

1.3

*IBM Tape Manager for z/VM  
Installation and Administration Guide*



This edition applies to Version 1 Release 3 of IBM® Tape Manager for z/VM (product number 5697-J08) and to all subsequent releases and modifications until otherwise indicated in new editions.

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## About this information

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This book provides instructions for installing and configuring IBM Tape Manager for z/VM. It is designed to help systems administrators perform these tasks:

- Install the product.
- Use commands to perform tape management tasks, such as adding tapes to or deleting tapes from system or private pools.
- Define which tape drives to use by specifying either an address or an address range.
- Control retention by specifying an expiration date or a maximum retention period.
- Restrict or authorize who can create private pools or access the system tape pool.
- Receive notification when a tape is encountered with either no label or an incorrect label.
- Obtain information on all of the tapes in the system.

Always check the VM Tools Library page for the most current version of this publication:

<http://www.ibm.com/software/products/en/tape-manager-for-zvm>

## Service updates and support information

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To find service updates and support information, including software FixPaks, PTFs, Frequently Asked Questions (FAQs), technical notes, troubleshooting information, and downloads, refer to the following Web page:

<http://www.ibm.com/software/stormgmt/zvm/tape/>



# Summary of Changes

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This section summarizes the significant improvements or enhancements for IBM® Tape Manager for z/VM® V1.3 and refers you to relevant sections of this book for more information. Minor modifications to the text are not listed.

## **SC18-9344-29 October, 2021**

The changes for this documentation release are related to the updated steps for customizing TAPCMD DEFAULTS. See [“Customizing TAPCMD DEFAULTS”](#) on page 9 for more information.

## **SC18-9344-28 March, 2018 for PTF UI54509**

The changes for this release of the book are part of PTF UI54509, and include:

- *New section on category managed media.* For IBM automated tape libraries, Tape Manager allows the specification of Scratch Category and Volume Category codes when a media type is defined. The change enables Tape Manager to manage the library category code of volumes of the corresponding media type when using a Tape Manager (i.e., non-RMM) catalog. Additional changes to the System Status Hold flag are also included. See [“Understanding category managed media”](#) on page 58 for more information.
- *Changes to System Hold Flags.* Significant changes have been made to the System Hold Flag, including several new values that are accepted. See [“Understanding volume attributes and hold conditions”](#) on page 62 for more information.
- *New appendix on vault management.* New sample code has been included to help you manage tape volumes located off site (the vault). See [Appendix H, “Vault Management Sample Code,”](#) on page 111 for more information.

## **SC18-9344-27 February, 2017**

The changes for this documentation release are related to the use of user ID names. In some cases, a specific user ID is required, such as TMTMM. In other cases, a user ID can be slightly modified to enable the use of a shared catalog across multiple LPARs. For example, some user ID's are shown as TxTMM, where "x" is the letter C or R to denote a Catalog Node or a Request Node. The user ID changes are reflected throughout the documentation.

## **SC18-9344-26 August, 2016**

The major change for this release is support for non-IBM virtual tape libraries (VTLs). Several sections have been modified to include information about non-IBM VTLs, such as Luminex. For more information, refer to [“EMC/Dell and Luminex Virtual Tape Libraries”](#) on page 4, the [“Support for non-IBM Virtual Tape Library \(VTL\) mounts”](#) on page 34, and also [Appendix G, “Virtual Tape Library \(VTL\) mounts for non-IBM libraries,”](#) on page 109.

## **SC18-9344-25 September, 2015**

The changes for the release of this book include:

- *Changes for configuring a Shared Catalog.* A new example for how to define a node for a Shared Catalog has been added. Refer to [“Node Definition example for a Shared Catalog Implementation”](#) on page 19 for more information.
- *Changes for the Disk configuration statement.* The text has been improved to more fully explain how to use the Disk configuration statement. Refer to [“Disk”](#) on page 35.
- *Changes for the Define\_Local\_Node configuration statement.* The text has been improved to more fully explain how to use the Define\_Local\_Node configuration statement. Refer to [“Define\\_Local\\_Node”](#) on page 28.

- *New parameter for the Define\_Remote\_Node configuration statement.* A new parameter, Host\_AltAddr, allows to specify one or more alternate addresses from which the remote node can connect. For more information on this parameter and other text changes, refer to [“Define\\_Remote\\_Node” on page 32](#).
- *New section about Messages.* A new section has been added to an appendix to explain how to access the Tape Manager messages file. Refer to [“Tape Manager Messages file” on page 117](#) for more information.

### **SC18-9344-24 April, 2015**

For this release, a new parameter, ALTLIB, was added to the LIBRARY statement. ALTLIB specifies an alternate library name, which provides access to a volume from multiple libraries. For more information, refer to [“Library” on page 41](#).

### **SC18-9344-23 December, 2014**

Prior to PTF UI17942, scratch tapes were selected based on the last volume in a chain of eligible scratch volumes. Next, PTF UI17942 caused scratch tapes to be randomly selected from the list of eligible scratch volumes in the system pool. Now with PTF UI24163, the SCRSEL keyword on the Define\_Media configuration statement enables you to designate how you want a scratch tape to be selected. The SCRSEL RANDOM keyword randomly selects a scratch tape from a pool of eligible scratch volumes. The SCRSEL LASTVOL keyword chooses the last volume in a chain of eligible scratch volumes. Refer to [“Define\\_Media” on page 29](#) for more information on the SCRSEL keyword.

### **SC18-9344-22 June, 2014**

Additional information is provided in several places to explain how Tape Manager supports EMC or Dell virtual tape library (VTL) devices. Refer to the following sections for details:

- [“EMC/Dell and Luminex Virtual Tape Libraries” on page 4](#)
- [“Support for non-IBM Virtual Tape Library \(VTL\) mounts” on page 34](#)
- [Appendix G, “Virtual Tape Library \(VTL\) mounts for non-IBM libraries,” on page 109](#)

Expanded EMC or Dell information is now included in several configuration statements: DevPool, Define\_Media, GenScratch, LibTypPri, and LibTypeSec. Refer to these configuration statements in [Chapter 3, “Configuring Tape Manager,” on page 17](#) for more details.

### **SC18-9344-21 April, 2013**

The changes to the book for this release include the following:

- *Sample configuration files.* Four sample files have been created for you to modify as needed to configure Tape Manager for your environment. For more information, refer to [“Creating the Tape Manager configuration file” on page 17](#).
- *Additional documentation on creating a configuration file.* Information on selecting a sample file name for CONFSAMP and creating an initial configuration file is provided in [“Creating the Tape Manager configuration file” on page 17](#).

