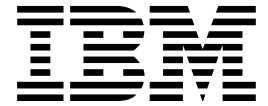


IBM VSE/Enterprise Systems Architecture

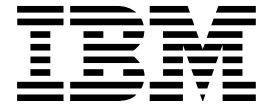


# VSE/ESA Library Control Device Driver for IBM 3494

*Version 2 Release 7*



IBM VSE/Enterprise Systems Architecture



# VSE/ESA Library Control Device Driver for IBM 3494

*Version 2 Release 7*

**Note!**

Before using this information and the product it supports, be sure to read the general information under "Notices" on page vii.

**Second Edition (March 2003)**

This edition applies to Version 2 Release 7 Modification Level 0 of IBM Virtual Storage Extended/Enterprise Systems Architecture (VSE/ESA), Program Number 5690-VSE, and to all subsequent releases and modifications until otherwise indicated in new editions.

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## Programming Interface Information

This manual is intended to help the customer to prepare, use, and operate the VSE/ESA Library Control Device Driver (LCDD) for the IBM 3494 Tape Library Dataserver. It also documents intended Programming Interfaces that allow the customer to write programs to obtain the services of the LCDD. This information is identified where it occurs, either by an introductory statement to a chapter or section or by the following marking:

Programming Interface Information

End of Programming Interface Information

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## About This Book

This manual describes the VSE/ESA Library Control Device Driver for IBM 3494 as available with VSE/ESA 2.4.1 or higher.

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## Who Should Use This Book

This manual is intended for system programmers, library administrators, and operational staff who support the IBM 3494 Tape Library Dataserver in a VSE/ESA operating environment including the LCDD. Users of this information should also be familiar with the models and the operations of the IBM 3490E and/or 3590 Magnetic Tape Subsystems.

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## How to Use This Book

The information in this manual is presented as follows:

- Chapter 1, Chapter 1, “Introduction” on page 1 gives an overview of the LCDD functions.
- Chapter 2, Chapter 2, “Commands” on page 9 gives the LCDD command descriptions and syntax.
- Chapter 3, Chapter 3, “LCDD Customization and Start-Up” on page 25 provides the procedures for loading and updating the LCDD.
- Appendix A, Appendix A, “LCDD Messages” on page 33 provides the messages that are presented by the LCDD.
- Appendix B, Appendix B, “LCDD Reason Codes” on page 45 describes the reason codes associated with the messages presented by the LCDD.
- Appendix C, Appendix C, “Quick Reference” on page 49 provides a set of tables that contains key data associated with the LCDD commands.

---

## Related Publications

For additional information about the LCDD and the IBM 3494, refer to the following publications.

### IBM 3494 Tape Library Dataserver Publications

For additional information about the IBM 3494, see:

- *IBM 3494 Tape Library Dataserver Operator's Guide*, GA32-0280
- *IBM 3494 Tape Library Dataserver Introduction and Planning Guide*, GA32-0279

For a collection of softcopy books on CD-ROM that pertain to the IBM 3494 and 3490/3490E subsystems, see:

- *IBM Online Library Omnibus Edition Hardware Collection*, SK2T-5843

## Tape Subsystem Publications

For information about IBM magnetic tapes and cartridges, see:

- *Care and Handling of the IBM Magnetic Tape Cartridge*, GA32-0047
- *Tape and Cartridge Requirements for the IBM Magnetic Tape Cartridge Drives*, GA32-0048
- *Tape and Cartridge Requirements for the IBM Enhanced Capacity Magnetic Tape Cartridge Drives*, GA32-0216

For additional information about the IBM 3490E Magnetic Tape Subsystems, see:

- *IBM 3590 High Performance Tape Subsystem Introduction and Planning Guide*, GA32-0330
- *IBM 3490 Magnetic Tape Subsystem Enhanced Capability Models C10, C11, C1A, C22, and C2A Introduction*, GA32-0217
- *IBM 3490 Magnetic Tape Subsystem Enhanced Capability Models C10, C11, C1A, C22, and C2A Hardware Reference*, GA32-0219
- *IBM 3490 Magnetic Tape Subsystem Enhanced Capability Models C10, C11, C1A, C22, and C2A Planning and Migration Guide*, GC35-0219
- *IBM 3490 Magnetic Tape Subsystem Enhanced Capability Models C10, C11, C1A, C22, and C2A Operator's Guide*, GA32-0218
- *IBM 3490 Magnetic Tape Subsystem Enhanced Capability Models A01, A02, A10, A20, B02, B04, B20, and B40 Introduction*, GA32-0125
- *IBM 3490 Magnetic Tape Subsystem Enhanced Capability Models A01, A02, A10, A20, B02, B04, B20, and B40 Hardware Reference*, GA32-0127
- *IBM 3490 Magnetic Tape Subsystem Enhanced Capability Models A01, A02, A10, A20, B02, B04, B20, and B40 Planning and Migration Guide*, GC35-0116
- *IBM 3490 Magnetic Tape Subsystem Enhanced Capability Models A01, A02, A10, A20, B02, B04, B20, and B40 Operator's Guide*, GA32-0126

## VTAM Publications

For additional information about the VTAM operating system, see:

- *VTAM Resource Definition Reference*, SC31-6438
- *VTAM Programming for LU 6.2*, SC31-6437

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## Where to Find More Information

### VSE/ESA Home Page

VSE/ESA has a home page on the World Wide Web, which offers up-to-date information about VSE-related products and services, new VSE/ESA functions, and other items of interest for VSE users.

You can find the VSE/ESA home page at:

<http://www.ibm.com/servers/eserver/zseries/os/vse/>

---

## Summary of Changes

This edition of the manual documents the following LCDD enhancements and changes:

- The Change Insert (CI) command can now be specified without operands and results in a message display of the status of automatic insert options.
- The Insert Volume (IV) command can now be specified without operands and results in a message display of any volsers awaiting insert and associated with queued mount requests.
- The new Display Insert Msg (DI) command can be used to dynamically enable or disable the queuing of mounts and the display of insert requests on a volume-not-found condition. A new control-card keyword also allows this operational convention to be set at LCDD start-up time.
- Support for the IBM 3590 Magstar Tape Subsystem included in an IBM 3494 has been added.
- Support of more than one subsystem with non-unique subsystem serial numbers.

New messages associated with these functions are also included.



# Chapter 1. Introduction

Native VSE/ESA support for the IBM 3494 Tape Library Dataserver is provided through a LAN attachment to the IBM 3494 Library Manager. This attachment permits library control communications between the IBM 3494 and one or more VSE/ESA hosts. The channel attachment to the IBM 3494 tape subsystems provides the tape data path.

VSE/ESA device support for the IBM 3494 is provided by the Library Control Device Driver (LCDD), an application that runs in its own partition and uses VTAM for library-control communication. The library-control commands are transmitted as packets to the library manager by using the LU 6.2 (APPC) communications protocol.

The support described in this manual requires VSE/ESA Version 2 Release 4.1 or higher including APAR DY45195.

**Note:** Starting with VSE/ESA 2.4.1, the LCDD is part of VSE/ESA as shipped. If you have separately installed the LCDD as a hardware feature (F/C 9203), you must delete it. Delete also library LCA.PROD which is no longer required.

The library attachment architecture is shown in Figure 1.

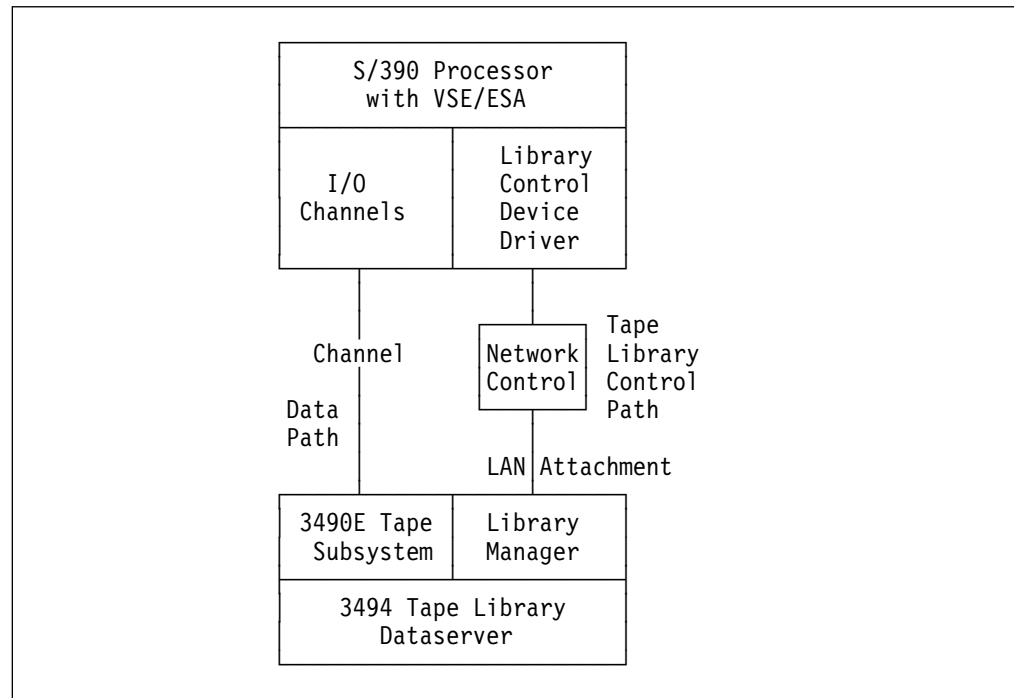


Figure 1. Library Attachment Architecture

Hardware required to attach a VSE/ESA platform to a 3494 includes:

- VSE/ESA-capable host processor.
- Token-Ring or Ethernet adapter card for 3494 attachment to a host processor.
- Network control hardware to connect a VSE host to a Token-Ring or Ethernet LAN

- Token-Ring or Ethernet LAN hardware.

For additional information, see *IBM 3494 Tape Library Dataserver Introduction and Planning Guide*.

---

## Functional Summary

The following library-control functions are supported by the LCDD:

- Querying the library status
- Querying a volume
- Querying a tape drive
- Querying a category or an entire 3494 cartridge count
- Querying an inventory or an entire 3494 cartridge inventory
- Managing the inventory
- Mounting a specified volume
- Mounting the next volume in the scratch category
- Ejecting a volume
- Setting a volume category
- Changing automatic insert operations
- Stopping the LCDD
- Replying to an insert volume request
- Setting the customization options

Most of these functions can be requested by a programming interface or interactively through an operator MSG command interface. Control of insert processing and stopping the LCDD is handled interactively. Other functions may be handled under program control.

The interface mechanisms and individual functions are described in Chapter 2, “Commands” on page 9. See also Appendix C, “Quick Reference” on page 49 for a summary of the commands used with the LCDD.

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Programming Interface Information

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## Programming Interface

The LCDD responds to functional requests from other applications and partitions through the VSE/ESA cross-partition communication service (XPCC). The VSE/ESA macro LBSERV is the application programming interface (API) for LCDD functions that allows 3494 functions to be requested under program control. LBSERV provides the cross-partition communication for the invoking application.

The LCDD functions correspond to the LBSERV macro functions as follows:

<b>LCDD Function</b>	<b>LBSERV Function</b>
Query library	LQUERY
Query volume single	SQUERY
Query drive	DQUERY
Query count	CQUERY
Query inventory	IQUERY



Query volume all	AQUERY
Manage inventory	MINVENT
Mount volume	MOUNT
Mount category	CMOUNT
Eject volume	EJECT
Set volume category	SETVCAT

Typically, the LBSERV API is used by a tape management system (TMS) to control library mount activity and to synchronize TMS inventory with the 3494 inventory. Results of requests handled via this interface can be optionally logged on the operator console.

\_\_\_\_\_ End of Programming Interface Information \_\_\_\_\_

---

## Operator Interface

An interactive command interface is provided for issuing library control functions that are not generated by production work or tape management and sent to LCDD through the API. This command interface uses the VSE/ESA MSG command and supports functions that enable:

- Querying the status of library elements (drives, volumes, categories, or the 3494 itself)
- Handling the movement of cartridges into and out of the library
- Requesting a cartridge mount
- Controlling certain LCDD processing options dynamically

Each request received on the MSG command interface results in a unique LCDD task. The MSG command tasks invoke the same lower-level programs called for by operations and initiated through the programming interface. In response to such commands, a message is always written to the operator console to report the result of the operation.

The following general rules apply to all interactive requests. The syntax of the MSG text is provided in the detailed descriptions of the individual functions.

1. The LCDD command function is specified as data in the VSE/ESA MSG command. The partition in which LCDD runs must be included in the MSG command syntax.
2. Either a short or a longer, descriptive form of the function name can be specified.
3. The message fields are positional, with blanks used as separators. A comma (,) must be substituted for an omitted optional field if another positional field follows. Trailing commas are not required. Examples of correct syntax are:

```
MSG C1,DATA=LCA SV VS0020 EJECT
MSG C1,DATA=LCA SV VS0020 EJECT , LIB01VSE
```

The command interface functions are listed in Chapter 2, “Commands” on page 9. The data attributes of the command variables are shown in Figure 6 on page 10.

