



# StorageTek™ Host Software Component (HSC)

MVS software

## Reference Summary

Part Number: 312642601

Revision: C

Version: 6.2



**StorageTek™  
Host Software Component  
(MVS Implementation)**

**Reference Summary**

**Release 6.2**

**312642601**

Copyright 2008 Sun Microsystems, Inc., 4150 Network Circle, Santa Clara, California 95054, U.S.A. All rights reserved.

Sun Microsystems, Inc. has intellectual property rights relating to technology that is described in this document. In particular, and without limitation, these intellectual property rights may include one or more of the U.S. patents listed at <http://www.sun.com/patents> and one or more additional patents or pending patent applications in the U.S. and in other countries.

This document and the product to which it pertains are distributed under licenses restricting their use, copying, distribution, and decompilation. No part of the product or of this document may be reproduced in any form by any means without prior written authorization of Sun and its licensors, if any.

Third-party software, including font technology, is copyrighted and licensed from Sun suppliers.

Parts of the product may be derived from Berkeley BSD systems, licensed from the University of California. UNIX is a registered trademark in the U.S. and in other countries, exclusively licensed through X/Open Company, Ltd.

Sun, Sun Microsystems, the Sun logo, Java, AnswerBook2, docs.sun.com, and Solaris are trademarks or registered trademarks of Sun Microsystems, Inc. in the U.S. and in other countries.

All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. in the U.S. and in other countries. Products bearing SPARC trademarks are based upon an architecture developed by Sun Microsystems, Inc.

The OPEN LOOK and Sun™ Graphical User Interface was developed by Sun Microsystems, Inc. for its users and licensees. Sun acknowledges the pioneering efforts of Xerox in researching and developing the concept of visual or graphical user interfaces for the computer industry. Sun holds a non-exclusive license from Xerox to the Xerox Graphical User Interface, which license also covers Sun's licensees who implement OPEN LOOK GUIs and otherwise comply with Sun's written license agreements.

U.S. Government Rights—Commercial use. Government users are subject to the Sun Microsystems, Inc. standard license agreement and applicable provisions of the FAR and its supplements.

DOCUMENTATION IS PROVIDED "AS IS" AND ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT, ARE DISCLAIMED, EXCEPT TO THE EXTENT THAT SUCH DISCLAIMERS ARE HELD TO BE LEGALLY INVALID.

Copyright 2008 Sun Microsystems, Inc., 4150 Network Circle, Santa Clara, Californie 95054, Etats-Unis. Tous droits réservés.

Sun Microsystems, Inc. a les droits de propriété intellectuels relatants à la technologie qui est décrit dans ce document. En particulier, et sans la limitation, ces droits de propriété intellectuels peuvent inclure un ou plus des brevets américains énumérés à <http://www.sun.com/patents> et un ou les brevets plus supplémentaires ou les applications de brevet en attente dans les Etats-Unis et dans les autres pays.

Ce produit ou document est protégé par un copyright et distribué avec des licences qui en restreignent l'utilisation, la copie, la distribution, et la décompilation. Aucune partie de ce produit ou document ne peut être reproduite sous aucune forme, par quelque moyen que ce soit, sans l'autorisation préalable et écrite de Sun et de ses bailleurs de licence, s'il y en a.

Le logiciel détenu par des tiers, et qui comprend la technologie relative aux polices de caractères, est protégé par un copyright et licencié par des fournisseurs de Sun.

Des parties de ce produit pourront être dérivées des systèmes Berkeley BSD licenciés par l'Université de Californie. UNIX est une marque déposée aux Etats-Unis et dans d'autres pays et licenciée exclusivement par X/Open Company, Ltd.

Sun, Sun Microsystems, le logo Sun, Java, AnswerBook2, docs.sun.com, et Solaris sont des marques de fabrique ou des marques déposées de Sun Microsystems, Inc. aux Etats-Unis et dans d'autres pays.

Toutes les marques SPARC sont utilisées sous licence et sont des marques de fabrique ou des marques déposées de SPARC International, Inc. aux Etats-Unis et dans d'autres pays. Les produits portant les marques SPARC sont basés sur une architecture développée par Sun Microsystems, Inc.

L'interface d'utilisation graphique OPEN LOOK et Sun™ a été développée par Sun Microsystems, Inc. pour ses utilisateurs et licenciés. Sun reconnaît les efforts de pionniers de Xerox pour la recherche et le développement du concept des interfaces d'utilisation visuelle ou graphique pour l'industrie de l'informatique. Sun détient une licence non exclusive de Xerox sur l'interface d'utilisation graphique Xerox, cette licence couvrant également les licenciées de Sun qui mettent en place l'interface d'utilisation graphique OPEN LOOK et qui en outre se conforment aux licences écrites de Sun.

LA DOCUMENTATION EST FOURNIE "EN L'ÉTAT" ET TOUTES AUTRES CONDITIONS, DECLARATIONS ET GARANTIES EXPRESSES OU TACITES SONT FORMELLEMENT EXCLUES, DANS LA MESURE AUTORISEE PAR LA LOI APPLICABLE, Y COMPRIS NOTAMMENT TOUTE GARANTIE IMPLICITE RELATIVE A LA QUALITE MARCHANDE, A L'APTITUDE A UNE UTILISATION PARTICULIERE OU A L'ABSENCE DE CONTREFAÇON.

We welcome your feedback. Please contact the Sun Learning Services Feedback System at:

[SLSFS@Sun.com](mailto:SLSFS@Sun.com)

or

Sun Learning Services  
Sun Microsystems Inc.  
One StorageTek Drive  
Louisville, CO 80028-3256  
USA

## Document Effectivity

---

EC Number	Date	Doc Kit Number	Type	Effectivity
132519	March, 2007	---	Revision A	This document applies to the Host Software Component for MVS (MVS/HSC), Version 6.2.
---	April, 2008	---	Revision B	
---	September, 2008	---	Revision C	



# Contents

---

<b>About this Summary</b> .....	<b>ix</b>
Other HSC Books to Help You .....	ix
Additional Information .....	x
Sun's External Web Site .....	x
Customer Resource Center .....	x
Partners Site .....	x
Hardcopy Publications .....	x
Customer Support .....	xi
Customer-initiated Maintenance .....	xi
Sun's Worldwide Offices .....	xii
<b>Syntax Conventions</b> .....	<b>1</b>
Syntax Flow Diagrams .....	1
Specifying Commands .....	1
Variables .....	1
Delimiters .....	1
Flow Lines .....	2
Single Required Choice .....	2
Single Optional Choice .....	3
Defaults .....	3
Repeat Symbol .....	3
Syntax Continuation (Fragments) .....	4
Library Identification .....	5
How to Specify a CAPid .....	6
CAPid Formats .....	7
Ranges and Lists .....	9
Control Statement Syntax Conventions .....	12
<b>LIBGEN Macro Syntax</b> .....	<b>13</b>
SLIACS macro .....	14
SLIALIST macro .....	14
SLIDLIST macro .....	14
SLIDRIVS macro .....	14
SLIENDGN macro .....	14
SLILIBRY macro .....	15
SLILSM macro .....	16

SLIRCVRY macro .....	16
SLISTATN macro .....	17
<b>Utility Syntax .....</b>	<b>19</b>
ACTivities Report utility .....	20
AUDIt utility .....	20
BACKUp utility .....	21
Database Decompile (LIBGEN) utility .....	21
Directory Rebuild (DIRBLD) utility .....	21
EJECT utility .....	22
INITialize Cartridge utility .....	23
Journal OFFLoad utility .....	23
MERGEcds utility .....	23
MOVE utility .....	24
Reconfiguration utility .....	24
REPLace utility .....	24
RESTore utility .....	24
SCRAtch utility .....	25
Scratch Conversion utility .....	25
Scratch Redistribution (SCREdist) utility .....	26
SET utility .....	27
UNSCRatch utility .....	28
UNSElect utility .....	28
Volume Report (VOLRpt) utility .....	29
<b>Control Statement Syntax .....</b>	<b>31</b>
Control Data Set Definition (CDSDEF) control statement .....	32
EXECParm control statement .....	32
Journal Definition (JRNDEF) control statement .....	32
License Key Definition (LKEYDEF) command and control statement .....	33
License Key Information (LKEYINFO) control statement .....	33
LMUPATH control statement .....	33
LMUPDEF command and control statement .....	33
OPTion control statement .....	34
Reconfiguration Definition (RECDEF) control statement .....	34
Scratch Subpool Definition (SCRPDEF) command and control statement .....	34
Scratch Subpool (SCRPOol) control statement .....	35
User Exit command and control statement .....	35
Volume Attribute (VOLATTR) control statement .....	36
Volume Attribute Definition (VOLDEF) command and control statement .....	37
<b>HSC Operator Command Syntax .....</b>	<b>39</b>
Allocation (ALLOC) command and control statement .....	39
CAP Preference (CAPPref) command and control statement .....	39
CDs Enable/Disable command .....	40
CLean command .....	40

Communications Path (COMMPath) command and control statement . . . . .	41
DISMount command . . . . .	41
Display command . . . . .	42
DRAin CAP command . . . . .	50
EJect command . . . . .	51
ENter command . . . . .	52
Journal command . . . . .	52
MODify command . . . . .	53
MONITOR command . . . . .	53
Mount command . . . . .	54
Mount/Dismount Options (MNTD) command and control statement . . . . .	55
MOVE command . . . . .	55
OPTion command and control statement . . . . .	56
RECover Host command . . . . .	56
RELease CAP command . . . . .	56
SCRatch command . . . . .	57
SENter command . . . . .	57
SRVlev command . . . . .	57
Stop Monitoring (STOPMN) command . . . . .	57
SWitch command . . . . .	57
TRace command . . . . .	58
TRACELKP command . . . . .	58
UNSCRatch command . . . . .	58
User Exit (UEXIT) command and control statement . . . . .	59
Vary Station command . . . . .	59
VIEW command . . . . .	60
Warn command . . . . .	61
<b>HSC Diagnostic Command Syntax . . . . .</b>	<b>63</b>
List command . . . . .	64
TRace command . . . . .	64



## About this Summary

---

This summary contains frequently used syntax information associated with Release 6.2.0 of the Host Software Component (MVS Implementation).

Use the material presented here as a memory aid. We assume that you are an experienced user who has worked with the Host Software Component at the programmer level. With this in mind, explanatory text has been kept to a minimum.

The following information appears in this reference summary:

- syntax conventions
- LIBGEN macro syntax
- control statement syntax
- utility syntax
- operator command syntax
- diagnostic command syntax.

## Other HSC Books to Help You

This summary supplements existing HSC 6.2.0 documentation. For more detailed information about a topic, refer to the following manuals:

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

## 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.sun.com/storagetek>

### Customer Resource Center

The Sun StorageTek product Customer Resource Center (CRC) is a Web site that enables members to resolve technical issues by searching code fixes and technical documentation for StorageTek brand products. CRC membership entitles you to other proactive services, such as HIPER subscriptions, technical tips, answers to frequently asked questions, addenda to product documentation books, and online product support contact information. Customers who have a current warranty or a current maintenance service agreement may apply for membership by clicking on the Request Password button on the CRC home page. Sun employees may enter the CRC through the SunWeb PowerPort.

The URL for the CRC is <http://www.support.storagetek.com>

### Partners Site

The Sun StorageTek Partners site is a Web site for partners with a Sun StorageTek Partner Agreement. This site provides information about products, services, customer support, upcoming events, training programs, and sales tools to support Sun 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 Sun StorageTek resellers.

The URL for the Sun 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. You can find additional information about customer support on the Customer Resource Center (CRC) Web site at: <http://www.support.storageitek.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:

**☎ 800.872.4786 (1.800.USA.4SUN)** (inside the United States)

**☎ 800.722.4786** (Canada)

For international locations, go to

<http://www.sun.com/service/contacting/solution.html>

for the appropriate telephone number

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/>

# Syntax Conventions

---

## Syntax Flow Diagrams

Syntax is illustrated using flow diagrams. These can include the following elements:

- Syntax – the diagram itself.
- Items – individual elements inside the diagram. Items can be keywords, variables, delimiters, operators, fragment references, and separators.
- Groups – a collection of items or other groups.

The following sections describe syntax flow diagram features and include some generic examples.

## Specifying Commands

Commands are composed of command names, keyword parameters, and positional parameters. Command names initiate command execution, keyword parameters are operands that contain keywords and their related values, and positional parameters are operands that are identified by their position in the command string rather than by keywords.

- Keyword parameters can be specified in any order. The HSC accepts (tolerates) multiple occurrences of a keyword. The value assigned to a keyword reflects the last occurrence of a keyword within a command.
- Positional parameters must be entered in the order shown in the syntax diagram.
- Uppercase letters indicate the minimum abbreviation for the command name, keyword, or positional parameter.

## Variables

Variables are italicized.

## Delimiters

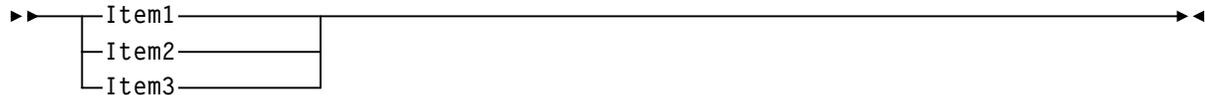
If a comma(,), a semicolon(;), or other delimiter is shown with an element of the syntax diagram, it must be entered as part of the statement or command.

## Flow Lines

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

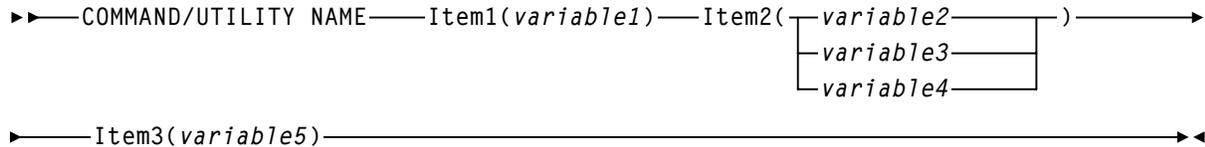


or



Diagrams are read left to right and top to bottom. Arrows show 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 on the base line of the diagram, a single choice is required.



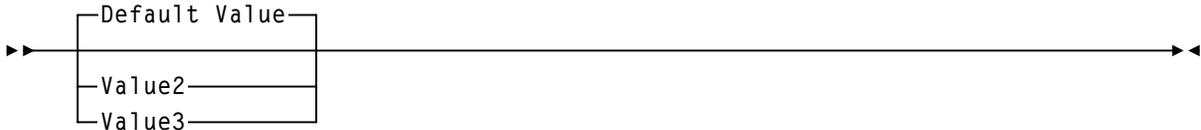
## Single Optional Choice

If the first item is 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 syntax diagram line. In the following example, if a value is not specified with the command, `Default Value` is used by the HSC.



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 baseline 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, `Keyword(Default Value)` is used by the HSC.



## 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 this example indicates that a comma is required as the repeat separator.



## Syntax Continuation (Fragments)

Fragment references direct you to parts (fragments) of the syntax that contain more detail than can be shown in the main syntax diagram.

▶ COMMAND/UTILITY NAME | Fragment Reference |

### Fragment:

Item1( *variable1*, *variable3* )  
          └── *variable2* ─┘   └── *variable4* ─┘

Item2( *variable5*, *variable7* )  
          └── *variable6* ─┘   └── *variable8* ─┘

## Library Identification

Each ACS, LSM, and CAP is assigned a unique identification number during LIBGEN. Use this number in HSC commands and utilities when identifying a specific ACSid, LSMid, or CAPid.

- ACSid (*acs-id*) is a hexadecimal value from 00 through FF that identifies the LMU.

An *acs-id* is the result of defining the SLIALIST macro during a LIBGEN. See “LIBGEN Macros” in the *HSC Configuration Guide* for information about the SLIALIST macro. The first ACS listed in this macro acquires a hexadecimal identifier of 00, the second ACS listed acquires a hexadecimal identifier of 01, and so forth until all ACSs are identified.

- An LSM number (*ll*) is a hexadecimal value from 00 through 17. It differentiates an LSM from every other LSM connected to the same LMU.

An LSM number is the result of defining the SLIACS macro LSM parameter. See the *HSC Configuration Guide* for information about the SLIACS macro. The first LSM listed for an ACS acquires a hexadecimal number of 00, the second LSM listed for an ACS acquires a hexadecimal number of 01, and so forth.

- An LSMid (*lsm-id*) is made up of the ACSid and the LSM number separated by a colon (:). It differentiates an LSM from every other LSM in a library.
- A CAP number is a hexadecimal value from 00 to 02 for all existing libraries, except for SL3000 libraries; the CAP number is a hexadecimal value from 00 to 0B. The CAP number identifies a specific CAP in an LSM that has more than one CAP.
- A CAPid (*cap-id*) is a hexadecimal value made up of the LSMid and the CAP number separated by a colon. Refer to “How to Specify a CAPid” on page 6 for more information.

Some HSC commands and utilities require, or optionally allow, the user to specify a host identifier or a VOLSER.

- The *host-id* for a given host is the identifier specified in the HOSTID parameter of the SLILIBRY macro in the LIBGEN. The HOSTID parameter is the SMF system identifier for **both** JES2 and JES3. Valid characters for a HOSTID are A-Z, 0-9, #, \$ and @.
- A VOLSER (*volser*) identifies a volume serial number consisting of one to six characters. Valid characters are A-Z, 0-9, # (crosshatch), \$, ¥ (yen character), and optional trailing blanks. Leading blanks are not allowed.

## How to Specify a CAPid

A CAPid specifies a particular CAP in the library. Each CAP is identified by the LSMid of the LSM that the CAP is attached to and a CAP number to distinguish it from other CAPs in that LSM.

CAP configurations differ based on the LSM type. The following configurations are possible:

### **LSM (Model 4410) and PowderHorn LSM (Model 9310)**

can be configured with either the standard 21-cell CAP or an enhanced CAP. An enhanced CAP contains two 40-cell magazine-style CAPs and a one-cell priority CAP (PCAP). The 40-cell CAPs function independently.

### **WolfCreek LSM (Models 9360-050, 9360-075, and 9360-100)**

configured with a WolfCreek CAP which contains a 20-cell magazine-style CAP and a PCAP. An optional 30-cell, magazine-style CAP, called a WolfCreek optional CAP, may be added to the WolfCreek CAP.

### **TimberWolf LSM (Model 9740)**

configured with either a 14-cell permanent rack or a 10-cell removable magazine.

### **StreamLine Library (Model SL3000)**

The library is configured with 2, 13-cell removable magazines in each CAP. This library can contain up to 12 CAPs (00-0B). CAP addresses 00 and 0B, located in the Access Expansion Modules (AEMs), are unused in the initial release of the library.

### **StreamLine Library (Model SL8500)**

This library is configured with 3, 13-cell removable magazines. An optional 39-cell CAP can be added.

## CAPid Formats

There are two formats that can be used to specify a CAPid:

- *AA:LL*, where *AA* is the ACSid and *LL* is the LSM number. This format is referred to as the *lsm-id*.
- *AA:LL:CC*, where *AA:LL* is the LSMid and *:CC* is the CAP number. This format is referred to as the *cap-id*.



**Caution: Do not use a colon as the MVS command delimiter because the system will process the colon in the new CAPid format as the end of the command.** All information following the colon in an HSC command will not be processed.

The appropriate format to use is determined by the CAP hardware and the command being specified.

- The *AA:LL* format can be specified in the following situations:
  - to specify a standard CAP
  - to allow the HSC to select a CAP based on CAP preference.
- The *AA:LL:CC* format can be specified for any CAP hardware in any command that accepts a CAPid. This is the preferred format. Valid CAP numbers are:

**00** indicates one of the following:

- a 21-cell 4410 or 9310 standard CAP
- the right-hand 40-cell 4410 or 9310 enhanced CAP
- the 20-cell 9360 WolfCreek CAP
- a 14-cell or 10-cell removable magazine 9740 TimberWolf CAP
- an unused SL3000 AEM CAP
- the left-hand 39-cell SL8500 library CAP.

**01** indicates one of the following:

- the left-hand 40-cell 4410 or 9310 enhanced CAP
- the 30-cell 9360 WolfCreek optional CAP
- an optional SL3000 CEM CAP consisting of 2, 13-cell removable magazines
- the right-hand optional 39-cell SL8500 library CAP.

**02** indicates one of the following:

- PCAP in either a 4410 or 9310 enhanced CAP or a 9360 WolfCreek CAP.
- an optional SL3000 CEM CAP consisting of 2, 13-cell removable magazines.

**03, 04, 05** indicates the following:

- an optional SL3000 CEM/DEM CAPs each consisting of 2, 13-cell removable magazines.

**06** indicates the following:

- the only required SL3000 BDM CAP consisting of 2, 13-cell removable magazines.

**07, 08, 09, 0A** indicates the following:

- an optional SL3000 CEM CAPs each consisting of 2, 13-cell removable magazines.

**0B** indicates the following:

- an optional SL3000 AEM CAP.



**Notes:**

- If SL3000 library CAPs are not present, the HSC reports them as “not installed” This keeps CAP addresses from changing as new CAPs are added.
- Refer to the individual command explanations for additional information on specifying CAPids.
- SL3000 and SL8500 libraries do not contain a PCAP.