### **SC18-9344-20 October, 2012**

The changes to the book for this release include the following:

- *New External\_Security configuration statement.* A new configuration statement, External\_Security, allows you to use an External Security Manager (ESM) to control access to Tape Manager resources. Refer to [“External\\_Security” on page 38](#) for more information.
- *Additional documentation on DseID statement.* More information was added to clarify that the Data Security Erase (DSE) utility applies to a Tape Manager (non-RMM) catalog only. Refer to [“DseID” on page 37](#) for details.



- *Additional documentation on CmdExit statement.* More information was added to the CmdExit configuration statement to explain how the ENABLE and DISABLE parameters affect the CmdExit statement and also when to run the CmdExit statement on the TMM or CMM machine. Refer to [“CmdExit” on page 26](#) for details
- *Additional documentation on Admins statement.* More information was added to the Admins configuration statement to explain how the scope of a system administrator ID varies depending on whether it is used with Tape Manager's native security or with an External Security Manager (ESM). Refer to [“Admins” on page 23](#) for details.
- *New documentation on expiration processing and scratch tapes.* Information was added to explain how expiration dates affect the processing of scratch tapes. Refer to [“Understanding expiration processing and scratch tapes” on page 57](#) for details.
- *New documentation on volume attributes and hold conditions.* Information was added to explain some of the volume attributes and hold flags returned by the TAPEQRY command. Refer to [“Understanding volume attributes and hold conditions” on page 62](#) for more information.
- *New STK return code.* Return code 144 relating to StorageTek (STK) was added to the table of return codes. Refer to [“StorageTek Automated Tape Libraries” on page 3](#) for more information.

### **SC18-9344-19 November, 2011**

The changes to the book for this release include the following:

- *New information on using Storage Tek (STK) libraries.* Tape Manager now supports the use of STK libraries and library servers. For more details, refer to the following sections:
  - [“Library” on page 41](#) , which is a configuration statement,
  - [“Tailor the Library Management Machine” on page 13](#), and to
  - [Appendix F, “Using StorageTek automated tape libraries,” on page 105](#).
- *New chapter for verifying a successful installation.* This chapter describe the steps required to start and test various components of the Tape Manager installation and configuration. Refer to [Chapter 4, “Installation Verification Steps,” on page 49](#) for more details.
- *Additional information is provided on using the DEVPOOL statement with ATL mounts.* Refer to [“ATL mounts” on page 34](#) for more details.

### **SC18-9344-18 February, 2011**

More information was added to explain how to use the Challenge\_Password operand for two statements. For details, refer to [“Define\\_Local\\_Node” on page 28](#) and to [“Define\\_Remote\\_Node” on page 32](#).

### **SC18-9344-17 November, 2010**

More information was added to explain how the Command Exit works with a dedicated or RMM catalog and with a Shared Catalog. For detailed information, refer to [“The Command Exit” on page 77](#).

### **SC18-9344-16 September, 2010**

The changes to the book for this release are:

- *New section on external security managers (ESM).* You can configure Tape Manager to use an ESM for authorizations. For detailed information, refer to [“Using an External Security Manager to control Tape Manager resources” on page 71](#).
- *New section on implementation options.* Tape Manager can maintain volume and control information in dedicated or Shared Catalogs and also in RMM catalogs. Security options are also discussed in this section. For more information, refer to [“Tape Manager Implementation Options” on page 2](#).
- *New migration appendix.* Information on how to migrate catalog files from Version 1.2 to Version 1.3 of Tape Manager is described in [Appendix E, “Migration of Tape Manager Catalog,” on page 103](#).

- *Changes to Tailor the TMTMM section.* Additional information is included in [“Tailor the Tape Management Machine \(TxTMM\)”](#) on page 10.
- *Changes to the configuration statements.* There are several changes to the configuration statements for both Tape Manager and RMM catalogs.
  - The configuration file can be located on any disk (or directory) accessed by Tape Manager, but the TMTMM 198 disk is recommended.
  - The configuration statements can now be continued with a comma.
  - The APPLID statement is no longer supported.
  - The ATTACH statement has been extended with the AT parameter.
  - The DISK statement no longer takes the file mode parameter.
  - The LIBRARY statement has been extended with the AT parameter.
  - A new Library\_Servers statement has been created to enable the automated log on of any library service machines that are defined for the request node in a Shared Catalog environment. The LIBRARY statement is no longer valid for a request node in a Shared Catalog environment.
  - The SYS MEDIA file is no longer supported and has been replaced with the Define\_Media statement.
  - A new Message\_Consoles statement allows you to assign user ID's that will receive messages from Tape Manager. This information is no longer determined by variable settings in the PROFILE EXEC.
  - A new External\_Security statement can be used to set the security options for sites that want to use an External Security Manager to secure Tape Manager resources.
  - A new Define\_Local\_Node statement can be used to define a node in a Shared Catalog environment.
  - A new Define\_Remote\_Node statement can be used to define a remote node in a Shared Catalog environment.
  - A new RMM statement, RMMVolMntScr can be used to allow or restrict volume mounts of scratch tapes.

For more information on the Tape Manager configuration statements, refer to [Chapter 3, “Configuring Tape Manager,”](#) on page 17. For more information on the RMM configuration statements, refer to [Appendix B, “Configuring Tape Manager for RMM catalog,”](#) on page 83.

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# Chapter 1. Introduction to Tape Manager

IBM Tape Manager for z/VM is designed to efficiently manage, monitor, and protect your tape resources. It provides many useful features to help you obtain the most value from your tape resources. This chapter provides an overview of the Tape Manager product.

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## What does Tape Manager do?

Tape Manager provides several commands that allow you to perform many tape management tasks, such as adding tapes to or deleting tapes from system or private pools. With flexible retention control, you can specify an expiration date or a maximum retention period. You can even query important information about all of the tapes in the system.

Operations, such as backup and recovery, are facilitated by Tape Manager through dynamic creation and deletion of private tape pools. This enables the creation of a collection of tapes that are related to a specific job or function. Tape Manager facilitates tape operations by:

- Providing commands to dynamically create new private pools that can be defined to use scratch tapes from either another private pool or the system pool.
- Supporting dynamic definition of pools using LIKE and LIKEU options. The LIKE option allows a pool to be created with the same attributes of an existing pool. The LIKEU option performs the same operation as LIKE, but also replicates the user permissions of the existing pool.
- Allowing you to easily return all tapes from a failed backup to "scratch" status. Once a pool has been dynamically defined to contain the tapes related to a specific job, the tapes can be returned to "scratch" status by simply deleting the pool.

Tape Manager helps protect tape resources by:

- Verifying internal tape labels and appropriate access authority for tape requests.
- Providing authorizations to pool resources, attributes, and defaults.
- Notifying you when tape resources are in danger of running low or when tape catalog disks are approaching capacity.