---

## Batch Command Interface

The LCABAT batch program is shipped with the LCDD and provides for the submission of one or more commands to the LCDD through its programming interface. This batch job provides a more convenient technique than the operator MSG command interface for submitting repetitive library-control requests to the LCDD. For example, LCABAT is useful for submitting volume-eject requests or returning a list of volumes to a scratch pool from private status.

The sample JCL for using LCABAT is shown in Figure 2.

```
* $$ JOB JNM=LCABAT,CLASS=0
* $$ LST CLASS=0
// JOB LCABAT
// ASSGN SYSLST,PRINTER
// LIBDEF *,SEARCH=IJSYSRS.SYSLIB
// EXEC PGM=LCABAT,SIZE=200K
    SV AAA111 SCRATCH
    SV AAA222 SCRATCH
    SV AAA333 SCRATCH
    EV BBB111
    EV BBB222
    EV BBB333
/&
* $$ E0J
```

Figure 2. Sample JCL for an LCABAT Job

Command information is passed to LCABAT as SYSIPT control cards. In Figure 2, three volumes are returned to the default scratch category and three are ejected from the library. LCABAT reads the control cards and submits a request for each to LCDD through the programming interface. Although each LCABAT job submits commands to LCDD serially, LCDD's multitasking capability allows LCABAT jobs to run in parallel with requests received through other interfaces.

LCABAT may be used judiciously as a mount interface. It accomplishes the mount operation but not other tasks such as assignment of the drive. As soon as a mount operation has completed, the tape is in READY state. Also, a rewind-unload command must be issued after I/O is complete so that the volume demount occurs and the tape drive is available for the next mount operation.

The syntax of the command control cards by the LCABAT is based on the request data syntax for the MSG command interface. The short forms of the command request types are used. Currently, the following usability constraints must be observed in preparing the control card input:

- The position of each field is card-column dependent, relative to the starting field (always request type); blanks are used as field delimiters.
- If optional fields in the command syntax are omitted, the card image must be blank up to the expected start of the next field.
- Alphabetic characters in the two-character command request type, volser, category name, and library name fields must be uppercase.

Figure 3 on page 5 shows the card-image formats for supported functions; required fields are highlighted. The command interface functions are shown in Chapter 2, “Commands” on page 9. The data attributes of the command variables are shown in Figure 6 on page 10.

	1	2	3	4
Relative columns:	1...+....0....+....0....+....0....+....0			
Query volume single	<b>QS</b>	<b>volser</b>	lib_name	
Query volume all	<b>QA</b>	<b>volser</b>		
Query drive	<b>QD</b>	<b>ccuu</b>		
Query library	<b>QL</b>	lib_name		
Query count	<b>QC</b>	source_cat	lib_name	
Query inventory	<b>QI</b>	source_cat	lib_name	
Manage inventory	<b>MI</b>	<b>memname</b>	<b>target_cat</b>	source_cat lib_name
Mount volume	<b>MV</b>	<b>volser</b>	ccuu lib_name target_cat	
Mount category	<b>MC</b>	<b>source_cat</b>	ccuu lib_name target_cat	
Eject volume	<b>EV</b>	<b>volser</b>	BULK lib_name	
Set volume category	<b>SV</b>	<b>volser</b>	<b>target_cat</b>	source_cat lib_name

Figure 3. Batch-Command Control Card Format

## Inventory Data Formats

The following topics describe the inventory operations.

### Query-Inventory Output Files

An 80-byte inventory record output file is created by a Query Inventory request. This file applies to a cartridge and contains the following information:

- External volume label (six characters)
- Media type, CST1 or CST2 for 3490 cartridges, CST3 or CST4 for 3590 cartridges (four characters)
- Special attribute byte, represented by an EBCDIC bit string (eight characters)
  - Bit 0** If 1, volume is present in library, but inaccessible
  - Bit 1** If 1, volume is mounted or queued for mount
  - Bit 2** If 1, volume is in eject-pending state
  - Bit 3** If 1, volume is in process of ejection
  - Bit 4** If 1, volume is misplaced
  - Bit 5** If 1, volume has unreadable label or no label
  - Bit 6** If 1, volume was used during manual mode
  - Bit 7** If 1, volume was manually ejected
- Category name (ten characters)
- Library manager hexadecimal category number, in EBCDIC representation (four characters)

The fields in each record are separated by a blank character to enhance their readability. A sample file record is:

```
CS0010 CST2 01000000 PRIVATE FFFF
```

A header with the time of list creation is inserted as the first record in the list.

See “Querying the Inventory (QI)” on page 14 for additional information.

**Note:** Including the category designation information in the response record when the request applies only to a particular category may be redundant. However, the use of a consistent record type creates the possibility for efficient processing when the LCDD is creating files and when applications are reading and using them.

## Manage-Inventory Input Files

A file submitted for use in a Manage Inventory request requires that each six-character external volume serial number in the list start in column 1 of a file record. The remaining space in each 80-character record is ignored as input. This allows for returning the Query Inventory output file to LCDD as input to the Manage Inventory function. A sample record in a Manage Inventory input file is:

```
CS0010 CST2 01000000 PRIVATE    FFFF
```

Or, simply

```
CS0010
```

A header record (as described for Query Inventory output) may be optionally present in the input list; one is inserted during list processing if there was none. Any record starting with an asterisk (\*) is not considered a valid input data record and is ignored.

## Manage-Inventory Output Files

After a Manage Inventory request is completed, a return code (or reason code) is supplied to indicate that processing is complete and to report the overall results for processing the request (for example, input was valid, file was found, and so forth). The actual outcome of transferring each volume to a new target category is reflected within the file itself. The LCDD updates the file by adding a results message in each file record, starting in column 38. An example of a successful output file record is:

```
CS0010 CST2 01000000 PRIVATE    FFFF ** CATEGORY CHANGED TO EJECT
```

An example of a failed output record is:

```
CS0010 CST2 01000000 PRIVATE    FFFF ** CATEGORY NOT CHANGED, RSN=3340
```

## File-Name Summary

Figure 4 summarizes the naming conventions for LCDD inventory files used in the Query Inventory and Manage Inventory functions. VSE libraries must be predefined, along with a sub-library for each attached 3494. See also page 25 for additional information.

<i>Figure 4. Summary of Inventory File-Name Conventions</i>				
<b>Function</b>	<b>VSE Library</b>	<b>VSE Sub-library</b>	<b>Member Name</b>	<b>Member Type</b>
<b>Query Inventory</b>	Locally selected and defined	3494 LU name	Determined by the <i>source_cat</i> parameter of the QI request.	L
<b>Manage Inventory</b>	Locally selected and defined	3494 LU name	Locally selected and specified as the <i>memname</i> parameter of the MI request.	L



## Chapter 2. Commands

The following sections describe the commands, command formats, and response message formats. Figure 5 provides a quick reference to the commands used with the LCDD.

<i>Figure 5. LCDD Function Summary and Quick Reference</i>		
<b>Full Function Name</b>	<b>MSG Command Text</b>	<b>Page Number</b>
Query_lib	LCA QL <i>lib_name</i>	See "Querying Library Status (QL)" on page 10
Query_vol_s	LCA QS <i>volser lib_name</i>	See "Querying a Volume (QS/QA)" on page 11
Query_vol_a	LCA QA <i>volser</i>	See "Querying a Volume (QS/QA)" on page 11
Query_drive	LCA QD <i>ccuu</i>	See "Querying a Tape Drive (QD)" on page 12
Query_count	LCA QC <i>source_cat lib_name</i>	See "Querying a Category Count (QC)" on page 12
Query_inv	LCA QI <i>source_cat lib_name</i>	See "Querying the Inventory (QI)" on page 14
Manage_inv	LCA MI <i>membrname target_cat source_cat lib_name</i>	See "Managing the Inventory (MI)" on page 15
Mount_vol	LCA MV <i>volser ccuu lib_name target_cat</i>	See "Mounting a Specified Volume (MV)" on page 16
Mount_cat	LCA MC <i>source_cat ccuu lib_name target_cat</i>	See "Mounting Next Volume in Scratch Category (MC)" on page 17
Eject_vol	LCA EV <i>volser BULK lib_name</i>	See "Ejecting a Volume (EV)" on page 18
Set_vol_cat	LCA SV <i>volser target_cat source_cat lib_name</i>	See "Setting a Volume Category (SV)" on page 19
Insert_vol	LCA IV <i>volser COMPLETE CANCEL</i>	See "Insert Volume (IV)" on page 20
Change_insert_op	LCA CI <i>target_cat lib_name</i>	See "Changing Automatic Insert Operation (CI)" on page 20
Display_insert_msg	LCA DI <i>Y N lib_name</i>	See "Displaying Insert Messages (DI)" on page 22
Stop_immed	LCA STOP_I	See "Stopping the LCDD (STOP I and STOP Q)" on page 22
Stop_quies	LCA STOP_Q	See "Stopping the LCDD (STOP I and STOP Q)" on page 22

Figure 6 identifies and describes the variables used in the LCDD commands.  
 Figure 7 defines the category name used in the LCDD commands.

<i>Figure 6. Variables Used in Library Control Functions</i>		
Variable Name	Description	Size
<i>volser</i>	External cartridge label	6 characters
<i>ccuu</i>	Tape drive address	3 or 4 characters
<i>lib_name</i>	Library identifier	Up to 8 characters
<i>source_cat</i>	Name of category from which the cartridge is mounted, the current category if the status is changed, or if a count is desired.	Up to 9 characters
<i>target_cat</i>	Name of category to which a cartridge belongs as part of a status change.	Up to 9 characters
<i>memname</i>	Member name in the library.sub-library that designates the VSE library location for the file containing the list of volsers to be managed (set to new target category).	Up to 8 characters

<i>Figure 7. Category Names Used in Library Control Functions</i>		
Category Name	Definition	Category Type
PRIVATE	Active tape category	Source or target
INSERT	Tapes that have just entered the 3494	Source or target
SCRATCH	Default scratch pool	Source or target
SCRATCHnn	VSE scratch pool where nn is 00 to 31	Source or target
EJECT	Move to the Convenience I/O Station	Target
EJECTB	Move to the High-Capacity Facility	Target
MANEJECT	List of volumes removed by operator in manual eject category.	Source

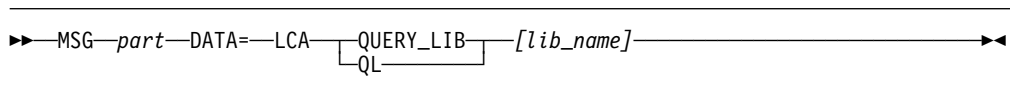
## Querying Library Status (QL)

The Query Library (QL) command is used to request status information on the library itself. The library name may be specified in the request, and if it is omitted, the default library is queried.

The return code indicates if the query was successful, that is, if status information was obtained from the library. Query response data is provided as output. See Figure 8 on page 13. The returned library status indicates the operational mode of the library: Automated, Paused, or Manual.

## MSG Command Format

MSG p#,DATA=LCA QL lib\_name





## Response Message Format

1. LCA2425I LIBRARY *lib\_id* OPERATING MODE IS *status*
2. LCA2426E QUERY FAILED FOR LIBRARY *lib\_id*, REASON *reason\_code*

---

## Querying a Volume (QS/QA)

Two types of the query-volume functions are supported:

- The Query Volume, Single Library (QS) command specifies either a particular library name in which to query the volume or the default library to be queried if no library name is specified.
- The Query Volume, All Libraries (QA) command does not use a library name as an input argument but queries each library listed in the LCDD Control Statements (see “Defining Customization Options with Control Statements” on page 26) starting with the default library, until the volume is located.

The return code (reason code) indicates if the volume was located. If the volume is found, the library name is reported as output. See Figure 6 on page 10.

Information provided is:

- Volume status or condition
- Category assigned
- Type

## MSG Command Format

MSG p#,DATA=LCA QS volser lib\_name

---

► MSG *part* DATA=LCA QUERY\_VOL\_S *volser* [*lib\_name*] ◄

---

MSG p#,DATA=LCA QA volser

---

► MSG *part* DATA=LCA QUERY\_VOL\_A *volser* ◄

---

## Response Message Format

1. LCA2420I VOLUME *volser* IN *lib\_id*, STATUS *status*, CATEGORY *category*, TYPE *type*
2. LCA2421I VOLSER *volser* NOT FOUND INSIDE A LIBRARY
3. LCA2422E QUERY FAILED FOR VOLUME *volser*, REASON *reason\_code*

---

## Querying a Tape Drive (QD)

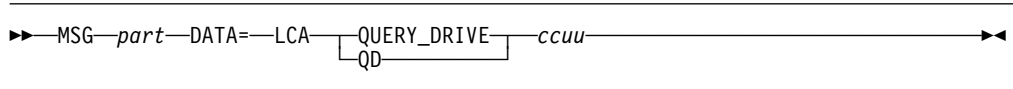
The Query Drive (QD) command is used to request status information on a specified *ccuu*. The library where this *ccuu* is located is queried for the drive status.

