HBDELETE BACKUP VERSION FROMVOL F2109WR1 HSM RECALL MIGRATED DATA SET F2109WR2 HSM BACKUP DATA SET
2109V - SUMMARY OF VOLUMES MCC ALIAS MISSING TTOC ENTRY	ERR116	DIRCTL		F2109VA HSM LIST TTOC VOLUME FOR MCC MISSING TTOC ENTRY F2109VB HSM LIST TTOC FAILEDCREATE F2109VC HSM AUDIT MEDIA CONTROL FOR MCC MISSING IN TTOC F2109VD TSO SUBMIT AUDIT MEDIACONTROLS JOB AKDAUDFT
2111W - MCC ENTRY IS MISSING MCB ENTRY	ERR040 ERR113	DSCTL (BACKUP) DIRCTL	Yes	F2111WA HSM FIXCDS DISPLAY B FOR MCC MISSING MCB F2111WB HSM FIXCDS DELETE C FOR MCC MISSING MCB
2113I - BACK-UP TTOC VOLUME IS EMPTY	None			F2113IA HSM LIST TTOC CONTENTS FOR EMPTY VOLUME
2114W - BACKUP NAME EXISTS ON VTOC, MCC IS MISSING	ERR142	DIRCTL, MEDCTL	Yes	F2114WA TSO CATALOG AND DELETE ORPHANED L1 MCC ALIAS

Advanced Audit for DFSMSHsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMSHsm available fixes (recommended default fix in boldface type)
2115W - VTOC BACKUP NAME HAS VTOC ERROR	None			F2115WA TSO DELETE BACK-UP DSN ON ML1 WITH VTOC ERROR F2115WB TSO DELETE BACK-UP VER AND FROM VOL
2116W - MCB TRUENAME IS MISMATCHED WITH MCC ENTRY	ERR039	DSCTL	No	F2116WA HSM FIXCDS DISPLAY B FOR MISMATCH MCC F2116WB HSM FIXCDS DISPLAY C FOR MCB MISMATCH
2117W - MCC ENTRY IS OWNED BY DIFFERENT MCB	ERR040	DSCTL	Yes	F2117WA HSM FIXCDS DISPLAY B FOR MCC CONFLICT F2117WB HSM FIXCDS DISPLAY C FOR MCB MISMATCH F2117WC HSM FIXCDS PATCH C WITH CORRECT DSN
2118W - MCB IS LINKED TO MCBR BUT MCBR RECORD NOT FOUND	None			F2118WA HSM LIST TO DISPLAY MCB RECORD MISSING MCBR RECORD F2118WB HSM FIXCDS DISPLAY MCB RECORD MISSING LINKED MCBR F2118WC HSM FIXCDS VERIFY MISSING MCBR RECORD F2118WD HSM FIXCDS PATCH B FOR MISSING MCBR RECORD

Advanced Audit for DFSMShsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMShsm available fixes (recommended default fix in boldface type)
3101W - TAPE IS IN MCV/MCT, NOT IN TTOC	ERR051	MEDCTL, VOLCTL	Yes	F3101WA TMS INTERROGATE TMS FOR HSM TAPES SANS TTOC F3101WB HSM VERIFY TTOC VOLUME MISSING FROM OCDS F3101WC ZRA INTERROGATE ZARA FOR HSM TAPES SANS TTO F3101WD RMM INTERROGATE RMM FOR HSM TAPES F3101WE HSM DELETE MCV RECORD FROM MCDS F3101WF HSM FIXCDS DISPLAY THE TTOC RECORD FROM OCD F3101WH TLM INTERROGATE TLMS FOR HSM TAPES

Advanced Audit for DFSMSHsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMSHsm available fixes (recommended default fix in boldface type)
3102C - TAPE IS IN TTOC, NOT IN MCV/MCT	ERR071	MEDCTL, VOLCTL	No	F3102CA HSM FIXCDS DISPLAY V RECORD FOR MISSING MCV F3102CB RMM INTERROGATE RMM FOR HSM TAPES F3102CC HSM FIXCDS TO ADD NEW MCV LEVEL 2 RECORD F3102CD HSM FIXCDS TO ADD NEW MCT SPILL TAPE F3102CE HSM FIXCDS DISPLAY X RECORD FOR MISSING MCT F3102CF HSM FIXCDS PATCH TTOC FOR COPY VOLUME F3102CG HSM FIXCDS TO ADD NEW MCT CYCLE TAPE F3102CH HSM FIXCDS DELETE X RECORD F3102CI TMS INTERROGATE TMS FOR TAPE WITH ENTRIES F3102CK TLM INTERROGATE TLMS FOR HSM TAPES

Advanced Audit for DFSMShsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMShsm available fixes (recommended default fix in boldface type)
3103C - TAPE IS NOT IN TTOC OR MCV/MCT BUT HAS ENTRIES	None			F3103CA TMS INTERROGATE TMS FOR TAPE WITH ENTRIES F3103CB ZRA INTERROGATE ZARA FOR HSM TAPES WITH ENTRIES F3103CC RMM INTERROGATE RMM FOR HSM TAPES F3103CE TLM INTERROGATE TLMS FOR HSM TAPES F3103CR1 HSM BUILD LIST TTOC FOR TAPES W/ENTRIES

Advanced Audit for DFSMShsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMShsm available fixes (recommended default fix in boldface type)
3104W - TAPE IS IN TTOC & MCV/MCT, NOT IN TMS	None			F3104WA TMS INTERROGATE EXPIRED TAPE IN CA1 TMS F3104WB ZRA INTERROGATE EXPIRED TAPE IN ZARA F3104WC HSM LIST CONTENTS OF TAPE MISSING IN ZARA F3104WD RMM INTERROGATE RMM FOR HSM TAPES F3104WE HSM FIXCDS DISPLAY OF TTOC RECORD F3104WF HSM FIXCDS DISPLAY OF DVL RECORD F3104WG HSM FIXCDS T PATCH COPY VOLUME GONE F3104WH TLM INTERROGATE TLMS FOR HSM TAPES F3104WR1 HSM LIST ACTIVE DATA FROM TAPE F3104WR2 HSM DELVOL PURGE FOR BACKUP VOLUMES F3104WR3 HSM DELVOL PURGE FOR ML2 VOLUMES F3104WR4 HSM DELVOL PURGE FOR DUMP VOLUMES F3104WS CNM INTERROGATE CONTROL M FOR HSM TAPES

Advanced Audit for DFSMSshm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMSshm available fixes (recommended default fix in boldface type)
3110W - TAPE IS PERMANENT IN TMS, NOT IN TTOC	None			F3110WA HSM FIXCDS DISPLAY MCV FOR TMS MISSING TTOC F3110WB TMS INTERROGATE TAPE IN TMS, NOT IN TTOC F3110WC RMM INTERROGATE RMM FOR HSM TAPES F3110WD HSM FIXCDS DISPLAY OF DVL RECORD F3110WE RMM EXPIRE A TAPE VOLUME ASSIGNED TO HSM F3110WF TLM INTERROGATE TLMS FOR HSM TAPES F3110WR1 HSM ADDVOL/DELVOL FOR BACKUP TMS MISSING TTOC F3110WR2 HSM ADDVOL/DELVOL FOR LEVEL2 TMS MISSING TTOC F3110WS CNM INTERROGATE CONTROL M FOR HSM TAPES F3110WT CTM CONTROL M SCRATCH TAPE VOLUMES F3110WU TMC EXPIRE TMS TAPES F3110WV ZRA EXPIRE ZARA TAPES