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## Benefits of using Tape Manager

Tape Manager provides several benefits to the z/VM administrator:

- Offers comprehensive features that help you to manage tapes and tape resources, including the ability to:
  - Perform tape management tasks, such as adding tapes to or deleting tapes from system or private pools, using simple line commands.
  - Provide flexible retention control using an expiration date or a maximum retention period.
  - Query important information on all tapes in the system.
- Facilitates backup and recovery operations by:
  - Providing commands to dynamically create new private pools that can be defined to use scratch tapes from either another private pool or the system pool.
  - Supporting dynamic definition of pools using LIKE and LIKEU options.
  - Allowing you to easily return all tapes from a failed backup to "scratch" status. Once a pool has been dynamically defined to contain the tapes related to a specific job, the tapes can be returned to "scratch" status by simply deleting the pool.

- Protects tape resources by providing functions to verify internal tape labels and notify personnel when catalog disks are approaching capacity. You can also verify the appropriate access authority for tape requests.

## Tape Manager Implementation Options

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When implementing Tape Manager, you have several options for maintaining volume and control information in Dedicated or Shared catalogs and also in an RMM catalog. Security features are also available.

### Catalog Options

Tape Manager offers several alternatives for the tape catalog information. Tape Manager catalog and RMM catalog options are described below.

#### Tape Manager catalog

The volume and control information is maintained on CMS minidisks or in SFS directories owned by Tape Manager. This is referred to as "Tape Manager catalog" operations and it provides two additional alternatives: Dedicated Catalogs and Shared Catalogs.

##### Dedicated Catalog

Each z/VM image running Tape Manager has a dedicated tape catalog. This is the typical implementation if Tape Manager is running on a single system and it can be an option for multiple systems. When multiple systems are installed with a Dedicated Catalog, each system typically has a dedicated range of volume serial numbers.

##### Shared Catalog

Multiple z/VM images run Tape Manager with a shared tape catalog. This implementation can be selected even if Tape Manager is initially installed on only one system, where it can provide tape service for a second level z/VM instance, for example.

- Each Tape Manager instance in a Shared Catalog implementation must have Tape Manager installed.
- Each Tape Manager instance that shares a catalog is referred to as a Tape Manager *node*.
- One, and only one, of the nodes will be the *catalog node* and that instance will own the tape catalog.
- Any other Tape Manager instance sharing the catalog will be a *request node*.

A Shared Catalog implementation requires a catalog node to be defined in the configuration file for each request node and catalog node sharing the catalog. Request nodes can be defined to the catalog node in the configuration file or added dynamically after Tape Manager has been implemented for a request node. Communications between the catalog and the request nodes is implemented using TCP/IP socket communications.

For a Shared Catalog environment, the minimum configuration for each Tape Manager request node is a local TMM (running as a request node) and DMM. In addition, an LMM machine must be defined on a request node whenever an IBM or STK automated tape library or virtual tape server is to be used on that node.

#### RMM catalog

Another alternative for maintaining volume and control information is referred to as "RMM catalog". The volume and control information is maintained in a DFSMS/MVS Removable Media Manager (RMM) catalog on a z/OS® system.

Tape Manager supplies an additional component, the z/OS RMM Started Task agent (the "RMM agent"), that is used when running with an RMM catalog. This RMM agent is installed on z/OS from files on the z/VM installation ID using JCL that is also supplied there.

The RMM agent uses the standard RMM Application Programming Interface (API) to pass requests and information to RMM. Authorization and catalog information flows between Tape Manager and RMM. For

example, when a user on the z/VM system requests a tape mount, an authorization request is sent to the RMM agent. If RMM approves the request, information about the volume (for example, the RMM media name) is sent back to Tape Manager where the request continues to completion.

For more information, refer to [“Alternative processing using an RMM catalog”](#) on page 6.

## Security options

Tape Manager provides native security features for both Tape Manager catalog and RMM catalog operations.

- In Tape Manager catalogs, the security features are extensive and control access to volumes, administrator and operations ID's, the ability to use non-standard labels, and so on.
- In RMM catalogs, similar controls are available, but the volume access and access to RMM information is controlled by the security system on the z/OS image.

Tape Manager also supports the use of an External Security Manager (ESM), such as the RACF® Security Server feature for z/VM (RACF), in both Tape Manager catalog and RMM catalog operations. A detailed explanation of the controls that are provided is available in [“Using an External Security Manager to control Tape Manager resources”](#) on page 71 of this manual.

## IBM Automated Tape Libraries

---

The DFSMS/VM Removable Media Services (RMS) component of DFSMS/VM is required in order for Tape Manager to support IBM automated tape libraries (ATL) and IBM virtual tape servers (VTS). RMS is not needed for other vendors' tape libraries and tape servers. The Tape Manager Library Management Machine (LMM) interacts with RMS by using the RMS Callable Service Library (CSL) routines.

The LMM identifies a particular automated tape library using the library name specified in a LIBRARY statement in the Tape Manager configuration file (SYS CONFIG). *The name of a library in the LIBRARY statement must match the name of the library as it is defined to RMS.*

Since Tape Manager relies strictly on the RMS library name when interacting with RMS, it is not necessary for Tape Manager to distinguish between a traditional ATL, such as a 3494, and a VTS. Therefore, in this manual, the use of an automated tape library (or ATL) refers to either a real or virtual automated tape library. An automated tape library is supported by Tape Manager only if it is supported by RMS.

For *Tape Manager catalogs* (non-RMM), Tape Manager allows the specification of Scratch Category and Volume Category codes when a media type is defined. When a volume becomes eligible to be used as a scratch volume, for example, during expiration processing, Tape Manager will set the category to the Scratch Category value. When a volume transitions from a scratch status to a non-scratch status, Tape Manager will set the category to the Volume Category value.

Note that for scratch mount requests, Tape Manager chooses a volume based on the volume status information in Tape Manager. Scratch Category codes are **not** used to select a volume to fulfill a scratch mount request. All Tape Manager mount requests (whether for a scratch tape or a volume specific tape) result in a volume specific mount request to the library.

For *RMM catalogs*, ATL scratch mounts depend on the category codes associated with the library specified in the Tape Manager configuration file. When a device pool is associated with an ATL, the category codes can be specified for the *device pool* using the DEVPOOLCAT configuration statement. The categories can also be specified when defining a named *scratch pool* using the optional RMMSRPOOL configuration statement. Refer to [Appendix B, “Configuring Tape Manager for RMM catalog,”](#) on page 83 for additional information on these configuration statements.

## StorageTek Automated Tape Libraries

---

To support StorageTek (STK) automated tape libraries (ATL) and virtual tape libraries (VTL), one of the following is required:

- STK VM Host Support Component

- STK VM Client

The Tape Manager Library Management Machine (LMM) interacts with the appropriate STK service machine utilizing the STK Tape Management Interface (TMI) over an IUCV connection.

The scope of the LMM machine is determined by the libraries that are supported by the STK service machine to which the IUCV connection is made. The library name specified for the LMM in a LIBRARY configuration statement does not need to correspond to any name specified in the STK configuration, but it must match the library name specified for the associated STK volumes in the Tape Manager catalog.