The return code indicates if the query was successful, that is, if information on the drive was obtained from the library. Response data from the library is provided as output. See Figure 8 on page 13. Information provided is:

- Drive status or condition
- Label of mounted volume (if any)
- Category of mounted volume (if one is mounted)

## MSG Command Format

MSG p#,DATA=LCA QD *ccuu*



## Response Message Format

1. LCA2423I DRIVE *ccuu*, STATUS *status*, MOUNTED VOLUME *volser*|NONE
2. LCA2424E QUERY FAILED FOR DRIVE *ccuu*, REASON *reason\_code*

---

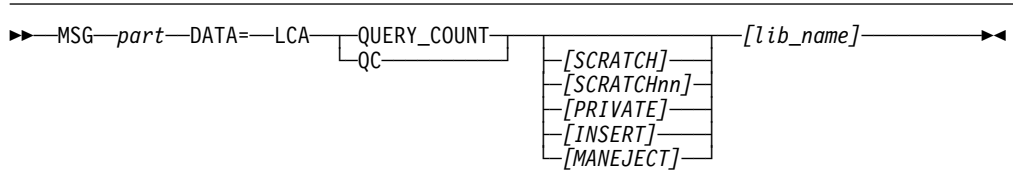
## Querying a Category Count (QC)

The Query Category Count (QC) command is used to request a count of the number of volumes currently assigned to a specified category in a specified library. If the source category name is omitted as an input argument, a count of the entire library inventory is returned. If the library name is omitted, the default library is assumed for this query.

The return code indicates if the query was successful, that is, if count information was obtained from the library. Query response data is provided as output. The count of volumes is the only information returned.

## MSG Command Format

MSG p#,DATA=LCA QC *source\_cat* *lib\_name*



## Response Message Format

1. LCA2427I CATEGORY COUNT FOR *source\_cat* INVENTORY, LIBRARY *lib\_id*  
IS *count*
2. LCA2428E QUERY COUNT FAILED, REASON *reason\_code*

Figure 8. Output from Query Requests

Field	Size	Contents	Command
Status	4	<p>When the library is queried:</p> <p>0000 - Automated mode 0100 - Paused mode 0200 - Manual mode</p> <p>When the volume is queried:</p> <p>0000 - No special condition 8000 - Inaccessible 4000 - Mounted 2000 - Queued for mount 1000 - Being mounted 0800 - Queued for demount 0400 - Being demounted 0200 - Queued for eject 0100 - Being ejected 0080 - Queued for audit 0040 - Being audited 0020 - Misplaced 0010 - Missing or damaged label 0008 - Used in manual mode 0004 - Manually ejected</p> <p>When the drive is queried:</p> <p>0000 - Installed and available 8000 - Not installed or available</p>	<p>Query library (QL) Query volumes all libraries (QA) Query volumes 1 library (QS) Query drive (QD)</p>
Volume category	4	Category of the queried volume or category of the volume mounted on the queried drive.	<p>Query volumes all libraries (QA) Query volumes 1 library (QS) Query drive (QD)</p>
Volume type	4	Name of the volume type in the library manager inventory (CST1, CST2, CST3, or CST4).	<p>Query volumes all libraries (QA) Query volumes 1 library (QS)</p>
Volume mounted	6	Volser of the volume mounted on the queried device.	Query drive (QD)
Volume count	4	The number of volumes in a queried category.	Query category (QC)

---

## Querying the Inventory (QI)

The Query Inventory (QI) command is used to request inventory data on volumes currently assigned to a specified category in a specified library. If the source category name is omitted as an input argument, inventory data for the entire library is created. If the library name is omitted, the 3494 default is used for this query.

The return code indicates if the query was successful, that is, if inventory data was obtained from the library. This request type may take a minute or longer to complete, depending on the number of cartridges in the category that is queried. A response is not returned (either via an programming interface in the request block or via a console message notification for command interface) until the request completes.

The inventory data is placed in a librarian-managed file in the library specified in the Query\_Inv\_Lists control card (see “Defining Customization Options with Control Statements” on page 26). The sub-library is the LU name (up to eight characters) for the 3494 target and is expected to be predefined. A QI command fails if the control information is not available or if the library.sub-library is not defined.

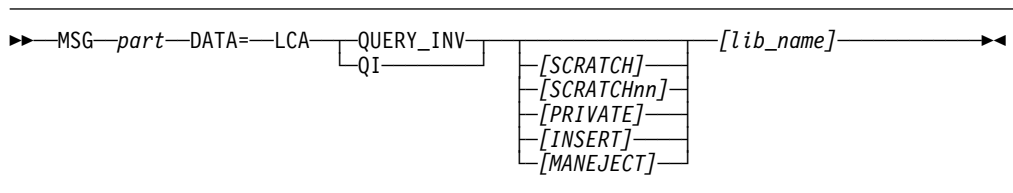
The member name created (or rebuilt) by a QI command is the name (up to eight characters) determined by the source category for the request:

Source Category	Member Name
(blank)	ALL
PRIVATE	PRIVATE
INSERT	INSERT
SCRATCHnn	SCRnn
SCRATCH	SCR
MANEJECT	MANEJECT

Refer to “Inventory Data Formats” on page 5 for information on the content and format of the inventory data.

## MSG Command Format

MSG p#,DATA=LCA QI source\_cat lib\_name



## Response Message Format

1. LCA2437I QUERY INVENTORY COMPLETED FOR LIST *lib.sublib.member*
2. LCA2438E QUERY INVENTORY FAILED FOR *lib.sublib.member*, REASON *reason\_code*

---

## Managing the Inventory (MI)

The Manage Inventory (MI) command is used to assign a list of volumes in a specific library to a specified target category. Lists created by the Query Inventory function are pre-formatted for use as input to the Manage Inventory command.

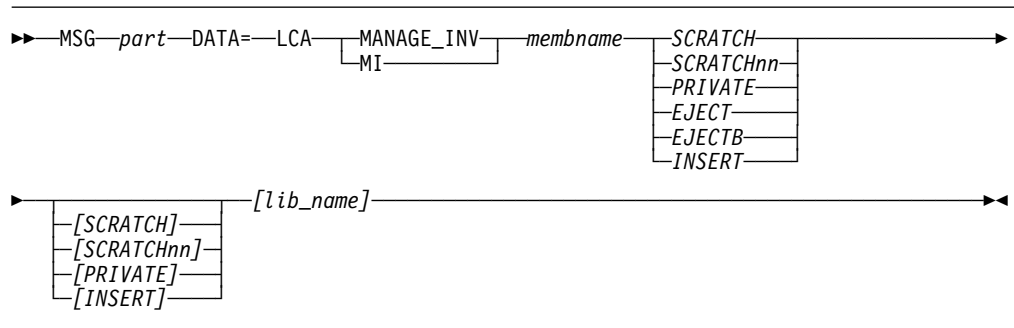
The user must supply a target category and the member name for the list file to be used as input. The library location for librarian request lists is provided as LCDD control information (see “Defining Customization Options with Control Statements” on page 26) and the sub-library name is the 3494 LU name.

The return code indicates if the query was successful, that is, if inventory data was obtained from the library. This request type can run a long time, and a response is not returned (either via an programming interface in the request block or via a console message notification for command interface) until the request completes.

The input list is updated to reflect the outcome of the category change for each volume. Refer to “Inventory Data Formats” on page 5 for information on the content and format of the inventory data.

## MSG Command Format

MSG p#,DATA=LCA MI memname target\_cat source\_cat lib\_name



## Response Message Format

1. LCA2439I MANAGE INVENTORY COMPLETED FOR LIST *lib.sublib.member*
2. LCA2440E MANAGE INVENTORY FAILED FOR *lib.sublib.member*, reason *reason\_code*

---

## Mounting a Specified Volume (MV)

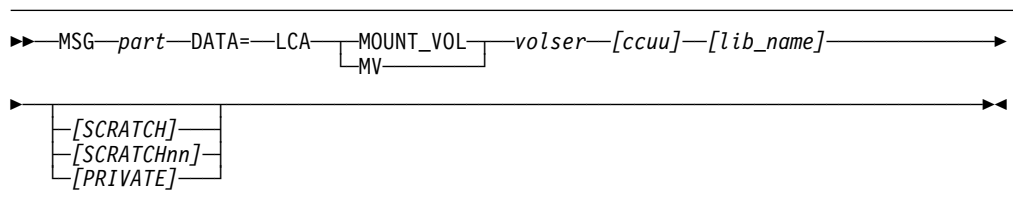
The Mount Volume (MV) command is used to mount a cartridge with a specified external label on a specified library drive (*ccuu*). Optionally, a target category may be specified so that the status of a volume can be changed as part of the mount process.

**Note:** It is recommended that *ccuu* be specified as input, if not specified, the LCDD will attempt to find an available *ccuu*.

The result of the mount operation is returned to the user in the return code and reason-code fields of the output.

## MSG Command Format

MSG p#,DATA=LCA MV volser ccuu lib\_name target\_cat



## Response Message Format

1. LCA2429I VOLUME *volser* MOUNTED ON DRIVE *ccuu*
2. LCA2430E MOUNT FOR VOLUME *volser* FAILED, REASON *reason\_code*

---

## Mounting Next Volume in Scratch Category (MC)

The Mount Category (MC) command is used to mount the next available cartridge in the specified category on a specified library drive (*ccuu*). Valid category designations are SCRATCH, SCRATCH*nn*, where *nn* is the numeric identifier (00 to 31) for the scratch pool, and INSERT.

**Note:** It is recommended that *ccuu* be specified as input, if not specified, the LCDD will attempt to find an available *ccuu*.

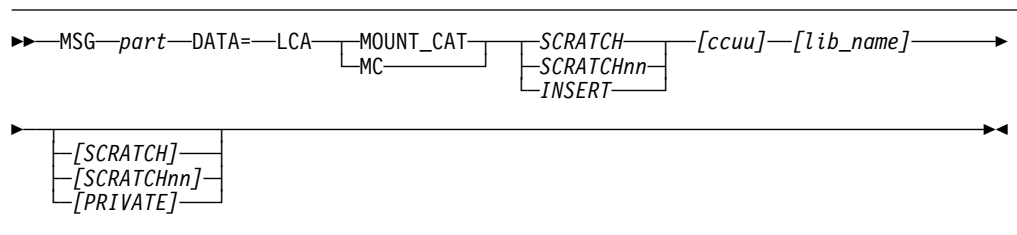
Up to 32 scratch categories (pools) are available for use by all attached hosts. If it is desirable to have each host mount from a separate scratch pool, different scratch pools names can be specified in mount requests, or different scratch pool names can be designated as the default pool for each host. The default scratch pool is specified by a host in a control statement read at LCDD start-up time. See “Defining Customization Options with Control Statements” on page 26

The default scratch pool is used for generic MOUNT SCRATCH requests (without a numeric SCRATCH*nn* designator). As part of the mount process for tapes in the scratch category, the volume is transferred to private status, if a target category is not specified.

The result of the mount operation is returned to the user as a return code and reason code. In addition, the external label of the mounted volume is provided.

## MSG Command Format

MSG *p#*,DATA=LCA MC *source\_cat* *ccuu* *lib\_name* *target\_cat*



## Response Message Format

1. LCA2429I VOLUME *volser* MOUNTED ON DRIVE *ccuu*
2. LCA2431E MOUNT FOR CATEGORY *source\_cat* FAILED, REASON *reason\_code*

---

## Ejecting a Volume (EV)

The Eject Volume (EV) command is used to remove a volume from a specified library or from the default library if the library name is not specified in the request. When the request is successful, the volume is moved to the output station for removal from the library by the operator:

- When both convenience and high-capacity I/O facilities are configured on the 3494, the optional keyword BULK parameter allows the user to direct the ejected cartridges to the I/O facility.
- If the keyword is omitted (or any value other than BULK is detected), the convenience I/O facility is used if both types of I/O stations are configured.
- If only one type of I/O facility is configured on the 3494, the keyword is not required, and the ejected volumes are placed in that I/O facility.

The return code and reason code in the request block indicate the status of the operation. If the volume is not in the specified library, or in a default library, if none is specified, the request fails.

## MSG Command Format

MSG p#,DATA=LCA EV volser BULK lib\_name

---

► MSG *part* DATA=LCA 

EJECT_VOL
EV

*volser* [*BULK*] [*lib\_name*] ◄

---

## Response Message Format

1. LCA2441I VOLUME *volser* EJECTED FROM LIBRARY *lib\_id*
2. LCA2432E EJECT FAILED FOR VOLUME *volser* IN LIBRARY *lib\_id*, REASON *reason\_code*



---

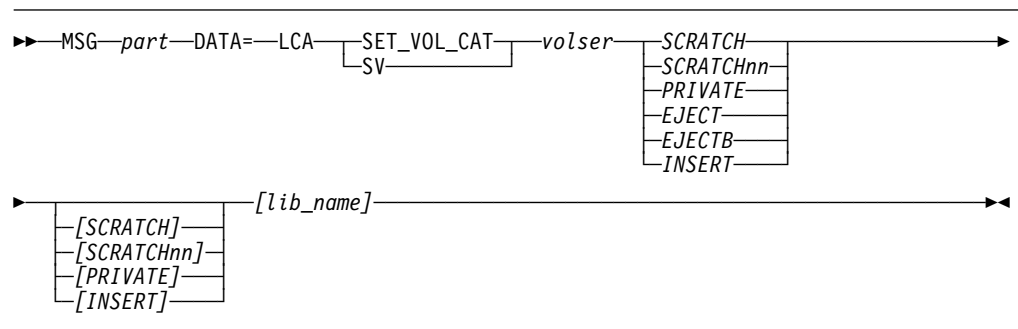
## Setting a Volume Category (SV)

The Set Volume Category (SV) command is used to transfer a specified volume from one logical group (or category) to another. The volume serial and the target category are required input for an SV command. If a library name is not specified, the default is used. The source category is optional, and if specified, the volume category is changed only if the volume is actually assigned to the specified source category at the time that the request is issued to the library. (If an inaccurate source category is specified, the 3494 responds with a Command Reject error. LCDD fails the Set Volume Category request with reason code 3800.)

