



StorageTek™ Storage Management Component (SMC)

MVS software

Configuration and Administration Guide

Part Number: 312597002

Revision: D

Version: 6.1



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Configuration and Administration Guide

Version 6.1

Sun Microsystems, Inc.
www.sun.com

Part No. 312597002
Rev. D September, 2008

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Document Effectivity

EC Number	Date	Doc Kit Number	Type	Effectivity
132084	February 15, 2005	---	Revision A (First Edition)	This document applies to SMC, Release 6.1.
132713	July, 2006	---	Revision B	
---	April, 2008	---	Revision C	
---	September, 2008	---	Revision D	

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What's New With This Release?

SMC Release 6.1 includes the following enhancements and modifications:

Enhancement/Modification	Publication(s)/ Primary Locations
Revision D:	
Support for the StorageTek™ T10000B tape drive	Chapter 7 Appendix B
Revision C:	
The client communication monitor subtask feature provides periodic validation of active communication paths for all non-disabled TapePlexes. This feature is enabled using the MONitor parameter on the TCPip command.	Chapters 2, 7
The automatic primary server switching feature directs Cz/OS to automatically switch from an active secondary server to the primary server when the primary server becomes available. This feature is enabled using the PREFprimary parameter on the TCPip MONitor command.	Chapters 2, 7
Support for the StorageTek™ T9840D tape drive	Chapter 7 Appendix B
Support for the StorageTek™ T10000 tape drive	Chapter 7 Appendix B
Revision B:	
SMC exclusion level 1 for specific requests is updated to exclude all virtual drives for non-labeled (NL) specific volume requests.	Chapter 4
The SMC ALLOCDef command includes the new VTVMAXvol parameter, used to set the volume count for a new allocation to 255 during MVS converter/interpreter (IDAX) processing when the JCL or SMC DFSMS ACS routine esoteric contains at least one virtual device.	Chapter 7
<p>The SMC SERver command is revised as follows:</p> <ul style="list-style-type: none"> • The new INITFail parameter can be used to specify the number of failures (before communication is established) before the specified server path is disabled or placed out of service. • The FAil limit default for the SMC SERver command is changed from 10 to 0. • Rules for the <i>hostname</i> value (HOst parameter) are changed. 	Chapter 7

Enhancement/Modification	Publication(s)/ Primary Locations
Support for the StorageTek™ T10000 transport is added for the SMC TAPEREQ control statement and UNITAttr command.	Chapter 7 Appendix B
Message changes and additions	Chapter 10 Appendix F
<i>First Edition (Revision A):</i>	
The SMC TAPEREQ control statement replaces the HSC and MVS/CSC TAPEREQ control statement.	Chapter 7 Appendix B
The SMC TREQDEF operator command replaces the HSC and MVS/CSC TREQDEF command and control statement.	Chapters 3, 7
The new SMC UNITATTR command replaces the HSC UNITDEF command and UNITATTR control statement. It is used to set the model type for nonlibrary drives, and IGNORE as the model type for drives to be excluded from allocation.	Chapters 3, 7, 9 Appendix B
The requirement has been removed for the SMC to be initialized before the HSC and/or MVS/CSC.	Chapter 3
The new SMC DRIVEMAP command allows you to map device addresses used on the HSC server to the addresses used on the SMC client.	Chapters 2, 7
The new SMC LOG command allows logging of XML payloads sent and/or received to local and remote library subsystems and servers.	Chapter 7
The new SMC MOUNTDEF command is used to specify message handling and mount/dismount policies previously provided by the HSC and CSC.	Chapters 3, 6, 7
The SMC ALLOCDEF command includes the following new parameters: DEFER, FETCHMSG, EXTVOLESOT, and ZEROSCR.	Chapters 3, 7
The SMC LIBRARY command includes a new STATUS parameter, used to list current status (active/inactive/disabled) for all libraries, or a single named library. For an active library, the status lists the name of the current server or local subsystem.	Chapter 7
The SMC READ command includes a new HOST parameter, used to specify that a READ command only be processed for a specific host.	Chapter 7
The SMC READ command can now be issued from either the console or a file.	Chapter 7
The SMC SMSDEF command includes a new MOD parameter, used to specify whether SMS esoteric substitution (if specified) applies to DISP=MOD data sets as well as DISP=NEW data sets.	Chapter 7
SMC LIBRARY WTORDEST processing now applies to both local and remote servers.	Chapter 7
SMC MSGDEF ECHOMNTERR processing now applies to both local and remote servers.	Chapter 7
ALLOCDEF FAILNOINFO processing now applies to either specific volume allocations <i>only</i> , or to <i>all allocations</i> .	Chapter 7

Enhancement/Modification	Publication(s)/ Primary Locations
SMC exclusion level 2 is updated for resident VTVs, excluding virtual drives only if they are in a VTSS to which the VTV cannot be migrated and recalled.	Chapters 4, 5
SMC exclusion level 5 is updated to exclude drives based on the SMC ALLOCDEF EXTVOLESOT esoteric.	Chapters 4, 5
SMC exclusion level 7 is updated to exclude drives based on the resident VTSS. This change allows customers with mixed density drives to set the minimum exclusion level to 3.	Chapters 4, 5
SMC exclusion MINLVL=0 is now valid for both ALLOCJOB and ALLOCDEF commands. MINLVL=0 is used to force SMC to proceed with allocation even if none of the allocation level criteria are satisfied.	Chapters 4, 5
Message changes, additions and deletions.	Chapters 10, 11 Appendix F

Use the following table to identify the **SMC 6.1 replacement** for a command, control statement, macro, or specific parameter that was previously provided by the HSC and/or MVS/CSC.

HSC 6.0 Component/Parameter	MVS/CSC 6.0 Component/Parameter	SMC 6.1 Replacement	Page
TAPEREQ control statement	TAPEREQ control statement	TAPEREQ control statement	169
TREQDEF command and control statement	TREQDEF command and control statement	TREQDEF command	189
UNITATTR control statement	---	UNITATTR command (nonlibrary and IGNORE only)	194
UNITDEF command	---	UNITATTR command	194
ALLOC command: DEFER FETCH SPECVOL ZEROSCR	startup parms/ALTER command: DEFER FETCH --- ZEROSCR	ALLOCDEF command: DEFER (Note: Default ON) FETCHMSG EXTVOLESOT ZEROSCR	128 128 129 129
AMPND/NOAMPND startup exec parameter	AMPND/NOAMPND startup exec parameter	MOUNTDEF command: AUTOPENDMOUNT	149
MNTD command: VOLWATCH MOUNTMSG	startup parms/ALTER command: --- WTODESC	MOUNTDEF command: VOLWATCH ROLLMSG	150
SLILIBRY macro: DELDISP NNLBDRV	startup parms/ALTER command: DELDISP NONLIB	MOUNTDEF command: DISMSCRReal/DISMSCRVirt UNITATTR command	149 194

About this Guide

Intended Audience

This guide provides administration and configuration information for the Sun StorageTek™ Storage Management Component (SMC) software. It is intended for storage administrators, system programmers and operators responsible for configuring and maintaining the SMC software at their site.

How this Guide is Organized

This guide contains the following chapters:

- Chapter 1, “Introduction” describes the SMC product; its general features and functions.
- Chapter 2, “SMC and StorageTek Library Management” describes typical SMC configuration scenarios and provides an introduction to the SMC LIBRARY and SERVER commands as well as the StorageTek™ HTTP Server for OS/390 and z/OS.
- Chapter 3, “Starting the SMC” describes how to initialize the SMC software.
- Chapter 4, “SMC Allocation in a JES2 Environment” describes the SMC allocation function for a JES2 environment.
- Chapter 5, “SMC Allocation in a JES3 Environment” describes the SMC allocation function for a JES3 environment.
- Chapter 6, “SMC Message Handling” describes the SMC message intercept function.
- Chapter 7, “Commands and Control Statements” describes the SMC operator commands.
- Chapter 8, “Recovery Procedures” describes procedures used when SMC or a library subsystem (HSC or MVS/CSC) becomes inactive.
- Chapter 9, “SMC Utilities” describes SMC system utilities.
- Chapter 10, “SMC Messages” describes the SMC system messages.
- Chapter 11, “StorageTek HTTP Server Messages” describes StorageTek HTTP Server messages.

- Appendix A, “Intercepted Messages” lists MVS, JES3, and TMS messages that are intercepted by the SMC.
- Appendix B, “MEDia, RECtech, and MODel Values” describes valid values for parameters used to specify media types, recording techniques, and model types.
- Appendix C, “SMC Migration and Coexistence” describes SMC migration and coexistence information.
- Appendix D, “Differences Between SMC and NCS 4.1 and Below” describes various differences between SMC and NCS 4.1, including those related to allocation and message handling.
- Appendix E, “SMC Interaction with Other Software” describes interaction with various third-party software packages.
- Appendix F, “Message Change Summary” lists SMC messages that have been added, changed or deleted for this release.

An index and glossary are also included.

Conventions Used in this Guide

Product Names

HSC refers to the MVS implementation of the Sun StorageTek™ Host Software Component. The VM implementation of HSC is not supported by SMC.

MVS/CSC refers to the Sun StorageTek™ Client System Component for MVS.

Typographic

In the JCL examples in this guide, some fields appear in lower case. You must update these fields to match your installation requirements.

Symbols

The following symbols are used to highlight text in this guide:



Note: Information that may be of special interest to you. Notes are also used to point out exceptions to rules or procedures.



Warning: Information necessary to keep you from damaging your hardware or software.



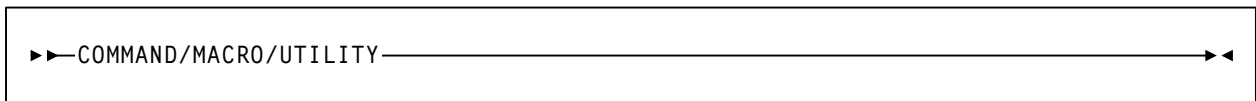
Caution: Information necessary to keep you from corrupting your data.

Syntax Flow Diagrams

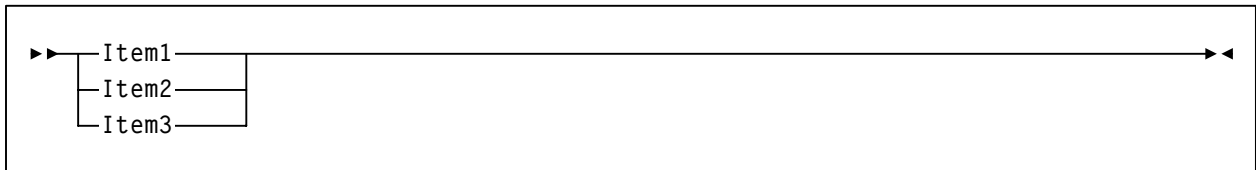
Syntax flow diagramming conventions include the following:

Flow Lines

Syntax diagrams consist of a horizontal base line, horizontal and vertical branch lines, and the text for a command, control statement, macro, or utility.



or

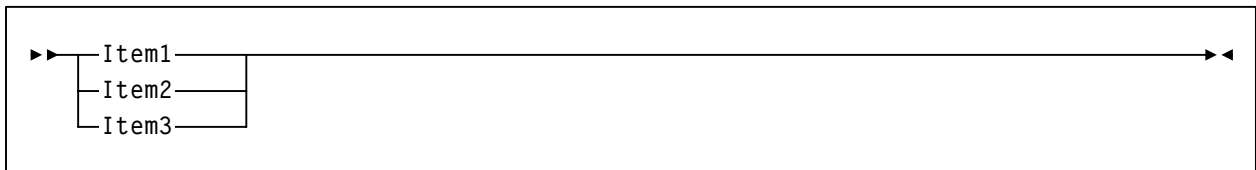


Diagrams are read left to right and top to bottom. Arrows indicate flow and direction.

- a statement begins with ▶▶
- a statement ends with ▶◀
- diagrams continuing to the next line begin with ▶
- fragments begin and end with |

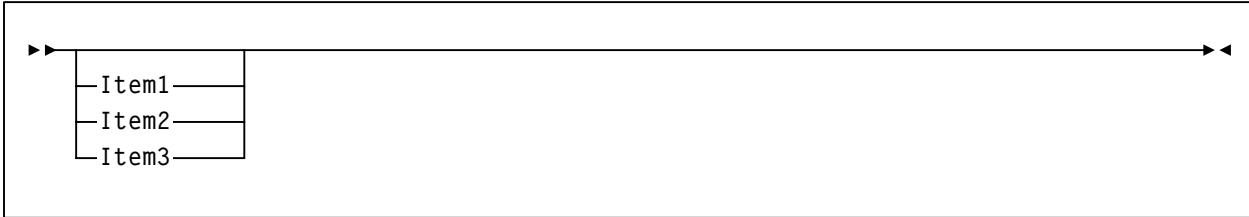
Single Required Choice

Branch lines (without repeat arrows) indicate that a single choice must be made. If one of the items from which a choice is being made is positioned on the base line of the diagram, a single choice is required.



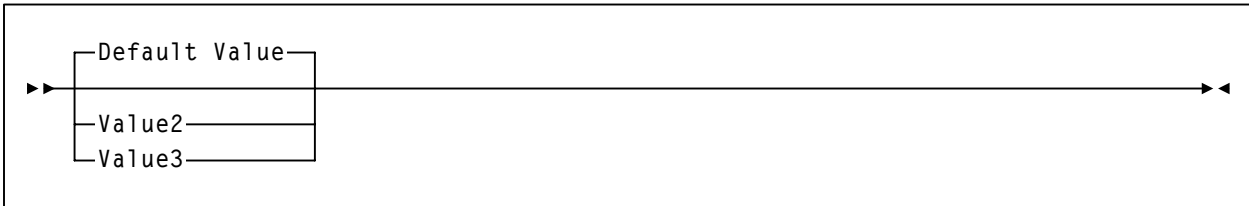
Single Optional Choice

If the first item is positioned on the line below the base line, a single choice of items in the stack is optional.

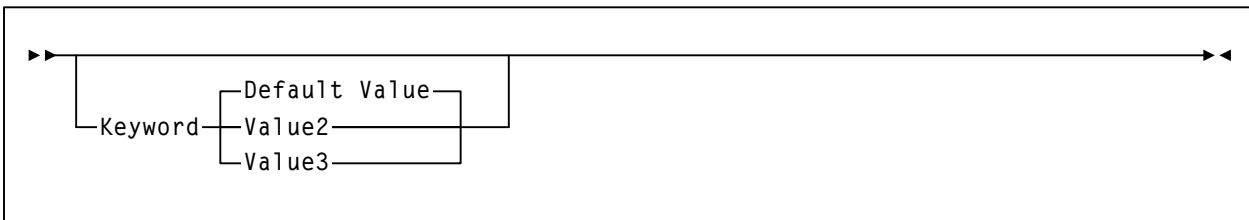


Defaults

Default values and parameters appear above the base line. In the following example, if a value is not specified with the command, the Default Value is used.



Some keyword parameters provide a choice of values in a stack. When the stack contains a default value, the keyword and the value choices are placed below the base line to indicate that they are optional, and the default value appears above the keyword line. In the following example, if the keyword is not specified with the command, the Default Value is used.



Repeat Symbol

A repeat symbol indicates that more than one choice can be made or that a single choice can be made more than once. The repeat symbol shown in the following example indicates that a comma is required as the repeat delimiter.



Keywords

All keywords are shown in uppercase or in mixed case. When keywords are not case sensitive, mixed case implies that the lowercase letters may be omitted to form an abbreviation.

Variables

Italic type is used to indicate a variable.

Alternatives

A bar (|) is used to separate alternative parameter values.

Delimiters

If parenthesis (), a comma (,), a semicolon (;), or any other delimiter is shown with an element of the syntax diagram, it must be entered as part of the statement or command unless otherwise stated.

Ranges

- An inclusive range is indicated by a pair of elements of the same length and data type, joined by a dash. The first element must be strictly less than the second element.
- A hexadecimal range consists of a pair of hexadecimal numbers (for example, 0A2-0AD, or 000-0FC).
- A decimal range consists of a pair of decimal numbers (i.e., 1-9, or 010-094). Leading zeros are not required. The decimal portion is referred to as an incremental range. The character positions of the incremental portion of both range elements must match, and the nonincremental characters of the first element must be identical to those of the second element.

- A numeric VOLSER range (*vol-range*) consists of a pair of VOLSER elements containing a decimal numeric portion of 1 to 6 digits (for example, ABC012-ABC025, or X123CB-X277CB). The decimal portion is referred to as an incremental range. The following additional restrictions apply:
 - The character positions of the incremental portion of both range elements must match.
 - The nonincremental characters of the first element must be identical to those of the second element.
 - You cannot increment two portions of a range element. If 111AAA is the first element, you cannot specify 112AAB for the second element.
 - If a VOLSER range contains more than one decimal portion, any portion is valid as the incremental range. For example:

<u>A00B00</u>	the largest range that can be specified is A00B00 through A99B99.
<u>A0B0CC</u>	the largest range that can be specified is A0B0CC through A9B9CC.
<u>000XXX</u>	the largest range that can be specified is 000XXX through 999XXX.

- An alphabetic VOLSER range (*vol-range*) consists of a pair of VOLSER elements containing an incremental portion of 1 to 6 characters (for example, 000AAA-000ZZZ, or 9AAA55-9ZZZ55). This portion is referred to as an incremental range. The following additional restrictions apply:
 - The character positions of the incremental portion of both range elements must match.
 - The nonincremental characters of the first element must be identical to those of the second element.
 - You cannot increment two portions of a range element. If 111AAA is the first element, you cannot specify 112AAB for the second element.
 - The alphabetic portion of the VOLSER range is defined as being from character A to Z. To increment multi-character sequences, each character increments to Z. For instance, ACZ is part of the AAA-AMM range. Examples are:

<u>A00A0-A99A0</u>	increments VOLSERs A00A0 through A09A0, then A10A0 through A99A0.
<u>9AA9A-9ZZ9A</u>	increments VOLSERs 9AA9A through 9AZ9A, then 9BA9A through 9ZZ9A.
<u>111AAA-111ZZZ</u>	increments VOLSERs 111AAA through 111AAZ, then 111ABA through 111ZZZ
<u>999AM8-999CM8</u>	increments VOLSERs 999AM8 through 999AZ8, then 999BA8 through 999CM8
<u>A3BZZ9-A3CDE9</u>	increments VOLSERs A3BZZ9 through A3CAA9, then A3CAB9 through A3CDE9
<u>AAAAAA-AAACCC</u>	increments VOLSERs AAAAAA through AAAAAZ, then AAAABA through AAACCC
<u>CCCNNN-DDDNNN</u>	increments VOLSERs CCCNNN through CCCNNZ, then CCCNOA through DDDNNN *

* **Caution:** This is a very large range.

The number of volumes in an alphabetic VOLSER range depends on the number of elements in the incrementing portion of the VOLSER range. For an A to Z range in each character position, the number of volumes can be calculated by 26 to the power of the number of positions that are being incremented.

A-Z	26^1	26
AA-ZZ	26^2	676
AAA-ZZZ	26^3	17,576
AAAA-ZZZZ	26^4	456,976
AAAAA-ZZZZZ	26^5	11,881,376
AAAAAA-ZZZZZZ	26^6	308,915,776

Lists

A list consists of one or more elements. If more than one element is specified, the elements must be separated by a comma or a blank space, and the entire list must be enclosed in parentheses.

Blanks

Keyword parameters and values may be separated by any number of blanks.

Control Statements

The standard syntax conventions for control statements are as follows:

- The only valid control statement information area is from column 1 to column 72. Columns 73-80 are ignored.
- Parameters may be separated by one or more blanks or a comma.
- A value is associated with a parameter by an equal (=) sign or by enclosing the value in parentheses, and concatenating it immediately after the parameter.
- Case (upper or lower) is ignored in actual control statements.
- Continuations are supported by including a plus (+) sign at the end of the line to be continued.
- /* and */ can be used to enclose comments in the job stream. Comments can be continued over multiple lines, but cannot be nested.
- The maximum length for a control statement is 1024 characters.

Related Publications

The following publications contain information about specific topics relating to the use of the Storage Management Component (SMC):

StorageTek™ Nearline Control Solution (NCS) Publications

- *NCS Installation Guide*
- *NCS User Exit Guide*
- *Requesting Help from Software Support*

StorageTek™ Host Software Component (MVS/HSC) Publications

- *MVS/HSC Configuration Guide*
- *MVS/HSC Operator's Guide*
- *MVS/HSC System Programmer's Guide*
- *MVS/HSC Messages and Codes Guide*

StorageTek™ Client System Component (MVS/CSC) Publications

- *MVS/CSC Configuration Guide*
- *MVS/CSC Operator's Guide*
- *MVS/CSC System Programmer's Guide*
- *MVS/CSC Messages and Codes Guide*

StorageTek™ Virtual Storage Manager Publications

- *VTCS Installation and Configuration Guide*
- *VTCS Administration Guide*
- *VTCS Messages and Codes Guide*
- *VTCS Command and Utility Reference*

IBM JES3 Publications

- *MVS/ESA JES3 Initialization and Tuning Reference*
- *OS/390 JES3 Initialization and Tuning Reference*

Additional Information

Sun Microsystems, Inc. (Sun) offers several methods for you to obtain additional information.

Sun's External Web Site

Sun's external Web site provides marketing, product, event, corporate, and service information. The external Web site is accessible to anyone with a Web browser and an Internet connection.

The URL for the Sun external Web site is: <http://www.sun.com>

The URL for Sun StorageTek™ brand-specific information is:
<http://www.storagetek.com>

Partners Site

The StorageTek Partners site is a Web site for partners with a StorageTek Partner Agreement. This site provides information about products, services, customer support, upcoming events, training programs, and sales tools to support StorageTek Partners. Access to this site, beyond the Partners Login page, is restricted. On the Partners Login page, Sun employees and current partners who do not have access can request a login ID and password and prospective partners can apply to become StorageTek resellers.

The URL for the StorageTek Partners site is:
<http://members.storagetek.com>

The URL for partners with a Sun Partner Agreement is:
<http://www.sun.com/partners/>

Hardcopy Publications

Contact a Sun sales or marketing representative to order additional paper copies of this publication or to order other StorageTek brand product customer publications in paper format.

Customer Support

Customer support is available 24 hours a day, seven days a week, to customers with Sun or StorageTek maintenance contracts and to Sun employees. The URL for Sun StorageTek™ support is:


<http://www.support.storagetek.com>


Customer-initiated Maintenance

Customer-initiated maintenance begins with a telephone call from you to Sun Microsystems StorageTek Support. You receive immediate attention from qualified Sun personnel, who record problem information and respond with the appropriate level of support.

To contact Sun Microsystems StorageTek Support about a problem:

1. Use the telephone and call:

 **800.525.0369** (inside the United States)

 **303.673.4056** (outside the United States)

2. Describe the problem to the call taker. The call taker will ask several questions and will either route your call to or dispatch a support representative.

If you have the following information when you place a service call, the process will be much easier:

Account name	_____
Site location number	_____
Contact name	_____
Telephone number	_____
Equipment model number	_____
Device address	_____
Device serial number (if known)	_____
Urgency of problem	_____
Fault Symptom Code (FSC)	_____
Problem description	_____ _____ _____ _____ _____

Sun's Worldwide Offices

You may contact any of Sun's worldwide offices to discuss complete storage, service, and support solutions for your organization. You can find address and telephone number information on Sun's external Web site at:
<http://www.sun.com/worldwide/>

Chapter 1. Introduction

What is SMC?

SMC, the Storage Management Component, is the interface between IBM's OS/390 and z/OS operating systems and the Sun StorageTek NCS automated library control systems, HSC and MVS/CSC. SMC operates on both JES2 and JES3 systems and is a **required** NCS component. Its primary functions are:

- Influencing tape allocation according to hardware requirements and customer policies to ensure that appropriate tape drives are selected.
- Intercepting tape management, and operating system mount, dismount, and swap messages and translating them in order to request the required tape hardware functions from the appropriate NCS automated library control system.
- Coordinating requests among multiple StorageTek automated libraries.

SMC resides on every MVS host that accesses StorageTek real and virtual tape hardware. SMC may communicate with any number of StorageTek automated libraries, using cross address space facilities to communicate with HSC or MVS/CSC running on the same host, and TCP/IP to communicate with HSC systems executing on other hosts.



Note: For the purposes of this publication, **HSC** refers to the **MVS** implementation of StorageTek's Host Software Component. The VM implementation of HSC is not supported by SMC.

Terminology

SMC introduces three important terms:

library

A single StorageTek hardware configuration, normally represented by a single HSC Control Data Set (CDS). Note that a library may contain multiple Automated Cartridge Systems (ACSs) and Virtual Tape Storage Subsystems (VTSSs).

drive exclusion

The SMC function of excluding drives for an allocation request based on SMC exclusion criteria.

See Chapter 4, "SMC Allocation in a JES2 Environment" and Chapter 5, "SMC Allocation in a JES3 Environment" for more information about this term.

drive prioritization

The SMC function of influencing selection of a particular drive based on allocation criteria, including volume location.

See Chapter 4, “SMC Allocation in a JES2 Environment” and Chapter 5, “SMC Allocation in a JES3 Environment” for more information about this term.

Chapter 2. SMC and StorageTek Library Management

Overview

This chapter describes sample SMC configuration scenarios and provides an introduction to the SMC LIBrary and SERVer commands as well as the StorageTek HTTP Server for OS/390 and z/OS.

The SMC provides the interface between IBM's OS/390 and z/OS operating systems and StorageTek NCS library control systems, HSC and MVS/CSC. These library control systems can operate in three ways:

- HSC or MVS/CSC can operate on the same local MVS host as the SMC
- The HSC can operate on a remote MVS host
- A combination of local and remote library control systems can be used.

In a simple configuration, with SMC residing on the same MVS host as HSC and/or one or more MVS/CSC systems each accessing a different library, the SMC automatically detects the library control system(s) using MVS interface facilities.

In a more complex configuration, where you wish to define remote HSC systems or enable simple server switching by defining multiple server paths to one or more libraries, you must use the SMC LIBrary and SERVer operator commands and the StorageTek HTTP Server for OS/390 and z/OS.

SMC LIBrary and SERVer Commands

In a configuration including both local and remote libraries, all libraries must be defined to SMC using the SMC LIBrary command. And, because a remote library can be shared by multiple instances of HSC running on different remote hosts, the path to each remote host is defined to SMC using the SMC SERVer command. See Chapter 7, "Commands and Control Statements" for more information about these commands.

Primary and Secondary Servers

The SMC SERVer command defines a named path to a remote library server. The first server defined is considered to be the primary server. Additional servers defined are secondary servers. If a communication error occurs on the primary server during allocation or mount processing, SMC automatically switches communication to the next available secondary server. If a communication error occurs on the secondary server, the SMC automatically switches to the next available secondary server.

Client Communication Monitor Subtask

This feature directs SMC to periodically validate whether an active communication path is available for all non-disabled TapePlexes. It does not require SMC to process an allocation or mount event. Validation automatically occurs at a specified monitor scan interval. This interval is specified using the MONitor parameter on the TCPip command.

By default, the communication monitor subtask is automatically enabled at SMC startup. To disable this feature, issue the following SMC command:

```
TCPIP MONITOR(OFF)
```

One communication monitor subtask services all TapePlexes defined to SMC and the TCPip MONitor and PREFprimary parameters apply to all non-disabled TapePlexes.

If an active communication path is not available for a TapePlex, the monitor subtask attempts to communicate with each defined communication path beginning with the local path (if available) followed by the primary server path and each secondary server path in turn. If the monitor subtask re-establishes communication with the TapePlex, all pending mounts are automatically redriven.



Notes:

- The communication monitor subtask eliminates the need to specify the FAIL or INITFAIL parameters on the SERVer command. If specified, these parameters are ignored.
- The communication monitor subtask does not attempt to re-establish communication with disabled server paths.
- See Chapter 7, “Commands and Control Statements” on page 121 for more information about the SMC TCPip and SERVer commands.

Automatic Primary Server Switching

By default, the communication monitor subtask automatically switches back to the primary server when it becomes available.

Automatic primary server switching is controlled by the PREFprimary parameter on the TCPip command. To disable this feature, issue the following command:

```
TCPIP PREFprimary(OFF)
```

See “TCPip Command” on page 180 for more information about the SMC TCPip command.

StorageTek HTTP Server for OS/390 and z/OS

The StorageTek HTTP Server for OS/390 and z/OS provides the middleware to allow communication between the SMC (client) and a remote HSC subsystem (server). The HTTP server executes as a separate subsystem on the MVS host where the remote HSC subsystem resides. The HTTP Server is not required on a host where only the SMC is executing.



Notes:

- Refer to the *NCS Installation Guide* for information about installing and configuring the StorageTek HTTP server.
- The StorageTek HTTP server is also included with the Virtual Tape Control System (VTCS) GUI product. However, for performance reasons, Sun Microsystems suggests that you do not use the same instance of the HTTP server for both SMC server programs and VTCS GUI programs. To execute multiple HTTP server subsystems on a single host, they must each listen on a unique PORT number.

Allocation and Multiple StorageTek Libraries

If your configuration includes multiple StorageTek library systems (as illustrated in Scenarios 5 and 6), SMC directs the allocation of each DD to the appropriate library based on TAPEREQ statements, user exits, specific volume locations, and scratch subpools.

SMC Configuration Scenarios

This section provides several scenarios for SMC in local, remote, and multiple library configurations.

Scenario 1: SMC and a Single Local HSC Library Configuration

In this scenario, the SMC and HSC execute on the same MVS host, as illustrated in the following figure:

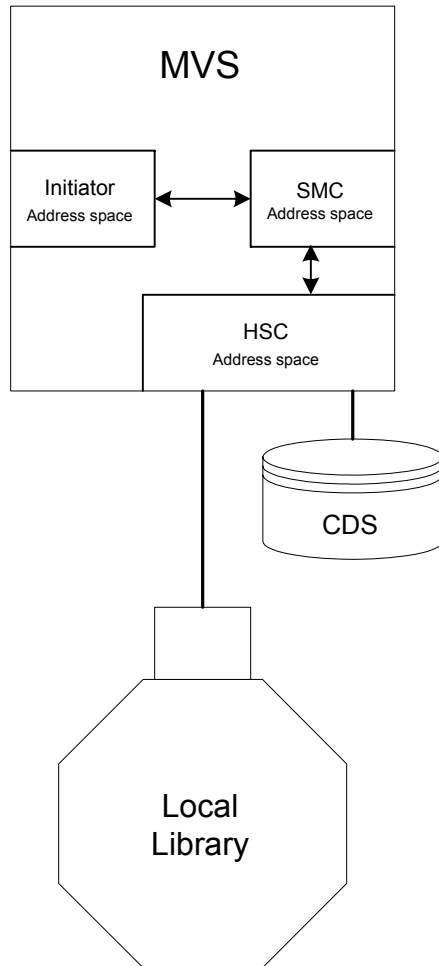


Figure 1. NCS Local Library Configuration

This configuration utilizes three address spaces:

- the Initiator Address Space from which allocation and mount events originate
- the SMC Address Space, which intercepts those events
- the HSC Address Space, to which SMC sends requests for drive and volume data, and mount requests.

This local configuration does not require the StorageTek HTTP server, nor does it require any LIBRARY or SERVER commands. In this scenario, the SMC automatically detects the local HSC subsystem (and any MVS/CSC subsystems) by scanning the MVS Subsystem Communication Vector Table (SSCVT) chain. The SMC then routes requests to subsystems on the same host using OS/390 and z/OS facilities for cross address space communication.

Optionally, you can enter LIBRARY commands to define the local subsystems. For example, the following LIBRARY command is used to define the local HSC library:

```
LIBRARY NAME(LCLLIB) LOCSUBSYS(HSC)
```

where LCLLIB is the desired name of the local library, and HSC is the local MVS subsystem name for the HSC.



Note: When the SMC receives a LIBRARY command, automatic library detection is disabled and only libraries identified with LIBRARY commands are known to the SMC.

Once the local HSC has been defined by the LIBRARY command, if your configuration includes an MVS/CSC executing on the same host, a second library command is needed to define the CSC library. For example:

```
LIBRARY NAME(CSCLIB) LOCSUBSYS(CSC)
```

Scenario 2: SMC and a Single Remote HSC Library Configuration

In this scenario, the SMC communicates with a single HSC on a remote MVS host, as illustrated in the following figure:

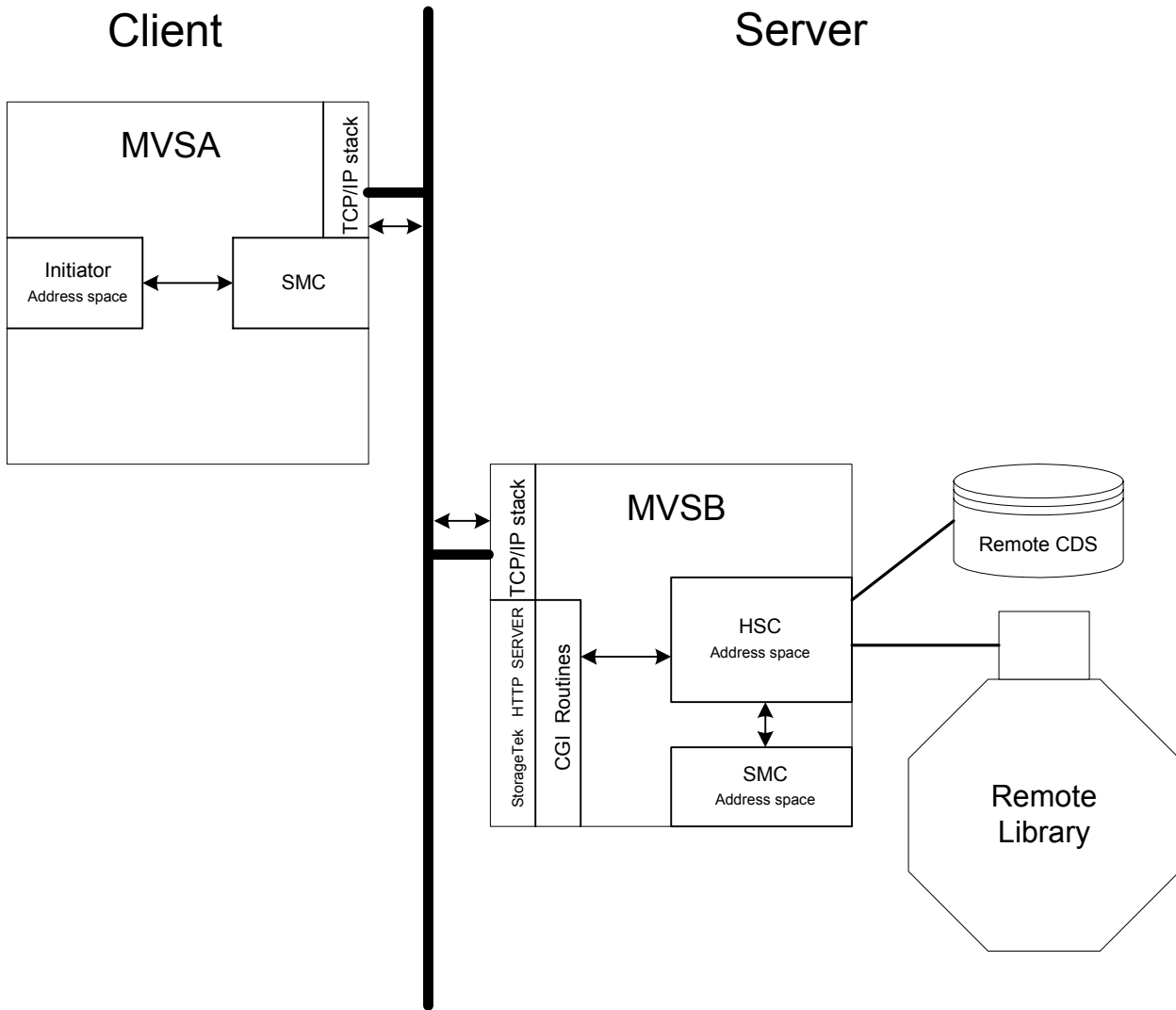


Figure 2. NCS Remote Library Configuration

In this scenario, the SMC acts as a client and the HSC acts as a server.

The SMC Address Space intercepts allocation and mount requests from an Initiator Address Space on MVSA and sends the requests through the TCP/IP stack to the designated StorageTek HTTP server on a remote host (MVSB). The HTTP server on MVSB executes the SMC CGI routine, which routes the request to the HSC executing on MVSB using OS/390 and z/OS facilities for cross address space communication.

Any configuration that includes a remote library requires the StorageTek HTTP server and LIBRARY and SERVER commands. The following example illustrates the LIBRARY and SERVER commands for the SMC on MVSA:

```
LIBRARY NAME(REMLIB)  
SERVER NAME(REMPATH) LIBRARY(REMLIB) HOST(MVSB)
```



Note: See “Client/Server Drive Address Mapping” on page 17 for additional requirements if different drive addresses are defined between client and server hosts.

Scenario 3: SMC and a Single HSC Library Configuration with One Local and One Remote (alternate) Path

When a single library hardware configuration is shared between multiple MVS hosts, you can define multiple paths to the library as shown in the following figure:

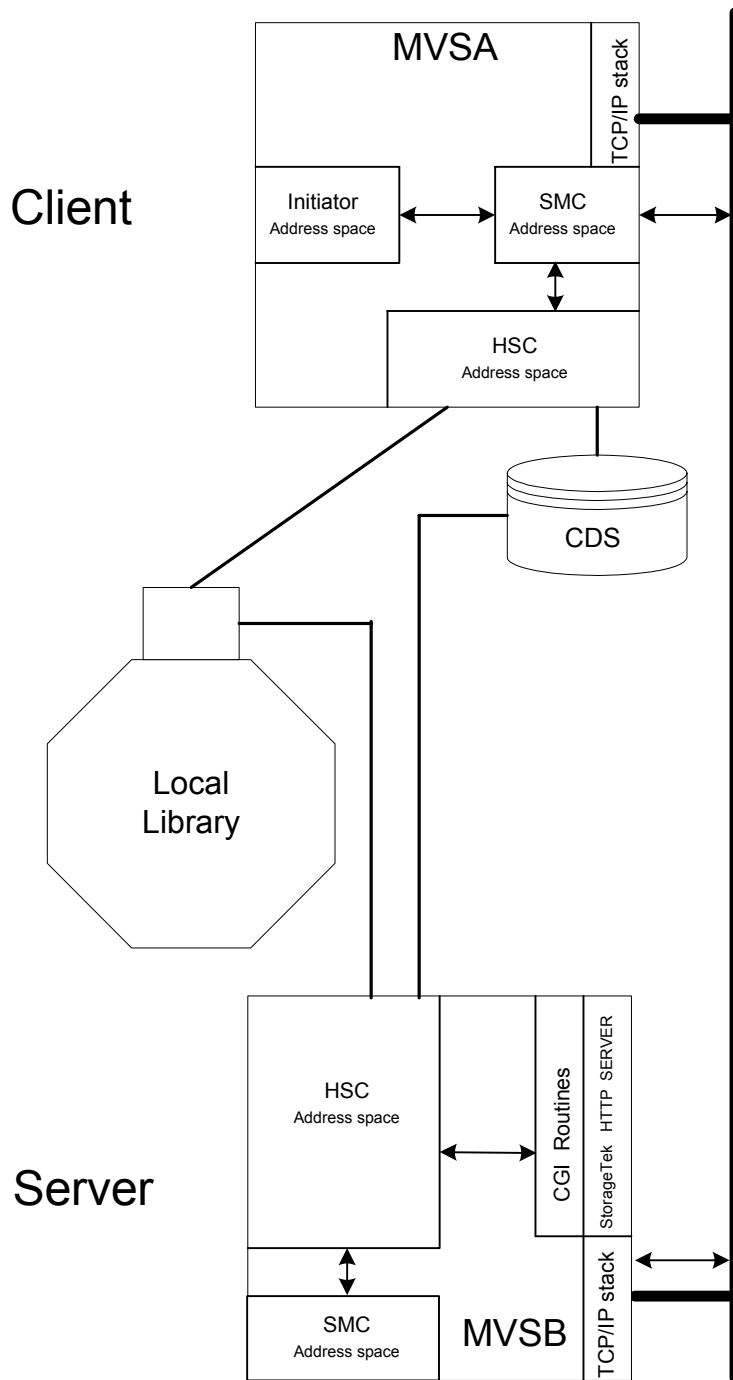


Figure 3. NCS Local Library with Alternate Path Configuration

The following example illustrates the LIBRARY and SERVER commands for the SMC on MVSA:

```
LIBRARY NAME(SHRLIB) LOCSUBSYS(HSC)
SERVER NAME(REMPATH) LIBRARY(SHRLIB) HOST(MVSB)
```

In this scenario, if the HSC is active on host MVSA, the SMC communicates with the local HSC as described in Scenario 1. If the HSC on MVSA is inactive, the SMC on MVSA communicates with the remote HSC on MVSB as described in Scenario 2.

Primary And Alternate Path Selection Hierarchy To A Single Library With A Local Path

The path utilized by the SMC in this scenario is dependent upon the following factors:

- Whenever a local path is enabled to a library, the SMC attempts to use it.
- If a local path to a library is not enabled, or the local HSC is inactive, the SMC attempts to communicate with the first defined remote SERVER path. Once successful communication is established for a remote SERVER, it becomes the active path. All subsequent requests use the active path unless the local path becomes active or the remote SERVER path becomes unavailable.
- If a remote SERVER path becomes unavailable, the SMC attempts to use the next available SERVER in the order the SERVER commands were entered.

In this example, when HSC is active on host MVSA, the SERVER path defined to MVSB is not used. However, if the HSC on MVSA becomes unavailable, the SMC attempts to send its requests to the library using the REMPATh SERVER definition. When the HSC on MVSA becomes active again, the SMC automatically adjusts to use the HSC on MVSA.



Note: See “Client/Server Drive Address Mapping” on page 17 for additional requirements if different drive addresses are defined between client and server hosts.

Scenario 4: SMC and a Single HSC Library Configuration with Multiple Remote Server Paths

In this scenario, the SMC runs on a host with no local HSC, but with multiple paths to a remote HSC, as illustrated in the following figure:

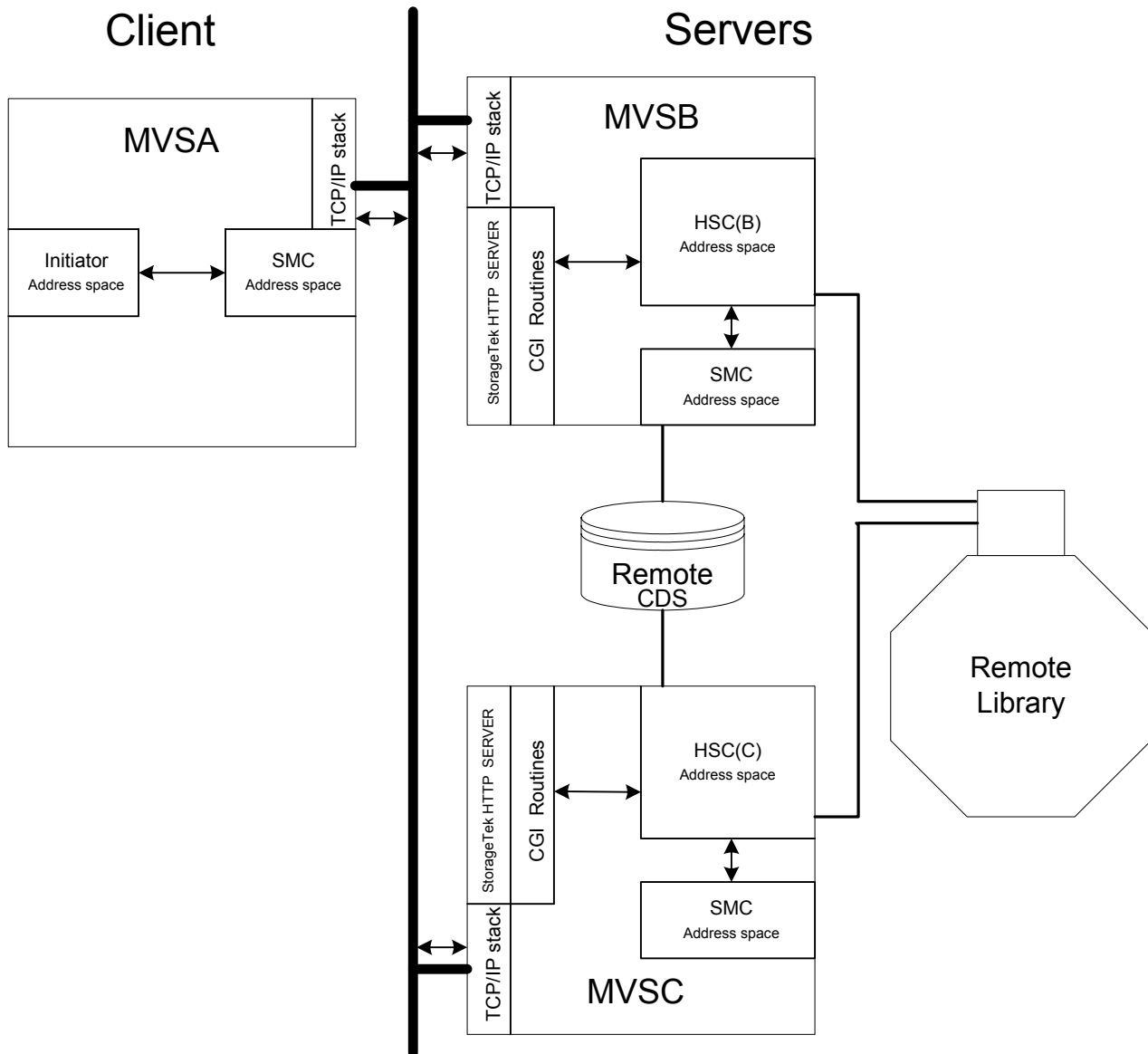


Figure 4. NCS Remote Library Configuration with Two Server Instances

The following example illustrates the LIBRARY and SERVER commands for the SMC on MVSA:

```
LIBRARY NAME(SHRLIB)
SERVER NAME(REMPATH1) LIBRARY(SHRLIB) HOST(MVSB)
SERVER NAME(REMPATH2) LIBRARY(SHRLIB) HOST(MVSC)
```

Requests originating in an Initiator Address Space on MVSA are intercepted by the SMC Address Space on MVSA. The SMC on MVSA sends requests for volume and drive data, and mount requests to the SERVER on MVSB or MVSC.

The SMC attempts to communicate with the first defined server (MVSB). If this attempt fails, the SMC attempts to communicate with MVSC. Once successful communication with MVSC is established, the active path is not changed even if the server on MVSB becomes available. The following two methods can be used to change the active path from MVSC to MVSB:

1. Disable the REMPATH2 server using the following command:

```
SERVER NAME(REMPATH2) DISABLE
```

The SMC automatically attempts to communicate with the first server in the list (REMPATH1).

2. Issue the RESYNChronize REStart command. See “RESYNChronize Command” on page 159 for more information.

See “SMC Drive Type Information Synchronization” on page 18 for information about how the SMC acquires drive type information from the HSC and MVS/CSC.

Scenario 5: SMC with Two Libraries; One Local and One Remote

In this scenario, the SMC can coordinate allocation and mount requests among multiple library hardware configurations as illustrated in the following figure.

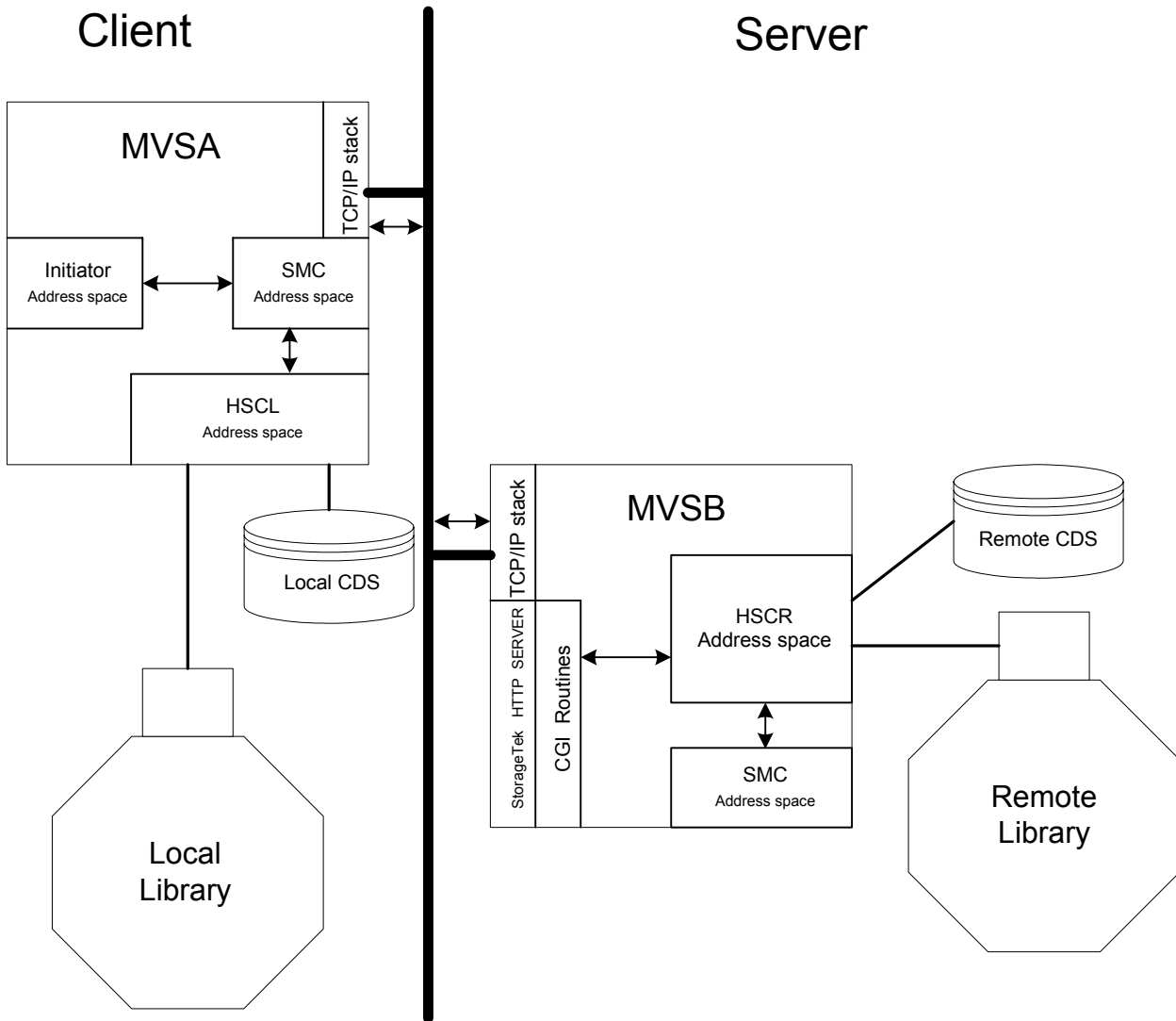


Figure 5. NCS with Two Libraries - One Local and One Remote with Multiple Paths

In this scenario, assume there are two separate libraries, each defined by a different CDS. In previous releases, this configuration was supported by executing MVS/CSC on MVSA and executing HSC with LibraryStation on MVSB. SMC eliminates the need for MVS/CSC and LibraryStation in an MVS-only environment. The SMC can communicate directly with the remote HSC using the StorageTek HTTP server.

Allocation and mount requests originating in an Initiator Address Space on MVSA are intercepted by the SMC on MVSA. These requests are then sent to either the local HSCL executing on the same host, or to the remote HSCR executing on the remote host MVSB.

The following example illustrates the LIBRARY and SERVER commands for the SMC on MVSA:

```
LIBRARY NAME(LCLLIB) LOCSUBSYS(HSCL)
LIBRARY NAME(REMLIB)
SERVER NAME(REMPATH) LIBRARY(REMLIB) HOST(MVSB)
```

LIBRARY commands are required to define both the local and remote libraries.

See “SMC Library Subsystem Selection” on page 18 for information on how the SMC selects among multiple library subsystems to determine an “owner” for each allocation request (i.e., each DD in a job step may have a different library subsystem owner).

Scenario 6: SMC with Two Libraries; One Local and One Remote with Multiple Paths

In this scenario, multiple libraries are configured with multiple paths as illustrated in the following figure.

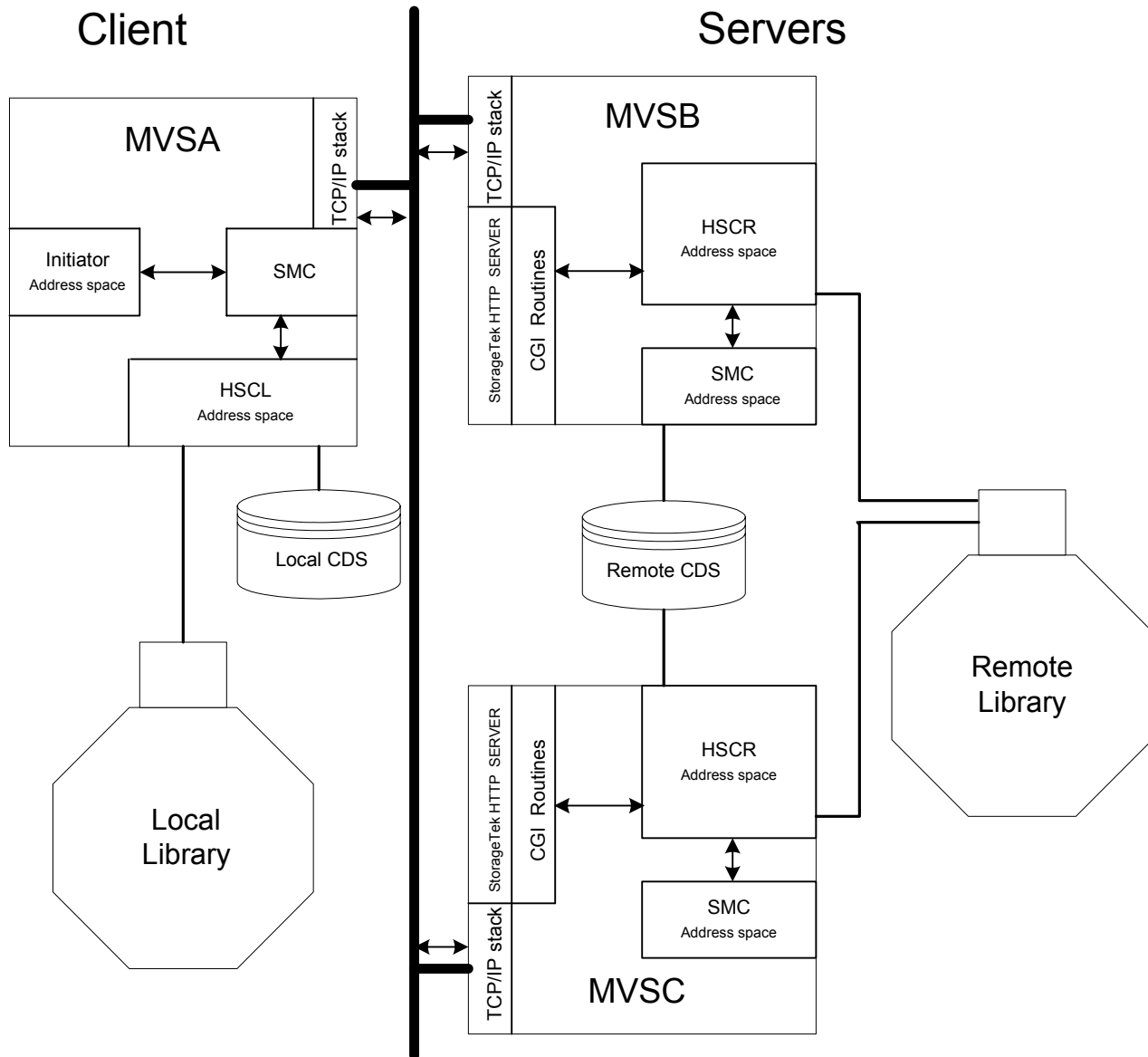


Figure 6. NCS with a Local Library and a Remote Library with Two Server Instances

This scenario is a combination of scenarios 1 and 4. The following example illustrates the LIBRARY and SERVER commands for the SMC on MVSA:

```
LIBRARY NAME(LCLLIB) LOCSUBSYS(HSCL)
LIBRARY NAME(REMLIB)
SERVER NAME(REMPATH1) LIBRARY(REMLIB) HOST(MVSB)
SERVER NAME(REMPATH2) LIBRARY(REMLIB) HOST(MVSC)
```


Client/Server Drive Address Mapping

SMC 6.0 client/server functionality required that all device addresses on client and server hosts be identically defined.

SMC 6.1 and HSC 6.1 provide new facilities to allow drive addresses to be different between client and server hosts. The following table provides scenarios to help you determine whether client/server drive address mapping is required, and what actions and facilities are required.

Table 1. SMC Client/Server Drive Address Mapping Scenarios

Scenario	Drive Address Mapping - Action Required
<ul style="list-style-type: none"> Client/server processing is not used. Each MVS host runs a copy of HSC. 	None.
<ul style="list-style-type: none"> Client/server processing is used. Device addresses are identically defined for all hosts participating in a single client/server network. 	None.
<ul style="list-style-type: none"> Client/server processing is used. Device addresses are identically defined for all hosts in a single client/server network, but not all devices are defined to all hosts. 	Drive address mapping is not required. However, you must use the HSC SET SLIDRIVS utility to define all drive addresses on hosts that will be used as servers, even if the devices are not defined to the host. Refer to the <i>HSC System Programmer's Guide</i> for more information about the SET SLIDRIVS utility.
<ul style="list-style-type: none"> Client/server processing is used. Device addresses are identically defined to all HSC hosts, but one or more SMC client-only hosts use a different set of addresses for the same device. 	Use the SMC DRIVemap operator command to map the SMC client host addresses to the HSC host addresses. SMC performs the necessary address translations in influencing allocations and requesting mounts from the server. See page 137 for more information about the SMC DRIVemap command.
<ul style="list-style-type: none"> Client/server processing is used. Two MVS hosts (MVS1 and MVS2), both running HSC and SMC. One MVS host (MVS3) running only SMC but defined as communicating to <i>either</i> of the two hosts as a server. Device addresses are defined differently among all three hosts. For example: <ul style="list-style-type: none"> - MVS1 (AA0-AAF) - MVS2 (BA0-BAF) - MVS3 (CA0-CAF) 	<ol style="list-style-type: none"> Since the SMC on MVS3 can communicate with either the MVS1 or MVS2 host for a particular mount event, you must use the HSC SET utility, SET DRVHOST, to designate one of these hosts as the "drive host master." For example, MVS1 (AA0-AAF). Once the drive host master is specified in the HSC CDS, the addresses associated with that host master (AA0-AAF) are used by both MVS1 and MVS2 when communicating with the SMC. If desired, you can add a dummy host ID to be the HSC DRVHOST, and use nonexistent drive addresses to map to client addresses. For example, use the HSC SET NEWHOST utility to define hostname DRVDUMMY and define the device range as 000-00F. Refer to the <i>HSC System Programmer's Guide</i> for more information about the HSC SET DRVHOST utility and HSC SET NEWHOST utility. Use the SMC DRIVemap operator command on clients MVS2 and MVS3 to map drive addresses BA0-BAF and CA0-CAF to the server addresses AA0-AAF. See page 137 for more information about the SMC DRIVemap command.

SMC Drive Type Information Synchronization

The SMC acquires drive type information from the NCS library control systems, HSC and MVS/CSC.

- For HSC subsystems, drive configuration changes are automatically recognized by the SMC for both local and remote systems.
- For MVS/CSC subsystems, an SMC RESYNChronize command must be issued whenever the equivalent MVS/CSC command is issued. See “RESYNChronize Command” on page 159 for more information.

The SMC UNITAttr command can be used to define device types for nonlibrary drives and to set MODEL=IGNORE for device addresses not available for the host.

SMC Library Subsystem Selection

When the SMC intercepts a specific or scratch allocation request, it selects an owning library to service the request. The following criteria are evaluated by the SMC in the order shown to determine which library subsystem controls the allocation request:

1. Libraries are interrogated in the order they are defined. If LIBRARY commands are defined to the SMC, the order of the LIBRARY commands is used. If LIBRARY commands are not defined to the SMC, the subsystem order in the MVS SSCVT subsystem table is used.
2. If the Eligible Device List (EDL) for the request does not contain drives owned by a specific library, that library cannot own the request unless overridden by explicit subsystem or library selection.
3. If the TAPEREQ esoteric contains only drives in a single library, it is selected as the request owner.
4. If a user exit explicitly selects a subsystem name or library name that is active, that library is the owner, even if it does not contain any drives in the EDL.
5. If a specific requested volume is found in a library, that library is considered the owner unless overridden by explicit subsystem or library selection. If the volume is not found in a library, but that library contains a VOLATTR for that volume, then the library is considered the owner if the specific volume is not found in any other library.
6. If a library indicates that it has scratch volumes for the request, it is considered the owner unless overridden by explicit subsystem or library selection. If the library does not have scratch volumes for the request, but the specified subpool name is known to the library, then the library will be considered the owner if scratch volumes are not found in any other library.



Note: Only a single version of an allocation user exit is executed, regardless of the number of libraries defined. Therefore, user exit return codes such as “USE LIBRARY DRIVES”, “USE VIRTUAL DRIVES”, etc. are **not** used to determine a request owner, nor does the user exit return code of “USE NONLIBRARY DRIVES” result in the selection of a “different” library.

The preferred way to select a library owner from among multiple libraries is through esoteric substitution on TAPEREQ. Alternatively, user exits can be used to specify a library name or esoteric.



Warning: If your pre-NCS 6.0 user exit uses the “USE NONLIBRARY DRIVES” return code to select an MVS/CSC subsystem in a mixed HSC and MVS/CSC environment, you must now use one of the methods described above to properly select a library.

MVS/CSC Library Issues

Converting MVS/CSC Systems to Use HSC and the StorageTek HTTP Server

If you have MVS/CSC library control software used only for MVS attached transports, Sun Microsystems recommends that you convert such installations to use remote HSC and StorageTek HTTP server facilities.

If your MVS/CSC library control software is used to control transports owned by Automated Cartridge System Library Software (ACSLs), it **cannot** be converted to use HSC and the StorageTek HTTP server.

If you wish to test the HTTP server communicating with HSC (replacing an MVS/CSC and LibraryStation communicating with the HSC), do the following:

1. Define a local MVS/CSC library and a second library for the remote HSC server.

```
LIBRARY NAME(LIB1) LOCSUB(CSC1)
LIBRARY NAME(LIB2) DISABLE
SERVER NAME(REM1) LIBRARY(LIB2)
```

2. To switch to the MVS/CSC, issue the following command:

```
LIBRARY NAME(LIB1) DISABLE
LIBRARY NAME(LIB2) ENABLE
```



Note: The SMC will **not** automatically switch from a local MVS/CSC to a remote HSC.

SMC LIBrary Commands and MVS/CSC Systems

If you have a mixed HSC and MVS/CSC environment and are using SMC LIBrary commands to define libraries and remote server paths, you cannot define both HSC and MVS/CSC subsystems using the same library name. That is, you **cannot** define a SERVER command for a LIBRARY where the local subsystem is an MVS/CSC. For example, the following is **not** valid (assuming subsystem CSC1 is an MVS/CSC system).

```
LIBRARY NAME(LIB1) LOCSUBSYS(CSC1)
SERVER NAME(REM1) LIBRARY(LIB1)
```


Chapter 3. Starting the SMC

Overview

The SMC manages all interfaces with MVS for allocation and message handling, and therefore must be started as a task on every MVS host where tape processing occurs.