STK libraries are only supported with a Tape Manager tape catalog (non-RMM catalog) and requests to Tape Manager for a scratch volume will always be issued as a volume-specific request to the STK automated system based solely on the volume status information in the Tape Manager catalog.

## EMC/Dell and Luminex Virtual Tape Libraries

---

Tape Manager directly supports some EMC/Dell and Luminex Virtual Tape Library (VTL) devices, through the use of mount display messages, without the involvement of the Tape Manager LMM or other automated tape-related service machines (such as DFSMS Removable Media Services). The devices are defined to Tape Manager as manual devices. The VTL is designed to automatically mount volumes when manual mount display messages are in a specific format.

Tape Manager supports the Luminex CGX family of VTL devices, including CGX, MVTi, and MVTe.

Refer to the following sections for more information:

- [“Support for non-IBM Virtual Tape Library \(VTL\) mounts” on page 34](#)
- [Appendix G, “Virtual Tape Library \(VTL\) mounts for non-IBM libraries,” on page 109](#)

## Scratch volumes in Tape Manager catalog

---

For a Tape Manager catalog, Tape Manager considers a volume to be eligible as a scratch volume when all of the following are true:

- The volume is in the Tape Manager catalog.
- The use status of the volume is FREE.
- The user hold status of the volume is NOHOLD.
- The system hold status of the volume is NOHOLD.
- The volume does not have a Data Security Erase (DSE) action pending.
- The volume is an internal (as opposed to an external or foreign) volume.
- The volume is not enqueued by an outstanding Tape Manager request.

For a specific scratch mount request, a volume must also be available that corresponds to the media type of the target private pool. Scratch mounts are always by volume serial number for ATL mounts. Scratch mounts for manual devices are also by volume serial number unless the site elects to use the generic scratch feature.

When using the generic scratch facility, a volume mounted on a manual device will be rejected if it does not satisfy all of the requirements for a scratch volume and a generic scratch mount message will be reissued. Refer to the GenScratch configuration statement in [Chapter 3, “Configuring Tape Manager,” on page 17](#) for additional information.

An otherwise eligible scratch volume may not be usable for some mount requests when there are conflicting circumstances that prevent the volume from being used. Some examples are described below:

- Manual or ATL scratch mounts can be prohibited based on the LibTypPri and LibTypSec configuration settings. For example, if neither the LibTypPri nor the LibTypSec statement specifies an "M" as a parameter, the manual scratch mounts are not permitted. Likewise, if neither the LibTypPri nor the LibTypSec statement specifies an "A" as a parameter, the ATL scratch mounts are not permitted.

**Note:** For more information on the LibTypPri and LibTypSec statements, refer to “LibTypPri” on page 42 and to “LibTypSec” on page 43.

- A volume might not be selected for a scratch mount if the mount type of the volume does not agree with the DEVPOOL or RDEV parameter specified in the TAPEMNT command. For example, a manual mount scratch volume cannot be used to satisfy a scratch mount when an ATL device pool (or RDEV) has been specified. Likewise, an ATL scratch volume cannot be used to satisfy a scratch mount when a manual mount device pool (or RDEV) has been specified.

**Note:** For more information on the TAPEMNT command, refer to Chapter 2, "Syntax for tape commands," in the *IBM Tape Manager for z/VM User's Guide and Reference (SC18-9349)*.

If Tape Manager indicates there are no volumes to satisfy a scratch request, but there appears to be an eligible scratch volume, determine the mount type of the volume and make sure there are no conflicts with the mount request or the configuration settings.

## Tape drive sharing considerations for Tape Manager

---

Tape Manager cannot dynamically share tape drives with any other guest on the same VM image that requires the drive to be attached to the other guest. This includes a z/OS guest running IBM Automated Tape Allocation Manager for z/OS (ATAM). You cannot use "multi-user attach" to circumvent this restriction.

### When drive sharing is supported

Tape Manager can dynamically share tape drives with:

- One or more other copies of Tape Manager running under the same VM image
- One or more other copies of Tape Manager running under different VM images. The VM images can be either in other LPARs on the same complex or on other complexes.
- One or more z/OS guests running ATAM under one or more different VM images. The VM images can be either in other LPARS on the same complex or on other complexes.
- One or more z/OS images which are not VM guests running ATAM in LPARs. The z/OS images can be either on the same complex or on other complexes.
- Any combination of the above

### When drive sharing is not supported

Tape Manager cannot share tape drives with any guest on the same VM image that requires the tape drive to be attached to the other guest, including a z/OS guest running ATAM. You cannot use "multiuser attach" to circumvent this restriction.

When a z/OS image under a VM image is running ATAM, the z/OS image cannot share tape drives with Tape Manager running on the same VM image.

## Accessing Help

---

Access Tape Manager help in the following ways:

- To access the help menu, type:

```
HELP AEUM
```

- To access help for a specific command, type "HELP AEUM" followed by the command name. For example:

```
HELP AEUM TAPEQRY
```

## Prerequisites

---

Tape Manager runs on all supported versions of z/VM and is compatible with VM/ESA. Tape Manager supports all VM-supported tape media types and their hardware, including 3590's that utilize robotics. In addition, you need the items listed below.

- One of the following:
  - IBM Library for REXX on zSeries V1.4 (5695-014)
  - IBM Alternate Library for REXX on zSeries. IBM recommends that you acquire the latest available version. It is available as a free download from: <http://www.ibm.com/software/awdtools/rexx/rexxzseries/index.html>
- DFSMS Removable Media Services (RMS) for support of an IBM Automated Tape Library (ATL) or Virtual Tape Server (VTS)

If you will be using Tape Manager with a StorageTek Automated Tape library, you need the items listed below.

- One of the following:
  - StorageTek VM Host Software Component Version 6.2, or
  - StorageTek VM Client Version 7.1 (with a StorageTek TapePlex server executing on MVS)
- PTF UK71747 for Tape Manager

In either instance, Tape Manager relies on the StorageTek provided ACSRQ macro for the IUCV interface to the appropriate StorageTek VM service machine.

## Alternative processing using an RMM catalog

---

Tape Manager for z/VM provides support for customers that may wish to use the z/OS RMM catalog to manage tapes that are used on VM. The RMM interface uses a TCP/IP socket connection to communicate with the RMM agent code running on the z/OS system. The z/OS RMM agent is compatible with RACF tape management constructs and provides an authorization exit as well.

**Note:** A limited set of the Tape Manager commands are available for the RMM catalog and no volume catalog information is kept on the z/VM system.