Advanced Audit for DFSMSHsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMSHsm available fixes (recommended default fix in boldface type)
3111W - TAPE IS IN TMS, VALID IN HSM, HAS NO ENTRIES	None			F3111WA TMS INTERROGATE TMS FOR EMPTY HSM TAPES F3111WB HSM LIST CONTENTS OF TAPE WITH NO ENTRIES F3111WC ZRA INTERROGATE ACTIVE TAPE IN ZARA F3111WD RMM INTERROGATE RMM FOR HSM TAPES F3111WE HSM FIXCDS TO ADD NEW MCV LEVEL 2 RECORD F3111WF HSM FIXCDS DISPLAY OF MCV RECORD F3111WG TLM INTERROGATE TLMS FOR HSM TAPES F3111WR1 HSM DELVOL PURGE FOR ML2 VOLUMES F3111WR2 HSM RECYCLE VOLUMES THAT HAD VALID DATA F3111WR3 HSM DELVOL PURGE FOR BACKUP VOLUMES F3111WR4 HSM DELVOL PURGE FOR DUMP VOLUMES F3111WR5 HSM AUDIT MEDIACONTROLS FOR RECYCLE F3111WS CNM INTERROGATE CONTROL M FOR HSM TAPES

Advanced Audit for DFSMSHsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMSHsm available fixes (recommended default fix in boldface type)
3112W - TAPE IS VALID IN HSM BUT EXPIRED IN TMS	None			F3112WA TMS INTERROGATE EXPIRED TAPE IN CA1 TMS F3112WB HSM LIST CONTENTS OF TAPE EXPIRED IN TMS F3112WC ZRA INTERROGATE EXPIRED TAPE IN ZARA F3112WD RMM INTERROGATE RMM FOR HSM TAPES F3112WE HSM GENERATE FIXCDS DELETE FOR DUMP TAPE F3112WF TLM TLMS CHANGE AN HSM TAPE TO ACTIVE FROM SCRATCH F3112WG TLM INTERROGATE TLMS FOR HSM TAPES F3112WS CNM INTERROGATE CONTROL M FOR HSM TAPES
3114I - TAPE IS IN TMS SCRATCH STATUS	None			F3114IA RMM INTERROGATE RMM FOR HSM TAPES F3114IB TLM TLMS CHANGE TAPE TO NO SCRATCH F3114IC TLM INTERROGATE TLMS FOR HSM TAPES F3114IS CNM INTERROGATE CONTROL M FOR HSM TAPES

Advanced Audit for DFSMShsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMShsm available fixes (recommended default fix in boldface type)
3115I - TAPE IS IN TMS DELETE STATUS	None			Information only
3116W - TAPE DOES NOT INDICATE EXTERNAL DATA MANAGEMENT	None			F3116WA TMC RESET THE EDM AND ETM FLAG IN THE TMC F3116WB HSA VERIFY EXISTENCE OF TTOC RECORD F3116WE TLM TLMS CHANGE TAPE OWNER TO HSM F3116WF TLM INTERROGATE TLMS FOR NON EDM TAPES F3116WR1 HSM LIST TTOC FOR NON EDM TAPES
4001W - PREVIOUS VOLUME NOT FOUND IN OCDS	ERR119	DIRCTL, MEDCTL	No	F4001WA HSM FIXCDS COMMAND TO CORRECT PREVIOUS VOL MISSING
4002W - SUCCESSOR VOLUME NOT FOUND IN OCDS	ERR120	DIRCTL	No	F4002WA HSM FIXCDS COMMAND TO CORRECT SUCCESSOR VOL MISSING
4003W - PREVIOUS VOLUME POINTER IS INCORRECT	ERR121 ERR123	DIRCTL DIRCTL	No No	F4003WA HSM FIXCDS COMMAND TO CORRECT PREVIOUS VOL INCORRECT
4004W - SUCCESSOR VOLUME POINTER IS INCORRECT	ERR122 ERR124	DIRCTL DIRCTL	No No	F4004WA HSM FIXCDS COMMAND TO CORRECT SUCCESSOR VOL INCORRECT
4005C - TAPE HAS FAILED CREATE STATUS	None			F4005CA HSM AUDIT MEDIA CONTROL FOR SELECT FAILED CREATE
4007C - TTOC RECORD HAS BROKEN SEQUENCE SET	ERR111	DIRCTL, MEDCTL	Yes (see recommendation in 4007V)	F4007CB HSM FIXCDS DELETE OF TTOC EXTENSION RECORD

Advanced Audit for DFSMSshm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMSshm available fixes (recommended default fix in boldface type)
4007V - VOLUME CONTAINS BROKEN SEQUENCE SET/ SETS	ERR111	DIRCTL, MEDCTL		F4007VA HSM AUDIT MEDIA CONTROL FOR BROKEN SEQ SET F4007VB HSM AUDIT DIRECTORY CONTROL FOR BROKEN SEQ SET F4007VC TSO SUBMIT AUDIT MEDIACONTROLS JOB AKDAUDFT F4007VR1 HSM LIST TTOC FOR VOLUME F4007VR3 TMS INTERROGATE TMS FOR HSM TAPES WITH BROKEN SEQUENCE F4007VR4 RMM INTERROGATE RMM FOR HSM TAPES Note: It is recommended that you run audit procedure AKDAUDFT.
4008C - TTOC EXTENSION RECORDS ARE LESS THAN EXPECTED	ERR112	DIRCTL	Yes	F4008C TSO SUBMIT AUDIT MEDIACONTROLS JOB AKDAUDFT. F4008CA HSM AUDIT MEDIA CONTROL FOR EXTENSION ERROR Note: It is recommended that you run audit procedure AKDAUDFT.

Advanced Audit for DFSMSHsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMSHsm available fixes (recommended default fix in boldface type)
4009C - TTOC EXTENSION RECORDS ARE MORE THAN EXPECTED	ERR112	DIRCTL	Yes	F4009CA HSM AUDIT MEDIA CONTROL FOR EXTENSION ERROR Note: It is recommended that you run audit procedure AKDAUDFT. F4009CB TSO SUBMIT AUDIT MEDIACONTROLS JOB AKDAUDFT.
4010W - 16K BLOCK COUNT DOES NOT MATCH COMPUTED BLKCNT	ERR135	MEDCTL	Yes	F4010WC HSM FIXCDS COMMAND TO CORRECT MISMATCH BLKCNT Note: It is recommended that you run audit procedure AKDAUDFT. F4010WB TSO SUBMIT AUDIT MEDIACONTROLS JOB AKDAUDFT.
4011W - TAPE HAS FAILED RECYCLE	None			F4011WA HSM AUDIT MEDIA CONTROL FOR RECYCLE FAILED F4011WR1 HSM RECYCLE VOLUME BEFORE AUDIT
4012C - TAPE IS NOT FULL AND WILL NOT BE SELECTED FOR RECYCLE	None			F4012CA TSO RECYCLE TAPE NOT FULL F4012CB HSM LIST CONTENTS OF TAPE F4012CR1 TSO MARKFULL AND RECYCLE ML2 TAPES F4012CR2 TSO MARKFULL AND RECYCLE BACKUP TAPES
4013I - TAPE IS ELIGIBLE FOR RECYCLE	None			F4013IA TSO RECYCLE ELIGIBLE TAPE

Advanced Audit for DFSMSshm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMSshm available fixes (recommended default fix in boldface type)
4016W - VOLUME HAS A (TCN) TAPE COPY NEEDED RECORD	None			F4016WA HSM LIST TTOC FOR VOLUME F4016WB TSO ISSUE HSEND TAPECOPY COMMAND FOR VOLUME F4016WC HSM FIXCDS DISPLAY OF TCN RECORD (TYPE E RECORD) F4016WD HSM FIXCDS DELETE of TCN RECORD (TYPE E RECORD)
4017C - TCN ENTRY IS MISSING THE TTOC ENTRY	None			F4017CA HSM LIST TTOC FOR VOLUME F4017CB HSM AUDIT MEDIA CONTROL FOR TCN TTOC MISSING F4017CC TSO SUBMIT AUDIT MEDIACONTROLS JOB AKDAUDFT
4018C - TCN MIGRATE ENTRY IS MISSING the MCV ENTRY	None			F4018CA HSM LIST TTOC FOR VOLUME F4018CB HSM AUDIT MEDIA CONTROL FOR TCN TTOC MISSING F4018CC TSO SUBMIT AUDIT MEDIACONTROLS JOB AKDAUDTP
4019C - TCN BACKUP ENTRY IS MISSING the MCT ENTRY	None			F4019CA HSM LIST TTOC FOR VOLUME F4019CB HSM AUDIT MEDIA CONTROL FOR TCN TTOC MISSING F4019CC TSO SUBMIT AUDIT MEDIACONTROLS JOB AKDAUDTP