The SMC calls on HSC and MVS/CSC for volume and drive information. Therefore, HSC or MVS/CSC can be active on the same host, or HSC can be active on another host with the StorageTek HTTP server.

Unlike previous releases, HSC 6.1 and/or MVS/CSC 6.1 can be initialized before the SMC without producing error messages. However, an SMC subsystem must be active to influence tape allocations and intercept MVS messages.

SMC startup requires the following tasks:

- creating the SMC START procedure
- executing the SMC START procedure.



Note: Refer to the *NCS 6.1 Installation Guide* for SMC installation procedures and JES3 post-installation tasks.

Creating the SMC START Procedure

An SMC START procedure must be created in the procedure library of the host system. The MVS START command invokes this catalogued procedure, thus activating the SMC with the specified startup parameter settings.

Figure 7 provides a sample SMC START procedure.

```
//yourprocname PROC PRM='WARM'  
//stepname EXEC PGM=SMCBINT,REGION=4M,TIME=1440,  
// PARM='&PRM'  
//*  
//STEPLIB DD DSN=linklib_name,DISP=SHR  
// DD DSN=exitlib_name,DISP=SHR  
//*  
//SMCPARMS DD DSN=parmlib_name(param_member_name),DISP=SHR  
//*  
//SMCCMDS DD DSN=cmdlib_name(cmd_member_name),DISP=SHR
```

Figure 7. Sample SMC START Procedure



Notes:

- The first four characters of *yourprocname* specify the SMC subsystem name (unless the SSYS startup parameter is specified). Sun Microsystems recommends a value of SMCx, where *x* is any valid jobname character.
- The SMCPARMS and SMCCMDS DD statements are optional. Both statements are processed during initialization. The SMCCMDS data set may be re-processed during execution. See Chapter 7, “Commands and Control Statements” on page 121 for information about SMC commands that may be specified in either of these data sets.



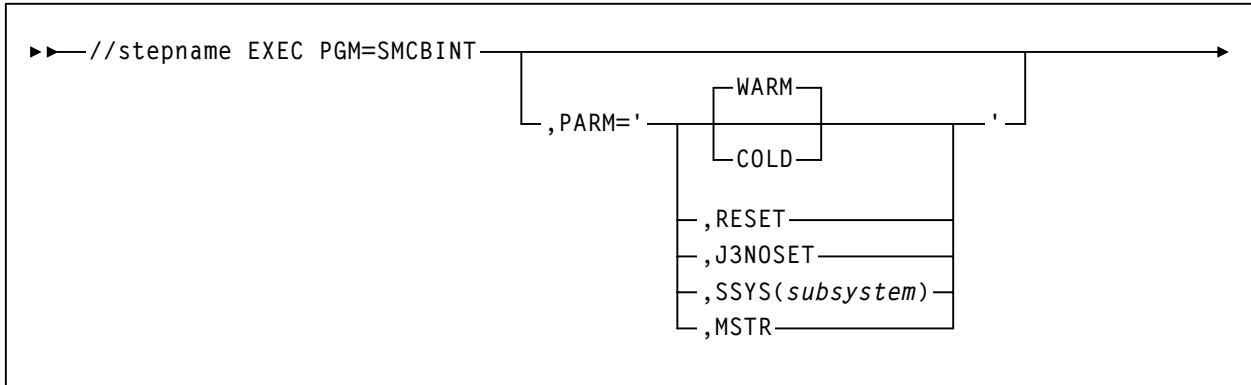
Notes:

- The TREQDef command, previously specified in HSC or MVS/CSC, is now specified in the SMC.
- The SMC UNITAttr command is used to define drive types for nonlibrary drives and MODEL=IGNORE for drives to be excluded from allocation.
- The ALLOCDef and MOUNTDef commands define allocation and mount policies previously defined in HSC and MVS/CSC.
- TIME=1440 must be coded to ensure that the SMC does not time out and terminate.

SMC EXEC Statement

The EXEC statement is used to define SMC startup parameter settings.

EXEC Statement Syntax



EXEC Statement Parameters

PARM=

defines the list of parameters passed to the SMC initialization routine.



Note: Execution parameters must be separated with commas. Separating parameters with blanks results in a syntax error.

WARM

specifies that the SMC main control block is not rebuilt. This is the default setting for normal operation.

COLD

specifies that all SMC control blocks are rebuilt. This parameter is mutually exclusive with WARM.



Warning: Do **not** use this parameter unless the SMC has terminated abnormally and cannot be restarted.

SSYS

specifies a *subsystem* ID that is different from the first four characters of the SMC START procedure. The SMC searches for this subsystem ID during initialization.

subsystem must be one to four characters in length.

RESET

specifies that the active subsystem status flag in the MVS Subsystem Communications Vector Table (SSCVT) for the SMC is reset. This parameter may correct a situation in which the SMC was terminated abnormally. It can be specified with WARM or COLD.



Warning: Using this parameter when an SMC subsystem is active and functional causes unpredictable results.

J3NOSET

indicates that a JES3 system is not using JES3 tape setup. When this parameter is specified, allocation influencing behaves as described for JES2.

MSTR

specifies that the SMC start under the MSTR subsystem instead of under JES.

When specifying this parameter, you **must** also perform **one** of the following actions:

- Start the SMC subsystem using SUB=MSTR on the MVS Start command.
- Add the SMC subsystem to the IEFSSNxx subsystem table using the keyword format.



Notes:

- This parameter is not supported for JES3 with SETUP environments.
- If you wish to run the SMC under the master MVS subsystem, the PROCLIB containing the SMC START procedure must be present in the PROCLIB concatenation for the master address space. This concatenation is defined in SYS1.PARMLIB(MSTJCLxx), under DD IEFPSI.

Executing the SMC START Procedure

The MVS START command is used to initialize the SMC software. When this command is issued, the SMC subsystem initialization routine is invoked. This routine determines what parameters are in effect, performs any cleanup necessary, and begins normal processing.

Parameters associated with PARM= on the EXEC statement of the SMC Start Procedure can also be supplied via PARM= on the MVS START command. The PARM= specification on the MVS START command overrides the PARM= specification in the SMC Start Procedure. See “EXEC Statement Parameters” on page 23 for parameter descriptions.

MVS START Command Syntax

```
▶▶—START—smc-proc-name—————▶▶
```

MVS START Command Parameters

START or S

initiates the MVS START command

smc-proc-name

indicates the name of the SMC START procedure member.

Chapter 4. SMC Allocation in a JES2 Environment

Overview

This chapter describes SMC allocation in a JES2 or JES3 without SETUP environment. The following topics are discussed:

- jobs selected for SMC allocation management
- DFSMS esoteric substitution
- drive exclusion
- affinity separation
- drive prioritization
- deferring mounts
- multiple library subsystem support
- SMC DFSMS processing
- interaction with other software



Notes:

- See Appendix D for differences between SMC and NCS allocation.
- See for Appendix E for information about SMC interaction with other software.

Jobs Selected for SMC Allocation Management

All I/O device allocations on a JES2 system are examined by the SMC to determine if it should process the allocation request.

The SMC uses the MVS subsystem interface (SSI) IEFJFRQ Subsystem Function Request exit to gain control during tape allocation events. The SMC takes control in the JES2 environment for these Subsystem Functions:

- SSI55 - DFSMS Interpreter/Dynamic Allocation Exit (IDAX)
- SSI24 - common allocation
- SSI78 - tape allocation.

SSI55 Interpreter/Dynamic Allocation Exit (IDAX)

During MVS JCL interpretation processing, IDAX provides an opportunity to examine new data set allocations and to replace the unit parameter value with a different value (esoteric).



Note: This function is optional for SMC customers. For information about implementing DFSMS esoteric substitution, refer to “SMC DFSMS Processing” on page 51.

SSI24 Common Allocation

During SSI24 common allocation processing, the SMC performs the following processes to arrive at the best set of eligible drives:

- drive exclusion
- unit affinity separation
- defer processing (when CA1RTS is set to ON)
- EDL updated with the drive exclusion results (when MIACOMPAT is set to ON)

The results of the drive exclusion process are not reflected in MVS control blocks until tape allocation time, unless MIACOMPAT is set to ON.

The results of unit affinity separation are used to update MVS VOLUNIT entries in the SIOT.

SSI78 Tape Allocation

During SSI78 tape allocation processing, the SMC performs the following:

- updates to MVS control blocks based on drive exclusion results (unless MIACOMPAT is set to ON)
- drive prioritization
- mount deferral (unless CA1RTS is set to ON)

The SMC sets all unacceptable drives to ineligible status and assigns a priority to each drive that remains eligible for the allocation. The higher the priority, the more likely the device will be chosen for the mount.

The mount may be deferred until the data set is opened. The customer's SMC ALLOCDef DEFer setting determines whether or not the mount is deferred.

The SMC implements these decisions by updating the IEFSSSTA control blocks for deferral, drive exclusion, and prioritization during SSI78 processing.

Exceptions

The SMC does not influence the following types of cartridge tape allocation:

- demand allocation (i.e., request for a specific drive(s))



Note: The SMC does perform DEFER processing for demand allocation.

- allocations excluded explicitly by entering the ALLOCJob command BYPASS parameter. Refer to the description of this command in Chapter 7, "Commands and Control Statements".
- allocations where the list of eligible devices contains only devices that are "unknown" (i.e., not virtual, not library, and not defined in an SMC UNITAttr command).
- DFSMS-managed allocation. An SMS-managed data set is defined as a data set that has a storage class defined. A storage class is assigned when either
 - the STORCLAS parameter is specified on the DD statement, or
 - an installation-written ACS routine selects a storage class for a new data set.

DFSMS Esoteric Substitution

During MVS JCL interpretation processing, the Interpreter/Dynamic Allocation Exit (IDAX) provides an opportunity to examine new data set allocations and to replace the unit parameter value with a different value (esoteric).



Note: This function is optional for SMC customers. For information about implementing DFSMS esoteric substitution, refer to “SMC DFSMS Processing” on page 51.

Drive Exclusion

When the SMC determines an interest in an allocation event at common allocation time (SSI24 subsystem function), its first step is to narrow down the list of eligible drives to those that best support the allocation request. This step is called *drive exclusion*.

Like the HSC and MVS/CSC device separation processes, the SMC drive exclusion process does **not** take into account the status of drives (e.g., offline, busy) when selecting drives that are eligible for the allocation request. If all drives compatible with the allocation request are unavailable, the job goes into allocation recovery.

The SMC performs drive exclusion by building a list of drives contained in the initial EDL and then by following a step-by-step process using an ordered list of exclusion criteria to remove drives from this list.

Before any drives are removed from consideration for the allocation, the SMC first determines whether a job step can be allocated.

For example:

```
//JOB1  JOB ...
//STEP1 EXEC PGM=...
//DD1   DD   UNIT=3490,...
//DD2   DD   UNIT=3490,...
      .
      .
      .
//DD25  DD   UNIT=3490,...
```

Assume STEP1 is requesting twenty-five 3490 drives. If the MVS EDL contains twenty-four 3490 drives in its lists of eligible devices, MVS cannot allocate the required drives for the job. In this instance, the SMC issues message SMC0042, which indicates the job cannot allocate before SMC modification, and allows the job to fail allocation.

Once the SMC determines a job step can be allocated, the SMC begins excluding drives based on an ordered list of criteria. Table 2 on page 33 and Table 3 on page 38 list these criteria and show the order the exclusion process follows. The lower the criteria level, the higher its importance. Thus, level 2 is considered more important than level 6.

Minimum Exclusion Level

By default, level 2 is the *minimum exclusion level*, that is, the desired minimum level of allocation exclusion, for both specific and scratch volume processing. However, if necessary, the ALLOCDef and ALLOCJob commands can reset the minimum exclusion level (refer to Chapter 7, “Commands and Control Statements” for descriptions of these commands).

In the first step of drive exclusion, the SMC determines if the job can be allocated at the minimum drive exclusion level. If not enough drives remain eligible at the minimum exclusion level, the SMC issues message SMC0043, which indicates the job is not allocatable at the minimum exclusion level. The SMC then excludes all devices, causing the job to fail allocation.

For example:

```
//JOB2 JOB ...
//STEP1 EXEC
//DD1 DD UNIT=3490,VOL=SER=984001,DISP=OLD
//DD2 DD UNIT=3490,VOL=SER=984002,DISP=OLD
//DD3 DD UNIT=3490,VOL=SER=984003,DISP=OLD
```

In this system environment, assume that twenty 3490-type drives have been configured. Only two of those twenty are actually T9840 drives. If all three volumes require a separate T9840 tape drive, then not enough T9840 drives exist for the job to allocate. Without SMC influence, MVS allows the job to proceed through allocation. However, with SMC influence, message SMC0043 is issued and the job fails.



Note: No exclusion criteria (including minimum level) are applied when the user specifies demand allocation (i.e., requests a specific drive or drives).

Subsequent Levels

Once the minimum level of exclusion has succeeded, the remaining exclusion levels are performed. Any level above the minimum level that fails is skipped and exclusion continues to the next level.



Note: A level fails if it results in too few drives for the DD statement to allocate. The only required exclusion levels are those at the minimum level or below.

After the last drive exclusion level is completed, the SMC examines the final drive lists. If the job step cannot be allocated because not enough drives remain eligible, drive exclusion regresses to the previous exclusion level for the failing DD statement. This process repeats until the job step can allocate.

Intentionally Failing a Job

Depending upon the characteristics of your installation, you may want specific jobs to fail at allocation time rather than execute them with nonoptimal devices. As an example, if you have two ACSs, one of which is located at a remote site, you may prefer to fail the job, rather than having to transfer the correct volume from one ACS to another.

For example:

```
//DD1 DD UNIT=CART ,VOL=SER=INACS0 ,DISP=OLD  
//DD2 DD UNIT=AFF=DD1 ,VOL=SER=INACS1 ,DISP=OLD
```

Assume the following:

- Both volume INACS0 and INACS1 share common media characteristics.
- Volume INACS0 resides in ACS0, and volume INACS1 resides in ACS1.
- Only ACS0 contains a compatible drive.

If this affinity chain is not broken, then volume INACS1 must be ejected from ACS1 and entered into ACS0 for this job to execute, which may not be possible given the geographical locations of the ACSs.

In this case, failure at allocation time may be preferable to failure at run time. By specifying the correct MINLVL value (i.e., by issuing the ALLOCJob command with a MINLVL of 7 for this job), the job is failed at allocation time.



Caution: Setting the minimum exclusion level may cause jobs to fail unexpectedly. Whenever the SMC is unable to apply an exclusion criterion at or below the minimum level, the job fails allocation.

For example, if a TAPEREQ specifies a media of STANDARD for a scratch volume and the eligible device list contains only T9840 drives, when the SMC attempts to apply the “policy media” exclusion level, all drives are excluded. If the minimum level is set to 3 or higher, the job fails allocation. Therefore, Sun Microsystems recommends that the default exclusion level (as specified by the ALLOCDef command) should normally not be set to a level greater than 2.

Specific Volume Request Drive Exclusion Criteria

For a specific volume allocation, the SMC excludes drives in order from lowest exclusion level to highest based on the criteria in Table 2. The lower the level number, the more important the exclusion criteria.

Table 2. JES2 Drive Exclusion Levels (Specific Request)

Level	Specific Volume Criteria	Keyword*
1	For non-labeled (NL) specific volume requests, exclude all virtual drives. Exclude drives incompatible with the volume media. Primary source: external volume label Secondary source: VOLATTR MEDIA parameter The volume media can be obtained from the volume label or from an HSC VOLATTR statement MEDIA parameter.	VIRTUALLABEL MEDRECTECH
2**	For virtual volumes only, exclude virtual drives that reside in a VTSS to which the VTV cannot be migrated and recalled.	AVAILVTSS
3	Exclude drives based on the required recording technique. Source: VOLATTR RECTECH parameter or volume density (i.e., 9840A/B and 9840C).	VOLATTRRECTECH
4	Exclude drives based on user location policies. Primary source: TAPEREQ ESOTERIC parameter. Secondary source: User Exit 08 or 10 return codes.	USERPOLICY
5	Exclude drives based on the SMC ALLOCDEF EXTVOLESOT esoteric.	EXTVOLESOT
6	Exclude drives based on volume location type, i.e., library or nonlibrary.	LOCTYPE
7	Exclude drives based on the ACS location of the volume (for library volumes), and the resident VTSS for virtual volumes.	ACSORVTSS
8	Exclude drives based on the requested recording technique. Primary source: DFSMS data class recording technique. Secondary source: TAPEREQ RECTECH parameter.	POLRECTECH

* Keywords associated with each exclusion level are specified in the exclusion criteria displayed in message SMC0046.

** Level 2 is the default minimum level.

Exclusion Level 1

The SMC excludes drives that are not compatible with the volume media. The volume media can be obtained from the volume label or from an HSC VOLATTR statement MEDIA parameter.

The SMC excludes all virtual drives for non-labeled (NL) specific volume requests.



Note: Specifying MINLVL=0 allows the allocation to succeed even if the volume's media conflicts with the EDL. See "ALLOCJob Command" on page 131 for more information.

Exclusion Level 2

If the specific volume requested is a resident virtual volume, the SMC excludes virtual drives that reside in a VTSS to which the VTV cannot be migrated and recalled.

Refer to the VTCS documentation for more information about virtual volumes.

Exclusion Level 3

If an HSC VOLATTR statement specified the recording technique (RECTECH parameter) for this specific volume, the SMC excludes drives that do not provide that recording technique.

For example:

```
//DD1 DD UNIT=TLACS0,VOL=SER=VOL000,DISP=OLD
```

A VOLATTR statement has been defined to the HSC.

```
VOLATTR SERIAL(VOL000) RECTECH(36B) MEDIA(ECART)
```

VOL000 requires a 9490 drive, and if TLACS0 contains both 9490 and 9490EE drives, the 9490EE drives are excluded from consideration for this allocation.



Notes:

- If your environment contains drives that support different densities for the same media, such as a combination of T9840A and T9840C drives, Sun Microsystems recommends that you set the default MINLVL to 3, so that jobs will fail rather than allocating volumes to a drive with an incompatible density.
- In MVS/CSC, the VOLATTR RECTECH is implied by the composite recording technique of the drives in the list returned by the library server.

Exclusion Level 4

If a TAPEREQ statement specifies an esoteric unit name for this allocation request, the SMC verifies the esoteric unit name is defined to MVS. If the esoteric passes this test, any drives in the original EDL that are not also defined to the esoteric unit name are excluded from consideration for this allocation.

For example:

```
//DD2 DD UNIT=CART,VOL=SER=TR0001,DSN=SYS4.TR1.DATA,DISP=OLD
```

The following TAPEREQ statement is defined to SMC:

```
TAPEREQ DSN(SYS4.TR1.** ) ESOT(TLACS1) RECT(LONGI)
```

The drives that are not defined to the esoteric TLACS1 are excluded from consideration for this allocation.

If no TAPEREQ statement specifies an esoteric for this allocation request, User Exit 08 or 10 return codes and values can define the criteria for drive exclusion at this level. The user exit return codes can direct the SMC to select nonlibrary drives, a specific ACS, or the user exit can return an esoteric name that contains customer-selected drives. Any drives in the current list of eligible devices that did not match the user exit return values are excluded here.

For example:

```
//DD1 DD UNIT=CART,VOL=SER=VOL001,DISP=OLD
```

User Exit 08 returns UX08ASUB and ACS0, which requests library drives and ACS0. The drives that are not in ACS0 are excluded from consideration for this allocation.

Exclusion Level 5

The ALLOCDEF EXTVOLESOT parameter is used to specify an esoteric to allocate specific external (nonlibrary) volumes. Additionally, the ALL modifier allows you to use this esoteric for all specific external volumes regardless of the value of the specific user exit return code.



Note: The EXTVOLESOT esoteric replaces the HSC ALLOC SPECVOL ACS list. The following describes how to use the SMC EXTVOLESOT to achieve the same functionality:

- If you used the UX08 SPECVOL return code, specify EXTVOLESOT(name,USEREXIT).
- If you used the SPECVOL list to force all nonlibrary volumes to be allocated inside the library (no defined NONLIB esoteric), use EXTVOLESOT (name, ALL).

Exclusion Level 6

The generic location of the volume (library or nonlibrary) reduces the remaining list of eligible drives.



Note: For exclusion level 6, nonlibrary drives are outside the library and contain **either** known (from the SMC UNITATTR command) or unknown device characteristics.

If the volume resides in a library, all drives outside the library are excluded, and if the volume resides outside the library, all library drives are excluded.

For example:

```
//DD1 DD UNIT=CART,VOL=SER=LIB001,DISP=OLD
```

Assume volume LIB001 resides in a library.

All drives outside the library are excluded from consideration for this allocation.

Exclusion Level 7

For volumes residing in the library, the ACS location of the volume reduces the remaining list of eligible drives. Any drives that remain that do not reside in the same ACS as the volume are excluded.

For example:

```
//DD1 DD UNIT=CART,VOL=SER=A00VL1,DISP=OLD
```

Assume volume A00VL1 resides in ACS00, and the drives reside in ACS00 and ACS01.

The drives residing in ACS01 are excluded from consideration for this allocation.

Additionally, for resident VTVs, drives that do not reside in the resident VTSS are excluded. This allows you to set your default minimum level to 3 if you use mixed density drives.

Exclusion Level 8

Exclusion levels 1 and 3 restrict the list of eligible drives to those compatible with the volume's actual media and its recording technique, if specified on the HSC or MVS/CSC server VOLATTR statement. Exclusion level 8 may further restrict the drives for the request based on the TAPEREQ or DFSMS data class recording technique.

The SMC TAPEREQ definitions can explicitly denote a recording technique for the allocation request. DFSMS data class definitions can also specify an 18- or 36-track recording technique for the request and override any TAPEREQ recording technique specification.

For example:

```
//DD1 DD UNIT=CART,VOL=SER=TV9840,DISP=NEW,  
// DSN=SYS4.TR4.DATA
```

Assume the requested volume is a 9840 volume in the library with no recording technique specified on a VOLATTR. Assume an SMC TAPEREQ has been defined:

```
TAPEREQ DSN(SYS4.TR4.** ) RECT(STK1RB)
```

Previous exclusion levels restricted the list of devices to all T9840 models. In this example the TAPEREQ recording technique of STK1RB leaves only T9840B devices in consideration for this allocation.

Scratch Volume Request Drive Exclusion Criteria

For a scratch volume allocation, the SMC excludes drives in order from lowest exclusion level to highest based on the criteria in Table 3. The lower the level number, the more important the exclusion criteria.

Table 3. JES2 Drive Exclusion Levels (Scratch Request)

Level	Scratch Volume Criteria	Keyword*
1	For nonlabeled (NL) scratch volume requests, exclude all virtual drives. Exclude all MODEL=IGNORE drives.	VIRTUALLABEL
2**	For virtual volumes only, exclude virtual drives that reside in a VTSS to which the VTV cannot be migrated and recalled.	AVAILVTSS
3	Exclude drives based on the requested media. Primary source: DFSMS data class media specification. Secondary source: TAPEREQ MEDIA parameter. Tertiary source: User Exit 02 request for virtual media.	POLMEDIA
4	Exclude drives based on user location policies. Primary source: TAPEREQ ESOTERIC parameter. Secondary source: User Exit 02 and 10 return codes.	USERPOLICY
5	Exclude drives based on the media of available scratch volumes in subpool. Primary source: TAPEREQ SUBPOOL parameter. Secondary source: User Exit 02 subpool values. Tertiary source: scratch subpool 0.	SUBPOOL
6	Exclude drives based on available scratch location type, i.e., library, nonlibrary, or virtual.	LOCTYPE
7	Exclude drives based on the SMC ALLOCDef command ZEROSCR parameter.	ZEROSCRATCH
8	Exclude drives based on the requested recording technique. Primary source: DFSMS data class recording technique. Secondary source: TAPEREQ RECTECH parameter.	POLRECTECH

* Keywords associated with each exclusion level are specified in the exclusion criteria displayed in message SMC0046.

** The MINLVL parameter value default, level 2 on the ALLOCDef or ALLOCJob command, applies to both scratch and specific volume requests. Even though level 2 has no meaning for scratch, level 2 is considered the default minimum level.

Exclusion Level 1

The SMC excludes virtual drives if the volume label type requested is NL (nonlabeled). This is the only required criterion. Refer to the VTCS documentation for more information about virtual volumes.

The SMC excludes all drives defined with the SMC UNITATTR MODEL=IGNORE.

Exclusion Level 2

For virtual allocation requests, the SMC excludes virtual drives that reside in a VTSS to which the VTV cannot be migrated and recalled.

Refer to the VTCS documentation for more information about virtual volumes.

Exclusion Level 3

A DFSMS data class definition can explicitly request the media desired, or the media can be derived from the DFSMS data class recording technique. Drives that do not provide the requested media support are excluded at this level.

If no DFSMS data class definition applies for this allocation, the SMC TAPEREQ definitions can explicitly specify the media desired for the allocation request, or media can be derived from the TAPEREQ RECTECH. Drives that do not provide the requested media support are excluded at this level.

For example:

```
//DD1 DD UNIT=CART,DISP=(NEW,KEEP),DSN=SYS4.VIRT.DATA
```

No SMC TAPEREQ has been defined and no DFSMS data class definition applies. Assume the User Exit 02 return code requested virtual media (UX02VIRT). The User Exit 02 media selected for this request is virtual. Only virtual drives remain in consideration for this allocation. The next example shows how TAPEREQ can override User Exit 02 return codes.

For example:

```
//DD1 DD UNIT=CART,DISP=(NEW,KEEP),DSN=SYS4.TR4.DATA
```

An SMC TAPEREQ has been defined:

```
TAPEREQ DSN(SYS4.TR4.** ) MEDIA(DD3A) RECT(DD3)
```

Assume User Exit 02 return code requested virtual media (UX02VIRT).

If no DFSMS data class definition or TAPEREQ definition applies to this allocation request, User Exit 02 return code, UX02VIRT, can explicitly request virtual media. Nonvirtual drives are excluded at this level.

However, the TAPEREQ media definition overrides the user exit return code, and the media selected for this request is helical. Only helical drives remain in consideration for

this allocation. Messages SMC0045 and SMC0046 are issued indicating that the user exit request for virtual volumes was not honored.

Exclusion Level 4

If a TAPEREQ statement specifies an esoteric for this allocation request, the SMC determines the common drives between the TAPEREQ esoteric and the list of remaining eligible drives. If common drives exist, any drives remaining in the current list of eligible drives that are not also defined to the esoteric are excluded from consideration for this allocation.

If no TAPEREQ statement specifies an esoteric for this allocation request, User Exit 02 and User Exit 10 return codes and values can define this criterion for drive exclusion. The user exit return codes can direct the SMC to select library drives, nonlibrary drives, or a specific ACS, or the user exit can return an esoteric unit name that contains customer-selected drives. Any drives in the current list of eligible drives that did not match the user exit return values are excluded here.

For example:

```
//DD1 DD UNIT=CART,DSN=&&TEMP1,DISP=(NEW,PASS)
```

Assume User Exit 02 returns UX02LIB, which requests library drives.

The drives that are not in the library are excluded from consideration for this allocation.

A TAPEREQ example is:

```
//DD2 DD UNIT=CART,DSN=SYS4.TR1.DATA,DISP=(NEW,KEEP)
```

The following TAPEREQ statement is defined to the SMC.

```
TAPEREQ DSN(SYS4.TR1.** ) ESOT(TLIB9840) RECT(LONGI)
```

The drives that are not defined to the esoteric TLIB9840 are excluded from consideration for this allocation. Any User Exit 02 return codes would be ignored.

Exclusion Level 5

The combined media and specified recording technique of the volumes in a scratch subpool define this criterion for drive exclusion. An SMC TAPEREQ SUBPOOL parameter can specify a scratch subpool name for the request.

If no TAPEREQ SUBPOOL parameter is specified for this allocation, User Exit 02 can return a scratch subpool number or subpool name when it also sets the return code to use default processing or library drives. User Exit 10 can also apply to affinity chains here. Refer to “Affinity Separation” on page 45 for a discussion about the interaction between User Exit 02 and User Exit 10.



Note: When no specific subpool applies to the allocation, the default subpool, subpool 0, is used.

Drives that do not provide a recording technique compatible with a volume(s) in the subpool are excluded from consideration for this allocation.

For example:

```
//DD1 DD UNIT=CART,DSN=NEW.TRK36.DATA,DISP=(NEW,KEEP)
```

Assume HSC has scratches of media types 36TRACK and DD3 in a subpool named SUBPOOL3, and an SMC TAPEREQ entry exists:

```
TAPEREQ DSN(NEW.*) SUBPOOL(SUBPOOL3)
```

Drives providing 36-track recording and helical recording remain in consideration for this allocation.

A User Exit 02 example for this criteria:

```
//DD1 DD UNIT=CART,DSN=SYS4.MYGROUP.DATA,DISP=(NEW,KEEP)
```

Assume the following:

- User Exit 02 returns UX02LIB
- User Exit 02 returns MYSUBPL in UX02SNAM
- MYSUBPL has been defined to the HSC using a SCRPOOL statement in the SLSSYSxx PARMLIB member or SCRPEDEF file
- The library has scratch volumes defined in MYSUBPL scratch subpool.

The drives that are not in the library are excluded from consideration for this allocation during level 4 drive exclusion.

Exclusion Level 6

The generic location of available scratch volumes provides the next level of drive exclusion. If the library contains no scratch volumes, all library drives and virtual drives are excluded from selection, leaving only nonlibrary drives eligible. If the request is for a virtual scratch volume, eligible virtual drives are selected based on the management class from DFSMS or TAPEREQ; VTSSs that cannot support the requested management class migration are excluded. Lastly, if the library contains scratch volumes and the request is not for a virtual volume, then all virtual drives and all nonlibrary drives are excluded, leaving only library drives eligible.

For example:

```
//DD1 DD UNIT=CART,DSN=MY.NEW.DATASET,DISP=(NEW,KEEP)
```

Assume that there are no SMC UNITAttr commands defined for nonlibrary drives, and the library contains no scratch volumes.

All HSC library drives are excluded from consideration for this allocation. When all drives are excluded during an exclusion level, and the level is not at or below minimum level, then the following occurs:

- messages SMC0045 and SMC0046 are issued
- all drives excluded at that level are restored to the list of eligible drives
- processing continues at the next level of exclusion.

In this case, all drives that were excluded by this criterion are now restored to the list. Processing continues at level 7.

Exclusion Level 7

The SMC ALLOCDef command parameter, ZEROSCR, determines whether or not to include drives in ACSs that do not contain any scratch cartridges of the required type. ZEROSCR(OFF), the default, indicates to include drives in all ACSs whether they contain scratch cartridges or not. ZEROSCR(ON) excludes drives in ACSs that do not contain any scratch volumes, but leaves all ACSs containing scratch volumes eligible for allocation.

For example:

```
//DD1 DD UNIT=CART,DSN=MY.NEW.DATASET,DISP=(NEW,KEEP)
```

Assume that ZEROSCR(OFF) has been specified, and two ACSs have scratch counts as follows: ACS0 has 400 and ACS1 has 0.

Drives in ACS0 and ACS1 remain eligible for the allocation.

Another example is:

```
//DD2 DD UNIT=CART,DSN=MY.OTHER.DATASET,DISP=(NEW,KEEP)
```

Assume ZEROSCR(ON) has been specified, and three ACSs have scratch counts as follows: ACS0 has 400, ACS1 has 500, ACS2 has 0.

Drives in ACS0 and ACS1 remain eligible. ACS2 drives are excluded from consideration because ACS2 does not contain any scratch volumes.

Exclusion Level 8

Exclusion level 3 restricts the list of eligible drives to those compatible with the TAPEREQ or DFSMS requested media. Exclusion level 5 restricts the list of eligible drives to those compatible with the scratch media in the requested subpool. Exclusion level 8 may further restrict the devices for the request based on the TAPEREQ or DFSMS data class recording technique.

The SMC TAPEREQ definitions can explicitly specify a recording technique for the allocation request. DFSMS data class definitions can also denote an 18- or 36-track recording technique for the request and will override any TAPEREQ recording technique specification.

This criterion is the last to be applied to the drives that are eligible for the allocation. Any drive that does not provide the requested recording technique is excluded from consideration for the allocation.

For example:

```
//DD1 DD UNIT=CART,DISP=(NEW,KEEP),DSN=SYS4.TR4.DATA
```

Assume an SMC TAPEREQ has been defined:

```
TAPEREQ DSN(SYS4.TR4.** ) RECT(STK1RB)
```

Previous exclusion levels restricted the list of devices to all T9840 models. In this example, the TAPEREQ recording technique of STK1RB leaves only T9840B devices in consideration for this allocation.

Affinity Separation

Explicit unit affinity is an MVS facility that allows volumes associated with two separate JCL DD statements, or allocation requests, to be mounted serially on the same drive. A request for all generations of a GDG group (GDG ALL chain) can be considered as a GDGALL affinity.

The SMC makes no distinction between these two types of affinity. When processing an affinity chain, the drive exclusion process examines each allocation in the chain separately up to and including the minimum exclusion level. The chain is always separated when the minimum exclusion level processing results in lists of eligible drives, for two or more members of the chain, that do not contain common drives.

For example:

```
//DD1 DD UNIT=CART,DSN=MY.STK1R.DATASET,DISP=OLD  
//DD2 DD UNIT=AFF=DD1,DSN=MY.LONGI.DATASET,DISP=OLD
```

DD1 specifies a data set on 9840 or T9840B media and DD2 specifies a data set on longitudinal media. Drive exclusion level 1 for specific volumes creates a list of eligible drives for each DD according to volume media required. The two lists do not contain a common drive. As a result, DD1 and DD2 no longer represent one drive allocation but two separate allocation requests. At this point, the SMC breaks the affinity chain between them.

Affinity Head-Of-Chain

For SMC affinity chain processing, the “head” of the affinity chain containing only scratch or only specific volumes is the first DD statement in the chain. If an affinity chain contains both scratch and specific volumes, the first specific volume is the “head.”

User Policy Influence on Affinity Separation

After the minimum level of drive exclusion and affinity separation completes, user policy influences the remaining affinity separation decisions.

Further affinity chain processing decisions are based on the first value found between the following:

- User Exit 10 return code separation decision
- ALLOCDef or ALLOCJob command SEPLvl parameter value.

User Exit 10

User Exit 10 sends an entire affinity chain to the user for examination. The user can decide whether the affinity chain remains together or separates during exclusion processing after the minimum level.

If User Exit 10 returns UX10SEP, indicating the chain members can be separated, the SMC proceeds as if ALLOCDEF SEPLVL=MAX were specified.

If User Exit 10 returns UX10LDRV, UX10NDRV, UX10ESUB, or UX10ASUB, the affinity chain remains together for the remainder of drive exclusion processing. The location requested (e.g., library drives if UX10LDRV is returned) replaces any location value provided by User Exits 02 or 08. This location information is used by drive exclusion level 4. Refer to Table 2 on page 33 and Table 3 on page 38 for drive exclusion level information.

For example:

```
//DD1 DD UNIT=CART,DSN=SYS4.DATASET1,VOL=SER=NOLIB1,DISP=OLD
//DD2 DD UNIT=AFF=DD1,DSN=SYS4.DATASET2,VOL=SER=INLIB2,DISP=OLD
```

Assume the following:

- DD1 requests a nonlibrary volume and DD2 requests a library volume.
- User Exit 08 returns a nonlibrary esoteric for DD1 (UX08ESUB).
- User Exit 10 returns a no separate decision and a library location (UX10LDRV).

The affinity chain stays together. Drive exclusion ignores the esoteric returned by User Exit 08 for DD1 and excludes all but library drives as requested by User Exit 10.

Any one of the four return values UX10LDRV, UX10NDRV, UX10ESUB, and UX10ASUB from User Exit 10 causes the SMC to operate as if ALLOCDEF SEPLvl=MIN were specified.



Note: Any User Exit 10 separation decision overrides the SEPLvl parameter of the ALLOCDef or ALLOCJob commands.

SEPLvl Parameter Value

If the decision to separate or keep the affinity chain together still has not been made, further affinity chain processing depends on the SEPLvl parameter value of the ALLOCDef and ALLOCJob commands (refer to Chapter 7, “Commands and Control Statements,” for descriptions of these commands and setting an affinity separation level).

The SEPLvl parameter operates in three distinct ways depending on the value specified. The SEPLvl MAX parameter allows drive exclusion to be performed to the maximum level for each allocation element in the affinity chain. At the end of the drive exclusion process, if two or more elements of the chain no longer have common drives, the affinity chain is separated.

For example:

```
//DD1 DD UNIT=3490,VOL=SER=INACS0,DSN=MY.DSN1,DISP=OLD
//DD2 DD UNIT=AFF=DD1,VOL=SER=INACS1,DSN=MY.DSN2,DISP=OLD
```

Assume the following:

- Both volume INACS0 and INACS1 share common media characteristics.
- Volume INACS0 resides in ACS0, and volume INACS1 resides in ACS1.
- ALLOCDEF SEPLVL(MAX) has been specified.

During specific volume exclusion level 7, the list of eligible drives in DD1 are all located in ACS0 and the list of eligible drives in DD2 are all located in ACS1. No drives are common to both lists. This affinity chain separates.



Note: MAX is the default value for SEPLVL.

The SEPLVL parameter can be specified as MIN. The value MIN requests that any affinity chains that remain together after the minimum level of drive exclusion should not be separated during the remaining levels of drive exclusion processing.

Using the same example:

```
//DD1 DD UNIT=3490 ,VOL=SER=INACS0 ,DSN=MY.DSN1 ,DISP=OLD
//DD2 DD UNIT=AFF=DD1 ,VOL=SER=INACS1 ,DSN=MY.DSN2 ,DISP=OLD
```

Once again, assume:

- Both volume INACS0 and INACS1 share common media characteristics.
- Volume INACS0 resides in ACS0, and volume INACS1 resides in ACS1.
- ALLOCDEF SEPLVL(MIN) has been specified.

During specific volume exclusion level 7, the list of eligible drives for DD1 is all located in ACS0. DD1 is considered the “head” of the chain and exclusion is performed to ACS0. Only drives in ACS0 remain eligible for the allocation, and the affinity chain remains together.

The SEPLVL parameter can also be set to a specific drive exclusion level. The level number indicates the highest drive exclusion level at which separation can occur. Using the previous example, if the user specifies

```
ALLOCDEF SEPLVL=6
```

The chain remains together through drive exclusion level 6 because each level produces a drive list containing common drives for both DD1 and DD2.

Another example:

```
//DD1 DD UNIT=3490 ,VOL=SER=INACS0 ,DSN=VIRTUAL.DATASET1 ,DISP=OLD
//DD2 DD UNIT=AFF=DD1 ,VOL=SER=INACS1 ,DSN=VIRTUAL.DATASET2 ,DISP=OLD
//DD3 DD UNIT=AFF=DD1 ,VOL=SER=NL0001 ,DSN=REAL.DATASET ,DISP=OLD
```

Assume the following:

- ALLOCDEF SEPLVL=5 has been specified.
- Volume INACS0 is in ACS0 and VOLATTR MEDIA(ECART) RECTECH(36B) has been defined.
- Volume INACS1 is in ACS1 and VOLATTR MEDIA(ECART) RECTECH(36B) has been defined.
- Volume NL0001 is a nonlibrary volume and VOLATTR MEDIA(DD3A) has been defined.

At drive exclusion level 1, two chains result because of incompatible media (ECART and DD3A). Statements DD1 and DD2 are still chained together and continue through exclusion levels 2 through 5 because the exclusion criteria do not create disparate sets of eligible drives for the two DD statements.

No further separation of the DD1/DD2 chain can occur because the SEPLVL parameter has been set to level 5.

After the last drive exclusion level is completed for the job, the SMC examines the final drive lists. If the job cannot be allocated because not enough drives remain eligible, drive exclusion regresses to the previous exclusion level of the failing DD statement and a separated chain may be rejoined. This process repeats until the job can allocate.



Note: The SEPLVL parameter replaces the function of the HSC ALLOC and MVS/CSC ALTER command UNITAFF and GDGALL parameters. These parameters are no longer supported.

If your installation previously specified UNITAFF(NOSEP) and GDGALL(NOSEP), to preserve that behavior, specify a SEPLVL value of 3 on the ALLOCDef command. If your installation previously specified UNITAFF(SEP) and GDGALL(SEP), no SEPLVL parameter change is required, since the default SMC behavior separates affinity chains at the maximum separation level.

Refer to the ALLOCDef and ALLOCJob commands in Chapter 7, “Commands and Control Statements,” for more information about setting an installation default minimum exclusion level and unit affinity separation level.

Drive Prioritization

After drive exclusion has occurred during the SSI24 common allocation event, the SMC then proceeds to assign a priority value to each remaining eligible drive during the corresponding SSI78 tape allocation event.



Note: Between a common allocation event (SSI24) for a tape and its tape allocation event (SSI78), MVS may make drives ineligible. When this occurs, the SMC retests the job step to ensure that it is allocatable with the remaining drives. If it is not, drives that were excluded by the SMC SSI24 process are reincluded until the job step is allocatable. Only the remaining drives are considered when the SMC assigns a priority value at SSI78 time.

One exception to the reinclusion process occurs when the ALLOCDef MIAcompat parameter is set to ON. In this case, exclusion is already done, so drive reinclusion cannot take place, and the job is allowed to fail.

The SMC drive priority is assigned based on the following criteria:

- For specific volumes, drives in LSMs closest to the volume are preferred. The SMC sets equal priority value for drives that are located the same number of passthroughs from the volume.
- For scratch volumes, drives in LSMs with the largest number of scratch volumes are preferred.
- The TAPEREQ DEVTPREF parameter causes drives with specific recording techniques to be preferred.
- The TAPEREQ SCOPE parameter determines the relative priority of LSM location and drive type preferencing.

The following parameters, control statements, and user exits also influence the drive priority:

- HSC ALLOC command parameters LOWSCR, LSMPREF, and SCRTECH
- SLSUX02 (HSC format user exit 02).

After a final list of drives has been selected for allocation, the preference order of the eligible drives, after considering LSM and drive type preferencing, is selected based on a “last use” algorithm.

To reduce excessive wear on allocated drives, the SMC allocates drives by rotation based on the “last mount time” for each drive. This value is examined for every drive in the final drive list. The drive that had the most recent mount is located, and the drive immediately following it in the list is selected as the most preferred for the current allocation.



Note: This algorithm does not apply to virtual drives.

Deferring Mounts

The SMC can also set the deferred mount status if the installation chooses to defer the mount of library volumes. The SMC ALLOCDef command DEFER parameter can set defaults for an installation.

Defer(ON)

The volume mount is deferred until the data set is opened. This is the default.

Defer(OFF)

The volume mount is deferred only if the user's JCL requests it.

For optimal performance, Sun Microsystems recommends setting Defer(ON).



Note: Virtual mounts are always deferred.

Library Subsystem Selection

In order to support the execution of SMC on a different host from the library subsystem, all allocation and message processing user exits are now managed and invoked by the SMC. Therefore, only one version (HSC or MVS/CSC) of each user exit can be executed.



Warning: Sun Microsystems recommends using the HSC user exit format, as the MVS/CSC format will no longer be supported in the next release.

Sun Microsystems recommends that you carefully review the contents of your existing user exits to determine the most effective method to direct allocations to the correct library. Specifically, the use of the user exit return code “use nonlibrary drives” to direct allocation to another library subsystem is no longer supported. Sun Microsystems recommends that you use TAPEREQ or user exit esoterics to direct allocations to the appropriate library subsystem.

An alternative method to select a library subsystem is to alter your scratch or specific allocation user exit to use the new HSC format, and explicitly select a LIBRARY name to direct a request.

See “SMC Library Subsystem Selection” on page 18 for information on how the SMC selects among multiple library subsystems to determine an “owner” for each allocation request (i.e., each DD in a job step may have a different library subsystem owner).

SMC DFSMS Processing

The SMC interface to DFSMS provides the following capabilities:

- esoteric substitution during MVS JCL interpretation
- at device allocation time, the DFSMS DATACLAS value can request a specific recording technique and/or media.
- at device allocation time, the DFSMS MGMTCLAS value can be used for VTV allocations.
- at volume mount, the DFSMS MGMTCLAS value can be assigned to a VTV.
- at volume mount, the DFSMS DATACLAS value can request a media for a scratch request.

Enabling/Disabling the SMC DFSMS Interface

To enable the SMC DFSMS interface, specify the SMS parameter of the ALLOCDef command as follows:

```
ALLOCDEF SMS=ON
```

To disable the SMC DFSMS interface, specify the SMS parameter of the ALLOCDef command as follows:

```
ALLOCDEF SMS=OFF
```

The SMC DFSMS interface can be selectively enabled or disabled by job or job step by specifying the SMS parameter of the ALLOCJob command.

Tailoring the SMC DFSMS Interface

The SMSDef command can be used to tailor the default SMC DFSMS support for your installation's requirements. This command provides the ability to include or bypass certain SMC DFSMS functions. See "SMSDef Command" on page 165 for more information about the options that can be specified.

DATACLAS, STORCLAS, and MGMTCLAS Specification

DFSMS DATACLAS can be specified by using the DATACLAS parameter on the DD JCL statement or by executing an Automatic Class Selection (ACS) routine. STORCLAS and MGMTCLAS can only be specified by ACS routines.



Note: STORCLAS and MGMTCLAS JCL parameters are not supported by the SMC DFSMS interface due to conflicts with IBM MVS DFSMS. Using the STORCLAS JCL parameter causes a data set to become DFSMS-managed, and the MGMTCLAS JCL parameter requires a DFSMS-managed data set. The data sets assigned STORCLAS and MGMTCLAS values in the STKTAP1 environment are not actually DFSMS-managed.

Invoking ACS Routines

IBM DFSMS invokes ACS routines with the variable `&ACSENVIR` set to `ALLOC` before the SMC invokes the ACS routines with variable `&ACSENVIR` set to `STKTAPI`.

The SMC invokes the ACS routines at the following points in processing:

- SSI55 Interpreter/Dynamic Allocation Exit (IDAX)
- SSI24 common allocation
- mount message interception.

The ACS routines are invoked in the following order:

1. data class
2. storage class
3. management class
4. storage group.

Management class and storage group ACS routines are called only if a storage class is assigned.

DFSMS Automatic Class Selection (ACS) Routine Environment for SMC

The following list of read-only variables is passed by SMC to DFSMS when the information is available to the SMC. Not all variables are available for every call to the ACS routines. See the descriptions of each DFSMS interface for exceptions.

- `&ACSENVIR` (equals `STKTAPI` for the SMC interface)
- `&ALLVOL`
- `&ANYVOL`
- `&DATACLAS`
- `&DD`
- `&DSORG`
- `&DSN`
- `&DSTYPE`
- `&EXPDT`
- `&FILENUM`
- `&JOB`
- `&LABEL`
- `&NVOL`
- `&PGM`
- `&RETPD`
- `&SYSNAME`
- `&SYSPLEX`
- `&UNIT`.

In the `STKTAPI` environment, the `&ANYVOL` variable is used only to match a specific `VOLSER` and does not contain the “`REF=xx`” values for `VOL=REF` allocations.

The `&DATACLAS` field is set when the JCL DD statement specifies this parameter.

If your installation uses the IGDACSXT routine to modify the read-only variables before the DFSMS ACS routine calls, be aware that the following variables, even if initialized, are not passed to the DFSMS ACS routines when &ACSENVIR is set to STKTAP1.

- &ACCT_JOB
- &ACCT_STEP
- &GROUP
- &MSGVP
- &USER
- &XMODE

Refer to the IBM manual *DFSMSdfp Storage Administration Reference* for more information about constraints when using read-only variables.

Esoteric Substitution During IDAX

When a job is in the JCL interpretation phase, the unit name (esoteric) can be changed indiscriminately (for example, you could substitute disk for tape). Considerations:

- SMC performs esoteric substitution for all DISP=NEW data sets.
- By default, the SMC treats a DISP=MOD data set as pre-existing and does not perform esoteric substitution. SMC performs esoteric substitution for DISP=MOD data sets **only** if the SMSDEF command MOD(ON) parameter is specified **and** the first reference to the data set in the job's JCL specifies either DISP=MOD or DISP=NEW.
- Unit affinity chains are always separated if ACS routines return different esoterics for different members of the chain.
- VOL=REF chains within a job are validated and updated with the head-of-chain esoteric if necessary to ensure that volume references are honored.

When the SMC locates a new allocation that is not DFSMS-managed, the SMC calls the DFSMS ACS routines with the environment variable &ACSENVIR set to STKTAP1. When the ACS routines return a pair of storage group names with the first name being STK1, the second storage group name replaces the original value of the UNIT parameter of the DD statement. For example, the following DD statement allocates a 3490 nonlibrary tape drive (esoteric TNLIB):

```
//DD1 DD DSN=&TEMP.DSN,UNIT=TNLIB,DISP=NEW
```

Assume that your installation wants to move all new tape allocations into a tape library. You can code the DFSMS ACS routines to return storage groups STK1 and a library esoteric such as TACS0, where TACS0 contains all drives in library location ACS0. After esoteric replacement, the only drives considered for the allocation are contained within the TACS0 esoteric. The nonlibrary drives are no longer considered eligible for the allocation.

Defining Storage Groups and Storage Classes

To enable esoteric substitution during IDAX, complete the following steps:

1. Define a storage group of type POOL named STK1.
2. Define a storage group of type POOL for each possible esoteric returned, giving it the same name as the esoteric name.
3. Define at least one volume to each storage group. Sun Microsystems recommends that you use a nonexistent volume for this definition.
4. Create a storage class ACS routine that, when it is invoked by the SMC (i.e., when the environmental variable is &ACSENVIR=STKTAP1), returns a storage class to be passed to the storage group ACS routine. Refer to Figure 8 on page 55.
5. Create a storage group ACS routine that, when the environmental variable is &ACSENVIR=STKTAP1, returns two storage groups (e.g., &STORGRP='STK1', 'CART'). In this case, "STK1" is the first storage group returned, and "CART," the replacement esoteric, is the second. Refer to Figure 8.
6. Test for the &ACSENVIR=STKTAP1 read-only variable in the storage class and storage group ACS routines. This enables you to prevent the storage class being assigned when MVS invokes the ACS routines. If MVS invokes the SMC version of the ACS routines, the data set becomes DFSMS-managed and all SMC allocation functions are bypassed.
7. Return both a storage class and a storage group during the SMC invocation of the DFSMS ACS routines. If a storage class is returned but a storage group is not, DFSMS issues a message stating that allocation has failed, but in reality that may not be the case.

```

PROC STORCLAS

FILTLIST LOCALDSN INCLUDE (BACKUP*.**,
                           PROD.BKP*.**)

FILTLIST RMTDSN INCLUDE (PROD.OFFSITE.**)
```

IF &ACSENVIR = 'STKTAP1' THEN
 SELECT
 WHEN &DSN = &LOCALDSN
 SET &STORCLAS = 'CART'
 WHEN &DSN = &RMTDSN
 SET &STORCLAS = 'RMT CART'
 END
END

```

=====

PROC STORGRP

IF &ACSENVIR = 'STKTAP1' THEN
  SELECT
  WHEN &STORCLAS = 'CART'
    SET &STORGRP = 'STK1', 'CART'
  WHEN &STORCLAS = 'RMT CART'
    SET &STORGRP = 'STK1', 'RMT CART'
  END
END
```

Figure 8. Sample Storage Class/Storage Group Routine

Availability of Read-only Variables

During DFSMS STORCLAS/STORGRP ACS routine processing, all of the read-only variables listed in “DFSMS Automatic Class Selection (ACS) Routine Environment for SMC” on page 52, except &DSORG, are available to the IDAX interface for esoteric substitution. The &DATACLAS field is set when the DD statement in the JCL specifies this parameter.

Validating DFSMS STORCLAS/STORGRP ACS Routine Execution

DFSMS provides the following ways to validate correct ACS routine execution:

- DFSMS WRITE statement in the ACS routines
- DFSMS ISMF test function.

When the SMC invokes the DFSMS ACS routines, all messages issued by DFSMS WRITE statements are routed to the GTF trace file if SMC tracing is active.

Refer to the publication *DFSMS/MVS DFSMSdfp Storage Administration Reference* for further information about writing and testing DFSMS ACS routines.


Retrieving DFSMS Values During Allocation and Volume Mount

Requesting Recording Technique/Media using DFSMS DATACLAS

During allocation processing, the media and/or recording technique can be specified for a DD allocation by coding:

- TAPEREQ statement
- DATACLAS parameter on the DD statement
- DATACLAS ACS routines.

During scratch volume mount processing, only the volume media can be specified.

 **Note:** DATACLAS media and recording technique values override TAPEREQ values.

Media/Rectech Support

The following media and recording techniques are supported:

Media:	
MEDIA1	Standard capacity for both 18-track and 36-track media types (this is the default)
MEDIA2	Enhanced capacity 36-track media
Recording Techniques:	
18TRACK	18-track recording technique
36TRACK	36-track recording technique

Defining Data Classes

To use DATACLAS, customers must define their own data class and specify the recording technique and media. If the recording technique is left blank, the SMC defaults to allowing both 18TRACK and 36TRACK to remain eligible for the allocation request, unlike MVS, which defaults to 36TRACK.

As an example, a customer can define a DATACLAS named STD18 that specifies a recording technique of 18TRACK and standard media.

When using an ACS routine to supply a DATACLAS to set recording technique and media, do not specify `&ACSENVIR='STKTAP1'`. The DATACLAS ACS routine is invoked both by the SMC and MVS, and the resulting recording technique and media should be consistent.

The following figure provides a sample data class routine.

```
PROC DATACLAS
FILTLIST RMTDSN INCLUDE(PROD.OFFSITE.***)

  SELECT
  WHEN &DSN = &RMTDSN
    SET &DATACLAS = 'ECART36'
  END
```

Figure 9. Sample Data Class Routine

In the example above, assume DATACLAS ECART36 is defined with a recording technique of 36-track and a media type of MEDIA2. This data class routine example assigns ECART36 to data sets with names that start with “PROD.OFFSITE.”

By default, any DATACLAS value specified by the DFSMS ACS routine overrides the DATACLAS parameter specified on the JCL statement. Your installation can change this behavior by adding the following statements to your DFSMS DATACLAS ACS routine.

```
  WHEN (&DATACLAS NE '')
  DO
    SET &DATACLAS = &DATACLAS
  EXIT
  END
```

Requesting Management Class Using DFSMS ACS Routines

During allocation and mount processing, a management class name can be specified for a virtual allocation by coding any of the following:

- TAPEREQ statement
- MGMTCLAS ACS routine.

The MGMTCLAS JCL parameter is not supported by the SMC DFSMS interface.



Note: The MGMTCLAS management class name overrides a TAPEREQ management class name.

When writing a management class routine, keep in mind:

- The management class routine is invoked only when a storage class is assigned.
- The management class routine must test for the &ACSENVIR='STKTAP1' read-only variable value.
- During volume mount message IEC501A interception, the &UNIT read-only variable contains the generic unit type, such as 3490. Therefore, careful consideration should be taken when coding ACS routines that use the &UNIT read-only variable.

Figure 10 on page 59 provides a sample management class routine.

```

PROC STORCLAS

FILTLIST CART INCLUDE ('CART')

  IF &ACSENVIR = 'STKTAP1' THEN
    SELECT
      WHEN (&UNIT EQ &CART)
        SET &STORCLAS = 'VIRTAPE'
      WHEN (&UNIT NE &CART)
        SET &STORCLAS = 'STKDFLT'
    END
  END

=====

PROC STORGRP

  IF &ACSENVIR = 'STKTAP1' THEN
    SELECT
      WHEN (&STORCLAS = 'VIRTAPE')
        SET &STORGRP = 'STK1', 'VDRIVES'
    END
  END

=====

PROC MGMTCLAS

FILTLIST LOCAL INCLUDE(BACKUP*.*,
                      PROD.BKP*.)

FILTLIST REMOTE INCLUDE(PROD.OFFSITE.*)

  IF &ACSENVIR = 'STKTAP1' THEN
    SELECT
      WHEN (&DSN = &LOCAL)
        SET &MGMTCLAS = 'INVTAPE'
      WHEN (&DSN = &REMOTE)
        SET &MGMTCLAS = 'OFFVTAPE'
    END
  END

```

Figure 10. Sample Management Class Routine



Note: In this example, the STORCLAS ACS routine assigns a storage class to every call. This ensures that the MGMTCLAS routine is also driven at mount time. Only the VTCS component of NCS currently uses the management class value.

Availability of Read-only Variables

- At allocation time and at mount time processing of message IEF233A, the &UNIT read-only variable is set by the SMC to the value specified by the UNIT= parameter of the DD statement. At mount time processing of message IEC501A, the SMC sets the &UNIT read-only variable to the generic unit type, such as 3490.
- During dynamic allocation, the &DATACLAS value can be specified by coding the DADACL text unit. However, this value is not available to the SMC when processing mount message IEF233A.

Validating DFSMS ACS Routine Execution

DFSMS provides the following ways to validate correct ACS routine execution:

- DFSMS WRITE statement in the ACS routines
- DFSMS ISMF test function.

When the SMC invokes the DFSMS ACS routines, all messages issued by DFSMS WRITE statements or by DFSMS processing are routed to the SYSMSG data set of the job and are also routed to the GTF trace file if SMC tracing is active.



Notes:

- DFSMS WRITE statements are **only** sent to the SYSMSG data set for the SSI55 Interpreter/Dynamic Allocation Exit (IDAX) esoteric substitution phase.
- Refer to the publication *DFSMS/MVS DFSMSdfp Storage Administration Reference* for further information about writing and testing DFSMS ACS routines.

Chapter 5. SMC Allocation in a JES3 Environment

Overview

This chapter describes SMC allocation in a JES3 environment. The following topics are discussed:

- SMC allocation – JES3 not managing drives
- SMC allocation – JES3 managing drives
- DFSMS esoteric substitution
- JES3 initialization parameter considerations
- SMC normal operations
- JES3 constraints
- multiple library subsystem support
- SMC DFSMS processing
- GDG ALL processing



Notes:

- See Appendix D for differences between SMC and NCS allocation.
- See for Appendix E for information about SMC interaction with other software.

SMC Allocation - JES3 Not Managing Drives

If JES3 is not managing any devices and SETUP=NONE has been specified on the JES3 STANDARDS initialization statement, the SMC operates the same as it does in a JES2 environment.

If JES3 is not managing any cartridge drives but is managing other types of devices, specify the J3NOSET parameter on the EXEC statement of the SMC START procedure (refer to “Creating the SMC START Procedure” on page 22). When J3NOSET is specified, the SMC operates the same as it does in a JES2 environment.

If either SETUP=NONE or J3NOSET is specified, no Type 1 modifications need to be installed on your JES3 system. HSC and MVS/CSC user exits invoked are the JES2 versions. For example, in HSC, the specific volume user exit SLSUX08 is invoked rather than user exit SLSUX13.

See Chapter 4, “SMC Allocation in a JES2 Environment” section for all further information about how the SMC operates in a JES2 environment.

SMC Allocation - JES3 Managing Drives

The SMC supports JES3-managed drives. JES3 manages drives through SETUP processing, which allocates drives identified on SETNAME statements when JOB, HWS (high watermark setup), or THWS (tape high watermark setup) is specified on the SETUP parameter of the JES3 STANDARDS initialization statement. In this environment, JES3 must manage all cartridge drives for the SMC to operate correctly.

SMC support operates during the following MVS subsystem interfaces (SSIs) and JES3 component phases:

- SSI55 Interpreter/Dynamic Allocation Exit (IDAX)
- JES3 Converter/Interpreter (C/I)
- SSI23 JES3 Dynamic Allocation
- JES3 Main Device Scheduler (MDS)
- SSI24 common allocation.

SSI55 Interpreter/Dynamic Allocation Exit (IDAX)

During MVS JCL interpretation processing, IDAX provides an opportunity to examine new data set allocations and to replace the unit parameter value with a different value (esoteric).



Note: This function is optional for SMC customers. For information about implementing DFSMS esoteric substitution, refer to “SMC DFSMS Processing” on page 103.

JES3 Converter/Interpreter (C/I)

During JES3 C/I subtask SWA processing, the SMC retrieves the media and recording technique obtained from the DFSMS DATACLAS specified by a DATACLAS JCL parameter on the DD allocation. This support is optional. For information about implementing DFSMS media and recording technique support, refer to “SMC DFSMS Processing” on page 103.

During JES3 C/I POSTSCAN processing, the SMC substitutes an esoteric to eliminate unacceptable drives from the allocation. The SMC performs the following processes to arrive at the best set of eligible drives:

- drive exclusion
- affinity separation
- esoteric unit name replacement.

At the end of JES3 C/I POSTSCAN processing, the SMC can defer the allocation until the job enters the initiator according to the customer’s library subsystem defer policy. Also, at this point of processing, fetch messages can be suppressed according to the customer’s library subsystem fetch policy.

These processes are discussed in this chapter.

SSI23 JES3 Dynamic Allocation

During SSI23 JES3 Dynamic Allocation processing, the SMC performs the same functions for dynamic allocations that the POSTSCAN C/I processes for common allocations:

- drive exclusion
- GDGALL affinity separation
- esoteric unit name replacement
- mount deferral.

JES3 Main Device Scheduler (MDS)

At the beginning of JES3 MDS processing, the SMC provides the ability to suppress fetch messages for dynamic allocation requests according to the customer’s library subsystem fetch policy.

During MDS device selection, the SMC sets preference values for drives according to their relative desirability, that is, JES3 selects the available drive with the highest preference value for the allocation.

SSI24 Common Allocation

If a mount has been deferred until the job enters an initiator, during SSI24 common allocation processing, the mount may be deferred further until the data set is opened. The customer’s library subsystem defer policy determines whether or not the mount is deferred.

Exceptions

The SMC does not influence the following types of cartridge tape allocation:

- demand allocation (i.e., request for a specific drive(s))



Note: The SMC does perform DEFER processing for demand allocation.

- allocations excluded explicitly by entering the ALLOCJob command BYPASS parameter. Refer to the description of this command in Chapter 7, “Commands and Control Statements.”
- allocations where the list of eligible devices contains only devices that are "unknown" (i.e., not virtual, not library, and not defined in an SMC UNITAttr command).
- DFSMS-managed allocation. An SMS-managed data set is defined as a data set that has a storage class defined. A storage class is assigned when either
 - the STORCLAS parameter is specified on the DD statement, or
 - an installation-written ACS routine selects a storage class for a new data set.

DFSMS Esoteric Substitution

During MVS JCL interpretation processing, the Interpreter/Dynamic Allocation Exit (IDAX) provides an opportunity to examine new data set allocations and to replace the unit parameter value with a different value (esoteric).



This function is optional for SMC customers. For information about implementing DFSMS esoteric substitution, refer to “SMC DFSMS Processing” on page 103.

Drive Exclusion

The JES3 C/I process creates an Intermediate Job Summary Table (IJS) that represents the device requirements for the JES3 managed devices for an entire job. The Type 1 modification to JES3 C/I module IATIIP1 enables the SMC to examine the IJS and to determine whether the SMC should influence the allocation.

When the SMC determines an interest in the allocation, its first step is to narrow down the list of eligible drives to those that best support the allocation request. This step is called *drive exclusion*.

Like the HSC and MVS/CSC device separation processes, the SMC drive exclusion process does **not** take into account the status of drives (e.g., offline, busy) when selecting drives that are eligible for the allocation request. If all drives compatible with the allocation request are unavailable, the job goes onto the allocation wait queue.

The SMC performs drive exclusion by building a list of drives defined to the original unit name and then by following a step-by-step process using an ordered list of exclusion criteria to remove drives from this list.

Before any drives are removed from consideration for the allocation, the SMC first determines whether a job can be allocated.