This command is useful for reverting private tapes to scratch status or for manual handling of inserted tapes if it is not desirable to have cartridges moved from the Insert category automatically. See “Defining Customization Options with Control Statements” on page 26 for more information on insert processing. In addition, this function can also be used to eject volumes, although the Eject Volume function is also available for this purpose.

## MSG Command Format

MSG p#,DATA=LCA SV volser target\_cat source\_cat lib\_name



## Response Message Format

1. LCA2433I VOLUME *volser* CATEGORY CHANGED TO *target\_cat*
2. LCA2434E VOLUME=*volser* CATEGORY NOT CHANGED, REASON *reason\_code*

---

## Insert Volume (IV)

The Insert Volume command can be used if an explicit volume specified for mount is not found in the library. In these cases a request to insert the volume is forwarded to the operator console. When automatic insert processing is enabled for the host, the availability of this volume is recognized automatically and no console response is required by the operator.

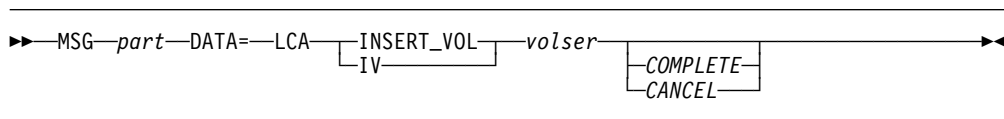
The Insert Volume command is used to respond if:

1. Automatic insert processing is not in use, and the operator must inform the LCDD that the insert is complete and the mount can be attempted again.
2. The automated mount must be cancelled because the volume cannot be found outside the library and inserted for use or because it is not desired to mount this volume on a library drive.

Specifying the Insert Volume command with no operands results in a message display of volumes queued for mount, pending insert.

## MSG Command Format

MSG p#,DATA=LCA IV volser COMPLETE|CANCEL



## Response Message Format

1. LCA2401E Unrecognized Insert Reply. Issue it again.
2. LCA2414I Requesting mount of inserted volume.
3. LCA2415E Error requesting mount of inserted volume.
4. LCA2443I Mount pending for volume *volser* in *lib\_id*.
5. LCA2444I No mounts awaiting insert.

---

## Changing Automatic Insert Operation (CI)

The Change Insert (CI) command is used to dynamically change automatic insert options that were specified in control cards at the LCDD start-up time. A new target category for automatic insert processing can be specified, or automatic processing can be disabled by specifying NONE.

When automatic insert processing is active, volumes that are inserted into the 3494, manually or via the Convenience I/O Station, are assigned to the designated target category (for example, PRIVATE or SCRATCH). If automatic insert processing is not active, then inserted volumes remain in the INSERT category until an explicit action is taken to change their assigned category (for example, Set Volume category for a specific volume or Manage Inventory for a list of volumes).

The decision to enable and use the automatic insert processing function depends on your operational needs and the functional capabilities of your tape management software (TMS). For example, if your TMS checks the 3494 inventory for volumes in the INSERT category and handles the category assignment, then it is not necessary to enable automatic insert processing. However, if manual steps are

required to synchronize the 3494 inventory with your TMS, then it may be convenient to activate automatic insert processing.

When automatic insert processing is enabled, no operator response is required to reissue a mount request for a job that is waiting for a tape. When the LCDD recognizes that a volume requested for a pending mount is now inside the 3494, the LCDD automatically drives the mount operation again. If automatic insert processing is not active, the operator must respond to the message requesting that the volume be loaded and then notify the LCDD that the mount may be driven again.

During automatic insert processing, when the LCDD encounters a volume for which an insert request message has been sent to the operator, the target category for that volume is always PRIVATE, regardless of the current target category designation. Such volumes have been specifically requested for insert and the LCDD treats them as active data.

If there are multiple VSE hosts attached to a single 3494, all attached hosts are notified when the 3494 detects new volumes in the library. Therefore, all hosts with automatic insert processing activated will attempt to handle the insert processing of the new volumes. IBM recommends that only one of the attached hosts have automatic insert processing active at any given time. If the 3494 is shared with other kinds of hosts, insert processing is best handled with the manage inventory lists function so that volser partitioning rules can be applied. Where multiple processors have automatic insert processing active, the default for new volumes is *Insert*. The *Any* option permits a volume from any category to be classified by any attached processor.

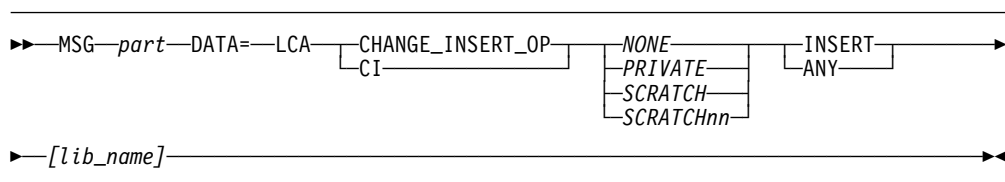
If you make automatic insert processing active, keep the following considerations in mind.

- During processing of tape batch jobs and when not moving large quantities of volumes into and out of the 3494, designate a target category of PRIVATE for automatic insert processing. This way a tape with active data cannot be inadvertently placed into a SCRATCH pool during insert processing.
- If you periodically replenish the scratch tape supply by inserting new volumes, you can use the CI command to dynamically change the target category to SCRATCH. When insert processing is complete, the target category should be changed back to PRIVATE (if that is its usual designation).

Specifying the Change Insert command with no operands results in the current status of the automatic insert processing options being displayed in a console message.

## MSG Command Format

MSG p#,DATA=LCA CI target\_cat source\_cat lib\_name



## Response Message Format

1. LCA2418I Insert Options have been changed.
2. LCA2417E Error in specified change-insert options.
3. LCA2442I Auto insert is *ON/OFF* for *lib\_id*, target: *target\_cat*, source:*source\_cat*.

---

## Displaying Insert Messages (DI)

The Display Insert Msg command can be used to turn seamless insert processing on and off.

If you want the operator console to display a message requesting that a specified volume be inserted when it is requested for mount but not found in the 3494, then use this command to enable this seamless insert processing. Note that automatic insert processing must be enabled (see “Changing Automatic Insert Operation (CI)” on page 20) in order for the mount to complete without an operator response at the console, after the volume has been inserted in the 3494.

If you do not desire to have mounts queued and insert messages displayed when a mount request fails with a volume-not-found condition, then use this command to turn off the display of insert messages and queuing of mounts. (Mount requests will fail if the volume is not found.)

LCDD's default state is that insert messages are displayed. This option can also be set at LCCD initialization time. See “Library\_ID” on page 26.

## MSG Command Format

MSG p#,DATA=LCA DI Y|N lib\_name

---

►MSG part DATA=LCA DISPLAY\_INSERT\_MSG Y N [lib\_name] ◄

---

## Response Message Format

1. LCA2445I Insert-message option changed to *Y/N*.
2. LCA2446E Invalid insert-message option specified.

---

## Stopping the LCDD (STOP I and STOP Q)

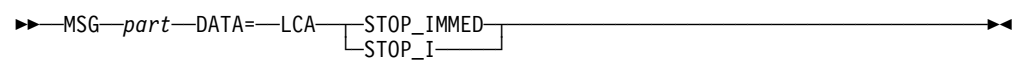
Two types of stop LCDD functions are supported:

- The Stop Immediate (STOP\_I) command is used to end the LCDD immediately, without waiting for any outstanding library requests to complete and results to be reported back to the user.
- The Stop Quiesce (STOP\_Q) command is used to allow in-process work to complete and results reported back to the user, with LCDD ending as soon as all previously requested library functions are finished. The only type of request that is not rejected between the time that SQ is received and remaining work is completing is an SI request.

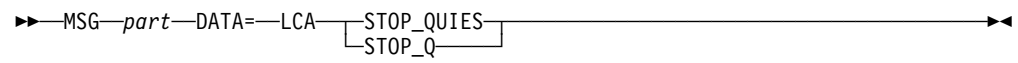
When the LCDD is ready to stop, normal termination processing takes place.

## MSG Command Format

MSG p#,DATA=LCA STOP\_I



MSG p#,DATA=LCA STOP\_Q



## Response Message Format

1. LCA2404I Application stopped by request
2. LCA2405I Application is quiescing by request



---

## Chapter 3. LCDD Customization and Start-Up

The following topics describe tasks for LCDD customization and start-up.

---

### Customization Activities

To prepare the VSE/ESA LCDD for use with an IBM 3494, certain customization activities must be performed on the VSE/ESA system. These activities are summarized here with references to other publications for further details as appropriate.

1. Select names for library control resources

The LCDD application running under VSE/ESA and the IBM 3494 require resource names that are used in local area network (LAN) definitions. Other customization and setup activities require resource names for attached VSE/ESA hosts and for the Library Manager(s) associated with the IBM 3494. Refer to “Local\_VSE\_ID” on page 26 and “Library\_ID” on page 26 for additional information.

2. Prepare VTAM and LAN setup definitions

LCDD is an LU 6.2 application that communicates with the Library Manager through a Token-Ring or Ethernet local area network (LAN). Preparation of a VSE/ESA environment for LCDD communication on a LAN requires appropriate VTAM definitions on the VSE/ESA system. Refer to the following publications for details defining a VTAM application for use with a 3494 Library Manager on a VSE/ESA system.

- *VTAM Resource Definition Reference*
- *VTAM Programming for LU 6.2*

In addition, ensure that appropriate definitions are made during the 3494 Library Manager installation (refer to *IBM 3494 Tape Library Dataserver Introduction and Planning Guide*) and on the network hardware controller (for example, 3174 or 3745) that allows the VSE/ESA host to access the LAN.

3. Add a SYS ATL command to the IPL procedure

A new VSE/ESA IPL command, SYS ATL=xxx, must be set as part of the IPL procedure. If the VSE/ESA system is running native, SYS ATL=VSE is the default and an explicit use of the statement is not required. However, if the LCDD is used to provide library control for a VSE/ESA system that runs as a guest of VM, this command will default to a value of VM and must be explicitly specified as VSE during the IPL process.

4. Predefine VSE/ESA libraries

Before starting the LCDD application, a predefined library is required where host copies of 3494 inventory lists are written. Define a unique sub-library, with the name of the 3494 resource (see first item) above. Refer to “Query\_Inv\_Lists” on page 28 and “Manage\_Inv\_Lists” on page 28 for control statements and to Figure 2 on page 4.

The library to be defined requires disk space that is assigned using DLBL and EXTENT statements. These labels may be added to either the STANDARD or USER STANDARD LABEL procedure. Examples of the use of these statements are shown in Figure 9 on page 26.

```
* DEFINITION FOR THE VSE LCAINV INVENTORY LIBRARY
// DLBL LCAINV,'VSE.LCAINV.QLISTS.LIBRARY',99/365
// EXTENT ,SYSWK1,1,0,9500,100
```

Figure 9. DLBL and EXTENT Statements

**Note:** For inventory lists, additional space is required, depending on the capacity of your library.

---

## Defining Customization Options with Control Statements

The LCDD job control members are:

**LCARUN** JCL to execute LCDD requires tailoring

**BATRUN** JCL to execute the batch command submission program

For the necessary tailoring of LCARUN or BATRUN, copy the job examples from VSE/ICCF library 59.

The following section describes how control statements can be used to change LCDD options.

The LCDD application expects certain installation-specific information to be provided by the user as control statements associated with the LCDD job. These cards are read by the LCDD during its initialization processing.

The control statements edited by the user are described in the following topics.

**Note:** The topic heading is the keyword.

For additional information, see “File-Name Summary” on page 6.

### Local\_VSE\_ID

Specifies the eight-character unique identifier (which is also the VTAM APPLID name) for this VSE system. When more than one host, VSE, or other operating environment is attached to a single library, this name uniquely identifies this VSE system. It is used in the identification of the VSE host as an APPC resource for LAN communication with the 3494. Only one occurrence of this keyword is required. If multiple statements are found, the last one read is used.

#### Format:

Local\_VSE\_Id ccccccc

### Library\_ID

Identifies and describes characteristics for a specific library.

An eight-character LU name for an attached library uniquely identifies it on the LAN. This ID serves as the APPC resource name that VSE connects to for communicating with the 3494 on the LAN. This is the name used as the Library Name field in functional requests from users, and as the VSE sub-library name. When dual active Library Managers are installed on 3494 Model HA-1, this positional parameter is the primary Library Manager.