Advanced Audit for DFSMShsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMShsm available fixes (recommended default fix in boldface type)
8000I - LIST OF DATA SETS RECORDED IN MCDS/BCDS	None			F8000IA TSO HSEND DEL DATA SET FROM MCDS F8000IB TSO HSEND BDEL BACKUP VERSION FROM BCDS F8000IC TSO HSEND RECALL DATA SET FROM TAPE F8000ID TSO HSEND RECOVER DATA SET FROM TAPE
8001C - NO HSM REFERENCE FOUND FOR REQUESTED TAPE	ERR017 ERR050 ERR110	MCDS BCDS OCDS		No fixes
8C02C - NO MCT ENTRY WAS FOUND FOR REQUESTED TAPE	ERR110	DIRCTL, MEDCTL	No	F8C02CA HSM FIXCDS TO ADD NEW MCT BACKUP RECORD F8C02CB HSM ADDVOL FOR BACKUP CYCLE TAPE F8C02CC HSM ADDVOL FOR BACKUP SPILL TAPE
8D02C - NO MCV ENTRY WAS FOUND FOR REQUESTED TAPE	ERR110	DIRCTL, MEDCTL	No	F8D02CA HSM FIXCDS TO ADD NEW MCV LEVEL 2 RECORD
8003C - NO TTOC EXTENSION 0000 WAS FOUND FOR VOLSER	ERR071 ERR111	MEDCTL, VOLCTL, DIRCTL	Yes Yes	F8003CA HSM VERIFY TTOC VOLUME MISSING FROM OCDS F8003CB HSM FIXCDS DISPLAY OF TTOC RECORD Note: The TTOC records will be rebuilt as a result of running AKDAUDFT or AKDAUDFL.

Advanced Audit for DFSMSHsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMSHsm available fixes (recommended default fix in boldface type)
8004W - VOLUME IS IN FAILED CREATE STATUS	ERR164	MEDCTL	Yes	F8004WA HSM FIXCDS DISPLAY OF TTOC RECORD Note: The TTOC records will be rebuilt as a result of running AKDAUDFT or AKDAUDFL and the TTCFAIST patched off.
8005W - VOLUME IS IN FAILED RECYCLE STATUS	None			F8005WA HSM FIXCDS DISPLAY OF TTOC RECORD
8006C - TTOC EXTENSION RECORDS ARE OUT OF SEQUENCE	ERR112	DIRCTL	Yes	F8006CA HSM LIST TTOC CONTENTS Note: The TTOC records will be rebuilt as a result of running AKDAUDFT or AKDAUDFL.
8007C - TTOC EXTENSION RECORD IS CONTAMINATED	None			F8007CA HSM LIST TTOC CONTENTS Note: The TTOC records will be rebuilt as a result of running AKDAUDFT or AKDAUDFL.
8008C - TTOC EXTENSION RECORDS DO NOT MATCH EXPECTED COUNT	ERR111 ERR112	DIRCTL, MEDCTL	Yes Yes	F8008CA HSM LIST TTOC CONTENTS Note: The TTOC records will be rebuilt as a result of running AKDAUDFT or AKDAUDFL.

Advanced Audit for DFSMShsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMShsm available fixes (recommended default fix in boldface type)
8009W - 16K BLOCK COUNT DOES NOT MATCH COUNTED BLOCKS	None			F8009WA HSM FIXCDS PATCH BLKCOUNT IN TTOC 0000 EXTENSION Note: The TTOC records will be rebuilt as a result of running AKDAUDFT or AKDAUDFL and the BLKCNT will be patched properly.
8C10C - MCC EXISTS, NOT ON TAPE	ERR116 ERR150	DIRCTL, MEDCTL	No No	F8C10CA TSO HSEND BDEL BACKUP VERSION FROM BCDS
8D10C - MCD EXISTS, NOT ON TAPE	ERR150	MEDCTL	No	F8D10CA TSO HSEND DEL DATA SET FROM MCDS F8D10CB TSO HSEND RECOVER DATA SET FROM BACKUP F8D10CC TSO DISPLAY DATA SET FOR BACKUP AND MIGRATION INFO
8C12C - MCC MISMATCH FILE BLOCK IDENTIFIER	None			F8C12CA HSM FIXCDS PATCH CORRECT FBID IN THE MCC RECORD
8D12C - MCD MISMATCH FILE BLOCK IDENTIFIER	None			F8D12CA HSM FIXCDS PATCH CORRECT FBID IN THE MCD RECORD

Advanced Audit for DFSMShsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMShsm available fixes (recommended default fix in boldface type)
8020I - LIST OF DATA SETS ON TAPE	ERR113 ERR140 ERR151 ERR152	DIRCTL, MEDCTL	Available for rebuilding select entries. Automation not appropriate.	F8020IA HSM FIXCDS CREATE NEW MCD RECORD F8020IB HSM FIXCDS CREATE ADD MCD DSORG PRIMARY VOLUME F8020IC HSM FIXCDS CREATE ADD ALIAS NAME AND FBID F8020ID HSM FIXCDS CREATE ADD TTOC EXTENSION AND 16K BLKS F8020IE HSM FIXCDS COMMAND IF NEW (D) RECORD ADD DEVICE TYPE F8020IF HSM FIXCDS TO MAKE MIGRATE TAPE A MULTIFILE FORMAT F8020IG HSM FIXCDS TO MAKE BACKUP TAPE A MULTIFILE FORMAT F8020IH HSM FIXCDS FOR PDS DATASET FAIL TO RECALL RC=0405
9001I - MANAGEMENT CLASS MISMATCH BETWEEN DATA SET AND ACS ROUTINE	None			F9001IA TSO LISTC FOR DATA SET F9001IB TSO ALTER MANAGEMENT CLASS TO NEW ACS MANAGEMENT CLASS
9002I - DATA CLASS MISMATCH BETWEEN DATA SET AND ACS ROUTINE	None			F9002IA TSO LISTC FOR DATA SET

Advanced Audit for DFSMShsm audit diagnostic	HSM audit diagnostic	HSM audit type	HSM auto-fix	Advanced Audit for DFSMShsm available fixes (recommended default fix in boldface type)
9003I - STORAGE CLASS MISMATCH BETWEEN DATA SET AND ACS ROUTINE	None			F9003IA TSO LISTC FOR DATA SET F9003IB TSO ALTER STORAGE CLASS TO NEW ACS STORAGE CLASS F9003IC TSO MIGRATE AND RECALL DATA SET TO NEW STORAGE CLASS
9004I - STORAGE GROUP MISMATCH BETWEEN DATA SET AND ACS ROUTINE	None			F9004IA TSO LISTC FOR DATA SET F9004IB TSO MIGRATE AND RECALL DATA SET TO NEW STORAGE GROUP

Appendix E. Query Language feature

The Query Language feature, based on the ANSI standard Structured Query Language (SQL), is useful for creating prototype logic, auditing existing files, preparing conversion files, capturing test data, obtaining hexadecimal dump files of specific records, and extracting records in their native format.

The Query Language feature addresses the broadest range of data processing needs. It is not limited to a specific discipline, such as HSM or ICF catalogs. It is designed to run efficiently and requires no data conversion.

For example, you can process your input files by using any of these methods:

- Comparing the contents of two files and merging the result when specific criteria is met
- Sorting the selected data
- Applying Boolean logic

Query Language guidelines

You must follow these guidelines when using the Query Language to define a query and plans for multiple queries.

Query guidelines

The Query Language is similar to the Structured Query Language (SQL). When you create a query, you include a group of Query Language statements that will process your input file and select only the data you want.