Additional information regarding using RMM with Tape Manager can be found in the following appendices and in the "Syntax for RMM commands" chapter in the *IBM Tape Manager for z/VM User's Guide and Reference*:

- [Appendix C, "Installing the z/OS RMM Agent Started Task," on page 99](#)
- [Appendix A, "Using a z/OS RMM Tape Catalog," on page 79](#)

## Scratch volumes in RMM catalog

When a volume is mounted for a scratch request for an RMM catalog, Tape Manager passes the volume serial number to the Tape Manager RMM started task. There are three types of volume related responses than can be passed back to Tape Manager from the agent:

- *The RMM catalog indicates the volume is a scratch volume.* In this case the volume will be used to satisfy the scratch request.
- *The RMM catalog indicates the volume is not a scratch.* In this case the volume will not be used and another scratch mount message will be displayed (for a manual request) or sent to the LMM (for an ATL request).
- *The volume is not found in the RMM catalog.* In this case the volume will not be used and another scratch mount message will be displayed (for a manual request) or sent to the LMM (for an ATL request).



The RMM catalog is always treated as authoritative. For example, even when an ATL volume has been mounted based on a scratch category, the volume will not be used unless the RMM catalog agrees that the volume is a scratch volume.

## Use of the RMM command interface

The RMM command interface allows RMM commands to be issued from VM and for the output of the command to be returned to the requestor on the VM system. The output can be returned either as message output (queued or displayed) or in a reader file. The message output is equivalent to the output that would result from issuing the RMM command in the TSO environment.

## Supported commands for Tape Manager and RMM catalogs

The table below shows the commands that are supported for Tape Manager catalogs and RMM catalogs. The commands may have different syntax based on which type of catalog is being used.

| <b>Command</b> | <b>Tape Manager catalog</b> | <b>RMM catalog</b> |
|----------------|-----------------------------|--------------------|
| CMDAUTH        | Supported                   | Supported          |
| CMDEXIT        | Supported                   | Supported          |
| CNFGSET        | Supported                   | Supported          |
| NODECMD        | Supported                   |                    |
| POOLACC        | Supported                   |                    |
| POOLDEF        | Supported                   |                    |
| POOLDEL        | Supported                   |                    |
| POOLMOD        | Supported                   |                    |
| POOLQRY        | Supported                   |                    |
| POOLXFR        | Supported                   |                    |
| QUIT/EXIT/STOP | Supported                   |                    |
| RMM            |                             | Supported          |
| STATUS         | Supported                   |                    |
| TAPEADD        | Supported                   |                    |
| TAPEDEL        | Supported                   |                    |
| TAPEDEV        | Supported                   |                    |
| TAPEDSN        | Supported                   |                    |
| TAPEEOV        | Supported                   | Supported          |
| TAPELBL        | Supported                   |                    |
| TAPELIB        | Supported                   | Supported          |
| TAPEMNT        | Supported                   | Supported          |
| TAPEMOD        | Supported                   |                    |
| TAPEMOV        | Supported                   |                    |
| TAPEQRY        | Supported                   |                    |

*Table 1. List of supported commands for Tape Manager and RMM catalogs (continued)*

| <b>Command</b> | <b>Tape Manager catalog</b> | <b>RMM catalog</b> |
|----------------|-----------------------------|--------------------|
| TAPEREQ        | Supported                   | Supported          |

---

## Chapter 2. Installing Tape Manager

The installation instructions are contained in the *IBM Tape Manager for z/VM Program Directory* (GI10-8660). Follow the directions in the Program Directory up to the *Post-Installation Instructions* section, then return to this manual to complete the installation.

**IMPORTANT:** It is strongly recommended that any available maintenance be applied before proceeding with the product customization. The maintenance may affect files that are used in the customization process and address problems that have been corrected since the product was initially released.

This chapter provides post-installation instructions. The following steps must be performed to complete the installation of Tape Manager:

1. Tailor the TxTMM ID.
2. Tailor the TxDMM ID.
3. Tailor the TxLM1 ID.
4. Tailor the TxCMM ID (optional).

The option to use the DFSMS/MVS Removable Media Manager (RMM) catalog is supported. The additional steps below are required when using an RMM catalog:

1. Tailor the TMRMM ID. The TMRMM ID is required only when running with the DFSMS/MVS RMM catalog.
2. Install the Tape Manager z/OS agent from the host files supplied on the 2C2 disk or, if using SFS, in the SAMPLE directory of the installation ID.

For information on how to use StorageTek (STK) automated tape libraries with IBM Tape Manager for z/VM, refer to Appendix F, “Using StorageTek automated tape libraries,” on page 105. This appendix contains information on defining STK automated tape libraries and performing various Library Manager Machine (LMM) processes.

---

### Customizing TAPCMD DEFAULTS

A TAPCMD DEFAULTS file is required on each Tape Manager system. The TAPCMD DEFAULTS file contains site-specific information that the TAPCMD module requires for communication with the TMM (tape management machine), such as the name of the TMM and the defaults for synchronous or asynchronous processing.

You can make the TAPCMD DEFAULTS file available to end-users on a CMS minidisk or SFS directory. Co-location with the TAPCMD module is recommended. The MAINT 19E ("system Y-disk") minidisk is recommended.

A sample TAPCMD DEFAULTS file is provided on the TMM ID 410 disk (or in SFS directory VMSYS:5697J08C.TAPEMGR.PRODUSER). It must be customized for your installation, which is described below.

1. On each Tape Manager system, update the file on the TxTMM 410 disk to reflect the following items:
  - The correct value for TMMID, such as TMTMM, TCTMM, or TRTMM.
  - Your desired setting for the Tape Manager commands to be handled synchronously or asynchronously:
    - **NOWAIT** will process the Tape Manager commands issued through TAPCMD asynchronously.
    - **WAIT** *nnn* will process the Tape Manager commands issued through TAPCMD synchronously with a maximum wait time of *nnn* seconds.
2. On each Tape Manager system, copy TAPCMD DEFAULTS to the appropriate TxTMM 198 disk:

- **Dedicated Catalog Environment:** Copy the TAPCMD DEFAULTS file from the TMTMM 410 disk to the TMTMM 198 disk.
  - **Shared Catalog Environment:**
    - a. **Catalog Node:** Copy the TAPCMD DEFAULTS file from the TCTMM 410 disk to the TCTMM 198 disk.
    - b. **Remote Node(s):** Copy the TAPCMD DEFAULTS file from the TRTMM 410 disk to each TRTMM 198 disk.
3. Optionally, copy the updated TAPCMD DEFAULTS file from the TxTMM ID 198 disk to the MAINT 19E disk on each system where an instance of Tape Manager is defined, and rebuild the CMS saved system. Follow the steps below on each member of an SSI cluster:
- a. Logon to MAINTvrm on each system where an instance of Tape Manager is installed and where you plan to copy the updated TAPCMD DEFAULTS file to the MAINT 19E disk. Follow the steps below:

```
LINK tmmid 198 198 RR
ACCESS 198 E
LINK MAINTvrm 19E 19E MR
ACCESS 19E F
```

- b. Copy the updated TAPCMD DEFAULTS file to the MAINT 19E disk.

```
VMFCOPY TAPCMD DEFAULTS E = = F2 (PRODID 5697J08C%TAPEMGR OLDDATE REPLACE
```

If you've installed Tape Manager in SFS, change the PRODID from 5697J08C%TAPEMGR to 5697J08C%TAPEMGRSFS.