For example:

```
//JOB1 JOB ...
//STEP1 EXEC PGM=...
//DD1 DD UNIT=3490,...
//DD2 DD UNIT=3490,...
.
.
.
//DD25 DD UNIT=3490,...
```

Assume STEP1 is requesting twenty-five 3490 drives. If JES3 has configured only twenty-four 3490 drives, JES3 cannot allocate the required drives for the job. In this instance, two messages are issued:

- SMC0042, which indicates the job cannot allocate before SMC modification and allows the job to fail allocation.
- IAT4801, a JES3 message which indicates the job has been express-canceled by the interpreter Dynamic Support Program (DSP).

Once the SMC determines a job can be allocated, the SMC begins excluding drives based on an ordered list of criteria. Table 4 on page 68 and Table 5 on page 73 list these criteria and show the order the exclusion process follows. The lower the criteria level, the higher its importance. Thus, level 2 is considered more important than level 6.

Minimum Exclusion Level

By default, level 2 is the *minimum exclusion level*, that is, the desired minimum level of allocation exclusion, for both specific and scratch volume processing. However, if necessary, the ALLOCDef and ALLOCJob commands can reset the minimum exclusion level (refer to Chapter 7, “Commands and Control Statements” for descriptions of these commands).

In the first step of drive exclusion, the SMC determines if the job can be allocated at the minimum drive exclusion level. If not enough drives remain eligible at the minimum exclusion level, the SMC sets a JES3 indicator that causes JES3 to express-cancel the job.

For example:

```
//JOB2 JOB ...
//STEP1 EXEC
//DD1 DD UNIT=3490,VOL=SER=984001,DISP=OLD
//DD2 DD UNIT=3490,VOL=SER=984002,DISP=OLD
//DD3 DD UNIT=3490,VOL=SER=984003,DISP=OLD
```

In this system environment, imagine that twenty 3490-type drives have been configured. Only two of those twenty are actually T9840 drives. If all three volumes require a separate T9840 tape drive, then not enough T9840 drives exist for the job to allocate. Without SMC influence, JES3 would allow the job to proceed through allocation. However, with SMC influence, the job fails and two messages are issued:

- SMC0043, which indicates the job could not allocate at the specified minimum exclusion level.
- IAT4801, a JES3 message which indicates the job has been express-canceled by the interpreter DSP.



Note: No exclusion criteria (including minimum level) are applied when the user specifies demand allocation (i.e., requests a specific drive or drives).

Subsequent Levels

Once the minimum level of exclusion has succeeded, the remaining exclusion levels are performed. Any level above the minimum level that fails is skipped and exclusion continues to the next level.



Note: A level fails if it results in too few drives for the DD statement to allocate. The only required exclusion levels are those at the minimum level or below.

After the last drive exclusion level is completed, the SMC examines the final drive lists. If the job cannot be allocated because not enough drives remain eligible, drive exclusion regresses to the previous exclusion level for the failing DD statement. This process repeats until the job can allocate.

Intentionally Failing a Job

Depending upon the characteristics of your installation, you may want specific jobs to fail at allocation time rather than execute them with nonoptimal devices. As an example, if you have two ACSs, one of which is located at a remote site, you may prefer to fail the job, rather than having to transfer the correct volume from one ACS to another.

For example:

```
//DD1 DD UNIT=CART,VOL=SER=INACS0,DISP=OLD  
//DD2 DD UNIT=AFF=DD1,VOL=SER=INACS1,DISP=OLD
```

Assume the following:

- Both volume INACS0 and INACS1 share common media characteristics.
- Volume INACS0 resides in ACS0, and volume INACS1 resides in ACS1.
- Only ACS0 contains a compatible drive.

If this affinity chain is not broken, then volume INACS1 must be ejected from ACS1 and entered into ACS0 for this job to execute, which may not be possible given the geographical locations of the ACSs.

In this case, failure at allocation time may be preferable to failure at run time. By specifying the correct MINLVL value (i.e., by issuing the ALLOCJob command with a MINLVL of 7 for this job), the job is failed at allocation time.



Caution: Setting the minimum exclusion level may cause jobs to fail unexpectedly. Whenever the SMC is unable to apply an exclusion criterion at or below the minimum level, the job fails allocation.

For example, if a TAPEREQ specifies a media of STANDARD for a scratch volume and the eligible device list contains only T9840 drives, when the SMC attempts to apply the “policy media” exclusion level, all drives are excluded. If the minimum level is set to 3 or higher, the job fails allocation. Therefore, Sun Microsystems recommends that the default exclusion level (as specified by the ALLOCDef command) should normally not be set to a level greater than 2.

Specific Volume Request Drive Exclusion Criteria

For a specific volume allocation, the SMC excludes drives in order from lowest exclusion level to highest based on the criteria in Table 4. The lower the level number, the more important the exclusion criteria.

Table 4. JES3 Drive Exclusion Levels (Specific Request)

Level	Specific Volume Criteria	Keyword*
1	For non-labeled (NL) specific volume requests, exclude all virtual drives. Exclude drives incompatible with the volume media. Primary source: external volume label Secondary source: VOLATTR MEDIA parameter The volume media can be obtained from the volume label or from an HSC VOLATTR statement MEDIA parameter.	VIRTUALLABEL MEDRECTECH
2**	For virtual volumes only, exclude virtual drives that reside in a VTSS to which the VTV cannot be migrated and recalled.	AVAILVTSS
3	Exclude drives based on the required recording technique. Source: VOLATTR RECTECH parameter or volume density (i.e., 9840A/B and 9840C).	VOLATTRRECTECH
4	Exclude drives based on user location policies. Primary source: TAPEREQ ESOTERIC parameter. Secondary source: User Exit 12 or 13 return codes.	USERPOLICY
5	Exclude drives based on the SMC ALLOCDEF EXTVOLESOT esoteric.	EXTVOLEXOT
6	Exclude drives based on volume location type, i.e., library or nonlibrary.	LOCTYPE
7	Exclude drives based on the ACS location of the volume (for library volumes), and the resident VTSS, for virtual volumes.	ACSORVTSS
8	Exclude drives based on the requested recording technique. Primary source: DFSMS data class recording technique. Secondary source: TAPEREQ RECTECH parameter.	POLRECTECH

* Keywords associated with each exclusion level are specified in the exclusion criteria displayed in message SMC0046.

** Level 2 is the default minimum level.

Exclusion Level 1

The SMC excludes drives that are not compatible with the volume media. The volume media can be obtained from the volume label or from an HSC VOLATTR statement MEDIA parameter.

The SMC excludes all virtual drives for non-labeled (NL) specific volume requests.



Note: Specifying MINLVL=0 allows the allocation to succeed even if the volume's media conflicts with the EDL. See "ALLOCJob Command" on page 131 for more information.

Exclusion Level 2

If the specific volume requested is a resident virtual volume, the SMC excludes virtual drives that reside in a VTSS to which the VTV cannot be migrated and recalled.

Refer to the VTCS documentation for more information about virtual volumes.

Exclusion Level 3

If an HSC VOLATTR statement specified the recording technique (RECTECH parameter) for this specific volume, the SMC excludes drives that do not provide that recording technique.

For example:

```
//DD1 DD UNIT=TLACS0,VOL=SER=VOL000,DISP=OLD
```

A VOLATTR statement has been defined to the HSC.

```
VOLATTR SERIAL(VOL000) RECTECH(36B) MEDIA(ECART)
```

VOL000 requires a 9490 drive, and if TLACS0 contains both 9490 and 9490EE drives, the 9490EE drives are excluded from consideration for this allocation.



Notes:

- If your environment contains drives that support different densities for the same media, such as a combination of T9840A and T9840C drives, Sun Microsystems recommends that you set the default MINLVL to 3, so that jobs will fail rather than allocating volumes to a drive with an incompatible density.
- In MVS/CSC, the VOLATTR RECTECH is implied by the composite recording technique of the drives in the list returned by the library server.

Exclusion Level 4

If a TAPEREQ statement specifies an esoteric unit name for this allocation request, the SMC verifies the esoteric unit name is defined to MVS. If the esoteric passes this test, any drives in the original unit name that are not also defined to the esoteric unit name are excluded from consideration for this allocation.



Note: The SMC does not substitute the requested esoteric directly, but uses it to alter the list of eligible drives.

For example:

```
//DD2 DD UNIT=CART,VOL=SER=TR0001,DSN=SYS4.TR1.DATA,DISP=OLD
```

The following TAPEREQ statement is defined to SMC.

```
TAPEREQ DSN(SYS4.TR1.***) ESOT(TLACS1) RECT(LONGI)
```

The drives that are not defined to the esoteric TLACS1 are excluded from consideration for this allocation.

If no TAPEREQ statement specifies an esoteric for this allocation request, HSC and MVS/CSC User Exit 12 or 13 return codes and values can define the criteria for drive exclusion at this level. The user exit return codes can direct the SMC to select library drives, nonlibrary drives, or a specific ACS, or the user exit can return an esoteric name that contains customer-selected drives. Any drives in the current list of eligible devices that did not match the user exit return values are excluded here.

For example:

```
//DD1 DD UNIT=CART,VOL=SER=VOL001,DISP=OLD
```

HSC User Exit 13 returns UX13LIB, which requests a library drive. The drives that are not in the library are excluded from consideration for this allocation.

Exclusion Level 5

The ALLOCDEF EXTVOLESOT parameter is used to specify an esoteric to allocate specific external (nonlibrary) volumes. Additionally, the ALL modifier allows you to use this esoteric for all specific external volumes regardless of the value of the specific user exit return code.



Note: The EXTVOLESOT esoteric replaces the HSC ALLOC SPECVOL ACS list. The following describes how to use the SMC EXTVOLESOT to achieve the same functionality:

- If you used the UX08 SPECVOL return code, specify EXTVOLESOT(name,USEREXIT).
- If you used the SPECVOL list to force all nonlibrary volumes to be allocated inside the library (no defined NONLIB esoteric), use EXTVOLESOT (name, ALL).

Exclusion Level 6

The generic location of the volume (library or nonlibrary) reduces the remaining list of eligible drives.



Note: For exclusion level 6, nonlibrary drives are outside the library and contain **either** known (from the SMC UNITAttr command) or unknown device characteristics.

If the volume resides in a library, all drives outside the library are excluded, and if the volume resides outside the library, all library drives are excluded.

For example:

```
//DD1 DD UNIT=CART ,VOL=SER=LIB001 ,DISP=OLD
```

Assume volume LIB001 resides in a library.

All drives outside the library are excluded from consideration for this allocation.

Exclusion Level 7

For volumes residing in the library, the ACS location of the volume reduces the remaining list of eligible drives. Any drives that remain that do not reside in the same ACS as the volume are excluded.

For example:

```
//DD1 DD UNIT=CART,VOL=SER=A00VL1,DISP=OLD
```

Assume volume A00VL1 resides in ACS00, and the drives reside in ACS00 and ACS01.

The drives residing in ACS01 are excluded from consideration for this allocation.

Additionally, for resident VTVs, drives that do not reside in the resident VTSS are excluded. This allows you to set your default minimum level to 3 if you use mixed density drives.

Exclusion Level 8

Exclusion levels 1 and 3 restrict the list of eligible drives to those compatible with the volume's actual media and its recording technique, if specified on the HSC or MVS/CSC server VOLATTR statement. Exclusion level 8 may further restrict the drives for the request based on the TAPEREQ or DFSMS data class recording technique.

The SMC TAPEREQ definitions can explicitly denote a recording technique for the allocation request. DFSMS data class definitions can also specify an 18- or 36-track recording technique for the request and override any TAPEREQ recording technique specification.

For example:

```
//DD1 DD UNIT=CART,VOL=SER=TV9840,DISP=NEW,  
// DSN=SYS4.TR4.DATA
```

Assume the requested volume is a 9840 volume in the library with no recording technique specified on a VOLATTR. Assume an SMC TAPEREQ has been defined:

```
TAPEREQ DSN(SYS4.TR4.** ) RECT(STK1RB)
```

Previous exclusion levels restricted the list of devices to all T9840 models. In this example, the TAPEREQ recording technique of STK1RB leaves only T9840B devices in consideration for this allocation.

Scratch Volume Request Drive Exclusion Criteria

For a scratch volume allocation, the SMC excludes drives in order from lowest exclusion level to highest based on the criteria in Table 5. The lower the level number, the more important the exclusion criteria.

Table 5. JES3 Drive Exclusion Levels (Scratch Request)

Level	Scratch Volume Criteria	Keyword*
1	For nonlabeled (NL) scratch volume requests, exclude all virtual drives. Exclude all MODEL=IGNORE drives.	VIRTUALLABEL
2**	For virtual volumes only, exclude virtual drives that reside in a VTSS to which the VTV cannot be migrated and recalled.	AVAILVTSS
3	Exclude drives based on the requested media. Primary source: DFSMS data class media specification. Secondary source: TAPEREQ MEDIA parameter. Tertiary source: User Exit 04 request for virtual media.	POLMEDIA
4	Exclude drives based on user location policies. Primary source: TAPEREQ ESOTERIC parameter. Secondary source: User Exit 04 and 12 return codes.	USERPOLICY
5	Exclude drives based on the media of available scratch volumes in subpool. Primary source: TAPEREQ SUBPOOL parameter. Secondary source: User Exit 04 subpool values. Tertiary source: scratch subpool 0.	SUBPOOL
6	Exclude drives based on available scratch location type, i.e., library, nonlibrary, or virtual.	LOCTYPE
7	Exclude drives based on the SMC ALLOCDef command ZEROSCR parameter.	ZEROSCRATCH
8	Exclude drives based on the requested recording technique. Primary source: DFSMS data class recording technique. Secondary source: TAPEREQ RECTECH parameter.	POLRECTECH

* Keywords associated with each exclusion level are specified in the exclusion criteria displayed in message SMC0046.

** The MINLVL parameter value default, level 2 on the ALLOCDef or ALLOCJob command, applies to both scratch and specific volume requests. Even though level 2 has no meaning for scratch, level 2 is considered the default minimum level.

Exclusion Level 1

The SMC excludes virtual drives if the volume label type requested is NL (nonlabeled). This is the only required criterion. Refer to the VTCS documentation for more information about virtual volumes.

The SMC excludes all drives defined with the SMC UNITATTR MODEL=IGNORE.

Exclusion Level 2

For virtual allocation requests, the SMC excludes virtual drives that reside in a VTSS to which the VTV cannot be migrated and recalled.

Refer to the VTCS documentation for more information about virtual volumes.

Exclusion Level 3

A DFSMS data class definition can explicitly request the media desired, or the media can be derived from the DFSMS data class recording technique. Drives that do not provide the requested media support are excluded at this level.

If no DFSMS data class definition applies for this allocation, the SMC TAPEREQ definitions can explicitly specify the media desired for the allocation request, or media can be derived from TAPEREQ RECTECH. Drives that do not provide the requested media support are excluded at this level.

For example:

```
//DD1 DD UNIT=CART,DISP=(NEW,KEEP),DSN=SYS4.VIRT.DATA
```

No SMC TAPEREQ has been defined and no DFSMS data class definition applies. Assume HSC User Exit 04 return code requested virtual media (UX04VIRT). The User Exit 04 media selected for this request is virtual. Only virtual drives remain in consideration for this allocation. The next example shows how TAPEREQ can override User Exit 04 return codes.

For example:

```
//DD1 DD UNIT=CART,DISP=(NEW,KEEP),DSN=SYS4.TR4.DATA
```

An SMC TAPEREQ has been defined:

```
TAPEREQ DSN(SYS4.TR4.** ) MEDIA(DD3A) RECT(DD3)
```

Assume HSC User Exit 04 return code requested virtual media (UX04VIRT).

If no DFSMS data class definition or TAPEREQ definition applies to this allocation request, User Exit 04 return code, UX04VIRT, can explicitly request virtual media. Nonvirtual drives are excluded at this level.

However, the TAPEREQ media definition overrides the user exit return code, and the media selected for this request is helical. Only helical drives remain in consideration for

this allocation. Messages SMC0045 and SMC0046 are issued indicating that the user exit request for virtual volumes was not honored.

Exclusion Level 4

If a TAPEREQ statement specifies an esoteric unit name for this allocation request, the SMC verifies the esoteric unit name is defined to MVS. If the esoteric passes this test, any drives in the original unit name that are not also defined to the esoteric unit name are excluded from consideration for this allocation.



Note: The SMC does not substitute the requested esoteric directly, but uses it to alter the list of eligible drives.

If no TAPEREQ statement specifies an esoteric for this allocation request, User Exit 04 and User Exit 12 return codes and values can define this criterion for drive exclusion. The user exit return codes can direct the SMC to select library drives, nonlibrary drives, or a specific ACS, or the user exit can return an esoteric unit name that contains customer-selected drives. Any drives in the current list of eligible drives that did not match the user exit return values are excluded here.

For example:

```
//DD1 DD UNIT=CART,DSN=&&TEMP1,DISP=(NEW,PASS)
```

Assume User Exit 04 returns UX04LIB, which requests library drives.

The drives that are not in the library are excluded from consideration for this allocation.

A TAPEREQ example is:

```
//DD2 DD UNIT=CART,DSN=SYS4.TR1.DATA,DISP=(NEW,KEEP)
```

The following TAPEREQ statement is defined to the SMC.

```
TAPEREQ DSN(SYS4.TR1.** ) ESOT(TLIB9840) RECT(LONGI)
```

The drives that are not defined to the esoteric TLIB9840 are excluded from consideration for this allocation. Any User Exit 04 return codes would be ignored.

Exclusion Level 5

The combined media and specified recording technique of the volumes in a scratch subpool define this criterion for drive exclusion. An SMC TAPEREQ SUBPOOL parameter can specify a scratch subpool name for the request.

If no TAPEREQ SUBPOOL parameter is specified for this allocation, User Exit 04 can return a scratch subpool number or subpool name when it also sets the return code to use default processing or library drives. User Exit 12 can also apply to affinity chains here. Refer to “Affinity Separation” on page 80 for a discussion about the interaction between User Exit 04 and User Exit 12.



Note: When no specific subpool applies to the allocation, the default subpool, subpool 0, is used.

Drives that do not provide a recording technique compatible with a volume(s) in the subpool are excluded from consideration for this allocation.

For example:

```
//DD1 DD UNIT=CART,DSN=NEW.TRK36.DATA,DISP=(NEW,KEEP)
```

Assume HSC has scratches of media types 36TRACK and DD3 in a subpool named SUBPOOL3, and an SMC TAPEREQ entry exists:

```
TAPEREQ DSN(NEW.*) SUBPOOL(SUBPOOL3)
```

Drives providing 36-track recording and helical recording remain in consideration for this allocation.

A User Exit 04 example for this criteria:

```
//DD1 DD UNIT=CART,DSN=SYS4.MYGROUP.DATA,DISP=(NEW,KEEP)
```

Assume the following:

- User Exit 04 returns UX04LIB
- User Exit 04 returns MYSUBPL in UX04SNAM
- MYSUBPL has been defined to the HSC using a SCRPOOL statement in the SLSSYSxx PARMLIB member or SCRPEDEF file
- The library has scratch volumes defined in MYSUBPL scratch subpool.

The drives that are not in the library are excluded from consideration for this allocation during level 4 drive exclusion.

Exclusion Level 6

The generic location of available scratch volumes provides the next level of drive exclusion. If the library contains no scratch volumes, all library drives and virtual drives are excluded from selection, leaving only nonlibrary drives eligible.

If the request is for a virtual scratch volume, eligible virtual drives are selected based on the management class from DFSMS or TAPEREQ; VTSSs that cannot support the requested management class migration are excluded. Last, if the library contains scratch volumes and virtual volumes were not requested, all virtual drives and all nonlibrary drives are excluded, leaving only library drives eligible.

For example:

```
//DD1 DD UNIT=CART,DSN=MY.NEW.DATASET,DISP=(NEW,KEEP)
```

Assume there are no SMC UNITAttr statements for nonlibrary drives, and the library contains no scratch volumes.

All HSC library drives are excluded from consideration for this allocation. When all drives are excluded during an exclusion level, and the level is not at or below minimum level, then all drives excluded at that level are restored to the list of eligible drives and processing continues at the next level of exclusion.

In this case, all drives that were excluded by this criterion are now restored to the list. Processing continues at level 7.

Exclusion Level 7

The SMC ALLOCDef command parameter, ZEROSCR, is supported for JES3. ZEROSCR(OFF) provides drive exclusion found in earlier NCS releases. Drives residing in the ACS with the largest number of available scratch volumes remain eligible for selection. All other drives are excluded from selection. ZEROSCR(ON) excludes drives residing in ACSs that do not contain any scratch volumes, but leaves all ACSs containing scratch volumes eligible for allocation.

For example:

```
//DD1 DD UNIT=CART,DSN=MY.NEW.DATASET,DISP=(NEW,KEEP)
```

Assume that ZEROSCR(OFF) has been specified, and two ACSs have scratch counts as follows: ACS0 has 400 and ACS1 has 500.

Only drives in ACS1 remain eligible for the allocation. Drives in ACS0 have been excluded.

Another example is:

```
//DD2 DD UNIT=CART,DSN=MY.OTHER.DATASET,DISP=(NEW,KEEP)
```

Assume ZEROSCR(ON) has been specified, and three ACSs have scratch counts as follows: ACS0 has 400, ACS1 has 500, ACS2 has 0.

Drives in ACS0 and ACS1 remain eligible. ACS2 drives are excluded from consideration because ACS2 does not contain any scratch volumes.

Exclusion Level 8

Exclusion level 3 restricts the list of eligible drives to those compatible with the TAPEREQ or DFSMS requested media. Exclusion level 5 restricts the list of eligible drives to those compatible with the scratch media in the requested subpool. Exclusion level 8 may further restrict the devices for the request based on the TAPEREQ or DFSMS data class recording technique.

The SMC TAPEREQ definitions can explicitly specify a recording technique for the allocation request. DFSMS data class definitions can also denote an 18- or 36-track recording technique for the request and will override any TAPEREQ recording technique specification.

This criterion is the last to be applied to the drives that are eligible for the allocation. Any drive that does not provide the requested recording technique is excluded from consideration for the allocation.

For example:

```
//DD1 DD UNIT=CART,DISP=(NEW,KEEP),DSN=SYS4.TR4.DATA
```

Assume an HSC TAPEREQ has been defined:

```
TAPEREQ DSN(SYS4.TR4.** ) RECT(STK1RB)
```

Previous exclusion levels restricted the list of devices to all T9840 models. In this example, the TAPEREQ recording technique STK1RB leaves only T9840B devices in consideration for this allocation.

Affinity Separation

Explicit unit affinity is an MVS facility that allows volumes associated with two separate JCL DD statements, or allocation requests, to be mounted serially on the same drive. A request for all generations of a GDG group (GDG ALL chain) can be considered as a GDGALL affinity.

The SMC makes no distinction between these two types of affinity. When processing an affinity chain begins, the drive exclusion process examines each allocation in the chain separately up to and including the minimum exclusion level. The chain is always separated when the minimum exclusion level processing results in lists of eligible drives, for two or more members of the chain, that do not contain common drives.

For example:

```
//DD1 DD UNIT=CART,DSN=MY.STK1R.DATASET,DISP=OLD
//DD2 DD UNIT=AFF=DD1,DSN=MY.LONGI.DATASET,DISP=OLD
```

DD1 specifies a data set on 9840 or T9840B media and DD2 specifies a data set on longitudinal media. Drive exclusion level 1 for specific volumes creates a list of eligible drives for each DD according to volume media required. The two lists do not contain a common drive. As a result, DD1 and DD2 no longer represent one drive allocation but two separate allocation requests. At this point, the SMC breaks the affinity chain between them.

Affinity Head-Of-Chain

For SMC affinity chain processing, the “head” of the affinity chain containing only scratch or only specific volumes is the first DD statement in the chain. If an affinity chain contains both scratch and specific volumes, the first specific volume is the “head.”

User Policy Influence on Affinity Separation

After the minimum level of drive exclusion and affinity separation completes, user policy influences the remaining affinity separation decisions.

Further affinity chain processing decisions are based on the first value found between the following:

- User Exit 12 return code separation decision
- ALLOCDef or ALLOCJob command SEPLvl parameter value.

User Exit 12

User Exit 12 sends an entire affinity chain to the user for examination. The user can decide whether the affinity chain remains together or separates during exclusion processing after the minimum level.

If User Exit 12 returns UX12SEP, indicating the chain members can be separated, the SMC proceeds as if ALLOCDEF SEPLVL=MAX were specified.

If User Exit 12 returns UX12LIB, UX12NLIB, UX12REPL, or UX12SACS, the affinity chain remains together for the remainder of drive exclusion processing. The location requested (e.g., library drives if UX12LIB is returned) replaces any location value provided by User Exits 04 or 13. This location information is used by drive exclusion level 4. Refer to Table 4 on page 68 and Table 5 on page 73 for drive exclusion level information.

For example:

```
//DD1 DD UNIT=CART,DSN=SYS4.DATASET1,VOL=SER=NOLIB1,DISP=OLD
//DD2 DD UNIT=AFF=DD1,DSN=SYS4.DATASET2,VOL=SER=INLIB2,DISP=OLD
```

Assume the following:

- DD1 requests a nonlibrary volume and DD2 requests a library volume.
- User Exit 13 returns a nonlibrary esoteric for DD1.
- User Exit 12 returns a no separate decision and a library location.

The affinity chain stays together. Drive exclusion ignores the esoteric returned by User Exit 13 for DD1 and excludes all but library drives requested by User Exit 12.

Any one of the four return values UX12LIB, UX12NLIB, UX12REPL, and UX12SACS from User Exit 12 causes the SMC to operate as if ALLOCDEF SEPLvl=MIN were specified.



Note: Any User Exit 12 separation decision overrides the SEPLvl parameter of the ALLOCDEF or ALLOCJOB commands.

SEPLvl Parameter Value

If the decision to separate or keep the affinity chain together still has not been made, further affinity chain processing depends on the SEPLvl parameter value of the ALLOCDEF and ALLOCJOB commands (refer to Chapter 7, “Commands and Control Statements,” for descriptions of these commands and setting an affinity separation level).

The SEPLvl parameter operates in three distinct ways depending on the value specified. The SEPLvl MAX parameter allows drive exclusion to be performed to the maximum level for each allocation element in the affinity chain. At the end of the drive exclusion process, if two or more elements of the chain no longer have common drives, the affinity chain is separated.

For example:

```
//DD1 DD UNIT=3490,VOL=SER=INACS0,DSN=MY.DSN1,DISP=OLD
//DD2 DD UNIT=AFF=DD1,VOL=SER=INACS1,DSN=MY.DSN2,DISP=OLD
```

Assume the following:

- Both volume INACS0 and INACS1 share common media characteristics.
- Volume INACS0 resides in ACS0, and volume INACS1 resides in ACS1.
- ALLOCDEF SEPLVL(MAX) has been specified.

During specific volume exclusion level 7, the list of eligible drives in DD1 are all located in ACS0 and the list of eligible drives in DD2 are all located in ACS1. No drives are common to both lists. This affinity chain separates.



Note: MAX is the default value for SEPLvl.

The SEPLvl parameter can be specified as MIN. The value MIN requests that any affinity chains that remain together after the minimum level of drive exclusion should not be separated during the remaining levels of drive exclusion processing.

Using the same example:

```
//DD1 DD UNIT=3490 ,VOL=SER=INACS0 ,DSN=MY.DSN1 ,DISP=OLD
//DD2 DD UNIT=AFF=DD1 ,VOL=SER=INACS1 ,DSN=MY.DSN2 ,DISP=OLD
```

Once again, assume:

- Both volume INACS0 and INACS1 share common media characteristics.
- Volume INACS0 resides in ACS0, and volume INACS1 resides in ACS1.
- ALLOCDEF SEPLVL(MIN) has been specified.

During specific volume exclusion level 7, the list of eligible drives for DD1 is all located in ACS0. DD1 is considered the “head” of the chain and exclusion is performed to ACS0. Only drives in ACS0 remain eligible for the allocation, and the affinity chain remains together.

The SEPLvl parameter can also be set to a specific drive exclusion level. The level number indicates the highest drive exclusion level at which separation can occur. Using the previous example, if the user specifies

```
ALLOCDEF SEPLVL=6
```

The chain remains together through drive exclusion level 6 because each level produces a drive list containing common drives for both DD1 and DD2.

Another example:

```
//DD1 DD UNIT=3490 ,VOL=SER=INACS0 ,DSN=SYS4.DATASET1 ,DISP=OLD
//DD2 DD UNIT=AFF=DD1 ,VOL=SER=INACS1 ,DSN=SYS4.DATASET2 ,DISP=OLD
//DD3 DD UNIT=AFF=DD1 ,VOL=SER=NL0001 ,DSN=REAL.DATASET ,DISP=OLD
```

Assume the following:

- ALLOCDEF SEPLVL=5 has been specified.
- Volume INACS0 is in ACS0 and VOLATTR MEDIA(ECART) RECTECH(36B) has been defined.
- Volume INACS1 is in ACS1 and VOLATTR MEDIA(ECART) RECTECH(36B) has been defined.
- Volume NL0001 is a nonlibrary volume and VOLATTR MEDIA(DD3A) has been defined.

At drive exclusion level 1, two chains result because of incompatible media (ECART and DD3A). Statements DD1 and DD2 are still chained together and continue through exclusion levels 2 through 5 because the exclusion criteria do not create disparate sets of eligible drives for the two DD statements.

No further separation of the DD1/DD2 chain can occur because the SEPLVL parameter has been set to level 5.

After the last drive exclusion level is completed for the job, the SMC examines the final drive lists. If the job cannot be allocated because not enough drives remain eligible, drive exclusion regresses to the previous exclusion level of the failing DD statement and a separated chain may be rejoined. This process repeats until the job can allocate.



Note: The SEPLvl parameter replaces the function of the HSC ALLOC and MVS/CSC ALTER command UNITAFF and GDGALL parameters. These parameters are no longer supported.

If your installation previously specified UNITAFF(NOSEP) and GDGALL(NOSEP), to preserve that behavior, specify a SEPLvl value of 3 on the ALLOCDef command. If your installation previously specified UNITAFF(SEP) and GDGALL(SEP), no SEPLVL parameter change is required, since the default SMC behavior separates affinity chains at the maximum separation level.

Refer to the ALLOCDef and ALLOCJob commands in Chapter 7, “Commands and Control Statements,” for more information about setting an installation default minimum exclusion level and unit affinity separation level.

Esoteric Unit Name Replacement

After drive exclusion and affinity separation successfully complete, each allocation may have a new list of eligible drives. The search begins to find an esoteric containing that exact list of drives. The SMC replaces the original JCL unit name in the Intermediate Job Summary Table (IJS) with this new esoteric.

The search for the “perfect” esoteric begins with the original JCL unit name or the unit name from the catalog entry for that data set. For example, assume the data set being allocated has been cataloged with the unit name 3490. Table 6 lists all the “3490” drives in the system.

Table 6. 3490 Drive List

ACS0	ACS1	Nonlibrary Location
0A10: 9490	0C10: 9490	0E10: 9490
0B10: 9840	0C11: 9490	0E11: 9490

JES3 groups devices by XTYPE names and groups XTYPE names by esoterics. The DEVICE statements coded in the JES3 initialization parameters follow:

```
DEVICE,TYPE=TA33490,XTYPE=(ACS09490,CA),JNAME=CA10,
  JUNIT=(A10,MVS1,TAP,ON),XUNIT=(A10,MVS1,TAP,ON)

DEVICE,TYPE=TA33490,XTYPE=(ACS09840,CA),JNAME=CA11,
  JUNIT=(B10,MVS1,TAP,ON),XUNIT=(B10,MVS1,TAP,ON)

DEVICE,TYPE=TA33490,XTYPE=(ACS19490,CA),JNAME=CC10,
  JUNIT=(C10,MVS1,TAP,ON),XUNIT=(C10,MVS1,TAP,ON)

DEVICE,TYPE=TA33490,XTYPE=(ACS19490,CA),JNAME=CC11,
  JUNIT=(C11,MVS1,TAP,ON),XUNIT=(C11,MVS1,TAP,ON)

DEVICE,TYPE=TA33490,XTYPE=(NLIB9490,CA),JNAME=CE10,
  JUNIT=(E10,MVS1,TAP,ON),XUNIT=(E10,MVS1,TAP,ON)

DEVICE,TYPE=TA33490,XTYPE=(NLIB9490,CA),JNAME=CE11,
  JUNIT=(E11,MVS1,TAP,ON),XUNIT=(E11,MVS1,TAP,ON)
```

Each unique location and device type pair has a unique XTYPE name. For example, the 9490 drive in ACS0 has a unique XTYPE name because it is the only 9490 in that location. The two nonlibrary 9490 drives share an XTYPE name because they are the same device type in the same location. An XTYPE should always define one type of device.

XTYPE names are associated with esoteric unit names in the initialization parameters as shown here:

```
SETNAME, XTYPE=ACS09490, NAMES=(CART, 3490, LIBDRVS, ACS0DRVS, A09490)
SETNAME, XTYPE=ACS09840, NAMES=(CART, 3490, LIBDRVS, ACS0DRVS, A09840)
SETNAME, XTYPE=ACS19490, NAMES=(CART, 3490, LIBDRVS, ACS1DRVS, A19490)
SETNAME, XTYPE=NLIB9490, NAMES=(CART, 3490, NLIBDRVS, NL9490)
```

Assume that during drive exclusion processing, the SMC determined the volume specified for this allocation resides in ACS0 and requires a 9490 drive. The drive exclusion process eliminates groups of drives by XTYPE.

In the environment defined above, the following XTYPE groups are no longer eligible for the allocation:

- ACS09840 – excluded at level 1 because T9840 drives are incompatible with the volume media.
- NLIB9490 – excluded at level 6 because the volume is in the library and these drives are not.
- ACS19490 – excluded at level 7 because the volume is in ACS0 and these drives are in ACS1.

One XTYPE, ACS09490, remains eligible for allocation at the end of drive exclusion. SMC esoteric unit name replacement now searches the SETNAME definitions for an esoteric that only contains the XTYPE ACS09490. For this allocation, the SMC selects the esoteric A09490 because it contains only XTYPE ACS09490. The A09490 esoteric replaces the original unit name, 3490, in the Intermediate Job Summary (IJS) table for that job.

If the example required two drives for the allocation (e.g., UNIT=(3490,2)) and the first volume to be mounted resides in ACS0, the results of drive exclusion would be as follows:

- ACS09840 – excluded at level 1 because T9840 drives are incompatible with the volume media.
- NLIB9490 – excluded at level 6 because the volumes are in the library and these drives are not.
- Exclusion level 7 fails.

On entry to level 7, three drives remain, two drives defined to XTYPE ACS19490 and the other drive to XTYPE ACS09490. If XTYPE ACS19490 were excluded because of ACS location, only one drive would remain. This allocation requires two drives. Thus, exclusion level 7 does not exclude the drives in ACS1.

Two XTYPEs, ACS09490 and ACS19490, remain eligible for allocation at the end of drive exclusion. The SMC esoteric unit name replacement now determines that XTYPE ACS09490 cannot be used for the allocation.

IBM APAR OW38427 to JES3 introduced the restriction that multi-unit allocations use devices defined in the same XTYPEs. Since XTYPE ACS09490 only contains one drive, it cannot satisfy the allocation requirements. The SMC esoteric unit name replacement now searches the SETNAME definitions for an esoteric that only contains the XTYPE ACS19490. The A19490 esoteric replaces the original unit name, 3490, in the IJS for that job.

After the SMC has updated the IJS, JES3 C/I processing continues. JES3 creates a Job Summary Table (JST) from the IJS table and performs any high watermark setup (HWS) chaining. During HWS chaining, JES3 can also change the esoteric unit name in the JST after the SMC changes the esoteric. The HWSNAME initialization statements define which esoteric unit names are subsets of other esoteric unit names. This allows JES3 to reuse devices in following steps.

Refer to “JES3 Initialization Parameter Considerations” on page 90 for more information about setting up your installation’s JES3 DEVICE, SETNAME and HWSNAME statements.

Suppressing Fetch Messages

By the time JES3 C/I processing completes, the IJS becomes the JST that represents the job for the remainder of its existence. The JST reflects the esoteric substitutions made by the SMC and by JES3. The next stage for the job is the Main Device Scheduler (MDS).

At the beginning of MDS processing, JES3 begins preparing the job for allocation. Asking the operator to fetch volumes is an optional phase in MDS. JES3 issues a fetch message when a job requires a volume that is not currently mounted and the SETPARAM statement FETCH parameter is set to YES (the default). If the SETPARAM statement also specifies ALLOCATE=MANUAL, jobs are placed on the volume wait queue until the operator retrieves the volume(s) and issues the *START SETUP command.

A customer's installation may not want to receive fetch messages for volumes in the library. To do so for common allocation requests (JCL statement allocation), install the SMC version of the JES3 user exit IATUX09. For dynamic allocation requests, install the SMC Type-1 modification to IATMDFE.

Use the SMC ALLOCDef FETCH parameter to control the issuing of fetch messages. FETCH(OFF) is the default and suppresses fetch messages for any volume that is to be mounted on a library drive. If fetch messages are desired for nonlibrary volumes that are to be mounted on a library drive, FETCH(NONLIB) should be entered.



Note: FETCH(NONLIB) causes another volume lookup request to the library, which can affect performance.

If your system is running with ALLOCATE=MANUAL as described above, when fetch messages are suppressed for a volume allocation, that allocation does not go onto the volume wait queue.

If your system is running with the SETPARAM statement set to FETCH=NO, or if you prefer to receive fetch messages for all volumes, then the IATMDFE Type-1 modification does not need to be applied to your system. The IATUX09 user exit also performs other functions and should be applied.

Drive Prioritization

The next step in Main Device Scheduler (MDS) allocates the devices required for the job. The SMC Type-1 modification to IATMDAL provides the SMC with the ability to review the list of drives available for each tape allocation. The list of drives contains drives that are online and available and are members of the group of drives defined in the esoteric placed in the Job Summary Table (JST) after drive exclusion processing.

The SMC drive priority is assigned based on the following criteria:

- For specific volumes, drives in LSMs closest to the volume are preferred. The SMC sets equal priority value for drives that are located the same number of passthroughs from the volume.
- For scratch volumes, drives in LSMs with the largest number of scratch volumes are preferred.
- The TAPEREQ DEVTPREF parameter causes drives with specific recording techniques to be preferred.
- The TAPEREQ SCOPE parameter determines the relative priority of LSM location and drive type preferencing.

The following parameters, control statements, and user exits also influence the drive priority:

- HSC ALLOC command parameters LOWSCR, LSMPREF, and SCRTECH
- SLSUX04 (HSC format user exit 04).

After a final list of drives has been selected for allocation, the preference order of the eligible drives, after considering LSM and drive type preferencing, is selected based on a “last use” algorithm.

To reduce excessive wear on allocated drives, the SMC allocates drives by rotation based on the “last mount time” for each drive. This value is examined for every drive in the final drive list. The drive that had the most recent mount is located, and the drive immediately following it in the list is selected as the most preferred for the current allocation.



Note: This algorithm does not apply to virtual drives.

Deferring Mounts

After drive prioritization completes and all drives are allocated, the volumes required by the job, but not currently mounted, can be mounted before the job enters an initiator, during common allocation in the initiator, or at data set open time. Your installation may choose to defer the mount of library volumes.

The IATUX09 JES3 user exit modification must be installed to defer mounts to the initiator or to data set open time. This SMC modification interacts with the setting of the DEFER parameter of the SMC ALLOCDef command.

Defer(ON)

The volume mount is deferred until the job enters the initiator and then again until the data set is opened. This is the default.



Note: User Exit 09 can be used to override the DEFER ON or OFF setting for individual jobs.

Defer(OFF)

The volume mount is deferred only if the user's JCL requests it.

Defer(JEs3)

The volume mount is deferred until the job enters the initiator. User Exit 11 can be used to override this value on an individual mount basis. For instance, the user exit can return a value to allow the mount to proceed before the job enters the initiator.

For optimal performance, Sun Microsystems recommends setting Defer(ON).



Note: Virtual mounts are always deferred.

JES3 Initialization Parameter Considerations

The library and nonlibrary drive environment must be defined to JES3 in the initialization deck using the following parameter statements:

- DEVICE statements to define drive addresses, device types, and XTYPEs
- SETNAME statements to define esoteric names and to associate them with XTYPEs
- HWSNAME statements to define the esoteric name relationships used during HWS processing.

This section describes these statements and shows how to code them for a sample configuration. Table 7 consists of the following drive addresses and esoterics attached to two systems, MVS1 and MVS2.

Table 7. Sample Configuration

Nonlibrary	ACS0	ACS1	Virtual
120-127 3480	220-223 4490	320-327 9490	A20-A5F Virtual
140-143 3490	240-243 9490	440-447 9490	
180-189 9840	280-289 9840	460-461 9940	



Note: The drive addresses and esoterics in this example are not meant to be taken literally but are intended to show how a wide variety of device types can be defined using JES3. Exact JES3 initialization statements are configuration dependent.

JES3 DEVICE Initialization Statements

DEVICE statements define the drives that JES3 can use to satisfy allocation requests. These statements define:

- drive addresses
- JES3/MVS systems that can access the drives
- initial drive online status
- device type of the drive.

The XTYPE parameter is especially important to SMC allocation. XTYPE connects devices with the same XTYPE value to a group of esoteric unit names. For example:

```
DEVICE,XTYPE=(DEV0220,CA),XUNIT=(220,MVS1,TAP,ON,220,MVS2,TAP,ON),
      NUMDEV=4,...
SETNAME,XTYPE=DEV0220,NAME=(CART,3490,SY3480R,SY348XR,ACS0TAP,...)
```

Devices 220-223 in ACS0 in the “Sample Configuration” on page 90 have been associated with the XTYPE name DEV0220. This name allows JES3 to allocate a device from the group 200-223 when any of the esoteric unit names listed on the SETNAME statement associated with XTYPE DEV0220 are specified in JCL or in a catalog entry.

The SMC relies on each XTYPE group to be unique with regard to real drive type and location. In the list of drives for ACS0, the 4490 drives should not be defined with the same XTYPE as the 9490 drives. Also, the T9840 drives located in ACS0 should not be defined with the same XTYPE as the nonlibrary T9840 drives.

During SMC initialization, XTYPE groupings are examined to verify these XTYPE restrictions. If an XTYPE contains mixed devices types or mixed locations, the characteristics of the first drive in the XTYPE group defines the remaining drives.

The SMC configuration report utility shows XTYPE, esoteric, and drive information. Refer to Chapter 9, “SMC Utilities” for more information about the configuration report.

The following example shows how DEVICE statements can be coded for this sample configuration.



Note: Drives must be defined to MVS prior to defining them to JES3. Use the Hardware Configuration Definition (HCD) facility to assign MVS unit addresses to the devices in the I/O Configuration.

```

* NONLIBRARY DRIVES
* 3480 DRIVES 120-127
DEVICE, XTYPE=(DEV0120, CA), JNAME=TNL, DTYPE=TA03480, NUMDEV=8,
JUNIT=(0120, MVS1, TAP, ON, 0120, MVS2, TAP, ON),
XUNIT=(0120, MVS1, TAP, ON, 0120, MVS2, TAP, ON)
*
* 3490 DRIVES 140-143
DEVICE, XTYPE=(DEV0140, CA), JNAME=TNL, DTYPE=TA03490, NUMDEV=4,
JUNIT=(0140, MVS1, TAP, ON, 0140, MVS2, TAP, ON),
XUNIT=(0140, MVS1, TAP, ON, 0140, MVS2, TAP, ON)
*
* 9840 DRIVES 180-189 DEFINED AS 3490'S
DEVICE, XTYPE=(DEV0180, CA), JNAME=TNL, DTYPE=TA03490, NUMDEV=10,
JUNIT=(0180, MVS1, TAP, ON, 0180, MVS2, TAP, ON),
XUNIT=(0180, MVS1, TAP, ON, 0180, MVS2, TAP, ON)
*
* DRIVES IN ACS0
* 4490 DRIVES 220-223
DEVICE, XTYPE=(DEV0220, CA), JNAME=ACS0, DTYPE=TA03490, NUMDEV=4,
JUNIT=(0220, MVS1, TAP, ON, 0220, MVS2, TAP, ON),
XUNIT=(0220, MVS1, TAP, ON, 0220, MVS2, TAP, ON)
*
* 9490 DRIVES 240-243
DEVICE, XTYPE=(DEV0240, CA), JNAME=ACS0, DTYPE=TA03490, NUMDEV=4,
JUNIT=(0240, MVS1, TAP, ON, 0240, MVS2, TAP, ON),
XUNIT=(0240, MVS1, TAP, ON, 0240, MVS2, TAP, ON)
*
* 9840 DRIVES 280-289 DEFINED AS 3590'S
DEVICE, XTYPE=(DEV0280, CA), JNAME=ACS0, DTYPE=TA435901, NUMDEV=10,
JUNIT=(0280, MVS1, TAP, ON, 0280, MVS2, TAP, ON),
XUNIT=(0280, MVS1, TAP, ON, 0280, MVS2, TAP, ON)
*
* DRIVES IN ACS1
* 9490 DRIVES 320-327
DEVICE, XTYPE=(ACS19490, CA), JNAME=ACS1, DTYPE=TA03490, NUMDEV=8,
JUNIT=(0320, MVS1, TAP, ON, 0320, MVS2, TAP, ON),
XUNIT=(0320, MVS1, TAP, ON, 0320, MVS2, TAP, ON)
*
*9490 DRIVES 440-447
DEVICE, XTYPE=(ACS19490, CA), JNAME=ACS1, DTYPE=TA03490, NUMDEV=8,
JUNIT=(0440, MVS1, TAP, ON, 0440, MVS2, TAP, ON),
XUNIT=(0440, MVS1, TAP, ON, 0440, MVS2, TAP, ON)
*
* 9940 DRIVES DEFINED AS 3590'S
DEVICE, XTYPE=(DEV0460, CA), JNAME=ACS1, DTYPE=TA435901, NUMDEV=2,
JUNIT=(0460, MVS1, TAP, ON, 0460, MVS2, TAP, ON),
XUNIT=(0460, MVS1, TAP, ON, 0460, MVS2, TAP, ON)
*
* VIRTUAL DRIVES
DEVICE, XTYPE=(DEV0A20, CA), JNAME=VIRT, DTYPE=TA03490, NUMDEV=64,
JUNIT=(0A20, MVS1, TAP, ON, 0A20, MVS2, TAP, ON),
XUNIT=(0A20, MVS2, TAP, ON, 0A20, MVS2, TAP, ON)

```

JES3 SETNAME Initialization Statements

The SETNAME statements define all esoteric unit names and device type names associated with JES3-managed devices. These esoteric unit names and device type names can be specified by the UNIT parameter on a DD statement or as the unit type in a cataloged data set entry.

DEVICE statements associate a set of drives with an XTYPE. The SETNAME statement associates the XTYPE with a group of esoteric unit names.

During SMC esoteric unit name replacement, the relationships among the devices, the XTYPEs, and the esoteric unit names enable the SMC to choose the optimal esoteric unit name.



Note: During allocation of specific volumes, the SMC attempts to substitute an esoteric containing only drives compatible with the volume. If all esoterics that are a subset of the original esoteric contain some drives not compatible with the volume (except for drives defined as MODEL=IGNORE in an SMC UNITAttr command), the SMC issues message SMC0068 and does not substitute for the original esoteric.

Therefore, to ensure the SMC's ability to perform esoteric substitution, you must define at least one esoteric containing only drives that are compatible with each media type in your library. For example, if your library contains ECART and standard volumes and 9490, 4490 and 4480 drives, you must, at a minimum, define one esoteric containing only drives compatible with the ECART volumes (9490, 4490, and 4480 drives). You can also define other esoterics containing any desired combinations of these drive types.

For best SMC performance, each drive type in each location should have a unique esoteric defined. For example, an esoteric named A09840 could be defined to contain only the T9840 drives located in ACS0.

The following example shows how SETNAME statements can be coded for this configuration. The esoteric unit names specified in the NAMES parameter value list consist of the following:

- CART – all cartridge drives in the environment
- NLCART – all cartridge drives not in a library ACS
- A0CART – all cartridge drives in ACS0
- A1CART – all cartridge drives in ACS1
- ALLxxxx – all cartridge drives of the same device type, xxxx, independent of location
- LIBxxxx – all cartridge drives of the same device type, xxxx, in any library location
- yyxxxx – all cartridge drives of the same device type, xxxx, in location yy.

The generic device type names, such as 3480 or SYS3480R, are also specified in the NAMES lists.

```

* 3480/NONLIBRARY
SETNAME, XTYPE=DEV120, NAMES=(SYS3480R, CART, 3480, NLCART, NL3480)
*
* 3490/NONLIBRARY
SETNAME, XTYPE=DEV0140, NAMES=(SYS3480R, SYS348XR, CART, 3490, NLCART,
                                ALL3490, NL3490)
*
* 9840/NONLIBRARY
SETNAME, XTYPE=DEV0180, NAMES=(SYS3480R, SYS348XR, CART, 3490, NLCART,
                                ALL9840, NL9840)
*
* 4490/ACS0
SETNAME, XTYPE=DEV0220, NAMES=(SYS3480R, SYS348XR, CART, 3490, A0CART,
                                A04490, A0DEVT90)
*
* 9490/ACS0
SETNAME, XTYPE=DEV0240, NAMES=(SYS3480R, SYS348XR, CART, 3490, A0CART,
                                ALL9490, LIB9490, A09490, A0DEVT90)
*
* 9840/ACS0
SETNAME, XTYPE=DEV0280, NAMES=(CART, 3590-1, A0CART, ALL9840, A09840)
*
* 9490/ACS1
SETNAME, XTYPE=ACS19490, NAMES=(SYS3480R, SYS348XR, CART, 3490, A1CART,
                                ALL9490, LIB9490, A19490)
*
* 9940/ACS1
SETNAME, XTYPE=DEV0460, NAMES=(CART, 3590-1, A1CART, ALL9940, A19940)
*
* VIRTUAL DRIVES
SETNAME, XTYPE=DEV0A20, NAMES=(SYS3480R, SYS348XR, CART, 3490, NLCART,
                                VIRT CART)

```

Refer to the appropriate version of the IBM *JES3 Initialization and Tuning Reference* for more information about esoteric unit name values for the SETNAME statement NAMES parameter.

JES3 HWSNAME Initialization Statements

The HWSNAME statements define which esoteric unit names are subsets of other esoteric unit names. Used during JES3 high watermark setup (HWS), these statements determine if a device can be reused from step to step.

The first HWSNAME TYPE parameter specifies the esoteric unit name, known as the *major name*, used during HWS processing. The following esoteric unit names, called *minor names*, can be used as an alternate to the major name.

The order of the minor names listed in the HWSNAME statement is the order in which they can be substituted for the major name. For example:

```
HWSNAME TYPE=(3490,ALL4490,ALL9490,ALL3490)
```

and

```
//STEP1 EXEC PGM...  
//DD1 DD UNIT=3490,...  
//STEP2 EXEC PGM...  
//DD1 DD UNIT=ALL3490,...  
//DD2 DD UNIT=ALL4490,...
```

JES3 HWS processing allocates two drives for this job. The Job Summary Table (JST) for the job after HWS shows the following esoterics for each DD allocation request:

- STEP1 DD1 and STEP2 DD2 JST entries contain ALL4490 because ALL4490 appears in the minor name list before ALL3490.
- STEP2 DD1 JST entry contains ALL3490.

Another example shows how HWS names are used when allocating across step boundaries:

```
//STEP1 EXEC PGM...  
//DD1 DD UNIT=ALL9490,...  
//DD2 DD UNIT=ALL4490,...  
//STEP2 EXEC PGM...  
//DD1 DD UNIT=3490
```

JES3 HWS begins with DD1 of STEP1 looking for an allocation in STEP2 that can use the same device. DD1 of STEP2 specifies 3490. The HWSNAME above for major name 3490 indicates that ALL9490 is an alternate (or minor) name for 3490. Therefore, STEP1 DD1 and STEP2 DD1 allocate the same drive. The JST entry for DD1 of STEP2 is not updated to reflect a new esoteric. The drive allocated for STEP1 DD2 is freed at the end of STEP1.

The minor names should not contain any devices that are not defined to the major name.
For example:

```
HWSNAME TYPE=(A0CART,ALL9840,...)
```

Assume the following:

- A0CART contains drives 220-223, 240-243, and 280-289.
- ALL9840 contains drives 180-189 and 280-289.

ALL9840 contains drives (180-189) not in A0CART. In this case, volumes inside the library requesting a T9840 drive may attempt to allocate to a drive outside the library after HWS processing by JES3.

HWS processing occurs after SMC esoteric unit name replacement. Therefore, the HWSNAME definitions can affect the final allocation decision if JES3 also changes the esoteric unit name as in the first example.

The best solution for this situation is to create unique esoteric unit names (by location and device type) so that the SMC can select an esoteric unit name that has no minor name. See the HWSNAME entries in the following example that have been coded for the sample configuration.


```

* GENERIC MAJOR NAMES
HWSNAME TYPE=(SYS3480R)
HWSNAME TYPE=(SYS348XR)
HWSNAME TYPE=(3480,NL3480)
HWSNAME TYPE=(3490,SYS348XR,
                ALL3490,ALL9490,LIB9490,A0DEVT90,
                A04490,A09490,A19490,NL3490,NL9840)
HWSNAME TYPE=(3590-1, ALL9940,
                A09840,A19940)
*
* ALL DRIVES IN THE COMPLEX
HWSNAME TYPE=(CART,SYS3480R,SYS348XR,3490,3480,3590-1,
                ALL3490,ALL9840,ALL9490,ALL9940,LIB9490,
                A0CART,A1CART,NLCART,A0DEVT90,
                A04490,A09490,A09840,A19490,A19940,
                NL3480,NL3490,NL9840)
*
* DRIVES BY DEVICE TYPE
HWSNAME TYPE=(ALL3490,LIB9490,A0DEVT90,A09490,A19490,NL3490)
HWSNAME TYPE=(ALL9840,A09840,NL9840)
HWSNAME TYPE=(ALL9490,LIB9490,A09490,A19490)
HWSNAME TYPE=(ALL9940,A19940)
*
* DRIVES BY LOCATION
HWSNAME TYPE=(LIB9490,A09490,A19490)
HWSNAME TYPE=(NLCART,ALL3490,ALL3480,3480,
                NL3480,NL3490,NL9840)
HWSNAME TYPE=(A0CART,A04490,A09490,A09840,A0DEVT90)
HWSNAME TYPE=(A1CART,ALL9940,A19940,A19490)
*
* DRIVES BY LOCATION AND DEVICE TYPE
HWSNAME TYPE=(A0DEVT90,A04490,A09490)
HWSNAME TYPE=(NL3480)
HWSNAME TYPE=(NL3490)
HWSNAME TYPE=(NL9840)
HWSNAME TYPE=(A04490)
HWSNAME TYPE=(A09490)
HWSNAME TYPE=(A09840)
HWSNAME TYPE=(A19490)
HWSNAME TYPE=(A19940)
*
* VIRTUAL DRIVES
HWSNAME TYPE=(VIRTCART)

```

Device Prefrencing Considerations

The DEVTpref parameter of the SMC TAPEREQ statement allows users to request a higher priority for one type of StorageTek 36-track drive during drive prioritization processing. A second or third model of 36-track drive can be specified as alternate choices. This device preferencing is applicable to a library configuration containing a mixture of 4490, 9490 and 9490EE cartridge drives.

To enable this processing, define an esoteric to include all the desired device types by ACS location or in the entire library configuration. In the sample configuration, the esoteric, A0DEVT90, serves this purpose for ACS0.

During drive exclusion, if a TAPEREQ indicated DEVT(9490,4490) for an allocation, the SMC could substitute A0DEVT90 for the original unit name if A0DEVT90 is a subset (e.g., UNIT=3490).



Note: JES3 HWS processing can change this esoteric to A09490 or A04490 when reusing drives across steps.

ZEROSCR Considerations

When specifying the SMC ALLOCDef command parameter ZEROSCR with a value of ON, create esoteric unit names that span ACS boundaries. As an example, the following esoterics could be added to the sample installation:

- CA0A1 – an esoteric containing all drives in ACS0 and ACS1
- A0A1X490 – an esoteric containing all 4490 and 9490 drives in ACS0 and ACS1.

Assume both ACSs contain scratch volumes.

- If the scratch request does not specify media or recording technique, the SMC can substitute CA0A1 for CART.
- If the scratch request asked for 36-track recording technique, the SMC can substitute A0A1X490 for 3490.

In this way, both ACSs remain eligible for the allocation.



Note: Once again, JES3 HWS can alter esoteric unit names after the SMC has selected its choice.

Virtual Drive Definition Considerations

Refer to the VTCS documentation for complete examples of JES3 initialization parameter statements for virtual drives.

SMC Normal Operations

The SMC runs on all processors that are active in a JES3 global and local environment. On both global and local processors, start the SMC and the library subsystem(s), the HSC, and/or MVS/CSC(s) before starting jobs requiring cartridge drives.

When the SMC and the library subsystem have initialized on the global processor and are communicating, the SMC performs drive exclusion, affinity separation, esoteric unit name replacement, fetch message suppression, drive prioritization, and mount deferral for both common and dynamic cartridge drive allocations. If the SMC has not completed initialization before jobs enter the JES3 C/I DSP, this processing is not performed. The PROMPT value on the NOSMC parameter of the SMCEHOOK macro delays one C/I DSP if the SMC has not initialized and reminds the operator to start the SMC.

When the SMC and the library subsystem have initialized on the local processor and are communicating, the SMC performs drive exclusion, affinity separation, and esoteric unit name replacement for dynamic cartridge drive allocations.



Notes:

- See the “Performing JES3 Post-Installation Tasks” appendix in the *NCS Installation Guide* for more information about the SMCEHOOK macro and its parameters.
- See Chapter 8, “Recovery Procedures” on page 197 for recovery procedures related to SMC, library subsystems, and JES3.

JES3 Constraints

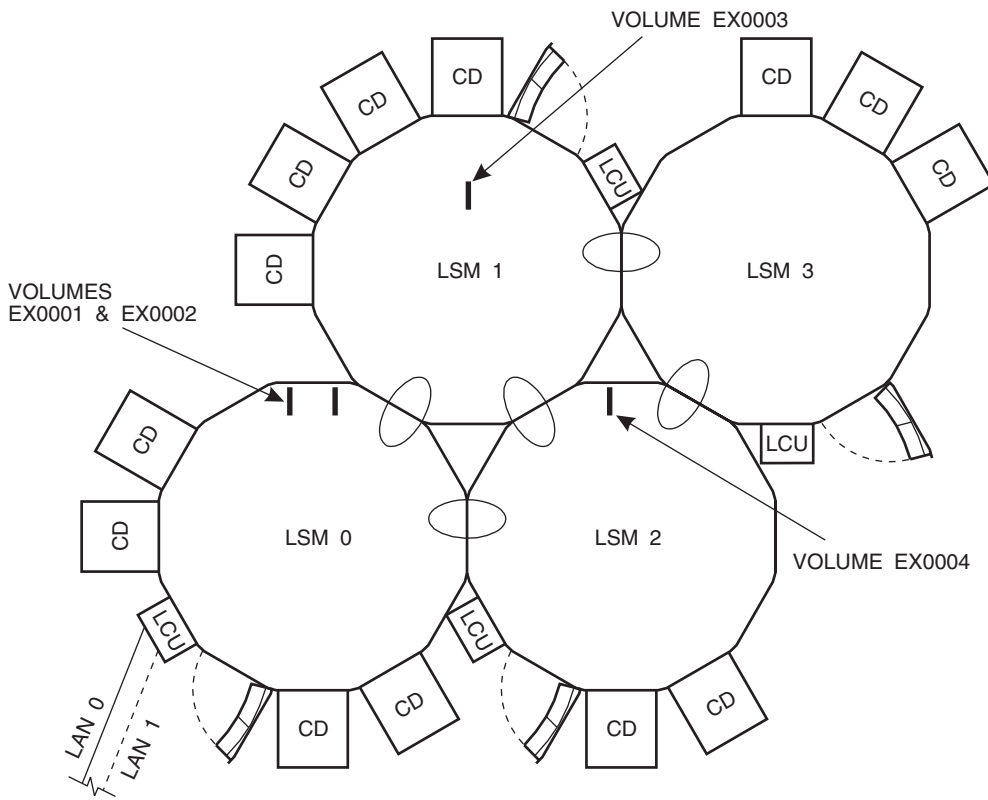
Timing Between C/I and MDS

A timing window exists between C/I processing and MDS processing. A requested volume's location or a scratch subpool count can change during the interval between these two processes. When this situation happens, one or more volumes may need to be ejected from or entered into an ACS.

JES3 High Watermark Setup and LSM Pass-Thru Processing

When a job consists of multiple steps, JES3 HWS processing attempts to minimize the number of devices required. Thus a job consisting of multiple steps, each requesting one tape drive, can be allocated a single drive for the entire job. The following example shows the possible effects on pass-thru processing.

Figure 11 shows a library configuration containing four LSMs. All drives in the library are online and available.



C28635

Figure 11. Volume Locations for the Pass-thru Example

The following example shows the JCL for the job:

```
//STEP1 EXEC
//DD1 DD DSN=DSN.IN.LSM0,UNIT=3490,VOL=SER=(EX0001,EX0002)
//*
//STEP2 EXEC
//DD1 DD DSN=DSN.IN.LSM1,UNIT=3490,VOL=SER=EX0003
//*
//STEP3 EXEC
//DD1 DD DSN=DSN.IN.LSM2,UNIT=3490,VOL=SER=EX0004
//*
//STEP4 EXEC
//DD1 DD DSN=DSN.IN.LSM0,UNIT=3490,VOL=SER=(EX0001,EX0002)
```

Volumes EX0001 and EX0002 are in LSM0, EX0003 is in LSM1, and EX0004 is in LSM2 and all volumes are the same media and require the same recording technique. The SMC drive exclusion process picked the same esoteric for the allocation.

After the SMC drive exclusion process completes, JES3 HWS analysis determines that the maximum number of drives required for running the job is one. MDS processing allocates the device. Pass-thru processing occurs as follows:

- If the allocated drive is attached to LSM0, the number of pass-thrus is two (volume EX0003 moves from LSM1, and volume EX0004 moves from LSM2).
- If the allocated drive is attached to LSM1 or LSM2, the number of pass-thrus is three (volumes EX0001 and EX0002 move from LSM0, and either EX0003 or EX0004 moves, depending upon which LSM contains the drive).
- If the allocated device is attached to LSM3, the number of pass-thrus is four (all volumes move to LSM3).

The SMC drive prioritization process uses the pass-thru counts when setting a priority for a drive. However, if the “preferred” drive is not available, other available drives can be selected.

Library Subsystem Selection

In order to support the execution of SMC on a different host from the library subsystem, all allocation and message processing user exits are managed and invoked by the SMC. Therefore, only one version (HSC or MVS/CSC) of each user exit can be executed.



Warning: Sun Microsystems recommends using the HSC user exit format, as the MVS/CSC format will no longer be supported in the next release.

Sun Microsystems recommends that you carefully review the contents of your existing user exits to determine the most effective method to direct allocations to the correct library. Specifically, the use of the user exit return code “use nonlibrary drives” to direct allocation to another library subsystem is no longer supported. Sun Microsystems recommends that you use TAPEREQ or user exit esoterics to direct allocations to the appropriate library subsystem.

An alternative method to select a library subsystem is to alter your scratch or specific allocation user exit to use the new HSC format, and explicitly select a LIBRARY name to direct a request.

See “SMC Library Subsystem Selection” on page 18 for information on how the SMC selects among multiple library subsystems to determine an “owner” for each allocation request (i.e., each DD in a job step may have a different library subsystem owner).