You must place your statements in the following order:

1. Begin the query with one of the following:
 - A SELECT statement to define the name of the fields you want to process in the file.
 - A JOIN statement to join the data from two input files.
2. Use the FROM statement to define one or more input data sets containing the files you want to process.
3. Use the CREATE statement to define the extract data set.
4. Use the USING statement to specify the file containing the COBOL map of the input file.
5. Use the FROMKEY and TOKEY statements to define where to start the processing in a KSDS.
6. Use the WHERE statement to define how to filter the data.
7. Use the ORDER BY statement to sort the data.

Each query must follow these guidelines:

- Use a maximum of 12 lines, starting with the SELECT statement.
- Use only one SELECT or JOIN statement.
- Use the ORDER BY statement to end a query that begins with the SELECT statement.
- Use the WHERE statement to end a query that begins with the JOIN statement.

Plan guidelines

The Query Language feature allows you to group multiple queries together that perform more complex processing of your data. To group multiple queries, you must place each query in a plan. A *plan* contains a logical set of Query Language statements that perform a single query. If you are performing a single query only, do not place it in a plan.

You must follow these rules when defining a plan:

- Specify the start of the plan as PLAN *plan-name*.
- Start the PLAN statement in column 1.
- Specify the end of the plan as END *plan-name*
- Start the END statement in column 1.
- Separate the PLAN and END statements from the *plan-name* with one blank space.
- Place only one query in each plan.

Example of a single query

The following example shows a single query and does not require the PLAN and END statements.

```
* STORAGE GROUPS HIGH OCCUPANCE CAPTURE
SELECT  SGROUP-HIGH,SPERCENT-OCC-HI
FROM    (HLQ.MONTHLY.SUM
         HLQ.WEEKLY.SUM)
USING HLQ.CNTL(STGPSUM)
CREATE HLQ.STGP.WORK04.RAWHI
ORDER DISTINCT BY SGROUP-HIGH A, SPERCENT-OCC-HI D
```

Example of multiple plans

The following example shows multiple plans called PLAN02 and PLAN04.

```
PLAN PLAN02
* STORAGE GROUPS LOW OCCUPANCY CAPTURE
SELECT  SGROUP-LOW,SPERCENT-OCC-LO
FROM    (HLQ.MONTHLY.SUM
         HLQ.WEEKLY.SUM)
USING HLQ.CNTL(STGPSUM))
CREATE HLQ.STGP.WORK04.RAWLO
ORDER DISTINCT BY SGROUP-LOW A, SPERCENT-OCC-LO A
END PLAN02
PLAN PLAN04
* ELIMINATE DUPLICATE STORAGE GROUPS
SELECT  SGROUP-LOW,SPERCENT-OCC-LO
FROM    HLQ.STGP.WORK04.RAWLO
USING DEFERRED
CREATE HLQ.STGP.WORK04.LOW.CSV
ORDER DISTINCT BY SGROUP-LOW A
END PLAN04
```

CREATE

Use the CREATE statement to build the extract data set to populate with the selected data from your query.

If the data set already exists, it is deleted and reallocated. If the data set does not exist, it is created as new. All data sets are allocated as RECFM=VB, LRECL=8192, and BLKSIZE=23476. The type of allocation units (CYLINDERS or TRACKS) and the number of units are controlled by a member called AKDZ0035 in the SAKDCNTL library. You can change these allocation units as needed.

CREATE data set example

You can specify the extract data set name as a fully qualified data set name with no apostrophes.

```
CREATE HLQ.DVLP.STGP.TR01MODL.CSV
```

FROM

Use the FROM statement to identify the input data set name for the query.

Generation data sets (GDGs) are supported by their entire spelled out name or the relative number in parentheses. You can also concatenate multiple data set names within parentheses.

Fully qualified data set name example

Specify the fully-qualified data set name with no apostrophes.

```
FROM DCD.DEMO.SUM
```

Concatenated data sets example

Concatenate data sets in parenthetical statements.

```
FROM (DCD.WEEKLY.SUM  
      DCD.MONTHLY.SUM)
```

Concatenated GDGs example

Place the GDG's relative number in parentheses.

```
FROM (HLQ.GDG.TEST(0)  
      HLQ.GDG.TEST(-1)  
      HLQ.GDG.TEST(-2))
```

FROMKEY

Use the FROMKEY statement to indicate where the processing should start in the input data sets specified in the FROM statement.

In the case of a KSDS, such as the HSM CDS, the specified key value is used to point to the location in the file to start reading.

You can use FROMKEY and TOKEY independently.

FROMKEY example

In this example, the processing begins at the first MCD record in the HSM MCDS that starts with DCD. It finishes after passing the last record containing DCD. This allows the process to skip uninteresting records and save a large amount of processing overhead.

```
* SAMPLE FROMKEY IN HEX  
SELECT MCDDSN,MCDVSN,MCDTLR,MCDDMIG  
FROM (RLS1.HSM.SPLIT.MCDS1  
      RLS1.HSM.SPLIT.MCDS2)  
CREATE DCD.HSM.MCDPLAN1.FORMAT  
USING DCD.MFL.MAPS(MCD)  
FROMKEY MCDDSN = 'DCD.'  
TOKEY MCDDSN = 'DCD.'  
WHERE MCHTYPE = X'00'  
AND MCDFLGS ON B'10000000'  
ORDER BY MCDDSN A
```

JOIN

Use the JOIN statement to conditionally join the contents of one extract with the contents of a second extract.

The JOIN statements allows you to easily relate data from diverse sources without having to create a formal database. For example, you can extract and join legacy data, such as the contents of an HSM CDS, with a catalog extraction.

A query that contains the JOIN statement references two extract data sets that have already been created by a previous query so it does not contain the SELECT statement.

When you use the JOIN statement, you must also specify the following:

- The WITH parameter for the name of the second file.
- The CREATE statement for the name of the third file containing the combined extracts.

- The WHERE statement for the condition that determines how to join the data together.

The JOIN statement provides parameters you can specify on the OPTION statement that define how to treat mismatches in the file. The default is to show everything.

- NONULLS suppresses mismatches
- NULLSONLY shows mismatches only

Step-by-step JOIN example

This example shows the step-by-step process of running two separate queries and then joining their two data sets into a third data set.

Step 1

In this step, data is selected from two data sets and the data set DCD.HSM.MCBPLAN.FORMAT is created.

```
* SAMPLE FROMKEY IN HEX
SELECT  BDSN,MCBBDSN,MCBVSN,MCBDBU
FROM    (SIS.HSM.SPLIT.BCDS1
        SIS.HSM.SPLIT.BCDS2)
CREATE  DCD.HSM.MCBPLAN.FORMAT
USING   DCD.MFL.MAPS(MCB)
FROMKEY BDSN = X'C4'
TOKEY   BDSN = X'C4'
WHERE   BDSN EQ 'D'
        AND MCBFLGS ON B'10000000'
ORDER  BY BDSN A
```

Step 2

In this step, data is selected from two additional data sets and the data set DCD.HSM.MCCPLAN.FORMAT is created.

```
* SAMPLE MCC PLAN GENERATED BY TTOC
SELECT  MCCADSN,MCK,MCCVSN,MCCFBID(HEX)
FROM    (RLS1.HSM.SPLIT.BCDS1
        RLS1.HSM.SPLIT.BCDS2)
USING   DCD.MFL.MAPS(MCC)
CREATE  DCD.HSM.MCCPLAN.FORMAT
WHERE   MCHTYPE = X'24'
        AND MCK LK '.DS01.'
ORDER  BY MCCADSN A
```

Step 3

In this step, the two data sets DCD.HSM.MCBPLAN.FORMAT and DCD.HSM.MCCPLAN.FORMAT (from the previous two queries) are joined.

```
* SAMPLE JOIN PLAN
JOIN    DCD.HSM.MCBPLAN.FORMAT
WITH    DCD.HSM.MCCPLAN.FORMAT
CREATE  DCD.HSM.JOIN.FORMAT
WHERE   BDSN EQ MCCADSN
OPTION  NONULLS
```