- c. Rebuild the CMS saved system, which will return the MAINT 19E disk to "shared" status.

```
PUT2PROD SAVECMS
```

## Tailor the Tape Management Machine (TxTMM)

The Tape Management Machine (TMM) provides the tape catalog management services and interfaces to the other service machines. It also provides the responses to user requests. This virtual machine owns tape volume and tape pool database information (in a Tape Manager catalog) and the Tape Manager configuration settings.

### Defaults and space requirements for the TMM

The default user ID for the TMM depends on your configuration. For a Shared Catalog environment, the default user ID is:

- TCTMM for the catalog node
- TRTMM for all request nodes

For a Dedicated Catalog or an RMM Catalog environment, the default user ID is TMTMM.

The TMM requires CP privilege classes B and G.

The amount of machine virtual storage required by the TMM depends on the system inventory. Generally, the default virtual storage size of 60M should be sufficient to manage 40,000 tape volumes. For larger inventories, a general guideline is to add 6M of storage for every 10,000 additional tapes. If the site plans to use data set names, allow an additional 6M of storage for every 10,000 data sets.

### Use of TMM with a Tape Manager catalog

For a Tape Manager catalog, certain commands support providing input in a file (via the FILE parameter) residing on one of the requestor's minidisks, which is usually the 191 minidisk.

**Note:** The VADDR option may be used to provide an alternate address, rather than using the 191 minidisk.

Commands that allow the FILE parameter include:

- POOLACC
- TAPEADD
- TAPEDEL
- TAPEMOD
- TAPEMOV
- TAPEQRY

When one of these commands is used, the TMM will attempt to link the requestor's specified minidisk as "read only", and will need authority to perform the link.

The method for providing this authority will vary depending upon your site's security policies, whether you use an External Security Manager, and how the External Security Manager is configured. You may use any of the following:

- general authorities that would permit the TMM to link to most or all minidisks, such as the LNKNOPAS directory option
- the RACF OPERATIONS attribute
- specific permissions that permit access to particular users and minidisks.

By default the directory entry for TxTMM contains the OPTION LNKNOPAS statement.

## Use of TMM with an RMM catalog

If this is an RMM catalog installation and LNKNOPAS was specified as a directory option, then that option can be deleted since the TMM does not link to user minidisks in an RMM catalog. With an RMM catalog, the 200 disk is only required if authorization checking for the tape mount NL (non-labeled volume), BLP (bypass label processing) and EJECT (ATL eject) operands. In most cases, a single cylinder should suffice for an RMM catalog operation. The TxTMM 210 disk should not be defined for an RMM catalog.

## Customizing the TxTMM ID

Follow the steps below to customize the TMM ID in a Dedicated Catalog environment. For a Shared Catalog environment, perform the steps for the TCTMM ID and each TRTMM ID.

1. Ensure that the TMM machine has the authority to issue the CP MSGNOH command. In a default z/VM environment, without an External Security Manager, this would require privilege class B.
2. Ensure that the TMM machine has the authority to link to users' minidisks if you are not using an RMM catalog and if you plan to use the FILE option when executing Tape Manager commands.

For more information on the FILE option, refer to the *IBM Tape Manager for z/VM User's Guide* (publication SC18-9349).

For more information on how to assign TxTMM the necessary authority, refer to [“Use of TMM with a Tape Manager catalog” on page 10.](#)

3. Log on to the TxTMM ID.
4. Link and access the 5697J08C sample disk (2C2) or, if using SFS, access the SAMPLE directory.
5. Copy the PROFTMM SAMPEXEC file from the sample disk to the PROFILE EXEC file on the TxTMM A-disk.
6. Refer to [“Modify the TxTMM PROFILE EXEC” on page 12](#) for information on how to modify the PROFILE EXEC.
7. Log off of the TxTMM ID.
8. Ensure that the value of the TMMID in the TAPCMD DEFAULTS file agrees with the name of the TxTMM ID. Refer to [“Customizing TAPCMD DEFAULTS” on page 9](#) for details.

## Modify the TxTMM PROFILE EXEC

This section refers to changes required in the PROFILE EXEC on the TMTMM ID in a Dedicated Catalog environment. For a Shared Catalog environment, perform the steps for the TCTMM ID and each TRTMM ID.

If the product was installed on minidisks, the PROFILE EXEC should contain the following statement:

```
'ACCESS 400 B'
```

If the product was installed with the Shared File System, the statement above should be replaced with:

```
'ACCESS 5697J08C.TAPEMGR.PRODSRVR B'
```

If the PRODSRVR installation directory name was different than that above, change the statement accordingly.

If this is a Shared Catalog or an RMM catalog installation, consider whether a host name will be used for TCP/IP connectivity. If so, the appropriate TCP/IP disk may need to be linked, in either the PROFILE EXEC or the TxTMM directory entry, to provide access to the TCPIP DATA file.

A sample link statement is provided as a comment in the sample PROFILE EXEC. The virtual address of the disk must match the address specified on the DISK configuration statement for TCPIP. Related information can be found in the Define\_Local\_Node, Define\_Remote\_Node, Disk, and RMM configuration statements.

## Tailor the Device Management Machine

The Device Management Machine (DMM) controls the physical tape devices. The machine verifies tape labels before a device is given to a mount requestor and again when the device is returned.

The default user ID for the DMM depends upon your configuration. For a Shared Catalog environment, the default user ID is:

- TCDMM for the catalog node
- TRDMM for all request nodes

For a Dedicated Catalog or an RMM Catalog environment, the default user ID is TMDMM.

## Service machine considerations for TxDMM

The DMM uses CP GIVE with RETURN so that a requestor only needs to detach the drive (with CP DETACH) when the mount is complete. It is best if the requesting ID rewinds the volume before detaching the drive to reduce the demands on the DMM.

Normally the DMM is auto-logged by the TMM at start up and the DMM parameters are passed at that time. The default parameters provided in PROFILE EXEC will be used if the DMM is logged-on or IPL'd by a means that does not pass parameters. The DMM ID requires CP privilege classes "B" and "G".

## Customizing the TxDMM ID

Follow these steps to customize the TMDMM ID in a Dedicated Catalog environment. For a Shared Catalog environment, perform the steps for the TCDMM ID and each TRDMM ID.