SMC DFSMS Processing

The SMC interface to DFSMS provides the following capabilities:

- esoteric substitution during MVS JCL interpretation
- at device allocation time, the DFSMS DATACLAS value can request a specific recording technique and/or media.
- at device allocation time, the DFSMS MGMTCLAS value can be used for VTV allocations.
- at volume mount, the DFSMS MGMTCLAS value can be assigned to a VTV.
- at volume mount, the DFSMS DATACLAS value can request a media for a scratch request.

Enabling/Disabling the SMC DFSMS Interface

To enable the SMC DFSMS interface, specify the SMS parameter of the ALLOCDef command as follows:

```
ALLOCDEF SMS=ON
```

To disable the SMC DFSMS interface, specify the SMS parameter of the ALLOCDef command as follows:

```
ALLOCDEF SMS=OFF
```

The SMC DFSMS interface can be selectively enabled or disabled by job or job step by specifying the SMS parameter of the ALLOCJob command.

Tailoring the SMC DFSMS Interface

The SMSDef command can be used to tailor the default SMC DFSMS support for your installation's requirements. This command provides the ability to include or bypass certain SMC DFSMS functions. See "SMSDef Command" on page 165 for more information about the options that can be specified.

DATACLAS, STORCLAS, and MGMTCLAS Specification

DFSMS DATACLAS can be specified by using the DATACLAS parameter on the DD JCL statement or by executing an Automatic Class Selection (ACS) routine. STORCLAS and MGMTCLAS can only be specified by ACS routines.



Note: STORCLAS and MGMTCLAS JCL parameters are not supported by the SMC DFSMS interface due to conflicts with IBM MVS DFSMS. Using the STORCLAS JCL parameter causes a data set to become DFSMS-managed, and the MGMTCLAS JCL parameter requires a DFSMS-managed data set. The data sets assigned STORCLAS and MGMTCLAS values in the STKTAP1 environment are not actually DFSMS-managed.

Invoking ACS Routines

IBM DFSMS invokes ACS routines with the variable `&ACSENVIR` set to `ALLOC` before the SMC invokes the ACS routines with variable `&ACSENVIR` set to `STKTAP1`.

The SMC invokes the ACS routines at the following points in processing:

- SSI55 Interpreter/Dynamic Allocation Exit (IDAX)
- JES3 Converter/Interpreter (C/I)
- SSI23 JES3 Dynamic Allocation
- JES3 Main Device Scheduler (MDS)
- mount message interception.

The ACS routines are invoked in the following order:

1. data class
2. storage class
3. management class
4. storage group.

Management class and storage group ACS routines are called only if a storage class is assigned.

DFSMS Automatic Class Selection (ACS) Routine Environment for SMC

The following list of read-only variables is passed by SMC to DFSMS when the information is available to the SMC. Not all variables are available for every call to the ACS routines. In particular, processes that occur in the JES3 address space, such as MDS, do not provide the SMC access to the MVS control blocks that contain the values for these fields. See the descriptions of each DFSMS interface for exceptions.

- `&ACSENVIR` (equals `STKTAP1` for the SMC interface)
- `&ALLVOL`
- `&ANYVOL`
- `&DATACLAS`
- `&DD`
- `&DSORG`
- `&DSN`
- `&DSTYPE`
- `&EXPDT`
- `&FILENUM`
- `&JOB`
- `&LABEL`
- `&NVOL`
- `&PGM`
- `&RETPD`
- `&SYSNAME`
- `&SYSPLEX`
- `&UNIT`.

In the STKTAP1 environment, the &ANYVOL variable is used only to match a specific VOLSER and does not contain the “REF=xx” values for VOL=REF allocations.

The &DATACLAS field is set when the JCL DD statement specifies this parameter.

If your installation uses the IGDACSXT routine to modify the read-only variables before the DFSMS ACS routine calls, be aware that the following variables, even if initialized, are not passed to the DFSMS ACS routines when &ACSENVIR is set to STKTAP1.

- &ACCT_JOB
- &ACCT_STEP
- &GROUP
- &MSGVP
- &USER
- &XMODE

Refer to the IBM manual *DFSMSdfp Storage Administration Reference* for more information about constraints when using read-only variables.

Esoteric Substitution During IDAX

When a job is in the JCL interpretation phase, the unit name (esoteric) can be changed indiscriminately (for example, you could substitute disk for tape). Considerations:

- SMC performs esoteric substitution for all DISP=NEW data sets.
- By default, the SMC treats a DISP=MOD data set as pre-existing and does not perform esoteric substitution. SMC performs esoteric substitution for DISP=MOD data sets **only** if the SMSDEF command MOD(ON) parameter is specified **and** the first reference to the data set in the job's JCL specifies either DISP=MOD or DISP=NEW.
- Unit affinity chains are always separated if ACS routines return different esoterics for different members of the chain.
- VOL=REF chains within a job are validated and updated with the head-of-chain esoteric if necessary to ensure that volume references are honored.

When the SMC locates a new allocation that is not DFSMS-managed, the SMC calls the DFSMS ACS routines with the environment variable &ACSENVIR set to STKTAP1. When the ACS routines return a pair of storage group names with the first name being STK1, the second storage group name replaces the original value of the UNIT parameter of the DD statement. For example, the following DD statement allocates a 3490 nonlibrary tape drive (esoteric TNLIB):

```
//DD1 DD DSN=&TEMP.DSN,UNIT=TNLIB,DISP=NEW
```

Assume that your installation wants to move all new tape allocations into a tape library. You can code the DFSMS ACS routines to return storage groups STK1 and a library esoteric such as TACS0, where TACS0 contains all drives in library location ACS0. After esoteric replacement, the only drives considered for the allocation are contained within the TACS0 esoteric. The nonlibrary drives are no longer considered eligible for the allocation.

Defining Storage Groups and Storage Classes

To enable esoteric substitution during IDAX, complete the following steps:

1. Define a storage group of type POOL named STK1.
2. Define a storage group of type POOL for each possible esoteric returned, giving it the same name as the esoteric name.
3. Define at least one volume to each storage group. Sun Microsystems recommends that you use a nonexistent volume for this definition.
4. Create a storage class ACS routine that, when it is invoked by the SMC (i.e., when the environmental variable is &ACSENVIR=STKTAP1), returns a storage class to be passed to the storage group ACS routine. Refer to Figure 12 on page 107.
5. Create a storage group ACS routine that, when the environmental variable is &ACSENVIR=STKTAP1, returns two storage groups (e.g., &STORGRP='STK1', 'CART'). In this case, "STK1" is the first storage group returned, and "CART," the replacement esoteric, is the second. Refer to Figure 12.
6. Test for the &ACSENVIR=STKTAP1 read-only variable in the storage class and storage group ACS routines. This enables you to prevent the storage class being assigned when MVS invokes the ACS routines. If MVS invokes the SMC version of the ACS routines, the data set becomes DFSMS-managed and all SMC allocation functions are bypassed.
7. Return both a storage class and a storage group during the SMC invocation of the DFSMS ACS routines. If a storage class is returned but a storage group is not, DFSMS issues a message stating that allocation has failed, but in reality that may not be the case.

Figure 12 on page 107 provides sample storage class and storage group routines.

```

PROC STORCLAS

FILTLIST LOCALDSN INCLUDE (BACKUP*.**,
                          PROD.BKP*.**)

FILTLIST RMTDSN INCLUDE (PROD.OFFSITE.**

  IF &ACSENVIR = 'STKTAP1' THEN
    SELECT
    WHEN &DSN = &LOCALDSN
      SET &STORCLAS = 'CART'
    WHEN &DSN = &RMTDSN
      SET &STORCLAS = 'RMT CART'
    END
  END

=====

PROC STORGRP

  IF &ACSENVIR = 'STKTAP1' THEN
    SELECT
    WHEN &STORCLAS = 'CART'
      SET &STORGRP = 'STK1', 'CART'
    WHEN &STORCLAS = 'RMT CART'
      SET &STORGRP = 'STK1', 'RMT CART'
    END
  END

```

Figure 12. Sample Storage Class/Storage Group Routines

Availability of Read-only Variables

During DFSMS STORCLAS/STORGRP ACS routine processing, all read-only variables listed in “DFSMS Automatic Class Selection (ACS) Routine Environment for SMC” on page 104, except &DSORG, are available to the IDAX interface for esoteric substitution. The &DATACLAS field is set when the DD statement in the JCL specifies this parameter.

Validating DFSMS STORCLAS/STORGRP ACS Routine Execution

DFSMS provides the following ways to validate correct ACS routine execution:

- DFSMS WRITE statement in the ACS routines
- DFSMS ISMF test function.

When the SMC invokes the DFSMS ACS routines, all messages issued by DFSMS WRITE statements are routed to the GTF trace file if SMC tracing is active.

Refer to the publication *DFSMS/MVS DFSMSdfp Storage Administration Reference* for further information about writing and testing DFSMS ACS routines.

Retrieving DFSMS Values During Allocation and Volume Mount

Requesting Recording Technique/Media using DFSMS DATACLAS

During allocation processing, the media and/or recording technique can be specified for a DD allocation by coding:

- TAPEREQ statement
- DATACLAS parameter on the DD statement
- DATACLAS ACS routines.

During scratch volume mount processing, only the volume media can be specified.



Note: DATACLAS media and recording technique values override TAPEREQ values.

Media/Rectech Support

The following media and recording techniques are supported:

Media:	
MEDIA1	Standard capacity for both 18-track and 36-track media types (this is the default)
MEDIA2	Enhanced capacity 36-track media
Recording Techniques:	
18TRACK	18-track recording technique
36TRACK	36-track recording technique

Defining Data Classes

To use DATACLAS, customers must define their own data class and specify the recording technique and media. If the recording technique is left blank, the SMC defaults to allowing both 18TRACK and 36TRACK to remain eligible for the allocation request, unlike MVS, which defaults to 36TRACK.

As an example, a customer can define a DATACLAS named STD18 that specifies a recording technique of 18TRACK and standard media.

When specifying a DATACLAS by coding it on the DD statement, the system programmer must have installed the optional Type-1 modification to IATIICM. The Type-1 modification retrieves the DATACLAS, determines its recording technique and media specification, and saves it in the IJSMEDIA field. This information is used during C/I processing (IATIIP1) and then passed to the JSTMEDIA field and used again during MDS processing.

When using an ACS routine to supply a DATACLAS to set recording technique and media, do not specify `&ACSENVIR='STKTAP1'`. The DATACLAS ACS routine is invoked both by the SMC and MVS, and the resulting recording technique and media should be consistent.

The following figure provides a sample data class routine.

```
PROC DATACLAS

FILTLIST RMTDSN INCLUDE(PROD.OFFSITE.**)

  SELECT
  WHEN &DSN = &RMTDSN
    SET &DATACLAS = 'ECART36'
  END
```

Figure 13. Sample Data Class Routine

In the example above, assume DATACLAS ECART36 is defined with a recording technique of 36-track and a media type of MEDIA2. This data class routine example assigns ECART36 to data sets with names that start with “PROD.OFFSITE.”

By default, any DATACLAS value specified by the DFSMS ACS routine overrides the DATACLAS parameter specified on the JCL statement. Your installation can change this behavior by adding the following statements to your DFSMS DATACLAS ACS routine.

```
  WHEN (&DATACLAS NE ' ')
  DO
    SET &DATACLAS = &DATACLAS
  EXIT
  END
```



Note: During JES3 C/I POSTSCAN processing, JES3 MDS processing, and IAT5210 mount message processing, the DATACLAS name specified on the JCL statement is not available and is not passed to the ACS routines. Thus, the statements above may not produce the expected results.

Requesting Management Class Using DFSMS ACS Routines

During allocation and mount processing, a management class name can be specified for a virtual allocation by coding any of the following:

- TAPEREQ statement
- MGMTCLAS ACS routine.

The MGMTCLAS JCL parameter is not supported by the SMC DFSMS interface.



Note: The MGMTCLAS management class name overrides a TAPEREQ management class name.

When writing a management class routine, keep in mind:

- The management class routine is invoked only when a storage class is assigned.

- The management class routine must test for the &ACSENVIR='STKTAP1' read-only variable value.

DFSMS issued messages for JES3 static allocations are routed to the SMC GTF trace file.

The following figure provides a sample management class routine.

```

PROC STORCLAS
FILTLIST CART INCLUDE ('CART')

  IF &ACSENVIR = 'STKTAP1' THEN
    SELECT
      WHEN (&UNIT EQ &CART)
        SET &STORCLAS = 'VIRTAPE'
      WHEN (&UNIT NE &CART)
        SET &STORCLAS = 'STKDFLT'
    END
  END

=====

PROC STORGRP

  IF &ACSENVIR = 'STKTAP1' THEN
    SELECT
      WHEN (&STORCLAS = 'VIRTAPE')
        SET &STORGRP = 'STK1', 'VDRIVES'
    END
  END

=====

PROC MGMTCLAS
FILTLIST LOCAL INCLUDE(BACKUP*.**,
                      PROD.BKP*.**)

FILTLIST REMOTE INCLUDE(PROD.OFFSITE.***)

  IF &ACSENVIR = 'STKTAP1' THEN
    SELECT
      WHEN (&DSN = &LOCAL)
        SET &MGMTCLAS = 'INVTAPE'
      WHEN (&DSN = &REMOTE)
        SET &MGMTCLAS = 'OFFVTAPE'
    END
  END

```

Figure 14. Creating Management Class Routines



Note: In this example, the STORCLAS routine assigns a storage class to every call. This ensures that the MGMTCLAS routine is also driven at mount time. Only the VTCS component of NCS currently uses the management class value.

Availability of Read-only Variables

During DFSMS ACS routine processing, the SMC sets the values for all read-only variables when the information is available. Not all information is available for each process for which the SMC calls ACS routines.

During JES3 C/I POSTSCAN processing, the following read-only variables are **not** available to the SMC:

- &DATACLAS (if specified in JCL)
- &EXPDT
- &PGM
- &RETPD.

During SSI23 dynamic allocation processing, all read-only variables are available to the ACS routines.

During JES3 MDS processing, the following read-only variables are **not** available to the SMC:

- &DATACLAS (if specified in JCL)
- &EXPDT
- &PGM
- &RETPD.

During IAT5210 mount message processing, the following read-only variables are **not** available to the SMC:

- &DATACLAS (if specified in JCL)
- &EXPDT
- &PGM
- &RETPD
- &UNIT (does not contain the original esoteric but does contain the selected device number, such as 0A10).

When processing mount message IEF233A for a dynamic allocation, the &DATACLAS value specified by the SVC99 text unit DADACL is not available.

When processing mount message IEC501A, the SMC sets the &UNIT read-only variable to the generic unit type, such as 3490.



Note: Each SMC interaction with DFSMS invokes all levels of ACS routines. The variable availability listed above applies to all ACS routines.

Validating DFSMS ACS Routine Execution

DFSMS provides the following ways to validate correct ACS routine execution:

- DFSMS WRITE statement in the ACS routines
- DFSMS ISMF test function.

When the SMC invokes the DFSMS ACS routines, all messages issued by DFSMS WRITE statements or by DFSMS processing are routed to the GTF trace file if SMC tracing is active. During SSI23 Dynamic Allocation processing and MVS mount message processing, these messages are also issued to the SYSMSG data set of the job.

Refer to the publication *DFSMS/MVS DFSMSdfp Storage Administration Reference* for further information about writing and testing DFSMS ACS routines.

GDG ALL Processing

GDG ALL processing is the referencing of all generations of a generation data group, using the JCL GDG base entry instead of referencing each individual generation by relative generation number.

There is a GDG ALL processing condition that the SMC cannot properly influence. This condition occurs when a step indicates that a new generation will be created, but fails to execute after being conditionally bypassed. A subsequent step then performs the GDG ALL processing.

Possible scenarios include, but are not limited to the following:

1. The new generation would have been created on a different device type than the current generation, and the creation of the new generation is bypassed.

As a result, the current generation is allocated to a device type that cannot support the media that the current generation resides on.

2. The last generation of the GDG resides on a different media than all other generations and the creation of the new generation is bypassed.

As a result, the last generation is not influenced and is requested to be mounted on a device type that does not support its media.

3. In a multiple VTSS environment, the new generation would have been created in one VTSS but the current generation resides in another VTSS.

As a result, the allocation is processed in the first VTSS and an automatic migrate/recall occurs.

For example, if the new generation would have been created in VTSS1 and either the first, last or both generations exist in VTSS2, these generations are transferred into VTSS1 during the GDG ALL processing step.

SMC recommendations for these scenarios are:

- Separate these steps into two jobs.
- Ensure that all generations use the same media/device type.
- If you are using multiple VTSSs, ensure that all generations have access to the same ACS to enable the transfer of the generations that may exist in a different VTSS.



Notes:

- See Appendix D for differences between SMC and NCS allocation.
- See for Appendix E for information about SMC interaction with other software.

Chapter 6. SMC Message Handling

Overview

The SMC intercepts specific MVS, JES3, and Tape Management System (TMS) messages related to mount, dismount, and swap operations. When the intercepted message includes a drive defined to a library subsystem (HSC or MVS/CSC), the SMC directs the owning library subsystem to perform the requested operation.

Messages that are intercepted by the SMC are listed in Appendix A, “Intercepted Messages” on page 289.



Note: The IATUX71 user exit must be installed to allow JES3 mount messages to be processed. Refer to the *NCS Installation Guide* for more information.

User Directed Message Handling

If the SMC does not currently support the Tape Management System at your installation, you can still direct the SMC to intercept the specific messages issued by your TMS. Use the USERMsg operator command to define these additional messages. See “USERMsg Command” on page 196 for more information.

User Exit 01 allows you to change or enhance actions taken on intercepted messages, and can direct the SMC to perform actions on messages that are not in the intercepted message list.

The SMC calls the library subsystem user exit for each intercepted message. This includes the default messages listed in Appendix A, “Intercepted Messages” and all messages defined using the USERMsg command.



Notes:

- Only messages intercepted by the SMC are passed to the user exit.
- The SMC does not support the user exit 01 return code of REPLY.

Message Handling Policies

The SMC honors the following MVS and SMC policies related to mount, dismount, and swap message handling:

MVS Policies

The System Authorization Facility (SAF) can be used to protect tapes at the volume level (CLASS=TAPEVOL) using your current security software. If defined, the SMC honors the policies defined through the SAF interface regarding the write-protect requirement for a volume mounted on a library transport. The SMC invokes the SAF interface by issuing a RACROUTE macro, and protects read-only volumes through the ACS Virtual Thumbwheel (VTW) support.

SMC Policies

The SMC MOUNTDef command is used to control message handling (i.e., mount/dismount) options previously controlled by the HSC MNTD command, HSC input parameters and LIBGEN options, and the MVS/CSC ALTER command and input parameters.

These options control the automation of pending mounts, delete disposition at dismount time, whether messages are produced when a library volume is mounted outside the library, and when mount messages are rolled off the console.



Note: This command is new for SMC release 6.1.

See “MOUNTDef Command” on page 148 for more information.

Tape Management System Support

The SMC interprets Mount, Dismount, and Swap messages from the following Tape Management Systems:

- CA-1
- CA-DYNAM/TLMS
- DFSMSrmm
- AutoMedia (Zara)
- CONTROL-T

For tape management systems that supply a subpool, the subpool is interpreted by the SMC and used as the requested subpool name, unless overridden by user exit 01 or a TAPEREQ statement. Related messages include:

- CTS002
- CTT101A
- CTT104A
- TMS002

SMC Swap Processing

The SMC automates the swap process (I/O error or operator initiated) in the same manner as HSC enhanced swap processing. This eliminates the need for operators to find a compatible “swap-to” device when DDR has chosen an incompatible device. If the SMC cannot find a compatible swap-to device, or if all compatible devices are busy, the SMC issues a message and control is returned to DDR processing with no further SMC involvement. Note that enhanced swap processing is the only mode supported in SMC.

On JES3 systems, the SMC does not influence the swap-to device selection. The SMC does not issue SMC0107 or SMC0110. JES3 can select a compatible drive itself based on proper initialization deck definitions. The SMC still automates the swap when the IGF502E is received.

The SMC swap process begins when one of the following messages is issued:

```
IGF500I SWAP XXX1 TO XXX2 - I/O ERROR  
IGF503I ERROR ON XXX1, SELECT NEW DEVICE  
IGF509I SWAP XXX1 - I/O ERROR
```

If device *XXX1* is known to the SMC as a library or nonlibrary device defined with an SMC UNITATTR command, the SMC suppresses the message and begins the automatic swap process.

The SMC issues one of two messages:

```
SMC0108  No compatible drive found for SWAP processing
```

Or when a compatible drive can be selected by the SMC:

```
SMC0107  SWAP volser from XXX1 to XXX2
```

Device *XXX2* is the SMC-selected device that has been determined to be compatible for the swap. The SMC next suppresses the MVS IGF500D or IGF509D message and replaces the message with:

```
SMC0110  Allow swap of volser from XXX1 to XXX2;  
Reply 'Y', or 'N' or DEVICE
```

The operator may approve the device selected, cancel the swap or choose a different device. If the operator selects a different device, the SMC accepts the device with no further compatibility checking.

If the reply is 'Y' or a new device, MVS issues the following message:

```
IGF502E  PROCEED WITH SWAP OF XXX1 TO XXX2
```

If *XXX1* is a library owned device, the dismount of the volume is automated.

If *XXX2* is a library owned device, the mount of the volume is automated.



Note: Ensure that your MVS security package (e.g., RACF, TopSecret) is configured to grant SMC the necessary authority to respond to MVS swap messages IGF500D and IGF509D.

HSC Mount-Related Messages

Certain mount-related messages may still be issued by the HSC due to error conditions.

- SLS0088D is issued when, due to an error condition, a repeated mount for the same volume is required.
- SLS1075D is issued when a dismounted volume encounters an I/O or other type of error.

In addition, the following HSC messages are replaced by SMC messages:

- SLS4306I and SLS4308I are replaced by SMC0106.
- SLS4310D is replaced by SMC0110.

Managing HSC Mounts from the SMC Client

The SMC client server architecture provides the ability to perform management of certain mount/dismount exception conditions from the client console rather than from the server console. Conditions handled by the SMC include the following:

- Displaying messages on the drive and console indicating the volume and its location for manual mounts when an LSM is offline.
- When a drive is found to be loaded with another volume during a mount request from a job in execution or JES3 setup processing, the dismount is forced and the mount is automatically redriven based on the UCB outstanding mount status (or JES3 SETUNIT).



Note: When a mount or dismount message is intercepted by SMC and directed to an HSC server, the SLS0107D message is not issued on the server or client. When a loaded drive condition is detected by the HSC for an SMC directed dismount, the HSC waits one minute for the drive to unload, and then terminates the dismount. If the dismount is performed as part of a mount request from the SMC, the loaded drive status is returned to the SMC, and the SMC then redrives the mount request if the mount is still pending.

- When a drive or volume is in use by another process, verifying that the mount is still pending, periodically retrying the request, and allowing the operator to cancel or retry the request at any time.
- When the LIBrary WTORdest Client option is selected, certain WTOR messages are not issued on the HSC server but are sent directly to the client console instead. The operator response to the message is then transmitted back to the server, as SMC redrives the mount or dismount to the server. The following HSC mount/dismount WTOR messages are currently supported with this option:
 - SLS0134
 - SLS0905
 - SLS2126
 - SLS2905
 - SLS2984
 - SLS0109
 - SLS4084

Refer to the *HSC Messages and Codes Guide* for more information about these messages.

Chapter 7. Commands and Control Statements

Overview

This chapter provides information for the following SMC commands and control statements:

- ALLOCDef
- ALLOCJob
- CMDDef
- DRIVemap
- LIBrary
- LIst
- LOG
- MOUNTDef
- MSGDef
- MSGJob
- READ
- RESYNChronize
- SERVer
- SMSDef
- TAPEREQ (control statement)
- TCPip
- TRace
- TREQDEF
- UEXit
- UNITAttr
- USERMsg

Issuing SMC Commands

SMC operator commands can be issued using the following methods:

- Issuing SMC commands using the MVS Modify command
- Issuing SMC commands using the SMC command prefix
- Specifying SMC commands in the SMCPARMS or SMCCMDS data set(s).

Issuing SMC Commands Using the MVS Modify Command

The following information is included when an SMC command is issued using the MVS Modify (F) command:

- MVS Modify command (F)
- SMC started task name
- command name
- parameters (optional or required).

SMC commands are entered in the following format:

```
F started-task-name,command-name [parameter]
```

The following example illustrates the MSGDef command:

```
F SMC1MVS,MSGDEF LVL=4
```



Notes:

- The started task name and command name **must** be separated with a comma. Spaces are **not** allowed between the subsystem name and command name.
- Parameters and values can be separated with any number of spaces, and may optionally include an equal (=) sign. Values may also be included in parentheses. The following are all equivalent commands:

```
F SMC1MVS,MSGDEF LVL 4  
F SMC1MVS,MSGDEF LVL=4  
F SMC1MVS,MSGDEF LVL(4)
```

Issuing SMC Commands Using the SMC Command Prefix

SMC operator commands can be issued using an SMC command prefix. This prefix is defined using the SMC CMDDef command. See “CMDDef Command” on page 135 for more information about this command.

Specifying SMC Commands in the SMCPARMS or SMCCMDS Data Set

SMC operator commands can be specified in the SMCPARMS or SMCCMDS data set. These commands are automatically processed at startup. See “Control Statements” on page xxvi for syntax conventions used when specifying commands in the SMCPARMS or SMCCMDS data set.

- The SMCCMDS data set can be reprocessed while the SMC is active using the READ operator command. The following is a sample SMCCMDS member entry:

```
MSGDEF CASE(MIXED) LVL(4)
TREQDEF DSN('MY.PARMLIB(TREQ)')
```

- The SMCPARMS data set is used for user-configured items that cannot be changed while the SMC is active. The SMCPARMS data set **cannot** be reprocessed using the READ command. The following is a sample SMCPARMS member entry:

```
CMDDEF PREFIX(B@F$)
```



Note: Sun Microsystems recommends that you include **only** the CMDDef PREFIX and USERMsg ID parameter settings in the SMCPARMS data set. Specify all other commands in the SMCCMDS data set.

SMC Commands that Specify JOBname, STEPname, and PROCstep

SMC ALLOCJOB, MSGJOB, and TRACE commands that allow specification of JOBname, STEPname, or PROCstep, are evaluated by the SMC in order of most specific to least specific job name specification. Therefore, commands can be entered in any order. Consider the following example:

Two ALLOCJob commands are entered:

```
ALLOCJOB JOBNAME=NOALLOC* MINLVL=4
ALLOCJOB JOBNAME=NOALLOC1 MINLVL=3
```

Regardless of the order in which these commands are entered, job name NOALLOC1 is processed with MINLVL 3 because this command's job name is more specific than job name NOALLOC*.



Note: The above behavior does **not** apply to TAPEREQ statements, which are **always** evaluated in the order in which they appear in the TREQDEF DD.

SMC Command and Control Statement Descriptions

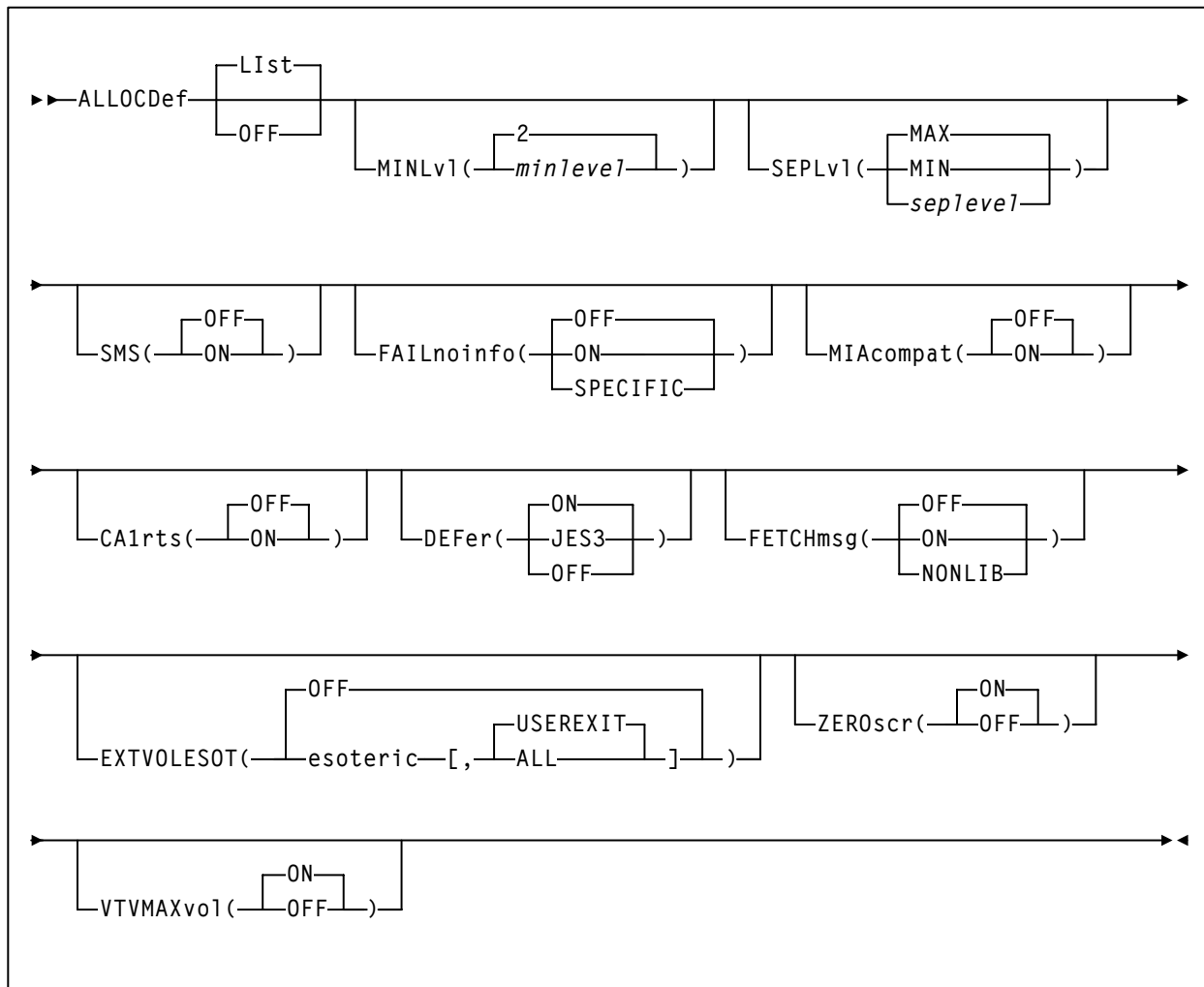
This section describes SMC operator commands and control statements. Syntax, parameter descriptions, and examples are included for each command or statement.

See “Syntax Flow Diagrams” on page xxi for syntax flow diagramming conventions.

ALLOCDf Command

The SMC ALLOCDf command is used to specify system default parameters used within the SMC subsystem to control allocation.

Syntax



Command Name**ALLOCDDef**

initiates the ALLOCDDef command.

Parameter Descriptions**List**

optionally, lists current default allocation settings.

This is the default if no parameters are specified. It **cannot** be specified with any other parameter.

OFF

optionally, resets all default allocation values to original SMC default settings. It **cannot** be specified with any other parameter.

MINLvl

optionally, specifies the desired minimum level of drive exclusion. If a job is not allocatable at the minimum exclusion level, the SMC still excludes drives to the minimum level and allows the job to fail.

minlevel

indicates the desired minimum allocation exclusion level. Valid values are 0-8. 0 indicates that the SMC will not exclude any drives, even if all drives would be excluded during level 1 exclusion processing. 2 is the default setting. See Chapter 4, “SMC Allocation in a JES2 Environment” or Chapter 5, “SMC Allocation in a JES3 Environment” for more information regarding SMC exclusion levels.

**Notes:**

- Setting MINLVL=0 indicates that the job will not be failed by the SMC even if the device and specific volume are incompatible. MINLVL=0 may be used to force SMC to allow allocation to succeed when a “foreign” tape cartridge has the same volume serial number as an existing library or virtual volume.
- Increasing *minlevel* has no effect unless message SMC0045 or SMC0091 has been issued for a specific job step.

SEPLvl

optionally, specifies the exclusion level at which affinity and GDG chains are separated.



Note: If HSC or MVS/CSC allocation previously specified UNITAFF(NOSEP) and GDGALL(NOSEP), the default SMC exclusion tables can specify SEPLvl=3 in order to preserve existing behavior for scratch affinity chains with different media types.

MIN

do **not** separate chains beyond the minimum level.

MAX

separate chains for conflicting exclusion criteria whenever sufficient drives are available. This is the default value.

seplevel

indicates a separation level between the minimum and maximum levels. When sufficient drives exist, the SMC attempts to separate chains at this level. See Chapter 4, “SMC Allocation in a JES2 Environment” or Chapter 5, “SMC Allocation in a JES3 Environment” for more information regarding SMC exclusion levels.



Note: The *seplevel* value **cannot** be less than the *minlevel* value.

SMS

enables and disables the DFSMS interface. When the DFSMS is enabled, SMC invokes the DFSMS ACS routines. The returned constructs are used to influence device allocation of data sets.

OFF

disables the DFSMS interface. This is the default value.

ON

enables the DFSMS interface.

FAILnoinfo

optionally, specifies whether the SMC fails a job step during allocation when a communication failure prevents the retrieval of volume information from a library subsystem or library server, or if no libraries are available.

OFF

do not fail a job step when a communication failure occurs during the volume lookup process, or if no libraries are available. This is the default setting.

ALL or ON

if a communication failure occurs during the volume lookup process, or if no libraries are available, then mark all devices ineligible and fail the job step.

SPECIFIC

if a communication failure occurs during the volume lookup process for a specific volume, or if no libraries are available and the step contains allocations for specific volumes, then mark all devices ineligible and fail the job step.

If the job step contains only scratch allocations, then the job step is allowed to proceed and allocation is based solely on SMS or TAPEREQ policy specifications.

MICompat

optionally, specifies whether or not the EDL is to be modified at SSI24 time for compatibility with Computer Associates Unicenter CA-MIA Tape Sharing for z/OS and OS/390 product. This parameter is **not** valid in JES3 environments with TAPE SETUP processing.

OFF

do not update the EDL at SSI24 time. This is the default value.

ON

update the EDL at SSI24 time. Specify this value if you use Unicenter CA-MIA.

CA1rts

optionally, specifies whether DEFER processing is performed at SSI24 time for compatibility with Computer Associates Real Time Stacking feature of its CA-1 tape management system. This parameter is **not** valid in JES3 environments with TAPE SETUP processing.

OFF

do not update DEFER status at SSI24 time. This is the default value.

ON

update DEFER status at SSI24 time. Specify this value if you use the Real Time Stacking feature of CA-1.

DEFer

enables or disables deferred mount processing for library mounts. With deferred mounting enabled, a library resident volume is mounted when the data set is opened. If the data set is not opened, the cartridge is not mounted, freeing the robot to perform other work. If the data set is opened, however, the job waits until the cartridge is mounted.

ON

enables deferred mount processing. This overrides the user's JCL and defers all ACS mounts until the data set is opened. **This is the default setting for both JES2 and JES3 environments.**



Note: On the JES3 SETPARAM initialization statement, set the DEFERCT parameter to YES to ensure that jobs requiring deferred mounts are included in SDEPTH job counts. Refer to the appropriate version of these IBM documents for detailed information about SETPARAM:

- *JES3 Initialization and Tuning Reference*
- *JES3 Command Reference Summary*
- *JES3 Commands*
- *JES3 Messages*

JES3

In a JES3 (with SETUP) environment, this parameter causes all mounts to be JES3 deferred until a step begins execution.

OFF

disables deferred mount processing and honors user JCL specifications.

FETCHmsg

optionally, for JES3 with SETUP environments that use volume fetch, this parameter specifies whether fetch messages should be issued for tape volumes that are allocated to a library transport.

OFF

indicates that fetch messages are not to be issued for volumes allocated to library drives. Fetch messages will still be issued for volumes that are allocated to nonlibrary drives. This is the default value.

ON

indicates that fetch messages are to be issued for all volumes, regardless of whether they are allocated to library or nonlibrary drives.

NONLIB

indicates that fetch messages are not suppressed for nonlibrary volumes allocated to a library transport. If the drive and volume both reside inside the library (i.e., the volume can be automatically mounted) then the fetch message is suppressed. Queries to the library subsystem(s) are required to determine volume location, and may have a negative impact on performance.

EXTVOLesot

optionally, instructs the SMC to use the specified esoteric to allocate a specific external volume (i.e., a volume that is not in the library). When this esoteric is used depends upon the setting of the modifier value specified after the esoteric, as well as whether the specified esoteric is valid (intersects with the original esoteric specification).

OFF

indicates that EXTVOLesot processing is disabled. If OFF, then nonlibrary drives will be selected if possible when a specific external volume is allocated. This is the default value.

esoteric,USEREXIT

specifies an esoteric to be used to allocate a specific external volume when the “use specvol” user exit return code is specified. If the specific volume user exit returns the “use specvol” return code for this DD, then any drives in the specified esoteric that intersect with the original esoteric will be selected for allocation. This is the default value if esoteric is specified.

esoteric,ALL

specifies that whenever an external volume is allocated, the drives in the specified esoteric are to be selected.

ZEROscr

specifies whether the SMC is to exclude the drives in one or more ACSs from the list of eligible drives when a scratch mount is requested in a multiple ACS environment.

ON

indicates one of the following:

- If scratch subpools are not being used, and one or more ACSs contain zero scratch volumes, then drives in those ACSs will be excluded from the list of eligible devices.
- If a scratch subpool is being requested (either through TAPEREQ or User Exit 04), and one or more ACSs contain zero scratch volumes in the requested subpool, then drives in those ACSs will be excluded from the list of eligible devices.
- In JES3 with SETUP environments only, drives in the ACS with the largest number of available scratch volumes remain eligible. All other drives are excluded from selection.

ON is the default value.

OFF

indicates that all drives in all ACSs are to remain eligible for selection.

ALLOCDef

VTVMAXvol

optionally, specifies whether the SMC sets the volume count for a new allocation to 255 during MVS converter/interpreter (IDAX) processing when the JCL or SMC DFSMS ACS routine esoteric contains at least one virtual device.

OFF

do not adjust the volume counts for virtual allocations.
This is the default value.

ON

if the JCL (or IDAX-substituted) esoteric contains virtual devices for a scratch allocation, then set the volume count to 255.

Example

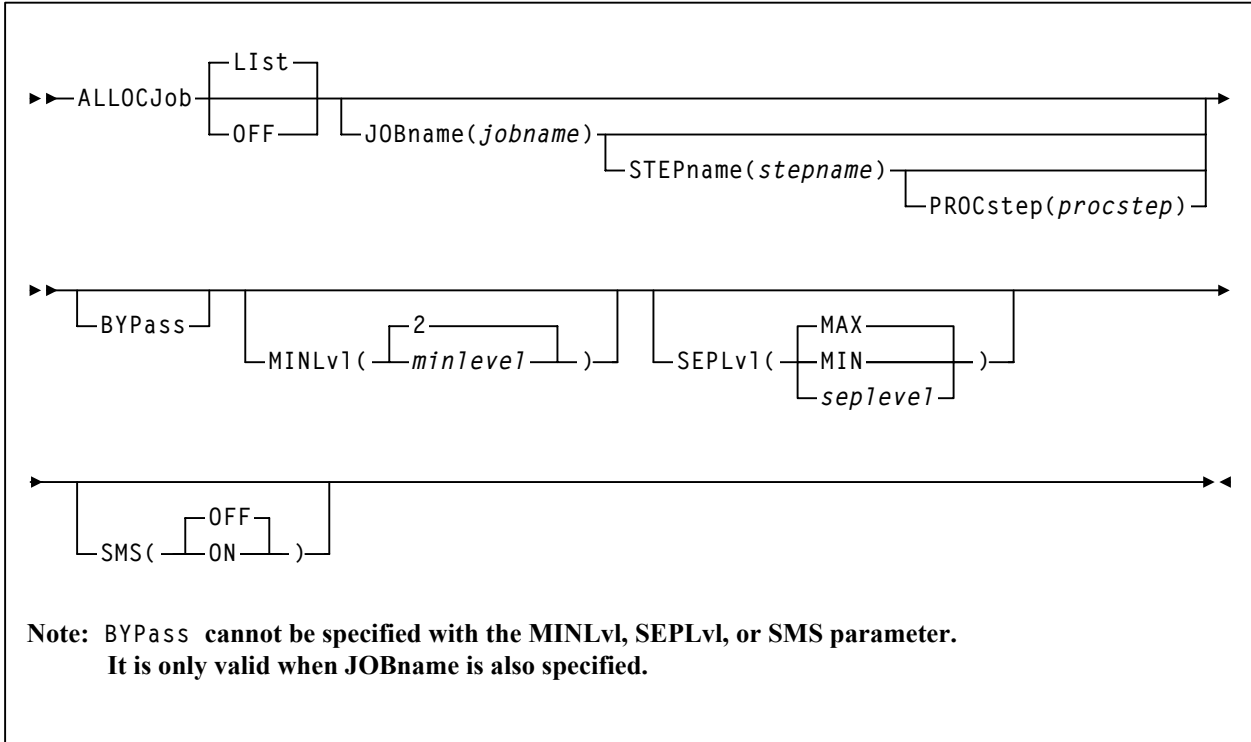
In the following example, the ALLOCDef command sets the minimum level of allocation exclusion to 4 and specifies that unit affinity and GDGALL chains are separated based on levels 1-4. It also specifies that when a user exit returns “use specvol”, the allocation should be directed to drives in the esoteric SACS0.

```
ALLOCDEF MINLVL=4 SEPLVL=MIN EXTVOL=(SACS0,USEREXIT)
```

ALLOCJob Command

The SMC ALLOCJob command is used to override SMC default allocation parameters by job name, step name, and PROC step.

Syntax



Command Name

ALLOCJob

initiates the ALLOCJob command.

Parameter Descriptions

List

optionally, lists current default allocation settings and override settings (in the order they are processed) by job name, step name, and PROC step.

This is the default if no parameters are specified. It **cannot** be specified with any other parameter.

OFF

optionally, removes all job name, step name, and PROC step overrides for allocation.

- If no other parameters are specified, allocation overrides are removed for all jobs.
- If only JOBname is specified, allocation overrides are removed for ALL ALLOCJob entries for that job name.
- If JOBname, STEPname and PROCstep are specified, allocation overrides are removed **only** for the specified entry.

Global allocation settings are not affected by this parameter.

JOBname

optionally, specifies a job name.

This parameter is required unless LList or OFF is specified.

jobname

indicates the job name.

The value entered **must** be one to eight characters in length. An asterisk (*) can be used as a wildcard when included as the last character. ALLOCJob is set for all jobs whose job names match the characters preceding the asterisk.

STEPname

optionally, specifies a step name. This parameter is **only** valid when JOBname is also specified. It is **not** valid in JES3 environments with TAPE SETUP processing.

stepname

indicates the step name.

The value entered **must** be one to eight characters in length. An asterisk (*) can be used as a wildcard when included as the last character.

PROCstep

optionally, specifies a PROC step. This parameter is **only** valid when JOBname and STEPname are also specified. It is **not** valid in JES3 environments with TAPE SETUP processing.

procstep

indicates the PROC step.

The value entered **must** be one to eight characters in length. An asterisk (*) can be used as a wildcard when included as the last character.

BYPass

optionally, specifies that SMC allocation influencing is **not** performed for the indicated job (job step, step name, PROC step).

This parameter **cannot** be specified with the MINLvl, SEPLvl, or SMS parameter. It is **only** valid when JOBname is also specified.



Note: Sun Microsystems recommends using MINLV=0 instead of BYPASS, except when no mounts will be performed (i.e., IEFBR14 jobs).

MINLvl

optionally, specifies the desired minimum level of drive exclusion. If a job is not allocatable at the minimum exclusion level, the SMC still excludes drives to the minimum level and allows the job to fail.

This parameter **cannot** be specified with the BYPass parameter. It is **only** valid when JOBname is also specified.

minlevel

indicates the desired minimum allocation exclusion level. Valid values are 0-8. 0 indicates that the SMC will not exclude any drives, even if all drives would be excluded during level 1 exclusion processing. The default is the current value of the ALLOCDEF MINLVL setting. See Chapter 4, “SMC Allocation in a JES2 Environment” or Chapter 5, “SMC Allocation in a JES3 Environment” for more information regarding SMC exclusion levels.

**Notes:**

- Setting MINLVL=0 indicates that the job will not be failed by the SMC even if the device and specific volume are incompatible. MINLVL=0 may be used to force SMC to allow allocation to succeed when a “foreign” tape cartridge has the same volume serial number as an existing library or virtual volume.
- Increasing ***minlevel*** has no effect unless message SMC0045 or SMC0091 has been issued for a specific job step.

SEPLvl

optionally, specifies the exclusion level at which affinity and GDG chains are separated.

This parameter **cannot** be specified with the BYPass parameter. It is **only** valid when JOBname is also specified.

MIN

do **not** separate chains beyond the minimum level.

MAX

separate chains for conflicting exclusion criteria whenever sufficient drives are available. This is the default value.

seplevel

indicates a level between the minimum and maximum levels. When sufficient drives exist, the SMC attempts to separate chains at this level. See Chapter 4, “SMC Allocation in a JES2 Environment” or Chapter 5, “SMC Allocation in a JES3 Environment” for more information regarding SMC exclusion levels.



Note: The *seplevel* value **cannot** be less than the *minlevel* value.

SMS

enables and disables the DFSMS interface. When the DFSMS is enabled, SMC invokes the DFSMS ACS routines. The returned constructs are used to influence device allocation of data sets.

This parameter **cannot** be specified with the BYPass parameter. It is **only** valid when JOBname is also specified.

OFF

disables the DFSMS interface. This is the default value.

ON

enables the DFSMS interface.

Example

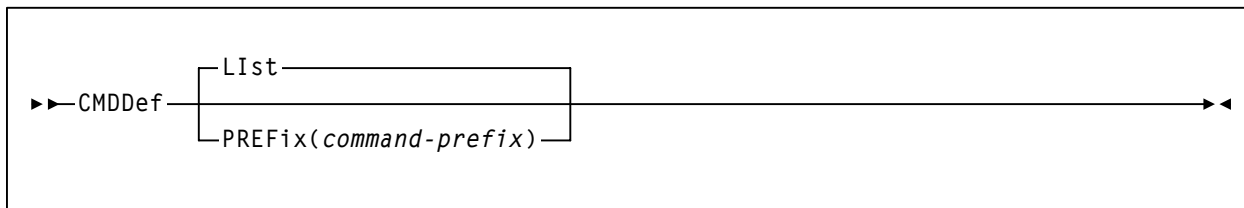
In the following example, the ALLOCJob command specifies that job PRODJOB1 with stepnames beginning with STEP1 be allowed to allocate even though SMC determines that volumes are not compatible with any drives in the EDL or esoteric.

```
ALLOCJOB JOB=PRODJOB1 STEP=STEP1* MINLVL=Ø
```

CMDDef Command

The SMC CMDDef command is used to assign an SMC command prefix.

Syntax



Command Name

CMDDef

initiates the CMDDef command.

Parameter Descriptions

LIst

optionally, lists the current command prefix.

This is the default if no parameters are specified. It **cannot** be specified with any other parameter.

PREFix

optionally, specifies a command prefix for the SMC subsystem.



Note: This parameter may **only** be specified in the SMCPARMS data set.

command-prefix

indicates the desired command prefix characters.

The value entered **must** be one to eight characters in length and **must** meet the following requirements:

- Valid characters include:
A-Z 0-9 @ ¢ \$ # , . / ' () < > * & + - = | ! ; : " % _ ?
- The command prefix **cannot** include a command string, a command abbreviation, or any string that invokes a command.
- The command prefix **cannot** include a string that is a subset or superset of an existing prefix beginning with the same character.



Note: The MVS command, DISPLAY OPDATA, displays all active command prefixes and their corresponding subsystem name.

CMDDef

Example

In the following example, the CMDDef command is specified in the SMCPARMS data set as follows:

```
CMDDEF PREFIX(B@F$)
```

As a result, SMC operator commands can be entered as follows:

```
B@F$MSGDEF CASE(MIXED)
```

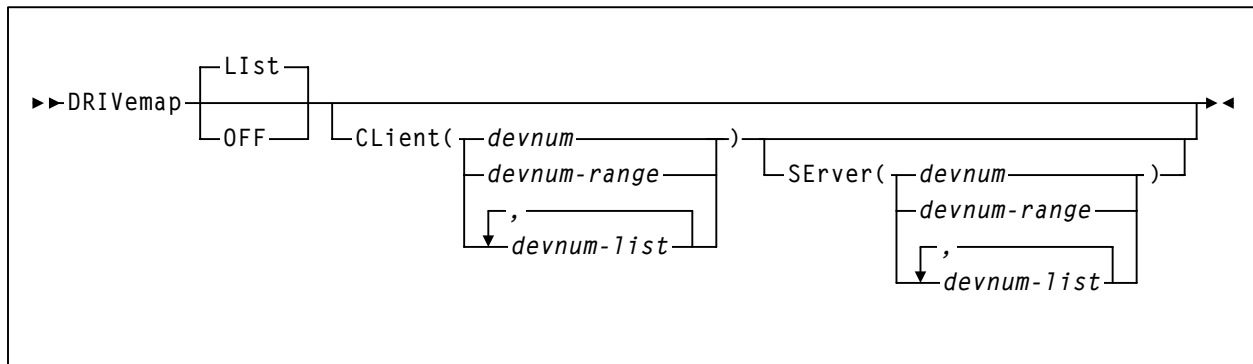

DRIVemap Command

The SMC DRIVemap command is used to map client drive addresses to server drive addresses. This command allows users to specify different MVS device addresses on different hosts for the same library or virtual drives in client-server mode. See Chapter 2, “SMC and StorageTek Library Management” for more information about drive mapping.



Note: This command is new for SMC release 6.1. See “Client/Server Drive Address Mapping” on page 17 for information about using DRIVemap commands and the HSC DRVHOST parameter when client and server addresses differ.

Syntax



Command Name

DRIVemap

initiates the DRIVemap command.

Parameter Descriptions

List

optionally, lists all current DRIVemap mappings. This is the default if no parameters are specified.

OFF

optionally, removes all current DRIVemap mappings. If specified with CLient, this parameter removes DRIVemap ranges specified in the CLient parameter.

CLient

specifies the device numbers mapped by the DRIVemap command.

SErver

specifies the device numbers that are defined on the HSC server. The ranges and lists must match those in the CLient parameter.

For example, CL(AA0-AA2) SE(BA0-BA2) is valid; CL(AA0-AA2) SE(BA0, BA1, BA2) is invalid.

DRIVemap

Example

In the following example, the DRIVemap command maps a set of client drive addresses (BA0-BAF) to a set of server drive addresses (AA0-AAF):

```
DRIVemap CLient(BA0-BAF) SErver(AA0-AAF)
```

LIBRARY Command

The SMC LIBRARY command defines a specific StorageTek tape hardware configuration, normally represented by a single CDS.

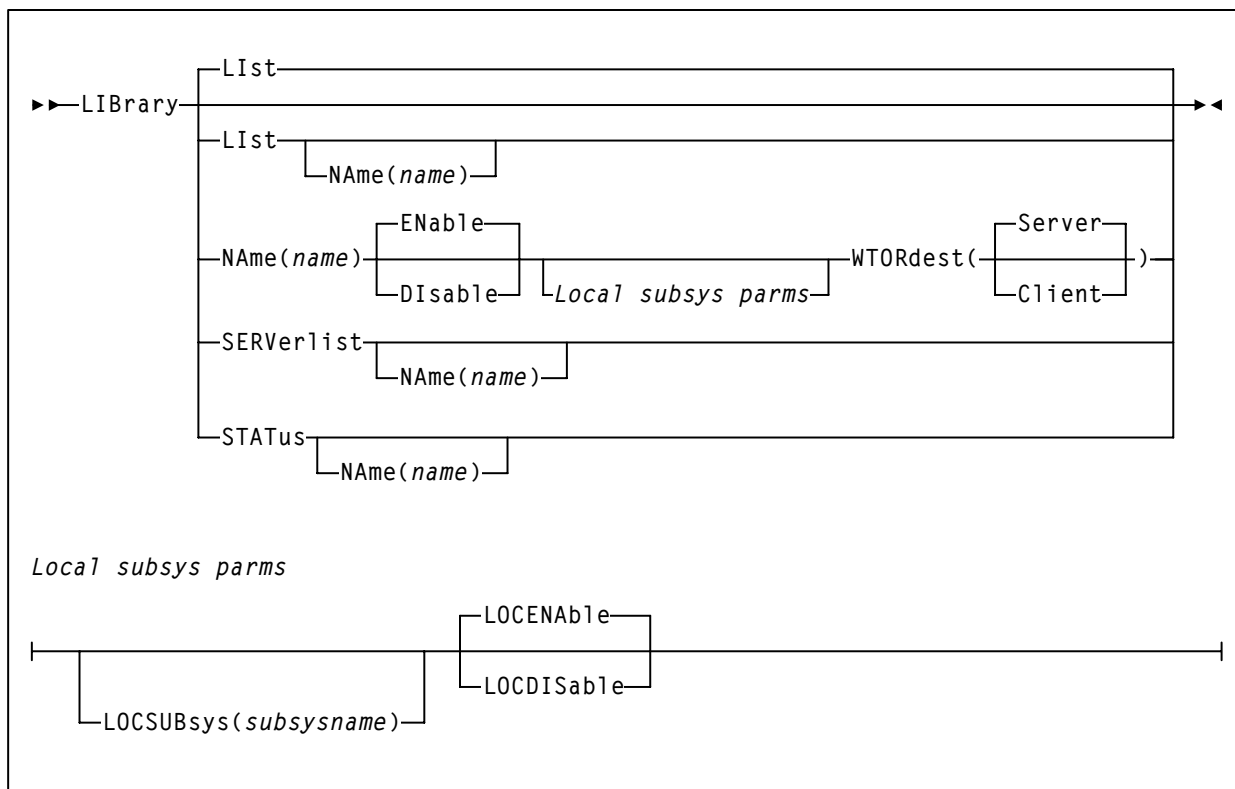


Notes:

- LIBRARY and SERVER commands are required to access remote HSC libraries.
- If a LIBRARY command is specified, then all libraries must be explicitly defined.
- If the LIBRARY command is not specified, the SMC uses active HSC and MVS/CSC subsystems defined in the host's SSCVT chain.

The LIBRARY command can also be used to list libraries that the SMC tries to communicate with, and report their status.

Syntax



LIBrary

Command Name

LIBrary
initiates the LIBrary command

Parameter Descriptions

LIst
optionally, lists the specified library. If no library name is specified, all libraries are listed.

NAme
specifies the library name to be listed

name
indicates the library name

NAme
specifies the library name to be defined or modified.

name
indicates the library name. The following rules apply:

- The first character must be an alpha character.
- The last character must be either an alpha character or digit.
- Any character between the first and last must be either an alpha character, digit, or hyphen.

ENable
enables the specified library to be selected for allocation or mount requests.

DISable
disables the specified library. The library is not used for any allocation or mount requests.

LOCSUBsys
specifies a local HSC and/or MVS/CSC subsystem

subsysname
indicates the subsystem

LOCENable
enables the specified HSC or MVS/CSC subsystem to be used as a local path to the library.

LOCDISable
disables the specified HSC or MVS/CSC subsystem. LOCDISable can be used to force the SMC to ignore the local subsystem and access the library via a remote server.

WTORdest

optionally, specifies the console to which HSC WTOR messages are directed. See “Managing HSC Mounts from the SMC Client” on page 119 for messages that apply.

Client

the remote HSC returns selected WTORs to the SMC client without issuing the WTOR message. The SMC client then issues the WTOR to the operator of the system that the SMC executes on. The SMC redrives the mount or dismount request to the server supplying the WTOR response.

Server

WTOR messages are issued on the HSC server console. This is the default.

SERVerlist

lists defined libraries, their attributes and associated servers. The SERVerlist parameter may also be specified with the NAME parameter to limit the display to a single library.

NAME

specifies the library name for which servers are to be listed

name

indicates the library name

STATus

optionally, lists current status of all libraries, or a single named library. The library status indicates whether a library is active, inactive, or disabled. For an active library, the status lists the name of the current server or local subsystem. STATus does not perform a RESYNChronize.

NAME

specifies the library name for which status information is to be listed

name

the library name

Example

In the following example, the LIBRARY command defines a local HSC subsystem executing on the same host as the SMC.

```
LIBRARY NAME(DENVER) LOCSUB(HSCØ)
```

In the following example, the LIBRARY command defines a local MVS/CSC subsystem executing on the same host as the SMC.

```
LIBRARY NAME(CSCLIB) LOCSUB(CSCA)
```

LIBrary

In the following example, the LIBrary command specifies that the remote subsystem (OMAHA) return selected WTORs to the SMC client without the remote HSC issuing the WTOR message.

```
LIBRARY NAME(OMAHA) WTORDEST(CLIENT)
SERVER NAME(OMAHA1) LIBRARY(OMAHA) HOST(OMA1) PORT(8888)
SERVER NAME(OMAHA2) LIBRARY(OMAHA) IP(11.22.33.44) +
PORT(7777)
```

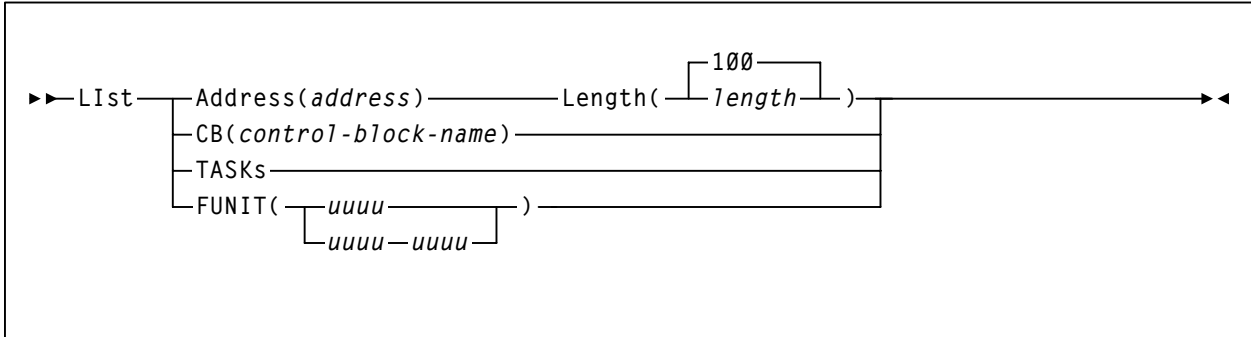


Note: The SERVer command must be specified to define the path to the remote library.

Llist Command

The SMC Llist command is used to display storage accessible from the SMC started task address space.

Syntax



Command Name

Llist

initiates the Llist command.

Parameter Descriptions

Address

specifies the address at which to begin listing SMC memory contents.

address

indicates the address. The value entered **must** be a valid hexadecimal address.

Length

optionally, specifies the length of SMC memory (bytes) to be listed.

length

indicates the length. The value entered **must** be a valid hexadecimal value between 1 and FFFF. Memory is listed beginning at the location specified in the *address* parameter. The default value is 100 (decimal 256).

CB

specifies the internal SMC control block to be listed.

control-block-name

indicates the control block name.

SMC control blocks are listed for diagnostic purposes. Specify *control-block-name* only as directed by Sun StorageTek Software Support.

List

TASKs

Lists the tasks in the SMC subsystem address space.

FUNIT

Lists SMC control blocks associated with the specified unit address(es).

uuuu

indicates the unit address(es).

Example

In the following example, the LList command displays the given length (FFF) of accessible storage beginning with address 01FE00.

```
LIST A=01FE00 L=FFF
```



LOG Command

The SMC LOG command logs XML transactions sent and/or received from library subsystems and servers to an SMCLOG file. Outgoing requests and incoming responses can be logged from both local and remote libraries. This command is intended to be used primarily as directed by Sun StorageTek Software Support.

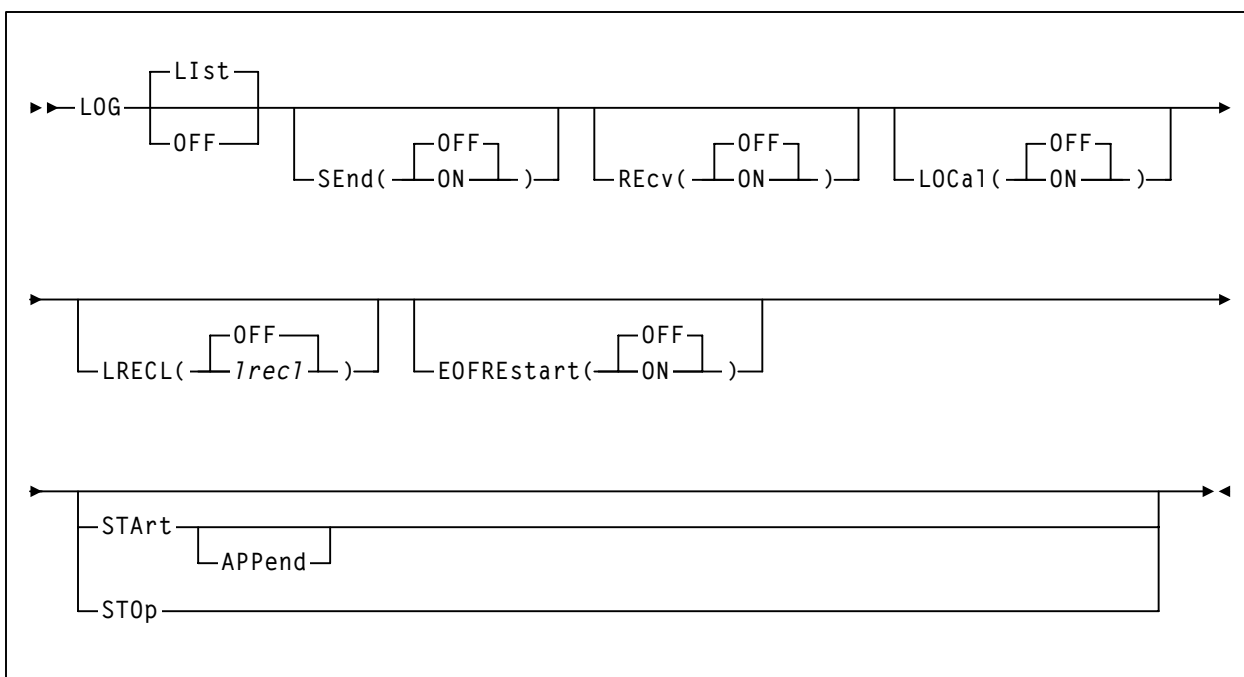
 **Note: This command is new for SMC release 6.1.**

In addition, you may specify command parameters to control the following:

- length of the log data line written (independently of the SMCLOG DCB attributes)
- whether log data is appended to an existing file
- handling of SMCLOG EOF conditions.

 **Note:** EOFRESTART, used to restart logging at SMCLOG EOF, simply restarts the log at EOF and does not wrap the log (i.e., all data prior to EOF is lost).

Syntax



LOG

Command Name

LOG

initiates the LOG command.

Parameter Descriptions

List

optionally, lists current SMC LOG settings. This is the default if no parameters are specified. It **cannot** be specified with any other parameter.

OFF

optionally, resets all LOG settings to original SMC default settings and stops SMC logging (if started). It **cannot** be specified with any other parameter.

SEnd

specifies whether the SMC logs request data sent to a library subsystem or server.

OFF

do not log requests sent to a library subsystem or server to the LOG file. This is the default value.

ON

log requests sent to a library subsystem or server to the LOG file.

REcv

specifies whether the SMC logs response data received from a library subsystem or server.

OFF

do not log responses received from a library subsystem or server to the LOG file. This is the default value.

ON

log responses received from a library subsystem or server to the LOG file.