## Ranges and Lists

HSC commands and utilities often allow the user to specify ranges and lists of elements.

1. 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 (for example, 1-9, or 010-094). Leading zeros are not required.
  - 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 non-incremental 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:

A00B00      the largest range that can be specified is A00B00 through A99B99.

A0B0CC      the largest range that can be specified is A0B0CC through A9B9CC.

000XXX      the largest range that can be specified is 000XXX through 999XXX.



**Note:** A VOLSER range for most operator commands is limited to 100 entries. If a larger range is entered, only the first 100 VOLSERS in the range are acted on. If HSC utilities are used, the entire range is processed.

- 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 non-incremental 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:

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

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



**Note:** For most operator commands, a VOLSER range is limited to 100 entries. If a large range is entered, only the first 100 VOLSERS are acted upon. If HSC utilities are used, the entire range is processed.

2. 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, and the entire list enclosed in parentheses.
  - For some HSC operator commands, an element may consist of a single item or a range. Refer to the individual command explanations for valid list entries.
  - In general, HSC utilities **do not allow** ranges to be specified in a list. The exception to this is a VOLSER list (*vol-list*) which does allow ranges to be specified.

For VOLATTR control statements, you can use wildcard characters (% , ? , or \*) to identify a list of VOLSERS.

## Control Statement Syntax Conventions

The control statement for each utility program consists of a command (indicating the utility function) followed by parameters, as applicable, in 80-character card-image records. 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 are 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.
- Control statements may be interspersed with comments designated by an asterisk (\*) in column one.

For definition data sets (VOLATTRs, UNITATTRs and TAPEREQs) comments **must** be in the new format (/...\*/). Asterisk (\*) comments are not allowed. A /...\*/ comment in the first line is **not** required for definition data sets.

- A control statement is terminated if the statement is not continued. Comments cannot be nested, and mixing the two comment styles (\* and /\*) is not allowed.
- The 80-character card-image records use conventional continuation rules.
  - A space and a dash (–) following a parameter or parameter value indicates that a blank is to be inserted between the last nonblank character of this line and the first nonblank character of the next nonblank record.
  - A plus sign (+) specifies that the continued control information is to be concatenated directly after the character preceding the plus sign. The continued data starts at column two of the next nonblank record.

**Note:** You can use a continuation only after a new keyword or after the natural end of a value. Some examples follow.

The following examples illustrate continuations used correctly:

```
SCRPOOL NAME=STD36 , RANGE+  
(AAA000 - AAA999 , ZZZ000 - ZZZ999)
```

```
SCRPOOL NAME=STD36 , RANGE(AAA000 - AAA999 , -  
ZZZ000 - ZZZ999)
```

The following example illustrates a continuation used incorrectly:

```
SCRPOOL NAME=STD36 , RANGE(AAA000 - AAA999 , ZZZ+  
000 - ZZZ999)
```

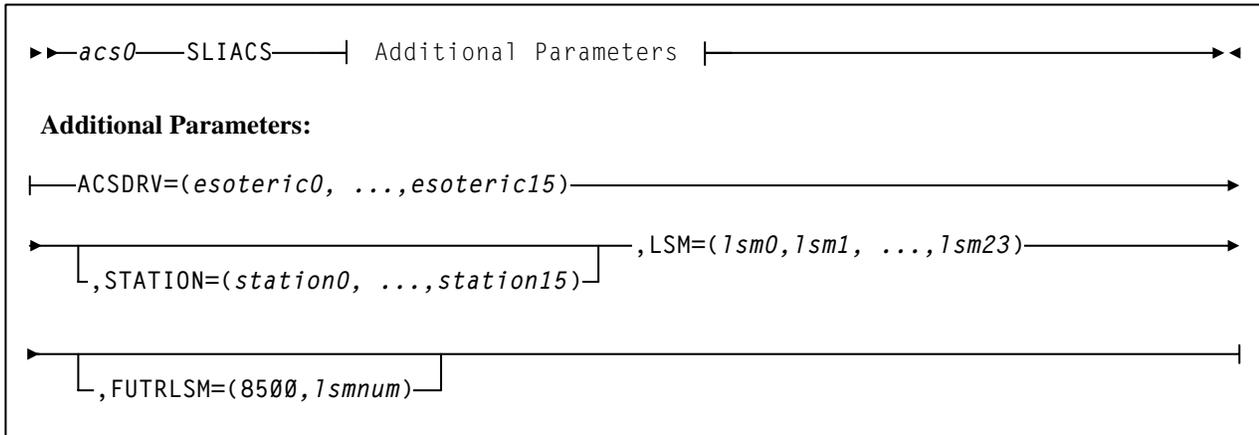
- The maximum length of a control statement is 32,767 characters.
- The maximum length of a command (used as a command or in PARMLIB) is 126 characters.

## **LIBGEN Macro Syntax**

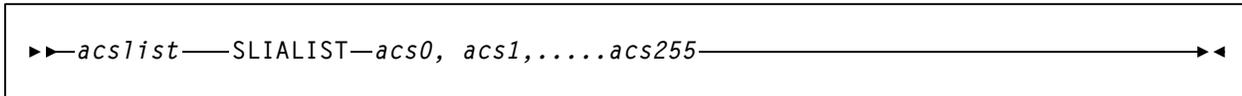
---

This section contains the syntax for LIBGEN macros presented in alphabetical order. For complete descriptions of the macros and the required order for specifying them, see the *HSC Configuration Guide*.

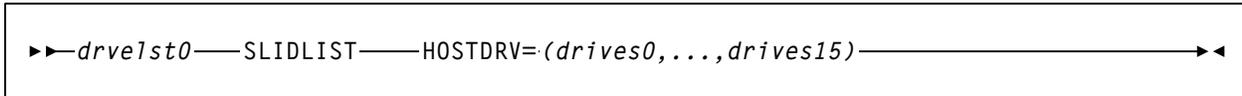
## SLIACS macro



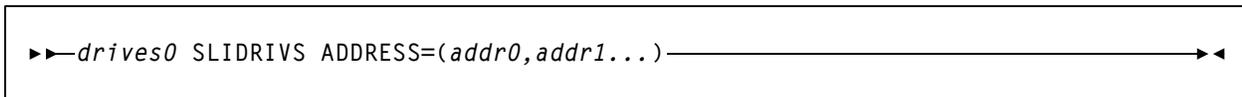
## SLIALIST macro



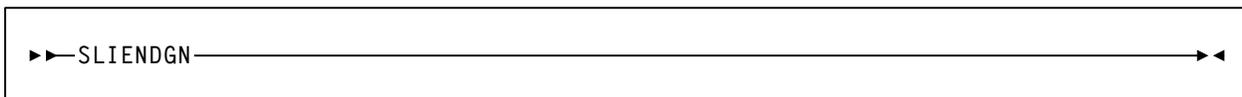
## SLIDLIST macro



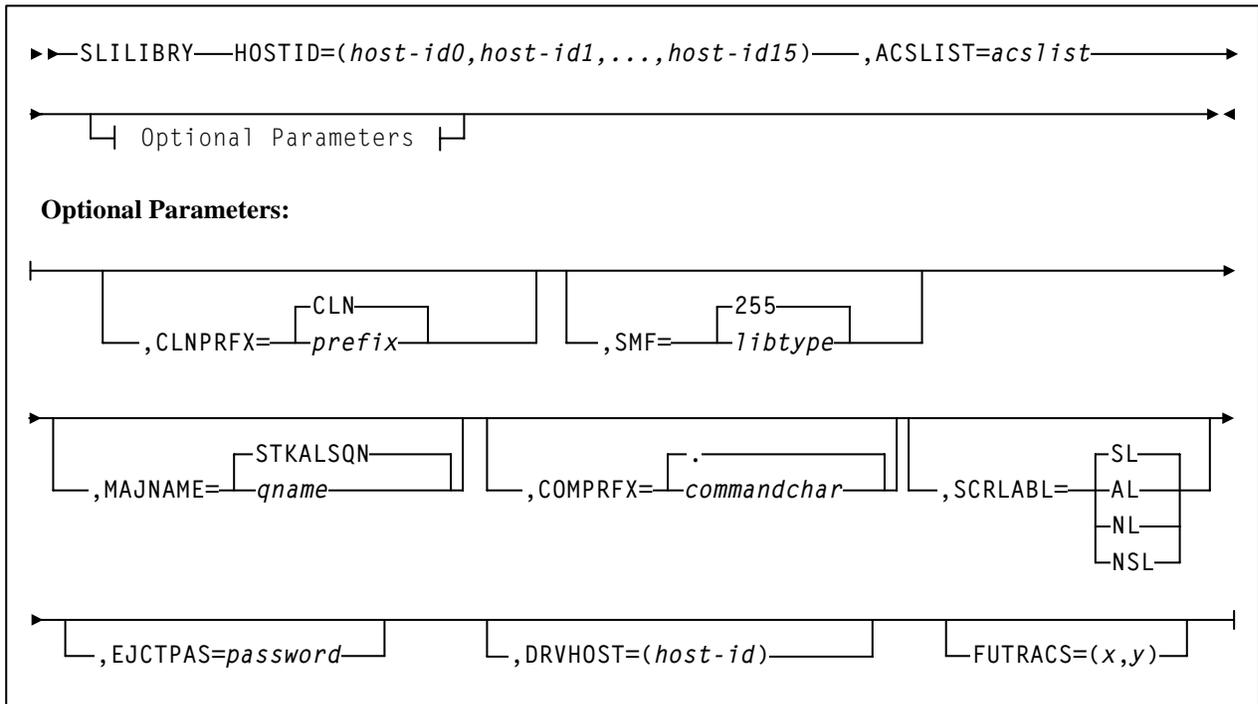
## SLIDRIVS macro



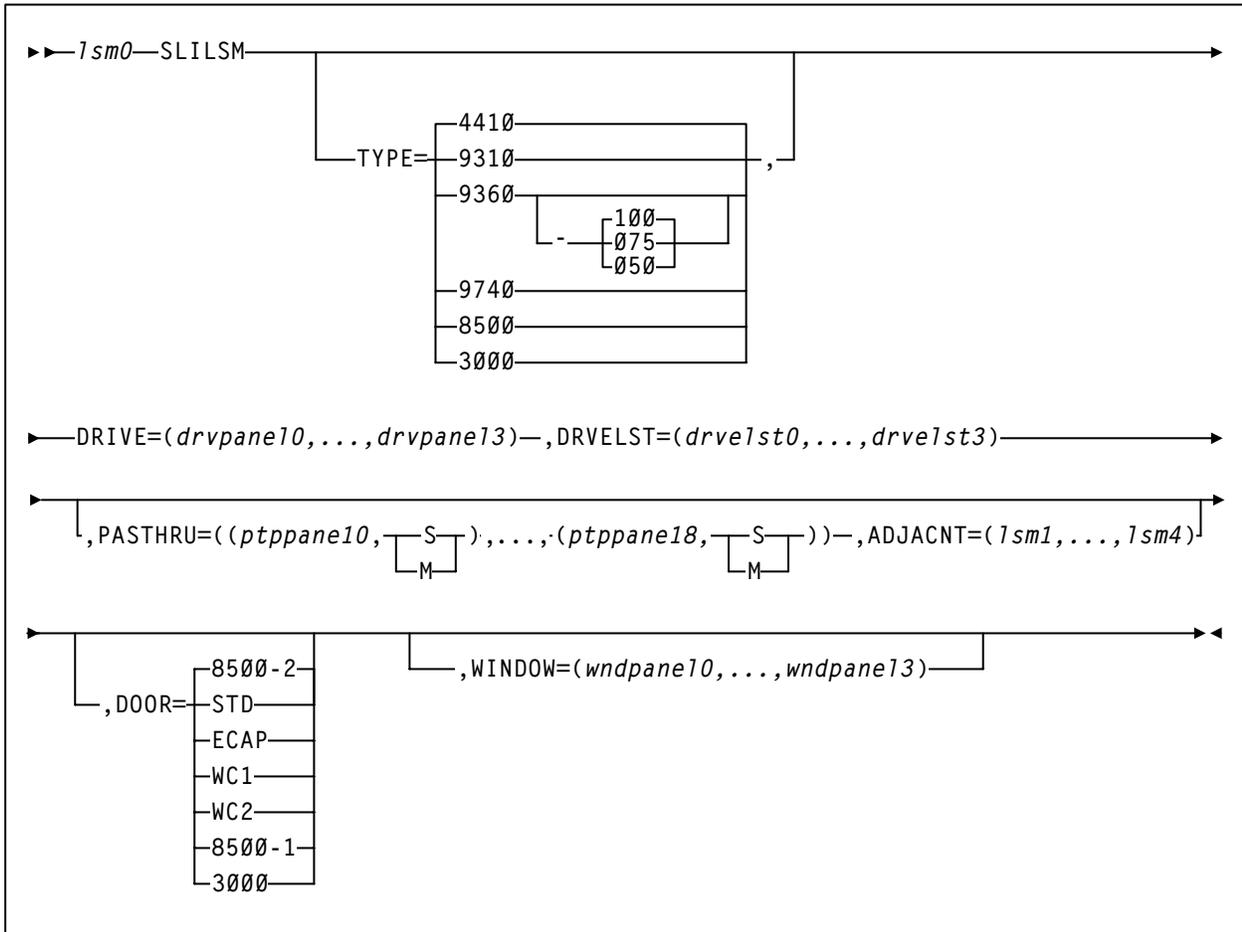
## SLIENDGN macro



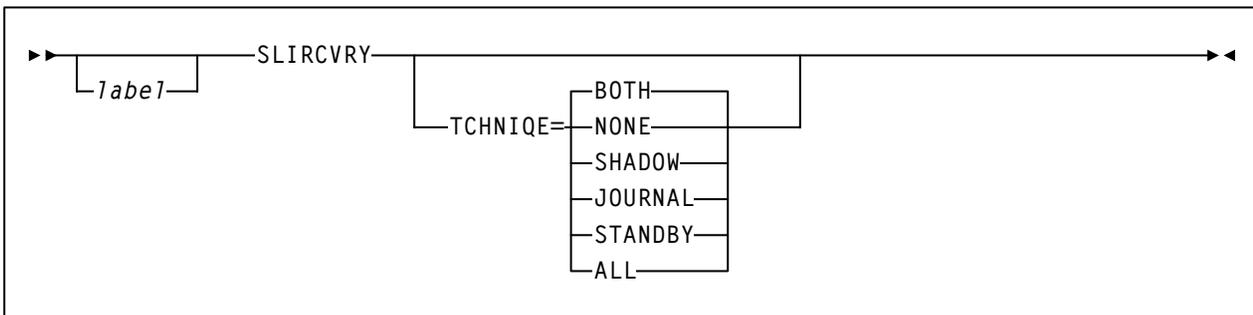
## SLILIBRY macro



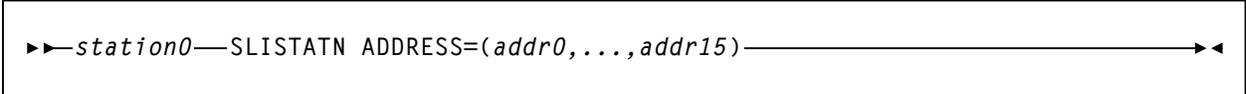
## SLILSM macro



## SLIRCVRY macro



# SLISTATN macro



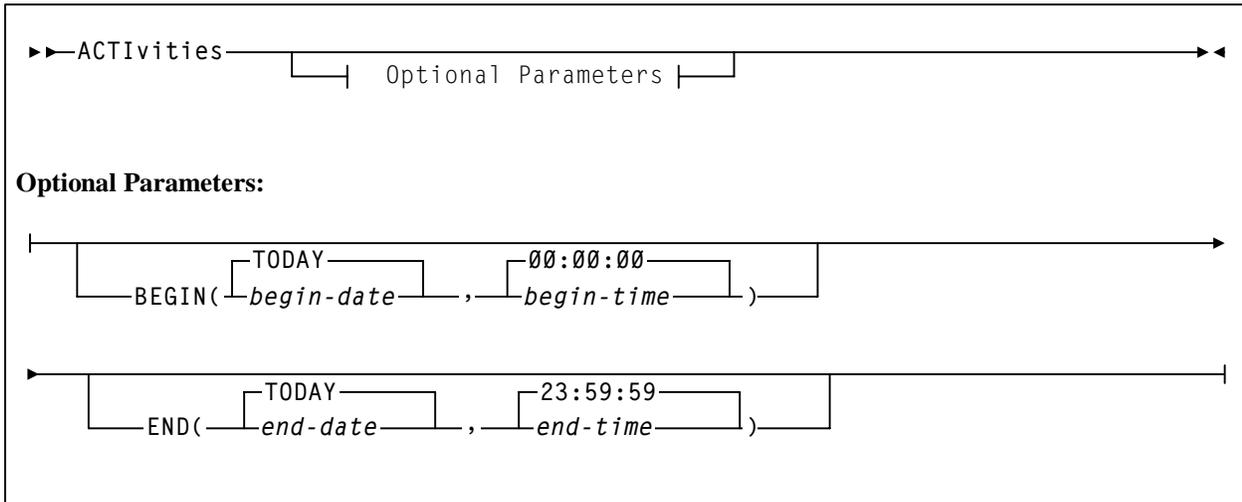


## Utility Syntax

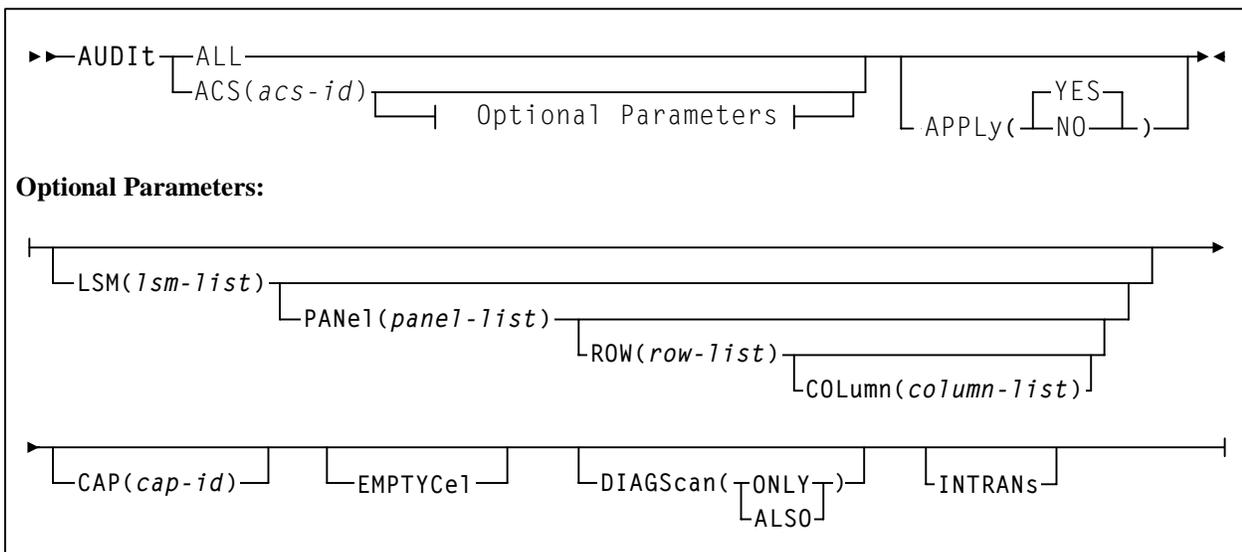
---

This section contains the syntax for library utilities. For complete descriptions of the utilities, see the *HSC System Programmer's Guide*.