1. Ensure that the DMM machine has the authority to issue the CP ATT and CP DET commands. In a default z/VM environment, without an External Security Manager (ESM), this would require privilege class B. If the CP ATTACH command is protected by an ESM, ensure that the TxDMM ID has the authorizations required to attach and detach any tape device that Tape Manager is expected to manage.
2. Log on to the TxDMM ID.
3. Link and access the 5697J08C sample disk (2C2) or, if using SFS, access the SAMPLE directory.

4. Copy the PROFDMM SAMPEXEC file from the sample disk to the PROFILE EXEC file on the TxDMM A-disk.
5. If the user ID of the Tape Manager tape management machine is not TMTMM, modify the PROFILE EXEC so that the Df1tTMM variable corresponds to the user ID of the TxTMM.
6. Log off the TxDMM ID.

## Tailor the Library Management Machine

---

The Library Management Machine (LMM) can provide an interface to the DFSMS/VM Removable Media Services (RMS) component of DFSMS/VM for IBM automated tape libraries or to the StorageTek (STK) Tape Management Interface (TMI) for STK automated tape libraries. However, STK libraries are not supported in an RMM catalog installation. A single occurrence of an LMM machine can support either an IBM tape library or a StorageTek library, but not both.

If an IBM automated tape library (ATL), such as an IBM 3494, is to be utilized, the following must be true:

- DFSMS Removable Media Services must have been previously installed and configured.
- An LMM virtual machine must be defined for Tape Manager's ATL services. The default user ID for the LMM depends on your configuration. For a Shared Catalog environment, the default user ID is:
  - TCLM1 for the catalog node
  - TRLM1 for all request nodes

For a Dedicated Catalog or an RMM Catalog environment, the default user ID is TMLM1.

If a StorageTek ATL is to be utilized, following must be true:

- Either the Host Software Component for VM must be installed or the StorageTek VM Client must be installed.
- An LMM virtual machine must be defined for Tape Manager's ATL services. The default user ID for the LMM is TMLM1. For a Shared Catalog environment, IBM recommends changing this default user ID to the following:
  - TCLM1 for the catalog node
  - TRLM1 for all request nodes

Be sure to check the [“Prerequisites”](#) on page 6 for StorageTek requirements .

For information on how to use STK automated tape libraries with Tape Manager, refer to [Appendix F, “Using StorageTek automated tape libraries,”](#) on page 105. This appendix contains information on defining STK automated tape libraries and performing various Library Manager Machine (LMM) processes.

## Service machine considerations for TxLM1 for IBM libraries

This section refers to the LMM ID. In a Dedicated Catalog environment, perform the steps for the TMLM1 ID. For a Shared Catalog environment, perform the steps for the TCLM1 ID and each TRLM1 ID.

If there are multiple RMS servers, an additional LMM (such as TxLM2) is required for each server that Tape Manager needs to utilize. Each LMM requires access to the DFSMS/VM CSL routines. A sample RMS SAMPEXEC is provided that can be modified, if necessary, to provide access to the appropriate disk or directory.

Normally the LMM is auto-logged by the TMM at start up and the LMM parameters are passed at that time. The default parameters provided in PROFILE EXEC will be used if the LMM is logged-on or restarted by an IPL that does not pass parameters.

The TxLM1 ID requires the following:

- CP privilege classes "G" and "B"
- DFSMS/VM RMS authority to perform mounts using the FSMRMMNT CSL routine

- Authority to perform "set volume category" requests using the FSMRMSVC CSL routine (required for RMM catalog operations only).
- Access to the RMS Callable Services Library (CSL). Refer to the RMSACC EXEC discussion below.

## Customizing the TxLM1 ID for an IBM library

Follow the steps below to customize the TMLM1 ID in a Dedicated Catalog environment. For a Shared Catalog environment, perform the steps for the TCLM1 ID and each TRLM1 ID.

1. Log on to the TxLM1 ID.
2. Link and access the 5697J08C sample disk (2C2) or, if using SFS, access the SAMPLE directory.
3. Copy the PROFLMM SAMPEXEC file from the sample disk to the PROFILE EXEC file on the TxLM1 A-disk.
4. If the user ID of the TxTMM is not TMTMM, modify the PROFILE EXEC so that the Dfl1tTMM variable corresponds to the user ID of the TxTMM.
5. If the user ID of the TxDMM is not TMDMM, modify the PROFILE EXEC so that the Dfl1tDMM variable corresponds to the user ID of the TxDMM.
6. Copy the RMSACC SAMPEXEC file from the sample disk to the RMSACC EXEC file on the TMLM1 (or TCLM1, or TRLM1) A-disk. If a link to the DFSMS 1B5 has not been included in the directory entry for the TxLM1 machine, uncomment the section of code in the RMSACC EXEC where the link occurs. If necessary, modify the RMSACC EXEC to provide the required access to the DFSMS/VM CSL routines.
7. Ensure that the TxLM1 machine has the DFSMS/VM RMS authority to perform mounts using the FSMRMMNT CSL routine and, for RMM catalog operations only, the authority to perform "set volume category" requests using the FSMRMSVC CSL routine. Refer to the *IBM z/VM DFSMS/VM Customization manual (SC24-6181)* for more information.
8. Log off the TxLM1 ID.

Repeat these steps if you have any other TxLM $n$  service machines that will need to communicate with additional RMS servers.

## Service machine considerations for TxLM1 for STK libraries

This section refers to the LMM ID. In a Dedicated Catalog environment, perform the steps for the TMLM1 ID. For a Shared Catalog environment, perform the steps for the TCLM1 ID and each TRLM1 ID.

A Tape Manager Library Management Machine (such as TxLM1) is required to support an STK library. If there are multiple STK library servers, an additional LMM (such as TxLM2) is required for each server that Tape Manager needs to utilize. Each TxLM $n$  ID requires the following:

- CP privilege classes "G" and "B"
- Authorization for IUCV connection to the service machine that provides the interface for HSC commands. Typical service machine names are STKACS for the HSC implementation or VMSMC for the StorageTek VM Client implementation.

In addition:

- When using the Host Software Component (HSC) for VM, each TxLM $n$  ID requires authorization for commands (CMDS) in HSC.
- When using the StorageTek VM Client, each TxLM $n$  ID requires authorization for the tape management interface (TMI) in the VM Client.

## Customizing the TxLM1 ID for an STK library

Follow the steps below to customize the TxLM1 ID:

1. Log on to the TxLM1 ID.
2. Link and access the 5697J08C sample disk (2C2) or, if using SFS, access the SAMPLE directory.