LOCal

specifies whether the SMC logs local data in addition to remote (TCP/IP) requests and responses.

OFF

do not log data sent and received from a local library subsystem using cross memory services. This is the default setting.



Note: Data sent and received over TCP/IP to remote servers is logged.

ON

log data sent and received from a local library subsystem using cross memory services, in addition to data sent and received over TCP/IP to remote servers.

LRECL

specifies the line length written to the LOG file. If this value exceeds the DCB LRECL, then the DCB LRECL is used.

OFF

use the DCB RECL to control the maximum line length. The LOG record is appended to the log date and time stamp. This is the default setting.

nnnnn

a value from 60 to 32767, used to limit the logical line length. If the data sent or received exceeds the specified LRECL, then multiple lines are written. If LRECL is specified, then the log date and time stamp are written as separate LOG records.

EOFREstart

specifies the SMC response when the LOG file reaches End of File (EOF).

OFF

stop logging at EOF.

ON

close and re-open the LOG file at EOF, and continue logging.

STArt

specifies that logging is to be started.

APPend

specifies that when logging is started, data is appended to the current LOG file. If not specified, then data is added to the LOG file from the beginning of the log file, and any data currently in the log file is lost. APPend can only be specified when START is also specified.

STOp

specifies that logging is to stop. Current LOG settings are preserved.

MOUNTDef

MOUNTDef Command

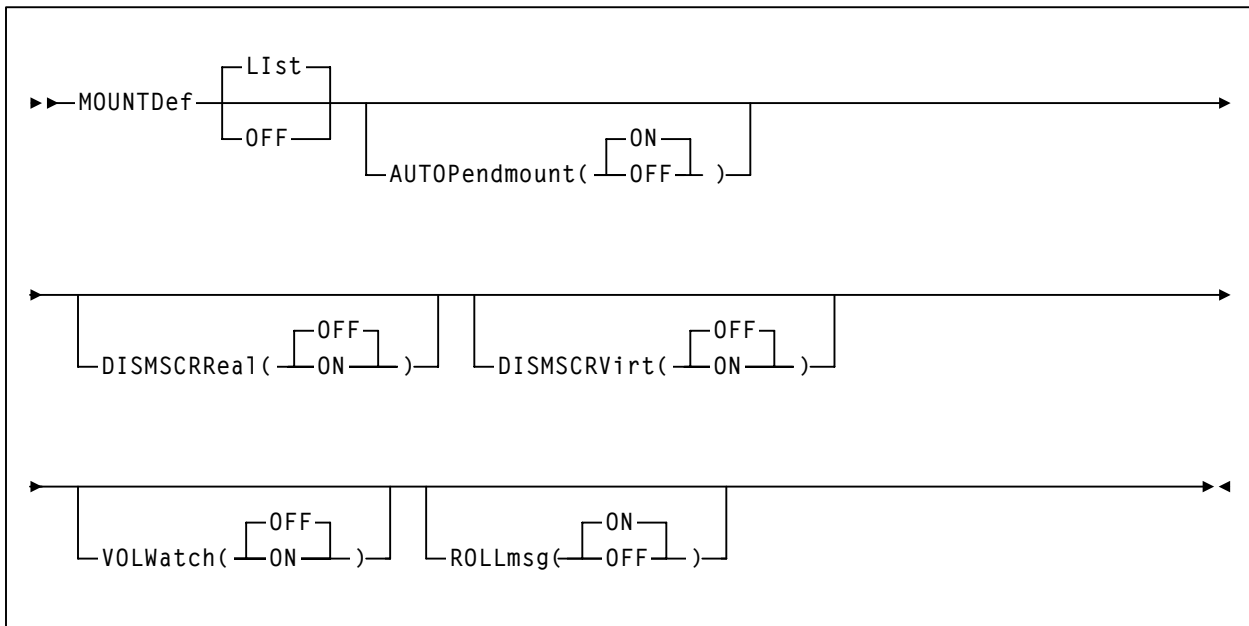
The SMC MOUNTDef command is used to control message processing (i.e., mount/dismount) options previously controlled by the HSC MNTD command, HSC input parameters and LIBGEN options, and the MVS/CSC ALTER command and input parameters.

These options control the automation of pending mounts, delete disposition at dismount time, whether messages are produced when a library volume is mounted outside the library, and when mount messages are rolled off of the console.



Note: This command is new for SMC release 6.1.

Syntax



Command Name

MOUNTDef

initiates the MOUNTDef command.

Parameter Descriptions

List

optionally, lists current SMC MOUNTDef settings. This is the default if no parameters are specified. It **cannot** be specified with any other parameter.

OFF

optionally, resets all MOUNTDef settings to original SMC default settings. It **cannot** be specified with any other parameter.

AUTOPendmount

specifies whether the SMC automates pending mounts for library drives found when SMC is first initialized and the owning NCS library subsystem or server is first activated.

ON

automate pending mounts for library drives when the SMC determines that the owning library subsystem or server is first activated. This is the default setting.

OFF

do not automate pending mounts.



Note: If AUTOPendmount is OFF, you must issue an HSC MOUNT command to complete any pending mounts found when a library is first activated.

DISMSCRReal

specifies how the SMC interprets the delete disposition on a dismount message for real (nonvirtual) volumes.



Note: The DISMSCRReal and DISMSCRVirt parameters replace the DELDISP= parameter of the HSC LIBGEN SLILIBRY macro.

OFF

Retain the real cartridge as nonscratch when MVS indicates delete disposition in the dismount message. This is the default setting, and is recommended for CA-1 or CA-TLMS users to leave volumes in a consistent nonscratch status during the CA-1 and CA-TLMS grace period.

ON

Scratch the real cartridge when MVS indicates delete disposition in the dismount message.

DISMSCRVirt

specifies how the SMC interprets the delete disposition on a dismount message for virtual volumes.



Note: The DISMSCRReal and DISMSCRVirt parameters replace the DELDISP= parameter of the HSC LIBGEN SLILIBRY macro.

OFF

Retain the virtual volume as nonscratch when MVS indicates delete disposition in the dismount message. This is the default setting.

ON

Scratch the virtual volume when MVS indicates delete disposition in the dismount message.

VOLWatch

specifies whether the SMC issues a message when a library volume is to be mounted on a nonlibrary drive.

OFF

Do not issue a message when a library volume is to be mounted on a nonlibrary drive.

ON

Issue a console message when a library volume is to be mounted on a nonlibrary drive. The message identifies the VOLSER that must be ejected from the library to satisfy the mount.

ROLLmsg

specifies whether mount messages handled by the SMC are allowed to roll off the operator console before mount requests are satisfied.

ON

Mount messages are allowed to roll off the console screen before mounts are satisfied. This is the default setting.



Note: You can limit the rolling of specific mount messages (e.g., TMS007) by presetting the messages xxxxRCDC (Request to Change Descriptor Codes) flag word xxxxRFBF1. The SAMPLIB includes a sample MPF USEREXIT to preset the xxxxRCDC flag.

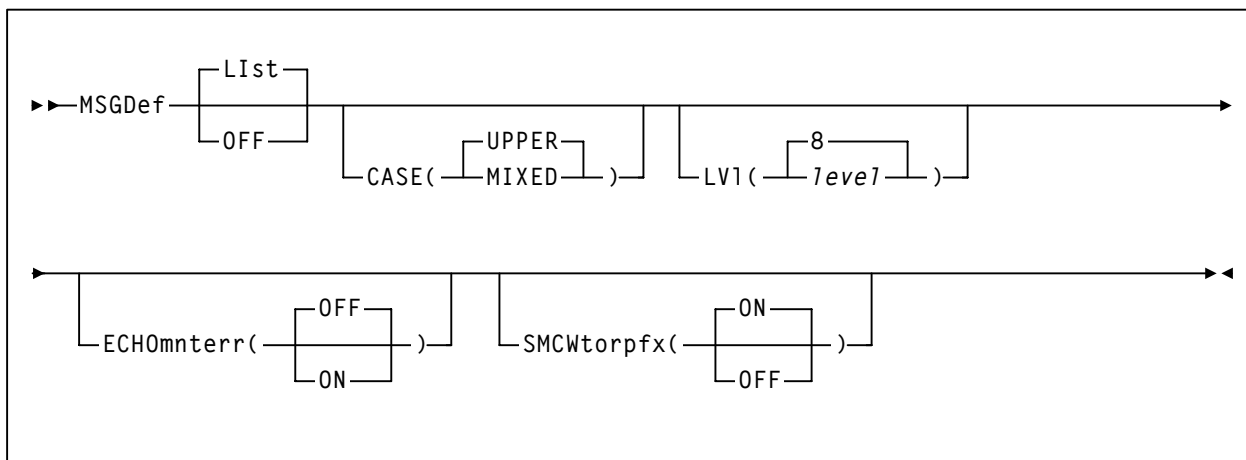
OFF

Mount messages remain on the console screen until mount requests are satisfied.

MSGDef Command

The SMC MSGDef command defines the appearance of SMC system messages, and controls which messages are displayed and suppressed.

Syntax



Command Name

MSGDef

initiates the MSGDef command.

Parameter Descriptions

List

optionally, lists current default SMC message settings.

This is the default if no parameters are specified. It **cannot** be specified with any other parameter.

OFF

optionally, resets all MSGDef values to original SMC default settings. It **cannot** be specified with any other parameter.

CASE

optionally, specifies the message case. Valid values are UPPER or MIXED. If no value is specified, the default value UPPER is used.

LVI

optionally, specifies the default level used to control which SMC messages are displayed and suppressed.

level

indicates the default level. Valid values include the following:

- 0 Display error messages **only**.
- 4 Display error and warning messages from the SMC subsystem.
- 8 Display all SMC subsystem messages and allocation job log warning messages. This is the default value if the MSGDef parameter is not specified.

If no value is specified, the default value of 8 is used.



Note: Levels higher than 8 are used for diagnostic purposes and should **only** be specified as directed by Sun StorageTek Software Support.

ECHOmnterr

optionally, specifies whether mount errors generated by the HSC are echoed directly to the console for the SMC client.

ON

mount errors generated by the HSC are echoed directly to the console for the SMC client.



Note: This parameter is valid for both local and remote servers.

OFF

mount errors generated by the HSC are not echoed to the console for the SMC client. This is the default.

SMCWtorpfx

optionally, specifies whether the SMC0137 prefix is displayed for HSC WTOR messages generated by WTORDEST(CLIENT) on the LIBRARY command.

ON

The SMC0137 prefix is displayed for HSC WTOR messages. This is the default.

OFF

The SMC0137 prefix is not displayed for HSC WTOR messages.

Example

In the following example, the MSGDef command specifies that SMC messages are displayed in mixed case. The command also specifies that **only** error and warning messages from the SMC subsystem are displayed.

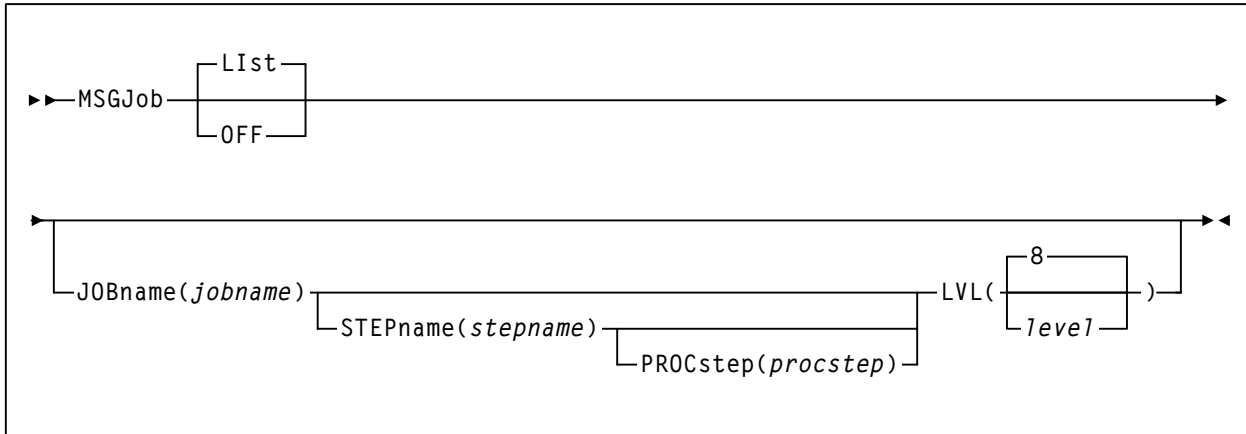
```
MSGDef CASE(MIXED) LVL(4)
```

MSGJob

MSGJob Command

The SMC MSGJob command allows an override of the default message level by job name, step name, and PROC step.

Syntax



Command Name

MSGJob

initiates the MSGJob command.

Parameter Descriptions

List

optionally, lists current default SMC message settings and job name, step name, and PROC step exceptions (in the order of evaluation).

This is the default if no parameters are specified. It **cannot** be specified with any other parameter.

OFF

optionally, removes MSGJob overrides.

- If no other parameters are specified, MSGJob overrides are removed for all jobs.
- If only JOBname is specified, MSGJob overrides are removed for ALL MSGJob entries for that job name.
- If JOBname, STEPname and PROCstep are specified, MSGJob overrides are removed **only** for the specified entry.

The global MSGDef is not affected by this parameter.

JOBname

optionally, specifies a job name.

jobname

indicates the job name.

The value entered **must** be one to eight characters in length. An asterisk (*) can be used as a wildcard when included as the last character. In this case, the message level is set for all jobs whose job names match the characters preceding the asterisk.

STEPname

optionally, specifies a step name. It is **only** valid when JOBname is also specified (may be "JOB=*").

stepname

indicates the step name.

The value entered **must** be one to eight characters in length. This parameter is **only** valid if JOBname is also specified.

PROCstep

optionally, specifies a PROC step. It is **only** valid when JOBname and STEPname are also specified. It is **not** valid in JES3 environments with TAPE SETUP processing.

procstep

indicates the PROC step.

The value entered **must** be one to eight characters in length. This parameter is **only** valid if JOBname and STEPname are also specified.

LVL

optionally, specifies the default level used to control which SMC messages are displayed. This parameter is required when JOBname is specified.

level

indicates the default level. Valid values include the following:

- 0 Display error messages **only**.
- 4 Display error and warning messages from the SMC subsystem.
- 8 Display all SMC subsystem messages and allocation job log warning messages.

If no value is specified, the default value of 8 is used.



Note: Levels higher than 8 are used for diagnostic purposes and should **only** be specified as directed by Sun StorageTek Software Support.

MSGJob

Example

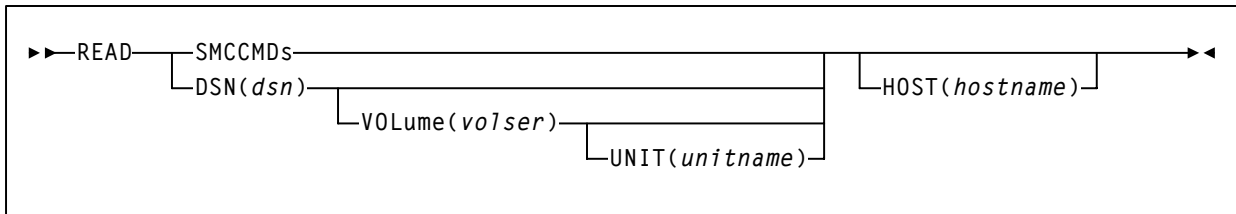
In the following example, the MSGJob command specifies that **only** error and warning messages are displayed for job PRODJOB1, step STEP3, PROC step REPORT.

```
MSGJOB JOB(PRODJOB1) STEP(STEP3) PROC(REPORT) LVL(4)
```

READ Command

The SMC READ command is used to enter a series of commands using an input data set instead of console commands.

Syntax



Command Name

READ

initiates the READ command.

Parameter Descriptions

SMCCMDS

re-processes commands contained in the data set specified in the SMCCMDS DD statement of the SMC START procedure.

DSN

processes commands contained in the specified data set.

dataset

indicates the specified data set.



Note: If the DSN parameter specifies a member name, the full data set **must** be enclosed in single quotes.

VOLUME

optionally, specifies the volume serial number of the DASD volume on which the data set resides. Specify this parameter if the data set is not catalogued.

volser

the volume serial number on which the data set resides

UNIT

optionally, specifies the unit name of the specified VOLUME for uncatalogued data sets. Requires that VOLUME also be specified.

unitname

the unit name

If not specified, then a unit name of SYSALLDA is the default.

READ

HOST

optionally, specifies a host name for which this READ command is valid. If this parameter is specified, the READ command is only processed when the specified hostname matches the MVS host. If this parameter is not specified, the READ command is processed regardless of the MVS host.

hostname

indicates the hostname



Notes:

- In a JES3 environment, the host name is the SMF host, not the JES3 MAIN name.
- Specification of the HOST parameter allows you to share a single SMC parameter file set across multiple MVS hosts as shown in the following example:

your.parmlib(COMMCMDSD)

```
MSGDEF CASE(MIXED)
...other common SMC parameter settings...
READ DSN('your.parmlib(MVS1CMDSD)') HOST(MVS1)
READ DSN('your.parmlib(MVS2CMDSD)') HOST(MVS2)
```

your.parmlib(MVS1CMDSD)

```
DRIVEMAP CL(AB0-AB7) SE(BB0-BB7)
```

your.parmlib(MVS2CMDSD)

```
DRIVEMAP CL(CB0-CB7) SE(BB0-BB7)
```

The file COMMCMDSD contains SMC parameter settings applicable to all hosts, and the READ commands with HOST specifications for your MVS hosts. The file MVS1CMDSD contains SMC specifications applicable only to MVS host MVS1, while the file MVS2CMDSD contains SMC specifications applicable only to MVS host MVS2.

Example

In the following example, the READ command is used to process commands included in the MYCMDSD member of the MY.COMMAND.PDS data set.

```
READ DSN('MY.COMMAND.PDS(MYCMDSD)')
```

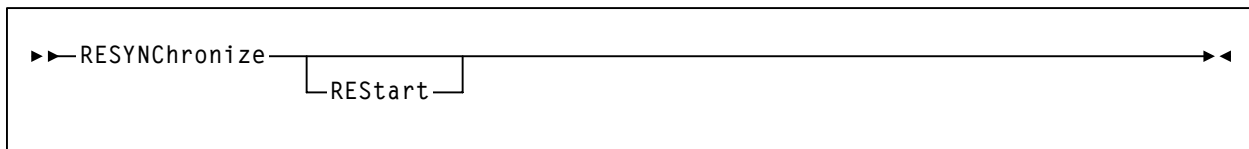
RESYNChronize Command

The SMC RESYNChronize command is used to re-establish connections to all defined libraries for the purpose of acquiring drive configuration information from all libraries.

This action is automatically performed when the SMC first activates a new path to a library, when an HSC subsystem (local or remote) reports a configuration change, or when an active local path to a library is accessed during an MVS allocation or mount event. However, the operator **must** issue the RESYNChronize command in the following instances:

- When the MVS/CSC RESYNC command is issued and the MVS/CSC is active
- When the user wants to automate pending mounts for a newly activated HSC or MVS/CSC library, and does not want to wait for an MVS allocation or mount event to trigger the reconnection.
- To attempt to redrive outstanding mounts that may have been lost due to hardware or communication errors.

Syntax



Command Name

RESYNChronize
initiates the RESYNChronize command.

Parameter Descriptions

REStart
starts the RESYNChronize attempt at the first SERVER, regardless of the last active path. REStart also attempts to redrive any outstanding mounts.



Notes:

- The SMC RESYNChronize command is not required when communicating with HSC, but may be used to redrive outstanding mounts that may have failed due to hardware or communication errors with **either** a local or remote HSC.
- Use of the RESYNChronize command to automate pending mounts for newly active HSC or MVS/CSC systems requires that the SMC MOUNTDef AUTOPendmount ON option is specified.
- Use of the RESYNChronize command to automate pending mounts for newly active HSC systems should be issued after the HSC system has reached FULL service level.

SERVer

SERVer Command

The SMC SERVer command defines a named path to a remote library server; an HSC subsystem executing on another host. The SERVer command describes the communication path to the StorageTek HTTP server.

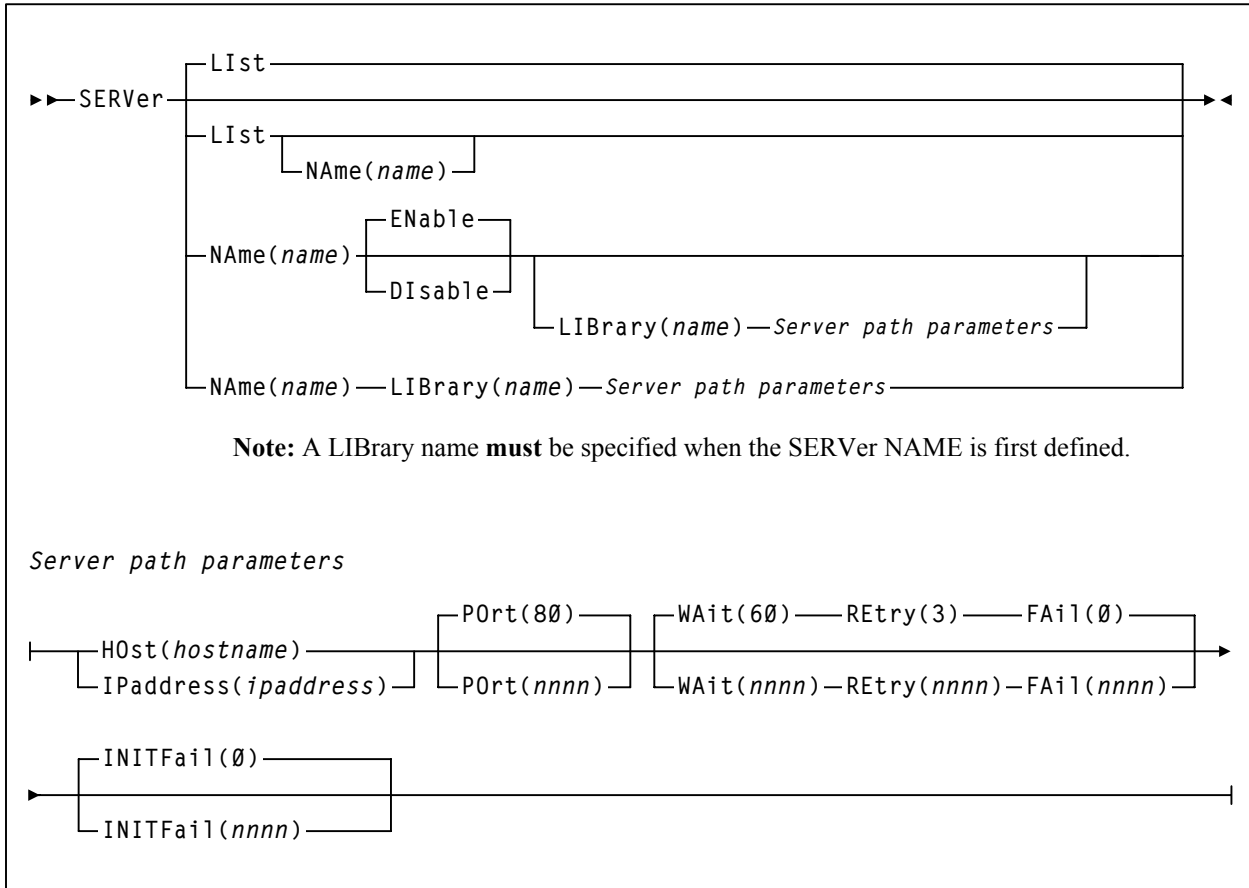


Notes:

- Before a SERVer is defined, the LIBRARY that it references must be defined using a LIBRARY command. The library name associated with a SERVer **cannot** be changed. See “LIBRARY Command” on page 139 for more information.
- You **cannot** define a SERVER if the corresponding LIBRARY defines a LOCSUBSYS for an MVS/CSC subsystem. For example, the following is **not** valid (assuming the subsystem CSC1 is an MVS/CSC system).

```
LIBRARY NAME(LIB1) LOCSUBSYS(CSC1)  
SERVER NAME(REM1) LIBRARY(LIB1)
```

Syntax



Command Name**SERVer**

initiates the SERVer command.

Parameter Descriptions**List**

optionally, displays status information for all library server paths. This is the default if no parameters are specified.

Name

optionally, specifies a server path for which status is displayed.

name

indicates the server path

Name

optionally, specifies the communication path or route to the server.

name

indicates an identifier for the path parameters. This name is reported in any communication error messages. The following rules apply:

- The value must be one to eight characters in length.
- The first character must be an alpha character.
- The last character must be either an alpha character or digit.
- Any character between the first and last must be either an alpha character, digit, or hyphen.

ENable

optionally, enables the specified server path to be selected for allocation or mount requests.

Disable

optionally, disables the specified server path. If this is the only path to the library, the library is unavailable for allocation or mount requests.

LIBrary

optionally, specifies the library name associated with an actual ACS hardware configuration. The LIBrary parameter **must** be specified when a new server is defined.

name

indicates the library name. This name is reported in any library error messages. The following rules apply:

- The value must be one to eight characters in length.
- The first character must be an alpha character.
- The last character must be either an alpha character or digit.
- Any character between the first and last must be either an alpha character, digit, or hyphen.



Note: If you are using the StorageTek HTTP server, there can be multiple NAMED paths to a single LIBRARY configuration. See Chapter 2, “SMC and StorageTek Library Management” for more information.

HOst

optionally, specifies the host on which the subsystem resides.

hostname

indicates the host name. The following arpanet rules apply:

- The first character must be an alpha character.
- The last character must be either an alpha character or digit.
- Any character between the first and last must be either an alpha character, digit, hyphen, or period.
- The host name can be a maximum of 128 characters.

IPaddress

optionally, specifies the subsystem IP address

ipaddress

indicates the IP address



Note: IPaddress and HOst are mutually exclusive.

POrt

optionally, specifies the server port.

nnnn

indicates the server port. The default is 80.

WAit

optionally, specifies the maximum wait time for any single request made over the network.

nnnn

indicates the wait time in seconds. The default is 60.



Note: The default for a mount or dismount request is 10 minutes (600 seconds) or more if the specified WAIT time is greater than 600 seconds.

REtry

optionally, specifies the number of retries to be attempted for any single request before the task is allowed to resume, and a failure recorded.

nnnn

indicates the number of retries. The default is 3.

FAil

optionally, specifies the number of failures (**after** communication is established) before the server path is disabled or placed out of service.



Note: The FAil limit count **only** applies **after** successful communication has been established on this SERVER path.

nnnn

indicates the number of failures. The default is 0.

If 0 is specified, the named SERVER is never automatically disabled due to communications errors. Specify this value when there are no backup SERVER paths to a named LIBRARY.

After successful communication is established with a LIBRARY, the error severity and SERVER FAil count are used to determine whether a SERVER path should be automatically disabled.

INITFail

optionally, specifies the number of failures (**before** communication is established) before the server path is disabled or placed out of service.



Note: The INITFail limit count **only** applies **before** successful communication has been established on this SERVER path.

nnnn

indicates the number of failures. The default is 0.

If 0 is specified, the named SERVER is never automatically disabled due to communications errors.

Examples

In the following example, two libraries (DENVER and OMAHA) are defined

The first library, DENVER, has both a local HSC (HSC0, on the SMC host) and a backup remote path on MVS system DEN1. SMC uses the local path unless the local subsystem is inactive or is disabled using the command LIB NAME(DENVER) LOCDIS. If the backup remote path is used, selected HSC messages are displayed on the client host.

```
LIBRARY NAME(DENVER) LOCSUBSYS(HSC0) WTORDEST(CLIENT)
SERVER NAME(DENBKUP) LIBRARY(DENVER) HOST(DEN1) PORT(8888)
```

The second library, OMAHA, is always accessed using a remote server. The SMC attempts to use the first defined server, OMAHA1. If this server becomes inactive, inaccessible, or is disabled, the SMC uses the next defined server, OMAHA2. If the SMC is unable to communicate with either server, no library requests are directed to the OMAHA library.

```
LIBRARY NAME(OMAHA) WTORDEST(CLIENT)
SERVER NAME(OMAHA1) LIBRARY(OMAHA) HOST(OMA1) PORT(8888)
SERVER NAME(OMAHA2) LIBRARY(OMAHA) IP(11.22.33.44) +
PORT(7777)
```

MVS hosts DEN1, OMA1, and the host represented by the IP address 11.22.33.44 must each have an instance of the StorageTek HTTP server executing on them in order for SMC to communicate with the HSC on these hosts. The StorageTek HTTP server port must be defined as 8888 for the first two hosts and 7777 for the third host.

SMSDef Command

The SMSDef command is used to tailor default SMC DFSMS support.

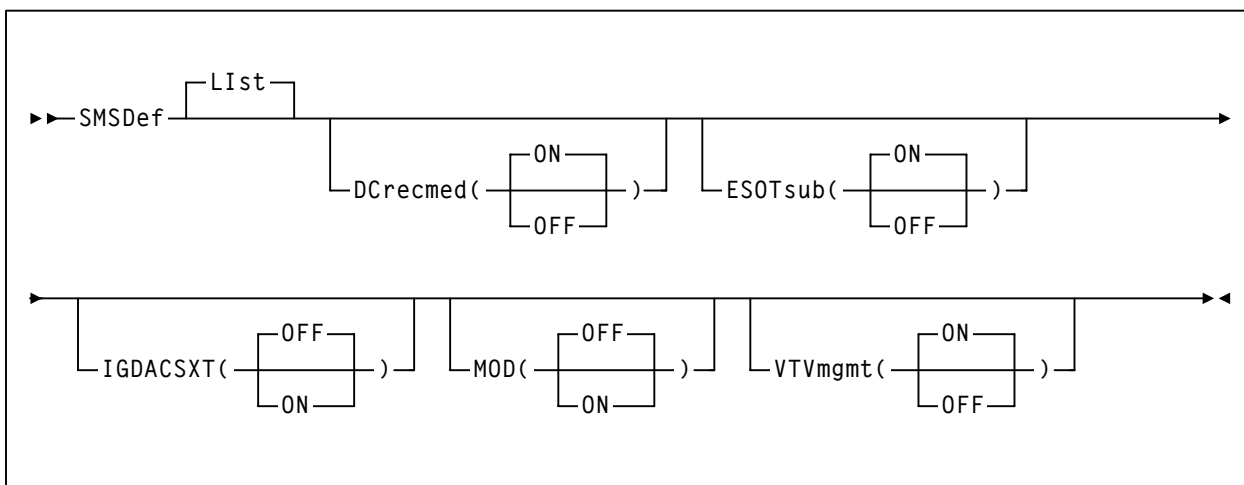


Note: This command takes effect when SMC DFSMS support is activated by setting the ALLOCDef or ALLOCJob SMS parameter value to ON.

During an allocation resulting in a tape mount, the SMC makes up to four calls to the DFSMS ACS routines. The SMSDef command allows you to bypass certain routine calls.

- DFSMS data class constructs specify a limited set of recording techniques and media supported by Sun Microsystems. Conversely, TAPEREQ statements can specify all recording techniques and media supported by Sun Microsystems. By default, DFSMS data class construct recording technique and media values override the TAPEREQ values. However, by setting the SMSDef DCRecmed parameter to OFF, the TAPEREQ recording technique and media values are always used.
- If VTCS is installed in your environment but TAPEREQ statements are used to assign a management class instead of DFSMS ACS routines, the calls to the DFSMS ACS routines can be bypassed by setting the SMSDef VTVmgmt parameter to OFF.
- If your environment does not support esoteric substitution using DFSMS storage group assignment, these DFSMS ACS routine calls can be bypassed by setting the SMSDef ESOTsub parameter to OFF.
- If your environment does not support DFSMS functions, the ALLOCDef SMS parameter can be set to or allowed to default to OFF. The SMC bypasses all DFSMS ACS routine calls.

Syntax



Command Name

SMSDef

initiates the SMSDef command.

Parameter Descriptions

List

optionally, lists the current SMS settings.

This is the default if no parameters are specified. It **cannot** be specified with any other parameter.

DCrecmed

specifies whether the SMC requests the data class construct be returned when a data class is assigned either during DFSMS ACS data class routine invocation or by using the DATACLAS parameter on the DD statement. The data class construct contains the recording technique and media value of the associated data class.

ON

the SMC retrieves the data class construct of a data class specified via JCL or DFSMS ACS data class routine. The recording technique and media, if defined to the data class, are retrieved during allocation and mount processing.

OFF

the SMC does not retrieve the data class construct.



Note: If DCrecmed is set to OFF, the DFSMS ACS data class routine is still retrieved from the DFSMS ACS data class routine or from the DATACLAS JCL parameter if the ESOTsub parameter or VTVmgmt parameter is set to ON.

ESOTsub

specifies whether the SMC invokes the DFSMS ACS routines during IDAX (Interpreter/Dynamic Allocation Exit) processing. The IDAX DFSMS interface can be used to provide a different unit name for new allocations.

ON

the SMC invokes all four (data class, storage class, management class and storage group) DFSMS ACS routines during IDAX processing.

OFF

the SMC does not invoke any DFSMS ACS routines during IDAX processing.

IGDACSXT

specifies whether the SMC invokes the Pre-ACS Installation Exit, IGDACSXT, before invoking the DFSMS ACS routines during SMC DFSMS processing. Refer to the IBM manual *DFSMS Installation Exits* for more information about this exit.

ON

the SMC invokes exit IGDACSXT before calling the DFSMS ACS routines. The exit receives the ACERO control block that contains the read only variable settings. The exit has the opportunity to change these settings before SMC invokes the DFSMS ACS routines.

OFF

the SMC does not invoke IGDACSXT before calling the DFSMS ACS routines.

MOD

optionally, specifies whether SMS esoteric substitution (if specified) applies to DISP=MOD data sets as well as DISP=NEW data sets.

OFF

The SMC SMS esoteric substitution (if specified) does not apply to DISP=MOD data sets. This is the default value.

ON

The SMC SMS esoteric substitution (if specified) applies to ALL DISP=MOD data sets when the first reference to the data set in the job's JCL specifies either DISP=MOD or DISP=NEW. Note that during SMS IDAX substitution, the SMC **cannot** determine whether a MOD data set exists.

VTVmgmt

specifies whether the SMC invokes the storage class and management class DFSMS ACS routines during virtual volume allocation and virtual volume mount message processing.

ON

when SMC determines that a list of eligible drives contain a virtual volume or a mount request specifies a virtual drive, the SMC invokes the data class, storage class and management class DFSMS ACS routines. If a management class name is returned, it is provided to VTCS during volume lookup and volume mount processing.

OFF

the SMC does not invoke the DFSMS ACS storage class or management class routines during virtual volume allocation or virtual volume mount processing.



Note: The DFSMS ACS data class routine is still invoked if the DCCredmed parameter value is set to ON.

Examples

In the following example, the SMSDef command is issued to disable the esoteric substitution function during IDAX processing.

```
SMSDEF ESOTSUB(OFF)
```

In the next example, the SMSDef command is used to bypass all DFSMS ACS routine calls during virtual volume allocation and virtual volume mount processing. Setting VTVMgmt to OFF bypasses the storage class and management class ACS routines. Setting DCrcmed to OFF bypasses the data class ACS routine.

```
SMSDEF DCRECMED(OFF) VTVMGMT(OFF)
```


TAPEREQ (Tape Request) Control Statement

The SMC TAPEREQ statement specifies tape request attributes. These attributes define the media type and recording technique or model number used for a particular data set or group of data sets.

TAPEREQ statements are placed in the definition data set (DDname) specified by the SMC TREQDEF command. SMC allocation calls on these TAPEREQ statements to help ensure that the correct media type is used to satisfy a request, and that the cartridge is mounted on the appropriate device. TAPEREQ statements must be placed in the definition data set; they **cannot** be issued as an operator command.



Notes:

- **This control statement is new for SMC 6.1. Existing HSC TAPEREQ control statements are not disabled, but are only processed for remote SMC 6.0 client systems.** See Appendix C, “SMC Migration and Coexistence” for more information.
- See page 189 for information about the TREQDEF Command.
- See chapters 4 and 5 for information about SMC allocation.
- Specifications for recording technique and media type are ignored on TAPEREQ control statements if the SMC/DFSMS interface is enabled and data class specifications for media type and recording technique exist.
- If your environment contains multiple types of 36-track drives (recording technique 36Atrack, 36Btrack, or 36Ctrack), Sun Microsystems recommends you use device preferencing to manage device allocation. Entering specific 36-track device types in TAPEREQ statements (i.e., 36A, 36B, 36C) causes the SMC to break unit affinity chains based on incompatible device types; using device preferencing allows the affinity chains to be maintained.
- Parameters from TAPEREQ lookup, including SUBPool and ESOTeric, always take precedence over values derived from a user exit.

Disabling a TAPEREQ Definition

Use the following procedure to disable a TAPEREQ definition.

1. Edit the definition data set containing the current TAPEREQ control statements.
2. Delete the parameters of the TAPEREQ control statement you want to disable, or delete the TAPEREQ control statement.
3. Issue the TREQDEF operator command to reload the definition data set.

To disable all TAPEREQ definitions, load a definition data set that contains only one TAPEREQ control statement with no parameters.

TAPEREQ

Syntax

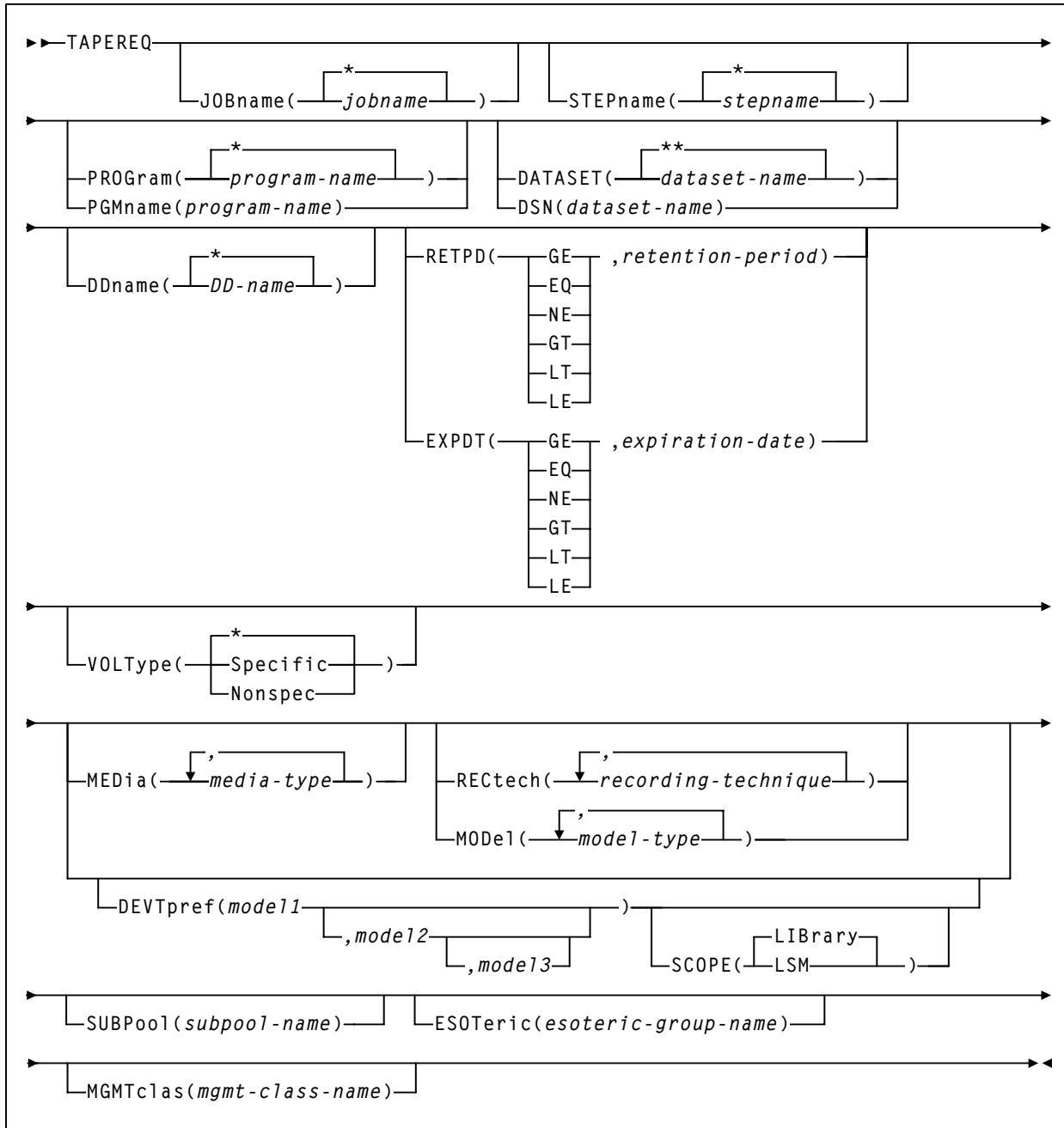


Figure 15. TAPEREQ Control Statement



Note: See Appendix B for valid media types, recording techniques, and model types.

Control Statement Name**TAPEREQ**

initiates the TAPEREQ control statement.

If any of the following conditions exist:

- there is no TAPEREQ control statement specified in the definition data set to match a request
- no matching TAPEREQ statement specifies the MEDIA, RECTECH, or MODEL parameters
- no definition data is loaded

then the MEDIA and RECTECH or MODEL parameters are set to undefined, which matches all requests. Any available device is eligible for allocation.

TAPEREQ

Parameters

The TAPEREQ control statement is in essence an IF-THEN statement. **IF** the Input (selection criteria) parameters match the current tape request variables, **THEN** the Output (media and format) parameters may apply.

TAPEREQ input and output parameters are described in the following sections.

Input Parameters



Note: The JOBname, STEPname, PROGRAM, and DATASET parameter values can include the following wild card characters:

- % or ? any single nonblank character
- * any character string (length zero to 8) not to exceed one qualification level. For example, A.B.* matches A.B and A.B.C, but does not match A.B.C.D.
- ** used only in DATASET. Indicates any number of qualifiers (zero or more). Cannot be used with any other characters within a qualifier. For example, A.B.** matches A.B, A.B.C, A.B.C.D, A.B.C.D.E, and so forth.

The TAPEREQ input (selection criteria) parameters include:

JOBname

Optionally, identifies the job name. If JOBname is not specified, the default value is *.



Note: If you are coding a TAPEREQ statement for DFHSM, you must specify JOBname as a selection criteria. Using DATASET (DSN) can cause unpredictable results.

jobname

Specifies the name of the job for which the TAPEREQ control statement is processed.

The TAPEREQ control statement is used only when the specified *jobname* matches the job name in the request.

STEPname

Optionally, specifies the step name. If the STEPname parameter is not specified, the default value is *.

stepname

Specifies the name of the step for which the TAPEREQ control statement is processed. The TAPEREQ control statement is used only when the specified *stepname* matches the step name in the request.

PROGram or PGMname

Specifies the program name.

The program name used is the job step program name. The default value is *.

program-name

Specifies the program name for which the TAPEREQ control statement is processed.

The TAPEREQ control statement is used only when the specified *program-name* matches the program name in the request.



Note: This parameter is not supported in JES3 environments.

DATASET or DSN

Specifies the data set name.

The default value is **.

dataset.name

Specifies the data set name for which the TAPEREQ control statement is processed.

The TAPEREQ control statement is used only when the specified *dataset.name* matches the data set name in the request.

**Notes:**

- If you are coding a TAPEREQ statement for DFHSM, the data set name **must** match the backup or migration data set name specified in the following publications:
 - *IBM DFSMSHsm Implementation and Customization Guide*
 - *IBM DFSMSHsm Storage Administration Guide*
- The name you specify on this parameter might be different from the value coded in the DSN parameter on a DD statement. For example,

```
DSN=&&ABC
```

may be coded on a DD statement if a data set is temporary. However, the actual data set name is not &&ABC. Similarly, if the DSN parameter refers back to a previous DD statement, the data set name is resolved to the referred-to data set. Thus, the data set name referred to must be coded on the DATASET parameter in order for the TAPEREQ control statement to be processed.

DDname

optionally, specifies the DDname. If DDname is not specified, the default value is *.

DD-name

the DDname. The TAPEREQ control statement is used only when this DD name matches the DDname in the request.

RETPD

Specifies the retention period and the relationship that must exist. If you do not specify either RETPD or EXPDT, the default value is RETPD(GE,0) (any expiration date will match this criterion).

- EQ** equal to.
- NE** not equal to.
- GT** greater than.
- GE** greater than or equal to.
- LT** less than.
- LE** less than or equal to.

retention-period

Specifies the retention period in days for the data set. Specify the number of days as a 1- to 4-digit decimal number.



Note: This parameter is not supported in JES3 environments.

EXPDT

Specifies the expiration date and the relationship that must exist.

- EQ** equal to.
- NE** not equal to.
- GT** greater than.
- GE** greater than or equal to.
- LT** less than.
- LE** less than or equal to.

expiration-date

Specifies the expiration date of the data set in *YYDDD* or *YYYY/DDD* format.



Note: This parameter is not supported in JES3 environments.

VOLType

Specifies whether or not a nonspecific volume is being requested. If VOLType is omitted, the default value is * (either specific or nonspecific matches).

Specific

Specifies that the request is for a specific volume.



Note: The TAPEREQ parameter never overrides the actual media type of the specific volume returned by the LCS.

Nonspec

Specifies that the request is for a nonspecific (scratch) volume.

Output Parameters

The TAPEREQ output (media and format) parameters include:

MEDIA

Specifies the desired type of media for a data set being created. You can enter a list of media types, but they must be separated by commas.

media-type

indicates the media type. See Table 13 on page 295 for a list of valid *media-type* values.

**Notes:**

- A list specifies a generic pool from which a selection is made. There is no implied priority.
- This parameter is ignored for an existing data set if the media characteristics are determined by the volume information contained in the LCS's control data set (CDS).
- If this parameter is not specified, a default is chosen based on the value of the RECtech parameter. See Table 14 on page 297 for default values used if the MEDIA parameter is omitted.
- To avoid problems, Sun Microsystems recommends that all TAPEREQ statements specify MEDIA and RECtech consistently. Be sure to include one or both parameters on each statement. If both media type and recording technique are omitted, all available devices are eligible for allocation.

RECtech

Optionally, specifies the method used to record data tracks on the tape surface for the desired data set. You can enter a list of recording techniques, but they must be separated by commas.



Note: A list specifies a generic pool from which a selection is made. There is no implied priority.

recording-technique

indicates the recording technique. See Table 15 on page 298 for a list of valid *recording-technique* values.



Notes:

- RECtech and MODEL are mutually exclusive.
- If this parameter is not specified on any matching TAPEREQ, a default is chosen based on the value of the MEDIA parameter. See Table 16 on page 301 for default values used if the MEDIA parameter is omitted.
- To avoid problems, Sun Microsystems recommends that all TAPEREQ statements specify MEDIA and RECtech consistently. Be sure to include one or both parameters on each statement. If both media type and recording technique are omitted, all available devices are eligible for allocation.

MODEL

Optionally, specifies the model number of a transport. You can enter a list of models, but they must be separated by commas. MODEL provides the same type of information as RECtech, but a user may find it more convenient to specify a transport model rather than a recording technique.



Note: A list specifies a generic pool from which a selection is made. There is no implied priority.

model-type

indicates the model type. See Table 17 on page 302 for a list of valid *model-type* values.



Note: MODEL and RECtech are mutually exclusive.

DEVTpref

Requests device preferencing for a particular allocation request. The use of device preferencing is restricted to StorageTek 36-track class transport models: 4490, 9490, and 9490EE.



Note: The following rules apply when using the MEDia, MODel, and RECtech parameters in conjunction with DEVTpref:

- The MODel parameter must include the models specified in the DEVTpref parameter.
- The RECtech parameter must include valid values for each model specified in the DEVTpref parameter.
- The MEDia parameter must include valid values for each model specified in the DEVTpref parameter.



Note: Device preferencing is managed by the SMC. If DEVTpref is specified and the list of devices includes 36-track and other devices (e.g., 18-track) the SMC preferences 36-track drives first, followed by other types in the list. Refer to the *SMC Configuration and Administration Guide* for more information.

model1

Specifies the transport model number of the preferred device. These transports are given a higher selection probability than the alternate transport model.

model2

Optionally, specifies the transport model number of the first alternate device. It must be separated from the *model1* by either a comma or a blank.

model3

Optionally, specifies the transport model number of the second alternate device. It must be separated from *model2* by either a comma or a blank.

If *model3* is omitted, the transport model number not specified by *model1* or *model2* is assumed to be the second alternate device.

The following table shows the alternate device order if only *model1* is entered:

Table 8. Alternate Device Default Value

<i>Preferred Device (model1):</i>	<i>First Alternate Device (model2):</i>	<i>Second Alternate Device (model3):</i>
4490	9490	9490EE
9490	4490	9490EE
9490EE	4490	9490

Entering DEVTpref(9490,4490) is functionally equivalent to DEVTpref(9490,4490,9490EE).

SCOPE

Specifies whether device preferencing should be performed across the entire library complex (single or multiple-ACS), or at the individual LSM level. The SCOPE parameter may be used in an attempt to reduce pass-thru events. SCOPE is valid only when the DEVTpref parameter is specified on the same TAPEREQ statement.

LIBrary

Specifies that all of the preferred models in the ACS are to be given a higher selection probability than all of the alternate models, while maintaining the ability to automate tape mounts. LIBrary is the default value.

In a multiple-ACS configuration, the way that the SMC processes SCOPE(LIBrary) depends on the following:

- The ability to automate the mount
- The type of request; specific versus scratch

A specific volume request is confined to the ACS where the volume resides so that the mount can be automated. The transports in all other ACSs, and all nonlibrary transports are marked ineligible for selection. The SMC then applies SCOPE(LIBrary) to one ACS, giving all of the preferred models in that ACS a higher selection probability.

A scratch request can be directed to any ACS, whether or not it contains scratch volumes. In this case, the SMC applies SCOPE(LIBrary) to all ACSs, giving all of the preferred models in all ACSs a higher selection probability.



Note: To prevent a scratch request from being directed to an ACS with no scratch volumes, use ALLOCDef Zeroscr (ON). See “ALLOCDef Command” on page 124.

LSM

Specifies that all of the preferred models within an LSM are to be given a higher selection probability than all of the alternate models within that same LSM, while maintaining the ability to automate tape mounts.

Each LSM is processed individually without regard to the models attached to other LSMs in the ACS. This means that if the preferred model is not available in the LSM where the volume resides, an alternate transport in the same LSM is allocated preventing a pass-thru of the volume to a different LSM.

SCOPE(LSM) should be requested if reducing pass-thru events is more important than allocating a preferred transport in a different LSM.

SCOPE applies only when DEVTpref is specified. LIBrary is the default value for the SCOPE parameter.

SUBPool

optionally, specifies the subpool used to satisfy a scratch request.

subpool-name

Specifies the subpool name.

ESOTeric

optionally, specifies the esoteric defining the list of eligible transports to be used to satisfy a tape request.

esoteric-group-name

Specifies the esoteric group name. The name specified can consist of one to eight alphanumeric or national (#, @, \$) characters. A slash (/) or hyphen (-) is also valid.

MGMTclas

optionally, specifies a Management Class you defined on the VTCS MGMTclas control statement. Refer to the *VTCS Command and Utility Reference* for more information.

mgmt-class-name

the Management Class name



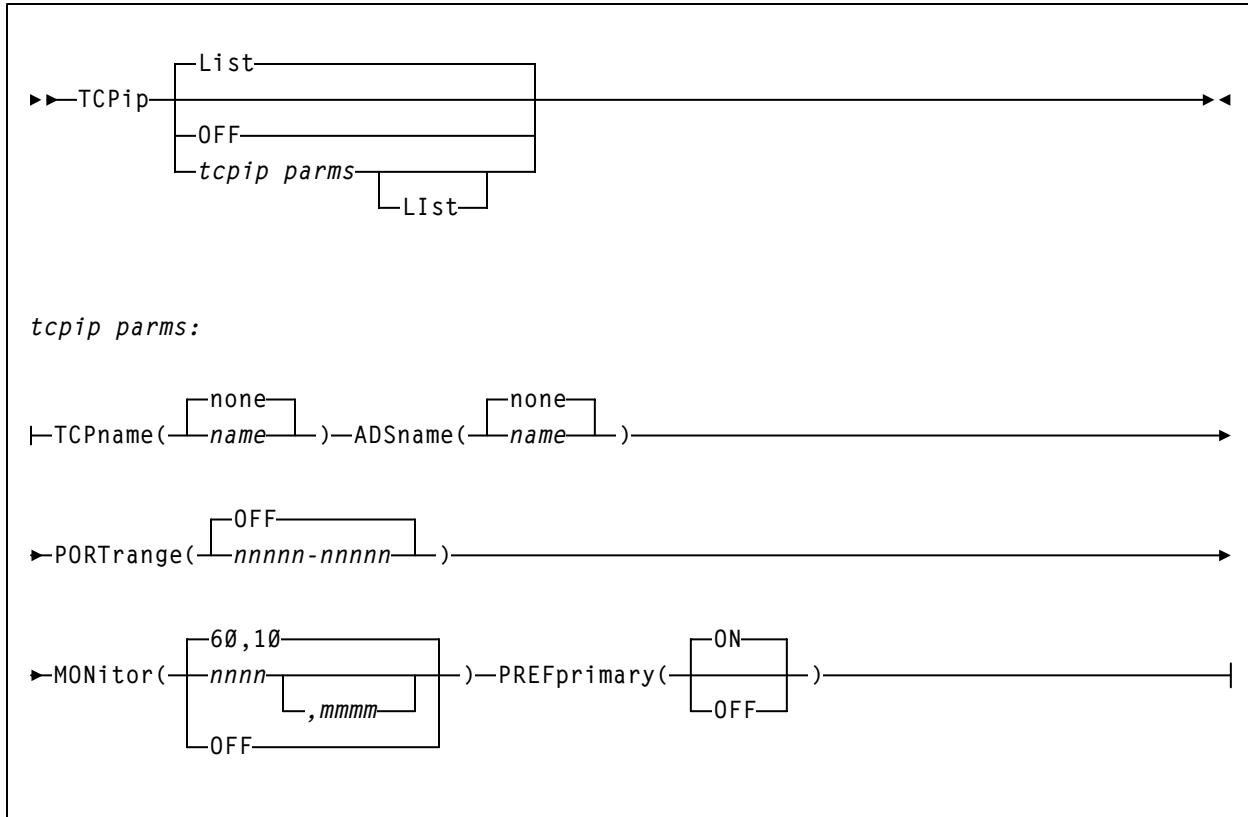
Caution: If you specify a Management Class on the MGMTclas parameter, you must specify both Media(V) and RECtech(V).

TCPip

TCPip Command

The SMC TCPip command alters or lists the current TCPNAME and ADSNAME defaults for your TCP/IP communications environment. It allows you to direct TCP/IP requests to a specific TCP/IP stack on an MVS host. The TCPip command can be issued at any time.

Syntax



Command Name

TCPip
initiates the TCPip command.

Parameter Descriptions

LlSt

optionally, lists current TCPNAME, ADSNAME, MONITOR, and PREFPRIMARY settings. If a PORTrange is specified, LlSt also displays currently bound port numbers and the high-water bound port number indicating the largest number of concurrent communication subtasks executing at one time.

LlSt is the default when no parameters are specified on the TCPip command.

LlSt may be specified with other parameters. In this case, the LlSt is generated after the other parameters are processed.

OFF

optionally, specifies that system defaults are used for client TCP/IP communication

TCPname

optionally, specifies the TCPNAME value for a specific TCP/IP stack on an MVS host. TCPNAME is the name of the MVS TCP/IP stack. Refer to the IBM publication *TCP/IP for MVS Application Programming Interface Reference* for more information about TCPNAME. The default is none.

name

the TCPNAME value

If a subsystem name is specified, it must consist of one to four alphanumeric or national (#,@,\$) characters, the first character being alphabetic or national.

If an addressname is specified, it must consist of one to eight alphanumeric or national characters.

ADSname

optionally, specifies the ADSNAME value for a specific TCP/IP stack on an MVS host. ADSNAME is the jobname of the TCP/IP startup job. Refer to the IBM publication *TCP/IP for MVS Application Programming Interface Reference* for more information about ADSNAME.

name

the ADSNAME value

PORTrange

optionally, specifies a range of ports to be used by the SMC to bind() sockets on the client when communicating on remote server paths

When PORTrange is defined, the SMC binds() client sockets to one of the ports within the specified PORTrange and will not use client ports outside the PORTrange. This allows the SMC to operate behind a firewall that restricts communication to known ports. A unique port is required for each concurrent subtask requiring communication services for a volume lookup, mount, etc. If a PORTrange is not defined, then any ephemeral port is used by the SMC.

Only one PORTrange can be active at a time, but you can dynamically re-define the PORTrange even if the new PORTrange overlaps with the old PORTrange.

nnnnn-nnnnn

the port number range

Each port number can have a value of 1-65535. However:

- The minimum port number range that can be specified is 10 (e.g., 6400-6410).
- The maximum port number range that can be specified is 1000 (e.g., 6400-6500).

OFF

PORTrange logic is disabled. As a result, any ephemeral port is used.



Notes:

- It is recommended that you specify a PORTrange that does not conflict with TCP/IP well-known ports.
- It is recommended that you specify a PORTrange greater than the anticipated number of concurrent subtasks requesting remote communication services. For most installations, a PORTrange of 40 ports is sufficient. However, if SMC0128 messages are produced with a return code indicating “no free port” then a larger PORTrange is required.
- When an SMC mount request to the HSC server results in an outstanding WTOR on the HSC, the used port number is unavailable until a reply is supplied for the outstanding WTOR. WTOR messages for mount requests are produced on the HSC when LIBrary WTORdest(SERVER) is specified, or when LIBrary WTORdest(CLIENT) is specified and the HSC mount message is not one returned to the SMC for processing.
- The TCPip LIST command may be used to display the high-water port number, indicating the largest number of concurrent communication subtasks executing at one time.

MONitor

optionally, specifies the communication monitor subtask scan interval and communication monitor subtask message interval.

nnnn

indicates the monitor scan interval in seconds. The communication monitor wakes every *nn* seconds to perform library communication validation. Specify a value between 10 and 9999 or OFF. The default is 60. OFF disables the communication monitor subtask.

It is recommended that you preserve the default setting of 60 to enable a monitor scan every minute. A value that is too low can potentially degrade performance when inactive libraries exist. A value that is too high can delay a return to the primary server if PREFPRIMARY(ON) is specified, or delay the redriving of mounts when there is no allocation or mount activity but a communication path becomes available.

mmm

optionally, indicates the monitor scan interval in number of scans. Communication error messages are displayed according to this interval. The default is 10.

The default MONITOR(60,10) setting specifies a monitor scan interval of 60 seconds, and a monitor message interval of 10 scans. A scan is performed every minute, but error messages are only produced once every 10 scans.

An *mmm* value of 0 disables all non-fatal or non-disabling error messages issued by the communication monitor subtask. However, errors resulting in the disabling of a server communication path are still issued.

PREFprimary

optionally, enables or disables automatic primary server switching. Automatic primary server switching requires that the communication monitor subtask be enabled. If MONITOR(OFF) is specified, primary server switching is disabled.

ON

enables automatic primary server switching. The communication path automatically switches back to the primary server from any secondary server when that primary server becomes available.

OFF

disables automatic primary server switching



Note: PREFprimary also affects behavior when the SMC SERVER command is used to ENABLE servers. If an SMC SERVER command is entered to ENABLE the primary SERVER when PREFPRIMARY(ON) is specified, then an automatic RESYNC is performed.

TRace

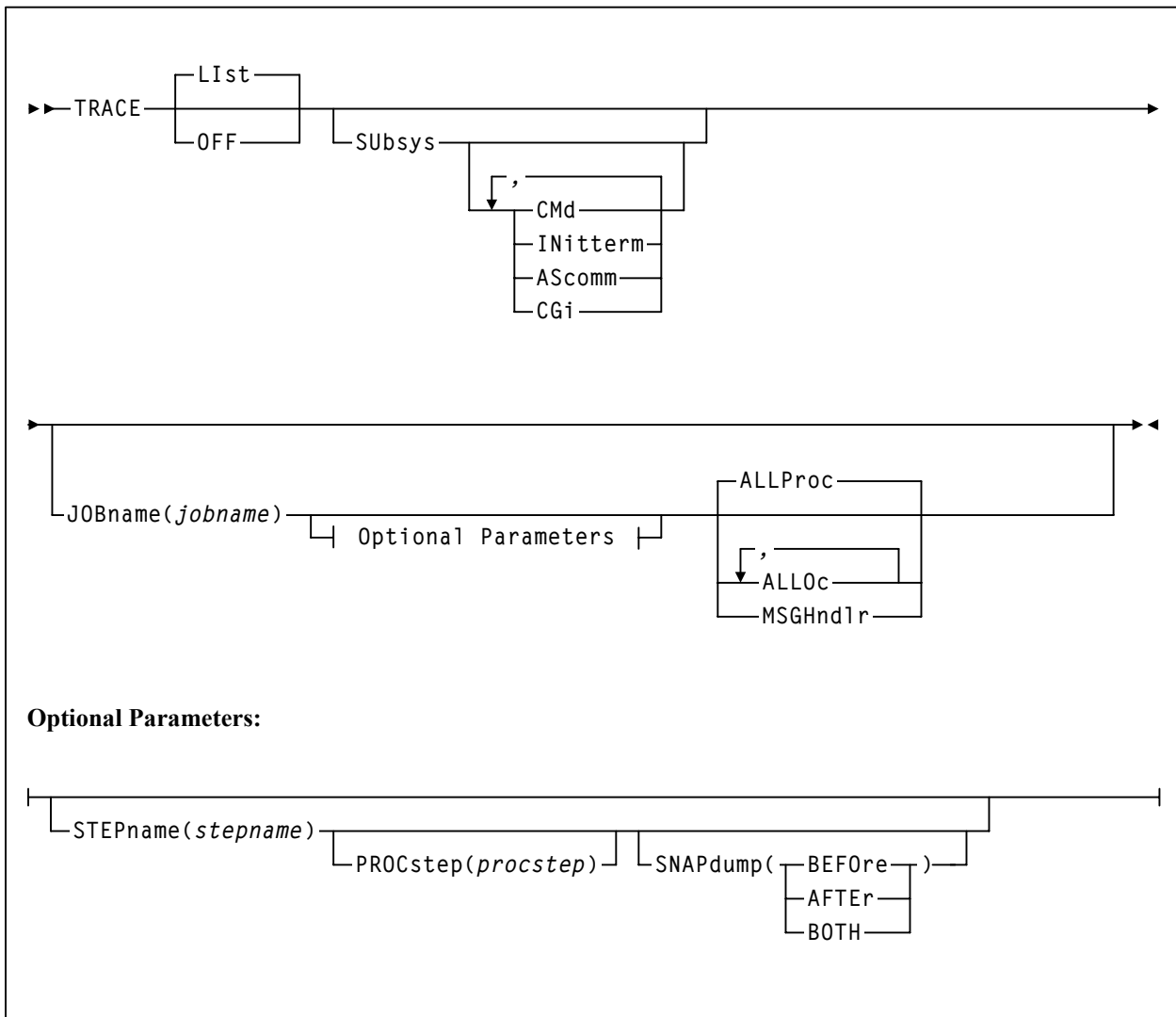
TRace Command

The SMC TRace command enables SMC tracing using the GTF trace facility and optionally provides a snap dump of the address space before and after control block modification.