This LU name is followed by either the network transaction program (TP) name "LIBMGRTP," or by the secondary Library Manager name when dual active Library Manager's are installed. If the value of the second positional parameter is not "LIBMGRTP," then LCDD treats the value as a secondary Library Manager name and operates as if dual Library Managers are installed.

A keyword SCRDEF parameter precedes the name of the scratch pool that is the default pool for this host on this library. This is the pool from which tapes will be mounted for nonspecific MOUNT SCRATCH requests. If this parameter is not included, then SCRATCH00 is used as the default pool.

An INSERT keyword allows a target category to be specified for automatic insert processing of new volumes inserted in the library. The target category must be either SCRATCH $nn$  (where  $nn = 00$  to  $31$ ) or PRIVATE. If this parameter is omitted, no automatic insert processing occurs. Refer to "Changing Automatic Insert Operation (CI)" on page 20.

An optional INSMMSG keyword allows the messages and mount queuing to be enabled or disabled for mounts that fail with volume-not-found condition. The character Y (for yes) enables this capability, N (for no) disables. If this parameter is omitted, messages are issued and mounts are queued. (That is, the default is INSMMSG=Y.) Refer to "Displaying Insert Messages (DI)" on page 22 for information on the command for altering this LCDD setting dynamically.

This statement must be provided once for each attached library. The library associated with the first occurrence of this keyword is the default library if user requests do not specify a library name.

**Format:**

LIBRARY\_ID lmluname lmtpname SCRDEF=SCRATCH $nn$  INSERT=category INSMMSG=Y|N

**Device\_List**

Designates either an eight-character library control-unit serial number and is followed by one or more device *ccuu* designations associated with that control unit.

Or designates an eight-character subsystem ID and is followed by one or more device *ccuu* designations associated with that control unit.

(Note that library control unit serial number and subsystem ID must not be intermixed).

Obtain the control-unit serial or the subsystem ID from the IBM customer engineer who installs the 3494. (Note that the format of this 8-character serial number for 3590 subsystems may differ from the 3490E format.)

When specifying a subsystem ID following format must be used :

00-00001 to 00-0001F , where 1 to 1F indicates the subsystem to be used.A maximum of 32 subsystems is possible.

When multiple hosts are attached to the same library, this keyword allows device partitioning. Each host's control file lists only the drives to be used by that host. On a 3490E subsystem the maximum number of drives is two. On a 3590 subsystem the maximum number of drives is four.

This statement may be repeated as required to list all library control units with drives to be used by this host. If needed, multiple Device\_List statements for the same control unit may be used to define all devices on a subsystem. The LCDD programs determine the library location of drives during initialization processing if there are multiple 3494 systems attached.

**Format:**

Device\_List *cu\_serial ccuu ccuu ....*  
OR  
Device\_List *subsystem\_ID ccuu ccuu ....*

**Msg\_Level**

Designates which messages are to be written to the system console:

- 0** Issue responses to the MSG command interface and report unexpected events.
- 1** In addition to MSG response and abnormal event reporting, also report requests and completion status of requests received via the programming interface.

If this control card is not found or if it is not coded properly, the default message level is 1.

**Format:**

MSG\_LEVEL *n*

**Query\_Inv\_Lists**

Designates the name (up to seven characters) for the predefined VSE sub-library in which Query Inventory member lists are to be created. If this control card is not found or if it is not coded properly, or if the library and a sub-library for the attached 3494 is not defined, Query Inventory requests cannot be processed. For additional information see "File-Name Summary" on page 6.

**Format:**

Query\_Inv\_Lists LIB=*library*

**Manage\_Inv\_Lists**

Designates the name (up to seven characters) for the predefined library from which Manage Inventory member lists are to be read. If this control card is not found or if it is not coded properly, or if the library and a sub-library for the attached 3494 is not defined, Manage Inventory requests cannot be processed.

**Format:**

Manage\_Inv\_Lists LIB=*library*

A sample set of control cards is shown in Figure 10 on page 29. For additional information, see "File-Name Summary" on page 6.

```

LOCAL_VSE_ID VSEHOST1          * ID of this VSE system
LIBRARY_ID AUTOLIB1 ATLBKPLM SCRDEF=SCRATCH00 INSERT=SCRATCH00 INSMMSG=Y
LIBRARY_ID AUTLIBK2 LIBMGRTD   * Second lib definition
DEVICE_LIST 13-00678 460 461    * 3490E drives for this host to use
DEVICE_LIST 13-00271 580 581    * 3590 drives for this host to use
DEVICE_LIST 13-00271 582 583    * 3590 drives for this host to use
MSG_LEVEL 1                     * Write maximum to console
QUERY_INV_LISTS LIB=LCAINV      * Master inventory files
MANAGE_INV_LISTS LIB=LCAWRK     * Working copies

```

Figure 10. Sample LCDD Control Cards

## Starting LCDD

Figure 11 and Figure 12 on page 30 show sample job control statements for starting the LCDD. The FSMLCITM phase is expected to reside in the system library. In this example, LCDD runs in a dynamic partition. The LCDD control cards following the EXEC statement are described in “Defining Customization Options with Control Statements” on page 26.

```

* $$ JOB JNM=LCARUN,CLASS=C
* $$ LST CLASS=C
// JOB LCARUN
// ASSGN SYSLST,PRINTER
// LIBDEF *,SEARCH=(IJSYSRS.SYSLIB,PRD1.BASE)
// EXEC PGM=FSMLCITM,SIZE=200K
MSG_LEVEL 1
LOCAL_VSE_ID VSE1LCA
LIBRARY_ID AUTOLIB1 ATLBKPLM SCRDEF=SCRATCH00 INSERT=SCRATCH00 INSMMSG=Y
LIBRARY_ID AUTLIBK2 LIBMGRTD   * Second lib definition
DEVICE_LIST 13-00678 460 461    * 3490E drives for this host to use
DEVICE_LIST 13-00271 580 581    * 3590 drives for this host to use
DEVICE_LIST 13-00271 582 583    * 3590 drives for this host to use
QUERY_INV_LISTS LIB=LCAINV      * Master inventory files
MANAGE_INV_LISTS LIB=LCAINV     * Manage from master file
/&
* $$ E0J

```

Figure 11. Sample1 Job to Start LCDD

OR

```

* $$ JOB JNM=LCARUN,CLASS=C
* $$ LST CLASS=C
// JOB LCARUN
// ASSGN SYSLST,PRINTER
// LIBDEF *,SEARCH=(IJSYSRS.SYSLIB,PRD1.BASE)
// EXEC PGM=FSMLCITM,SIZE=200K
MSG_LEVEL 1
LOCAL_VSE_ID VSE1LCA
LIBRARY_ID AUTOLIB1 ATLBKPLM SCRDEF=SCRATCH00 INSERT=SCRATCH00 INMSG=Y
LIBRARY_ID AUTLIBK2 LIBMGRTP          * Second lib definition
DEVICE_LIST 00-00004 460 461          * subsystem ID 4
DEVICE_LIST 00-00005 580 581          * subsystem ID 5
QUERY_INV_LISTS LIB=LCAINV            * Master inventory files
MANAGE_INV_LISTS LIB=LCAINV           * Manage from master file
/&
* $$ EOJ

```

Figure 12. Sample2 Job to Start LCDD

Ensure that VTAM is active before starting the LCDD job and that the 3494 Library Manager is already online or expected to come online soon. After the LCDD starts, it performs a set of initialization tasks before it becomes active and capable of accepting user requests. Part of the initialization scenario involves exchanging messages with the 3494 Library Manager.

During initialization processing, the communication paths are verified and the Library Manager sends configuration data for installed library hardware to the LCDD. The LCDD uses the configuration data to complete its in-storage control block structures required for conducting further communications with the Library Manager and servicing user requests for library functions. Library tape drives that are included in the device list and are reported to the LCDD by the library manager become available for selection via the EXTRACT ATLCUU function.

After initialization is successfully completed, the following message is displayed on the console, and both the MSG command and the programming interfaces are enabled:

```
LCAXxx2307I LCDD is initialized and ready for service
```

If the LCDD cannot connect to the 3494 Library Manager, or if the 3494 Library Manager returns configuration information that does not match any data provided in the Device\_List control card, this message is displayed on the console and the LCDD goes into a wait state until the 3494 Library Manager sends configuration data.

```
LCAXxx2315I Initialized processing awaits configuration data
```

While the LCDD is waiting for the Library Manager to come online or to send expected configuration data, the programming interface remains disabled, and only the subset of LCDD MSG commands that do not require library interaction are enabled. The enabled commands are:

- Change\_insert\_op
- Stop\_immed
- Stop\_quiesce

If configuration data was sent by the Library Manager but does not match the Device\_List control-card input, an additional message (LCAxxx2317W) indicates that no library drives are initialized. In this case, check the Device\_List control card. Make any needed corrections, and then stop and restart LCDD.

When the Library Manager is online and operational, there is a possible error in the VTAM or Library Manager communications definitions if the following message sequences occur:

- The LCAxxx2315I message is displayed without the LCAxxx2317W message
- Neither the LCAxxx2307I nor the LCAxxx2315I message is written on the console during initialization

Cancel the LCDD job and restart it after the configuration problems are resolved.

Refer to Appendix A, "LCDD Messages" on page 33 for information about other LCDD messages that may be displayed on the console during initialization.



## Appendix A. LCDD Messages

This section provides message explanations and required actions for messages issued by the LCDD.

A customization option allows to control the issuing of messages for requests received through the programming interface (see “Defining Customization Options with Control Statements” on page 26). Messages that are the result of requests issued to the LCDD through the interactive MSG interface are always sent to the operator console.

LCDD message numbers have the following format:

<b>LCDD Message Number</b>
LCA <i>midnnnt</i>

The variable components of the message number are:

<b><i>mid</i></b>	Three-character internal LCDD identifier.  This identifier is not necessarily the same for each invocation of a particular message. Thus, it is not included in the message numbers shown below, although it is part of any message sent to the VSE operator console. The entire message number, including this three-character ID, must be referenced when reporting unexpected conditions for service. This ID helps the service representative to identify the component involved in reported problems.						
<b><i>nnnn</i></b>	Unique message number						
<b><i>t</i></b>	Message type, where: <table style="margin-left: 20px;"> <tr> <td><b>I</b></td> <td>Information</td> </tr> <tr> <td><b>W</b></td> <td>Warning</td> </tr> <tr> <td><b>E</b></td> <td>Error</td> </tr> </table>	<b>I</b>	Information	<b>W</b>	Warning	<b>E</b>	Error
<b>I</b>	Information						
<b>W</b>	Warning						
<b>E</b>	Error						

Informational messages, warning messages, and error messages that describe unexpected events at the library or in the LCDD are always logged at the operator console. Such messages may not be

related to a specific request but rather to the current state of the LCDD or the library hardware.

---

**LCA0505E**      **Internal error from *function name*  
return code = *return code***

**Cause:** An internal LCDD error has occurred.

**Recovery:** Contact your service representative and provide the full message number, the *function name*, and the *return code*.

**Description:** The system fails the current action that it is attempting. If this action is a critical LCDD function, LCDD terminates; however, if this is not a critical LCDD function, LCDD attempts to continue processing other requests.

---

**LCA0509E**      **Internal error, return code = *rc***

**Cause:** An internal LCDD error has occurred.

**Recovery:** Contact your service representative and provide the full message number and the *return code*.

**Description:** The system fails the current action that it is attempting. If this action is a critical LCDD function, LCDD terminates; however, if this is not a critical LCDD function, LCDD attempts to continue processing other requests.

---

**LCA2000E**      **Requested volume *volser* is a  
reserved volume in library *library  
name*.**

**Cause:** The specified volume is reserved.

**Recovery:** Provide corrected volume serial information and resubmit the request.

**Description:** The system fails the current request that it is attempting. LCDD continues processing other requests.

---

**LCA2003E**      **Request cancelled; subsystem  
functionally incompatible**

**Cause:** A requested operation has been received but cannot be performed due to the state of the library configuration or its installed features.

**Recovery:** Contact the library administrator, or for additional information contact your service representative and provide the full message number.

**Description:** The system fails the current request that it is processing. LCDD attempts to continue processing other requests.

---

**LCA2006E**      **Library I/O error; reason code =  
reason code, device = ccuu**

**Cause:** A library hardware error has occurred that prevents completion of a request for one of the following reasons. See the specific reason code explanation for further information:

<b>3348</b>	Library volume misplaced
<b>3500</b>	Library attachment check
<b>3504</b>	Library manager offline
<b>3508</b>	Control unit and library manager error
<b>3512</b>	Library vision failure
<b>3516</b>	Library not capable
<b>3692</b>	Unload failure
<b>3740</b>	Unsolicited sense
<b>3800</b>	Command reject

**Recovery:** See Appendix B, "LCDD Reason Codes" on page 45.

**Description:** The system fails the current request that it is processing. LCDD attempts to continue processing other requests.

---

**LCA2008E**      **Requested volume *volser* already in  
use in library *library name***

**Cause:** The specified volume is in use.

**Recovery:** Reissue the request later.

**Description:** The system fails the current request that it is processing. LCDD attempts to continue processing other requests.