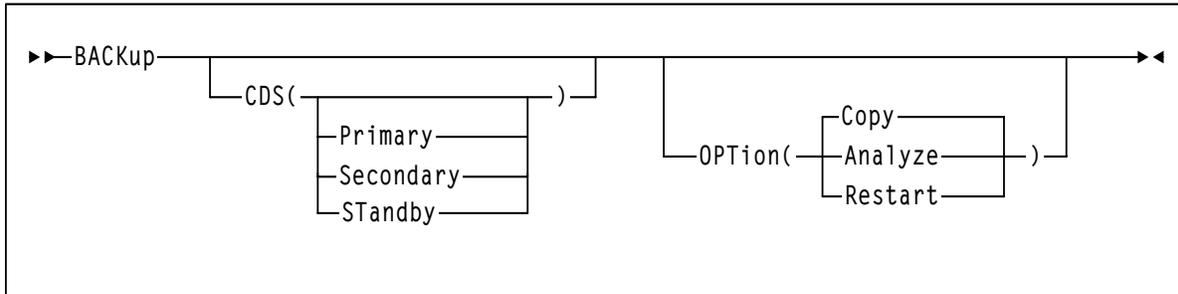
## ACTivities Report utility



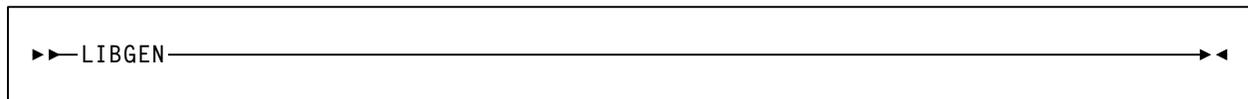
## AUDIt utility



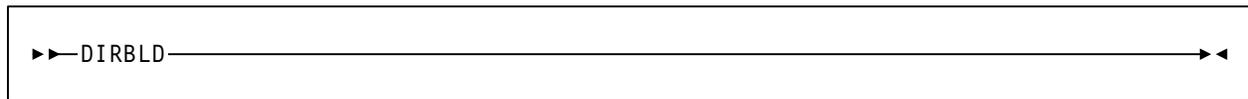
## BACKup utility



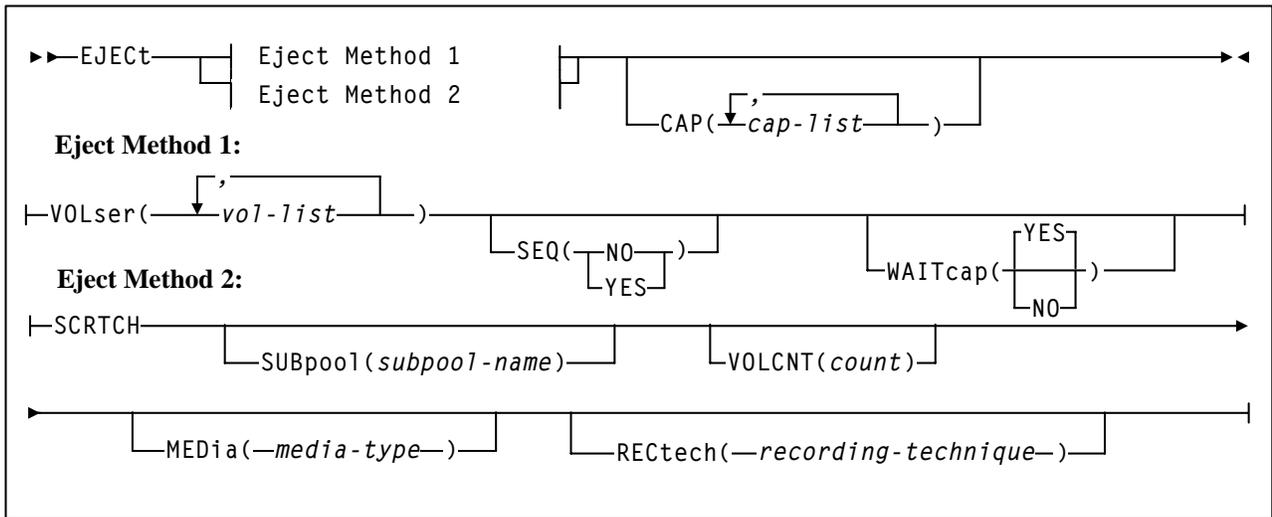
## Database Decompile (LIBGEN) utility



## Directory Rebuild (DIRBLD) utility



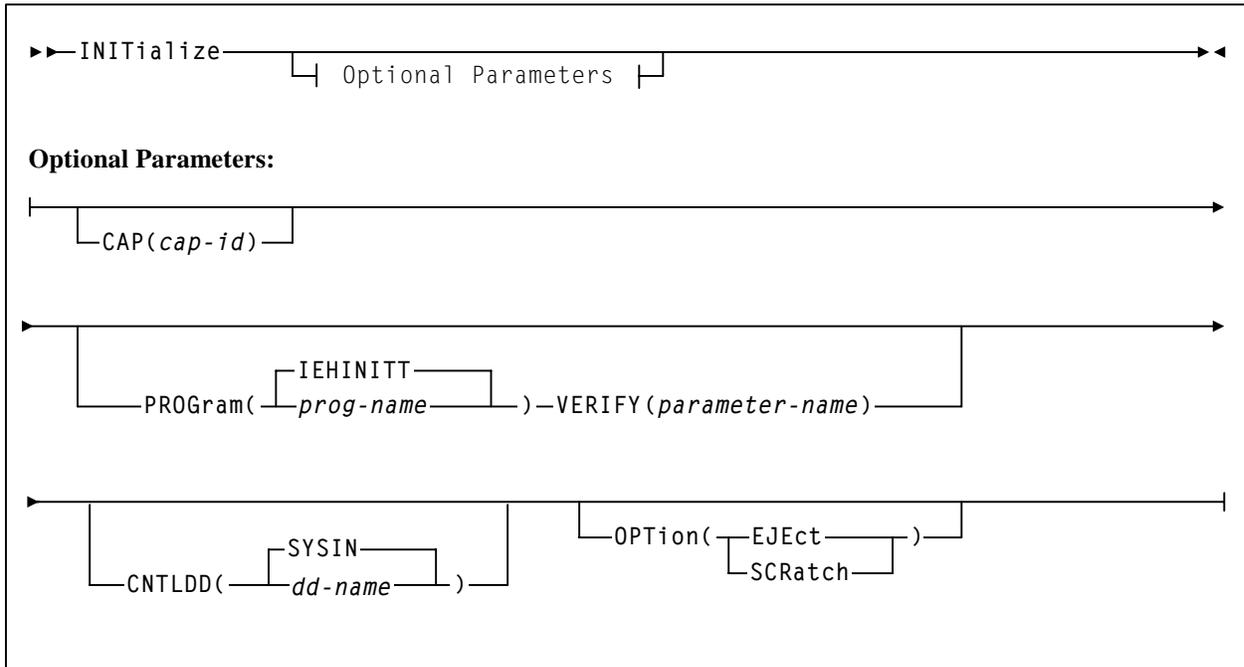
## EJECT utility



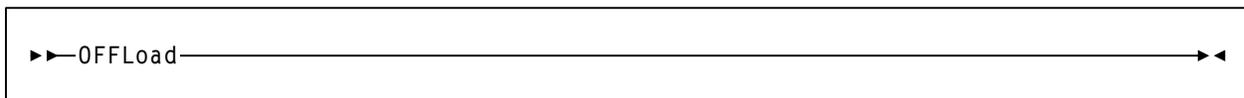
Media Types	Recording Techniques
Standard	18track, 36track, 36Atrack, 36Btrack, 36Ctrack
ECART	
ZCART	
DD3, DD3A, DD3B, DD3C	HELical, DD3
STK1, STK1R	STK1R, STK1R34, STK1R35, STK1RA, STK1RA34, STK1RA35, STK1RB, STK1RB34, STK1RB35, STK1RAB, STK1RAB4, STK1RAB5, STK1RC, STK1RC34, STK1RC35, STK1RD, STK1RDE, STK1RDN, STK1RD34, STK1RD35, STK1RDE4, STK1RDE5
STK2, STK2P	STK2P, STK2P34, STK2P35, STK2PA, STK2PA34, STK2PA35, STK2PB, STK2PB34, STK2PB35
LTO-10G, LTO-35G, LTO-50G, LTO-100G, LTO-200G, LTO-400G, LTO-400W, LTO-800G, LTO-800W	*
SDLT, SDLT-2, SDLT-S1, SDLT-S2, SDLT-S3, SDLT-S4, SDLT-4	*
T10000T1, T10000TS	T10K, T10KN, T10KE, T1A, T1AN, T1A34, T1A35, T1AE, T1AE34, T1AE35, T1B, T1BN, T1B34, T1B35, T1BE, T1BE34, T1BE35

\* No corresponding recording technique.

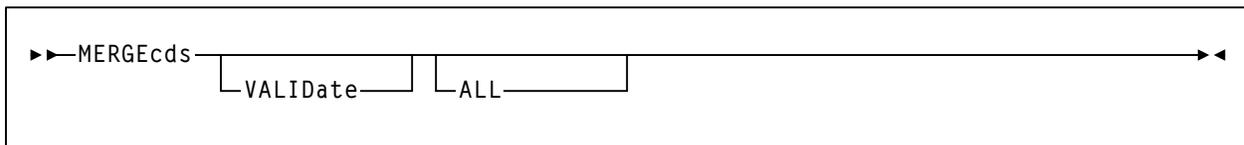
## INITialize Cartridge utility



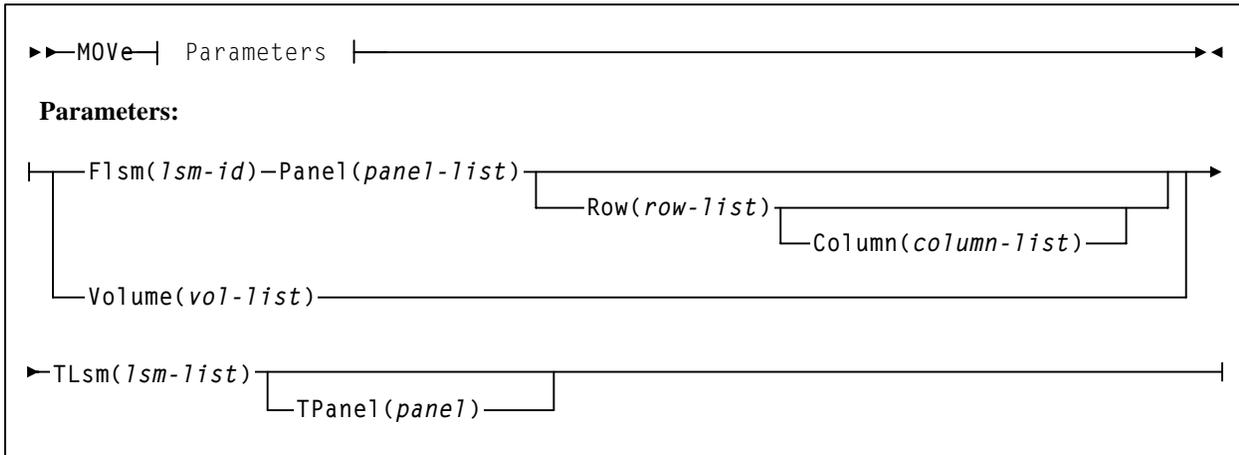
## Journal OFFLoad utility



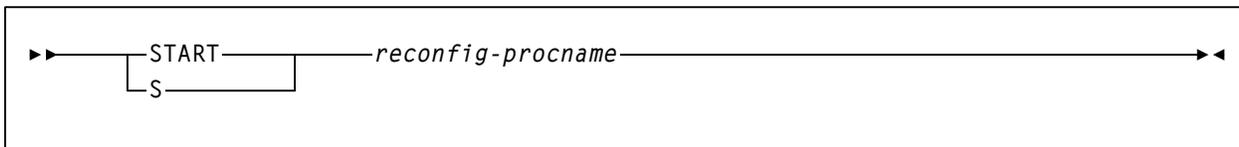
## MERGEcdfs utility



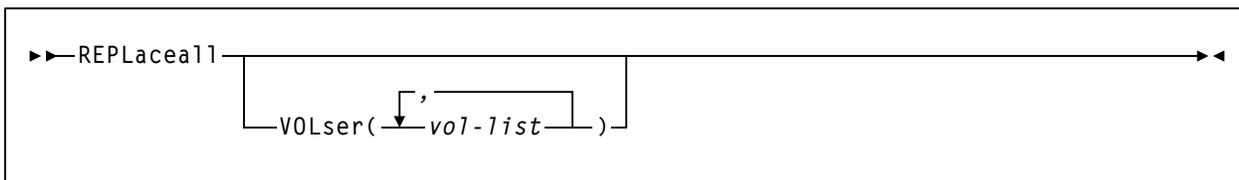
## MOVE utility



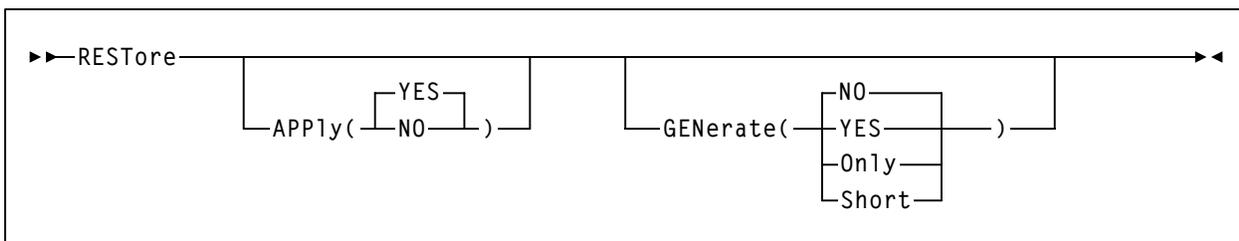
## Reconfiguration utility



## REPLace utility



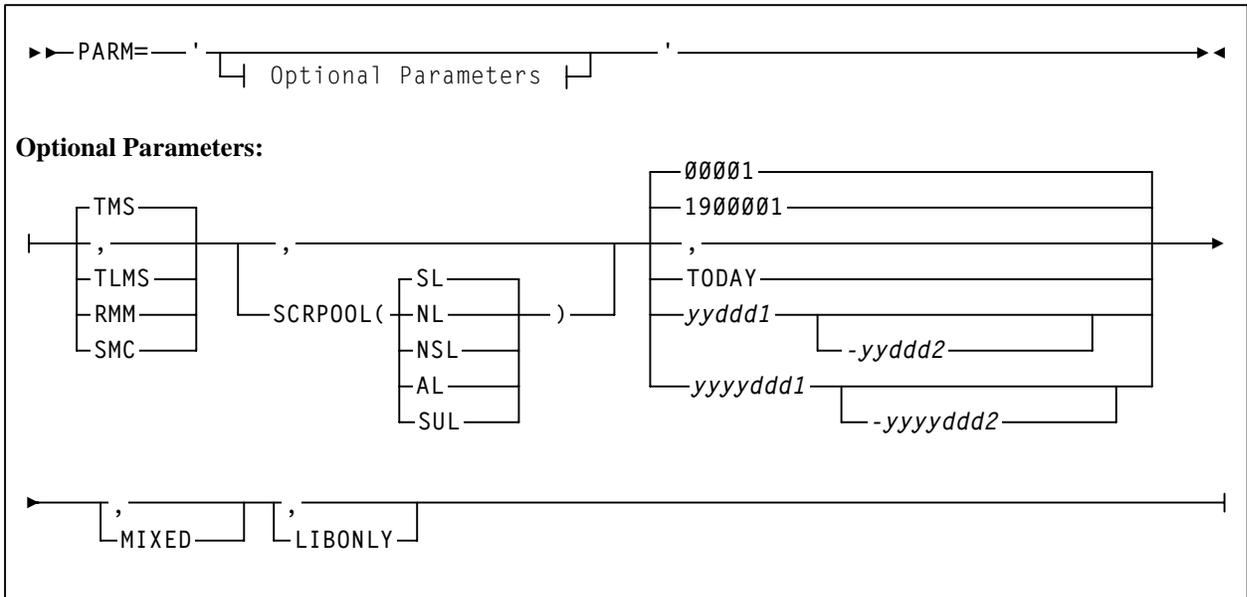
## RESTore utility



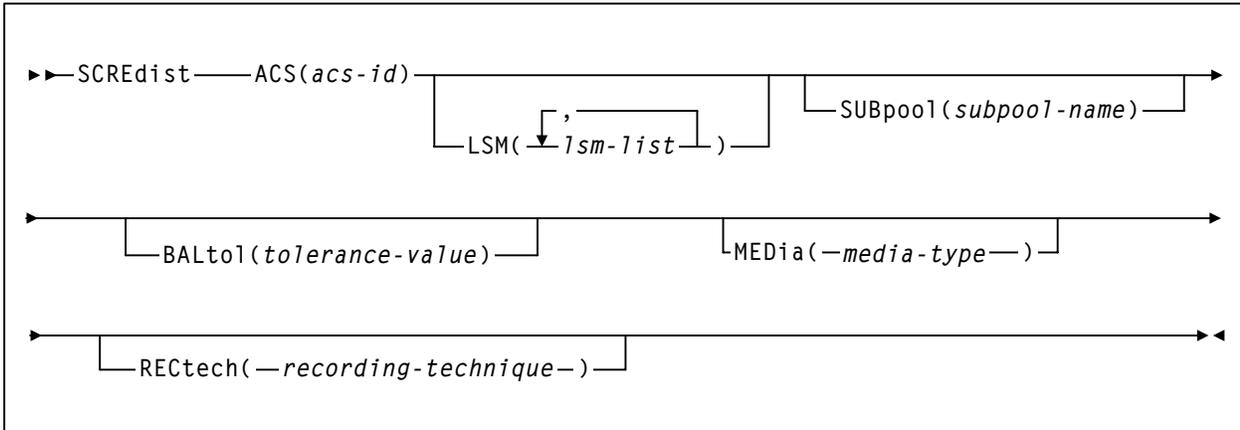
## SCRAtch utility



## Scratch Conversion utility



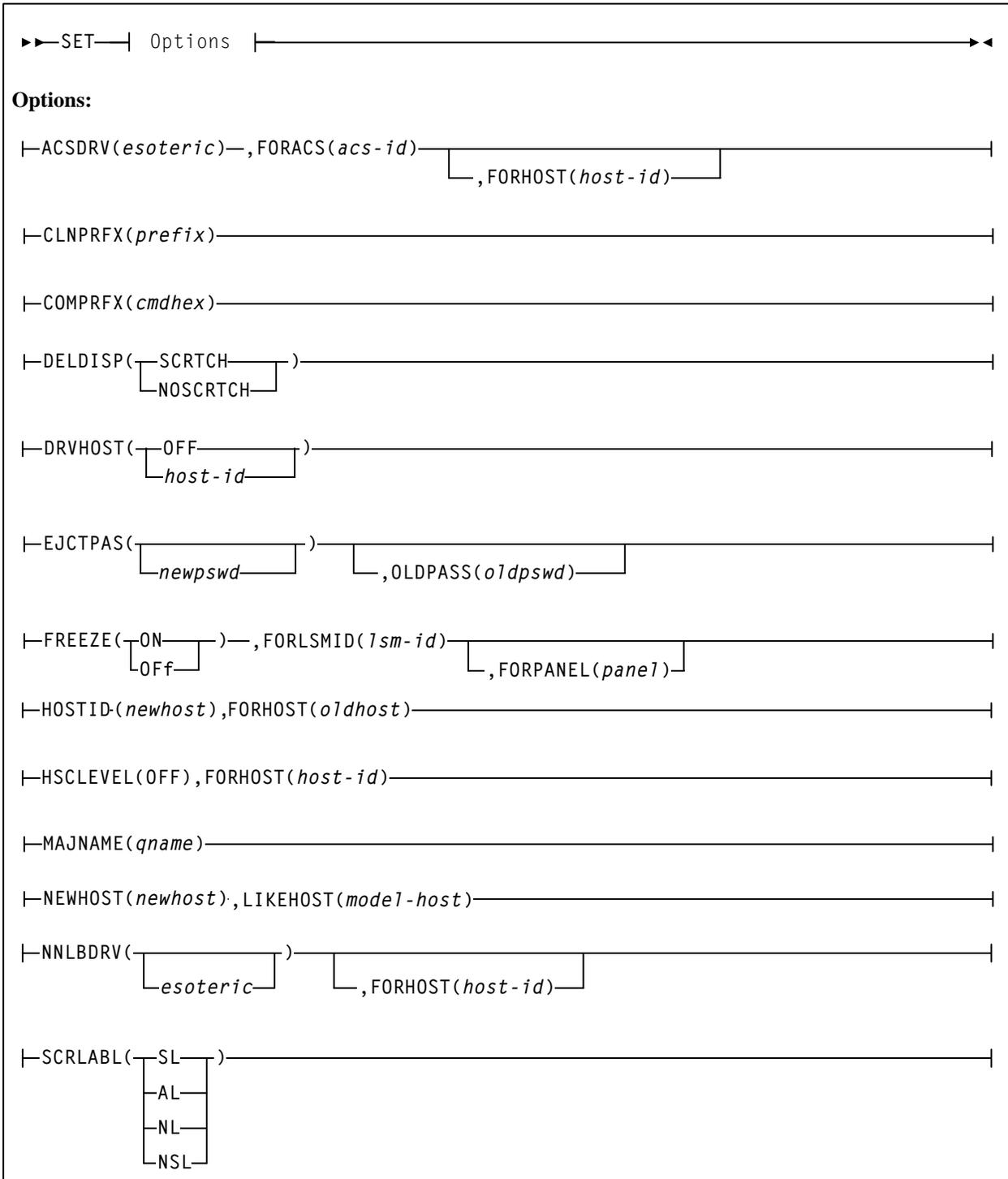
## Scratch Redistribution (SCREdist) utility