You can run the queries described above as a multiple plan query.

```
PLAN PLAN01
* SAMPLE FROMKEY IN HEX
SELECT  BDSN,MCBBDSN,MCBVSN,MCBDBU
FROM    (SIS.HSM.SPLIT.BCDS1
        SIS.HSM.SPLIT.BCDS2)
CREATE  DCD.HSM.MCBPLAN.FORMAT
USING   DCD.MFL.MAPS(MCB)
FROMKEY BDSN = X'C4'
TOKEY   BDSN = X'C4'
WHERE   BDSN EQ 'D'
        AND MCBFLGS ON B'10000000'
ORDER  BY BDSN A
END PLAN01
PLAN PLAN02
```

```

* SAMPLE MCC PLAN GENERATED BY TTOC
SELECT MCCADSN,MCK,MCCVSN,MCCFBID(HEX)
FROM (RLS1.HSM.SPLIT.BCDS1
      RLS1.HSM.SPLIT.BCDS2)
USING DCD.MFL.MAPS(MCC)
CREATE DCD.HSM.MCCPLAN.FORMAT
WHERE MCHTYPE = X'24'
AND MCK LK '.DS01.'
ORDER BY MCCADSN A
END PLAN02
PLAN PLAN03
* SAMPLE JOIN PLAN
JOIN DCD.HSM.MCBPLAN.FORMAT
WITH DCD.HSM.MCCPLAN.FORMAT
CREATE DCD.HSM.JOIN.FORMAT
WHERE BDSN EQ MCCADSN
OPTION NONULLS

```

JOIN example

This example shows how the lowest and highest occupancy level of all the storage groups in the system are logically joined into a third file.

```

JOIN HLQ.STGP.WORK04.LOW.CSV
WITH HLQ.STGP.WORK04.HIGH.CSV
CREATE HLQ.STGP.WORK04.HILO
WHERE SGROUP-LOW EQ SGROUP-HIGH

```

The following shows the low occupancy extraction for storage groups.

```

AA=SGROUP-LOW
A0=SPERCENT-OCC-LO
AAAAAAAA AAA
AAAAAAAA 000
ARCHIVE 060
CONCPY 001
CRPSG9 003
CRSU1 041
DB2SG 017
DTS1 001
DUANEG 001
HSMBACK 001
HSMIGL1 041
HSMIGL2 009
NOGROUP 025
PROD 066
SGBRMI 001

```

The following shows the high occupancy extraction for storage groups.

```

AA=SGROUP-HIGH
A0=SPERCENT-OCC-HI
AAAAAAAA AAA
AAAAAAAA 000
ARCHIVE 063
CONCPY 001
CRPSG9 003
CRSU1 041
DB2SG 017
DTS1 001
DUANEG 001
HSMBACK 001
HSMIGL1 050
HSMIGL2 009
NOGROUP 028
PROD 076
SGBRMI 001

```

This following shows the JOIN results.

```

AA=SGROUP-LOW
A0=SPERCENT-OCC-LO
AB=SGROUP-HIGH
A1=SPERCENT-OCC-HI
AAAAAAAA AAA AAAAAAAAA AAA

```

```

AAAAAAA 000 BBBBBBB 111
ARCHIVE 060 ARCHIVE 063
CONCPY 001 CONCPY 001
CRPSG9 003 CRPSG9 003
CRSU1 041 CRSU1 041
DB2SG 017 DB2SG 017
DTS1 001 DTS1 001
DUANEG 001 DUANEG 001
HSMBACK 001 HSMBACK 001
HSMIGL1 041 HSMIGL1 050
HSMIGL2 009 HSMIGL2 009
NOGROUP 025 NOGROUP 028
PROD 066 PROD 076
SGBRMI 001 SGBRMI 001

```

Missing values example

Missing values example

Using the JOIN example, this example shows how to use `OPTION NULLSONLY` to list only values without a match.

```

JOIN HLQ.STGP.WORK04.LOW.CSV
  WITH HLQ.STGP.WORK04.HIGH.CSV
  CREATE HLQ.STGP.WORK04.HILO
  WHERE SGROUP-LOW EQ SGROUP-HIGH
  OPTION NULLSONLY

```

These are the results:

```

AA=SGROUP-LOW
A0=SPERCENT-OCC-LO
AB=SGROUP-HIGH
A1=SPERCENT-OCC-HI
AAAAAAA AAA AAAAAAA AAA
AAAAAAA 000 BBBBBBB 111
CONCPY 001 .....
CRSU1 041 .....
DTS1 001 .....
HSMBACK 001 .....
HSMIGL2 009 .....

```

No matches example

Using the JOIN example, this example shows how to use `OPTION NONULLS` to eliminate records that have no match.

```

JOIN HLQ.STGP.WORK04.LOW.CSV
  WITH HLQ.STGP.WORK04.HIGH.CSV
  CREATE HLQ.STGP.WORK04.HILO
  WHERE SGROUP-LOW EQ SGROUP-HIGH
  OPTION NONULLS

```

These are the results:

```

AA=SGROUP-LOW
A0=SPERCENT-OCC-LO
AB=SGROUP-HIGH
A1=SPERCENT-OCC-HI
AAAAAAA AAA AAAAAAA AAA
AAAAAAA 000 BBBBBBB 111
ARCHIVE 060 ARCHIVE 063
CRPSG9 003 CRPSG9 003
DB2SG 017 DB2SG 017
DUANEG 001 DUANEG 001
HSMIGL1 041 HSMIGL1 050
NOGROUP 025 NOGROUP 028
PROD 066 PROD 076
SGBRMI 001 SGBRMI 001

```

ORDER BY

Use the ORDER BY statement to sort the selected data into ascending or descending order and end the query.

To order the selected data in ascending order, specify A one space after the field name. To order the selected data in descending order, specify D one space after the field name. The default is to sort the data in ascending order.

You can specify the DISTINCT parameter to eliminate duplicate rows. You must specify the DISTINCT parameter before the BY keyword of the ORDER BY statement.

All field names after the ORDER BY statement must also be specified in the SELECT statement. The ORDER BY statement ends the query.

Ascending order example

This example shows how to sort the data in ascending order by date and time.

```
* STORAGE GROUP NOGROUP AT 09 AM MONTHLY
  SELECT SDATE,STIME,SSYSID,SGROUP,SCAPACITY-CYLS,SALLOC-CYLS,
         SPERCENT-OCC,SHIGH-THRSH
  FROM (HLQ.MONTHLY.SUM)
  USING HLQ.CNTL(STGPSUM))
  CREATE HLQ.STGP.TR01MODL.CSV
  WHERE SGROUP = 'NOGROUP'
  AND STIME = '07'
  ORDER BY SDATE A, STIME A
```

Remove duplicate rows example

In this example, the data in the field SGROUP-HIGH is sorted in ascending order and the data in the field SPERCENT-OCC-HI is sorted in descending order. The DISTINCT parameter then removes any duplicate rows.

```
* STORAGE GROUPS HIGH OCCUPANCE CAPTURE
  SELECT SGROUP-HIGH,SPERCENT-OCC-HI
  FROM (HLQ.MONTHLY.SUM
        HLQ.WEEKLY.SUM)
  USING HLQ.CNTL(STGPSUM)
  CREATE HLQ.STGP.WORK04.RAWHI
  ORDER DISTINCT BY SGROUP-HIGH A, SPERCENT-OCC-HI D
```

SELECT

Use the SELECT statement to identify the names of the fields you want to extract from the input file.

The following lists the guidelines for the SELECT statement:

- Use to start the query.
- Separate each field with a comma.
- List additional fields on the next line and specify a comma after the last field on the previous line.
- Select each field in the record from the position that it corresponds to in the COBOL map.
- Specify SELECT * to extract the entire record.
- Specify SELECT *DUMP to print the selected records in a snap dump format.
- Do not use SELECT * or SELECT *DUMP with the ORDER BY statement.