---

**LCDD2009E**      **Requested volume *volser* is not in  
library *library name***

**Cause:** The specified volume is not in the specified library.

**Recovery:** If this volume is to be used for a mount operation in the named library, insert the volume using the library I/O facility.

**Description:** If the current request is a mount operation, the request is put on hold by LCDD and reissued automatically after the volume is received by the library. Or the operator may cancel the request if the volume cannot be inserted.

---

**LCA2010E**      **Requested category *scratch pool id*  
in library *library name* is empty**

**Cause:** There are no volumes assigned to the specified scratch category or pool.

**Recovery:** Either use the Set Volume Category function to assign volumes to this category or request a specific volume label.

**Description:** The system fails the current request that it is processing. LCDD attempts to continue processing other requests.

---

**LCA2011E**      **Requested volume *volser* in library  
*library name* is misplaced**

**Cause:** The requested volume cannot be located in the library and is recorded in the library inventory as being misplaced.

**Recovery:** Insert the volume in the specified library if it can be located outside the library. Reissue the request.

**Description:** The system fails the current request that it is processing. LCDD attempts to continue processing other requests.

---

**LCA2012E**      **Requested volume *volser* in library  
*library name* is inaccessible**

**Cause:** The requested volume is in a position that is inaccessible.

**Recovery:** Pause the library and relocate the volume in an accessible location. Reissue the request.

**Description:** The system fails the current request that it is processing. LCDD attempts to continue processing other requests.

---

**LCA2013E**      **Requested volume *volser* in library  
*library name* was manually ejected**

**Cause:** The requested volume is recorded in the library inventory as being manually ejected.

**Recovery:** Insert the requested volume in the library. Reissue the request.

**Description:** The system fails the current request that it is processing. LCDD attempts to continue processing other requests.

---

**LCA2017E**      **Unrecognized I/O error; device *ccuu***

**Cause:** An unrecognized I/O error condition has occurred.

**Recovery:** Contact your service representative and provide the full message number.

**Description:** The system fails the current request that it is processing. LCDD attempts to continue processing other requests.

---

**LCA2018E**      **Library order sequence check,  
reason code = *reason code***

**Cause:** A library sequence-check error has occurred due to one of the following conditions. See the specific reason code explanation for further information:

<b>3364</b>	Mount is in progress or volume is mounted
<b>3368</b>	Mount is already pending
<b>3372</b>	Demount was already pending
<b>3376</b>	No volume is mounted

**Recovery:** None.



**Description:** The system fails the current request that it is processing. LCDD attempts to continue processing other requests.

---

**LCA2019I      Request not processed. Library  
library name is offline**

**Cause:** The named library has reported an offline condition. Requests are not processed until LCDD receives notification of online status.

**Recovery:** Check for possible need of corrective action at the 3494.

**Description:** The system fails requests until the library manager sends notification that it is ready to start receiving requests.

---

**LCA2300E      No initial response received from  
library library name device ccuu**

**Cause:** An initial response is not received by LCDD from the library within the prescribed time limit.

**Recovery:** Reissue the request after the library status and communication network have been verified as being operational. Contact your service representative if the error persists.

**Description:** The system fails the current request that it is processing. LCDD attempts to continue processing other requests.

---

**LCA2301E      Internal error: Unknown resource  
name library name**

**Cause:** A message has been received from a resource not identified in the LCDD library configuration.

**Recovery:** None.

**Description:** The received message is ignored. LCDD attempts to continue processing other requests.

---

**LCA2302E      Unexpected response message  
received from library library name**

**Cause:** A response message not associated with any in-process LCDD request has been received from the specified library.

**Recovery:** Contact your service representative if this occurrence is persistent.

**Description:** The received message is ignored. LCDD attempts to continue processing other requests.

---

**LCA2303E      Unexpected delayed response  
received from library library name**

**Cause:** A final response message not associated with any in-process LCDD request has been received from the specified library.

**Recovery:** Contact your service representative if this occurrence is persistent.

**Description:** The received message is ignored. LCDD attempts to continue processing other requests.

---

**LCA2304E      Unexpected RC = return code  
received sending packet to device  
ccuu**

**Cause:** An error has occurred sending a request to the library in which the specified drive is located.

**Recovery:** Contact your service representative if this occurrence is persistent, and provide the *return code* information.

**Description:** The system fails the current request. LCDD attempts to continue processing other requests.

---

**LCA2305I      Test message successfully sent to  
library library name**

**Cause:** A communication test sequence has been successfully completed with the specified library.

**Recovery:** None.

---

**LCA2306E      Attempt to send test message to  
library library name unsuccessful**

**Cause:** A communication test sequence was not successfully completed with the specified library.

**Recovery:** None.

---

**LCA2307I      LCDD is initialized and ready for  
service**

**Cause:** The LCDD has completed its initialization processing and is ready to handle library-control requests.

**Recovery:** None.

---

**LCA2308I      Initialization has started**

**Cause:** The LCDD has started its initialization processing.

**Recovery:** None.

---

**LCA2309I      Tracing feature set to tracing option**

**Cause:** This informational message reflects the requested setting of the CDA\_Trace\_On control-card variable set by the user, or the default set in place if this option was not specified in the control-card input. This value is either Y (Yes) to run this debug trace or N (No) to not run this trace.

**Recovery:** None.

---

**LCA2310I**      **Console message level is** *message level*

**Cause:** This informational message reflects the requested setting of the `Msg_Level` control-card variable set by the user, or the default set in place if this option was not specified in the control-card input. This value is either 1, to report the outcome of requests received through the programming interface on the Operator Console (in addition to all other messages sent to the console), or 0 to suppress the logging of messages describing the outcome of requests received through the programming interface.

**Recovery:** None.

---

**LCA2311I**      **Local resource name is** *Local\_VSE\_Id*

**Cause:** This informational message reflects the local resource name for the LCDD, as specified in the required `Local_VSE_Id` control-card. This resource name is the logical unit (LU) name by which LCDD is known on the LAN.

**Recovery:** None.

---

**LCA2312E**      **Unrecognized parameter in**  
**Library\_ID card, data**

**Cause:** While processing the `Library_ID` control card, the LCDD has encountered an unexpected character string described as *data* while searching for the expected parameter.

**Recovery:** Correct the control card input and restart LCDD.

---

**LCA2313E**      **Unrecognized control card keyword,**  
*keyword*

**Cause:** While processing the control card input, the LCDD has encountered an unrecognized control-card as described by *keyword*.

**Recovery:** Correct the control card input and restart LCDD.

---

**LCA2314E**      **Initialization failure** *failing task name*  
**for library** *library name*.

**Cause:** A problem occurred during the specified initialization task for the specified library.

**Recovery:** If this error causes the LCDD to terminate, contact your service representative and provide the *failing task name*.

**Description:** If this action is a critical LCDD function, LCDD terminates; however, if this initialization task failed because the 3494 Library Manager is not yet online, LCDD finishes other initialization work and waits for the 3494 Library Manager to be activated.

---

**LCA2315I**      **Initialization processing awaits**  
**configuration data**

**Cause:** None of the libraries identified in LCDD control card information is online and ready to send configuration data to the LCDD to complete initialization processing. The LCDD is waiting.

**Recovery:** Ensure that start-up is initiated at the 3494 Library Manager.

**Description:** If the 3494 Library Manager has not completed its own initialization process when the LCDD attempts to request data for the LCDD initialization, the LCDD waits for the 3494 Library Manager to identify itself to LCDD. Then LCDD requests configuration data from the library and completes LCDD initialization.

---

**LCA2316E**      **Required control card information**  
**not found for** *keyword*

**Cause:** A required control card keyword was not included in the control cards processed by LCDD.

**Recovery:** Correct the control card input and restart LCDD.

**Description:** Control cards with the `VSE_Local_Id`, `Library_Id`, and `Device_List` keywords are required input for LCDD. If these are not found during control-card processing, the LCDD cannot become active.

---

**LCA2317W**      **There are no drives initialized for**  
**library** *library name*

**Cause:** The configuration data from the specified library did not specify and tape drives.

**Recovery:** Check hardware status on the 3494.

**Description:** Library control requests requiring a tape drive (mount, query drive) cannot be performed until the Library Manager sends configuration data with device information.

---

**LCA2318E**      **Initialization failure** *failing task name*

**Cause:** An error has occurred during initialization.

**Recovery:** Contact your service representative and provide the *failing task name* and full message number.

**Description:** This is a critical LCDD failure and LCDD terminates.

---

**LCA2319I**      **Insert volume** *volser* **for mount in**  
**library** *library name*

**Cause:** The specified volume was requested for mount in the specified library but it cannot be located in that library.

**Recovery:** Insert the specified volume in the specified library, unless there is some reason not to continue processing this tape job on a drive in the specified

library. If automatic insert processing is not active, use the Insert\_Volume (IV) MSG command to inform LCDD that this volser is now in the library. Or use the IV command with the CANCEL option to inform LCDD that the volume is not to be inserted.

**Description:** If a volume requested for a mount operation is not found in the specified library, the mount command is “held” by the LCDD until one of the following occurs:

1. LCDD is notified by means of automatic insert processing that this volume has been inserted; the LCDD then drives the mount request again.
2. LCDD is notified through an Insert\_Vol command from the operator that the volume has been inserted; the LCDD then drives the mount request again.
3. LCDD is notified by a Insert\_Vol command from the operator that this mount must not be processed by LCDD; the LCDD fails the mount.

---

**LCA2320W      Unsolicited message from library**  
*library name: message*

**Cause:** The specified message was received from the 3494 Library Manager in the specified library.

**Recovery:** Depending on the content of this message, action may be required at the 3494.

**Description:** Certain events in the 3494 result in an unsolicited and unexpected message being sent to the LCDD by the library. Such messages and events are logged by LCDD on the operator console.

---

**LCA2321W      Unable to acquire auto insert process lock, rc = return code**

**Cause:** An automatic insert processing task is unable to start because there is already an automatic insert processing task active for this library.

**Recovery:** None.

**Description:** The currently active insert processing task handles all volumes currently in the INSERT category at the time the task started. Volumes inserted after the start of that task result in an additional state-change event being reported to the LCDD. These volumes will be changed from the insert category to the default insert target category the next time automatic insert processing occurs, or a new target category can be specified through the Set\_Vol\_Cat function. Meanwhile, volumes that remain in the INSERT category are available for mount.

---

**LCA2322I      Insert processing complete in library** *library name for number of volumes*

**Cause:** An automatic insert processing task has completed and the designated number of volumes have been handled.

**Recovery:** None.

**Description:** This LCDD notifies the operator that an automatic insert processing task has been completed.

---

**LCA2323W      External label unreadable for volume** *volser*

**Cause:** Although the external label on the specified volume could not be read by the library vision system, the current request was completed.

**Recovery:** Eject the specified volume and check the external label for damage.

**Description:** Because the Library Manager knows the physical location for each volume, it was able to complete the requested operation.

---

**LCA2324W      Category not changed for volume** *volser*

**Cause:** The category is not changed as part of the current request; however, the requested was completed.

**Recovery:** Use one of the query-volume request types (QS or QA) to check the current category assignment for this volume. Use the Set\_Vol\_Cat function to change the category of the specified volume if required.

**Description:** A category change can be requested as part of another library request, usually a mount. This message indicates that the category change could not be made, although the primary operation completed successfully.

---

**LCA2325W      Vision failure during request processing in library** *library name*

**Cause:** Although there was a vision system failure in the specified library, the current request was completed.

**Recovery:** Check for possible need for corrective action in 3494.

**Description:** Because the Library Manager knows the physical location for each volume, it was able to complete the requested operation without using the vision system.

---

**LCA2326E**      **Test message error, library** *library name*

**Cause:** An error occurred echoing a test message from the 3494.

**Recovery:** None.

**Description:** Test message execution is a maintenance function not used in production.

---

**LCA2327I**      **Test message echoed OK, library** *library name*

**Cause:** A test message received from the 3494 was returned successfully.

**Recovery:** None.

**Description:** Test message execution is a maintenance function not used in production.

---

**LCA2330W**      **Message received from library** *library name: message information*

**Cause:** An unsolicited message with the specified *message information* was received from the 3494 Library Manager in the specified library.

**Recovery:** Depending on the content of this message, action may be required at the 3494.

**Description:** Certain events in the 3494 result in an unsolicited and unexpected message being sent to the LCDD by the library. Such messages and events are logged by LCDD on the Operator Console.

---

**LCA2331W**      **Message received from unknown resource, message**

**Cause:** The specified message was received from a resource or library unknown to the LCDD.

**Recovery:** If a new library has been installed and added to the LAN, add its identifying control information to the LCDD control card input and restart LCDD.

**Description:** At initialization time, the LCDD creates control structures for all libraries with which it communicates. The initialization process must be executed to set up control structure for a previously unknown library. It is OK to define a library in the LCDD control card input even though it is not yet operational and/or LAN-attached to LCDD and the VSE host.

---

---

**LCA2332W**      **Unrecognized message type** *message code from library library name*

**Cause:** A message received from the specified library does not have a message code type that is known to the LCDD.

**Recovery:** Contact your service representative and provide the *message code*.

**Description:** This occurrence may be symptomatic of an internal error, or the LCDD and 3494 microcode levels may not be compatible.