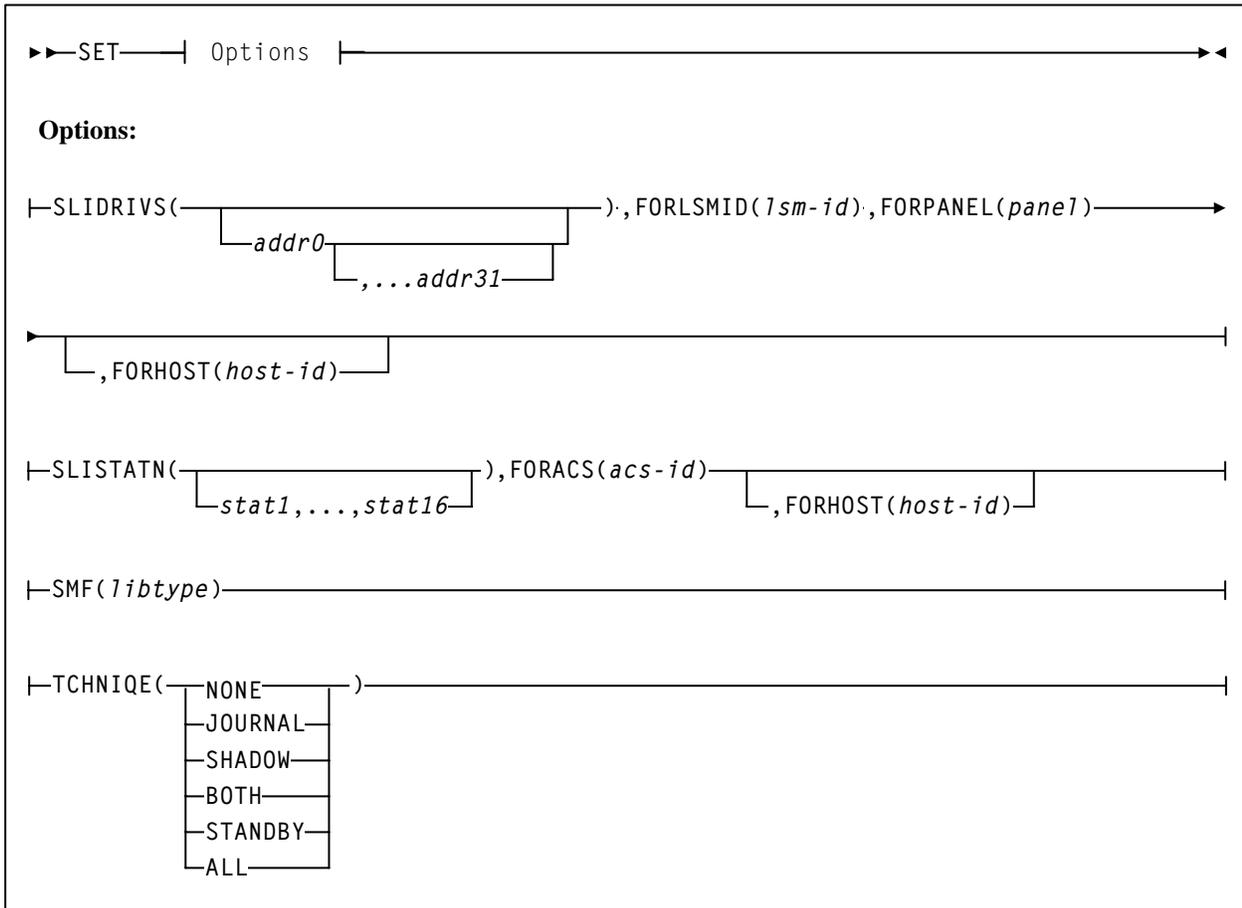
Media Types	Recording Techniques
LONGItud, Standard	LONGItud, 18track, 36track, 36Atrack, 36Btrack, 36Ctrack
ECART	
ZCART	
DD3, DD3A, DD3B, DD3C	HELical, DD3
STK1, STK1R	STK1R, STK1R34, STK1R35, STK1RA, STK1RA34, STK1RA35, STK1RB, STK1RB34, STK1RB35, STK1RAB, STK1RAB4, STK1RAB5, STK1RC, STK1RC34, STK1RC35, STK1RD, STK1RDE, STK1RDN, STK1RD34, STK1RD35, STK1RDE4, STK1RDE5
STK2, STK2P	STK2P, STK2P34, STK2P35, STK2PA, STK2PA34, STK2PA35, STK2PB, STK2PB34, STK2PB35
LTO-10G, LTO-35G, LTO-50G, LTO-100G, LTO-200G, LTO-400G, LTO-400W, LTO-800G, LTO-800W	*
SDLT, SDLT-2, SDLT-S1, SDLT-S2, SDLT-S3, SDLT-S4, SDLT-4	*
T10000T1, T10000TS	T10K, T10KN, T10KE, T1A, T1AN, T1A34, T1A35, T1AE, T1AE34, T1AE35, T1B, T1BN, T1B34, T1B35, T1BE, T1BE34, T1BE35

\* No corresponding recording technique.

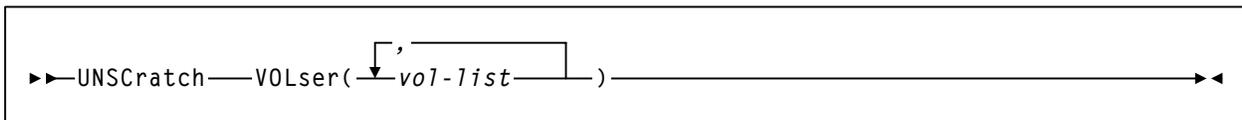
## SET utility



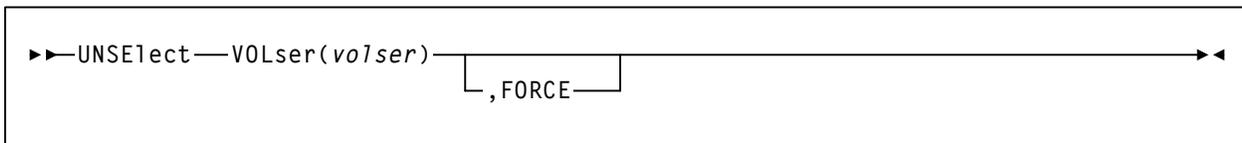
## SET utility (continued)



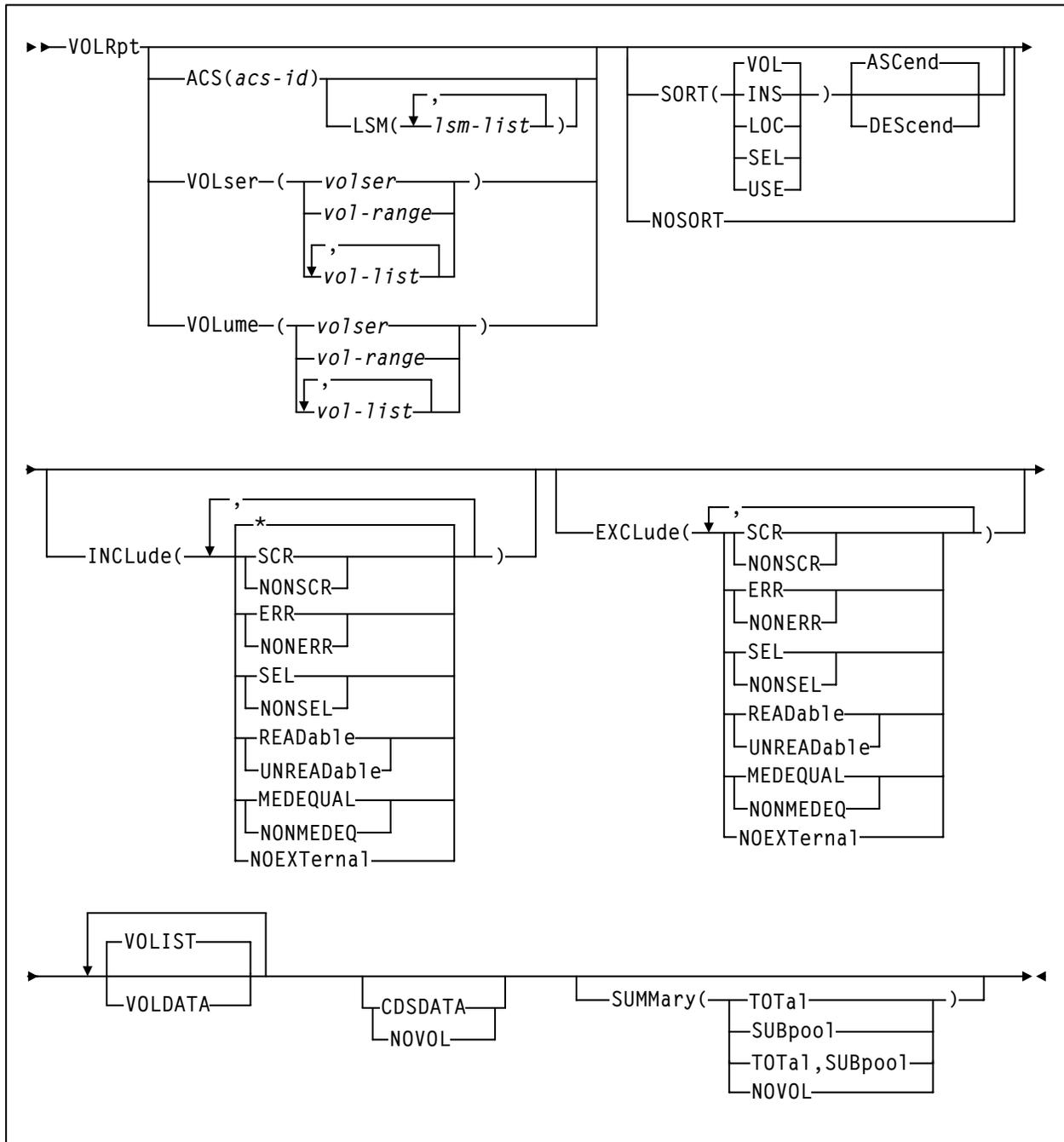
## UNSCratch utility



## UNSElect utility



# Volume Report (VOLRpt) utility



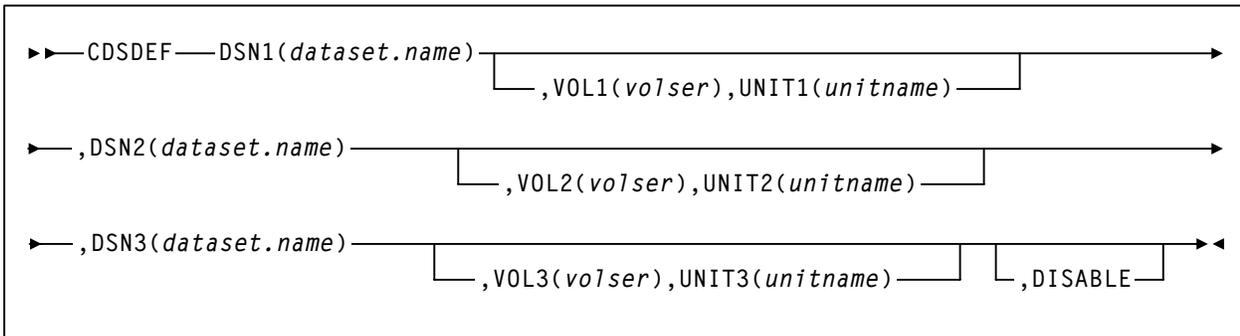


## **Control Statement Syntax**

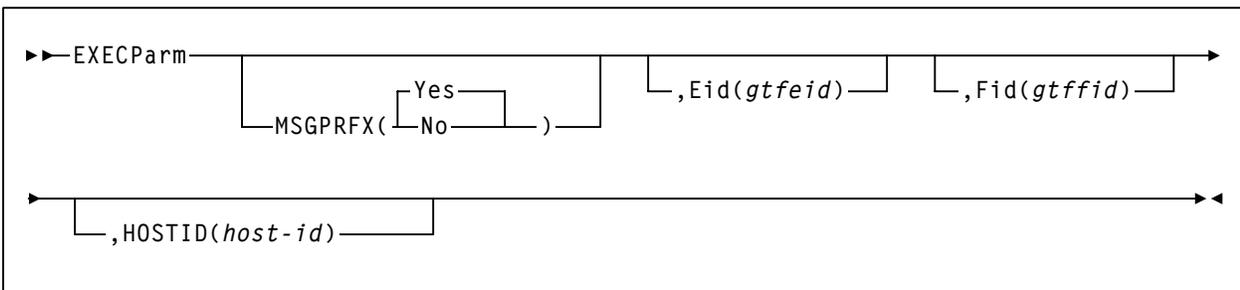
---

This section contains the syntax for control statements. For complete descriptions of the control statements, see the *HSC System Programmer's Guide*.

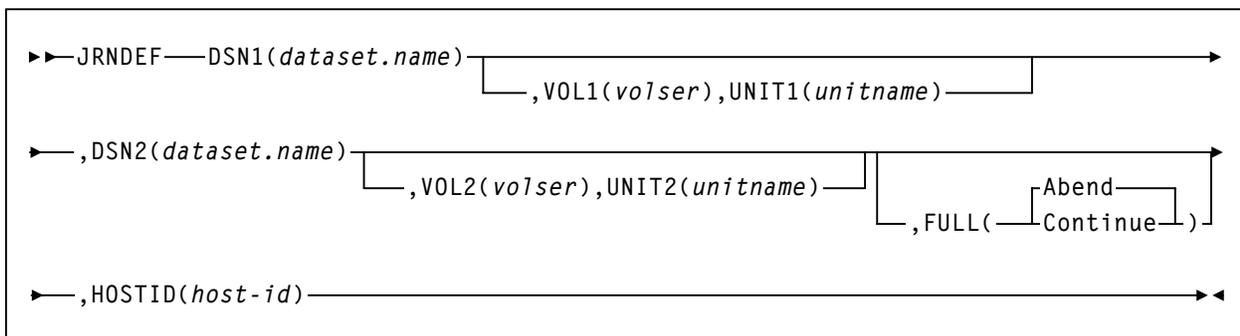
## Control Data Set Definition (CDSDEF) control statement



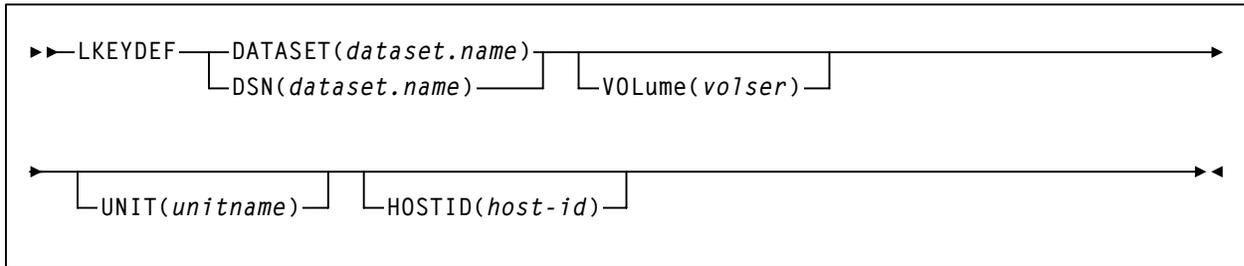
## EXECParm control statement



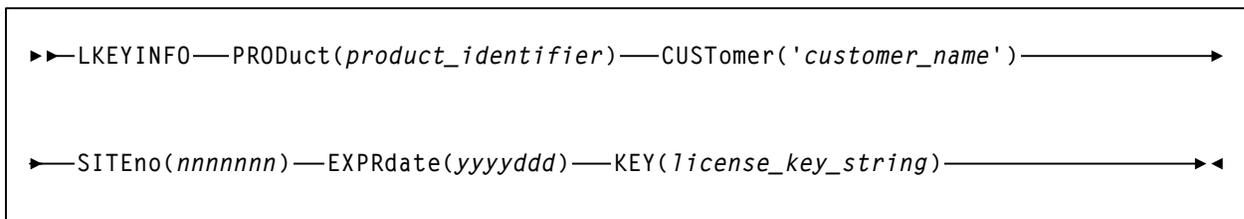
## Journal Definition (JRNDEF) control statement



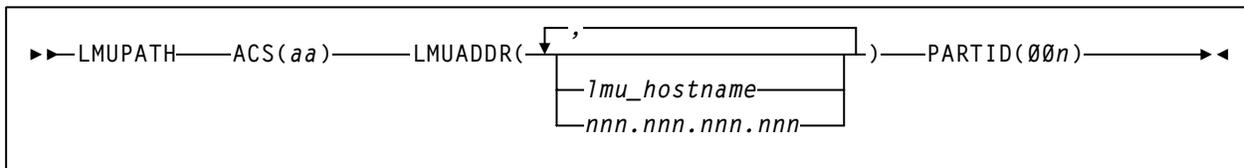
## License Key Definition (LKEYDEF) command and control statement



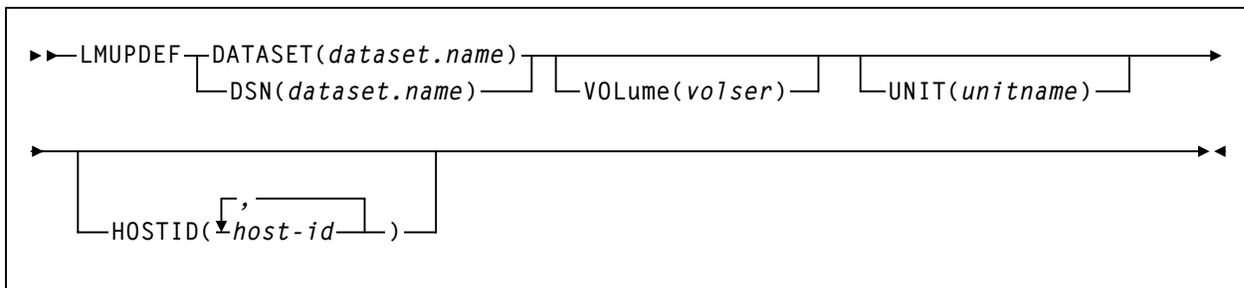
## License Key Information (LKEYINFO) control statement



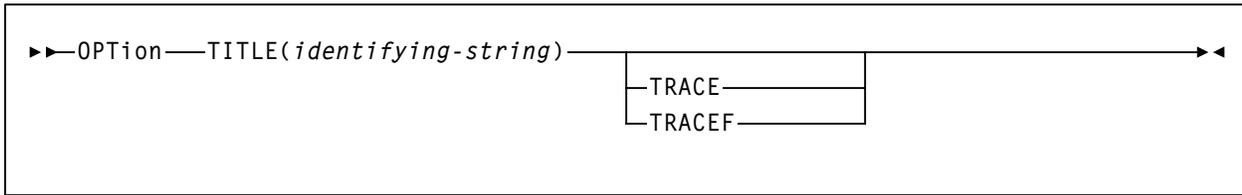
## LMUPATH control statement



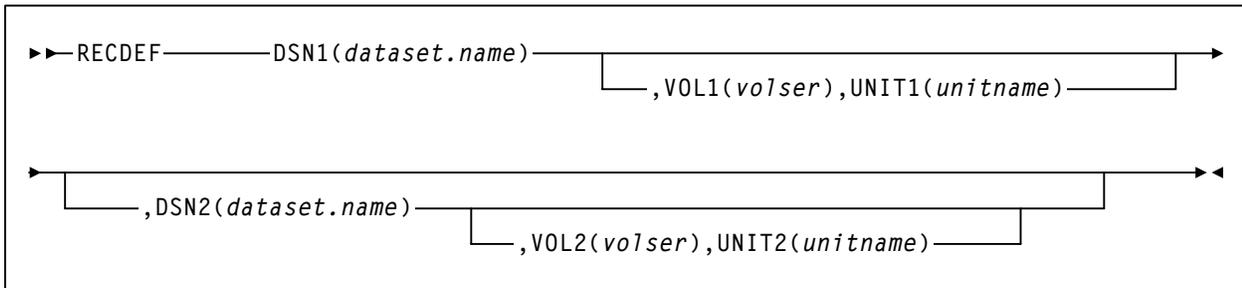
## LMUPDEF command and control statement



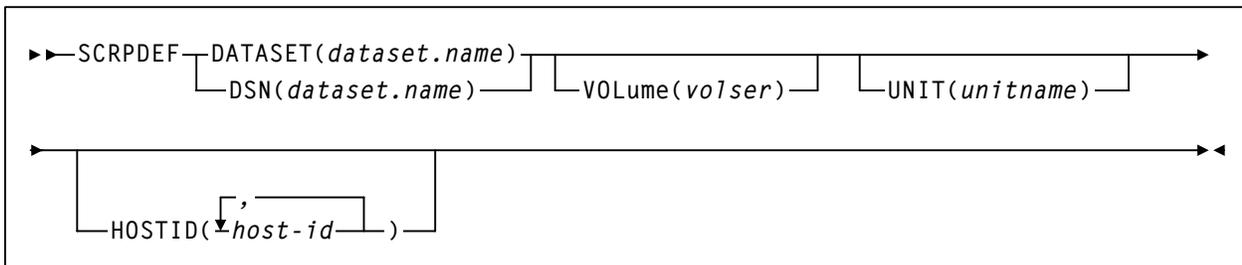
## OPTion control statement



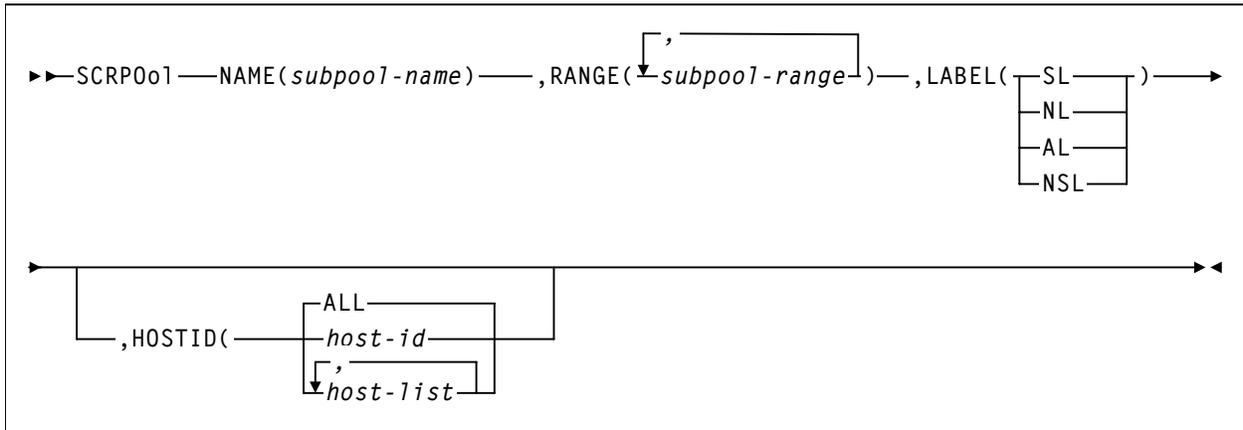
## Reconfiguration Definition (RECDEF) control statement