SELECT example

The following example shows the SELECT statement and some fields that are shown on mapping.

```
SELECT  SDATE,STIME,SSYSID,SGROUP,SCAPACITY-CYLS,SALLOC-CYLS,
        SPERCENT-OCC,SHIGH-THRSH
```

In this example, the selected fields are matched with the COBOL map of the file. Additionally, all numeric fields are converted to display numeric. If a selected field occurs more than once in a record, multiple selected lines are created.

```
01  STORAGE-GROUP-SUMMARY.
*  IBM JULIAN DATE FIELD SDATE
05  SDATE                PIC 9(7).
05  STIME                 PIC X(8).
05  SSYSID                PIC X(4).
05  SGROUP-GROUP.
10  SGROUP                PIC X(8).
05  SGROUP-H REDEFINES SGROUP-GROUP.
-----
05  SCAPACITY-CYLS        PIC 9(13).
05  SALLOC-CYLS           PIC 9(13).
-----
05  OCCUPANCY.
10  SPERCENT-OCC          PIC 9(3).
05  SHIGH-THRSH           PIC 9(3).
-----
05  FILLER                 PIC X(13).
*  FIELD DESCRIPTIONS FOLLOW.
*  SDATE                  DATE STORAGE GROUP SUMMARY WAS CREATED
*  STIME                  TIME STORAGE GROUP SUMMARY WAS CREATED
*  SSYSID                 SYSTEM IDENTIFIER
*  SGROUP                 NAME OF STORAGE GROUP
*  SVOLS                  NUMBER OF VOLUMES WITH GROUP
*  SCAPACITY-CYLS         GROUP CAPACITY IN CYLINDERS
*  SFREE-CYLS             NUMBER OF FREE CYLINDERS IN GROUP
*  SPERCENT-OCC           STORAGE GROUP PERCENT ALLOCATED
```

The following example shows what the file would look like when you run the SELECT statement. Each selected field is assigned a pair of legend characters. The DA=SDATE signifies the SDATE field. The same matching pair of legend characters are aligned vertically over the position in the record that represents that field as shown in the DA fields in the example below. This continues with each selected field. The selection of the legends has significance in their names. For example, all legends with D as the first character represent date fields. All legends with an alphabetic character in the second character represent alphabetic fields. All legend characters with a numeric as the second character represent numeric fields.

```
000001 DA=SDATE
000002 AA=STIME
000003 AB=SSYSID
000004 AC=SGROUP
000005 A0=SCAPACITY-CYLS
000006 A1=SALLOC-CYLS
000007 A2=SPERCENT-OCC
000008 A3=SHIGH-THRSH
-----+-----1-----+-----2-----+-----3-----+-----4-----+-----5-----+-----6-----+-----7--
000009 DDDDDD AAAAAAAAA AAAA AAAAAAA AAAAAAAAAAAAAA AAAAAAAAAAAAAA AAA AAA?
000010 AAAAAA AAAAAAA BBBB CCCCCCCC 00000000000000 111111111111 222 333?
000011 2005113 07:17:03 DVLP NOGROUP 0000001148598 0000000309789 027 085
000012 2005114 07:14:11 DVLP NOGROUP 0000001151938 0000000310545 027 085
000013 2005115 07:14:35 DVLP NOGROUP 0000001151938 0000000311342 028 085
000014 2005116 07:19:04 DVLP NOGROUP 0000001148598 0000000307399 027 085
000015 2005117 07:11:06 DVLP NOGROUP 0000001145258 0000000297359 026 085
000016 2005118 07:13:47 DVLP NOGROUP 0000001145258 0000000295147 026 085
000017 2005119 07:17:49 DVLP NOGROUP 0000001145258 0000000295439 026 085
000018 2005120 07:20:23 DVLP NOGROUP 0000001145258 0000000295380 026 085
000019 2005121 07:12:58 DVLP NOGROUP 0000001141918 0000000295374 026 085
000020 2005122 07:13:31 DVLP NOGROUP 0000001141918 0000000295374 026 085
000021 2005123 07:12:32 DVLP NOGROUP 0000001141918 0000000295414 026 085
000022 2005124 07:15:05 DVLP NOGROUP 0000001141918 0000000295855 026 085
000023 2005126 07:10:24 DVLP NOGROUP 0000001151938 0000000296569 026 085
000024 2005127 07:11:19 DVLP NOGROUP 0000001148598 0000000295153 026 085
000025 2005128 07:12:21 DVLP NOGROUP 0000001148598 0000000295138 026 085
000026 2005129 07:13:10 DVLP NOGROUP 0000001148598 0000000295162 026 085
```

TOKEY

Use the TOKEY statement to specify where the processing should end in the FROM data set.

After the key value specified in the argument is passed, processing stops.

USING

Use the USING statement to define the file that contains the COBOL map of the input file.

The data set name containing the COBOL map is specified as a fully-qualified data set name with no apostrophes. The COBOL map can be a member of a PDS or a sequential file.

If the input file has already been processed by the Query Language feature, you must use the DEFERRED parameter.

Fully qualified data set name example

This example shows a fully qualified data set name with no apostrophes.

```
USING HLQ.CNTL(STGPSUM)
```

DEFERRED Parameter Example

This example shows the DEFERRED parameter in the query of PLAN03 because the query in PLAN01 has already processed the three input files using a COBOL map in HLQ.CNTL(STGPSUM).

```
PLAN PLAN01
* STORAGE GROUPS HIGH OCCUPANCE CAPTURE
SELECT SGROUP-HIGH,SPERCENT-OCC-HI
FROM (HLQ.MONTHLY.SUM
      HLQ.WEEKLY.SUM)
USING HLQ.CNTL(STGPSUM))
CREATE HLQ.STGP.WORK04.RAWHI
ORDER DISTINCT BY SGROUP-HIGH A, SPERCENT-OCC-HI D
END PLAN01
PLAN PLAN03
* ELIMINATE DUPLICATE STORAGE GROUPS
SELECT SGROUP-HIGH,SPERCENT-OCC-HI
FROM HLQ.STGP.WORK04.RAWHI
USING DEFERRED
CREATE HLQ.STGP.WORK04.HIGH.CSV
ORDER DISTINCT BY SGROUP-HIGH A
END PLAN03
```

WHERE

Use the WHERE statement to specify the filtering for selecting specific data.

If the WHERE statement is not specified, all fields specified in the SELECT statement are selected without any filtering (not recommended).

Follow these rules when using the WHERE statement:

- You can specify Boolean operators.
- You can specify an AND or OR connector to each argument.
- You can use parenthetical statements. All conditions coded in parentheses are evaluated to be either true or false.
- You can specify NOT to reverse a true or false condition.
- The fields in the

```
WHERE
```

statement must exist in the COBOL map specified in the

```
USING
```

statement.

- You cannot specify the literal before the field.

If you specify a Boolean operator, such as LT (less than), the field specified in the WHERE statement is compared to the argument specified by the literal. If the content of the field is less than the specified literal, then the condition is true and the record is included. The same logic applies for the GT (greater than) operator. If the content of the field is greater than the literal, then the condition is true and the record is included.

Literal equals example

This example shows a simple equate to a literal value.

```
WHERE SGROUP EQ 'HSMML1'
```

Greater than example

This example shows a field called MIGDATE is compared to a field called BACKDATE in the same record. If the contents of MIGDATE is greater than the contents of the data described by BACKDATE, the condition is true.

```
WHERE MIGDATE GT BACKDATE
```

AND connector example

This example shows two arguments connected with AND. In this case, both arguments must be satisfied before the record is selected.

```
WHERE MIGDATE GT BACKDATE  
AND VOLSER EQ '123456'
```

OR connector example

This example shows two arguments connected with OR. In this example, either condition may be true to cause record selection.

```
WHERE MIGDATE GT BACKDATE  
OR MIGDATE GT '*-5'
```

Parenthetical arguments example

This example shows parenthetical arguments.

```
WHERE (MIGDATE GT BACK DATE  
AND VOLSER EQ '123456')  
AND (MIGDSN EQ 'USERID.DATA.SET'  
OR MIGDSN EQ 'ANOTHER.USER.DATA.SET')
```

Reversed parenthetical arguments example

This example shows parenthetical arguments that are reversed by NOT.

```
WHERE (MIGDATE GT BACK DATE  
AND VOLSER EQ '123456')  
AND NOT(MIGDSN EQ 'USERID.DATA.SET'  
OR MIGDSN EQ 'ANOTHER.USER.DATA.SET')
```

Notices

This information was developed for products and services offered in the U.S.A.