---

**LCA2333W**      **LIBRM library for query/manage lists not specified**

**Cause:** During initialization processing, valid control card input was not encountered for the library location for inventory lists for the named function.

**Recovery:** If it is desirable to use this inventory function, correct the control card input and restart LCDD, or use the Change Library interactive function to dynamically update this LCDD control information.

---

**LCA2334E**      **Failure executing LIBRM function** *name, RC=LIBRM rc, reason=LIBRM reason*

**Cause:** An error occurred after issuing LIBRM macro function in processing an inventory file.

**Recovery:** Refer to the *IBM VSE/ESA System Macros Reference* to find the reason code. Correct the problem if it is a user error. Contact your service organization if assistance is required.

---

**LCA2350E**      *function type request failed for partner LU LUName*

**Cause:** A failure has occurred during execution of the named VTAM APPCCMD control function in attempting to communicate with the 3494 library manager with the designated LUName.

**Recovery:** Use the return codes provided in messages LCA2351E and LCA2352E to investigate cause of failure. These additional messages occur in connection with LCS2350. Codes are documented in *VTAM Programming for LU 6.2*, SC31-6437.

**Description:** With the LCDD, this message may occur if the library manager is not yet operational or if library manager communications components need to be restarted.

---

**LCA2351E**      *function type request RPL return codes return code and return code*

**Cause:** This message provides the return codes associated with the failing VTAM APPCCMD control function.

**Recovery:** Refer to *VTAM Programming for LU 6.2*, SC31-6437, to investigate the return codes.

**Description:** With the LCDD, this message may occur if the library manager is not yet operational or if library manager communications components need to be restarted.

---

**LCA2352E**      *function type request RPL primary and secondary codes return code and return code*

**Cause:** This message provides the primary and secondary codes associated with the failing VTAM APPCCMD control function.

**Recovery:** Refer to *VTAM Programming for LU 6.2*, SC31-6437, to investigate these codes.

**Description:** With the LCDD, this message may occur if the library manager is not yet operational or if library manager communications components need to be restarted.

---

**LCA2353E**      *function type request failed for partner transaction program TPname*

**Cause:** A failure has occurred during execution of the named VTAM APPCCMD control function in attempting to communicate with the 3494 library manager with the designated TPname.

**Recovery:** This message adds the transaction program (TP) name used by the library manager to which LCDD is attempting connection. The corresponding LUName is provided in message LCA2350E. These additional messages LCA2351E and LCA2352E supplement this message with return codes. Codes are documented in *VTAM Programming for LU 6.2*, SC31-6437.

**Description:** With the LCDD, this message may occur if the library manager is not yet operational or if library manager communications components need to be restarted.

---

**LCA2354E**      **Communication error CID block threshold exceeded**

**Cause:** An internal error has occurred in communications processing.

**Recovery:** Contact your service representative.

**Description:** None.

---

**LCA2355E**      **Communication error CID block block index in use**

**Cause:** An internal error has occurred in communications processing.

**Recovery:** Contact your service representative and provide the block index number that is provided with this message.

**Description:** None.

---

**LCA2356E**      **Communication error no ACB opened for LU local VSE host**

**Cause:** A probable VTAM definition error has occurred.

**Recovery:** The local VSE host names in this message is taken from the control card input used in the job that starts the LCDD application. Ensure that this name is specified correctly in the control card input and defined properly to VTAM. Restart LCDD.

**Description:** None

---

**LCA2357E**      **Communication error path block threshold exceeded**

**Cause:** An internal error has occurred in communications processing.

**Recovery:** Contact your service representative.

**Description:** None.

---

**LCDD2401E**      **Unrecognized MSG was received**

**Cause:** A message received in the LCDD partition is not identified correctly as an LCDD MSG request.

**Recovery:** If a message sent to the LCDD partition is intended as an LCDD request, correct the syntax of the MSG text and reissue the MSG command.

**Description:** LCDD intercepts all MSG commands issued to the partition in which it runs. Only MSG commands intended as LCDD interactive messages should be sent to the LCDD partition. MSG commands without proper LCDD syntax are not processed by the LCA application.

---

**LCA2402I**      **Application not active**

**Cause:** An attempt is made to send a library-control request to the LCDD, but the application has not completed required initialization processing, or is quiescing (not accepting new requests.)

**Recovery:** Reissue the request after the LCDD is active.

**Description:** This condition may occur if the LCDD is activated before the 3494 completes its start-up processing and activates its LAN connection.

---

**LCA2403E      Internal error processing MSG command**

**Cause:** This message is provided as a response to the LCDD MSG command after an internal programming error prevents processing of the request. Additional LCDD messages identify the source of the internal error.

**Recovery:** Contact your service representative and report this error and other associated internal errors.

**Description:** If the internal error is critical, LCDD terminates. Otherwise the system fails the current request, but LCDD continues to attempt the processing of additional requests.

---

**LCA2404I      Application stopped by request**

**Cause:** This message indicates that the LCDD is in the process of terminating and will stop immediately because a Stop\_Immediate request was received.

**Recovery:** None.

**Description:** If a Stop\_Immediate command is received, LCDD does not wait for any in-process requests to complete before initiating its own termination activity.

---

**LCA2405I      Application is quiescing by request**

**Cause:** This message indicates that the LCDD is no longer taking requests and terminates after all in-process requests have completed. A Stop\_Quiesce request has been received.

**Recovery:** None.

**Description:** If a Stop\_Quiesce command is received, LCDD does wait for any in-process requests to complete before initiating its own termination activity. The only request type it acts on during this quiesce period is a Stop\_Immediate request.

---

**LCA2406E      Volser contains invalid characters**

**Cause:** A current request received on through the MSG interface contains invalid characters in the field expected to contain a volume serial.

**Recovery:** Correct the input error and reissue the command.

**Description:** This error is detected during MSG command input parsing.

---

**LCA2407E      Drive CCUU contains invalid characters**

**Cause:** A current request received on through the MSG interface contains invalid characters in the field expected to contain a tape drive CCUU.

**Recovery:** Correct the input error and reissue the command.

**Description:** This error is detected during MSG command input parsing.

---

**LCA2408E      Library ID contains invalid characters**

**Cause:** A current request received on through the MSG interface contains invalid characters in the field expected to contain a library ID.

**Recovery:** Correct the input error and reissue the command.

**Description:** This error is detected during MSG command input parsing.

---

**LCA2409E      Target category contains invalid characters**

**Cause:** A current request received on through the MSG interface contains invalid characters in the field expected to contain a target category.

**Recovery:** Correct the input error and reissue the command.

**Description:** This error is detected during MSG command input parsing.

---

**LCA2410E      Source category contains invalid characters**

**Cause:** A current request received through the MSG interface contains invalid characters in the field expected to contain a source category.

**Recovery:** Correct the input error and reissue the command.

**Description:** This error is detected during MSG command input parsing.

---

**LCA2411E      Insufficient parameters in LCDD request**

**Cause:** A current request received on through the MSG interface does not include a sufficient number of parameters for this request type.

**Recovery:** Correct the input error and reissue the command.

**Description:** This error is detected during MSG command input parsing.

---

**LCA2412E      Unrecognized LCDD operation was requested**

**Cause:** Unrecognized data is encountered where a valid LCDD request type is expected in a LCDD MSG interface request.

**Recovery:** Correct the LCDD MSG syntax and reissue the MSG command.

**Description:** This error is detected as part of the MSG interface parsing process.

---

**LCA2413E      Unrecognized Insert Reply. Reissue**

**Cause:** An unrecognized keyword describing the completion status was detected in the Insert\_Volume MSG request.

**Recovery:** Reissue the command with corrected syntax.

**Description:** If the completion status is specified, it must be one of the keywords defined for the command syntax. If the default is desired, the keyword can be omitted.

---

**LCA2414I      Requesting mount of inserted volume**

**Cause:** A volume that required insertion in the library to satisfy a mount request is now inside the library, and the LCDD is requesting this mount again.

**Recovery:** None.

**Description:** The LCDD holds mount requests for retry when a specified volume is not found inside the library on the first attempt of the mount. After the LCDD detects that the volume is inserted, it retries the mount.

---

**LCA2415E      Error requesting mount of inserted volume**

**Cause:** An LCDD MSG request for Insert\_Vol is received for a volume, and LCDD does not have a mount request in hold status with the volser specified in that Insert\_Vol request.

**Recovery:** Verify the volser and reissue the Insert\_Vol request.

---

**LCA2416I      Canceling mount of specified volume**

**Cause:** An Insert\_Vol request with the CANCEL option is received by the LCDD, and the corresponding mount is being failed.

**Recovery:** None.

**Description:** The LCDD fails a request for a mount if

an Insert\_Vol response specifies the cancel option. In such cases, the LCDD API responds to its requester with a failing return code. The disposition of the processing job itself is determined by the requester of the mount (not by the LCDD).

---

**LCA2417E      Error in specified change insert options**

**Cause:** A current Change\_Insert\_Op command specifies an invalid parameter.

**Recovery:** Verify that the library id is specified correctly and resubmit the command.

---

**LCA2418I      Insert options have been changed**

**Cause:** A change requested to insert processing options (through the Change\_Insert\_Op command) is successfully completed.

**Recovery:** None.

---

**LCA2420I      Volume *volser* in library *library name*, status *status code*, category *category name*, type *cartridge type***

**Cause:** This is the response message for a successful Query\_Volume (single or all libraries) request.

**Recovery:** None.

---

**LCA2421I      Volume *volser* not found inside a library**

**Cause:** This response message for a Query\_Volume (single or all libraries) request indicates that the specified volume was not found.

**Recovery:** Refer to Figure 8 on page 13 for interpretation of status codes.

---

**LCA2422E      Query failed for volume *volser*, reason *reason code***

**Cause:** A query request for the specified volume failed for the specified reason.

**Recovery:** Refer to the explanation of the reason code for further information.

---

**LCA2423I      Status for drive *ccuu* is *status code*, volume mounted is *volser***

**Cause:** This response message indicates a successful Query\_Drive request.

**Recovery:** Refer to Figure 8 on page 13 for interpretation of status codes.

---

**LCA2424E**      **Query failed for drive** *ccuu*, **reason** *reason code*

**Cause:** A query request for the specified drive failed for the specified reason.

**Recovery:** Refer to the explanation of the reason code for further information.

---

**LCA2425I**      **Library** *library name* **mode is** *status*  
*description*

**Cause:** This response message indicates a successful Query\_Library request.

**Recovery:** None.

---

**LCA2426E**      **Query failed for library** *library name*,  
**reason** *reason code*

**Cause:** A query request for the specified library failed for the specified reason.

**Recovery:** Refer to the explanation of the reason code for further information.

---

**LCA2427I**      **Category count for** *category name* **in**  
**library** *library name* **is** *count*

**Cause:** This response message indicates a successful Query\_Count request.

**Recovery:** None.

---

**LCA2428E**      **Query Count for** *category name*  
**failed, reason** *reason code*

**Cause:** A query request for the specified category count failed for the specified reason.

**Recovery:** Refer to the explanation of the reason code for further information.

---

**LCDD2429I**      **Volume** *volser* **mounted on drive**  
*ccuu*

**Cause:** This response message indicates a successful Mount\_Volume or Mount\_Category (scratch) request.

**Recovery:** None.

---

**LCA2430E**      **Mount failed for volume** *volser*,  
**reason** *reason code*

**Cause:** A mount request for the specified volume failed for the specified reason.

**Recovery:** Refer to the explanation of the reason code for further information.

---



---

**LCA2431E**      **Mount failed for category** *scratch*  
*pool id*, **reason** *reason code*

**Cause:** A mount request for a volume from the specified scratch pool failed for the specified reason.

**Recovery:** Refer to the explanation of the reason code for further information.

---

**LCA2432E**      **Eject failed for volume** *volser*, **library**  
*library name*, **reason** *reason code*

**Cause:** An eject request for a volume from the specified library failed for the specified reason.

**Recovery:** Refer to the explanation of the reason code for further information.

---

**LCA2433I**      **Volume** *volser* **category changed to**  
*category name*

**Cause:** This response message indicates a successful Set\_Vol\_Cat request.

**Recovery:** None.

---

**LCA2434E**      **Volume** *volser* **category not**  
**changed, reason** *reason code*

**Cause:** A Set Volume Category request for specified volume failed for the specified reason.

**Recovery:** Refer to the explanation of the reason code for further information.

---

**LCA2435I**      **Test message successfully sent to**  
**library** *library name*

**Cause:** This response indicates that a test message was successfully sent to the specified library.

**Recovery:** None.

---

**LCA2436E**      **Unsuccessful attempt to send test**  
**message to library** *library name*

**Cause:** An attempt to send a test message to the specified library failed.

**Recovery:** None (not a production or operation function).

**Description:** Test message execution is a maintenance function not used in production.

---

**LCA2437I**      **Query Inventory completed for list**  
*lib.sublib.member*

**Cause:** This response message indicates a successful Query Inventory request.

**Recovery:** None.

---



---

**LCA2438E**      **Query Inventory failed for list**  
*lib.sublib.member, reason*  
*reason\_code*

**Cause:** This Query Inventory request for the named list failed for the specified reason.

**Recovery:** Refer to the explanation of the reason code for further information.

---

**LCA2439I**      **Manage Inventory completed for list**  
*lib.sublib.member*

**Cause:** This response message indicates a successful Manage Inventory request.

**Recovery:** None.

---

**LCA2440E**      **Manage Inventory failed for list**  
*lib.sublib.member, reason*  
*reason\_code*

**Cause:** The Manage Inventory request for the named list failed for the specified reason.

**Recovery:** Refer to the explanation of the reason code for further information.

---

**LCA2441I**      **Volume *volser* ejected from library**  
*library name*

**Cause:** This response message indicates a successful Eject\_Volume request.

**Recovery:** None.

---

**LCA2442I**      **Auto insert is *ON/OFF* for *library***  
*name, target: category name, source:*  
*category name*

**Cause:** This response message describes the currently set LCDD options that pertain to automatic insert processing. Specifying the CI command without operands results in this status message.