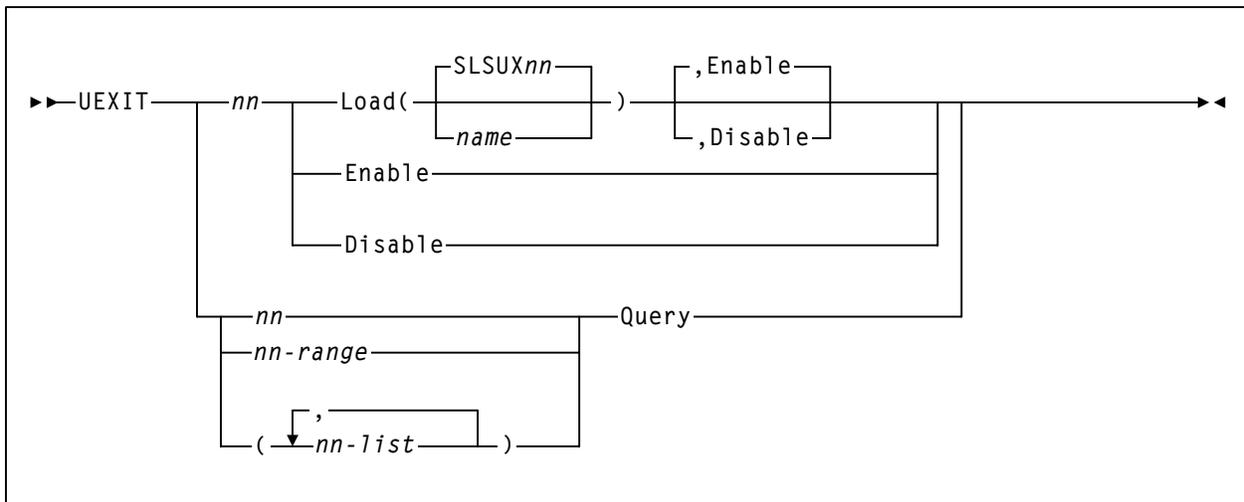
## Scratch Subpool Definition (SCRDEF) command and control statement



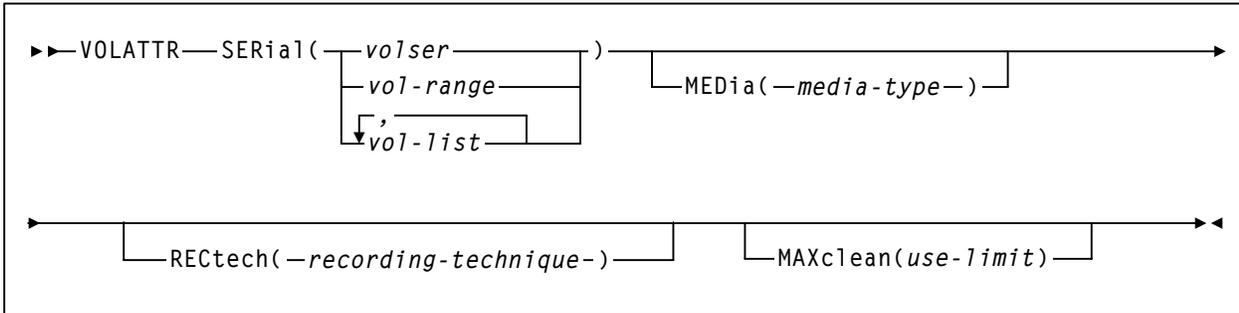
## Scratch Subpool (SCRPOol) control statement



## User Exit command and control statement



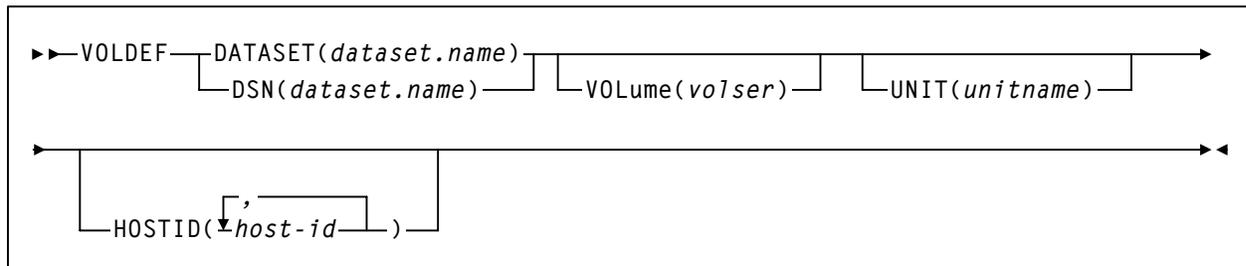
## Volume Attribute (VOLATTR) control statement



Media Types	Recording Techniques
LONGItud, Standard	LONGItud, 18track, 36track, 36Atrack, 36Btrack, 36Ctrack
ECART	
ZCART	
DD3A, DD3B, DD3C, DD3D	HELical, DD3
STK1R, STK1U, STK1Y	STK1R, STK1R34, STK1R35, STK1RA, STK1RA34, STK1RA35, STK1RB, STK1RB34, STK1RB35, STK1RAB, STK1RAB4, STK1RAB5, STK1RC, STK1RC34, STK1RC35, STK1RD, STK1RDE, STK1RDN, STK1RD34, STK1RD35, STK1RDE4, STK1RDE5
STK2P STK2W	STK2P, STK2P34, STK2P35, STK2PA, STK2PA34, STK2PA35, STK2PB, STK2PB34, STK2PB35
LTO-10G, LTO-35G, LTO-50G, LTO-100G, LTO-200G, LTO-400G, LTO-400W, LTO-800G, LTO-800W	*
SDLT, SDLT-2, SDLT-S1, SDLT-S2, SDLT-S3, SDLT-S4, SDLT-4	*
T10000T1, T10000TS, T10000CT	T10K, T10KN, T10KE, T1A, T1AN, T1A34, T1A35, T1AE, T1AE34, T1AE35, T1B, T1BN, T1B34, T1B35, T1BE, T1BE34, T1BE35

\* No corresponding recording technique.

## Volume Attribute Definition (VOLDEF) command and control statement



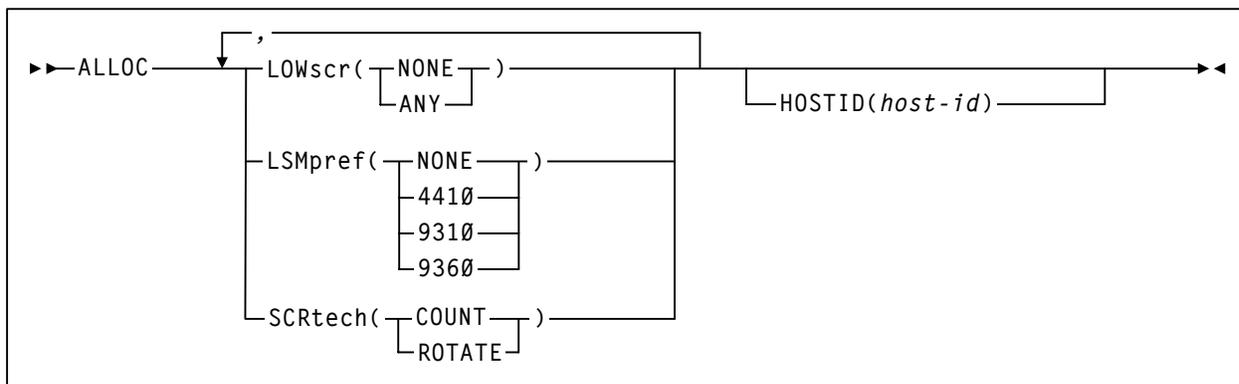


# HSC Operator Command Syntax

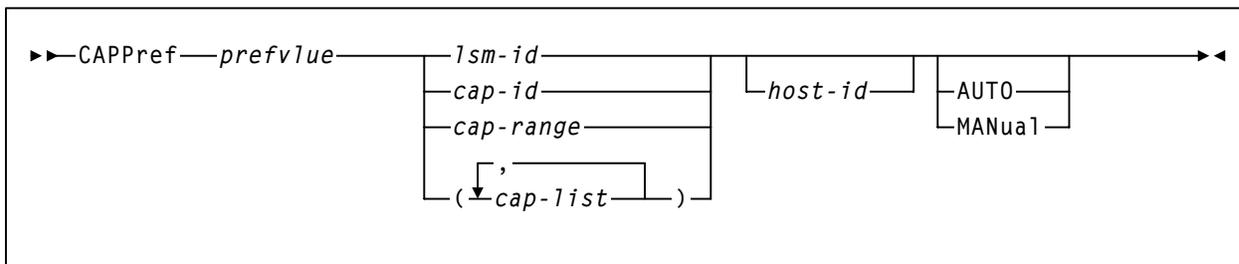
---

This section contains the syntax for operator commands. For complete descriptions of the commands, see the *HSC Operator's Guide*.

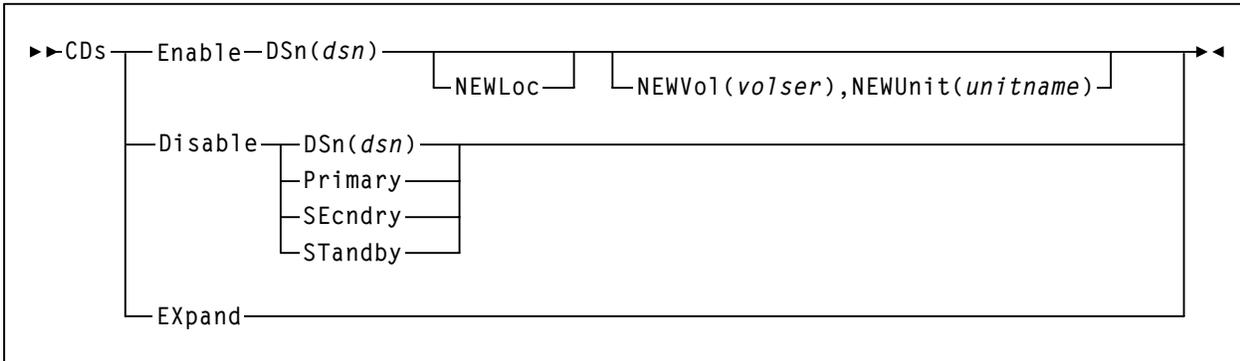
## Allocation (ALLOC) command and control statement



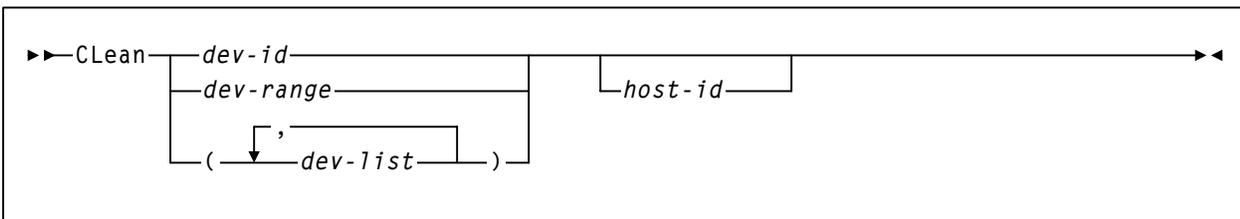
## CAP Preference (CAPPref) command and control statement