This material may be available from IBM in other languages. However, you may be required to own a copy of the product or product version in that language in order to access it.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785
U.S.A.

For license inquiries regarding double-byte (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:

Intellectual Property Licensing
Legal and Intellectual Property Law
IBM Japan Ltd.
19-21, Nihonbashi-Hakozakicho, Chuo-ku
Tokyo 103-8510, Japan

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law: INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

IBM Corporation
J64A/G4
555 Bailey Avenue

San Jose, CA 95141-1003
U.S.A.

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this information and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement, or any equivalent agreement between us.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrate programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs. The sample programs are provided "AS IS", without warranty of any kind. IBM shall not be liable for any damages arising out of your use of the sample programs.

If you are viewing this information softcopy, the photographs and color illustrations may not appear.

Trademarks

IBM, the IBM logo, and [ibm.com](http://www.ibm.com)® are trademarks or registered marks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the web at "Copyright and trademark information" at: <http://www.ibm.com/legal/copytrade.shtml>.

UNIX® is a registered trademark of The Open Group in the United States and other countries.

Terms and conditions for product documentation

Permissions for the use of these publications are granted subject to the following terms and conditions:

Applicability: These terms and conditions are in addition to any terms of use for the IBM website.

Personal use: You may reproduce these publications for your personal, noncommercial use provided that all proprietary notices are preserved. You may not distribute, display or make derivative work of these publications, or any portion thereof, without the express consent of IBM.

Commercial use: You may reproduce, distribute and display these publications solely within your enterprise provided that all proprietary notices are preserved. You may not make derivative works of these publications, or reproduce, distribute or display these publications or any portion thereof outside your enterprise, without the express consent of IBM.

Rights: Except as expressly granted in this permission, no other permissions, licenses or rights are granted, either express or implied, to the publications or any information, data, software or other intellectual property contained therein.

IBM reserves the right to withdraw the permissions granted herein whenever, in its discretion, the use of the publications is detrimental to its interest or, as determined by IBM, the above instructions are not being properly followed.

You may not download, export or re-export this information except in full compliance with all applicable laws and regulations, including all United States export laws and regulations.

IBM MAKES NO GUARANTEE ABOUT THE CONTENT OF THESE PUBLICATIONS. THE PUBLICATIONS ARE PROVIDED "AS-IS" AND WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT, AND FITNESS FOR A PARTICULAR PURPOSE.

Privacy policy considerations

IBM Software products, including software as a service solutions, ("Software Offerings") may use cookies or other technologies to collect product usage information, to help improve the end user experience, to tailor interactions with the end user, or for other purposes. In many cases no personally identifiable information is collected by the Software Offerings. Some of our Software Offerings can help enable you to collect personally identifiable information. If this Software Offering uses cookies to collect personally identifiable information, specific information about this offering's use of cookies is set forth below.

This Software Offering does not use cookies or other technologies to collect personally identifiable information.

If the configurations deployed for this Software Offering provide you as customer the ability to collect personally identifiable information from end users via cookies and other technologies, you should seek your own legal advice about any laws applicable to such data collection, including any requirements for notice and consent.

For more information about the use of various technologies, including cookies, for these purposes, see IBM's Privacy Policy at <http://www.ibm.com/privacy> and IBM's Online Privacy Statement at <http://www.ibm.com/privacy/details> the section entitled "Cookies, Web Beacons and Other Technologies" and the "IBM Software Products and Software-as-a-Service Privacy Statement" at <http://www.ibm.com/software/info/product-privacy>.

Glossary

A

Alias

The name HSM assigns to a migrated or backup of a data set. For example: HSM.HMIG.T120906.FA390.AUDIT.I6034. This alias name might represent the migrated version of FA390.CNTL.

B

BCDS

Backup Control Data Set. This is a KSDS VSAM Cluster that contains information about the backup versions of data sets.

C

CDD

Common Data Set Descriptor record. Non-compressed dsname on a tape volume preceded by '*CDD**'.

Cycle

For this document, cycle means a cycle day number assigned to a backup tape that contains backup copies. A similar backup tape inventory is Spill.

L

L2

L2 or ML2 is a term meaning Level 2 tape. When a migrated data set is in L2 it means that it is on tape.

M

MCA

Migration Control Data Set Alias Entry Record. Typically this is an alias name assigned to a true name for a migrated data set. However, VSAM component names (data, index path, and so on) are also considered MCA records but are true names for the VSAM components. An MCA record has no significant information required to recall a data set. Mostly it is used to manage the tape recycle process.

MCB

Backup Control Data Set Record. This record is an entry in the BCDS. It is the actual true name for backup versions. A single MCB contains information about all backup versions of the data set.

MCC

Backup Control Data Set Backup Version Record. This record is an entry in the BCDS. It is the HSM generated alias name and contains critical information to recover a data set.

MCD

Migration Control Data Set Record. This record is an entry in the MCDS. It is the true name for a migrated data set. This record must exist for a data set to be recalled.

MCDS

Migration Control Data Set. This is the VSAM cluster that contains information about migrated data.

MCO

Migration Control Data Set VSAM Associations Record. This is a record in the MCDS that contains information about the VSAM components of a migrated data set, such as Index name, Data name, Path name, AIX name, and so on.

MCT

Backup Control Data Set Backup Volume Record. This is a record in the BCDS. It contains information about the backup volumes and must exist before a data set can be recovered.

MCV

Migration Control Data Set Volume Record. This is a record in the MCDS. It contains information about the migration volumes and must exist before a data set can be recalled.

O

OCDS

Offline Control Data Set. This is the VSAM cluster that contains information about the tape volumes used for Migration Level 2 and Backup tapes. Its primary purpose is to maintain tape usage statistics for recycle functions.

R

Recycle

Recycle is a term used by IBM for maintaining the HSM tape inventory. As data stored on tapes expires, is recalled, or otherwise is no longer valid, the information on the tapes needs to be deleted in order to free up the space. To do this, HSM copies valid data from an old tape to a new tape and drops off unneeded data. This frees up the old tape for reuse.

RLS

Record Level Sharing is an OS/390 service supported by the SYSPLEX Coupling Facility. RLS permits multiple OS/390 systems to concurrently share VSAM files on shared DASD while in update mode, without compromising either file update integrity or performance.

RMM

Removable Media Manager.

S

SDSP

Small Data Set Packing. This is a function used by HSM to pack data that occupies less than one track into a VSAM cluster. One track is the smallest allocation a data set can have. If an installation has many data sets smaller than one track, they can direct migration to the SDSP cluster and save significant space.

Spill

Spill is a term used for recycled backup tapes. Original backup is directed to a cycle tape. The recycle of the cycle tapes goes to spill volumes. Cycle tapes are assigned to a number (1 through 31) for the backup that runs on those days of the month.

T

Tape Inventory

An external (to HSM) system to manage an installation's tape inventory.

TCN

Tape Copy Needed. An OCDS record that contains information about a tape volume that has been marked as needing a tape copy.

TMS

Tape Management System. This term refers to the Computer Associates CA1 Tape Management System. It is a system that contains information about tape (cartridges) used in an MVS environment.

TTOC

Tape Table Of Contents. This is a record in the OCDS. It contains information about migrated/backed up data to tape. It is used to control recycle processes.

V

VTOC

Volume Table Of Contents. For those data sets migrated or backed up to Level 1 (except SDSP) an entry in the direct access volume is placed in its VTOC.