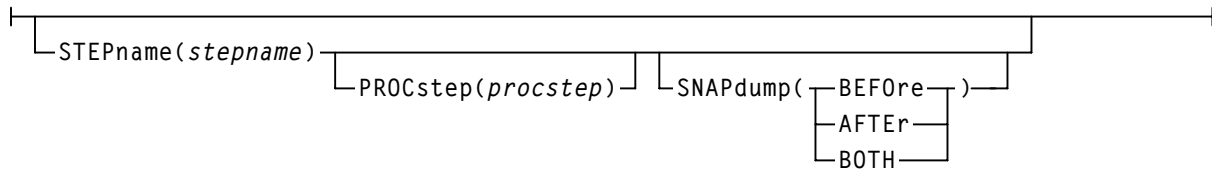


Warning: This command may impact system performance and should be used **only** as directed by Sun StorageTek Software Support.

Syntax



Optional Parameters:



Command Name**TRace**

initiates the TRace command.

Parameter Descriptions**LlSt**

optionally, lists current SMC trace settings for both the SMC subsystems and SMC components by job name, step name, and PROC step.

If no JOBname is specified, all jobs with SMC components being traced are listed. If JOBname is specified, **only** those jobs with SMC components being traced whose job name matches the specified job JOBname are listed. In either case, all SMC subsystem components being traced are listed.

This is the default if no parameters are specified.

OFF

optionally, disables SMC tracing.

- If no other parameters are specified, tracing is disabled for all jobs.
- If only JOBname is specified, tracing is disabled for all entries for that job name.
- If JOBname, STEPname and PROCstep are specified, tracing is disabled **only** for the specified entry.

SUbsys

optionally, enables or disables SMC tracing for one or more SMC subsystem components or subtasks.

OFF

disables tracing for all SMC subtasks.

CMd

enables tracing for the SMC subtask that processes all SMC operator commands.

INitterm

enables tracing for the SMC subtask that performs SMC initialization and termination.

AScomm

optionally, enables tracing for the SMC address space component. Tracing of library and configuration requests is performed **only** if tracing is also enabled for the jobname making the request.

CGi

optionally, enables tracing to the log of the StorageTek HTTP server. Tracing of HTTP server requests is performed **only** if tracing is also enabled for the jobname making the request.

JOBname

optionally, specifies a job name.

jobname

indicates the job name.

The value entered **must** be one to eight characters in length. An asterisk (*) can be used as a wildcard when included as the last character. In this case, all jobs whose job names match the characters preceding the asterisk are traced or listed. To trace all jobs, specify TRACE JOB(*).

STEPname

optionally, specifies a step name.

stepname

indicates the step name.

The value entered must be one to eight characters in length. This parameter is **only** valid if JOBname is also specified. It is **not** valid in JES3 environments with TAPE SETUP processing.

PROCstep

optionally, specifies a PROC step.

procstep

indicates the PROC step.

The value entered **must** be one to eight characters in length. This parameter is **only** valid if JOBname and STEPname are also specified. It is **not** valid in JES3 environments with TAPE SETUP processing.

SNAPdump

optionally, requests a snap dump. This parameter is **not** valid in JES3 environments with TAPE SETUP processing.



Note: A snap dump may impact system performance, and should be used **only** as directed by Sun StorageTek Software Support.

BEFORe

perform a snap dump before allocation influencing.

AFTEr

perform a snap dump after allocation influencing.

BOTH

perform a snap dump both before and after allocation influencing.

ALLProc

enables tracing for all SMC components. This is the default if no parameters are specified.

ALLOc

optionally, enables tracing for the SMC allocation component that performs drive exclusion and drive prioritization.

MSGHndlr

optionally, enables tracing for the SMC message handler component that processes all MOUNT, DISMOUNT, and SWAP messages and issues robotic movement commands to the StorageTek tape library.

Examples

In the following example, tracing is enabled for any job whose name begins with “TESTJOB.”

```
TRACE JOB=TESTJOB*
```

In the following example, the TRace command specifies that tracing is disabled for all SMC initiator processes and SMC subsystem subtasks.

```
TR OFF
```

In the following example, tracing is enabled for SMC initiator allocation and message handling processes for any job with jobname ABC.

```
TR JOBN=ABC ALLOC MSGHN
```

In the following example, tracing is enabled for the SMC subsystem command component.

```
TR SUBSYS CMD
```

TRace

In the following example, tracing is disabled for all SMC subsystem subtasks.

```
TR SUBSYS OFF
```

In the following example, tracing is disabled for all jobs whose job name begins with “PROD.”

```
TR OFF JOB=PROD*
```

TREQDef Command

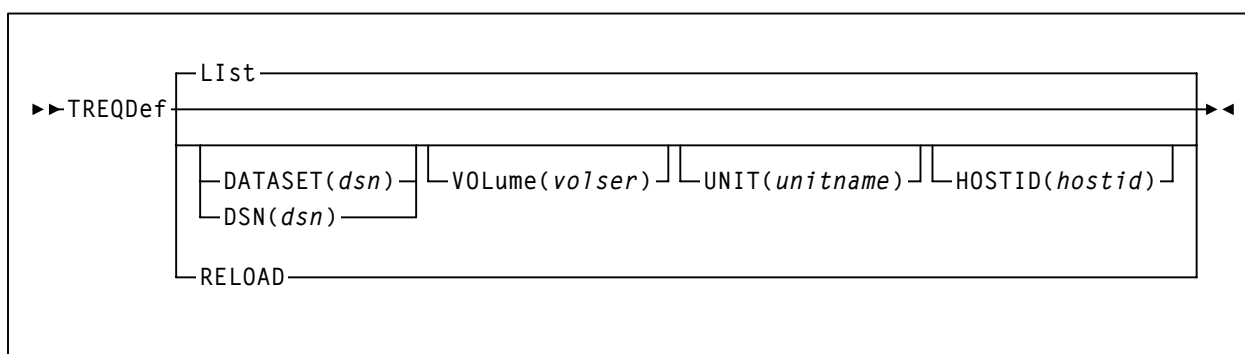
The TREQDEF command specifies and loads the definition data set containing your tape request (TAPEREQ) parameter statements.

This command may be issued from the SMCPARMS or SMCCMDS data set, or it may be issued by an operator.



Note: This command is new for SMC 6.1. Existing HSC TREQDEF control statements are not disabled, but are only processed for remote SMC 6.0 client systems. MVS/CSC 6.1 TREQDEF control statements are not processed.

Syntax



Command Name

TREQDef

initiates the TREQDef command.

Parameter Descriptions

List

lists information about the definition data set containing TAPEREQ control statements that are currently loaded. Information includes:

- data set name
- member name
- identifying string (if the data set contains an OPTION TITLE statement)
- date and time parameters were loaded

DATASET or DSN

specifies the name of the data set containing the TAPEREQ control statements to be processed and, optionally, an OPTion TITLE statement.

dsn

the data set name. This data set can be a fixed length 80-byte sequential data set, or a fixed length 80-byte member of a PDS. If the data set name includes a member name, you must enclose the *dsn* in quotes. For example:

```
DATASET( 'YOUR.PDS.DSN(MEMBER)' )
```

VOLume

specifies the volume serial number of the DASD volume on which the data set resides. This parameter is optional. Specify the VOLume parameter if the data set is not cataloged.

volser

the volume serial number for the definition data set.

UNIT

specifies the unit name where the definition data set is located. This parameter is optional. Specify the UNIT name if the data set is not cataloged.

unitname

the unit name. If the definition data set is not cataloged, and the *unitname* is omitted, a unit name of SYSALLDA is the default.

HOSTID

specifies the hostid from which to execute this control statement. This parameter is valid only for use in PARMLIB, to allow multiple systems to share a parmlib member containing multiple TAPEREQ control statement members.

hostid

the name of one or more hosts from which to execute this control statement. Multiple host names must be separated by commas.

RELOAD

reloads the currently loaded TAPEREQ control statements from the same data set. This parameter can be used after a TREQDEF DSN(*dsn*) command is issued, and changes may then be made to the contents of that data set.

Examples

The following examples illustrate the use of the TREQDEF command.

Load the TAPEREQ Parameters from YOUR.DSN(MEMBER)

```
TREQDEF DSN( 'YOUR.DSN(MEMBER)' )
```

UExit Command

User exits 1, 2, 4, 8, 9, 10, 11, 12, and 13 are invoked and managed by the SMC. The UExit command defines which load module is invoked for a specific user exit, and whether the user exit is enabled or disabled. Both HSC and MVS/CSC user exit formats are supported. The UExit command specifies the desired format.



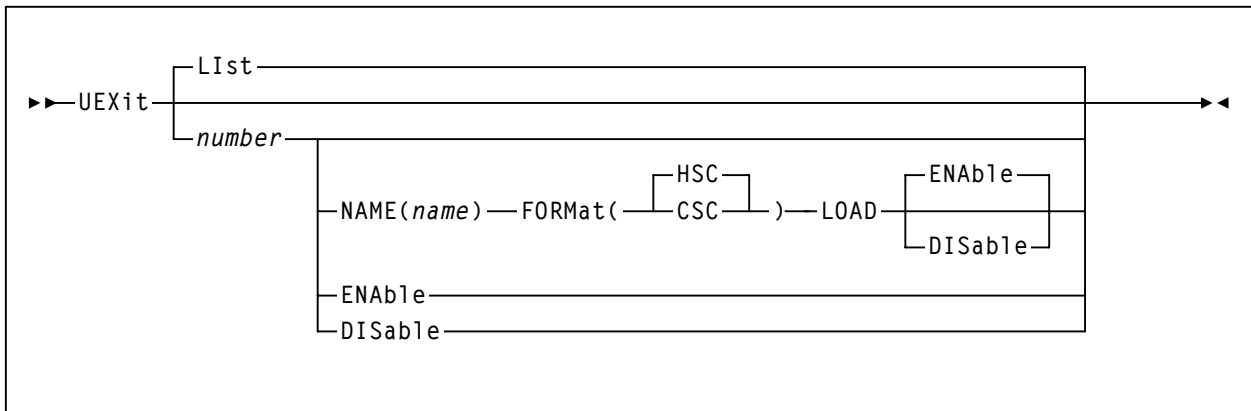
Notes:

- Use this command to load each user exit you wish to use. If a user exit is not loaded, it will **not** be called.
- All user exits are executed on the host where the SMC resides, regardless of where the library server resides.
- Only one format of a given user exit can be invoked, regardless of the number of libraries the SMC interacts with. The desired format (HSC or MVS/CSC) is specified using the FORMat parameter.
- HSC User exit 7 (SLSUX07) is no longer supported.
- These user exits must reside in a library accessible to the subsystem (SMC STEPLIB, JOBLIB, or your system's LINKLIB concatenation)
- Refer to the *NCS User Exit Guide* for information about each user exit.



Warning: Sun Microsystems recommends that you use the HSC user exit formats, as MVS/CSC user exit formats will not be supported in the next SMC release.

Syntax



Command Name

UExIt

Initiates the UExIt command.

Parameter Descriptions

LIst

optionally, displays status information for all user exits. This is the default if no parameters are specified.

number

optionally, specifies the user exit number. Valid values are 1, 2, 4, 8, 9, 10, 11, 12, and 13.

NAME

optionally, specifies the user exit's load module name

name

indicates the load module name (e.g., SLSUX01)

FORMat

optionally, specifies the format of user exit to be enabled or disabled.

HSC

indicates the HSC user exit format.

CSC

indicates the MVS/CSC user exit format.

LOAD

optionally, loads the specified user exit, making it available for use.



Notes:

- If a user exit is not loaded, it will **not** be called.
- A subsequent load of a module for the same user exit causes the currently active copy of the load module to be deleted when its use count reaches zero.

ENable

optionally, enables a user exit that was previously disabled due to a problem.

DISable

optionally, disables a user exit to allow for problem resolution.

Example

In the following example, the UExit command is used to load the HSC format (SLSUX01) of user exit 01.

```
UEXIT 01 NAME(SLSUX01) FORMAT(HSC) LOAD
```

SLSUX01 is loaded from the SMC STEPLIB, JOBLIB, or your system's linklib concatenation.

UNITAttr Command

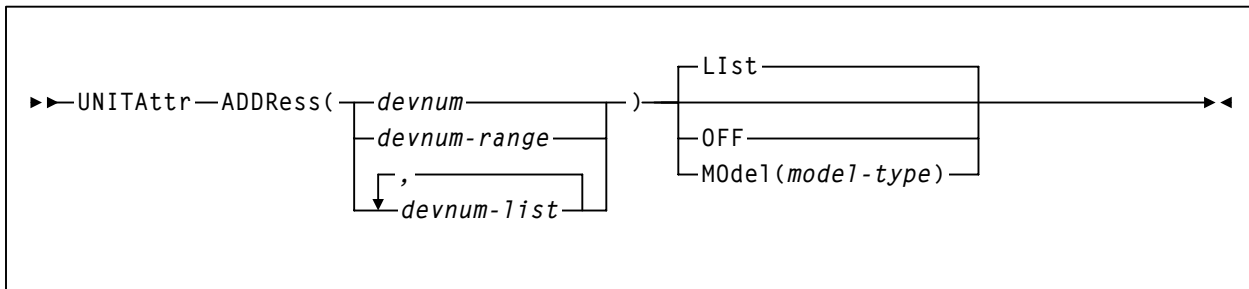
The SMC UNITAttr command specifies device addresses and allows the user to define the model types for nonlibrary drives. This command can also be used to set MODEL=IGNORE for device addresses not available for the host.



Notes:

- **This command is new for SMC 6.1. Existing HSC UNITATTR control statements are not disabled, but UNITATTRs for nonlibrary and MODEL(IGNORE) devices are only processed for remote SMC 6.0 client systems. HSC UNITATTR statements for library and virtual drives are not used in any HSC 6.1 processing.**
- SMC does not support a UNITDEF command. Each UNITATTR command is parsed and processed independently.
- HSC nonlibrary and MODEL=IGNORE UNITATTR statements are no longer returned to SMC on a configuration query. Therefore, if you use UNITATTRs to bypass devices for allocation or to define the device type of nonlibrary drives, you must define these UNITATTR commands to the SMC subsystem.

Syntax



Command Name

UNITAttr

initiates the UNITAttr command.

Parameter Descriptions

ADDRESS

specifies the device numbers to be processed by the UNITAttr command.

List

lists the UNITAttr model information for the device numbers specified by the ADDRESS parameter.

MOdel

specifies the model type of the transport to be assigned the device numbers specified by the ADDRESS parameter.

model-type

indicates the model type. See Table 17 on page 302 for a list of valid *model-type* values.

OFF

specifies that the model type for the device numbers specified by the ADDRESS parameter should be determined from the device UCB, or, for a device which was previously set to MODEL=IGNORE, that the MODEL information from the library server should be restored.

Example

In the following example, model 9840C devices outside of an NCS library are defined.

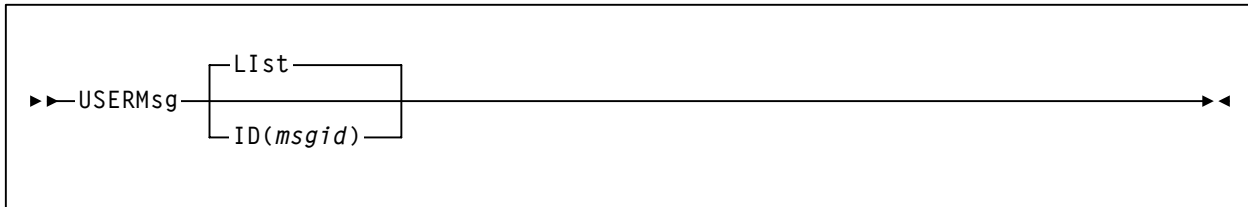
```
UNITATTR ADDR(2910,2911) MODEL(T9840C)
```

USERMsg

USERMsg Command

The USERMsg command allows you to specify additional message identifiers for messages to be intercepted and passed to the library subsystem's user exit 01. This command can also be used to list the message identifiers of those messages that have been defined using the USERMsg command.

Syntax



Command Name

USERMsg
initiates the USERMsg command.

Parameter Descriptions

LIst

optionally, lists the message identifiers in the customer-defined message table. This is the default if no parameters are specified.

ID

optionally, specifies a message to be added to the customer-defined message table. This message is passed to any active library subsystem user exit 01 (SLSUX01/SCSUX01).



Note: This parameter may **only** be specified in the SMCPARMS data set.

msgid

indicates the message identifier for the message to be added.

Example

In the following example, the USERMsg command is used to list message identifiers for messages included in the customer-defined message table.

```
USERMsg LI
```

Chapter 8. Recovery Procedures

Overview

This chapter describes recovery procedures used when the SMC, a library subsystem (HSC or MVS/CSC), or JES3 becomes inactive. Procedures for both JES2 and JES3 are included.

SMC Recovery Procedures (JES2)

This section describes recovery procedures for the following problem scenarios:

- Inactive SMC - Active library subsystem
- Active SMC - Inactive library subsystem
- Automating mount requests for inactive libraries
- Lost MVS mount requests for active libraries

Inactive SMC - Active Library Subsystem

When the SMC fails while a library subsystem remains active, the following functions are **not** performed:

- allocation processing
- automation of mount/dismount/swap messages

When this occurs, re-start the SMC.

Certain software products allow you to suspend processing that may require dynamic allocation. For example, if Data Facility Hierarchical Storage Manager (DFHSM) is installed on the local processor, you can issue commands to prevent this type of processing without stopping DFHSM.

Common allocations can be postponed by holding the job queue or purging all initiators. Refer to the appropriate IBM publication for more information about JES2 operator commands.

If the SMC MOUNTDef AUTOPendmount (ON) option was specified, outstanding mount messages are re-driven.

Active SMC - Inactive Library Subsystem

When a library subsystem fails or is terminated, volumes and drives owned by that subsystem become unknown to SMC. The following functions are **not** performed:

- volume lookup for allocation influencing
- automated mount processing

When this occurs, re-start the library subsystem. The SMC automatically re-establishes communication with the library and automates any outstanding mounts, regardless of the SMC MOUNTDef AUTOPendmount setting. See “Automating Mount Requests for Inactive Libraries” below for more information.

Certain software products allow you to suspend processing that may require dynamic allocation. For example, if Data Facility Hierarchical Storage Manager (DFHSM) is installed on the local processor, you can issue commands to prevent this type of processing without stopping DFHSM.

Common allocations can be postponed by holding the job queue or purging all initiators. Refer to the appropriate IBM publication for more information about JES2 operator commands.



Note: You can provide a backup path to a remote library that is automatically activated when the local HSC is discovered to be inactive.

Automating Mount Requests for Inactive Libraries

MVS mount requests for drives owned by inactive library subsystems are automatically redriven when the corresponding HSC or MVS/CSC library subsystems are activated.

Lost MVS Mount Requests for Active Libraries

An MVS mount request may be lost when an LMU error occurs. Use this procedure if you suspect lost mounts.

1. Issue the following MVS command on the system requesting the mount to determine if any drives have a mount request pending:

```
D R,L
```

2. Issue the following MVS command on the same system to determine which VOLSER to mount:

```
D U,,,uuuu,1
```

3. If the drive is defined to an HSC library, issue the HSC Mount command for the volume on the MVS system on which the HSC is active.

SMC Recovery Procedures (JES3)

This section describes recovery procedures for the following problem scenarios:

- Inactive SMC - Active library subsystem
- Active SMC - Inactive library subsystem
- Inactive JES3 on a local processor
- Inactive JES3 on a global processor
- Automating mount requests for inactive libraries
- Lost JES3 mount requests for active libraries
- Lost MVS mount requests for active libraries

Inactive SMC - Active Library Subsystem

When the SMC fails while a library subsystem (HSC and/or MVS/CSC) remains active, the following functions are **not** performed:

- allocation processing
- automation of mount/dismount/swap messages

When this occurs, re-start the SMC.

Certain software products allow you to suspend processing that may require dynamic allocation. For example, if Data Facility Hierarchical Storage Manager (DFHSM) is installed on the local processor, you can issue commands to prevent this type of processing without stopping DFHSM.

To postpone the C/I process for batch jobs while SMC is inactive, use the following modify command:

```
*F X,D=POSTSCAN,MC=00
```

After the SMC is re-started, restore the maximum count to its original value, xx:

```
*F X,D=POSTSCAN,MC=xx
```

If the HSC and MVS/CSC were started with the AMPND startup parameter, outstanding mount messages are re-driven when SMC is re-started and an MVS allocation or mount event occurs. Alternatively, the SMC RESYNChronize command may be issued to redrive pending mounts under these circumstances.

Active SMC - Inactive Library Subsystem

When a library subsystem fails or is terminated, volumes and drives owned by that subsystem become unknown to SMC. The following functions are **not** performed:

- volume lookup for allocation influencing
- automated mount processing

When this occurs, re-start the library subsystem. The SMC automatically re-establishes communication with the library and automates any outstanding mounts, regardless of the SMC MOUNTDef AUTOPendmount setting. See “Automating Mount Requests for Inactive Libraries” on page 200 for more information.

Certain software products allow you to suspend processing that may require dynamic allocation. For example, if Data Facility Hierarchical Storage Manager (DFHSM) is installed on the local processor, you can issue commands to prevent this type of processing without stopping DFHSM.



Note: You can provide a backup path to a remote library that is automatically activated when the local HSC is discovered to be inactive. See Chapter 1 for more information.

Inactive JES3 on a Local Processor

When JES3 fails on a local processor, jobs executing at the time that do not require JES3 services continue to execute. Drive exclusion still occurs for dynamic allocation requests.

To recover, restart JES3 (LOCAL start).

The SMC continues processing and requires no recovery.

Inactive JES3 on a Global Processor

When JES3 fails on a global processor, jobs executing at the time that do not require JES3 services continue to execute. Drive exclusion still occurs for dynamic allocation requests.

To recover, restart JES3 or invoke Dynamic System Interchange (DSI) processing.

You can use DSI to reassign the JES3 global function to a JES3 local processor when the global processor becomes inactive or requires maintenance. One of the JES3 local processors becomes the new JES3 global processor. By reassigning the global function to a local processor, the JES3 environment continues processing. The SMC continues processing and requires no recovery.

Refer to the *HSC System Programmer's Guide* or *MVS/CSC System Programmer's Guide* for more information about cross host recovery.

Automating Mount Requests for Inactive Libraries

MVS mount requests for drives owned by inactive library subsystems are automatically redriven when the corresponding HSC or MVS/CSC library subsystems are activated.

Lost JES3 Mount Requests for Active Libraries

A JES3 mount request may be lost when an LMU error occurs. Use this procedure if you suspect lost mounts.

1. Issue the following JES3 command to determine which jobs are awaiting a volume mount:

```
*I,S,V
```

2. Issue the following JES3 command to determine how long a job has been waiting:

```
*I,J=nnnn,W
```

3. Issue the following JES3 command to determine the volume and drive the job is waiting on:

```
*CALL,DISPLAY,J=nnnn
```

4. If the drive with a pending mount is defined to an HSC library, issue the HSC Mount command for the volume on the MVS system on which the HSC is active.

Lost MVS Mount Requests for Active Libraries

An MVS mount request may be lost when an LMU error occurs. Use this procedure if you suspect lost mounts.

1. Issue the following MVS command on the system requesting the mount to determine if any drives have a mount request pending:

```
D R,L
```

2. Issue the following MVS command on the same system to determine which VOLSER to mount:

```
D U,,,uuuu,1
```

3. If the drive is defined to an HSC library, issue the HSC Mount command for the volume on the MVS system on which the HSC is active.

Chapter 9. SMC Utilities

Overview

This chapter provides information for the following SMC utilities:

- Tape Management Extract utility, used to support scratch synchronization between the SMC client host and the HSC CDS.
- JES3 Configuration Report utility, used to generate JES3 configuration data which can be used to help verify JES3 initialization deck behavior.

SMC Utility Return Codes and Messages

SMC utilities may return the following return codes:

- A return code of 0 is returned when the utility program completes successfully with no errors or warnings.
- A return code of 4 is returned when an inconsistency is detected.
- A return code of 8 is returned when an error that prevents the utility from completing is detected.

For a listing of SMC messages that may be returned by SMC utilities, see page 274. These messages are identified by the SMCU prefix.

Tape Management Extract Utility

The SMC utility SMCUDBX supports scratch synchronization between the SMC client host and the HSC CDS. Using common tape extract modules (SLUDRCA1, SLUDRTL, SLUDRRMM, and SLUDRZAR) with HSC and MVS/CSC, the SMC accesses the client tape management system to produce an extract file that can be read as input by the HSC scratch tape conversion module SLUCONDB. This process is illustrated in the following figure:

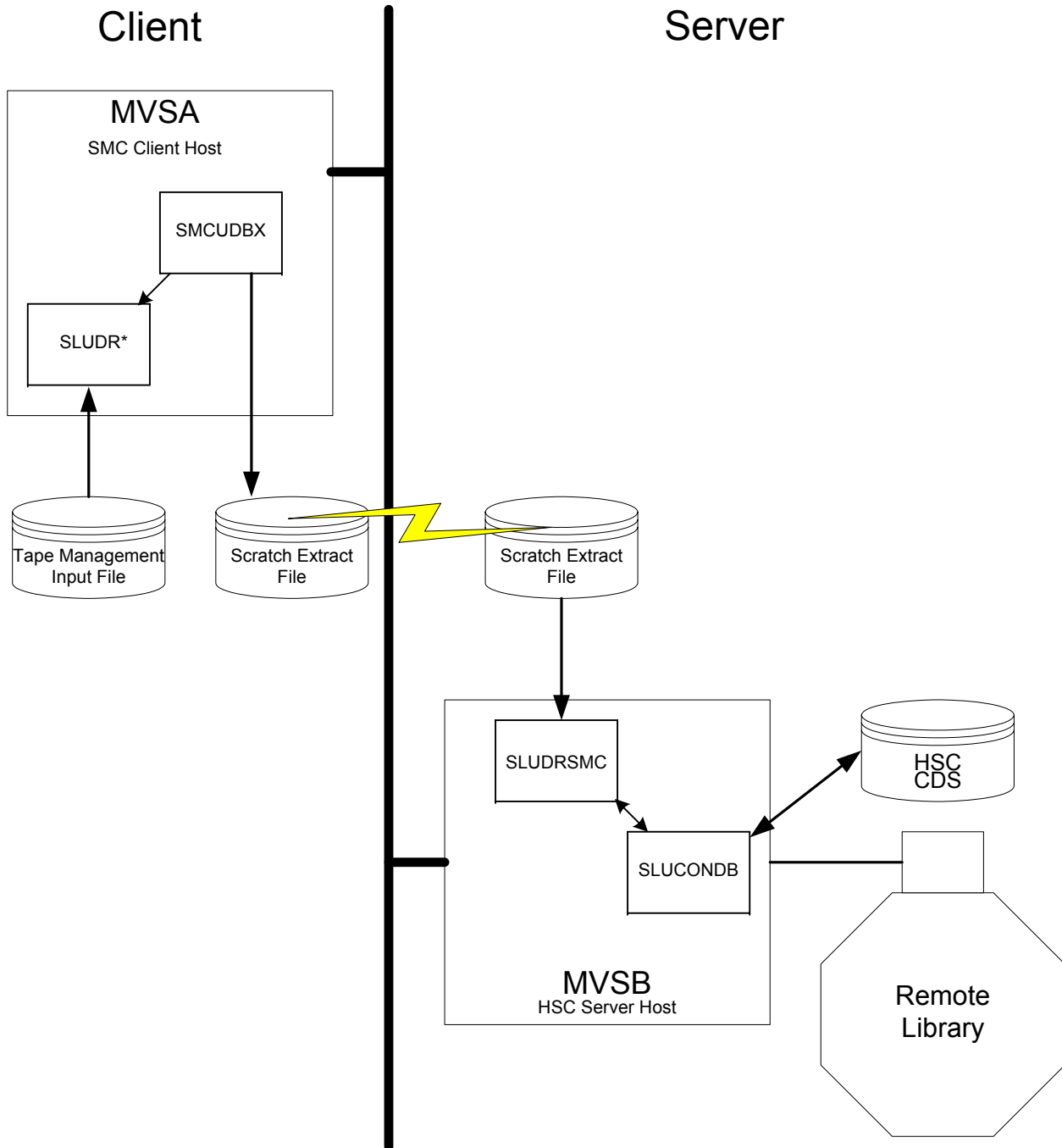


Figure 16. Scratch Synchronization Between SMC Client host and HSC CDS

If the client and server share a tape management system, the HSC utility SLUCONDDB may be run directly using the common tape management system data base as input.

If, however, the client host has a tape management system that is not accessible to the HSC host, the SMC utility SMCUDBX can be used to extract scratch volumes from the tape management system using label and date parameters. The SMCUDBX output can then be used as input on the HSC host to the SLUCONDDB utility. The SMC process supports timing synchronization by comparing the GMT time of the SMCUDBX run with the last select time of the HSC CDS volume record. If the volume was selected after the SMC scratch run, it is not eligible for scratch by SLUCONDDB.

Running the SMC Scratch Extract Utility

You can run the SMC scratch extract utility regardless of whether the SMC is executing on the host.

SMCUDBX processes the CA-1 Tape Management Catalog (TMC), the CA-DYNAM/TLMS Volume Master File (VMF), the DFSMSrmm report extract file, or the Zara database, and selects the volume serial numbers for processing based on information specified on the PARM parameter of the JCL EXEC statement.

For CA-1, CA-DYNAM/TLMS, and DFSMSrmm, SMCUDBX calls the appropriate tape management system database READ routine. For Zara, SMCUDBX invokes the SLUDRZAR module, which in turn invokes an application programming interface (API) to read Zara's database. The data returned from these routines is used to format the SMC scratch extract file.

The following list describes the READ routines that are called for the CA-1, CA-DYNAM/TLMS, DFSMSrmm, and Zara tape management systems.

SLUDRCA1

Called to read the CA-1 TMC when CA-1 is defined as the tape management system. This routine uses CA-1 macros to map the layout of the TMC.

SLUDRTLTM

Called to read the CA-DYNAM/TLMS VMF when CA-DYNAM/TLMS is defined as the tape management system. This routine uses a CA-DYNAM/TLMS COPY member to map the layout of the VMF.

SLUDRRMM

Called to read the DFSMSrmm report extract file when DFSMSrmm is defined as the tape management system. This routine uses the DFSMSrmm EDGRVEXT macro to map the layout of the report extract file.

SLUDRZAR

Called to invoke an API to read Zara's database when Zara is defined as the tape management system.



Note: Both source and load module versions of the SLUDR* tape management extract routines are provided as part of the HSC product installation. Source

modules are provided in the HSC SAMPLIB file and load modules are provided in the HSC SLULINK distribution library.

If your installation uses a different tape management system, you can develop a program modeled on one of the supplied examples SLUDRCA1, SLUDRTL, SLUDRRMM, or SLUDRZAR, or you can write your own program to produce an extract file in the following format:

Position	Field	Format
1	Scratch volume	CL6
7	GMT of run	XL8
15	Unused	CL2

The time filed in the SMC scratch extract file is a character representation of the first four bytes of the output of the MVS STCK macro. For example, if the STCK macro produces a result of X'B0912345 6789ABCD', the GMT field of the SMC extract contains the character value C'B0912345'.

SMCUDBX, SLUDRCA1, SLUDRTL, SLUDRRMM, and SLUDRZAR are provided as load modules. You can use the current versions of these load modules with CA-DYNAM/TLMS Release 5.4 and above, CA-1 Release 5.0 and above, DFSMSrmm 1.1, and Zara 1.2. The HSC SAMPLIB file on the base installation tape contains the sample source code.



Notes:

- If there are local modifications to your tape management system, you must reassemble the associated READ routine.
- If your tape management system is CA-1 Release 4.9 or below, you must modify and reassemble the SLUDRCA1 routine. See “Using SMCUDBX with CA-DYNAM/TLMS Release 5.3 or Below” for information about modifying and reassembling this routine.
- If your tape management system is CA-DYNAM/TLMS Release 5.3 or below, you must reassemble the SLUDRTL routine. See “Using SMCUDBX with CA-DYNAM/TLMS Release 5.3 or Below” for information about reassembling this routine.
- If your tape management system is Zara, the SMCUDBX utility must be able to access the data set that contains the Zara API module (ZARAAPI1). You can either store this module in the LINKLIST, or include a JOBLIB or STEPLIB DD statement in the SMCUDBX JCL that points to the library containing the module.
- Any routine that you modify and reassemble must be re-linked as non-reentrant (NORENT parameter) with AMODE=24 and RMODE=24.

Using SMCUDBX with CA-1 Release 4.9 or Below

To use SMCUDBX with CA-1 Release 4.9 or below, you must modify and reassemble the SLUDRCA1 routine. The CA-1 MACLIB containing the TMRECORD MACRO must be accessible during the assembly.

Perform the following steps for CA-1 Release 4.9:

1. Delete the asterisk in column 1 of the following line:

```
TMRECORD
```

2. Add an asterisk in column 1 of the following line:

```
TM*TMREC
```

3. Reassemble the SLUDRCA1 routine.

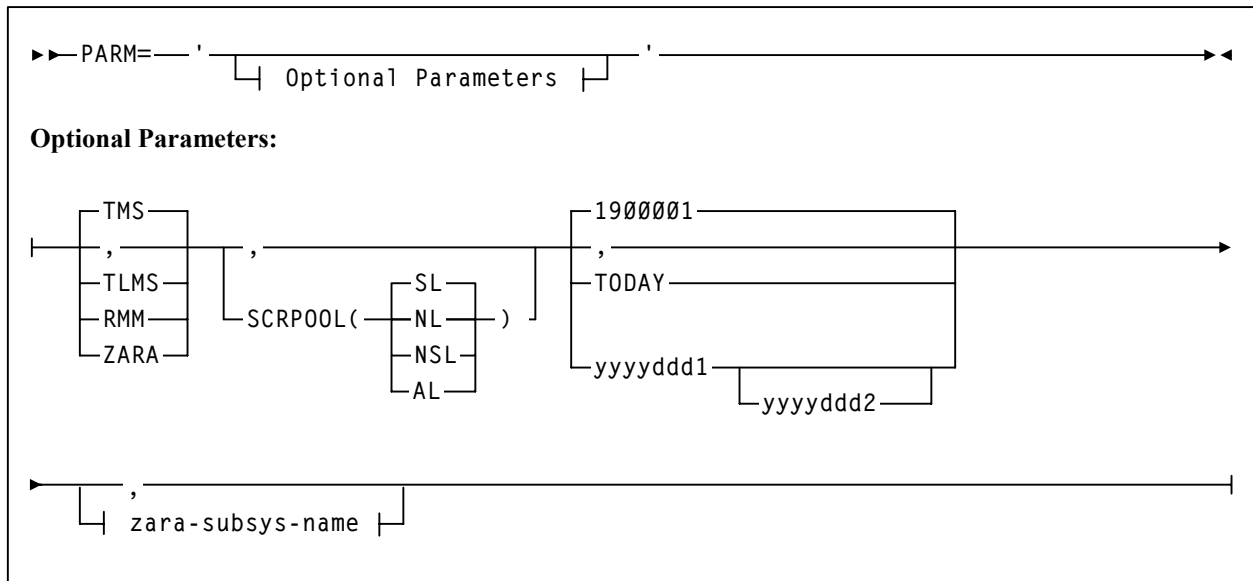
Using SMCUDBX with CA-DYNAM/TLMS Release 5.3 or Below

Perform the following steps to use SMCUDBX with CA-DYNAM/TLMS Release 5.3 or below:

1. Verify that the CA-DYNAM/TLMS Release 5.3 MACLIB containing the VMFBASE MACRO is accessible for the re-assembly of the SLUDRTLTM routine.
2. Reassemble the SLUDRTLTM routine; no modifications to the source code are required.

Specifying Values for the PARM Parameter

You can specify the following values for the PARM parameter on the JCL EXEC statement when running the Scratch Extraction utility.



The keywords for the PARM parameter are positional. If the PARM parameter is not specified, default values are used.

Parameter Descriptions

This section describes the values you can specify for the PARM parameter on the JCL EXEC statement.

TMS

Specifies the CA-1 tape management system.

This is the default value.

TLMS

Specifies the CA-DYNAM/TLMS tape management system.

RMM

Specifies the DFSMSrmm tape management system.

ZARA

Specifies the Zara tape management system.

SCRPOOL

Specifies the label type for the scratch volume selection. Acceptable values are:

SL specifies standard label. This is the default value.

NL specifies nonlabeled.

AL specifies ANSI label.

NSL specifies nonstandard label.

1900001

Specifies January 1, 1900 as the date. This is the default date.



Note: You must specify a four-year format for year 2000 dates. For example, specify 2000001 for January 1, 2000.

TODAY

Specifies the current system date.

yyyyddd1

Specifies a single date in four-year format. This date becomes the *from* date. The *to* date is the current system date (which is not specified). All dates must be specified in Julian notation (year-day).

yyyyddd1-yyyddd2

Specifies a range of dates in which the volumes became scratch. Neither date specified can be greater than the current system date, and the first date cannot be greater than the second date.



Note: A comma (,) or no keyword (blank) results in the system default date of January 1, 1900 (1900001).

MIXED

Specifies to print all report headings and messages in mixed-case characters (uppercase and lowercase).



Note: A comma (,) or no keyword (blank) results in headings and messages being printed in uppercase characters.

zara-subsys-name

Specifies the subsystem name for the Zara tape management system, where *zara-subsys-name* is the four-character name. The default subsystem name is ZARA.

Sample JCL

The following definitions apply to the JCL used for the SMC Scratch Extract utility.

DBTMS

Input to the Scratch Extract utility in the form of the CA-1 TMS, the CA-DYNAM/TLMS VMS, or DFSMSrmm report extract file. This DD statement is not required for Zara.

STDOUT

Output messages from the Scratch Extraction utility. This DD statement is required.

DBEXTFIL

Output file from the Scratch Extract Utility. If a DCB LRECL is specified, it must specify a 16-byte value.

If Zara is the tape management system, the Zara API module must either reside in the MVS LINKLIST, or you must include one of the following JCL statements to access the module.

```
//STEPLIB DD DISP=SHR, DSN=your.zaraapi1.library
           DISP=SHR, DSN=your.tmsextract.library
           or
//JOB LIB DD DISP=SHR, DSN=your.zaraapi1.library
```

Figure 17 shows sample JCL used to invoke the Scratch Extraction utility to process the CA-DYNAM/TLMS VMF for all tapes scratched in 2003.

```
//yourstd JOB card
//STEP0 EXEC PGM=SMCUBX,PARM='TLMS,,2003001-2003365'
//STEPLIB DD DISP=SHR,DSN=your.SMCLINK
//          DD DISP=SHR,DSN=your.SLUDRxxx.LINKLIB
//DBTMS DD DISP=SHR,DSN=your.tlms.database
//DBEXTFIL DD DISP=(NEW,KEEP),DSN=scratch.extract.file,
//          SPACE=(TRK,(5,1)),UNIT=SYSDA
//STDOUT DD SYSOUT=*
/*
```

Figure 17. Sample JCL for Scratch Extraction Utility

Sample Output

Output resulting from the execution of the Scratch Extraction utility includes:

- Messages associated with error conditions resulting from an unsuccessful attempt to execute scratch extraction processing.
- Messages indicating errors or actions occurring during processing.
- An output data set containing Scratch Update utility control statements.

Figure 18 shows sample output from the SMCUDBX utility.

```
SMCUDBX 6.1.0      SMC TMS DB SCRATCH EXTRACT      Page 0001
TIME 15:26:41                                           Date 2003-08-14

Total records extracted for scratch volumes = 977
```

Figure 18. Scratch Extraction Utility Sample Output-Messages

JES3 Configuration Report Utility

The SMC utility SMCUPJS generates JES3 configuration data which can be used to help verify that the JES3 initialization deck defines the intended devices and esoterics. This data is derived from internal SMC JES3 configuration control structures. These control structures are built during SMC/JES3 initialization through analysis of the SETNAME and SETUNIT statements in the user's JES3 initialization deck. For this reason, the SMC must be active on the system on which the report is run.

The following reports are generated from the SMC JES3 configuration control structures:

- A list of XTYPE numbers in hexadecimal order with their corresponding XTYPE names.
- A list of XTYPEs in hexadecimal order with all esoterics in which the XTYPE appears.
- A list of esoterics in alphabetical order with all XTYPEs that each contains and the total number of devices in the esoteric. This report also lists any discrepancies between JES3 and HCD esoterics.
- A list of XTYPEs in hexadecimal order with all devices in that XTYPE, along with the location and recording technique of the devices in the XTYPE.
- A list of devices in hexadecimal order and the XTYPE to which each belongs, along with the location and recording technique of the device.

Sample JCL

The following JCL sample executes the SMCUPJS utility to produce the five individual reports listed above.

```
//yourstd JOB card
//STEP EXEC PGM=SMCUPJS
//STEPLIB DD DSN=yoursmc.LINKLIB,DISP=SHR
//STDOUT DD DSN=yourstd.printout.dataset,DISP=SHR
```

Figure 19. JCL to Produce the JES3 Configuration Report



Note: *yourstd.printout.dataset* should be allocated with LRECL=80.

Sample Reports

In the following report fragments, XTYPE 27 is carried through all five reports to illustrate how the reports are related. Lines pertaining to XTYPE 27 are underlined in each report.

XTYPE Number to XTYPE Name (EXTON)

Below are fragments of the XTYPE Number to XTYPE Name report. This mapping is useful when reading other reports that reference the XTYPE number instead of the name. The number in parenthesis is the XTYPE number, followed by the XTYPE name.

```
SMCUPJS (6.1.0)      SMC JES3 CONFIGURATION REPORT      PAGE 0001
TIME 15:03:42      XTYPE NUMBER TO XTYPE NAME (EXTON)  DATE 2003-01-09

XTYPE(01) DEV01D5
XTYPE(02) DEV2504
XTYPE(03) DEV2507
XTYPE(04) DEV2506
XTYPE(05) DEV01D6
XTYPE(06) DEV01DA
XTYPE(07) DEV01DD
XTYPE(08) DEV01DF
XTYPE(09) DEV01D0
...
XTYPE(27) DEV0AA0
XTYPE(28) DEV0A20
...
```

XTYPE Number to Esoteric (EXTOE)

Below are fragments of the XTYPE Number to Esoteric report, which lists each XTYPE in hexadecimal order, along with all esoterics that contain that XTYPE. Both the XTYPE number (in parenthesis) and name are displayed.

```
SMCUPJS (6.1.0)      SMC JES3 CONFIGURATION REPORT      PAGE 0001
TIME 15:03:42      XTYPE NUMBER TO ESOTERIC (EXTOE)   DATE 2003-01-09

XTYPE(01) DEV01D5  appears in 11 ESOTERICs
  CART  EAGLE  3590-1  HVALL  HSCV3590 MCZZZZ0  HVZZZZ01 MCZZ9840
  HV994035 HRACS1L1 HV994010
XTYPE(02) DEV2504  appears in 10 ESOTERICs
  CART
...
XTYPE(27) DEV0AA0  appears in 7 ESOTERICs
  SYS3480R  CART  3480  TL3480  SLIB  SACS0  S04480
```

Esoteric to XTYPE (EETOX)

Below are fragments of the Esoteric to XTYPE report, which lists each esoteric in alphabetical order, along with all XTYPES in that esoteric in hexadecimal order. The XTYPE number can be mapped to its corresponding XTYPE name using the XTYPE Name to XTYPE Number report described above.

```
SMCUPJS (6.1.0)          SMC JES3 CONFIGURATION SUPPORT          PAGE 0001
TIME 15:03:42          ESOTERIC TO XTYPE NUMBER (EETOX)       DATE 2003-01-09

  ESOTERIC AUSALL      contains 4 XTYPES and 12 devices
    2C 2D 3D 85
  ESOTERIC AUSREDW    contains 1 XTYPES and 2 devices
    2D
  ...
  ESOTERIC CART       contains 84 XTYPES and 433 devices
    01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 10 11 21 22 23 24 25 26 27
    28 29 2A 2E 2F 30 31 32 33 34 35 36 37 38 39 3A 3B 3C 3D 3E 3F 40 41 42
    43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54 55 56 57 58 59 5A
    5B 5C 5D 5E 5F 60 61 62 63 64 65 66
  ...
  ESOTERIC SACS0      contains 9 XTYPES and 22 devices
    10 11 27 42 43 44 45 5E 5F
SMCU0005 *** WARNING: HCD esoteric does not match JES3 esoteric
JES3 esoteric drives not in HCD:
  0AA3
HCD esoteric drives not in JES3:
  (NONE)
  ...
  ESOTERIC SLIB       contains 13 XTYPES and 34 devices
    10 11 23 24 27 42 43 44 45 46 47 5E 5F
  ...
  ESOTERIC SYS3480R   contains 102 XTYPES and 1511 devices
    21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F 30 31 32 33 34 35 36 37 38
    39 3A 3B 3C 3D 3E 3F 40 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50
    51 52 53 54 55 56 57 58 59 5A 5B 5C 5D 5E 5F 60 61 62 63 64 65 66 67 68
    69 6A 6B 6C 6D 6E 6F 70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E 7F 80
    81 82 83 84 85 86
  ...
  ESOTERIC S04480     contains 1 XTYPES and 4 devices
    27
  ...
  ESOTERIC TL3480     contains 5 XTYPES and 48 devices
    25 26 27 28 29
  ...
  ESOTERIC 3480       contains 14 XTYPES and 132 devices
    21 22 23 24 25 26 27 28 29 83 84 85 86
  ...
```

XTYPE to Device Number (EXTOD)

Below are fragments of the XTYPE to Device Number report, which lists each XTYPE in hexadecimal order along with its devices. For each XTYPE number the following information is displayed:

- XTYPE number
- XTYPE name
- number of devices in the XTYPE
- associated library subsystem
- device location
- device recording technique.

The device location is one of the following:

- in a library, in which case "*libraryname* LSM AA:LL" is displayed, where *libraryname* is the name of the library containing the HSC where the nonlibrary device is defined via the NONLIB esoteric or UNITATTR.
- in a VTSS, in which case "*libraryname* VTSS (*nnnnnnnn*)" is displayed
- defined with an SMC UNITATTR command, in which case "nonlib" is displayed
- neither in the library nor defined with an SMC UNITATTR command, in which case "not lib or nonlib" is displayed

```
SMCUPJS (6.1.0)          SMC JES3 CONFIGURATION REPORT          PAGE 0001
TIME 15:03:42          XTYPE TO DEVICE NUMBER (EXTOD)        DATE 2003-01-09

  XTYPE(01) DEV01D5  contains 1 DEVICES  not lib or nonlib, rectech STK1RA35
    01D5
  XTYPE(02) DEV2504  contains 1 DEVICES  not lib or nonlib, rectech STK1RA35
    2505
  ...
  XTYPE(0F) DEV2801  contains 1 DEVICES  nonlib, rectech STK1RA35
    2801
  ...
  XTYPE(27) DEV0AA0  contains 4 DEVICES  HSCQ LSM 00:00, rectech 18TRACK
    0AA0 0AA1 0AA2 0AA3
  ...
  XTYPE(48) DEV9000  contains 64 DEVICES  HSCQ VTSS SVTSS1
    9000 9001 9002 9003 9004 9005 9006 9007 9008 9009 900A 900B 900C 900D
    900E 900F 9010 9011 9012 9013 9014 9015 9016 9017 9018 9019 901A 901B
    901C 901D 901E 901F 9020 9021 9022 9023 9024 9025 9026 9027 9028 9029
    902A 902B 902C 902D 902E 902F 9030 9031 9032 9033 9034 9035 9036 9037
    9038 9039 903A 903B 903C 903D 903E 903F
  ...
```

Device Number to XTYPE (EDTOX)

Below are fragments of the Device Number to XTYPE report, which lists each device in hexadecimal order and the XTYPE to which it belongs. For each device the following is displayed:

- associated library subsystem
- device location
- device recording technique.

The device location and recording technique are displayed as in the XTYPE to Device Number report described above.

```
SMCUPJS (6.1.0)          SMC JES3 CONFIGURATION REPORT          PAGE 0001
TIME 15:03:42          DEVICE TO XTYPE NUMBER (EDTOX)        DATE 2003-01-09

  DEVICE/XTYPE - 0120/3C  not lib or nonlib, rectech 36ATRACK
  DEVICE/XTYPE - 0121/3C  not lib or nonlib, rectech 36ATRACK
  ...
  DEVICE/XTYPE - 0AA0/27  HSCQ LSM 00:00, rectech 18TRACK
  DEVICE/XTYPE - 0AA1/27  HSCQ LSM 00:00, rectech 18TRACK
  DEVICE/XTYPE - 0AA2/27  HSCQ LSM 00:00, rectech 18TRACK
  DEVICE/XTYPE - 0AA3/27  HSCQ LSM 00:00, rectech 18TRACK
  ...
```


Chapter 10. SMC Messages

Overview

This chapter provides information about SMC messages. This information is provided to help system programmers and operators:

- initialize the SMC
- monitor SMC activity
- diagnose and correct SMC problems

See Chapter 11, “StorageTek HTTP Server Messages” for information about messages issued by the StorageTek HTTP Server for OS/390 and z/OS.

Message Format

Messages are displayed on the console in the following format:

SMCnnnn message-text

where:

- *SMC* identifies the Storage Management Component (SMC).
- *nnnn* is the four-character message number.
- *message-text* is the actual text displayed on the job log or system log.

Message Descriptions

This chapter provides a description for each SMC message. In addition to the message number and message text, this description includes the following:

Message Level

The message level represents a message category. Using the MSGDEF or MSGJOB operator command, the message level is specified in order to control which categories of messages are issued. See “MSGDef Command” on page 151 for more information.

Explanation

The explanation describes the message.

System Action

The system action describes how the SMC reacts when a message-triggering event occurs.

User Response

The user response describes how the user should respond to the message. In many cases, no response is required.

Variable Definitions

Italicized text indicates variable data that is replaced by actual values when messages are issued. Message specific variable data is symbolized as follows:

Table 9. Variable Data Definitions

Variable Data	Definition
<i>AA</i>	ACSid
<i>n</i>	decimal value
<i>X</i>	hexadecimal value
various letters (<i>C, N, K</i> , etc.)	variable information (character data)
numbers (<i>1, 2</i> , etc.) (combined with letters)	related variable information i.e., commands <i>CCCCCCCC1</i> and <i>CCCCCCCC2</i>
{ }	multiple choices
[]	optional field (may not appear in message)

SMC System Message Listing

The following SMC messages are listed numerically.

- SMC0001** SMC subsystem initializing
- Message Level:** 0
- Explanation:** The MVS start command was entered for the SMC, and the SMC subsystem initialization process has begun.
- System Action:** None.
- User Response:** None.
- SMC0002** *CCCCCCCCCCCCCCCC* failed; return code=*XXXX1*, reason code=*XXXX2*
- Message Level:** 0
- Explanation:** MVS facility or macro *CCCCCCCCCCCCCCCC* completed with the specified nonzero return code *XXXX1* and reason code *XXXX2*.
- System Action:** Depending upon the type of error, initiation/termination may try to continue. If the MVS facility is listed as *Requested SDUMP*, the error occurred during the TRACE SNAP process, and processing will continue without producing the requested SDUMP.
- User Response:** Look for IBM related messages in the SYSLOG or job log, and refer to IBM documentation for the explanation.
- SMC0003** SMC subsystem SSSS terminating
- Message Level:** 0
- Explanation:** The MVS stop command was entered for the SMC, and the SMC subsystem termination process has begun.
- System Action:** None.
- User Response:** None.
- SMC0004** MVS release is down-level
- Message Level:** 0
- Explanation:** An attempt was made to initialize the SMC on an MVS system that does not support the necessary services required by this version of SMC.
- System Action:** The SMC subsystem terminates.
- User Response:** Upgrade MVS to the required release level.

SMC0005 - SMC0008

SMC0005 Invalid command CCCCCCCC [at line nnnn of SMCCMDS|SMCPARMS]

Message Level: 0

Explanation: An undefined command, CCCCCCCC, was encountered by the SMC.

System Action: Processing continues. The command is ignored.

User Response: Ensure that the syntax in the command data set is correct, or enter the corrected command.

SMC0006 SMC subsystem not dynamic

Message Level: 0

Explanation: The SMC was defined as a nondynamic subsystem using the positional form of the IEFSSNxx parmlib member. The SMC must run as a dynamic subsystem.

System Action: The SMC subsystem terminates.

User Response: Use the keyword format of the subsystem definition in the IEFSSNxx parmlib member to define the SMC subsystem, or remove the SMC subsystem from the IEFSSNxx parmlib member.

SMC0007 SMCCVT incompatible with previous version; defaulting to COLD start

Message Level: 4

Explanation: During initialization, the SMC subsystem detected that the prior SMC subsystem of the same name was an incompatible version. The COLD start parameter was not specified.

System Action: Initialization continues, but in COLD start mode (the SMC subsystem CVT is rebuilt).

User Response: None.

SMC0008 Not running from an authorized library; SMC subsystem terminating

Message Level: 0

Explanation: The SMC subsystem initialization module, SMCBINT, was executed from an unauthorized library.

System Action: The SMC subsystem terminates.

User Response: Ensure that the SMC link library is APF authorized.

SMC0009 Job *JJJJJJJJ* JOB*nnnn* active at termination

Message Level: 4

Explanation: The SMC subsystem received the MVS stop ('P') command, but there is an active job, *JJJJJJJJ*, in tape allocation. The SMC0012 message was issued previously, but the job allocation has not completed after waiting one minute.

System Action: Termination continues. No allocation influencing is performed for JOB*nnnn*.

User Response: None.

SMC0010 Unable to acquire storage for *CCCCCCCC*; return code=*XXXX*

Message Level: 0

Explanation: During initialization, the SMC subsystem could not acquire sufficient storage for the specified dynamic control block or module, *CCCCCCCC*.

System Action: The SMC subsystem terminates.

User Response: Ensure that there is sufficient CSA storage available. Refer to IBM documentation for the explanation of return code *XXXX*.

SMC0011 Load failed for module *MMMMMMMM*

Message Level: 0

Explanation: The SMC subsystem could not load the required module *MMMMMMMM*.

System Action: The SMC subsystem terminates.

User Response: Ensure that the SMC startup procedure has access to all SMC distributed load libraries in its steplib concatenation.

SMC0012 Termination waiting for job *JJJJJJJJ* JOB*nnnn* [in allocation|in message handling]

Message Level: 0

Explanation: The SMC subsystem received the MVS stop command, but there is an active job *JJJJJJJJ* in tape allocation or message handling.

System Action: The SMC waits for 30 seconds or until all active processes are complete.

User Response: Ensure that there are no jobs performing tape allocation or message handling when the SMC is terminated. Respond to any MVS allocation recovery messages.

SMC0013 TRACE settings:
CCCC....CCCC

Message Level: 0

Explanation: The TRACE command was specified with the LIST keyword. The SMC0013 multiline message lists the current settings for the SMC subsystem. Refer to the TRACE command for parameter descriptions.

System Action: None.

User Response: None.

SMC0014 Unmatched [quote|or invalid parenthesis] detected; command ignored
[at line *nnnn* of SMCCMDS|SMCPARMS]

Message Level: 0

Explanation: The SMC encountered a command containing an unterminated quoted string, or invalid or unmatched parenthesis.

System Action: Processing continues. The command is ignored.

User Response: Ensure that the syntax in the command data set is correct, or enter the corrected command.

SMC0015 Invalid keyword *KKKKKKKK* for the *CCCCCCCC* command [at line *nnnn* of SMCCMDS|SMCPARMS]

Message Level: 0

Explanation: The SMC encountered a command that specified an invalid keyword *KKKKKKKK*.

System Action: Processing continues. The command is ignored.

User Response: Ensure that the syntax in the command data set is correct, or enter the corrected command.

SMC0016 Invalid value *VVVVVVVV* for keyword *KKKKKKKK* of the *CCCCCCCC* command [at line *nnnn* of SMCCMDS|SMCPARMS]

Message Level: 0

Explanation: The SMC encountered a command that specified keyword *KKKKKKKK* with an invalid value *VVVVVVVV*.

System Action: Processing continues. The command is ignored.

User Response: Ensure that the syntax in the command data set is correct, or enter the corrected command.

SMC0017 Keyword *KKKKKKKK* of the *CCCCCCCC* command requires a value [at line *nnnn* of SMCCMDS|SMCPARMS]

Message Level: 0

Explanation: The SMC encountered a command that specified keyword *KKKKKKKK* without an accompanying value (required by most keywords).

System Action: Processing continues. The command is ignored.

User Response: Ensure that the syntax in the command data set is correct, or enter the corrected command.

SMC0018 Keyword *KKKKKKKK* of the *CCCCCCCC* command is not allowed for *EEEEEEEE* [at line *nnnn* of SMCCMDS|SMCPARMS]

Message Level: 0

Explanation: The SMC encountered a command that specified keyword *KKKKKKKK*, which is not valid in the current operating environment *EEEEEEEE*. For example, some keywords or keyword=value pairs may be invalid depending upon whether the user is executing JES2 or JES3.

System Action: Processing continues. The command is ignored.

User Response: Ensure that the specified keyword is valid in your environment.

SMC0019 Duplicate keyword *KKKKKKKK* specified for the *CCCCCCCC* command [at line *nnnn* of SMCCMDS|SMCPARMS]

Message Level: 0

Explanation: The SMC encountered a command that specified the same keyword, *KKKKKKKK*, more than once.

System Action: Processing continues. The command is ignored.

User Response: Ensure that the syntax in the command data set is correct, or enter the corrected command.

SMC0020 Keyword *KKKKKKK1* of the *CCCCCCCC* command is mutually exclusive with keyword *KKKKKKK2* [at line *nnnn* of SMCCMDS|SMCPARMS]

Message Level: 0

Explanation: The SMC encountered a command that specified multiple keywords, two of which (*KKKKKKK1* and *KKKKKKK2*), are mutually exclusive.

System Action: Processing continues. The command is ignored.

User Response: Ensure that the syntax in the command data set is correct, or enter the corrected command.

SMC0021 {COLD|WARM} start failure

Message Level: 0

Explanation: During initialization, the SMC subsystem detected an error.

System Action: The SMC subsystem terminates.

User Response: Look for SMC related messages in the SYSLOG or job log. Associated messages may be (but are not limited to) SMC0002, SMC0004, SMC0006, SMC0008, SMC0010, or SMC0011.

SMC0022 Invalid format or missing keywords for the *CCCCCCCC* command [at line *nnnn* of SMCCMDS|SMCPARMS]

Message Level: 0

Explanation: The SMC encountered a command *CCCCCCCC* that contained either too many or too few keywords in the command line.

System Action: Processing continues. The command is ignored.

User Response: Ensure that the syntax in the command data set is correct, or enter the corrected command.

SMC0023 *CCCCCCCC* command successfully processed [at line *nnnn* of SMCCMDS|SMCPARMS]

Message Level: 0

Explanation: The *CCCCCCCC* command was successfully validated and processed by the SMC.

System Action: None.

User Response: None.

SMC0024 SSSS subsystem initialization complete

Message Level: 0

Explanation: The SMC initialization process is complete. The SMC is ready to begin normal operations.

System Action: None.

User Response: None.

SMC0025 No {*CCCCCCCC*|control block} entries to list [(no JES3 tape setup)]

Message Level: 0

Explanation:

One of the following occurred:

- Command *CCCCCCCC* was specified with the LIST keyword. However, no entries were found in the SMC queue for the specified command.
- A LIST command was specified with a control block keyword. However, no control blocks of the specified type were found.
- A LIST command was specified for an SMC JES3 specific control block name. However, the SMC is not operating on a system with JES3 tape setup.

System Action: None.

User Response: None.

SMC0027 Keyword *KKKKKKK1* of the *CCCCCCCC* command requires keyword *KKKKKKK2* [at line *nnnn* of SMCCMDS|SMCPARMS]

Message Level: 0

Explanation: The SMC encountered a command that specified keyword *KKKKKKK1*, but not the required co-requisite keyword, *KKKKKKK2*.

System Action: Processing continues. The command is ignored.

User Response: Ensure that the syntax in the command data set is correct, or enter the corrected command.

SMC0028 STOP command received

Message Level: 0

Explanation: The MVS stop ('P') command was received by the SMC, and the SMC subsystem termination process is set to begin.

System Action: The SMC subsystem begins termination processing.

User Response: None.

SMC0029 *CCCCCCCC* command processing error; [matching entry not found|command line truncated; will be ignored|parameter truncated; command ignored] [at line *nnnn* of SMCCMDS|SMCPARMS]

Message Level: 0

Explanation: An error was found processing the *CCCCCCCC* command.

System Action: Processing continues. The command is ignored.

User Response: Use the LIST keyword to list the current SMC queue of entries; then ensure that the syntax in the command data set is correct, or enter the corrected command.

SMC0030 TRACE JOBNAME=*JJJJJJJJ* [STEPNAME=*SSSSSSSS*]
[PROCSTEP=*PPPPPPPP*] [SNAPDUMP *DDDDDDDD*] *CCCCCCCC*

Message Level: 0

Explanation: The TRACE command was specified with the LIST keyword. The SMC0030 message lists the jobs, step, and PROC steps and the associated processes which have been specified for tracing.

System Action: None.

User Response: None.

- SMC0031** No SMC start mode specified; defaulting to WARM start
- Message Level:** 4
- Explanation:** During SMC initialization, the subsystem detected that neither a WARM or COLD start was specified in the initialization program's execution parameters.
- System Action:** Initialization continues in WARM start mode.
- User Response:** None.
- SMC0032** Number of SMC startup parameters specified exceeds maximum of *n*
- Message Level:** 0
- Explanation:** During initialization, the SMC subsystem initialization program encountered an execution parameter string containing too many parameters.
- System Action:** The SMC subsystem terminates.
- User Response:** Correct the subsystem initialization startup procedure to specify the correct execution parameter string.
- SMC0033** SMC startup parameter *PPPPPPP* may not have a value
- Message Level:** 0
- Explanation:** During initialization, the SMC subsystem initialization program encountered a valid execution parameter, but it was specified as a keyword=value pair, where no value is allowed.
- System Action:** The SMC subsystem terminates.
- User Response:** Correct the subsystem initialization startup procedure to specify the correct execution parameter string.
- SMC0034** SMC startup parameter *PPPPPPP* must have a value
- Message Level:** 0
- Explanation:** During initialization, the SMC subsystem initialization program encountered a valid execution parameter, but it was not specified as a keyword=value pair, and a value is required.
- System Action:** The SMC subsystem terminates.
- User Response:** Correct the subsystem initialization startup procedure to specify the correct execution parameter string.

SMC0035 Error processing SMC startup parameter *PPPPPPP; CCCCCCCCCC*

Message Level: 0

Explanation: During initialization, the SMC subsystem initialization program encountered an error in the execution parameter string. The string *CCCCCCCCCCCC* indicates the type of error encountered.

System Action: The SMC subsystem terminates.

User Response: Correct the subsystem initialization startup procedure to specify the correct execution parameter string.

SMC0036 SMC startup parameter *PPPPPPP* successfully processed

Message Level: 4

Explanation: During SMC initialization, the execution parameter *PPPPPPP* was successfully verified and processed.

System Action: None.

User Response: None.

SMC0037 Invalid SMC startup parameters; subsystem terminating

Message Level: 0

Explanation: During initialization, the SMC subsystem initialization program detected an error processing the execution parameter string.

System Action: The SMC subsystem terminates.

User Response: Look for SMC related messages in the SYSLOG or job log. Associated messages may be (but are not limited to) SMC0032 SMC0033, SMC0034, or SMC0035.

SMC0038 Another SMC system SSSS is already active

Message Level: 0

Explanation: During initialization, the SMC subsystem initialization program detected a different SMC subsystem, SSSS, already active on the system.

System Action: The initializing SMC subsystem terminates.

User Response: Only one SMC can be active on a system at a time.

- If SMC SSSS is active, and is preventing the current SMC from initializing, terminate SMC SSSS.
- If SMC SSSS was terminated abnormally and is not truly active, restart the current SMC subsystem with the RESET execution parameter.