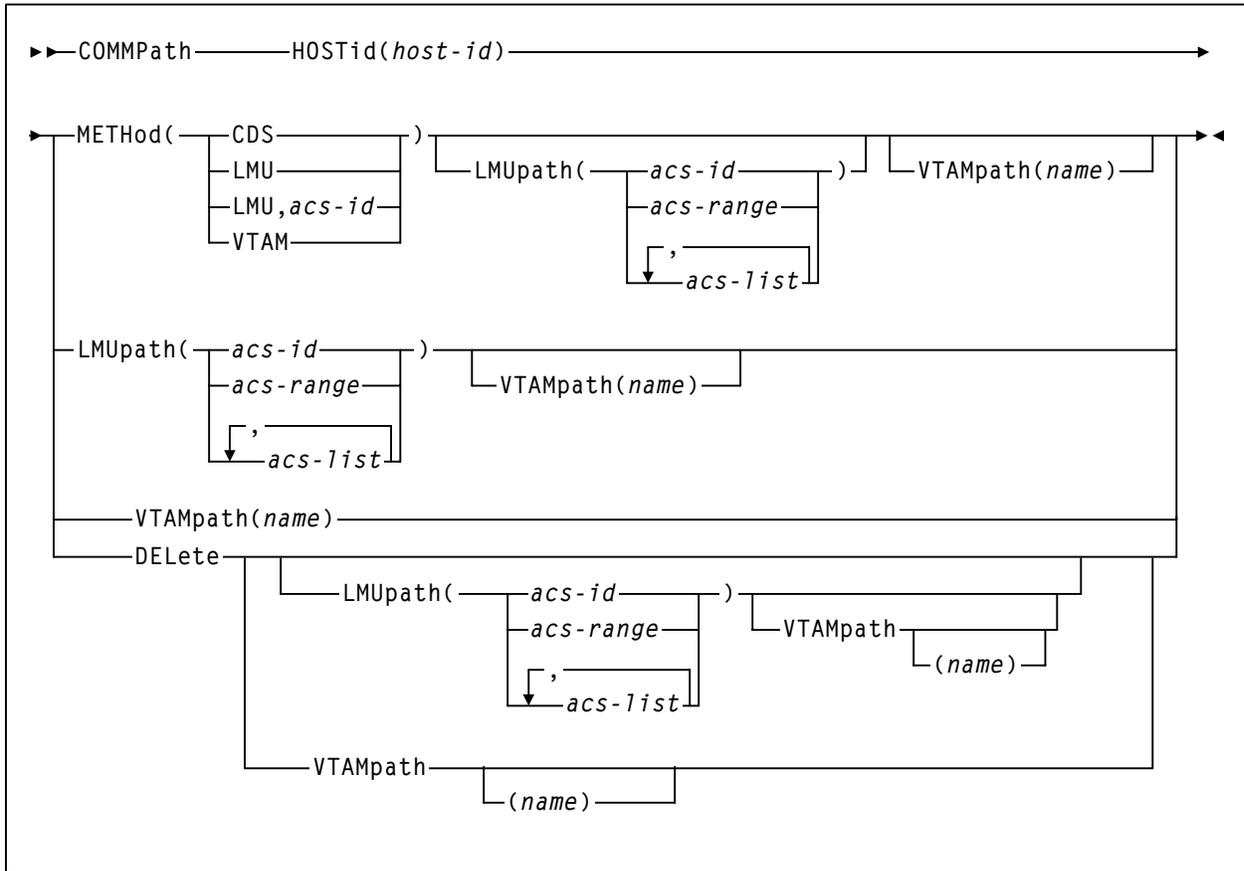
## CDs Enable/Disable command



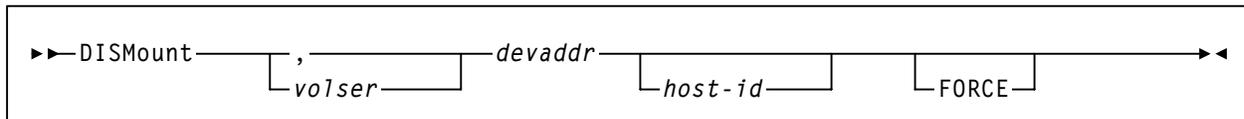
## CLea n command



## Communications Path (COMMPath) command and control statement

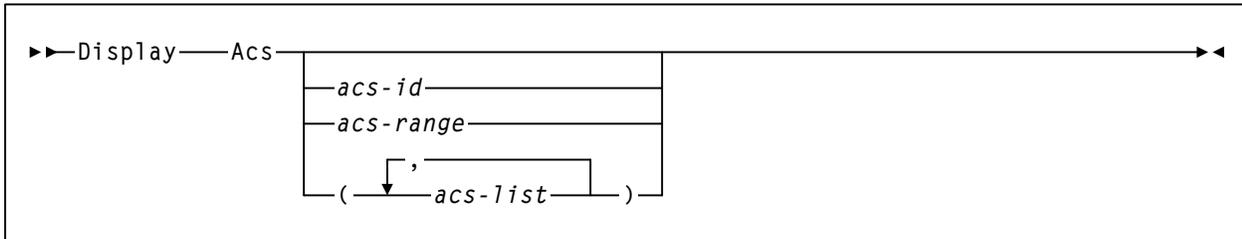


## DISMount command

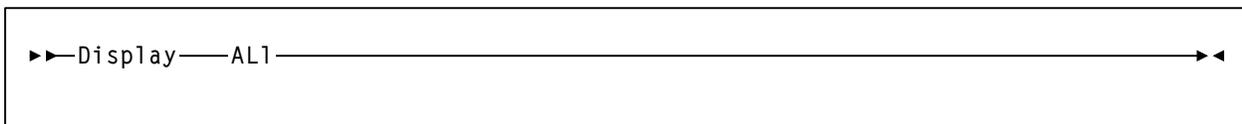


## Display command

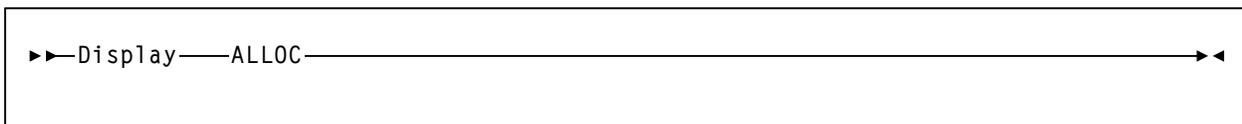
### Display Acs



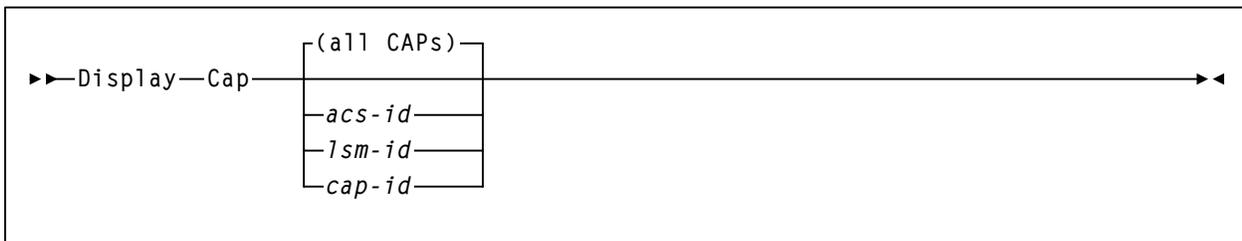
### Display ALI



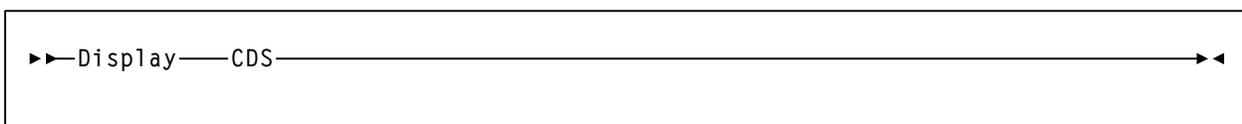
### Display ALLOC



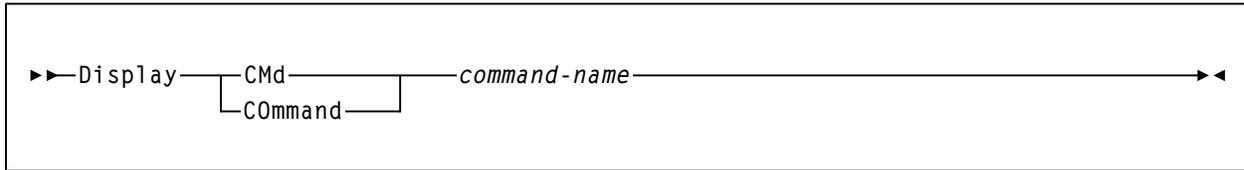
### Display Cap



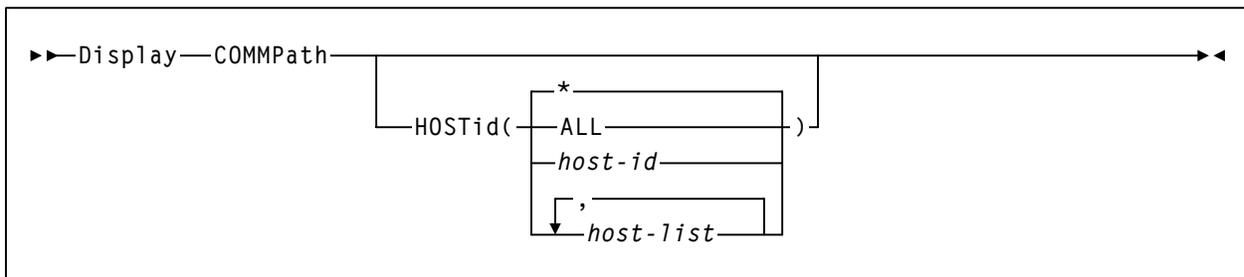
### Display CDS



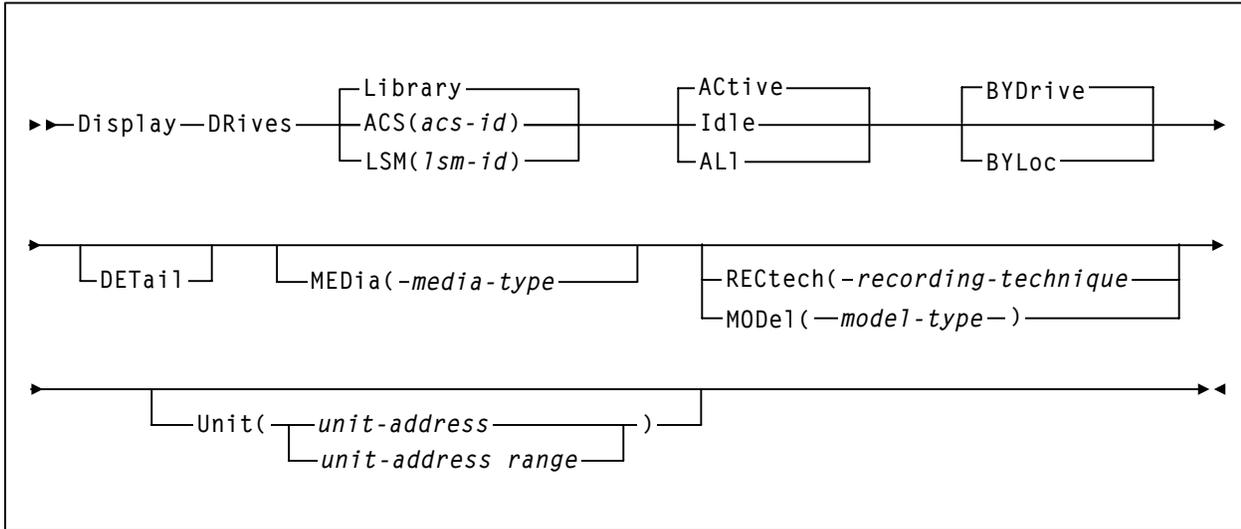
## Display Cmd



## Display COMMPath



## Display DRives

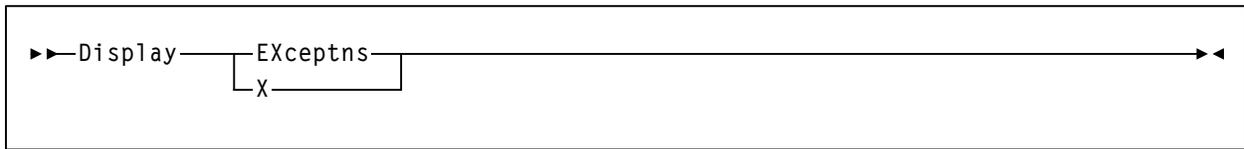


Media Types	Recording Techniques	Model Types
LONGItud	LONGItud, 18track, 36track, 36Atrack, 36Btrack, 36Ctrack	4480, 4490, 9490, 9490EE
Standard		
ECART		
ZCART		
DD3, DD3A, DD3B, DD3C, DD3D	HELical, DD3	SD3
STK1, STK1R, STK1U, STK1Y	STK1R, STK1R34, STK1R35, STK1RA, STK1RA34, STK1RA35, STK1RB, STK1RB34, STK1RB35, STK1RAB, STK1RAB4, STK1RAB5, STK1RC, STK1RC34, STK1RC35, STK1RD, STK1RDE, STK1RDN, STK1RD34, STK1RD35, STK1RDE4, STK1RDE5	9840, 984035, T9840B, T984035B, T9840C, T9840C35, T9840D, T9840D35, T9840DE, T9840DE5
STK2, STK2P, STK2W	STK2P, STK2P34, STK2P35, STK2PA, STK2PA34, STK2PA35, STK2PB, STK2PB34, STK2PB35	T9940A, T9940A35, T9940B, T9940B35
LTO-10G, LTO-35G, LTO-50G, LTO-100G, LTO-200G, LTO-400G, LTO-400W, LTO-800G, LTO-800W, LTO-CLN1, LTO-CLN2, LTO-CLNU	*	HP-LTO2, HP-LTO3, HP-LTO4, IBM-LTO2, IBM-LTO3, IBM-LTO4

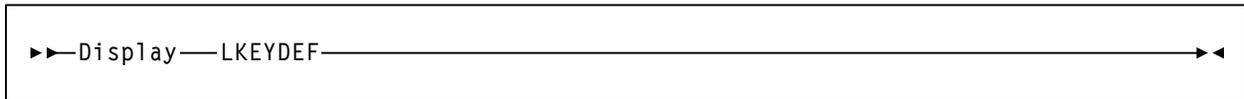
Media Types	Recording Techniques	Model Types
SDLT, SDLT-2, SDLT-S1, SDLT-S2, SDLT-S3, SDLT-S4, SDLT-4	*	SDLT-600, DLT-S4
T10000T1, T10000TS, T10000CT	T10K, T10KN, T10KE, T1A, T1AN, T1A34, T1A35, T1AE, T1AE34, T1AE35, T1B, T1BN, T1B34, T1B35, T1BE, T1BE34, T1BE35	T1A34, T1A35, T1AE34, T1AE35, T1B34, T1B35, T1BE34, T1BE35

\* No corresponding recording technique.

### Display Exceptions



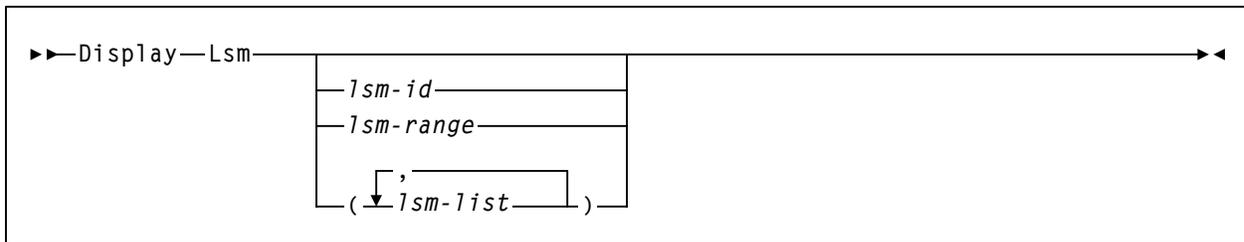
### Display LKEYDEF



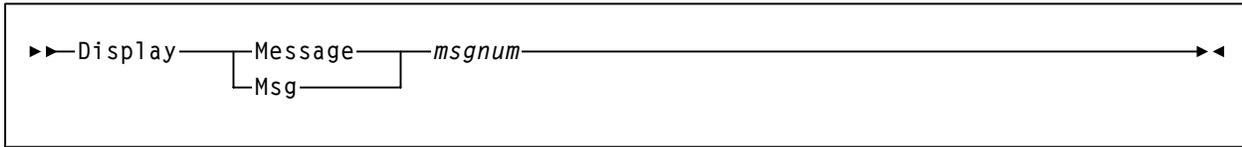
### Display LMUPDEF



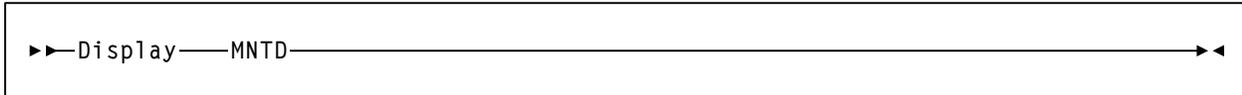
### Display LSM



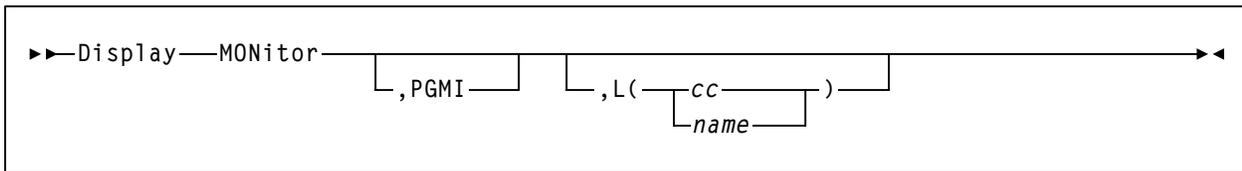
## Display Message



## Display MNTD



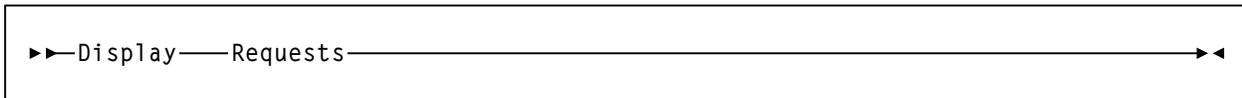
## Display MONitor



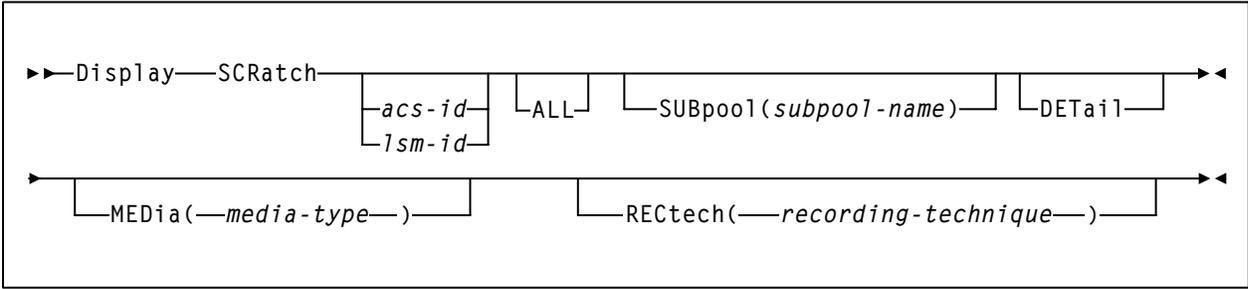
## Display OPTion



## Display Requests



## Display SCRatch



Media Types	Recording Techniques
LONGitud	LONGitud, 18track, 36track, 36Atrack, 36Btrack, 36Ctrack
Standard	
ECART	
ZCART	
DD3, DD3A, DD3B, DD3C	HELical, DD3
STK1, STK1R	STK1R, STK1R34, STK1R35, STK1RA, STK1RA34, STK1RA35, STK1RB, STK1RB34, STK1RB35, STK1RAB, STK1RAB4, STK1RAB5, STK1RC, STK1RC34, STK1RC35, STK1RD, STK1RDE, STK1RDN, STK1RD34, STK1RD35, STK1RDE4, STK1RDE5
STK2, STK2P	STK2P, STK2P34, STK2P35, STK2PA, STK2PA34, STK2PA35, STK2PB, STK2PB34, STK2PB35
LTO-10G, LTO-35G, LTO-50G, LTO-100G, LTO-200G, LTO-400G, LTO-400W, LTO-800G, LTO-800W	*
SDLT, SDLT-2, SDLT-S1, SDLT-S2, SDLT-S3, SDLT-S4, SDLT-4	*
T10000T1, T10000TS	T10K, T10KN, T10KE, T1A, T1AN, T1A34, T1A35, T1AE, T1AE34, T1AE35, T1B, T1BN, T1B34, T1B35, T1BE, T1BE34, T1BE35

\* No corresponding recording technique.

### Display SCRDEF

▶▶ Display — SCRDEF —————▶◀

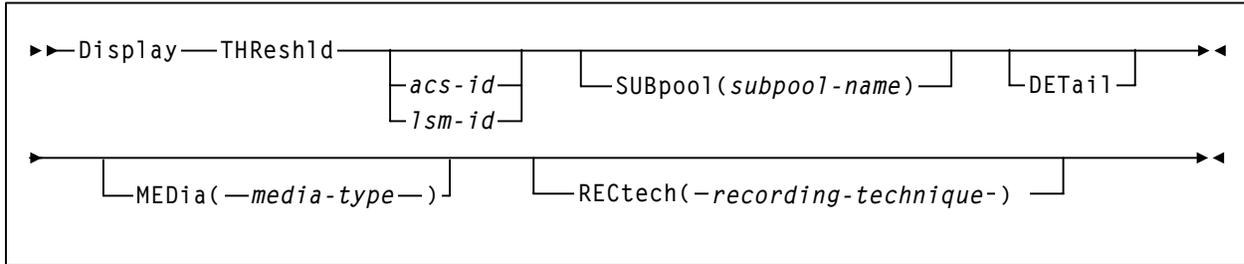
### Display SRVlev

▶▶ Display — SRVlev —————▶◀

### Display Status

▶▶ Display — Status —————▶◀

## Display THReshId



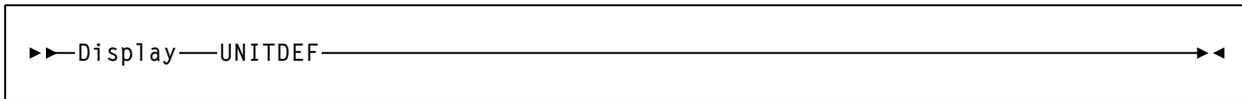
Media Types	Recording Techniques
LONGItud	LONGItud, 18track, 36track, 36Atrack, 36Btrack, 36Ctrack
Standard	
ECART	
ZCART	
DD3, DD3A, DD3B, DD3C	HELical, DD3
STK1, STK1R	STK1R, STK1R34, STK1R35, STK1RA, STK1RA34, STK1RA35, STK1RB, STK1RB34, STK1RB35, STK1RAB, STK1RAB4, STK1RAB5, STK1RC, STK1RC34, STK1RC35, STK1RD, STK1RDE, STK1RDN, STK1RD34, STK1RD35, STK1RDE4, STK1RDE5
STK2, STK2P	STK2P, STK2P34, STK2P35, STK2PA, STK2PA34, STK2PA35, STK2PB, STK2PB34, STK2PB35
LTO-10G, LTO-35G, LTO-50G, LTO-100G, LTO-200G, LTO-400G, LTO-400W, LTO-800G, LTO-800W	*
SDLT, SDLT-2, SDLT-S1, SDLT-S2, SDLT-S3, SDLT-S4, SDLT-4	*
T10000T1, T10000TS	T10K, T10KN, T10KE, T1A, T1AN, T1A34, T1A35, T1AE, T1AE34, T1AE35, T1B, T1BN, T1B34, T1B35, T1BE, T1BE34, T1BE35

\* No corresponding recording technique.

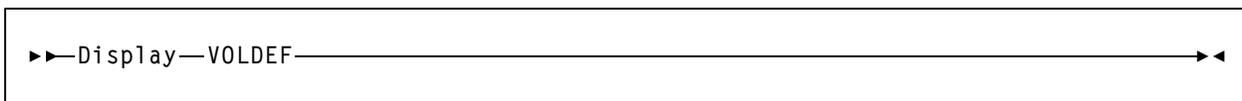
## Display TREQDEF



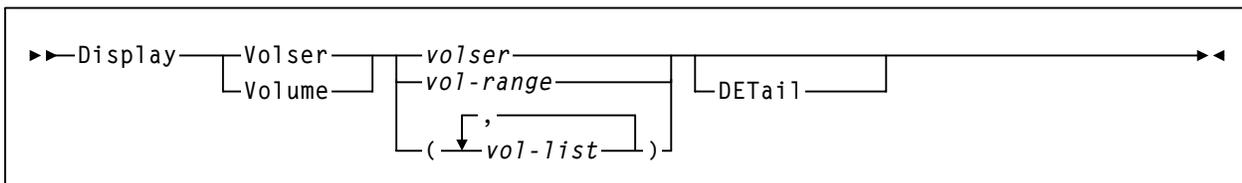
## Display UNITDEF



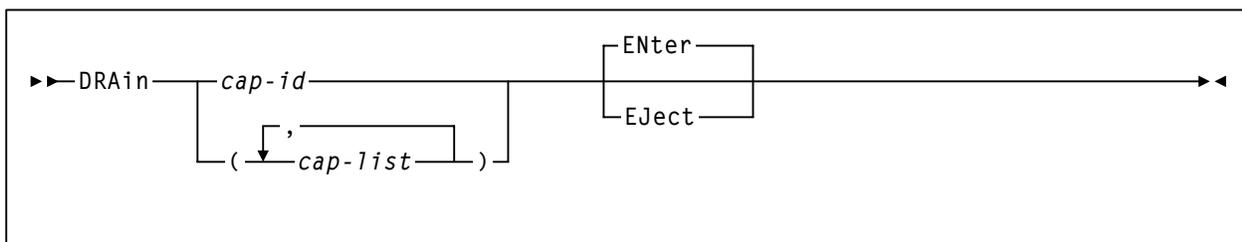
## Display VOLDEF



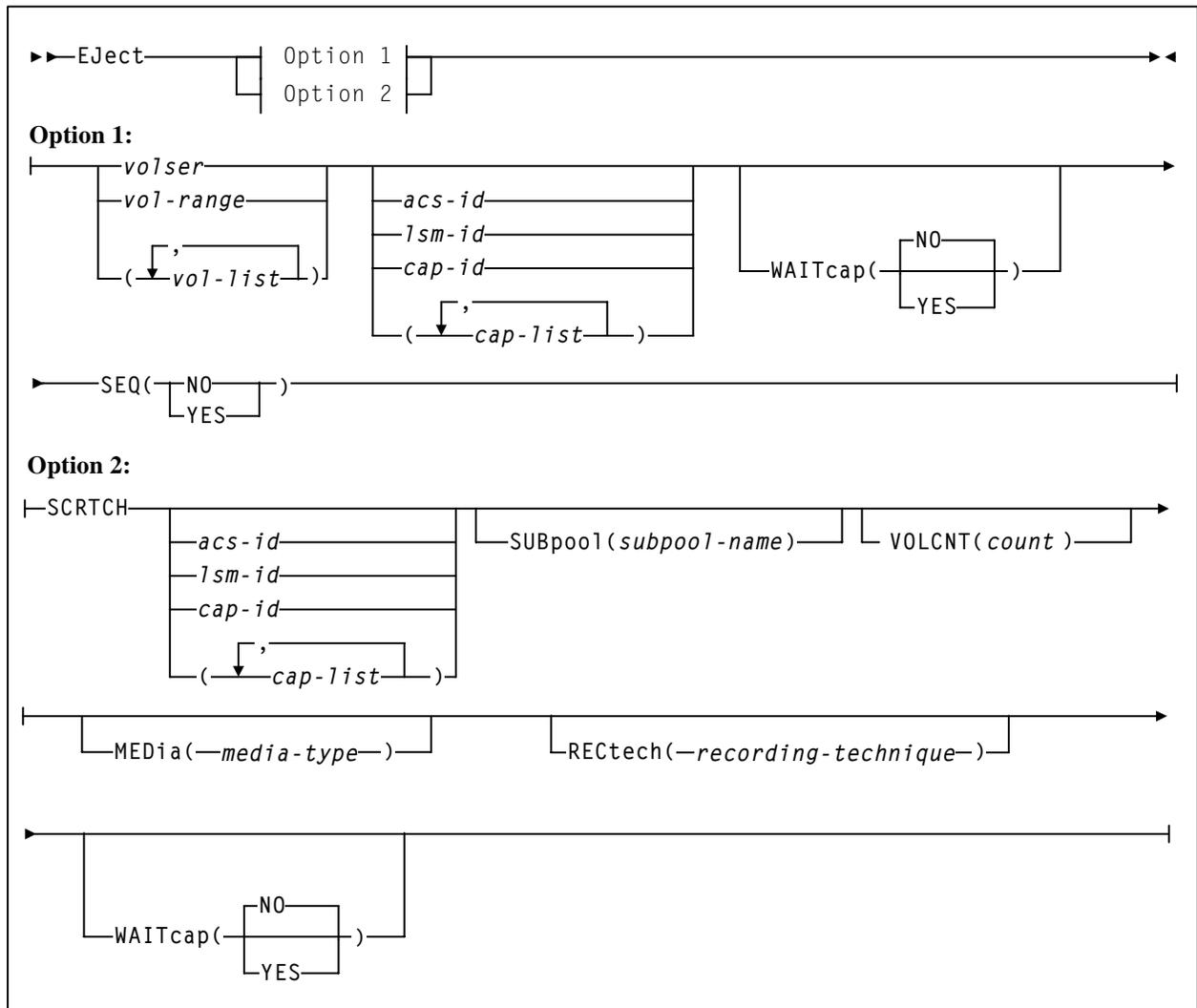
## Display Volume



## DRAIN CAP command



## Eject command

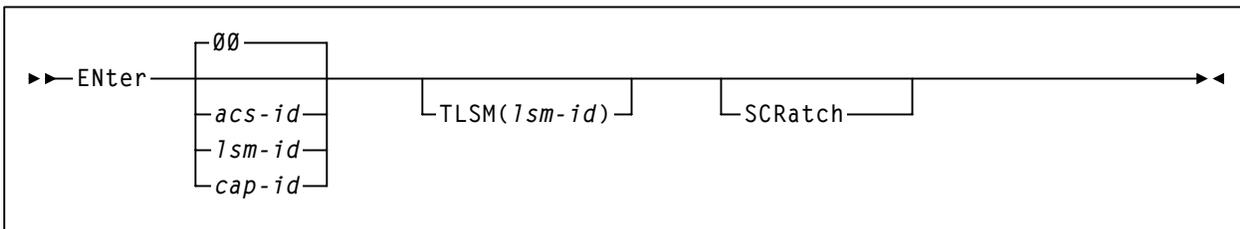


Media Types	Recording Techniques
LONGitud	LONGitud, 18track, 36track, 36Atrack, 36Btrack, 36Ctrack
Standard	
ECART	
ZCART	
DD3, DD3A, DD3B, DD3C	HELical, DD3

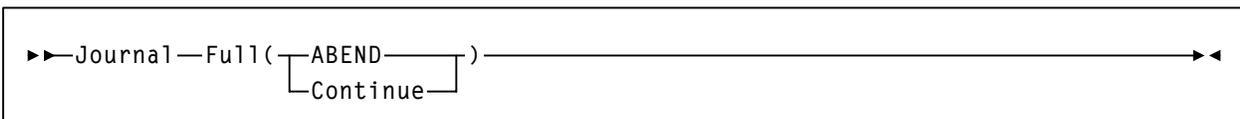
Media Types	Recording Techniques
STK1, STK1R	STK1R, STK1R34, STK1R35, STK1RA, STK1RA34, STK1RA35, STK1RB, STK1RB34, STK1RB35, STK1RAB, STK1RAB4, STK1RAB5, STK1RC, STK1RC34, STK1RC35, STK1RD, STK1RDE, STK1RDN, STK1RD34, STK1RD35, STK1RDE4, STK1RDE5
STK2, STK2P	STK2P, STK2P34, STK2P35, STK2PA, STK2PA34, STK2PA35, STK2PB, STK2PB34, STK2PB35
LTO-10G, LTO-35G, LTO-50G, LTO-100G, LTO-200G, LTO-400G, LTO-400W, LTO-800G, LTO-800W	*
SDLT, SDLT-2, SDLT-S1, SDLT-S2, SDLT-S3, SDLT-S4, SDLT-4	*
T10000T1, T10000TS	T10K, T10KN, T10KE, T1A, T1AN, T1A34, T1A35, T1AE, T1AE34, T1AE35, T1B, T1BN, T1B34, T1B35, T1BE, T1BE34, T1BE35

\* No corresponding recording technique.