**Recovery:** None.

---

**LCA2443I**      **Mount pending for volume *volser* in**  
*library name*

**Cause:** This message is displayed once for each pending mount request that LCDD has queued, while awaiting insert of the volume. The IV command without operands results in one or more of these messages.

**Recovery:** None.

---

**LCA2444I**      **No mounts awaiting insert.**

**Cause:** This message is displayed when there are no pending mount requests awaiting insert of the volume. The IV command without operands produces this message when there are no queued mount requests.

**Recovery:** None.

---

**LCA2445I**      **Insert-message option changed to**  
*Y/N*

**Cause:** This message is displayed when Display Insert Msg command is successfully executed.

**Recovery:** None.

---

**LCA2446E**      **Invalid Insert-message option**  
**specified.**

**Cause:** This message is displayed when Display Insert Msg command has been issued with an input error.

**Recovery:** Refer to "Displaying Insert Messages (DI)" on page 22 for proper command format.



---

## Appendix B. LCDD Reason Codes

This section provides explanations of reason codes.

The LCDD sets one of the following reason codes when the return code is greater than 0. For requests received on the programming interface, the function that invokes this interface decides if and how the reason code is externalized for the user. If the control-card MSG\_LEVEL keyword is set to 1, a console message logs the return and reason codes for requests received through the programming interface.

For requests received through the interactive MSG interface, a message with the return and reason codes is always sent to the operator console after a request is not completed successfully.

---

### 0001

**Explanation:** An internal error has in LCDD processing, or LCDD cannot process the request due to an offline condition in the Library Manager. An error or information message on the console provides additional details.

---

### 0020

**Explanation:** An invalid request type was sent to the LCDD.

---

### 0024

**Explanation:** A request was sent but the LCDD is either completing its initialization processing or is quiescing.

---

### 3000

**Explanation:** There is a library and device mismatch. A specified device is not found in the specified library.

---

### 3004

**Explanation:** A source category unknown to LCDD was specified in a request.

---

### 3005

**Explanation:** An invalid source category name was specified for this type of request.

---

### 3008

**Explanation:** A specified CCUU is not available in the active library device configuration.

---

### 3020

**Explanation:** A library name unknown to LCDD was specified in a request.

---

### 3024

**Explanation:** A category name unknown to LCDD was specified in a request.

---

### 3025

**Explanation:** An invalid target category name was specified for this type of request.

---

### 3030

**Explanation:** An inventory file created by a Query Inventory request or referenced by a Manage Inventory request is currently in use by another inventory task. Reissue the request later.

---

### 3032

**Explanation:** A Query Inventory or Manage Inventory request cannot be processed because control information for library location of inventory lists has not been specified.

---

### 3034

**Explanation:** A Query Inventory or Manage Inventory request cannot be processed because an error occurred during execution of a LIBRM function.

---

### 3116

**Explanation:** The request is rejected by the preprocessing user exit.

---

### 3136

**Explanation:** No devices are available to service this request.

---

### 3140

**Explanation:** The 3494 has determined that the specified device is not available for use.

---

**3150**

**Explanation:** LCDD has found the specified device to be in use and is not issuing the request to the 3494.

---

**3152**

**Explanation:** Unable to acquire I/O resource. An internal error prevents the request from being processed.

---

**3156**

**Explanation:** Unable to send request to library. Communication with the library was not executed successfully.

---

**3220**

**Explanation:** The volume category was not changed during request processing.

---

**3300**

**Explanation:** The completion status for the request is not known.

---

**3304**

**Explanation:** Volser involved in this request has an unreadable external label.

---

**3308**

**Explanation:** The operation was cancelled by request.

---

**3312**

**Explanation:** The request was cancelled due to an order-sequence condition.

---

**3316**

**Explanation:** The request cannot be executed because the library is in manual mode.

---

**3320**

**Explanation:** The failure is due to hardware malfunction.

---

**3324**

**Explanation:** The volume is not accessible to the library.

---

**3328**

**Explanation:** No volumes are currently assigned to the requested category.

---

**3336**

**Explanation:** The volume is already in use.

---

**3340**

**Explanation:** The volume was not found in the library.

---

**3344**

**Explanation:** The category is empty.

---

**3348**

**Explanation:** The library volume is misplaced.

---

**3352**

**Explanation:** The volume is not accessible to the gripper.

---

**3356**

**Explanation:** The volume was manually ejected.

---

**3360**

**Explanation:** The category is in use.

---

**3364**

**Explanation:** A mount is already in progress on the requested device.

---

**3368**

**Explanation:** A mount is already pending on the requested device.

---

**3372**

**Explanation:** A demount is already pending on the requested device.

---

**3376**

**Explanation:** No volume is mounted on the device to which the demount is issued.

---

**3500**

**Explanation:** The library failed the attachment check.

---

**3504**

**Explanation:** The library manager is offline.

---

**3508**

**Explanation:** There is a control unit and library manager error.

---

**3512****Explanation:** The library has a vision system failure.

---

**3516****Explanation:** The library is not capable of performing request.

---

**3624****Explanation:** There is an unrecognized I/O error.

---

**3692****Explanation:** There was an unload failure.

---

**3740****Explanation:** Unsolicited sense information was received.

---

**3800****Explanation:** A command reject was received from the 3494, possibly due to invalid information in a request. For example, a set volume-category request may have specified a source category to which to subject volume is not currently assigned.

---

**3804****Explanation:** The function is incompatible.

---

**3808****Explanation:** The library volume is reserved.

---

**3816****Explanation:** All categories are reserved.



## Appendix C. Quick Reference

This section provides a quick reference to the commands used with the LCDD. See Figure 13 and Figure 14.

*Figure 13. LCDD Function Summary and Quick Reference*

Full Function Name	Full MSG Command Syntax with the Short Function Name	MSG	BAT	API
Query_vol_s	LCA <b>QS</b> <i>volser lib_name</i>	Yes	Yes	Yes
Query_vol_a	LCA <b>QA</b> <i>volser</i>	Yes	Yes	Yes
Query_drive	LCA <b>QD</b> <i>ccuu</i>	Yes	Yes	Yes
Query_lib	LCA <b>QL</b> <i>lib_name</i>	Yes	Yes	Yes
Query_count	LCA <b>QC</b> <i>source_cat lib_name</i>	Yes	Yes	Yes
Query_inv	LCA <b>QI</b> <i>source_cat lib_name</i>	Yes	Yes	Yes
Manage_Inv	LCA <b>MI</b> <i>memname target_cat source_cat lib_name</i>	Yes	Yes	Yes
Mount_vol	LCA <b>MV</b> <i>volser ccuu lib_name target_cat</i>	Yes	Yes	Yes
Mount_cat	LCA <b>MC</b> <i>source_cat ccuu lib_name target_cat</i>	Yes	Yes	Yes
Eject_vol	LCA <b>EV</b> <i>volser BULK lib_name</i>	Yes	Yes	Yes
Set_vol_cat	LCA <b>SV</b> <i>volser target_cat source_cat lib_name</i>	Yes	Yes	Yes
Insert_vol	LCA <b>IV</b> <i>volser COMPLETE CANCEL</i>	Yes	---	---
Change_insert_op	LCA <b>CI</b> <i>target_cat lib_name</i>	Yes	---	---
Display_insert_msg	LCA <b>DI</b> <i>Y N</i>	Yes	---	---
Stop_immed	LCA <b>Stop_I</b>	Yes	---	---
Stop_quiesce	LCA <b>Stop_Q</b>	Yes	---	---

**Note:** Required fields are shown in bold type.

	1	2	3	4
Relative columns:	1...+....0	....+....0	....+....0	....+....0
Query volume single	<b>QS</b>	<i>volser</i>	<i>lib_name</i>	
Query volume all	<b>QA</b>	<i>volser</i>		
Query drive	<b>QD</b>	<i>ccuu</i>		
Query library	<b>QL</b>	<i>lib_name</i>		
Query count	<b>QC</b>	<i>source_cat</i>	<i>lib_name</i>	
Query inventory	<b>QI</b>	<i>source_cat</i>	<i>lib_name</i>	
Manage inventory	<b>MI</b>	<i>memname</i>	<i>target_cat</i>	<i>source_cat lib_name</i>
Mount volume	<b>MV</b>	<i>volser</i>	<i>ccuu lib_name target_cat</i>	
Mount category	<b>MC</b>	<i>source_cat</i>	<i>ccuu lib_name target_cat</i>	
Eject volume	<b>EV</b>	<i>volser</i>	<i>BULK lib_name</i>	
Set volume category	<b>SV</b>	<i>volser</i>	<i>target_cat source_cat lib_name</i>	

Figure 14. Batch-Command Card Column Format





---

## Glossary

This glossary defines the terms, abbreviations, and acronyms used in this publication. If you do not find the term you are looking for, refer to the *Dictionary of Computing*, New York: McGraw-Hill, 1994.

### A

**API.** Application program interface, a functional interface supplied by the operating system or by a separately-ordered licensed program that allows an application program written in a high-level language to use specific data or functions of the operating system or licensed program.

### B

**BAT.** A batch file, a group of records or data processing jobs brought together for processing or transmission.

### C

**category.** A group of volumes that has a common attribute, such as volumes to eject, volumes newly added to the tape library, and volumes to clean devices.

**code.** The term used to refer to the internal programs that comprise the library manager application.

**command.** A control signal that initiates an action or the beginning of a sequence of actions.

**control program.** The program in the host system that schedules and supervises the execution of application programs.

**CST1.** Cartridge System Tape. The base tape cartridge media that is used with 3480, 3490, and 3490E Magnetic Tape Subsystems.

**CST2.** Enhanced Capacity Cartridge System Tape. Cartridge system tape with increased capacity that can be used with 3490E enhanced capacity magnetic tape subsystems. Visually identified by a two-tone cartridge case.

**CST3.** The name used by LCDD to refer to base tape cartridge media for Magstar 3590 Tape Subsystems.

**CST4.** The name used by LCDD to refer to expanded capacity tape cartridge media for Magstar 3590 Tape Subsystems.

### D

**database.** A collection of data that can be accessed by a data-processing system for a specific purpose.

**dump.** To record data, at a particular instant, for the purpose of safeguarding or analyzing.

### E

**enable.** To provide the means or opportunity. The modification of system, control unit, or device action through the change of a software module or a hardware switch (circuit jumper) position.

### H

**host system.** A data-processing system that is used to prepare programs and the operating environments for use on another computer or controller.

### I

**initial program load (IPL).** The initialization procedure that causes an operating system to commence operation.

**inventory.** The operation of identifying the location of each tape cartridge contained in the tape library.

**invoke.** To start a command, procedure or program. The request for a feature or function to be used in future processing activities through the use of software or hardware commands.

### L

**library manager.** The controller for the 3494. It manages the location of tape cartridges, monitors performance, issues commands to the hardware, displays status, and performs other functions. It communicates with host systems through the tape control unit in each 3494 or, in other systems, directly through an RS-232 or LAN interface. The library manager also provides operator and service panel functions.

### M

**MSG.** A message in response to a command.

## Glossary

### O

**offline.** Pertaining to the operation of a unit when not under the direct control of a host system. Contrast with *online*.

**online.** Pertaining to the operation of a unit when under the direct control of a host system. Contrast with *offline*.

### R

**return code.** A value returned to a program to indicate the results of an operation requested by that program.

### S

**setup.** The preparation of a computing system to perform a job or job step.

### T

**tape library.** A term used to refer to the customer's collection of tapes. Within the 3494, it describes the set of cartridges contained within the enclosure.

**Tape Library Dataserver.** An automated tape library consisting of mechanical mechanisms, cartridge storage

frames, IBM tape subsystems, and controlling hardware and software. The tape library dataserver performs host-directed tape cartridge mounts and demounts without operator intervention.

**tape management software.** A program that controls the scratch status of tape volumes.

### U

**unavailable.** A term used to indicate that a component in the tape library (for example, the cartridge accessor) is unavailable for use by the library manager. Compare with *offline*.

### V

**volser.** Volume serial identifier. The physical label on the cartridge. Also, the same or different identifier encoded on the magnetic tape.

**VSE/ESA.** Virtual Storage Extended/Enterprise System Architecture is an IBM operating system that controls the execution of programs.

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