SMC0039 Identically named subsystem SSSS is already active

Message Level: 0

Explanation: During initialization, the SMC subsystem initialization program detected an identically named subsystem SSSS already active on the system.

System Action: The initializing SMC subsystem terminates.

User Response: Start the SMC with a different subsystem name.

SMC0040 SMC subsystem SSSS is already active; RESET specified; startup continuing

Message Level: 4

Explanation: During initialization of SMC subsystem SSSS, the initialization program detected that the prior SMC subsystem terminated abnormally, but the user specified the RESET execution parameter to ignore this condition.

System Action: None.

User Response: None.

SMC0041 {Command|Comment} beginning at line *nnnn* of {SMCCMDS|SMCPARMS} is unterminated

Message Level: 4

Explanation: A command or comment beginning at line *nnnn* of an input command file ended with a continuation character (+), but no continuation was found.

System Action: Processing continues. The command containing the unterminated string is ignored.

User Response: Ensure that the syntax in the command data set is correct.

SMC0042 Job *JJJJJJJJ* step *SSSSSSSS* not allocatable before SMC modification

Message Level: 4

Explanation: During execution of job *JJJJJJJJ* step *SSSSSSSS*, the SMC allocation component detected that the job step was not allocatable before any allocation influencing was performed.

System Action: None. The job is failed by MVS or express-canceled by JES3.

User Response: Correct the JCL.

SMC0043 Job *JJJJJJJJ* step *SSSSSSSS* not allocatable at MINLVL=*nn*; failing DD *DDDDDDDD*

Message Level: 4

Explanation: During execution of a job with tape allocation, the SMC allocation component detected that the job is not allocatable at the specified minimum exclusion level (MINLVL).

System Action: The job is failed by MVS or express-canceled by JES3.

User Response: Correct the JCL, or change the MINLVL for the specified job.

SMC0044 SMC subsystem termination in progress; no allocation influence for job *JJJJJJJJ* step *SSSSSSSS*

Message Level: 8

Explanation: During execution of job *JJJJJJJJ* step *SSSSSSSS*, the SMC allocation component detected that the SMC subsystem was being terminated.

System Action: No allocation influencing is performed for the job.

User Response: None.

SMC0045 Conflicting exclusion criteria for job *JJJJJJJJ* step *SSSSSSSS* DD
DDDDDDDD

Message Level: 8

Explanation: Messages SMC0045 and SMC0046 are always produced together. See the explanation for message SMC0046 for more information.

System Action: None.

User Response: None.

SMC0046 *CCCCCCCCCCCCCCCC* would have excluded all devices; not honored

Message Level: 8

Explanation: When the SMC allocation component attempted to apply the exclusion criteria *CCCCCCCCCCCCCCCC* for job *JJJJJJJJ* step *SSSSSSSS* DD *DDDDDDDD*, no devices remained in the current exclusion level EDL. The SMC0045 and SMC0046 messages are always produced together.

For information about exclusion criteria, refer to the keyword column of the “JES2 Drive Exclusion Levels” and “JES3 Drive Exclusion Levels” tables in the *SMC Configuration and Administration Guide*.

System Action: None. The criteria that would have eliminated all devices is ignored.

User Response: None.

SMC0047 Esoteric *EEEEEEEE* contains no known devices; ignored for job
JJJJJJJJ step *SSSSSSSS* DD *DDDDDDDD*

Message Level: 8

Explanation: During execution of job *JJJJJJJJ* step *SSSSSSSS*, the SMC allocation component encountered a user policy esoteric, *EEEEEEEE* (from TAPEREQ or user exit), that did not contain any tape devices in the current EDL.

System Action: The specified esoteric is ignored.

User Response: None.

SMC0048 ACS ID AA contains no known devices; ignored for job JJJJJJJJ step SSSSSSSS DD DDDDDDDD

Message Level: 8

Explanation: During execution of job JJJJJJJJ step SSSSSSSS, the SMC allocation component encountered an user exit policy requesting exclusion to ACS ID *aa*. However, the EDL at the current exclusion level does not include tape devices in the requested ACS.

System Action: The ACS ID policy request is ignored.

User Response: None.

SMC0049 No eligible libraries for job JJJJJJJJ

Message Level: 8

Explanation: During execution of job JJJJJJJJ, the SMC allocation component did not find any libraries at the correct release level.

System Action: If ALLOCDEF FAILnoinfo is specified, the SMC marks all devices ineligible. Otherwise, no allocation influencing is performed for the job.

User Response:

- If libraries are implied using the MVS SSCVT chain or via the LIBRARY command LOCSubsys parameter, ensure that the HSC or MVS/CSC(s) on the host are active and at the correct level.
- If libraries on another host are defined using the LIBRARY command, ensure that the HSC on the remote host defined by the SERVER command is active and at the correct level. Also ensure that the HTTP server is active on the remote host.

SMC0051 SMC subsystem interface error for job JJJJJJJJ; reason=SSSSSSSS function=CCCCCCCC

Message Level: 4

Explanation: SMC processing in an MVS initiator address space attempted to communicate with the SMC subsystem in order to process an allocation or mount request but encountered an error. The reason for the failure is SSSSSSSS while the function attempted was CCCCCCCC.

System Action: The SMC will not be able to continue processing the allocation or mount request.

User Response: Investigate the cause of the error by looking for related SMC subsystem, or MVS error messages.

SMC0052 User exit *nn* {inactive|abended and disabled}

Message Level: 8

Explanation: During execution of a job with tape allocation, the SMC allocation component invoked the user exit *nn* from an HSC or MVS/CSC subsystem. However, the user exit is currently inactive, or has abended and is now disabled for both the SMC and the owning HSC or MVS/CSC subsystems.

System Action: Allocation influencing continues for the job.

User Response: Correct the user exit.

SMC0053 **** SMC U1099 ABEND at CCCCCCCC*n* ****

Message Level: 0

Explanation: An SMC task has abended in module CCCCCCCC at abend sequence number *n*.

System Action: If the abend occurs in the address space of a tape allocation job, the SMC subsystem does not influence the job's allocation. If the abend occurs in the SMC started task address space, a restart of the SMC subsystem may be required.

User Response: Look for SMC or IBM related messages in the SYSLOG or job log. Save the associated logs, dump data set, and JCL, and contact Sun StorageTek Software Support.

SMC0054 MSGJOB LVL=*nn* for {DEFAULT SETTING|JOBNAME=JJJJJJJJ}
[STEPNAME=SSSSSSSS][PROCSTEP=PPPPPPPP]

Message Level: 0

Explanation: A MSGJOB command was specified with the LIST keyword. Each unique job, job step, and PROC step entry found in the MSGJOB queue is displayed in a separate SMC0054 message, followed by the SMC defaults in a final SMC0054 message. *nn* indicates the message level, and any messages at that indicated level or lower are produced on that job's job log in JES2 or on the system log in JES3.

System Action: None.

User Response: None.

SMC0055 ALLOCJOB {BYPASSEd|MINLVL=*nn*}[SEPLVL=MIN|MAX|*nn*][SMS=OFF|ON] for
 {JOBNAME=JJJJJJJJ}[STEPNAME=SSSSSSSS][PROCSTEP=PPPPPPPP][SNAPDUMP
 DDDDDD] PPPPPPPP

Message Level: 0

Explanation: An ALLOCJOB command was issued with the LIST keyword. Each unique job, job step, and PROC step entry found in the ALLOCJOB queue is displayed in a separate SMC0055 message. The BYPASSEd message indicates that the specified job, job step, or PROC step will not have any of its tape allocations influenced by the SMC. MINLVL=*nn* indicates the desired minimum exclusion level at which affinity and GDG chains are separated. The SMS value indicates whether the SMC DFSMS interface is enabled for this entry.

System Action: None.

User Response: None.

SMC0056 *nn* Bytes:
 AAAAAAAAA +00000| XX.XX XX.XX XX.XX XX.XX | CC..CC |
 AAAAAAAAA +00100| XX.XX XX.XX XX.XX XX.XX | CC..CC |
 AAAAAAAAA +00000| XX.XX XX.XX XX.XX XX.XX | CC..CC |

Message Level: 0

Explanation: An SMC LIST command was issued. The SMC0056 multiline message lists the *nn* bytes of storage in translated hexadecimal (*xx.xx*) and character (*cc.cc*) format, each line listing the next 16 bytes (X'10') bytes of storage, beginning at hexadecimal address *aaaaaaaa*.

System Action: None.

User Response: None.

SMC0057 No {SMCPARMS|SMCCMDS} DDNAME statement found

Message Level: 8

Explanation: During SMC initialization, the specified SMCPARMS DD or SMCCMDS DD was not present in the SMC startup procedure.

System Action: Initialization continues.

User Response: None.

SMC0058 Error opening {DDNAME {SMCPARMS|SMCCMDS}|DSNAME DDDDDDDD}

Message Level: 0

Explanation: The SMC encountered a READ command, but the specified DDNAME or DSNAME could not be opened.

System Action: The READ command is ignored.

User Response: Look for IBM related messages in the SYSLOG or job log, and refer to IBM documentation for more information.

SMC0059 Identically named subsystem SSSS is initializing

Message Level: 0

Explanation: During initialization, the SMC subsystem initialization program detected an identically named SMC subsystem, SSSS, already being initialized (but not yet fully active).

System Action: The currently initializing SMC subsystem terminates.

User Response: Only one SMC can be active on a system at a time. If the prior SMC subsystem, SSSS, was terminated abnormally, and is not truly active, then restart SMC SSSS with the RESET execution parameter.

SMC0060 I/O error reading {DDNAME {SMCPARMS|SMCCMDS}|DSNAME DDDDDDDD}

Message Level: 0

Explanation: The SMC received an I/O error attempting to read the SMCPARMS or SMCCMDS data set specified in the SMC started procedure or a data set specified on a READ command.

System Action: The indicated data set is not processed.

User Response: Determine the cause of the error. If the input data set is a PDS, ensure that a member name was specified.

SMC0061 Command beginning at line *nnnn* of {SMCCMDS|SMCPARMS} is too long; input ignored

Message Level: 4

Explanation: The SMC encountered a multi-line command beginning at line *nnnn* of the specified file. This command exceeds 1024 characters in length.

System Action: Processing continues. The entire multi-line is ignored.

User Response: Ensure that the command data set has the correct syntax.

SMC0062 Command *CCCCCCCC* [with parameter *PPPPPPPP*] is not allowed [{from console|at line *nnnn* of SMCCMDS|SMCPARMS}]

Message Level: 0

Explanation: The SMC encountered a command or a command parameter that is not supported for the indicated command origin. For example, the READ command is not supported if encountered during processing of another READ command.

System Action: The command is ignored.

User Response: Issue the command from a valid command origin.

SMC0063 MSGDEF settings:
CCCC....CCCC

Message Level: 0

Explanation: A MSGDEF command has been issued with the LIST keyword. The SMC0063 multiline message lists the current settings for the SMC subsystem. Refer to the MSGDEF command for parameter descriptions.

System Action: None.

User Response: None.

SMC0066 ALLOCDEF settings:
CCCC....CCCC

Message Level: 0

Explanation: An ALLOCDEF command has been issued with the LIST keyword. The SMC0066 multiline message lists the current settings for the SMC subsystem. Refer to the ALLOCDEF command for parameter descriptions.

System Action: None.

User Response: None.

SMC0067 SMSDEF settings:
CCCC...CCCC

Message Level: 0

Explanation: An SMSDEF command has been issued with the LIST keyword. The SMC0067 multiline message lists the current settings for the SMC subsystem. Refer to the SMSDEF command for parameter descriptions.

System Action: None.

User Response: None.

SMC0068 Cannot substitute for esoteric EEEEEEE at MINLVL=*n* job JJJJJJJJ
step SSSSSSSS DD DDDDDDDD

Message Level: 8

Explanation: During execution of job JJJJJJJJ step SSSSSSSS on JES3, the SMC allocation component determined that the job step was not allocatable at the specified minimum level (MINLVL).

For example, if you are executing at the default minimum exclusion level 2, this message indicates that the SMC is unable to select an esoteric containing only drives compatible with the media type of a specific volume.

System Action: None. No esoteric substitution is performed. The job may later fail because a volume is requested on an incompatible drive.

User Response: Refer to “JES3 SETNAME Initialization Statements” in Chapter 5 for an explanation of esoteric definition requirements.

SMC0069 SMCERSLV release level LLLLLL1 does not match SMC release level
LLLLLL2

Message Level: 0

Explanation: Module SMCERSLV is at release level LLLLLL1 which does not match SMC release level LLLLLL2.

System Action: The SMC does not initialize.

User Response: Reassemble SMCERSLV at the correct release level and restart the SMC.

SMC0070 SMC maintenance has been applied; reassemble SMCERSLV

Message Level: 0

Explanation: SMC maintenance was applied and affected the module SMCERSLV, but SMCERSLV was not reassembled.

System Action: The SMC does not initialize.

User Response: Reassemble SMCERSLV using the correct level of SMC macros and restart the SMC.

SMC0071 SMCERSLV JES3 release level LLLLLL1 does not match JES3 release level LLLLLL2

Message Level: 0

Explanation: Module SMCERSLV was assembled using a different JES3 release level LLLLLL1 than the active JES3 release level LLLLLL2.

System Action: The SMC does not initialize.

User Response: Reassemble SMCERSLV using the correct level of JES3 macros and restart the SMC.

SMC0073 JES3 C/I waiting for SMC to initialize; Start SMC or reply "GO" to continue

Message Level: 0

Explanation: JES3 has begun scanning the JCL of jobs requiring tape mounts and the SMC is not initialized and cannot influence allocation.

System Action: One JES3 C/I process waits until the SMC has been started or the operator has replied "GO".

User Response: Start the SMC or reply "GO" to proceed without SMC allocation influence.

SMC0074 Unsupported virtual label type for job *JJJJJJJJ* step *SSSSSSSS* DD
DDDDDDDD

Message Level: 8

Explanation: All virtual devices were previously excluded for the DD because of an unsupported label type (NL). A subsequent exclusion criteria requesting virtual drives could not be honored. Message SMC0046 describes the criteria not honored.

System Action: The DD is allocated to a nonvirtual drive. Nonlibrary drives are preferred over library drives.

User Response: Change the JCL to request a supported label type, or change the policy to direct the allocation to a different device type.

SMC0075 SEPLVL cannot be less than MINLVL on the *CCCCCCCC* command [at line *nnnn* of SMCCMDS|SMCPARMS]

Message Level: 0

Explanation: The SMC encountered a command that specified either a SEPLVL that is lower than the applicable MINLVL or a MINLVL higher than the applicable SEPLVL.

System Action: Processing continues. The command is ignored.

User Response: Ensure that command MINLVL and SEPLVL values are correct in the command data set, or enter the corrected command.

SMC0076 Xtype *CCCCCCCC* (*XX*) has inconsistent {device type|location
type|VTSS|ACS} between device *XXXX1* and device *XXXX2*

Message Level: 4

Explanation: In a JES3 environment, the SMC encountered an XTYPE that contains nonhomogeneous devices, where *CCCCCCCC* represents the JES3 SETNAME name. Use of this XTYPE may result in allocation to an incorrect device based on media, recording technique, or location.

System Action: Allocation is performed based on the device characteristics of the first device encountered in the XTYPE.

User Response: Refer to Chapter 3, “Starting the SMC” for JES3 initialization parameter requirements.

SMC0077 Subtask *CCCCCCCC* terminating at retry count *n*; please start and restart SMC subsystem

Message Level: 0

Explanation: The specified SMC subsystem task abnormally terminated *N* times, and could not be restarted. The subsystem is now operating without a required service.

System Action: Processing continues. However, specific allocation or command facilities may be affected.

User Response: Stop and restart the SMC subsystem. If the named subtask is SMCOCMD, use the MVS CANCEL command to terminate the subsystem.

SMC0078 No command prefix defined

Message Level: 0

Explanation: No CMDDEF command specified a command prefix in the SMCPARMS data set.

System Action: Processing continues.

User Response: If a command prefix is desired, add the CMDDEF command to the SMCPARMS data set. The command is processed the next time SMC is initialized.

SMC0079 The command prefix is *PPPPPPP*

Message Level: 0

Explanation: The command prefix for the subsystem is set to *PPPPPPP*.

System Action: The SMC now accepts commands prefixed with *PPPPPPP*.

User Response: None.

SMC0080 Command prefix value *VVVVVVVV* contains invalid character *C* at line *nnnn* of SMCPARMS

Message Level: 0

Explanation: The command prefix value *VVVVVVVV* of the CMDDEF command contained an invalid character *C*.

System Action: Processing continues. The command is ignored.

User Response: Review the list of valid characters for the command prefix listed with the CMDDEF command description. Update the CMDDEF command in the SMCPARMS data set with the new prefix value. The command is processed the next time the SMC is initialized.

SMC0081 Command prefix not added; [prefix is not unique|CPF system error]

Message Level: 0

Explanation: The command prefix was disallowed by the CPF facility because the prefix was not unique or a system error occurred.

System Action: Processing continues. The command is ignored.

User Response:

- If the prefix is not unique, issue the MVS DISPLAY OPDATA command and compare the prefix with those of the other subsystems. The command prefix **cannot** include a command string, a command abbreviation, or any string that invokes a command. The command prefix **cannot** include a string that is a subset or superset of an existing prefix beginning with the same character.
- If a CPF error occurred, look for IBM related messages in the SYSLOG and refer to IBM documentation for the explanation.

SMC0082 Command prefix already set

Message Level: 0

Explanation: The command prefix can be specified only once while the SMC is initializing and cannot be changed during execution.

System Action: Processing continues. The command is ignored.

User Response: To change the command prefix, update the CMDDEF statement in the SMCPARMS data set and recycle the SMC.

SMC0083 Unable to locate {JES3 SETNAME table|JES3 SETUNIT table}

Message Level: 0

Explanation: During SMC subsystem initialization on a JES3 system, the indicated JES3 control structures could not be located. The SMC could not initialize.

System Action: The SMC subsystem terminates.

User Response: Reassemble SMCERSLV with the current level of JES3 macros. Refer to the *NCS Installation Guide* for more information.

SMC0084 *MMM DD YYYY HH:MM:SS SSSS active on hostid HHHH*

Message Level: 4

Explanation: The date (*MMM DD YYYY*), time (*HH:MM:SS*), subsystem name (*SSSS*) and MVS hostid (*HHHH*) are displayed once a day at midnight and during SMC initialization.

System Action: None.

User Response: None.

SMC0085 *SMCBPREI: IEFSSI failed RC=XX RS=XXXX*

Message Level: 0

Explanation: The SMC subsystem pre-initialization routine (SMCBPREI) encountered an error.

System Action:

- If the Return Code (RC) is 4 or less, the SMC subsystem was defined.
- If the Return Code (RC) is 8 or higher, the SMC subsystem was not defined.

User Response: Investigate the Return Code (RC) and Reason (RS) and take the necessary action. The return code and reason are documented in the IBM manual *MVS Programming: Authorized Assembler Service Reference, Volume 2*.

SMC0086

```

SMC SUBSYSTEM TASKS:
A(PCE)  A(TCB)  USE   CT-S PROGRAM  JOBNAME  JOBID  LAST
-----  -----  -----  -
XXXXXXXX XXXXXXXX 00001 BB-W SMCBINT  JJJJJJJJ Jnnnn TTTTTT
XXXXXXXX XXXXXXXX 00001 BM-W SMCBMID  JJJJJJJJ Jnnnn TTTTTT
XXXXXXXX XXXXXXXX 00001 QM-W SMCQMGR  JJJJJJJJ Jnnnn TTTTTT
XXXXXXXX XXXXXXXX 00001 J
XXXXXXXX XXXXXXXX 00001 O -W SMCOCMD  JJJJJJJJ Jnnnn TTTTTT
XXXXXXXX XXXXXXXX 00001 BL-W SMCBLOG  JJJJJJJJ Jnnnn TTTTTT
XXXXXXXX XXXXXXXX 00001 QW-X SMCQWRK  JJJJJJJJ Jnnnn TTTTTT
....
XXXXXXXX XXXXXXXX nnnnn QW-X SMCQWRK  JJJJJJJJ Jnnnn TTTTTT
SMCQWRK executing tasks=nn waiting tasks=nn requests=nn

```

Message Level: 0

Explanation: An SMC LIST TASK command was issued. The SMC0086 multiline message lists status of each SMC subsystem task. The last line lists the number of SMCQWRK tasks currently executing, waiting for work, as well as the total number of requests processed.

System Action: None.**User Response:** None.**SMC0087**

```

EXTVOLESOT esoteric EEEEEEE not found [at line nnnn of
SMCCMDS|SMCPARMS]

```

Message Level: 0

Explanation: An ALLOCDEF command was issued with the EXTVOLESOT keyword specifying EEEEEEE. However, the specified *esoteric-name* is not a valid MVS esoteric.

System Action: The specified ALLOCDEF command is not processed.**User Response:** Reissue the ALLOCDEF command specifying a valid MVS esoteric name.**SMC0088**

```

Unable to [acquire/release] resource CCCCCC; attempt by JJJJJJJJ
XXXXXXXXX1 owned by XXXXXXXX2

```

Message Level: 0

Explanation: A shared SMC resource could not be acquired or freed successfully. Job JJJJJJJJ is the task currently attempting to acquire or free the resource, but cannot because another task holds the resource.

System Action: Jobname JJJJJJJJ may not be processed correctly.**User Response:** Contact Storage Technology technical support.

SMC0089 Unable to start subtask CCCCCCCC

Message Level: 0

Explanation: During initialization, the indicated SMC subsystem task could not be successfully attached.

System Action: The SMC subsystem terminates.

User Response: Look for related MVS or SMC messages in the SYSLOG or SMC job log.

SMC0090 Unable to restart subtask CCCCCCCC

Message Level: 0

Explanation: During subsystem processing the indicated SMC subsystem task abended and could not be restarted.

System Action: Processing continues. However, subsystem processing or command facilities may be affected.

User Response: Stop and restart the SMC subsystem. If the indicated subtask is SMCOCMD, use the MVS CANCEL command to terminate the subsystem.

SMC0091 Could not allocate job JJJJJJJJ step SSSSSSSS after applying all exclusion levels; backing up until allocatable

Message Level: 8

Explanation: The indicated job step would not allocate when all exclusion criteria were applied to all DDs in the step. This means that the remaining set of drives is insufficient for each DD to be assigned a unique drive.

System Action: The SMC backs out exclusion criteria on selected DDs in the step until the set of remaining drives is sufficient to allocate to all DDs in the step.

User Response: None.

SMC0093 TCPIP TCPNAME=CCCCCCCC ADSNAME=CCCCCCCC

Message Level: 0

Explanation: A TCPIP LIST command was issued. The current values of the TCPNAME and ADSNAME are displayed. If the SMC is using the default settings, “default” is displayed.

System Action: None.

User Response: None.

SMC0094 MOUNTDEF SETTINGS:
CCCC....CCCC

Message Level: 0

Explanation: A MOUNTDEF command has been issued with the LIST keyword. The SMC0094 multiline message lists the current settings for the SMC subsystem. Refer to the MOUNTDEF command for a description of keywords and their meanings.

System Action: None.

User Response: None.

SMC0095 UX01 function code UX01RPLY not supported

Message Level: 4

Explanation: The function code return of UX01RPLY (reply to a WTOR message) is not supported by SMC.

System Action: None. The user exit is ignored.

User Response: None.

SMC0096 Invalid UX01 function code X'XX'

Message Level: 4

Explanation: A user exit 01 returned an invalid function code of X'XX'.

System Action: All data returned by this invocation of UX01 is ignored.

User Response: Correct the UX01 to return only function codes documented in the *MVS/CSC* or *HSC System Programmer's Guide*.

SMC0097 UX01 function code X'XX' not valid for message *MMMMMMMM*

Message Level: 4

Explanation: The SMC detected that the action code returned for a message (mount, dismount, or swap) did not match the action for an SMC default message.

System Action: All data returned by this invocation of UX01 is ignored.

User Response: Correct the UX01 to return a function code compatible with the message.

SMC0098 UX01 drive *XXXX1* does not match message drive *XXXX2*, using UX01 drive

Message Level: 4

Explanation: The device address returned from UX01 does not match the address specified in the message.

System Action: The device address returned from UX01 is used in the message processing.

User Response: Ensure that UX01 is functioning as desired.

SMC0099 Drive *XXXX* not a library drive

Message Level: 4

Explanation: A user exit 01 returned a drive *XXXX*, which is not a library or virtual drive.

System Action: All data returned by this invocation of UX01 is ignored.

User Response: Ensure that UX01 is functioning as desired.

SMC0100 Invalid UX01 drive *XXXX*

Message Level: 4

Explanation: A user exit 01 returned an invalid drive address of *XXXX* which is not defined as a valid tape device on this system.

System Action: All data returned by this invocation of UX01 is ignored.

User Response: Correct the UX01.

- SMC0101** Invalid UX01 or TAPEREQ subpool SSSSSSSSSSSS from LIBRARY LLLLLLLL for job JJJJJJJJ
- Message Level:** 4
- Explanation:** A user exit 01 or TAPEREQ specified an invalid subpool name.
- System Action:** The default subpool 0 is used.
- User Response:** Correct the UX01 or TAPEREQ to specify a valid subpool.
- SMC0102** Invalid UX01 volser VVVVVV
- Message Level:** 4
- Explanation:** A user exit 01 returned a volume serial containing invalid characters.
- System Action:** The volume serial returned by this invocation of UX01 is ignored.
- User Response:** Correct the UX01 to return a valid volume serial.
- SMC0103** Unrecoverable mount error on device XXXX volser VVVVVV for JOB JJJJJJJJ
- Message Level:** 0
- Explanation:** The SMC detected a volume mount error in response to an IAT5310 message for a mount requested in message IAT5210.
- System Action:** The SMC breaks the mount loop and issues a dismount to the indicated device XXXX. The job remains in the MDS VERIFY queue.
- User Response:** Refer to the IAT5310 message for the cause of the mount error and take corrective action.
- SMC0104** Default recording technique set for device XXXX
- Message Level:** 0
- Explanation:** During initialization of the SMC drive table, a device with an unrecognized recording technique was detected.
- System Action:** A recording technique is defaulted based on the UCB device type. Processing continues.
- User Response:** Verify that any maintenance for new device types has been applied to all NCS products, including SMC.

SMC0105 KEYWORD KKKKKKKK of the CCCCCCCC command is required

Message Level: 0

Explanation: The command CCCCCCCC was issued without the required keyword KKKKKKKK.

System Action: The command is not processed.

User Response: Re-issue the command with the required keyword.

SMC0106 Mount of HSC volser VVVVVV in LIBRARY LLLLLLLL on device XXXX not in library

Message Level: 0

Explanation: An SMC MOUNTDEF VOLWATCH option is ON. The SMC has detected that a volume resident in library LLLLLLLL is being requested to be mounted on a drive outside all libraries.

System Action: None.

User Response: Cancel the job requesting the mount, or eject the volume to satisfy the mount request.

SMC0107 Swap VVVVVV from XXXX1 to XXXX2

Message Level: 4

Explanation: The SMC has intercepted DDR swap processing. XXXX2 is either the original device selected to swap to or a device selected by SMC that more closely matches the device characteristics of XXXX1.

System Action: DDR swap processing continues.

User Response: None.

SMC0108 No compatible drive found for SWAP processing

Message Level: 0

Explanation: The SMC has intercepted DDR swap processing. The original device chosen to swap to is not compatible with the swap from device and the SMC could not locate a compatible alternate device.

System Action: DDR swap processing continues.

User Response: If no compatible device is available, reply NO to message IGF500D or IGF509D to stop the swap process. If a compatible device is offline, vary it online and reply with its device number to message IGF500D or IGF509D.

- SMC0109** The SMC subsystem is running in key *n*; results are unpredictable; reply 'Y' to continue or 'N' to terminate
- Message Level:** 0
- Explanation:** During initialization SMC detected that it is running in key *n*, not 1 through 7.
- System Action:** The SMC waits until a reply is received.
- User Response:** A reply of N stops SMC. A reply of Y causes SMC to continue initialization, though results are unpredictable. Possible problems are S0C1 and S0C4 ABENDs. To prevent this message, update the Program Properties Table (PPT) with "PPT PGMNAME(SMCBINT),SYST,KEY(*n*)", where *n* is between 1 and 7, inclusive.
- SMC0110** Allow swap of VVVVVV from XXXX1 to XXXX2; Reply 'Y', 'N' or DEVICE
- Message Level:** 0
- Explanation:** The SMC has intercepted DDR swap processing. The SMC is awaiting operator approval to allow the swap.
- System Action:** The SMC continues processing; however, the swap cannot complete until an operator reply is entered.
- User Response:** To allow the swap to proceed using the selected device XXXX2, reply Y. To select a different swap to device, reply with its device address. The SMC does not validate a new device address. To cancel the swap, reply N. If an I/O error on device XXXX1 caused the swap, a reply of N causes the job to fail.
- SMC0111** USER defined message ID: MMMMMMMM
- Message Level:** 0
- Explanation:** The SMC has listed the messages that were added using the USERMsg command.
- System Action:** Both SMC default and USERMsg added messages are sent to user exit 01 for each library subsystem. SMC processes USERMsg added messages according to the response from user exit 01.
- User Response:** None.

SMC0112 Cannot add duplicate message ID *MMMMMMMM* at line *nnnn* of SMCPARMS

Message Level: 0

Explanation: The USERMsg command was issued to add a new message ID that SMC will intercept. The supplied message ID *MMMMMMMM* is a duplicate of a message already defined to SMC.

System Action: The message is not added.

User Response: None.

SMC0113 SERVER=SSSSSSSS CCCCCCCC
Status={active|never active|inactive|disabled}
Messages=*nnnn*
Retries=*nnnn*
Init errors=*nnnn*
Errors=*nnnn*

Message Level: 0

Explanation: A SERVER command has been issued with the LIST keyword. The SMC0113 multiline message lists the server settings and status for each SERVER defined to the SMC subsystem. Refer to the SERVER command for parameter descriptions.

- **STATUS** indicates the status of the server.
 - **active** indicates that this server is the current path through which the specified library will be accessed.
 - **never active** indicates that communication was never attempted on this path, or was attempted but never succeeded.
 - **inactive** indicates that another server path is active, or that the last communication attempt on this path failed.
 - **disabled** indicates that the SERVER has been disabled by a discovered incompatibility, by reaching the FAIL limit, or by an operator command.
- **Messages** indicates the number of logical messages (volume lookup requests, mounts, dismounts) on this server path.
- **Retries** indicates how many message retries have been attempted.
- **Init errors** indicates the current count of number of errors for an inactive server.
- **Errors** indicates the total number of errors on this server.

System Action: None.

User Response: None.

SMC0116 Cannot find LIBRARY LLLLLLLL for SERVER SSSSSSSS [at line *nnnn* of SMCCMDS|SMCPARMS]

Message Level: 0

Explanation: A SERVER command was issued with a LIBRARY name that was not previously defined.

System Action: The SERVER is not added or updated.

User Response: Specify a LIBRARY command to define the library, then specify the SERVER command.

SMC0117 Cannot change LIBRARY name for existing SERVER SSSSSSSS [at line *nnnn* of SMCCMDS|SMCPARMS]

Message Level: 0

Explanation: A SERVER command was issued with the NAME of an existing SERVER and a LIBRARY name, but the LIBRARY name of the existing server did not match the library name in the new command.

System Action: The command is rejected.

User Response: Omit the library name, change the library name to match the existing server, or change the SERVER name to add a new server to the specified library.

SMC0118 No LOCSUBSYS for [LOCENABLE|LOCDISABLE] parameter on LIBRARY command [at line *nnnn* of SMCCMDS|SMCPARMS]

Message Level: 0

Explanation: A LIBRARY command was issued with a LOCENABLE or LOCDISABLE parameter, but the library was not defined with a LOCSUBSYS subsystem name.

System Action: This message is a warning. The LIBRARY will be added or modified, but the LOCENABLE or LOCDISABLE parameter is ignored.

User Response: None.

SMC0119 [SERVER|LOCSUBSYS] CCCCCCCC now disabled

Message Level: 0

Explanation: The SMC detected TCP/IP errors in excess of the FAIL count or detected a fatal error for a local subsystem. See the preceding SMC0128/SMC0129 messages for the reason for the disable.

System Action: None. If there are no additional server paths defined for the associated library, the library hardware is no longer accessible from this host.

User Response: Correct the problem with the TCP/IP network, SMC server, host operating system, or the HSC subsystem, and re-ENABLE the SERVER or LOCSUBsys.

SMC0120 NAME must be specified to add or modify a SERVER [at line *nnnn* of SMCCMDS|SMCPARMS]

Message Level: 0

Explanation: The user entered a SERVER command to add a new SERVER or modify an existing SERVER path, but the SERVER path NAME was not specified.

System Action: None.

User Response: Enter the SERVER command specifying the SERVER path NAME.

SMC0121 UEXIT *nn* is now [ENABLED/DISABLED]

Message Level: 0

Explanation: The user entered a UEXIT *nn* ENABLE or DISABLE command, or the SMC detected an abend in the specified user exit. The specified user exit is now ENABLED or DISABLED.

System Action: None.

User Response: If the SMC automatically disabled the user exit due to an abend, the exit cannot be re-enabled unless it is also reloaded.

SMC0122 UEXIT=*nn*
 STATUS={ACTIVE|DISABLED|ABENDED}
 CCCC...CCCC
 SEQUENCE=*nn*
 LOADED=YYYY-MM-DD HH:MM:SS
 CHANGED=YYYY-MM-DD HH:MM:SS

Message Level: 0

Explanation: A UEXIT command was issued with the LIST keyword. The SMC0122 multiline message lists the user exit status for each user exit defined to the SMC subsystem. REfer to the UEXIT command for parameter descriptions.

- *nn* indicates the SMC user exit number (type).
- **STATUS** indicates the user exit status.
 - ACTIVE indicates that the exit is loaded and active.
 - DISABLED indicates that the exit is loaded but was de-activated by the UEXIT DISABLE keyword.
 - ABENDED indicates the user exit abended. A new version must be loaded for this exit to be re-activated.
- **SEQUENCE** indicates how many loads have been performed for this user exit.
- **LOADED** indicates when this version of the module was loaded.
- **CHANGED** indicates when this version of the module was activated or disabled.

System Action: None.

User Response: None.

SMC0123 Drive range mismatch between CLIENT *XXXX1-XXXX2* and SERVER
XXXX3-XXXX4

Message Level: 0

Explanation: A DRIVemap command was issued. One of the specified CLient range did not match the format of the corresponding SERver range.

System Action: None.

User Response: Reissue the command, ensuring that the CLIENT parameter and the SERVER parameter have corresponding formats and number of drives.

SMC0124 ABENDED or INACTIVE UEXIT *nn* must be reloaded to ENABLE [at line *nnnn* of SMCCMDS|SMCPARMS]

Message Level: 0

Explanation: A UEXIT *nn* ENABLE command was issued for a user exit that had previously abended, or inactivated itself via a return code.

System Action: None.

User Response: Use the UEXit command with the LOAD keyword to reload the exit.

SMC0125 UEXIT *nn* already [ENABLED/DISABLED][at line *nnnn* of SMCCMDS|SMCPARMS]

Message Level: 0

Explanation: A UEXIT *nn* ENABLE or DISABLE command was issued but the exit was already in the specified state.

System Action: None.

User Response: Verify the exit number you are trying to alter.

SMC0126 UEXIT *nn* not valid for [JES2/JES3] [at line *nnnn* of SMCCMDS|SMCPARMS]

Message Level: 0

Explanation: A UEXIT command was issued for a user exit number not valid for this configuration.

System Action: None.

User Response: Verify the user exit number for your configuration.

SMC0127 Cannot resolve HOST name *HHHHHHHH* [at line *nnnn* of SMCCMDS|SMCPARMS]

Message Level: 0

Explanation: A SERVER command was issued using the HOST keyword specification. However, the SMC could not resolve the IP address using the specified HOST *name*.

System Action: The SERVER command is ignored.

User Response: Enter the correct HOST name or use the IPADDRESS keyword instead.

SMC0128

```

Library error:
Job=JJJJJJJJ transaction=TTTT LIBRARY=LLLLLLLLL {SERVER=SSSSSSSS}
{Interface error: CCC...CCC|
  Fatal comm error: CCC...CCC|
  Comm error nnn {of nnn}: CCC...CCC |
  Comm error limit (nnn) exceeded: CCC...CCC |
  Initialization error nnn:CCC...CCC}
{Response from HTTP server follows: RRR...RRR}

```

Message Level: 4

Explanation: The SMC encountered an interface or communication error attempting to communicate with a library subsystem or server. The SMC0128 multiline message first lists the jobname, transaction type, and libraryname associated with the error.

If the communication error was produced for a local library subsystem using cross memory services on this same host (i.e., not using a server) then the next line will list the interface error.

If the communication error was produced for a remote HTTP server or its associated remote HSC library subsystem using TCP/IP, then one of the message reason lines will be displayed.

Examples of the reason strings include:

- Specific TCP/IP function errors (connect, send, recv, etc.)
- Data error (incomplete or invalid data response)
- Subsystem inactive, not found, or at an incompatible release level
- Subsystem function error
- HTTP server not authorized
- HSC ASCOMM error
- Interface or communication timeout



Note: Certain remote errors may result in a display of the entire HTTP server response as follows:

```

Response from HTTP server follows:
HTTP 1.0 401 Unauthorized

```

If the message indicates “Comm error limit (*nnn*) exceeded” then the SMC0128 message will be followed by an SMC0119 message and the SERVER path will be disabled by the SMC.

If the message indicates an “Initialization error” then the error occurred before any successful communication to the named SERVER path. Such errors are not counted

against the cumulative error count on the server path, and will not result in the named SERVER being automatically disabled by the SMC.

Also, “Initialization error” messages will not be generated for every request, but will only be generated at 5 minute intervals until the path is successfully activated.

System Action: The allocation or mount event may not be processed by the SMC.

User Response: Use the specified error reason to determine the cause of the problem. If the error was produced for a remote server, verify that the HTTP server is active.

SMC0129 {ERROR|WARNING}: No cartridge transport(s) for *XXXX1*- [*XXXX2*] for {UNITATTR|DRIVEMAP} {ADDRESS|CLIENT}

Message Level: 0

Explanation: A UNITATTR or DRIVEMAP command was issued specifying a device *XXXX1* or range *XXXX1-XXXX2*. None of the specified devices is an MVS-defined cartridge transport device.

System Action:

- If the message indicates an ERROR, the command is not processed.
- If the message indicates a WARNING, the SMC stores the value and may use it to translate addresses for non-MVS-defined RTD devices.

User Response: Review the devices specified in the command and re-issue the command if they are incorrect.

SMC0130 LIBRARY *LLLLLLLLL1* has same LOCSUBSYS *SSSS* as LIBRARY *LLLLLLLLL2* [at line *nnnn* of SMCCMDS|SMCPARMS]

Message Level: 0

Explanation: A LIBRARY command was issued with a different library name *LLLLLLLLL1* but the same LOCSUBSYS name as an existing library *LLLLLLLLL2*.

System Action: The LIBRARY command is not executed.

User Response: Correct the error and resubmit the command.

SMC0131 Cannot use [LIBRARY|SUBSYSTEM]=*CCCCCCC* returned from user exit; {not active or disabled|not in initial EDL}

Message Level: 4

Explanation: A user exit returned a library or subsystem name, but the specified name was invalid, or the referenced library had no defined drives in the Eligible Device List from the JCL.

System Action: The library or subsystem name returned from the user exit is ignored. Other data from the exit, such as subpool, is honored.

User Response: Verify that the specified SUBSYSTEM or LIBRARY is active, or correct the exit to specify a valid SUBSYSTEM or LIBRARY name.

SMC0132

SMC0132 Mount retry limit exceeded for volser=VVVVVV device=XXXX from
LIBRARY=LLLLLLLL SERVER=SSSSSSSS

Message Level: 4

Explanation: When SMC mount or mount TAPEREQ retrieval processing determines that an MVS mount is still pending and should be retried, it waits before attempting the retry. After the mount or mount policy retrieval retry limit is reached, the SMC0132 message is displayed.

System Action: The SMC will not continue to process the mount request after this message is issued.

User Response: Investigate the cause of the HSC mount problem. After resolving the problem, issue the SMC RESYNChronize REStart command or the HSC MOUNT command if necessary.

```
SMC0133 LIBRARY=LLLLLLLLL
Library status={disabled|active|inactive|never active}
Requests=nnnn
CCCC....CCCC
[SERVER=SSSSSSSS
Server status={disabled|active|inactive|never active}]
```

Message Level: 0

Explanation: A LIBRARY command was issued with the LIST keyword. The SMC0133 multiline message lists the library status for each library defined to the SMC subsystem. Refer to the LIBRARY command for parameter descriptions. Optionally, if the SERVER keyword was specified, the server status for all servers associated with this library is also displayed.

Library status indicates the status of the library.

- **disabled** indicates that the LIBRARY has been disabled by an operator command.
- **active** indicates that the last communication to this library was successful.
- **inactive** indicates that a communication path to this LIBRARY is no longer active, although one was previously active.
- **never active** indicates that a communication path to this LIBRARY was never successfully established.

Requests indicates the total number of requests (configuration, volume lookup, mount, dismount, and swap) that were directed to the specified LIBRARY.

If the SERVER keyword was specified, then each server path defined for this library will also be displayed, along with its status.

System Action: None.

User Response: None.

SMC0134 No UNITATTR specified for device *XXXX*

Message Level: 0

Explanation: A UNITATTR command was issued specifying device *XXXX* and also specifying either the LIST parameter or the OFF parameter. No UNITATTR was associated with the device.

System Action: The UNITATTR command does not process this device.

User Response: None.

SMC0135 {Mount/dismount message|Client response WTOR message|WTOR message issued by server} from LIBRARY=LLLLLLLL SERVER=SSSSSSSS

SMC0136 *HSC mount or dismount message*

Message Level: 4

Explanation: The WTORDEST(CLIENT) or ECHOMNTERR(ON) option is in effect. A mount or dismount was performed on an HSC library but did not complete successfully. The SMC0135 message indicates the LIBRARY name and SERVER name where the mount or dismount was requested. The SMC0136 merely echoes the HSC server mount or dismount message on the SMC client.

System Action: None.

User Response: Correct the problem indicated in the HSC mount or dismount message.



Note: Messages SMC0135 and SMC0136 are issued for all mount errors if the message level is 12 or greater, regardless of the WTORDEST or ECHOMNTERR setting, and for all HSC mount and dismount messages if the message level is 16 or greater.

SMC0137 *HSC mount or dismount WTOR message*

Message Level: 4

Explanation: A mount or dismount was performed on an HSC library with the LIBRARY WTORDEST(CLIENT) set. HSC issued a WTOR that is to be handled by the client. The SMC0135 message indicates the LIBRARY name and SERVER name where the mount or dismount was requested.

System Action: The SMC redrives the mount or dismount to the server, transmitting the specified message response.

User Response: See the *HSC Messages and Codes Guide* for the corresponding HSC message, and respond as directed.



Note: The MSGDef command SMCWtorpfx parameter can be used to suppress the SMC0137 portion of the message.

SMC0138 XML {input|output} parse error RC=*nnn*; transaction=*TTTTTTTT*
LIBRARY=*LLLLLLLL*

Message Level: 0

Explanation: The SMC encountered an XML parse error. Input XML errors are produced when the input XML transaction cannot be parsed. Output XML errors occur when transaction response data cannot be converted to XML. The transaction type and library-name are also displayed.

System Action: Depending upon the type of error, and server characteristics, the allocation or mount event may not be processed by the SMC.

User Response: Contact Sun StorageTek Software Support.

SMC0139 UNITATTR for device *DDDD* is model *MMMMMMMM*

Message Level: 0

Explanation: A UNITATTR command was issued specifying device *DDDD* and the LIST parameter. The model associated with device *DDDD* is model *MMMMMMMM*.

System Action: None.

User Response: None.

nnnnnnnn SMC0140 DFSMS message

Message Level: 0

Explanation: The DFSMS ACS routine has issued the DFSMS message. *nnnnnnnn* will be the JCL statement number or the DDNAME if it is a dynamic allocation.

System Action: None.

User Response: None.

nnnnnnnn SMC0141 UNIT=value VVVVVVVV1 replaced by VVVVVVVV2

Message Level: 0

Explanation: The DFSMS ACS routines has changed the esoteric.

- *nnnnnnnn* is the JCL statement number or the DDNAME if it is a dynamic allocation.
- *VVVVVVVV1* is the esoteric that was in the JCL. If a UNIT parameter was not used in the JCL, this will be NULL-UNIT.
- *VVVVVVVV2* is the esoteric that was supplied by the DFSMS ACS routines.

System Action: Use the new esoteric supplied by the DFSMS ACS routines for the allocation.

User Response: None.

SMC0142 Invalid reply to prior message from LIBRARY=LLLLLLLL
SERVER=SSSSSSSS

Message Level: 0

Explanation: The WTORDEST(CLIENT) option was specified for LIBRARY *LLLLLLLL*, and SMC has communicated a mount or dismount request to HSC via server *SSSSSSSS*. When SMC attempted to redrive the request, HSC returned an indication that the response was invalid.

System Action: SMC redisplay the HSC message.

User Response: Refer to the *HSC Messages and Codes Guide* for the valid responses for the indicated message.

SMC0143 Response {timeout|wait cancelled by SMC STOP} for job=JJJJJJJJ
volser=VVVVVVVV device=XXXX from LIBRARY=LLLLLLLL SERVER=SSSSSSSS

Message Level: 0

Explanation: SMC has communicated a request to LIBRARY *LLLLLLLL* via SERVER *SSSSSSSS*. Either the response timed out, or the SMC subsystem received an MVS STOP command.

System Action: None.

User Response: Check the network and server subsystem for problems. If the mount was not performed, issue a manual mount command to the HSC.

SMC0144 Mount of volser=VVVVVV on device=XXXX; drive is in use; reply 'C' to cancel mount or 'R' to retry

Message Level: 0

Explanation: SMC has communicated a mount or dismount request to HSC. HSC has responded with a message indicating that the drive is in use.

System Action: If the mount is still outstanding, the SMC automatically redrives the mount every 30 seconds. The message is DOMed if the mount is no longer pending, or the drive becomes available.

User Response: Wait for the drive to become available, or reply 'C' to cancel the request, or 'R' to retry immediately.

SMC0145 Mount of volser=VVVVVV on device=XXXX; volume is in use; reply 'C' to cancel mount or 'R' to retry

Message Level: 0

Explanation: SMC has communicated a mount or dismount request to HSC. HSC has responded with a message indicating that the drive is in use.

System Action: The SMC verifies that the mount is still outstanding. If the mount is still outstanding, the SMC automatically redrives the mount every 30 seconds. The message is DOMed if the mount is no longer pending, or the volume becomes available.

User Response: Wait for the volume to become available, or reply 'C' to cancel the request, or 'R' to retry immediately.

SMC0146 All devices marked ineligible for job JJJJJJJJ step SSSSSSSS due to volume lookup failure

Message Level: 4

Explanation: When SMC allocation attempted to acquire volume information, a communication failure with the library server occurred. The ALLOCDEF option FAILNOINFO was specified.

System Action: The SMC marks all devices as ineligible for allocation. The job is failed by MVS or express-canceled by JES3.

User Response: Investigate the cause of the communication failure and resubmit the job.

SMC0147 *PPPPPPPP1* is incompatible with *PPPPPPPP2* on the TAPEREQ command line *nnnn* of TREQDEF DSN

Message Level: 0

Explanation: An incompatibility exists between *PPPPPPPP1* and *PPPPPPPP2* at line *nnnn* in the data set specified on the TREQDEF command.

System Action: The SMC continues to process the TAPEREQ statements, flagging additional errors.

User Response: Correct the errors and re-issue the TREQDEF command.

SMC0148 *PPPPPPPP* on the TAPEREQ command at line *nnnn* of TREQDEF DSN is not valid in a JES3 environment

Message Level: 0

Explanation: The specified parameter *PPPPPPPP* at line *nnnn* of the data set specified in the TREQDEF command is not valid in a JES3 with tape setup environment.

System Action: The SMC continues to process the TAPEREQ statements, flagging additional errors.

User Response: Correct the errors and re-issue the TREQDEF command.

SMC0149 TREQDEF specifications not installed, reason code *nn*

Message Level: 0

Explanation: The TAPEREQ statements in the data set specified on the TREQDEF command were not installed.

08 - Syntax error on a TAPEREQ statement
12 - The TAPEREQ structure has not been initialized

System Action: None.

User Response: Correct the errors and re-issue the TREQDEF command.

SMC0150 TREQDEF specifications installed from *DDDDDDDD*

Message Level: 0

Explanation: The TAPEREQ statements in the data set specified on the TREQDEF command were successfully installed.

System Action: None.

User Response: None.

SMC0151 TREQDEF status:
Loaded from *DDDDDDDD*
Title: *TTTTTTTT*
Loaded on *YYYY-MM-DD* at *HH:MM:SS*

Message Level: 0

Explanation: The TAPEREQ command was issued with the LIST keyword. The current TAPEREQ statements were loaded from data set *DDDDDDDD*. The title *TTTTTTTT* is displayed if one was specified in the OPTION statement.

System Action: None.

User Response: None.

SMC0152 TREQDEF DSN command has not been previously issued

Message Level: 0

Explanation: The TAPEREQ LIST or RELOAD commands have been specified without a prior TREQDEF DSN command.

System Action: None.

User Response: Issue a TREQDEF command with the DSN keyword prior to issuing the TREQDEF with the LIST or RELOAD keyword.

SMC0153 Dynamic allocation failed for *DDDDDDDD*

Message Level: 0

Explanation: Data set name *DDDDDDDD*, specified in a READ command, could not be allocated by the SMC.

System Action: The command is not processed.

User Response: Review the specified data set name to ensure that it is a cataloged MVS data set, and re-issue the command.

SMC0154 UNITATTR model *MMMMMMMM* ignored for library device *XXXX*

Message Level: 0

Explanation: A UNITATTR command has been issued specifying device *XXXX*. The device is defined to a library subsystem known to SMC. The SMC obtains the device model from the library subsystem.

System Action: The UNITATTR command does not process the device.

User Response: None.

SMC0155 LOG settings:
CCCC....CCCC
Logging currently {INACTIVE|ACTIVE}

Message Level: 0

Explanation: A LOG command was issued with the LIST keyword. The SMC0155 multiline message lists the current settings and status for the SMC subsystem. Refer to the LOG command for parameter descriptions.

In addition, a log status of ACTIVE indicates that logging has been started; INACTIVE indicates that logging has not been started, or has been stopped at EOF.

System Action: None.

User Response: None.

SMC0156 SMCLLOG file is not currently opened

Message Level: 0

Explanation: A LOG command has been issued with the STOP keyword. However logging is not currently active.

System Action: The LOG command is ignored.

User Response: None.

SMC0157 SMCLLOG file is already opened

Message Level: 0

Explanation: A LOG command has been issued with the START keyword. However, the logging is already active.

System Action: The LOG command is ignored.

User Response: None.

SMC0158 No SMCLLOG DD; logging cannot be started

Message Level: 0

Explanation: A LOG command has been issued with the START keyword. However, there was no SMCLLOG DD in the SMC subsystem startup JCL.

System Action: The LOG command is ignored.

User Response: Add an SMCLLOG DD to the SMC subsystem startup JCL, then restart the SMC subsystem.

SMC0159 Logging {started|stopped}

Message Level: 0

Explanation: A LOG command has been issued with the START or STOP keyword.

System Action: SMC logging is started or stopped.

User Response: None.

SMC0160 Invalid or overlapping range *XXXX1-XXXX2* for keyword ADDRESS of the UNITATTR command

Message Level: 0

Explanation: A UNITATTR command has been issued specifying a device range *XXXX1-XXXX2*, where *XXXX1* is smaller than *XXXX2*.

System Action: The UNITATTR command does not process this device range.

User Response: Reissue the command specifying a valid range.

SMC0161 Restoring all default settings for the *CCC...CCC* command

Message Level: 0

Explanation: The *CCC...CCC* command has been issued with the OFF parameter. All SMC values have been restored for the SMC subsystem.

System Action: None.

User Response: None.

SMC0162 *CCC...CCC* object successfully {added|updated|deleted}

Message Level: 0

Explanation: The *CCC...CCC* command has been successfully processed.

System Action: None.

User Response: None.

SMC0163 DRIVEMAP settings:
CLIENT=XXXX1{-XXXX2} SERVER=XXXX3{-XXXX4}

Message Level: 0

Explanation: A DRIVEMAP command has been issued with the LIST keyword. The SMC0163 multiline message lists the currently active DRIVEMAPs. One line is produced for each CLIENT/SERVER range.

System Action: None.

User Response: None.

SMC0164 CLIENT range XXXX1{-XXXX2} not found for the OFF parameter of the DRIVEMAP command

Message Level: 0

Explanation: The DRIVEMAP command has been issued with the OFF parameter and CLIENT parameter. No matching DRIVEMAP range matching the CLIENT parameter was found.

System Action: None.

User Response: None.

SMC0165 Keyword {CLIENT/SERVER} range XXXX1{-XXXX2} overlaps with previous DRIVEMAP entry

Message Level: 0

Explanation: A DRIVEMAP command was issued containing a CLIENT or SERVER range that overlaps a range specified on a previously issued DRIVEMAP command.

System Action: The DRIVEMAP command is not processed.

User Response: Issue the DRIVEMAP LIST command to view the list of currently active DRIVEMAP ranges. Correct the DRIVEMAP command to specify a new range. Or, use the DRIVEMAP CLIENT(XXXX1-XXXX2) OFF command to de-activate the existing overlapping range and re-specify the command with unique ranges.

SMC0166 Excessive READ depth at line *nn* of DSN *DDDDDDDD*

Message Level: 0

Explanation: A READ command was issued from a file. However, too many command files are already open, and the read command depth has been exceeded. Read command depth is defined as the number of files that can be open simultaneously due to imbedded Read commands.

System Action: The READ command is not processed.

User Response: Restructure your command files to reduce the READ command depth.

SMC0167 {LIBRARY|RESYNCH} summary:
LIBRARY *LLLLLLLL* is {disabled|inactive|active on {LOCAL SUBSYS
SSSS|REMOTE SERVER SSSSSSS}}

All LIBRARY(s) active
%i of %i LIBRARY(s) active
WARNING: All LIBRARY(s) inactive
WARNING: No LIBRARY(s) defined
WARNING: No LIBRARY(s) enabled

Message Level: 0

Explanation: A RESYNCH or LIBRARY STATUS command was issued. Each LIBRARY will be represented by a line in the multiline WTO displaying its status.

System Action: None.

User Response: None.

SMC0168 WARNING: No TREQDEF command processed

Message Level: 4

Explanation: No TREQDEF command was found in the SMCPARMS or SMCCMDS file at startup.

System Action: TAPEREQ processing is not performed for allocation or mount requests.

User Response: If your installation previously specified TREQDEF in HSC or MVS/CSC, issue the TREQDEF command to SMC and add the TREQDEF command to the SMCCMDS (or SMCPARMS) file.

SMC0169 WARNING: {SMCCMDS|SMCPARMS} processing TIMEOUT; startup continuing

Message Level: 4

Explanation: During SMC subsystem startup, startup command processing could not complete the indicated command file.

System Action: The SMC continues startup processing, but not all startup commands may have been processed.

User Response: None.

SMC0170 {Request timeout|SMC subsystem terminating}; request to subsystem SSSS aborted

Message Level: 4

Explanation: The SMC issued a request to subsystem SSSS, but no response was received within the time limit, or the SMC subsystem was terminated.

System Action: The SMC continues processing without waiting for the HSC response. In addition, if a request timeout is indicated, the SMC SERVER path to the specified subsystem is disabled.

User Response: Check the status of the subsystem that is not responding to SMC, and correct the problem. After correcting the problem, enable the appropriate SERVER path.

SMC0171 Allocatability test matrix retries exceeded

Message Level: 0

Explanation: The SMC could not determine allocatability of the job step using its test matrix in the calculated number of retries.

System Action: Normally, processing continues, with SMC “backing out” exclusion conditions until the job step is allocatable.

During JES3 CI esoteric substitution, if SMC is unable to solve its allocatability matrix after reverting to the original list of eligible devices, an abend results, and no esoteric substitution is performed.

User Response: If possible, rerun the job with allocation trace turned on. Save trace and log output and contact Sun StorageTek Software Support.

SMC0174 ASCOMM ACK timeout for job=JJJJJJJJ (DS=nnnn-nnnn)

Message Level: 0

Explanation: The SMC replied to a request from job *JJJJJJJJ*, but no acknowledgment was received within the time limit.

System Action: The SMC continues processing without waiting for the acknowledgment.

User Response: None.

SMC0175 Communication initialized on LIBRARY=*name* {SERVER=*name*}

Message Level: 8

Explanation: The SMC has successfully communicated with the specified LIBRARY for the first time. Additionally, if the communication path selected was a remote SERVER, then the SERVER is also displayed.

System Action: Processing continues.

User Response: None.



Note: This message is produced each time communication switches from one server to another, or communication is re-established after an error.

SMC0192 Specific volume lookup failure(s) during job *JJJJJJJJ*

Message Level: 4

Explanation: During execution of job *JJJJJJJJ*, the SMC could not complete a volume lookup request for one or more specific volumes.

System Action: The SMC continues processing the request using available policy information.

User Response: If other policy information is not sufficient to allocate the specific volume, investigate whether FAILNOINFO(SPECIFIC) should be specified.

SMC0193 Scratch volume lookup failure(s) during job *JJJJJJJJ*

Message Level: 8

Explanation: During execution of job *JJJJJJJJ*, the SMC could not complete a volume lookup request for one or more scratch volumes.

System Action: The SMC continues processing the request using available policy information.

User Response: If other policy information is not sufficient to allocate the scratch volume correctly, investigate whether `FAILNOINFO(ALL|ON)` should be specified.

SMC0193 Scratch volume lookup failure(s) during job *JJJJJJJJ*

Message Level: 8

Explanation: During execution of job *JJJJJJJJ*, the SMC could not complete a volume lookup request for one or more scratch volumes.

System Action: The SMC continues processing the request using available policy information.

User Response: If other policy information is not sufficient to allocate the scratch volume correctly, investigate whether `FAILNOINFO(ALL|ON)` should be specified.

SMC0226 Path switch from `SERVER=SSSSSSSS` to `SSSSSSSS` for `LIBRARY=LLLLLLLLL`

Message Level: 4

Explanation: The SMC automatically switched the communication path from the secondary server `SSSSSSSS` to primary server `SSSSSSSS` for library `LLLLLLLLL`.

System Action: Processing continues.

User Response: None.

SMC0230 IEFJFRQ exit smcxJFRQ is inactive. SMC is unable to influence tape allocation

Message Level: 0

Explanation: Exit routine smcxJFRQ has reached its error threshold and has been made inactive by the operating system.

The smcx in smcxJFRQ will be replaced with the subsystem name belonging to SMC. IBM message CSV430I was issued when the routine was made inactive. An SVC dump of the job most likely occurred along with message CSV430I.

The dump title will be:

```
DUMP TITLE=COMPON=SSI,COMPID=5752SC1B6,ISSUER=IEFJSARR,
MODULE=IEFJRASP,ABEND=aaaa,REASON=rrrrrrrr
```

System Action: SMC is unable to direct tape allocation to the correct drive. SMC will delete the SMC0230 each minute and re-check the state of exit routine. If the exit routine is still inactive SMC0230 will be re-issued.

User Response: Investigate the reason that the exit became inactive. To display the exit use the following MVS command:

```
DISPLAY PROG,EXIT,EXITNAME=IEFJFRQ,DIAG
```

The state of the exit can be made active by one of the following methods:

1. Use the MVS SETPROG command:

```
SETPROG EXIT,MODIFY,EX=IEFJFRQ,MOD=smcxJFRQ,STATE=ACTIVE
```

2. Stop and re-start SMC.

Retain the SVC dump and job log of the failing job. Contact Sun Microsystems Software support for analysis of the failure.

SMC9999 *MMMMMMMM* Variable text

Message Level: 12, 16, 20, 24, 28

Explanation: SMC9999 messages are intended for Sun StorageTek Software Support problem determination and resolution. *MMMMMMMM* is the name of the issuing module.

System Action: None.

User Response: None. A message level (LVL) of 12 or higher should generally be specified only when directed by Sun StorageTek Software Support.

SMC Utility Message Listing

SMCU0001 SMC is not active or not JES3; unable to produce report

Explanation: The SMCUPJS utility was submitted on a system without an active SMC subsystem, or on a system that is not JES3.

System Action: Report processing terminates with a return code of 8.

User Response: If the host system is JES3, start the SMC subsystem and resubmit the utility job.

SMCU0002 Utility release level *n.n* is incompatible with SMC release *n.n*

Explanation: The SMCUPJS utility load module is not at the same release level as the SMC subsystem on the host.

System Action: Report processing terminates with a return code of 8.

User Response: Resubmit the utility job with the release level matching the SMC subsystem.

SMCU0003 No active libraries; unable to determine drive characteristics

Explanation: The SMCUPJS utility was submitted on a system without an active HSC or MVS/CSC subsystem, and no defined active remote library, or the SMC subsystem has not yet processed an allocation or message request.

System Action: Report processing terminates with a return code of 8.

User Response: Start the HSC or MVS/CSC subsystem, or define a remote HSC subsystem using the LIBRARY and SERVER commands. Then issue the RESYNC command and resubmit the job.

SMCU0004 *** WARNING: HCD esoteric not found

Explanation: The SMCUPJS utility found an esoteric defined by the JES3 SETUNIT statement that had no corresponding HCD esoteric.

System Action: Report processing continues, but a return code of 4 is returned.

User Response: Research and correct the discrepancy.

- SMCU0005** *** WARNING: HCD esoteric does not match JES3 esoteric
- Explanation:** The SMCUPJS utility found an esoteric that contains different devices in its HCD and JES3 definitions.
- System Action:** The report lists JES3 devices missing from the HCD esoteric and HCD devices missing from the JES3 esoteric. Report processing continues, but a return code of 4 is returned.
- User Response:** Research and correct the discrepancy.
- SMCU0006** *** WARNING: XTYPE contains inconsistent location or drive characteristics
- Explanation:** Drives contained within an XTYPE do not have the same location type (library, virtual, nonlibrary, or unknown), the same location (ACS or VTSS), or the same recording technique.
- System Action:** Report processing continues, but a return code of 4 is returned.
- User Response:** Review the Device to XTYPE report to determine the inconsistency, and correct the discrepancy.
- SMCU0007** *** WARNING: XTYPE contains unknown or MODEL(IGNORE) devices
- Explanation:** One or more of the drives within an XTYPE are either UNKNOWN, MODEL(IGNORE), or both. However, one or more drives in the XTYPE are NOT UNKNOWN or MODEL(IGNORE).
- System Action:** Report processing continues, but a return code of 4 is returned.
- User Response:** Verify that the XTYPEs are defined as intended.
- SMCU0008** SMCUDBX parameter error
- Explanation:** An error was detected in the input PARM for the SMCUDBX utility. A detailed description of the error follows.
- System Action:** The utility processing terminates with a return code of 8.
- User Response:** Correct the indicated error and resubmit the job.

SMCU0009 Unable to load TMS interface routine
{SLUDRCA1|SLUDRTL|SLUDRRMM|SLUDRZAR}

Explanation: Explanation: Based on the input TMS parameter, the SMCUDBX utility attempted to load the corresponding tape management access routine, but the load failed.

System Action: The utility processing terminates with a return code of 8.

User Response: Ensure that a load library containing the appropriate SLUDR* routine for your tape management system is available to the SMCUDBX utility through a JOBLIB, STEPLIB, or MVS LINKLIST library.