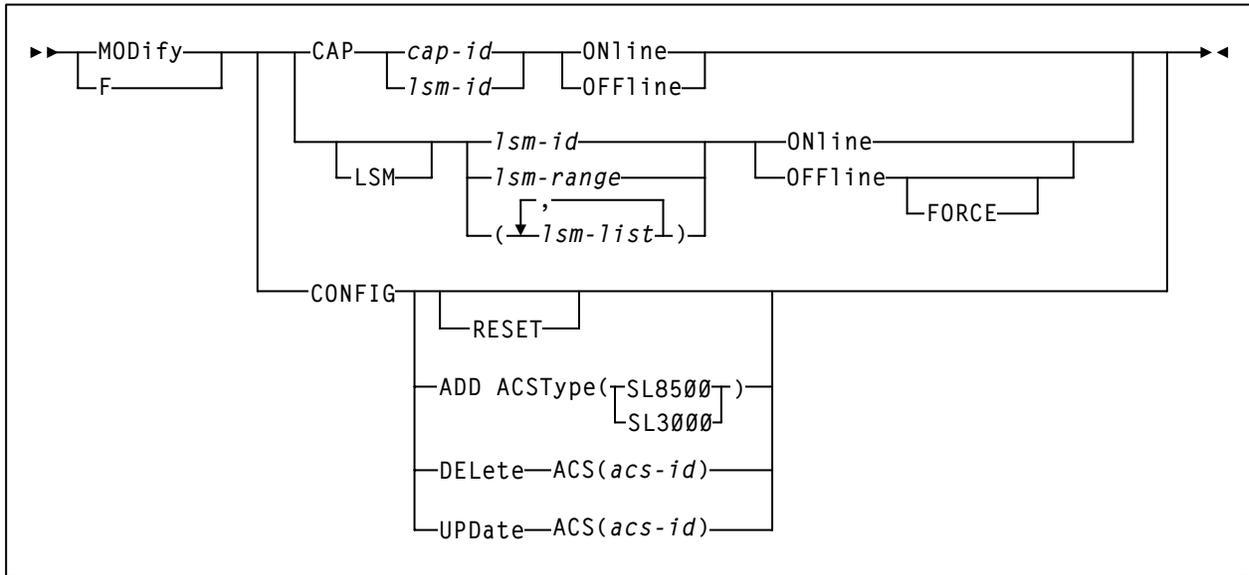
## ENter command



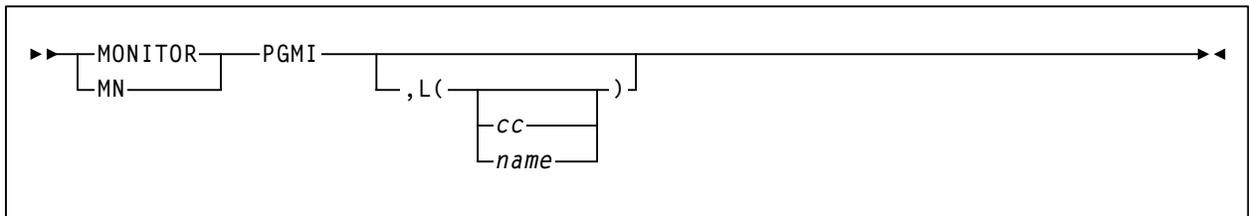
## Journal command



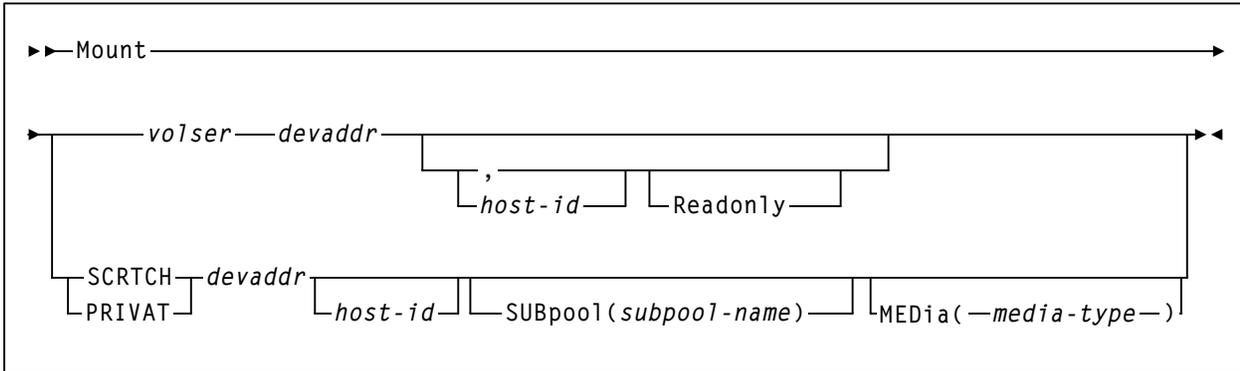
## MODify command



## MONITOR command

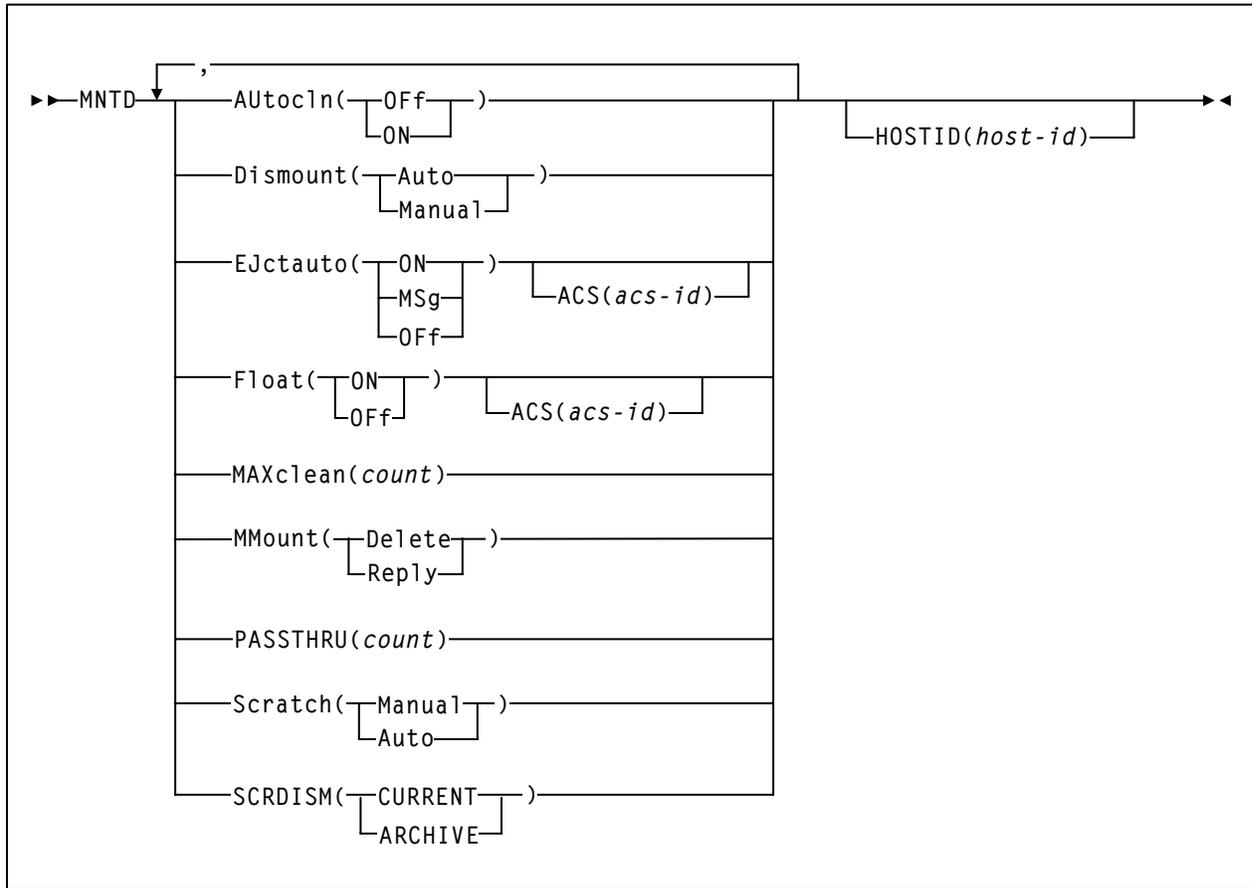


## Mount command

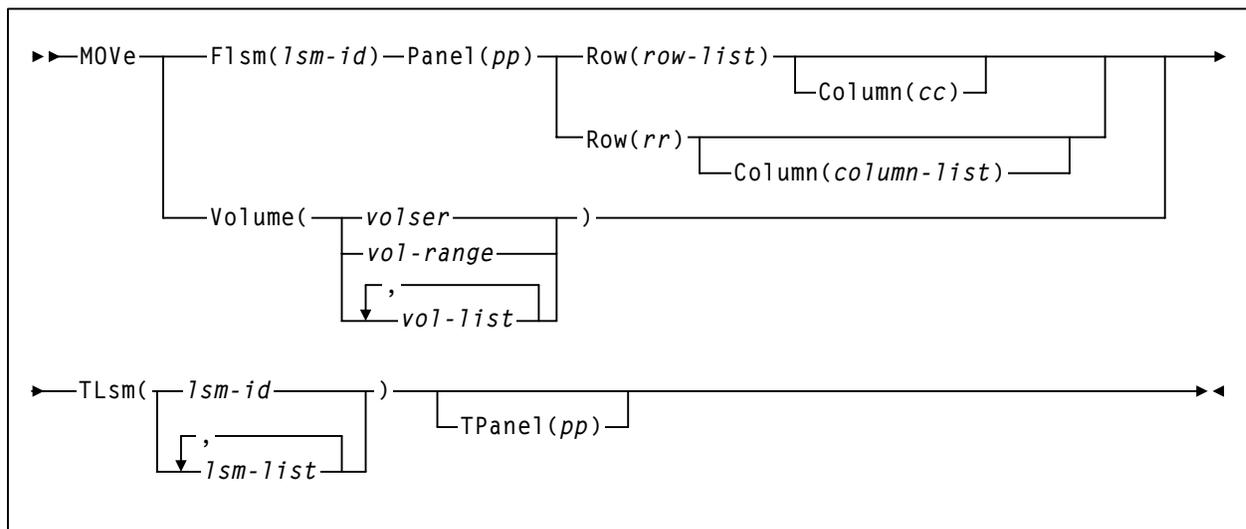


Media Types
LONGitud
Standard
ECART
ZCART
DD3, DD3A, DD3B, DD3C
STK1, STK1R
STK2, STK2P
LTO-10G, LTO-35G, LTO-50G, LTO-100G, LTO-200G, LTO-400G, LTO-400W, LTO-800G, LTO-800W
SDLT, SDLT-2, SDLT-S1, SDLT-S2, SDLT-S3, SDLT-S4, SDLT-4
T10000T1, T10000TS

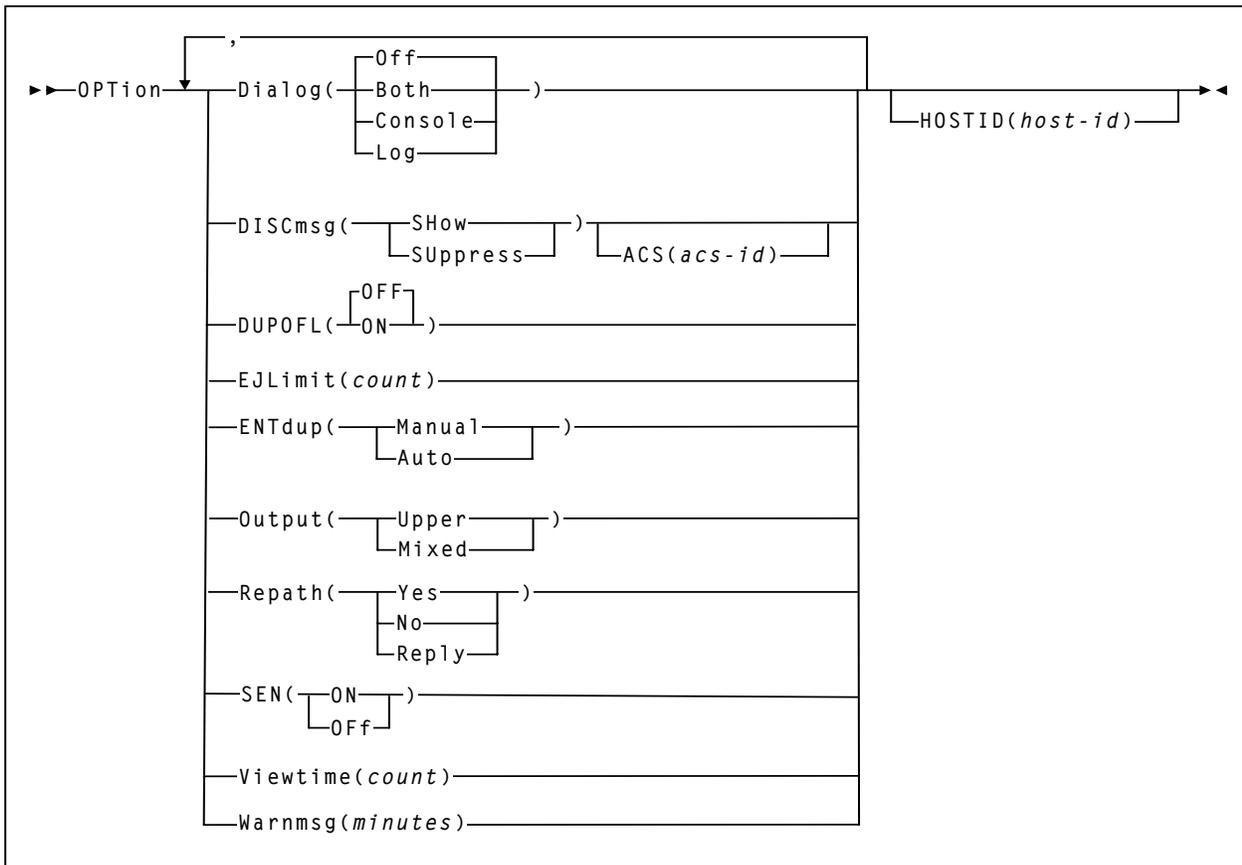
## Mount/Dismount Options (MNTD) command and control statement