Index

A

- access to HSM commands [52](#)
- Active Allocations report [47](#), [49](#)
- address space [56](#), [57](#)
- administrative tasks
 - customizing processing parameters [51](#)
 - listing CNTL members [51](#)
 - listing PARMLIB members [51](#)
 - listing PLAN members [51](#)
 - submitting audit procedures [51](#)
 - testing HSM command access for user IDs [51](#)
- AKDAUDAL audit procedure [43](#)
- AKDAUDCM audit procedure [43](#)
- AKDAUDCT audit procedure [43](#)
- AKDAUDDB audit procedure [43](#)
- AKDAUDFD audit procedure [46](#)
- AKDAUDFL audit procedure [46](#)
- AKDAUDFT audit procedure [46](#)
- AKDAUDGF audit procedure [44](#)
- AKDAUDHL audit procedure [44](#)
- AKDAUDMD audit procedure [44](#)
- AKDAUDOD audit procedure [44](#)
- AKDAUDRM audit procedure [44](#)
- AKDAUDSM audit procedure [45](#)
- AKDAUDTP audit procedure [45](#)
- AKDAUDZR audit procedure [45](#)
- AKDCMD00
 - customization [5](#)
- AKDINI
 - customizing [6](#)
- AKDMAIN task
 - starting [8](#)
- AKDSAVFT member [9](#)
- Alias defined [183](#)
- audit procedure descriptions
 - AKDAUDAL [43](#)
 - AKDAUDCM [43](#)
 - AKDAUDCT [43](#)
 - AKDAUDDB [43](#)
 - AKDAUDFD [46](#)
 - AKDAUDFL [46](#)
 - AKDAUDFT [46](#)
 - AKDAUDGF [44](#)
 - AKDAUDHL [44](#)
 - AKDAUDMD [44](#)
 - AKDAUDOD [44](#)
 - AKDAUDRM [44](#)
 - AKDAUDSM [45](#)
 - AKDAUDTP [45](#)
 - AKDAUDZR [45](#)
- AUTHPGM NAMES list
 - adding to member IKJTSO00 [7](#)
- automatic error correction
 - bypassing [74](#)
 - enabling [73](#)
 - quick reference [75](#)

B

- BCDS defined [183](#)
- bypassing automatic error correction [74](#)

C

- CDD defined [183](#)
- CNTL member list [51](#)
- CNTL members [53](#)
- COLOR [28](#)
- commands
 - COLOR [28](#)
 - FILTERS [28](#)
 - FIX [28](#)
 - general console commands [32](#)
 - HIDE [28](#)
 - HILITE [28](#)
 - ISPF scroller commands [28](#)
 - KILO [28](#)
 - MOVE [28](#)
 - REFRESH [32](#)
 - RESET [28](#)
 - SCALE [28](#)
 - SCOPE [28](#)
 - SHOW [28](#)
 - SHOWALL [28](#)
 - SHUTDOWN [32](#), [33](#)
 - SIZE [28](#)
 - SORT [28](#)
 - UNFIX [28](#)
- communication
 - cross-system, about [23](#)
 - OMVS segment definition requirement [23](#)
- CONNECTION keyword [23](#)
- console interface
 - general commands for address space [32](#)
- Control Data Set Backup Information [49](#)
- Control Data Sets report [47](#), [48](#)
- Control/M Tape tape management system
 - procedure customization [10](#)
- cookie policy [179](#)
- cross-system communications [23](#)
- customizing
 - JCL parameter settings [51](#)
 - started task data set names [51](#)
- customizing AKDCMD00 [5](#)
- customizing AKDINI [6](#)
- customizing processing parameters [51](#)
- Cycle defined [183](#)

D

- data sets allocated [56](#)
- data sets used [56](#)
- data sets without a backup [67](#), [69](#)
- DFSMSHsm commands

DFSMSHsm commands (*continued*)
issuing from DFSMSHsm Host Reports panel [47](#)

E

enqueues [57](#)
error correction
 automatic error correction quick reference [75](#)
 bypassing automatic error correction [74](#)
 enabling automatic error correction [73](#)
error messages [36](#)
Errors Cost report [59](#)
exiting the ISPF interface [37](#)

F

FILTERS [28](#)
FIX [28](#)
FORMAT command member
 report layout section [30](#)
 sample [32](#)

G

GFS/AFM tape management
 system
 procedure customization [10](#)
GLOBAL SUMMARY database allocation [6](#)

H

HIDE [28](#)
HILITE [28](#)
HSM CDS Backups report [47](#), [49](#)
HSM command access [52](#)
HSM host information [47](#)
HSM Host Information [47](#)
HSM Host Information report [47](#)

I

ISPF interface
 scroller commands [28–30](#)

J

JCL parameter setting customization [51](#)

K

KILO [28](#)

L

L2 defined [183](#)
legal notices
 cookie policy [179](#)
 notices [179](#)
 trademarks [179](#)
license key specification [6](#)
links

links (*continued*)
 non-IBM Web sites
 [180](#)

list CNTL members [53](#)
list PARMLIB members [52](#)
list PLAN members [53](#)
listing CNTL members [51](#)
listing data sets [56](#)
listing data sets allocated [56](#)
listing enqueues [57](#)
listing PARMLIB members [51](#)
listing PLAN members [51](#)
LOCALCONN keyword [23](#)

M

MCA defined [183](#)
MCB defined [183](#)
MCC defined [183](#)
MCDS defined [183](#)
MCO defined [183](#)
MCS defined [183](#)
MCT defined [183](#)
MCV defined [183](#)
message documentation [36](#)
messages [58](#)
Migrated Data Sets Audit report [61](#)
MOVE [28](#)
multi-system communications [23](#)

N

notices [179](#)

O

OCDS defined [183](#)
OMVS segment definition
 requirement for using cross-system communications [23](#)
OMVS segment for started task [7](#)

P

PARMLIB data set members [52](#)
PARMLIB member list [51](#)
PLAN member list [51](#)
PLAN members [53](#)
PLANS library
 creating [6](#)
PORTNUM keyword [23](#)
product license specification [6](#)
product messages [58](#)

R

Recycle defined [183](#)
REFRESH command [32](#)
release [55](#)
report
 Storage Groups Threshold Audit report [66](#)
reports
 Active Allocations [47](#)
 Control Data Sets [47](#)

reports (*continued*)

- Errors Cost report [59](#)
- for DFSMSHsm hosts [47](#)
- HSM CDS Backups [47](#)
- HSM Host Information [47](#)
- Migrated Data Sets Audit report [61](#)
- SMS Volumes Audit report [63](#)

RESET [28](#)

RLS defined [183](#)

RMM defined [183](#)

S

SCALE [28](#)

SCOPE [28](#)

scroller commands

commands

FORMAT [30](#)

SAVE [29](#)

FORMAT command [30](#)

SAVE command [29](#)

SDSP defined [183](#)

SHOW [28](#)

SHOWALL [28](#)

SHUTDOWN command [32](#), [33](#)

shutting down the product address space [32](#)

SIZE [28](#)

SMS Volumes Audit report [63](#)

SORT [28](#)

Spill defined [183](#)

started task

AKDMAIN [8](#)

OMVS segment for [7](#)

started task data set name customization [51](#)

Storage Groups Threshold Audit report [66](#)

submitting audit procedures [51](#)

SYSCHKINTVL keyword [23](#)

system connections status [58](#)

T

Tape Inventory defined [183](#)

TCN defined [183](#)

TCP/IP

OMVS segment definition requirement [23](#)

using for cross-system communications [23](#)

testing HSM command access for user IDs [51](#)

thrashing index

identifying data sets with high thrashing index [61](#)

TIMEOUT keyword [23](#)

TLMS tape management system

procedure customization [10](#)

TMS defined [183](#)

trademarks [179](#)

TTOC defined [183](#)

U

UNFIX [28](#)

USEEXSYS [23](#)

USERWAIT [23](#)

V

version [55](#)

viewing version and release level data [55](#)

virtual storage [57](#)

VTOC defined [183](#)

W

work data set [58](#)

Z

ZARA tape management system

procedure customization [10](#)



Product Number: 5698-B12

SC27-2347-07