SMCU0010 Error opening file DDNAME {DBTMS|DBEXTFIL|

Explanation: Explanation: The SMCUDBX program or tape management extract program was unable to open the tape management data base file or extract file.

System Action: System Action: The utility processing terminates with a return code of 8.

User Response: User Response: Correct the execution JCL to provide the required DD statement.

SMCU0011 Error processing ZARA interface for subsystem SSSS

Explanation: The user requested an extract from the ZARA tape management system with subsystem ID CCCC. A detailed description of the error follows the message.

System Action: The utility processing terminates with a return code of 8.

User Response: Correct the indicated error and resubmit the job.

SMCU0012 Unexpected return code XXXX from TMS interface

Explanation: An unexpected return code XXXX was received from the TMS extract routine.

System Action: The utility processing terminates with a return code of 8.

User Response: If user modifications have been made to the TMS extract routine, correct the routine. Otherwise, contact Sun StorageTek Software Support for assistance.

SMCU0013 No VLF control record found by SLUDRTLM

Explanation: The user specified TLMS as the SMCUDBX tape management system, but the input file did not contain a CA-DYNAM/TLMS VLF record.

System Action: Utility processing terminates with a return code of 8.

User Response: Verify that the correct input file was specified on the DBTMS DD statement, and resubmit the job.

Chapter 11. StorageTek HTTP Server Messages

Overview

This chapter provides information about StorageTek HTTP server messages. See Chapter 2, “SMC and StorageTek Library Management” for more information about the HTTP Server.

Message Format

Messages are displayed on the console in the following format:

SKYnnnn message-text

where:

- *SKY* identifies the StorageTek HTTP server.
- *nnnn* is the four-character message number.
- *message-text* is the actual text displayed on the job log or system log.

StorageTek HTTP Server Message Listing

The following HTTP Server messages are listed numerically.

- SKY001I** *name Server version starting on system running MVS level*
Explanation: This is the HTTP server startup message
- SKY002E** Error binding server socket - terminating
Explanation: The server cannot bind to the specified network port. The server shuts down.
- SKY003I** *name ready to accept requests*
Explanation: The server name is ready for normal operation.
- SKY004E** Error opening server socket - terminating
Explanation: The server cannot open a socket connection to the required network port. The server shuts down.
- SKY005E** Server select failed rc=*ret* err=*msg*
Explanation: An error occurred while listening for a client connection.
- SKY006I** TCP/IP connection terminated
Explanation: The client connection was terminated.
- SKY007E** Accept error - shutting down
Explanation: There was an error in network connection accept processing. The server shuts down.
- SKY008E** Error reading request
Explanation: A network error occurred while reading a client request.
- SKY013I** Shutdown command from operator acknowledged
Explanation: The server has received a console command to shut down.

SKY016I name Server *ver* started at *tttt*
 "requests received: *nnn*
 "tasks default: *dd* active: *aa* limit: *ll*

Explanation: Response to an operator display status command and indicates the server name, version, start date and the total number of requests received. It also details the worker task settings, the default number of idle tasks, the maximum limit of dynamically started tasks and the current number of active tasks.

SKY018I Request *n* task completed *rc=ret*

Explanation: The worker task *t* has completed with return code *ret*.

SKY023E Unknown server command: *cmd*

Explanation: The command *cmd* is not a valid console command.

SKY025E Invalid command option: *oooo*

Explanation: The option *oooo* is not a valid option for the operator command.

SKY026I Task: *t* Requests: *n* Client: *xxx.xxx.xxx.xxx* : *pppp*

Explanation: This message is issued in response to a display client console command. Task *t* has serviced *n* requests from the client at IP address *xxx.xxx.xxx.xxx* port *pppp*.

SKY027I No active client connections

Explanation: This message is issued in response to a display client console command, when there are no clients currently connected to the server.

SKY030E Missing to/from translation string

Explanation: The data set file name translation is incorrect.

SKY031I Connections total: *nn* max: *mm/min*

Explanation: This message is issued in response to a display client console command. There have been a total of *nn* connections at a maximum rate of *mm* per minute.

SKY031W Not APF authorized, some facilities not available

Explanation: The HTTP server is not APF authorized.

SKY032I - SKY051E

SKY032I Connection rates: *nn*/min *mm*/hour

Explanation: This message is issued in response to a display client console command. The connection rates are *nn* per minute and *mm* per hour.

SKY040I Option *nnnn* *ssss*

Explanation: The parameter option *nnnn* is set to *ssss*.

SKY043E Terminating execution due to parameter error(s)

Explanation: There was an error in one or more parameters. The server shuts down.

SKY045E SAF authentication requested but not APF authorized

Explanation: SAF authentication requires caller to be APF authorized, but server is not APF authorized. The server shuts down.

SKY046E Supplied *parm* is too long

Explanation: The length of the parameter string *parm* exceeds the allowed length.

SKY047E Unable to open *dsname*

Explanation: The HTTP server was unable to open the data set *dsname* in response to a client request.

SKY048E *abend_message_line*

Explanation: Message number for abend reporting messages.

SKY049E Not APF authorized, cannot continue

Explanation: The server is not APF authorized but APF authorization is required. The server shuts down.

SKY050E Task shutdown time expired, terminating tasks

Explanation: During HTTP server shutdown, some tasks did not stop before the shutdown timeout was exceeded. These tasks are forcibly terminated.

SKY051E Cannot find server module *name*

Explanation: When the HTTP server performed its startup checks, it could not find its module: *name*.

- SKY052E** Cannot find all server modules, shutting down
- Explanation:** The HTTP server could not find all of its modules when it performed its startup checks. The server shuts down.
- SKY053I** Current active worker tasks: *t*
- Explanation:** The current number of worker tasks for servicing requests.
- SKY053E** Fatal error in main task, commencing forced shutdown
- Explanation:** The server suffered a fatal error in its main task and was unable to perform an orderly shutdown.
- SKY054E** Fatal error in main task, attempting orderly shutdown
- Explanation:** The server suffered a fatal error in its main task and is attempting to perform an orderly shutdown.
- SKY055I** Forcibly terminating task *t*
- Explanation:** The task *t* is forcibly terminated.
- SKY056I** Disable abend handling option specified, handling disabled
- Explanation:** The HTTP server abend handlers will not be enabled so any abends can cause dumps and may also shut down the server.
- SKY059E** Error initializing translation tables
- Explanation:** An error occurred while initializing the server file name translation table.
- SKY060E** SERVERBASE not set, shutting down
- Explanation:** The required parameter `SERVERBASE` was not set in the parameter file. The server shuts down because it cannot locate its data files.
- SKY061I** Authentication request received from client at *xxx.xxx.xxx.xxx* :
pppp
- Explanation:** A request to authenticate was received from the client at network address *xxx.xxx.xxx.xxx* and port *pppp*.

SKY100W - SKY109I

- SKY100W** Unable to set socket *option* to *value*
Explanation: The named socket *option* could not be set. Processing continues.
- SKY101W** Unable to set socket option
Explanation: A socket option could not be set.
- SKY102E** Socket *option* error: *explanation*
Explanation: Indicates why a socket option could not be set.
- SKY103E** Cannot open parameter file *dsname*, terminating
Explanation: The HTTP server was unable to open the parameter file *dsname*. The server shuts down.
- SKY104E** Parameter *ppp* invalid
Explanation: The parameter *ppp* is not known.
- SKY105E** Unexpected character *c* encountered, skipping line
Explanation: When parsing the parameter file, an unexpected character was encountered. The parameter is skipped by moving to the next line.
- SKY106E** Expected number but non numeric: *ssss*
Explanation: When parsing the parameter file, a non numeric item was found when a number was expected.
- SKY107I** *parm* set to *vvv*
Explanation: The parameter *parm* is set to value *vvv*.
- SKY108E** Expected string: *ssss*, skipping
Explanation: When parsing the parameter file, the string *ssss* was expected but not found. Parsing skips to the next parameter.
- SKY109I** *pppp* set to *vvv*
Explanation: When reading the parameter file, the parameter *pppp* was set to value *vvv*.

- SKY110E** Unknown token type: *tttt*
Explanation: The parameter token is unknown.
- SKY112E** Cannot create *tbl*, terminating
Explanation: During initialization, the memory table *tbl* could not be allocated. The server shuts down.
- SKY113E** Cannot start task *tttt*, terminating
Explanation: During initialization, the task *tttt* could not be started. The server shuts down.
- SKY114I** Task *tttt* completed, rc=*nn*
Explanation: Task *tttt* completed with return code *nn*.
- SKY115I** Commencing server shutdown
Explanation: The server has started to shut down.
- SKY116E** Task *tttt* unable to get client id
Explanation: An error occurred while passing a socket connection to the work task *tttt*.
- SKY118I** Task *t* waiting for work
Explanation: The worker task *t* is now idle after completing a request.
- SKY119I** Task *t* shutting down
Explanation: Task *t* has commenced shutting down.
- SKY120E** Task *t* unable to allocate dir list buffer
Explanation: The worker task *t* was unable to allocate a memory buffer needed for a directory listing.
- SKY121E** Task *t* unable to open directory readme
Explanation: The worker task *t* encountered an error when attempting to open a directory readme file while listing a directory.

SKY122E - SKY130I

- SKY122E** Task *tt* connection error with *xxx.xxx.xxx.xxx* errno *error_text*
- Explanation:** The worker task *t* encountered a connection error (error number *errno*, text *error_text*) with the client at IP address *xxx.xxx.xxx.xxx*.
- SKY123E** Task *t*, connection eof from *xxx.xxx.xxx.xxx*
- Explanation:** For worker task *t*, the connection to client at IP address *xxx.xxx.xxx.xxx* ended.
- SKY124I** Task *t* connection terminated by peer *adr*
- Explanation:** The network connection to worker task *t* was terminated by the client with IP address *adr*.
- SKY125E** Task *t cmp*, abend *aaa* caught
- Explanation:** The abend handler for task *t* in component *cmp*, intercepted a type *aaa* abend. Task *t* is shut down and a replacement task is created.
- SKY126E** Task *t cmp*, illegal instruction abend caught. Code *aaa*
- Explanation:** The abend handler for task *t* in component *cmp*, intercepted an illegal instruction abend of type *aaa*. Task *t* will be shut down and a replacement task created.
- SKY127E** Task *t cmp* memory access abend caught. Code *aaa*
- Explanation:** The abend handler for task *t* in component *cmp*, intercepted a memory abend of type *aaa*. Task *t* is shut down and a replacement task is created.
- SKY128E** Task *t* request error *nnn* msg: *description*
- Explanation:** For worker task *t*, an HTTP protocol error was encountered for a client request.
- SKY129E** *ppp* out of valid range min - max
- Explanation:** The numeric parameter *ppp* is outside the allowed range.
- SKY130I** *hhh* handler ready
- Explanation:** The handler *hhh* task has finished initializing and is ready for work.

- SKY131I** *hhh* handler shutting down
Explanation: The handler *hhh* task has started shutting down.
- SKY132E** *hhh* handler startup timeout, terminating
Explanation: The startup timeout for the handler task *hhh* has been exceeded. The handler will be terminated.
- SKY133E** Unable to start *hhh* handler, terminating
Explanation: The HTTP server was unable to start its handler task *hhh*. The server shuts down.
- SKY134E** Unable to allocate *mmm* memory, terminating
Explanation: During initialization, memory could not be allocated for *mmm* memory. The server shuts down.
- SKY135E** Unable to open log, reason: *rrr*
Explanation: The log handler task was unable to open the log file for reason *rrr*.
- SKY136W** Out of memory for stack space, requested *nnnn* bytes
Explanation: An HTTP server task was unable to allocate stack memory.
- SKY138W** No free worker tasks, at maximum limit
Explanation: A request has been received but there are no idle worker tasks and the number of tasks is at the maximum limit. A server busy request is returned to the client. If this condition occurs frequently consider increasing the maximum limit of worker tasks to a value where this is a rare occurrence.

Appendix A. Intercepted Messages

IBM Operating System Messages

The messages listed in Table 10 are received by the SMC. IBM message manuals describe the exact format (spacing, etc.) and definition for each message. Ellipses are used to indicate that the message contains more text than is shown.

Correct operation of the SMC depends on these messages. Do not suppress or alter them using products designed to handle messages through the subsystem interface (SSI). Many automated operations systems make use of the subsystem interface to intercept and alter or suppress messages.



Note: If the “suppressed by subsystem” and “hardcopy only” bits are turned on in the WQE (the MVS write queue element) before the SMC has received the message, the SMC ignores the WTO, and the message is not displayed at the console.

If you plan to use an automated operations system and are unsure about how it intercepts messages, contact the product vendor.

Although these messages may be suppressed (that is, prevented from displaying in the console) by using MPFLSTxx parameters or an MPF exit, the text of these messages should not be changed. The use of other WTO exits to change the display characteristics or the text of these messages is not supported by the SMC.

Volume serial numbers (‘ser’) as specified in messages from the operating system, are defined as follows:

SCRATCH: a public scratch volume is to be mounted (nonspecific request).

PRIVATE: a private scratch volume is to be mounted (nonspecific request).

VVVVVV: volume serial number to be processed (specific request)

Messages that contain VOLSERS with more than six characters or any character except A-Z, 0-9, # (crosshatch), \$, ¥ (yen character), and optional trailing blanks are ignored by the SMC.

Table 10. Intercepted Operating System Messages

Message ID	Description
IEC068A	U dddd,ser
IEC101A	M dddd,ser,...
IEC111E	D dddd,ser
IEC114E	D dddd...
IEC135A	U dddd,ser...
IEC400A	M dddd, ser...
IEC401A	F dddd,ser...
IEC501A	M dddd,ser{,labtyp}
IEC501E	M dddd,ser{,labtyp}
IEC502E	n,dddd,ser...
IEC509A	F dddd,ser...
IEC512I	I/O ERR LBL ERR SEC VOL...
IEC701D	M dddd, VOLUME TO BE LABELED ser
IEC702I	dddd, VOLUME LABELS CANNOT BE VERIFIED
IEC703I	dddd, VOLUME IS FILE PROTECTED
IEF233A	M dddd,ser{,labtyp}
IEF233D	M dddd,ser{,labtyp}
IEF234E	{K D R} dddd{,ser...}
IGF500I	SWAP dddd to eeee - OPERATOR I/O ERROR
IGF502E	PROCEED WITH SWAP OF dddd TO eeee
IGF503I	ERROR ON dddd, SELECT NEW DEVICE
IGF509I	SWAP ddd - OPERATOR I/O ERROR
IGF511A	WRONG VOLUME MOUNTED ON dddd, MOUNT ser,...
_TA0233D	Message for ASM2

JES3 Messages

The following JES3 messages are processed by the SMC:

- IAT5210
- IAT5310
- IAT5410

IBM message manuals describe the exact format (spacing, etc.) and definition of each message.

Tape Management System Messages

CA-1 Messages

The following CA-1 (TMS) messages are received by the SMC. Refer to the appropriate Computer Associates publication for the exact format and meaning of each message.

Table 11. Tape Management System Messages - CA-1

Message ID	Description
CTS001	See CA-1 User Manual, Volume 1
CTS002	See CA-1 User Manual, Volume 1
CTS004	See CA-1 User Manual, Volume 1
CTS005	See CA-1 User Manual, Volume 1
CTS007	See CA-1 User Manual, Volume 1
CTS008	See CA-1 User Manual, Volume 1
CTS009	See CA-1 User Manual, Volume 1
CTS010	See CA-1 User Manual, Volume 1
CTS011	See CA-1 User Manual, Volume 1
CTS014	See CA-1 User Manual, Volume 1
CTS015	See CA-1 User Manual, Volume 1
CTT100A	See CA-1 User Manual, Volume 1
CTT101A	See CA-1 User Manual, Volume 1
CTT102A	See CA-1 User Manual, Volume 1
CTT103A	See CA-1 User Manual, Volume 1
CTT104A	See CA-1 User Manual, Volume 1
CTT105A	See CA-1 User Manual, Volume 1
TMS001	See CA-1 User Manual, Volume 1
TMS002	See CA-1 User Manual, Volume 1

Table 11. Tape Management System Messages - CA-1 (Continued)

Message ID	Description
TMS004	See CA-1 User Manual, Volume 1
TMS005	See CA-1 User Manual, Volume 1
TMS007	See CA-1 User Manual, Volume 1
TMS008	See CA-1 User Manual, Volume 1
TMS009	See CA-1 User Manual, Volume 1
TMS010	See CA-1 User Manual, Volume 1
TMS011	See CA-1 User Manual, Volume 1
TMS014	See CA-1 User Manual, Volume 1
TMS015	See CA-1 User Manual, Volume 1
IECTMS7	See CA-1 User Manual, Volume 1
CA\$F810A	See CA-1 Message Guide
CA\$F813A	See CA-1 Message Guide

CONTROL-M/TAPE (formerly CONTROL-T) Messages

The following CONTROL-M/TAPE messages are received by the SMC. Refer to the appropriate BMC publication for the exact format and meaning of each message.

Message ID	Description
CTT100A	See BMC's INCONTROL for OS/390 and z/OS Message Manual
CTT101A	See BMC's INCONTROL for OS/390 and z/OS Message Manual
CTT102A	See BMC's INCONTROL for OS/390 and z/OS Message Manual
CTT103A	See BMC's INCONTROL for OS/390 and z/OS Message Manual
CTT104A	See BMC's INCONTROL for OS/390 and z/OS Message Manual
CTT105A	See BMC's INCONTROL for OS/390 and z/OS Message Manual

DFSMSrmm Messages

DFSMSrmm mount message (EDG6627A) must be acted on by the SMC when the volume or drive specified in the message is under the control of the SMC. The action of the SMC is similar to the SMC actions for the normal MVS mount messages (e.g., IEC233A, etc).

The DFSMSrmm Tape Initialization program (EDGINERS) issues a series of messages describing the success or failure of tape initialization, erasure, and/or verification. This series of messages is used to drive the dismount of the tapes mounted from the EDG6627A message. Refer to Table 12 for the messages that must be acted on by the SMC to dismount a tape.

Table 12. Tape Management System Messages - DFSMSrmm

Message ID	Description
EDG6620I	VOLUME volser INITIALIZATION AND VERIFICATION SUCCESSFUL
EDG6621E	VOLUME volser INITIALIZATION FAILED
EDG6623I	VOLUME volser ERASE, INITIALIZATION AND VERIFICATION SUCCESSFUL
EDG6624I	VOLUME volser ERASE FAILED
EDG6627E	M dev VOLUME (volser) RACK (rack-number) TO BE action, lbltype
EDG6642E	VOLUME volser LABELLED SUCCESSFULLY
EDG6643E	VOLUME volser ERASED AND LABELLED SUCCESSFULLY

Appendix B. MEDia, RECtech, and MODel Values

This appendix provides values for MEDia, RECtech, and MODel parameters. These parameters are used to specify transport and media characteristics. They are specified in various NCS commands and control statements, including the SMC TAPEREQ control statement.

Media Type (MEDia)

The Media type is used to specify the desired type of media to be used for a data set. It is specified in various NCS commands and control statements, including:

- SMC TAPEREQ control statement
- HSC VOLATTR control statement

The following table describes valid MEDia types:



Note:

- The SL8500 library supports the T9840A, T9840B, T9840C, T9840D, T9940B, and T10000 media types and recording techniques.
- The SL3000 library supports the T9840C, T9840D, and T10000 media types and recording techniques.

Table 13. Media Types

Media Type	Description
LONGitud	Indicates standard or enhanced (ECART) capacity cartridges.
Standard	Indicates a standard capacity cartridge. Synonyms include CST, MEDIA1, STD, 1, 3480. A standard capacity cartridge can be used on any longitudinal transport (i.e., 4480, 4490, 9490, or 9490EE). However, if the data is written on the tape in 36-track, the data cannot be read by an 18-track 4480 transport.
ECART	Indicates an enhanced capacity cartridge. Synonyms include E, ECCST, ETAPE, Long, MEDIA2, 3490E. An ECART cartridge can be used only on 36-track transports (i.e., 4490, 9490, and 9490EE), and is identified by a two tone colored case.
ZCART	Indicates an extended-enhanced capacity cartridge. A ZCART cartridge can be used only on TimberLine 9490EE 36-track transports. ZCART can be abbreviated as Z.

Table 13. Media Types (Continued)

Media Type	Description
Virtual	Indicates a VTV (Virtual Tape Volume) mounted on a VTD (Virtual Tape Drive).
HELical	<p>Indicates a helical cartridge. A helical cartridge can be used only on RedWood transports. The following subtypes and abbreviations specify a helical cartridge:</p> <p>DD3 indicates any DD3A, DD3B, or DD3C helical cartridge. DD3A or A indicates a helical cartridge with a 10GB media capacity. DD3B or B indicates a helical cartridge with a 25GB media capacity. DD3C or C indicates a helical cartridge with a 50GB media capacity.</p> <p>The seventh position in the external label is encoded with the cartridge type (i.e., A, B, or C).</p>
STK1	Indicates any T9840 cartridge.
STK1R	Indicates a T9840 data cartridge. STK1R can be abbreviated as R. T9840 cartridge media capacities are 20GB (T9840A and T9840B), 40GB (T9840C), or 75GB (T9840D).
STK1U	Indicates a T9840A, T9840B, or T9840C cleaning cartridge. STK1U can be abbreviated as U.
STK1Y	Indicates a T9840D cleaning cartridge. STK1Y can be abbreviated as Y.
STK2	Indicates any T9940 cartridge.
STK2P	Indicates a T9940 data cartridge. STK2P can be abbreviated as P. T9940 cartridge media capacities are 60GB (T9940A) or 200GB (T9940B)
STK2W	Indicates a T9940 cleaning cartridge. STK2W can be abbreviated as W.
T10000T1 or T1	Indicates a full-capacity 500GB T10000A or 1TB T10000B cartridge. T10000T1 can be abbreviated as T1.
T10000TS or TS	Indicates a smaller-capacity 120GB T10000A or 240GB T10000B cartridge. T10000TS can be abbreviated as TS.
T10000CT or CT	Indicates a T10000 cleaning cartridge. T10000CT can be abbreviated as CT.

When this parameter is not specified, a default is chosen based on the value of the RECtech parameter. The following table shows default values used if MEDia is omitted:

Table 14. Media Type Defaults

RECtech Entered:	MEDia Default
18track	Standard
36track, 36Atrack, 36Btrack	LONGItud
36Ctrack	ZCART
LONGItud	LONGItud
DD3, Helical	DD3A
STK1R, STK1R34, STK1R35 STK1RA, STK1RA34, STK1RA35 STK1RB, STK1RB34, STK1RB35 STK1RAB, STK1RAB34, STK1RAB35 STK1RC, STK1RC34, STK1RC35, STK1RD, STK1RDE, STK1RDN, STK1RD34, STK1RD35, STK1RDE4, STK1RDE5	STK1R
STK2P, STK2P34, STK2P35 STK2PA, STK2PA34, STK2PA35 STK2PB, STK2PB34, STK2PB35	STK2P
Virtual	Virtual

Recording Technique (RECtech)

The recording technique, or RECtech, is used to specify the method used to record data tracks on the tape surface for the desired data set. It is used in the following NCS commands and control statements:

- SMC TAPEREQ control statement
- HSC VOLATTR control statement

The following table describes valid recording techniques:



Notes:

- The SL8500 library supports the T9840A, T9840B, T9840C, T9840D, T9940B, and T10000 media types and recording techniques.
- The SL3000 library supports the T9840C, T9840D, and T10000 media types and recording techniques.
- The T9940B transport supports both 3490 and 3590 image definitions. However:
 - With VSM, T9940B transports may **only** be defined as 3490-image devices.
 - With a native interface, T9940B transports may **only** be defined as 3590-image devices.

Table 15. Recording Techniques

Recording Technique	Description
LONGitud	Indicates any device that records data tracks in a linear format along the length of the tape surface. These devices include 4480, 4490, 9490, and 9490EE transports.
18track	Indicates a 4480 transport.
36track	Indicates a 4490, 9490, or 9490EE transport (any device that records in 36-track mode).
36Atrack	Indicates a 4490 transport.
36Btrack	Indicates a 9490 transport.
36Ctrack	Indicates a 9490EE transport.
HELical	Indicates a device using helical recording.

Table 15. Recording Techniques (Continued)

Recording Technique	Description
DD3	<p>Indicates a device using helical recording.</p> <p>DD3A, DD3B, DD3C, DD3D all indicate a helical cartridge. The media indicator in the external label is encoded with the cartridge type (A, B, C, or D). DD3A, DD3B, DD3C, or DD3D can be abbreviated to A, B, C, or D, respectively.</p> <p>Types of helical cartridges, along with their associated media capacities, are:</p> <ul style="list-style-type: none"> • DD3A – 10GB • DD3B – 25GB • DD3C – 50GB • DD3D – cleaning cartridge. <p>Data capacity differences between DD3A, DD3B, and DD3C cartridges are related to the length of the tape in the cartridge, not to the recording density of the data.</p>
STK1R	Indicates any T9840 transport.
STK1R34	Indicates a 3490E-image T9840 transport.
STK1R35	Indicates a 3590-image T9840 transport.
STK1RA	Indicates a T9840A transport.
STK1RA34	Indicates a 3490E-image T9840A transport.
STK1RA35	Indicates a 3590-image T9840A transport.
STK1RB	Indicates a T9840B transport.
STK1RB34	Indicates a 3490E-image T9840B transport.
STK1RB35	Indicates a 3590-image T9840B transport.
STK1RAB	Indicates a T9840A or T9840B transport.
STK1RAB4	Indicates a 3490E-image T9840A or T9840B transport.
STK1RAB5	Indicates a 3590-image T9840A or T9840B transport.
STK1RC	Indicates a T9840C transport.
STK1RC34	Indicates a 3490E-image T9840C transport.
STK1RC35	Indicates a 3590-image T9840C transport.
STK1RD	Indicates a T9840D transport.
STK1RDN	Indicates a non-encryption-enabled T9840D transport.
STK1RD34	Indicates a non-encryption-enabled 3490E-image T9840D transport.
STK1RD35	Indicates a non-encryption-enabled 3590-image T9840D transport.
STK1RDE	Indicates an encryption-enabled T9840D transport.

Table 15. Recording Techniques (Continued)

Recording Technique	Description
STK1RDE4	Indicates an encryption-enabled 3490E-image T9840D transport.
STK1RDE5	Indicates an encryption-enabled 3590-image T9840D transport.
STK2P	Indicates any T9940 transport.
STK2P34	Indicates a 3490E-image T9940 transport.
STK2P35	Indicates a 3590-image T9940 transport.
STK2PA	Indicates a T9940A transport.
STK2PA34	Indicates a 3490E-image T9940A transport.
STK2PA35	Indicates a 3590-image T9940A transport.
STK2PB	Indicates a T9940B transport.
STK2PB34	Indicates a 3490E-image T9940B transport.
STK2PB35	Indicates a 3590-image T9940B transport.
T10K	Indicates all T10000 transports.
T10KN	Indicates all non-encrypted T10000 transports.
T10KE	Indicates all encrypted T10000 transports.
T1A	Indicates any T10000A transport.
T1AN	Indicates a non-encryption-enabled 3490E or 3590-image T10000A transport.
T1A34	Indicates a non-encryption-enabled 3490E T10000A transport.
T1A35	Indicates a non-encryption-enabled 3590 T10000A transport.
T1AE	Indicates an encryption-enabled 3490E or 3590-image T10000A transport.
T1AE34	Indicates an encryption-enabled 3490E-image T10000A transport.
T1AE35	Indicates an encryption-enabled 3590-image T10000A transport.
T1B	Indicates any T10000B transport.
T1BN	Indicates a non-encryption enabled 3490E- or 3590-image T10000B transport.
T1B34	Indicates a non-encryption enabled 3490E-image T10000B transport.
T1B35	Indicates a non-encryption enabled 3590-image T10000B transport.
T1BE	Indicates an encryption-enabled 3490E- or 3590-image T10000B transport.
T1BE34	Indicates an encryption-enabled 3490E-image T10000B transport.
T1BE35	Indicates an encryption-enabled 3590-image T10000B transport.

Table 15. Recording Techniques (Continued)

Recording Technique	Description
Virtual	Indicates a VTV (Virtual Tape Volume) mounted on a VTD (Virtual Tape Drive).

When this parameter is not specified, a default is chosen based on the value of the *MEDIA* parameter. The following table shows default values used if *RECtech* is omitted.

Table 16. Recording Technique Defaults

<i>MEDIA</i> Entered:	RECtech Default
LONGitud	LONGitud
Standard	LONGitud
ECART	36track
ZCART	36Ctrack
DD3A, DD3B, DD3C, DD3D	DD3
STK1R, STK1U, STK1Y	STK1R
STK2P, STK2W	STK2P
T10000T1, T10000TS, T10000CT	T10K
Virtual	Virtual

MODEL Type (MODEL)

The model type is used to specify the model number of a transport (drive), or drive. MODEL provides the same type of information as RECTech, but a user may find it more convenient to specify a transport model rather than a recording technique. MODEL and RECTech are mutually exclusive.

MODEL is used in the following NCS commands and control statements:

- HSC Display DRives command
- SMC TAPEREQ control statement
- SMC UNITAttr operator command

The following table describes valid MODEL types:



Note: You can specify multiple values for this parameter; separate each value with a comma.

Table 17. Model Types

Model Type	Description
4480	Indicates a 4480 (18-track) transport.
4490	Indicates a 4490 (36-track Silverton) transport.
9490	Indicates a 9490 (36-track Timberline) transport.
9490EE	Indicates a 9490EE (36-track Timberline EE) transport.
SD3	Indicates an SD-3 (RedWood) transport.
9840	Indicates a 3490E-image T9840A transport.
984035	Indicates a 3590-image T9840A transport.
T9840B	Indicates a 3490E-image T9840B transport.
T9840B35	Indicates a 3590-image T9840B transport.
T9840C	Indicates a 3490E-image T9840C transport.
T9840C35	Indicates a 3590-image T9840C transport.
T9840D	Indicates a non-encryption-enabled 3490E-image T9840D transport.
T9840D35	Indicates a non-encryption-enabled 3590-image T9840D transport.
T9840DE	Indicates an encryption-enabled 3490E-image T9840D transport.
T9840DE5	Indicates an encryption-enabled 3590-image T9840D transport.
T9940A	Indicates a 3490E-image T9940A transport.
T9940A35	Indicates a 3590-image T9940A transport.
T9940B	Indicates a 3490E-image T9940B transport.
T9940B35	Indicates a 3590-image T9940B transport.

Table 17. Model Types (Continued)

Model Type	Description
T1A34	Indicates a 3490E-image T10000A transport.
T1A35	Indicates a 3590-image T10000A transport.
T1AE34	Indicates an encryption-enabled 3490E-image T10000A transport.
T1AE35	Indicates an encryption-enabled 3590-image T10000A transport.
T1B34	Indicates a 3490E-image T10000B transport.
T1B35	Indicates a 3590-image T10000B transport.
T1BE34	Indicates an encryption-enabled 3490E-image T10000B transport.
T1BE35	Indicates an encryption-enabled 3590-image T10000B transport.
Virtual	Indicates a VTV (Virtual Tape Volume) mounted on a VTD (Virtual Tape Drive).

Appendix C. SMC Migration and Coexistence

SMC with HSC

If SMC and HSC reside on the **same** host, they must be at the same release level.

However, in a client/server environment, HSC 6.1 can communicate with SMC 6.0 clients on **separate** hosts. Therefore, you are not required to upgrade all of your client and server hosts at one time. Sun Microsystems recommends that you always upgrade the HSC library server host first.

SMC with MVS/CSC

SMC and MVS/CSC always reside on the **same** host, and therefore **must** be at the same release level.

Appendix D. Differences Between SMC and NCS 4.1 and Below

The SMC product represents a complete re-architecture of the MVS interfaces for StorageTek tape library management systems. Customers converting to SMC from HSC or MVS/CSC releases 4.1 or below should be aware that minor differences to allocation and message processing may be found with SMC. In a few cases Sun Microsystems recommends changes to existing HSC policies and parameters to preserve behavior consistent with older releases. Significant differences are noted in this appendix.

Allocation Differences

1. SMC allocation is based on exclusion levels (see Chapters 4 and 5 for a detailed description) and patented allocatability testing algorithms. In all cases, the SMC attempts to ensure that the most important policies and criteria are applied first. For example, the SMC ensures that a specific volume is never allocated to an incompatible drive type. Other policies (those above "minimum level") are considered optional. The SMC will ignore optional policies in order to be able to allocate the job.
2. In JES2, SMC allocation uses documented operating system interfaces (IEFSSI, IEFSSSTA, IEFJFRQ) to perform allocation influencing. For the most part, if no parameter overrides such as MIACOMPAT or CAIRTS are specified, the SMC performs its modifications at SSI 78 (MVS tape allocation) rather than updating the Eligible Device List (EDL) at SSI 24. In some cases other vendors' products rely on the StorageTek EDL modifications at SSI 24 to work correctly. You can specify MIACOMPAT(ON) to force the SMC to update the EDL as earlier NCS releases did.
3. SMC policies use logical defaults, including:
 - Always separate affinity chains
 - Always honor user exit and TAPEREQ policies for head-of-chain when an affinity chain is not separated
 - Allow allocation to fail when a volume can not be mounted
 - Do not attempt to influence allocation if the original list of eligible drives does not contain any drive known by Sun Microsystems.

For most customers, these changes eliminate the need to specify previously required policies such as UNITAFF(SEP) and UX02/08(HONOR).

4. SMC supports the ability to specify any esoteric for substitution in a user exit or TAPEREQ provided that:

- Devices cannot be added to the original list of eligible drives
- The specified esoteric must be a valid esoteric, and must contain one or more drives in common with the original list of eligible drives.

Customers with TAPEREQs or user exits with specified esoterics that were invalid in previous releases may experience unexpected results when these esoterics are honored by SMC.

5. In SMC virtual tape is treated more like a unique device type and may be used when policies include both real and virtual drives. For example, if a subpool including real and virtual volumes is specified, SMC allocation may select virtual drives.
6. SMC ignores allocations for tape DDs when all devices in the EDL are undefined to any library subsystem. This behavior allows better coexistence between Sun StorageTek software and other vendor products that influence tape allocation. Sun recommends using SMC UNITATTRs to define StorageTek devices outside the library, and if necessary, include SMC UNITATTRs with MODEL(IGNORE) for nonexistent drives outside the library.
7. The SMC uses SMC UNITATTRs to determine characteristics of drives outside the library.
8. A single version of an allocation user exit is executed, regardless of the number of libraries defined. Therefore, user exit return codes such as “USE LIBRARY DRIVES”, “USE VIRTUAL DRIVES”, etc. are **not** used to determine a request owner, nor does the user exit return code or “USE NONLIBRARY DRIVES” result in the selection of a “different” library.

The preferred way to select a library owner from among multiple libraries is through esoteric substitution on TAPEREQ. Alternatively, user exits can be used to specify a library name or esoteric.



Warning: If your pre-NCS 6.0 user exit uses the “USE NONLIBRARY DRIVES” return code to select an MVS/CSC subsystem in a mixed HSC and MVS/CSC environment, you must now use one of the methods described above to properly select a library.

SMS Differences

Beginning in SMC 5.1 the ability to use DFSMS to influence allocation was implemented in SMC and removed from HSC and MVS/CSC. The SMC invocation of DFSMS routines is supported using standard IBM interfaces, that is, SSI 55. This change requires that the StorageTek ACS routines (&ACSENVIR=STKTAP1) receive control after IBM ACS routines (&ACSENVIR=ALLOC), rather than before, as was the case in HSC and MVS/CSC 4.1 and below. If your IBM DFSMS routines apply a Storage Class to a data set, the data set is now SMS-managed, and StorageTek DFSMS routines will not be in effect for this data set.

Message Handling Differences

The SMC message handling component does not call user exit 01 for all console messages. The USERMsg operator command allows specification of additional messages to be intercepted and passed to the library subsystem's user exit 01.

For swap processing, only the enhanced swap was implemented in SMC. Customers previously doing custom swap processing by defaulting to HSC nonenhanced swap and intercepting IBM swap messages may need to examine their processing and possibly intercept SMC messages.

Appendix E. SMC Interaction with Other Software

Automated Operations

Customers who use an automated operations product should review the following WTORs for possible auto-ops rule changes:

- SMC0110 - issued during SMC swap processing

Open Type J

The Open Type J macro is **not** supported during SMC message handling processing.

Additionally, SMC allocation enhancements may not operate if you use the MVS Open Type J macro. Because this macro allows you to change volume serial numbers or data set names at open time, information available at Job Step Allocation time may be incorrect as interpreted by the SMC.



Note: Some vendor software products use MVS Open Type J. If you are experiencing unexpected allocation results using a vendor software product, check with the vendor to determine if Open Type J is used and follow the recommendations below.

SMC allocation may influence MVS allocation erroneously based on information that may have changed at open time. To prevent this problem when using the Open Type J macro, specify the appropriate esoteric in the JCL or specify an appropriate esoteric in an applicable TAPEREQ control statement.

SAMS: DISK (DMS)

Sterling Software's SAMS: DISK (DMS) has two methods of allocating transports:

- allocates transports at session startup, holds onto the transports throughout the session and uses Open Type J (refer to the section about "Open Type J").
- uses dynamic allocation (DYNALLOC) to allocate transports when required.

The SMC allocates correctly when dynamic allocation is used. Therefore, the latter method of allocating transports is recommended.

CA-MIA Tape Sharing

The Computer Associates Unicenter CA-MIA Tape Sharing for the z/OS and OS/390 product relies upon direct modification of the EDL at SSI24 time to determine what tape drives remain eligible for an allocation event. However, the SMC does not directly modify the EDL as part of its normal allocation processing. To enable proper coexistence with CA-MIA Tape Sharing, set the MIAcompat parameter of the ALLOCDef command to ON.

CA1-RTS Real Time Stacking

The Computer Associates Real Time Stacking product relies on DEFER processing being performed at SSI24 time. However, the SMC normally performs DEFER processing during SSI78 time. To enable proper coexistence with CA1-RTS, set the CA1rts parameter of the ALLOCDef command to ON.

MVS Security Packages

Ensure that your MVS security package (e.g., RACF, TopSecret) is configured to grant SMC the necessary authority to respond to MVS swap messages.

Fault Analyzer for z/OS

The IBM program Fault Analyzer for z/OS is used to determine why an application abends. It may be installed on systems that also run Sun StorageTek NCS software products, however, **it is not useful when applied to abends that occur in NCS code**. Because of the complex subsystem environment where NCS code executes, Fault Analyzer itself may abend.

If Fault Analyzer for z/OS is installed on your NCS system, **Sun Microsystems strongly recommends** that you specify the following update to ensure that this product ignores NCS product abends.

When Fault Analyzer is installed, perform the following update to SYS1.PARMLIB(IDICNF00):

```
EXCLUDE (NAME(HSC) NAME(SMC) NAME(CSC))
```

where:

- *HSC* is the name of the HSC console-started-task
- *SMC* is the name of the SMC console-started-task
- *CSC* is the name of the MVS/CSC console-started-task.

Alternatively, you can specify EXCLUDE (TYPE(STC)) to exclude all console-started tasks from evaluation by Fault Analyzer. However, this broad exclusion may not be appropriate in your environment.

Appendix F. Message Change Summary

The following messages have been added, changed, or deleted for SMC Release 6.1.

New Messages

SMC Messages

- SMC0105
- SMC0138
- SMC0139
- SMC0147
- SMC0148
- SMC0149
- SMC0150
- SMC0151
- SMC0152
- SMC0153
- SMC0154
- SMC0155
- SMC0156
- SMC0157
- SMC0158
- SMC0159
- SMC0160
- SMC0161
- SMC0162
- SMC0163
- SMC0164
- SMC0165
- SMC0166
- SMC0167
- SMC0168
- SMC0169
- SMC0170
- SMC0171
- SMC0174
- SMC0175
- SMC0192
- SMC0193

StorageTek HTTP Server Messages

None.

Changed Messages

- SMC0025
- SMC0056
- SMC0063
- SMC0066
- SMC0067
- SMC0086
- SMC0087
- SMC0094
- SMC0113
- SMC0122
- SMC0123
- SMC0128
- SMC0129
- SMC0131
- SMC0133
- SMC0134
- SMC0146

Deleted Messages

- SMC0114
- SMC0115

Glossary

Terms are defined as they are used in the text. If you cannot find a term here, check the index.

A

Abnormal end of task (abend)— A software or hardware problem that terminates a computer processing task.

ACS-id— A method used in the LIBGEN process to identify ACSs by using hexadecimal digits, 00 to nn.

ACS— *See* Automated Cartridge System.

ACS library— A library is composed of one or more Automated Cartridge Systems (ACSs), attached cartridge drives, and cartridges residing in the ACSs.

address— Coded representation of hardware id, or the destination or origination of data.

allocation— The assignment of resources to a specific task.

asynchronous transmission— Character-oriented data transmission (as distinct from IBM's block-mode transmission).

Automated Cartridge System (ACS)— A fully-automated, cartridge storage and retrieval library subsystem consisting of one or more Library Storage Modules (LSMs) connected by pass-thru ports.

Automated Cartridge System Library Software (ACSLs)— The library control software, which runs in the UNIX®-based Library Control System.

automatic mode— A relationship between an LSM and all attached hosts. LSMs operating in automatic mode handle cartridges without operator intervention. This is the normal operating mode of an LSM that has been modified online. The opposite situation is "manual mode." *See* manual mode.

B

bar code— A code consisting of a series of bars of varying widths. This code appears on the external label attached to the spine of a cartridge and is equivalent to the volume serial number (volser). This code is read by the robot's machine vision system.

BISYNC— Binary Synchronous Communications. An early low-level protocol developed by IBM and used to transmit data on a synchronous communications link. It is a form of data transmission in which synchronization of characters is controlled by timing signals generated at the sending and receiving stations.

C

CAPid— A CAPid uniquely defines the location of a CAP by the LSM on which it resides. A CAPid is of the form "AAL" where "AA" is the acs-id and "L" is the LSM number.

cartridge— The plastic housing around the tape. It is approximately 4 inches (100 mm) by 5 inches (125 mm) by 1 inch (25 mm). The tape is threaded automatically when loaded in a transport. A plastic leader block is attached to the tape for automatic threading. The spine of the cartridge contains an OCR/Bar Code label listing the VOLSER (tape volume identifier).

Cartridge Access Port (CAP)— An assembly that allows several cartridges to be inserted into or ejected from an LSM without human entry into the LSM.

cartridge drive (CD)— A hardware device containing two or four cartridge transports and associated power and pneumatic supplies.

cartridge tape I/O driver— Operating system software that issues commands (for example, read, write, and rewind) to cartridge subsystems. It is the software focal point for attaching a particular type of control unit. (An example is the StorageTek CARTLIB product.)

cartridge transport— *See* transport.

cell— A receptacle in the LSM in which a single cartridge is stored.

CGI—Common Gateway Interface

channel— A device that connects the host and main storage with the input and output devices' control units. A full-duplex channel has two paths (that is, 2 wires, or one wire with signals at two frequencies). A half-duplex channel requires that one port receives while the other transmits.

channel-to-channel (CTC)— Refers to the communication (transfer of data) between programs on opposite sides of a channel-to-channel adapter.(I)

client— The ultimate user of the ACS services as provided by the Library Control System.

client computing system (CCS)— A computer and an operating system.

client-initiated utilities (CIU)— VM/HSC utilities that can be executed from a CLS or client operator console.

client link— The communications link between the LCS and a client.

client-server— A model of interaction in a distributed system in which a program at one site serves a request to a program at another site and awaits a response. The requesting program is called a client; the program satisfying the request is called a server.

client system— The system to which the LCS provides an interface to a StorageTek Automated Cartridge System.

Client System Component (CSC)— Software that provides an interface between the Client Computing System's operating system and the StorageTek Library Control System (LCS).

Client System Interface— Software that provides a transport and translation mechanism between the Library Control System (LCS) and the Client System Component (CSC).

coaxial cable— A transmission medium used in data transmissions for networks using synchronous communications, as opposed to twisted-pair, the primary medium for asynchronous RS-232 communications.

communication parameters— Keywords that need to be specified for a client's mode of access to CLS (VM/Pass-Through facility or TCP/IP).

complex— A system composed of other systems, specifically the ACS server system and the client system.

configuration data base (CDB)— Data used by CLS to maintain the CLS configuration.

Configuration Management (CM)— A CLS program that provides a menu-driven facility for users to define and maintain CLS configurations.

connected mode— A relationship between a host and an ACS. In this mode, the host and an ACS are capable of communicating (in the sense that at least one station to this ACS is online).

connection number— The unique identifier on the server for a communications path. The number is assigned by TCP/IP to identify the unique connection between the server node and a specific port on the server, and the client node and a specific port on the client. The connection number exists only as long as the connection exists.

console— The primary I/O device to control a session on a system.

control data set (CDS)— The data set used by the host software to control the functions of the automated library. Also called a library database.

Control Path Adaptor (CPA)— A Bus-Tech, Inc. hardware device that allows communications between a host processor's block multiplexer channel and a local area network.

control program (CP)— The piece of the VM operating system that controls the real hardware, provides services to virtual machines so that they appear to be real machines, and provides the timesharing services on the processor.

Control Unit (CU)— A microprocessor-based unit situated locally between a channel and an I/O device. It translates channel commands into device commands and sends device status to the channel.

conversational monitor system (CMS)— A virtual machine operating system that provides a general interactive environment and operates only under the control of VM.

coupling facility— A special logical partition that provides high-speed caching, list processing, and locking functions in a sysplex.(I)

coupling facility channel— A high bandwidth fiber optic channel that provides the high-speed connectivity required for data sharing between a coupling facility and the central processor complexes directly attached to it.(I)

coupling services— In a sysplex, the functions of XCF that transfer data and status between members of a group residing on one or more MVS systems in the sysplex.(I)

cross-system coupling facility (XCF)— XCF is a component of MVS that provides functions to support cooperation between authorized programs running within a sysplex.(I)

CTC— Channel-to-channel.

D

Data Path Adapter— A hardware device which translates from a client computing system's data protocol to the data protocol of the StorageTek Control Unit or IMU. An example is DEC's TC44-AA/BA STI-to-4400 ACS Interconnect.

data set— A set of records treated as a unit.

data sharing— The ability of concurrent subsystems or application programs to directly access and change the same data while maintaining data integrity.(I)

device number— A four-digit hexadecimal number that uniquely identifies a device attached to a processor.

device preferencing— The process of preferring one 36-track transport type over another 36-track transport type.

device separation— *See* drive exclusion.

DFSMS— Data Facility Storage Management Subsystem.

direct access storage device (DASD)— IBM's term for a disk drive storage device.

directed allocation— *See* drive prioritization.

disconnected mode— A relationship between a host and an ACS. In this mode, the host and the ACS are not capable of communicating (there are no online stations to this ACS).

DMS/OS— DASD Management System/Operating System.

dotted-decimal notation— The syntactic representation of a 32-bit integer that consists of four 8-bit numbers written in base ten with periods (dots) separating them. In TCP/IP descriptions, dotted-decimal notation is used for Internet addresses.

drive exclusion— (previously referred to as *device separation*) refers to the Storage Management Component (SMC) function of excluding drives for an allocation request based on SMC exclusion criteria. *See the SMC Configuration and Administration Guide* for more information.

drive panel— An LSM wall containing tape transports. The drive panel for a T9840 transport can contain either 10 or 20 transports. The drive panel for a non-T9840 transport can contain a maximum of 4 transports.

drive prioritization— (previously referred to as *directed allocation*) refers to the Storage Management Component (SMC) function of influencing selection of a particular drive based on allocation criteria, including volume location. *See the SMC Configuration and Administration Guide* for more information.

Dual LMU— A hardware/microcode feature that provides a redundant LMU capability.

dump— A printed representation of the contents of main storage at time *t*. This representation is used for debugging purposes.

dynamic server switching— The capability of switching server processors when a system failure occurs on the active server.

E

ECART— Enhanced Capacity Cartridge.

Enhanced Capacity Cartridge— A cartridge that has a length of 1100 feet and can be used only on 36-track transports (i.e., 4490, 9490, and 9490EE).

Enterprise Systems Connection (ESCON)— A set of products and services that provides a dynamically connected environment using optical cables as a transmission medium.(I)

error codes (EC)— Numeric codes displayed by messages indicating the type of problem that caused an error.

error recovery procedures (ERP)— Procedures designed to help isolate and, where possible, to recover from errors in equipment.

ESCON— Enterprise Systems Connection.

esoteric name— The name assigned to transports that have the same device type.

Ethernet— One LAN architecture using a bus topology that allows a variety of computers to be connected to a common shielded coaxial spine. The Ethernet architecture is similar to the IEEE 802.3 standard.

event control block (ECB)— Provides an area for a completion code to be stored when an operation has completed.

EXEC— VM CMS command.

F

file— A set of related records treated as a unit.

File Transfer Protocol (FTP)— A TCP/IP command that provides a way to transfer files between machines connected through TCP/IP.

foreign socket— One of two end-points in a TCP/IP connection-oriented protocol. Specifies the address of a foreign host that can connect to the server.

G

GB— 1,073,741,834 bytes of storage

H

handshake— A flow-of-control signal sent by one process to another.

heartbeat interval— Specifies how often CLS checks the communications link to a client to make sure it is still “up.”

helical cartridge— A high capacity, helical scan cartridge that can hold up to 50GB of uncompressed data. This cartridge can be used only on RedWood (SD-3) transports.

heterogeneous systems— Systems of dissimilar processor or system type.

homogeneous— Of the same or a similar kind or nature.

host computer— A computer that controls a network of computers.

Host Software Component (HSC)— Software running on the Library Control System processor that controls the functions of the ACS.

Host Software Component utilities— Utilities provided by the VM/HSC that can be executed from the HSCUTIL virtual machine. *See* client-initiated utilities.

HSC— *See* Host Software Component.

HTTP— Hypertext Transfer Protocol.

I

IEEE 802.3— A standard produced by the IEEE and accepted worldwide for local area networks using CSMA/CD (Carrier Sense Multiple Access with Collision Detection).

ICRC— Improved Cartridge Recording Capacity. A compression and compaction feature that increases the amount of data that can be stored on a 1/2-inch cartridge.

initial program load (IPL)— A process that activates a machine reset.

Intelligent Management Unit (IMU)— Hardware similar to a Control Unit. This term is reserved for future products.

Interactive Storage Management Facility— A series of applications for defining DFSMS/MVS storage groups and classes.

Internet— A collection of networks using TCP/IP that functions as a virtual network.

Internet address— The numbering system used to specify a network or host on that network for TCP/IP communications. Standard Internet address notation is dotted-decimal format.

Internet Protocol (IP)— Formal description of messages and rules two networks use to exchange messages.

Inter-User Communication Vehicle (IUCV)— A CP communications facility that allows users to pass information between properly authorized virtual machines.

ISMF— Interactive Storage Management Facility.

J

job control language (JCL)— A problem oriented language designed to describe a job's processing requirements to an operating system.

JES—Job entry subsystem.(I)

JES2—An MVS subsystem that receives jobs into the system, converts them to internal format, selects them for execution, processes their output, and purges them from the system. In an installation with more than one processor, each JES2 processor independently controls its job input, scheduling, and output processing. *See also* JES3.(I)

JES3—An MVS subsystem that receives jobs into the system, converts them to internal format, selects them for execution, processes their output, and purges them from the system. In complexes that have several loosely coupled processing units, the JES3 program manages processors so that the global processor exercises centralized control over the local processors and distributes jobs to them via a common job queue. *See also* JES2.(I)

L

LAN— *See* local area network.

LCS— *See* Library Control System.

LCS processor console— The Library Control System processor console is used to control the VM operating system (for the VM-based LCS).

LCU— *See* Library Control Unit.

LIBGEN— The process of defining the configuration of a library to the VM/HSC.

library— An installation of one or more ACSs, attached cartridge drives (also known as transports), volumes (cartridges) placed into the ACSs, host software that controls and manages the ACSs and associated volumes, and the library control data set that describes the state of the ACSs.

library cartridge transport— *See* transport.

library complex— A library complex consists of one HSC Control Data Set (CDS) and may contain up to 256 Automatic Cartridge Systems (ACSs), each of which may contain up to 24 Library Storage Modules (LSMs).

library control component— Software that controls the mounting and dismounting of cartridges in an ACS.

library control platform— The hardware and software that provides the proper environment for the Library Control System.

library control processor— Properly configured computer hardware that supports the operation of the Library Control System.

Library Control Software— A library control component, the client system interface, and library utilities.

Library Control System (LCS)— The library control platform and the Library Control Software.

Library Control Unit (LCU)— The portion of an LSM that controls the movements of the robot.

library database— A file or data set containing information about the location and status of the removable media volumes, such as cell location, scratch status. Also called a control data set (CDS).

library drive— A cartridge drive in the ACS, as distinct from a stand-alone cartridge drive.

Library Management Unit (LMU)— A hardware and software product that coordinates the activities of one or more LSMs/LCUs.

library mode— The operation of a 4480 Cartridge Subsystem as part of a 4400 Automated Cartridge System, as opposed to manual mode, in which the operator inserts cartridges into the transports. *See* manual mode.

LibraryStation— Software that allows MVS hosts to share ACS facilities with client systems.

Library Storage Module (LSM)— The standard LSM (4410) a twelve-sided structure with storage space for up to around 6000 cartridges. It also contains a free-standing, vision-assisted robot that moves the cartridges between their storage cells and attached transports. *See* also PowderHorn, StreamLine SL8500, and WolfCreek.

LMU— *See* Library Management Unit.

local area network (LAN)— A network in a small (local) geographic area.

local port— The designation of a given application or process among many that are available for a TCP/IP-capable host processor.

local socket— The address combination of a TCP/IP-capable host's network address and a specific port for an application process.

logical port (LP)— CLS software that interfaces with the client system. The CLSLP is one of the software components used to pass data between the client system and the VM/HSC.

LP— *See* logical port.

LSM— *See* Library Storage Module.

LSM-id— An LSM-id is composed of the ACS-id joined to (concatenated with) the LSM number.

LSM number— A method used to identify an LSM. An LSM number is the result of defining the SLIACS macro LSM parameter during a LIBGEN. The first LSM listed in this parameter acquires the LSM number of 00 (hexadecimal) the second LSM listed acquires a number of 01, and so forth, until all LSMs are identified (up to a maximum of 24 or hexadecimal 17).

M

manual mode— Operation of a cartridge drive apart from an ACS. *See* library mode.

master LMU— The LMU currently controlling the functional work of the ACS in a dual LMU configuration.

mixed configuration— A configuration that contains different types of cartridge drives in both manual and library modes.

modem— A device that enables digital data to be transmitted over an analog transmission facility.

multi-client— The environment where more than one (homogenous or heterogeneous) client system is connected to one LCS.

MVS system console— The MVS/CSC provides an operator interface through the MVS system console.

N

NCS— Nearline Control Solution, consisting of SMC, HSC, StorageTek HTTP server, MVS/CSC, and LibraryStation.

Nearline Storage Server— The hardware and software necessary to use ACS libraries by client computing systems.

O

OCR label— Optical character recognition label. An external label attached to the spine of a cartridge that is both human and machine readable.

operator console— In this document, the operator console refers to the MVS client system console.

operating system (OS)— Software that controls the execution of programs that facilitate overall system operation.

P

Pass-thru Port (PTP)— A mechanism that allows a cartridge to be passed from one LSM to another in a multiple LSM ACS.

physical port— The communications hardware required to support a server/client link.

physical volume— A physically bound unit of data file media. *See* cartridge.

pipe— VM Inter-User Communications Vehicle (IUCV) path.

PowderHorn (9310)— The high-performance version of the standard LSM.

pre-configured package— A storage server package including all hardware, software, and configuration parameter settings delivered by the vendor.

privilege class— Applicable to both the VM and CLS environments, usersids are granted access to either system based on assigned rights to execute various commands.

product change request (PCR)— A request for enhancement to a product. Normally, this request comes from a client, but may come from Sun.

program temporary fix (PTF)— A software release designed to remedy one or a series of defects.

program update tape (PUT)— One or more tapes containing updates to, or new versions of, the MVS/CSC system software.

protocol— A formal description of message formats and the rules two or more machines must follow to exchange these messages.

R

recovery— Automatic or manual procedures to resolve problems in the server system.

reel-id— Identifier of a specific tape volume. Equivalent to volume serial number (VOLSER).

request— Term used to refer to commands issued to the 4400 ACS to perform a tape-related function.

request status record (RSR)— An in-memory record, maintained by CLS, that tracks the status and disposition of each client request to the VM/HSC.

S

scratch tape— A tape that is available to any user because it is not owned.

scratch tape subpool— A defined subset of all scratch tapes. Subpools are composed of one or more ranges of volsers with similar physical characteristics (type of volume—reel or cartridge, reel size, length, physical location, and so on). Some installations may also subdivide their scratch pools by other characteristics such as label type.

SD-3— The StorageTek helical cartridge transport. Also known as RedWood.

shadow recording— A technique for recovery involving maintaining both a control data set and a copy (shadow) of the data set.

signon script— A series of statements used by CLS to initiate or verify VM Pass Through communications with the CSC. Signon scripts are defined by the CLSCM EXEC.

socket— A unique address on a network plus a node address plus the id of one specific application on a specific network. An abstraction used by TCP/IP.

standard capacity cartridge— A cartridge that can be used on any longitudinal transport (i.e., 4480, 4490, 9490, or 9490EE).

standby— The status of a station that has been varied online but is connected to the standby LMU of a dual LMU ACS.

standby LMU— The redundant LMU in a dual LMU configuration that is ready to take over in case of a Master LMU failure or when the operator issues a SWITCH command.

station— A hardware path between the host computer and an LMU over which the VM/HSC and LMU send control information.

Storage Management Component (SMC)— Software interface between IBM's OS/390 and z/OS operating systems and StorageTek real and virtual tape hardware. SMC performs the allocation processing, message handling, and SMS processing for the NCS solution. It resides on the MVS host system with HSC and/or MVS/CSC, and communicates with these products to determine policies, volume locations, and drive ownership.

storage server— A set of hardware and software products designed to enable heterogeneous computer systems to use automated tape cartridge library services.

StreamLine (SL8500)— A modular library scalable from 1,500 to over 200,000 cartridges in mainframe, Windows, UNIX, and supercomputer environments. The SL8500 utilizes hot swap components and multiple robots.

switchover— The assumption of master LMU function by the standby LMU.

synchronous— *See* BISYNC.

synchronous LAN— Local area network built on synchronous communications.

sysplex— A set of MVS systems communicating and cooperating with each other through certain multisystem hardware components and software services to process customer workloads.(I)

Systems Network Architecture (SNA)— A description of the logical structure, formats, protocols, and operational sequences for transmitting information units through and controlling the configuration and operation of networks.

T

tape drive— A tape processing device consisting of up to four transports in a cabinet. A drive can refer to an individual transport.

tape library management system (TLMS)— TLMS, as used in this document, refers to any tape library management system, not to CA-1.

TCP/IP— Transmission Control Protocol/Internet Protocol.

trace event type— Types of event traced through the system when tracing is enabled.

trace file— A file that contains information useful for debugging the system.

transaction— A specific set of input that triggers the execution of a specific process.

Transmission Control Protocol (TCP)— An inter-network standard protocol that provides a full-duplex stream service.

transport— An electro-mechanical device used to thread, position, and read or write from a tape.

U

UCB— Unit Control Block.

userid— Sometimes referred to as the VM userid, the userid is the name that identifies a specific “virtual machine” user or client.

utility— Program that performs a function ancillary to the chief function(s) of a computer system.

V

virtual machine (VM)— A functional simulation of a computer and its associated devices. Each virtual machine is controlled by a suitable operating system.

virtual storage— A feature of the OS where main storage requirements are allocated by segments (or pages) as needed by programs, thus creating the apparent existence of unlimited or virtual storage.

Virtual Storage Manager (VSM)— A storage solution that virtualizes volumes and transports in a VTSS buffer in order to improve media and transport use.

Virtual Tape Control System (VTCS)— The primary host code for the Virtual Storage Manager (VSM) solution. This code operates in a separate address space, but communicates closely with HSC.

Virtual Tape Storage Subsystem (VTSS)— The DASD buffer containing virtual volumes (VTVs) and virtual drives (VTDs). The VTSS is a StorageTek RAID 6 hardware device with microcode that enables transport emulation. The RAID device can read and write “tape” data from/to disk, and can read and write the data from/to a real tape drive (RTD).

Virtual Telecommunications Access Method (VTAM)— IBM host-resident communications software that serves as a common interface for communications.

VM— *See* virtual machine.

VM/Pass-Through Facility— IBM’s software utility for implementing synchronous communications between CLS and client.

VM/SP or VM/XA— A proprietary operating system of IBM corporation that consists mainly of two major components, CP and CMS.

volume— A tape cartridge (data carrier) that is mounted or dismounted as a unit.

volume location record (VLR)— A record, maintained by the CLS system, that tracks the status of each volume from the time it is mounted until it is dismounted.

volume serial number (VOLSER)— An identifier of a physical volume.

W

WolfCreek (9360)— The high-performance LSM with a smaller capacity than the standard LSM.

X

XCF— Cross-system coupling facility.

Z

ZCART— An extended-enhanced cartridge that uses a thinner media to provide twice the capacity of the enhanced capacity (ECART) cartridge. This cartridge has a length of 2200 feet and can be used only on TimberLine 9490EE 36-track transports.

Numerics

802.3— *See* IEEE 802.3.

3270— IBM synchronous, block-mode, half-duplex terminals preferred for use with IBM 370 and related types of machine.

3270 protocol— A telecommunications protocol that supports networks of 327x CRTs on IBM mainframes.

3274— Terminal control unit used on the ACS for processor-to-LMU communications.

3480— IBM’s 18-track half-inch cartridge tape drive model.

3490— IBM’s 36-track half-inch cartridge tape drive model.

3590— IBM’s newest cartridge tape drive model that supports 128-track recording technique.

4400 Automated Cartridge System (ACS)— A fully automated, cartridge-based, 18-track storage and retrieval library. A 4400 ACS consists of 1 to 256 LMUs with each LMU connected to from 1 to 24 LSMs.

4410— The standard Library Storage Module (LSM).

4411— Library Control Unit (LCU).

4480— The StorageTek 18-track 1/2-inch cartridge transport.

4480 Cartridge Subsystem— The StorageTek 4480 Cartridge Subsystem consists of a control unit (CU) plus cartridge drives (CDs).

4490— The StorageTek 36-track long-tape cartridge transport with ESCON support. Also known as Silverton.

4780— Same as a 4480, but is used for attachment to certain non-IBM computers.

8380— StorageTek DASD system.

9310— The PowderHorn, a high-performance version of the standard LSM (4410)

9360— The WolfCreek, a high-performance LSM with a smaller capacity than the standard LSM (4410).

9490— The StorageTek 36-track cartridge transport. Also known as TimberLine.

9490EE— The StorageTek 36-track cartridge transport. Also known as TimberLine EE.

9740— A small, four-sided StorageTek library that supports large-style cartridge transports. This library can be configured to contain either 326 cartridges or 494 cartridges.

SL8500— See StreamLine (SL8500).

T9840A—The StorageTek access-centric cartridge transport capable of reading and writing 9840A cartridges.

T9840B—The StorageTek access-centric cartridge transport capable of reading and writing T9840B cartridges.

T9840C—The StorageTek access-centric cartridge transport capable of reading and writing T9840C cartridges.

T9940A— The StorageTek capacity-centric cartridge transport capable of reading and writing 60GB T9940A cartridges.

T9940B— The StorageTek capacity-centric cartridge transport capable of reading and writing 200GB T9940B cartridges.

T10000A— The StorageTek high-capacity cartridge transport capable of reading and writing 120GB or 500GB T10000A cartridges.

T10000B— The StorageTek high-capacity cartridge transport capable of reading and writing 240GB or 1TB T10000B cartridges.

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