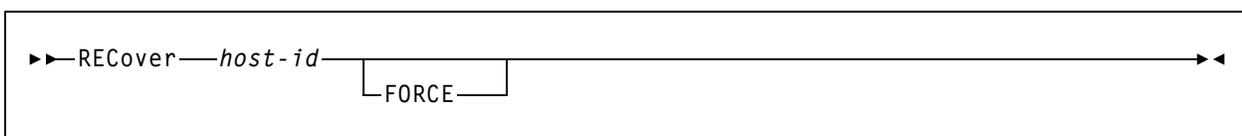
## MOVE command



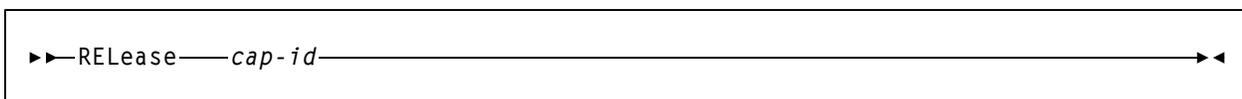
## OPTion command and control statement



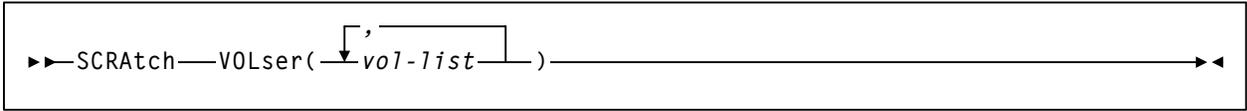
## RECover Host command



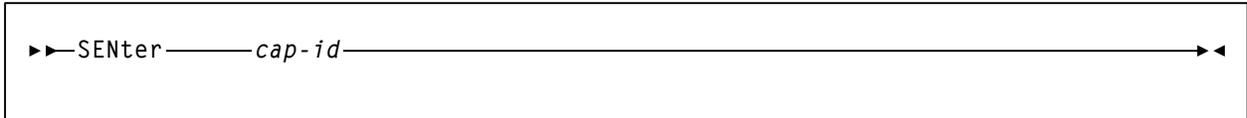
## RELease CAP command



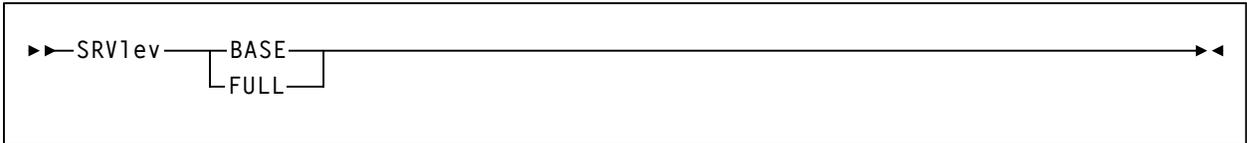
## SCRAtch command



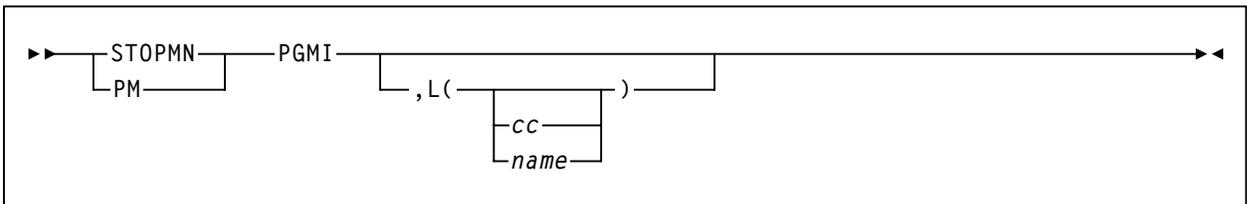
## SENter command



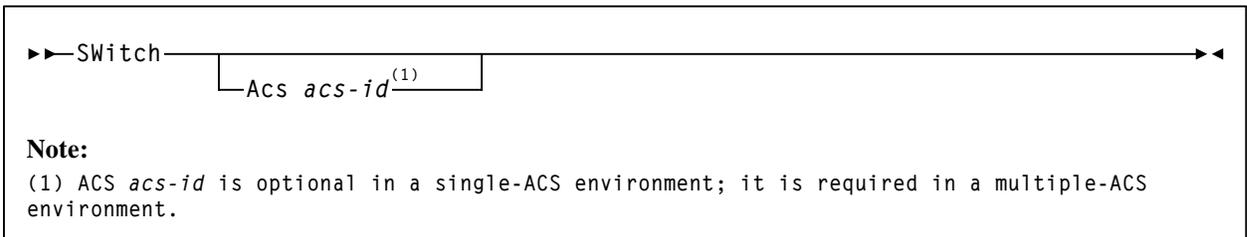
## SRVlev command



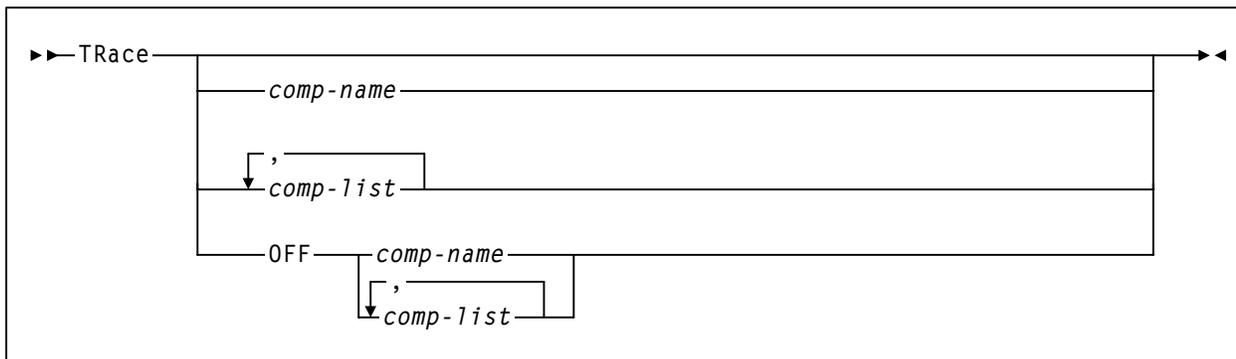
## Stop Monitoring (STOPMN) command



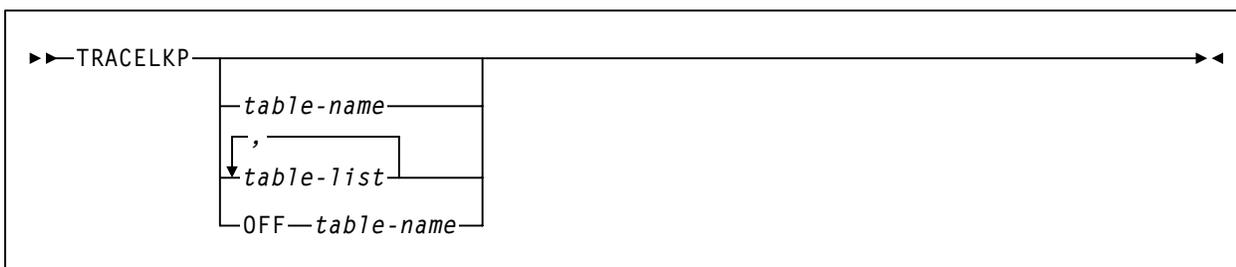
## SWitch command



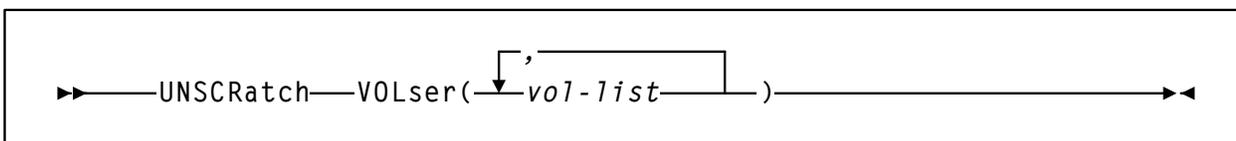
## TRace command



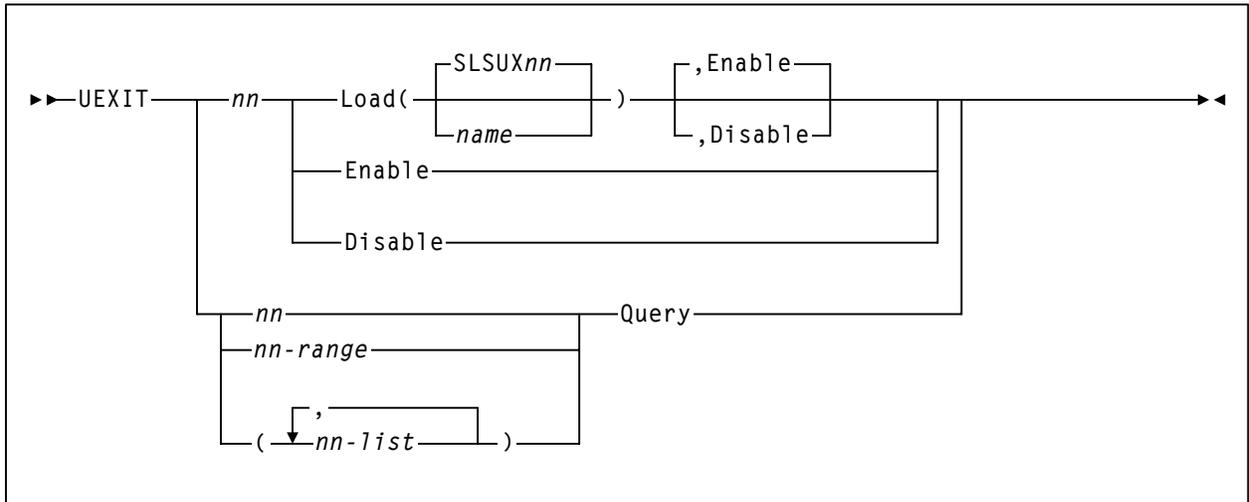
## TRACELKP command



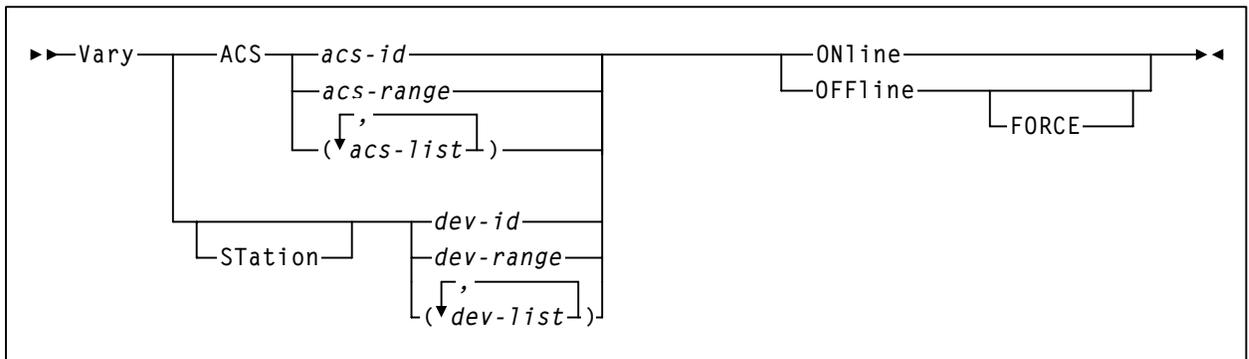
## UNSCRatch command



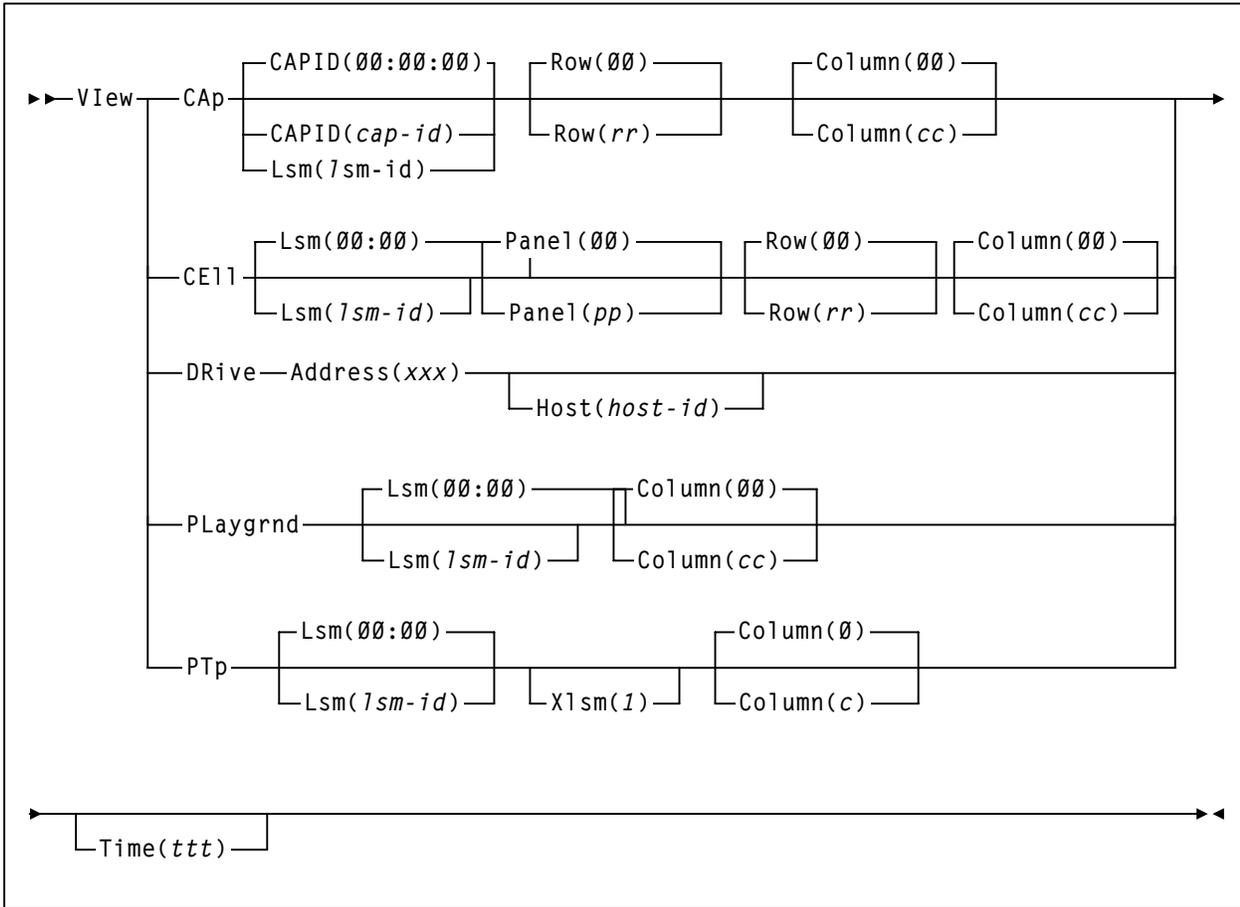
## User Exit (UEXIT) command and control statement



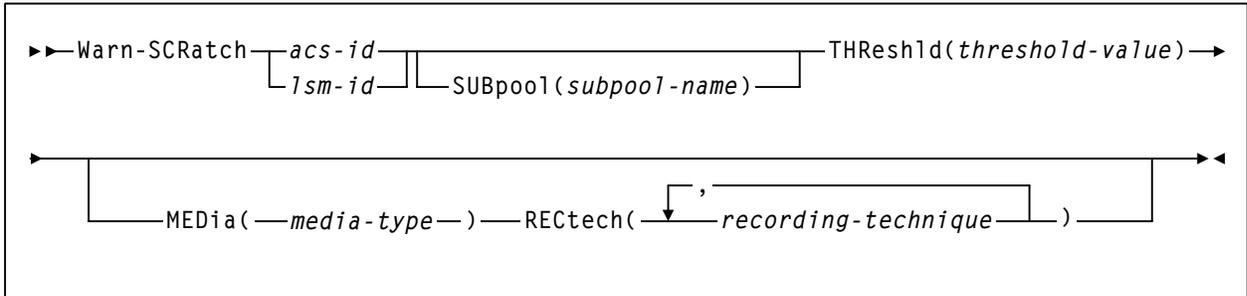
## Vary Station command



# View command



## Warn command



Media Types	Recording Techniques
LONGItud	LONGItud, 18track, 36track, 36Atrack, 36Btrack, 36Ctrack
Standard	
ECART	
ZCART	
DD3, DD3A, DD3B, DD3C	HELical, DD3
STK1, STK1R	STK1R, STK1R34, STK1R35, STK1RA, STK1RA34, STK1RA35, STK1RB, STK1RB34, STK1RB35, STK1RAB, STK1RAB4, STK1RAB5, STK1RC, STK1RC34, STK1RC35, STK1RD, STK1RDE, STK1RDN, STK1RD34, STK1RD35, STK1RDE4, STK1RDE5
STK2, STK2P	STK2P, STK2P34, STK2P35, STK2PA, STK2PA34, STK2PA35, STK2PB, STK2PB34, STK2PB35
LTO-10G, LTO-35G, LTO-50G, LTO-100G, LTO-200G, LTO-400G, LTO-400W, LTO-800G, LTO-800W	*
SDLT, SDLT-2, SDLT-S1, SDLT-S2, SDLT-S3, SDLT-S4, SDLT-4	*
T10000T1, T10000TS	T10K, T10KN, T10KE, T1A, T1AN, T1A34, T1A35, T1AE, T1AE34, T1AE35, T1B, T1BN, T1B34, T1B35, T1BE, T1BE34, T1BE35

\* No corresponding recording technique.

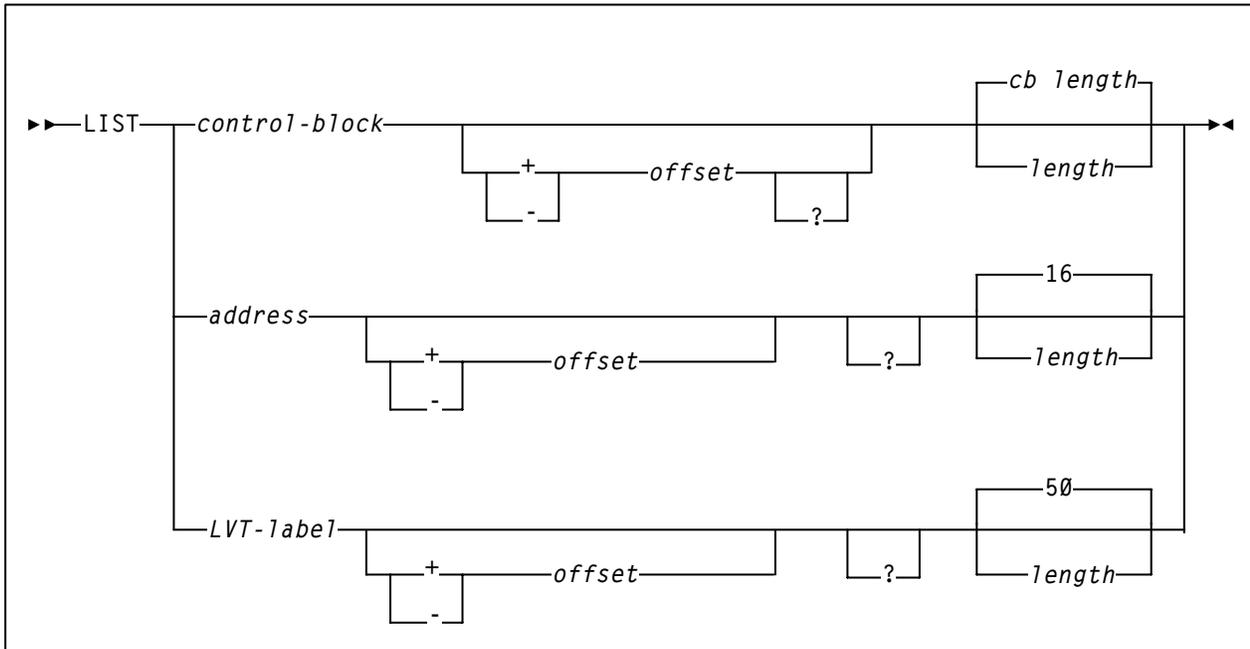


## **HSC Diagnostic Command Syntax**

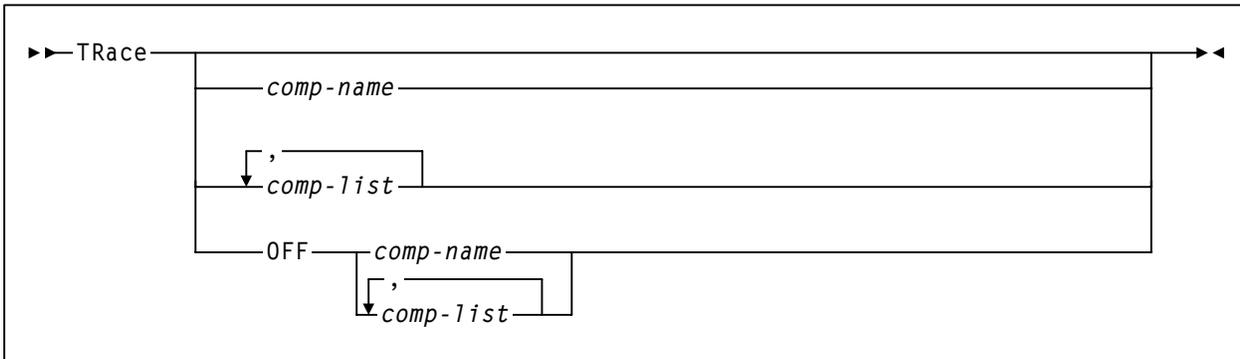
---

This section contains the syntax for diagnostic commands. For complete descriptions of the commands, see the *HSC System Programmer's Guide* and *HSC Operator's Guide*.

## List command



## TRace command









Sun Microsystems, Inc. 4150 Network Circle, Santa Clara, CA 95054 USA Phone 1-650-960-1300 or 1-800-555-9SUN Web [sun.com](http://sun.com)



ARGENTINA: 5411-4317-5636 • AUSTRALIA: 1-800-550-786 • AUSTRIA: 43-1-601-26-0 • BALKANS: 301-6188-111 • BELGIUM: 32-2-704 89 83 • BRAZIL: 55-11-51872100 • BRUNEI: 65-216-8333 • CANADA: 1-800-422-8020 (GENERAL); 416-964-2001 (LEARNING MANAGEMENT SYSTEM SALES, TORONTO) • CHILE: 562-372-4500 • COLOMBIA: 571-629-2323  
CZECH REPUBLIC: 420-2-33009311 • DENMARK: 45-4556-5040 • EGYPT: 00-202-570-9442 • FINLAND: 358-9-525-551 • FRANCE: 33-1-41-33-17-17 • GERMANY: 49-89-460-08-2788 • GREECE: 30-01-6188101 • HONG KONG: 852-2877-7077 • HUNGARY: 361-202-4415 • INDIA: 91-80-229-8989 • INDONESIA: 65-216-8333 • IRELAND: 353-1-668-4377  
ISRAEL: 972-9-9710500 • ITALY: 39-02-9259511 • JAPAN: 81-3-5779-1820 • KOREA: 82-2-3453-6602 • MALAYSIA: 603-2116-1887 • MIDDLE EAST: 00-9714-3366333 • MEXICO: 525-261-0344 • NETHERLANDS: 31-33-4515200 • NEW ZEALAND: 0800-786-338 • NORTH WEST AFRICA: 00-9714-3366333 • NORWAY: FROM NORWAY: 47-22023950, TO NORWAY: 47-23369650 • PAKISTAN: 00-9714-3366333 • PEOPLE'S REPUBLIC OF CHINA: 8610-6803-5588 • PHILIPPINES: 632-885-7867 • POLAND: 48-22-8747848 • PORTUGAL: 351-21-413-4000 • RUSSIA: 7-095-935-8411 • SAUDI ARABIA: 00-9714-3366333 • SINGAPORE: 65-216-8300 • SOUTH AFRICA: 27-11-256-6300 • SPAIN: 34-902-210-412 • SRI LANKA: 65-2168333 • SWEDEN: 46-8-631-22-00 • SWITZERLAND: 41-1-908-90-50 (GERMAN) 41-22-999-0444 (FRENCH) • TAIWAN: 886-2-25185735 • THAILAND: 662-344-6855 • TURKEY: 90-212-335-22-00 • UNITED KINGDOM: 44-1276-416-520 • UNITED STATES: 1-800-422-8020 • VENEZUELA: 582-905-3800 • VIETNAM: 65-216-8333 • WORLDWIDE HEADQUARTERS: 1-650-960-1300

**SUN™** THE NETWORK IS THE COMPUTER ©2006 Sun Microsystems, Inc. All rights reserved. Sun, Sun Microsystems, and the Sun logo are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and other countries.