3. Copy the PROFSTK SAMPEXEC file from the sample disk to the PROFILE EXEC file on the TxLM1 A-disk.
4. If the user ID of the TxTMM is not TMTMM, modify the PROFILE EXEC so that the Df1tTMM variable corresponds to the user ID of the TxTMM.
5. If the user ID of the TxDMM is not TMDMM, modify the PROFILE EXEC so that the Df1tDMM variable corresponds to the user ID of the TxDMM.
6. Modify the PROFILE EXEC so the Df1tHSC variable corresponds to the STK service machine that processes HSC commands. Typically the name is STKACS when using HSC for VM or VMSMC when using the StorageTek VM Client.
7. Ensure that the TxLM1 machine has the authority for IUCV connections to the HSC service machine specified in the preceding step.
8. Log off the TxLM1 ID.

Repeat these steps if you have any other TxLMn service machines that will be needed to communicate with additional STK servers.

## Tailor the Command Management Machine

---

The Command Management Machine (CMM) provides an alternative to running a local command exit (EUMCMD EXEC) on the TMM. The use of the CMM to run the command exit adds complexity and diminishes overall performance. It is recommended that this service machine be utilized only if either of the following is true:

- A site requires a command exit that might have long running processes that could seriously impact the performance of the TMM if the command exit ran there.
- A site requires a command exit and needs to issue Tape Manager commands from within the command exit.

The default user ID for the CMM is TMCMM. For a Shared Catalog environment, IBM recommends changing this default user ID to the following:

- TCCMM for the catalog node
- TRCMM for all request nodes

## Service machine considerations for TxCMM

A sample exec (EUMCMD SAMPEXEC) is provided on the samples disk. This sample is intended only to show how a command is processed and how to call the SUBCMM EXEC if the exit needs to use a Tape Manager command; it is not a functionally useful exec. If the sample exec is called for a TAPEMNT command with an RDEV parameter, it calls SUBCMM to issue the Tape Manager TAPEDEV command and, once the command completes, processes the TAPEDEV output.

Normally the CMM is auto-logged by the TMM at start up and the CMM parameters are passed at that time. The default parameters provided in PROFILE EXEC will be used if the CMM is logged-on or IPL'd by a means that does not pass parameters. The CMM ID requires CP privilege class "G".

## Customizing the TMCMM ID

Follow these steps to customize the TMCMM ID in a Dedicated Catalog environment. For a Shared Catalog environment, perform the steps for the TCCMM ID and each TRCMM ID.

1. Log on to the TxCMM ID.
2. Link and access the 5697J08C sample disk (2C2) or, if using SFS, access the SAMPLE directory.
3. Copy the PROFCMM SAMPEXEC file from the sample disk to the PROFILE EXEC file on the TxCMM A-disk.
4. If the user ID of the TxTMM is not TMTMM, modify the PROFILE EXEC so that the Df1tTMM variable corresponds to the user ID of the TxTMM.

5. The second parameter of the `DflTMM` variable should correspond to the `SubCmd Secs` value in the `CMDEXIT` configuration statement.
6. Log off the `TxCMM` ID.

## Tailor the RMM Machine (RMM catalog only)

---

The RMM Interface Machine (RMM) is required for RMM catalog installations and is not used otherwise. The RMM machine serves as a gateway between the TMM and z/OS RMM agent started task.

The default user ID for the RMM is `TMRMM`.

### Service machine considerations for TMRMM

The message flow between the TMM and z/OS agent is as follows:

1. From the TMM to the RMM via TCP/IP
2. From the RMM to the TMM via SMSG
3. From the RMM to the z/OS agent via TCP/IP
4. From the z/OS agent to the RMM via TCP/IP

The TMM, the RMM and the z/OS agent all provide host name support. Link and access the appropriate TCP/IP disk, to provide access to the `TCPIP DATA` file, if host name support is to be used. The sample `RMM PROFILE EXEC` contains sample statements to link and access a TCP/IP disk.

Normally the RMM is auto-logged by the TMM at start up and the RMM parameters are passed at that time. The default parameters provided in `PROFILE EXEC` will be used if the RMM is logged-on or IPL'd by a means that does not pass parameters. The RMM ID requires CP privilege class "G".

### Customizing the TMRMM ID

Follow these steps to customize the `TMRMM` ID:

1. Log on to the `TMRMM` ID.
2. Link and access the `5697J08C` sample disk (2C2) or, if using SFS, access the `SAMPLE` directory.
3. Copy the `PROFRMM SAMPEXEC` file from the sample disk to the `PROFILE EXEC` file on the `TMRMM` A-disk.
4. If the user ID of the `TMTMM` is not `TMTMM`, modify the `PROFILE EXEC` so that the first parameter of the `DflTMM` variable corresponds to the user ID of the `TMTMM`. The last five parameters of the `DflTMM` variable should correspond to the last five parameters on the RMM statement in the Tape Manager configuration file (`SYS CONFIG`).
5. Log off the `TMRMM` ID.

## Install the Tape Manager z/OS Agent (RMM catalog only)

---

Refer to [Appendix A, "Using a z/OS RMM Tape Catalog,"](#) on page 79 and to [Appendix C, "Installing the z/OS RMM Agent Started Task,"](#) on page 99 for information on how to complete the Tape Manager z/OS agent installation.

---

## Chapter 3. Configuring Tape Manager

After you install Tape Manager, you are ready to configure the product so that it contains your customized information. The process for modifying the Tape Manager configuration (SYS CONFIG) file is described in this chapter.

**Note:** This chapter describes a standard Tape Manager configuration file. Communication with the DFSMS/MVS component, Removable Media Manager (RMM), can be requested in the Tape Manager configuration (SYS CONFIG) file. The Tape Manager catalog is not used when running an RMM catalog, and all tape requests are deferred to the Tape Manager z/OS RMM agent for authorization checking and catalog management. For more information on RMM, refer to these appendices:

- [Appendix A, “Using a z/OS RMM Tape Catalog,” on page 79](#)
- [Appendix B, “Configuring Tape Manager for RMM catalog,” on page 83](#)

The rest of this chapter describes the statements that are part of the standard Tape Manager configuration file. Examples are provided so you can see how to use each statement and its parameters.

---

### Creating the Tape Manager configuration file

The Tape Manager configuration file can be managed from any user ID authorized to update the configuration disk (the TxTMM 198, by default). Four sample configuration files are included on the 2C2 disk of the 5697J08C installation user ID. Select a sample file name from the following list and use that name in Step 4 below:

#### **STDMODE CONFSAMP**

Use this file if you are configuring a Dedicated Catalog instance; that is, you are not planning to share the Tape Manager catalog with another instance of Tape Manager (Shared Catalog) and you do not plan to use Tape Manager with a DFSMS/MVS Removable Media Manager on z/OS tape catalog (RMM catalog).

#### **CATNODE CONFSAMP**

Use this file if you plan to share the Tape Manager tape catalog with another instance of Tape Manager (Shared Catalog) and the instance you are configuring will own the tape catalog; that is, the instance will be a *Catalog Node*.

#### **REQNODE CONFSAMP**

Use this file if you plan to share the Tape Manager tape catalog with another instance of Tape Manager (Shared Catalog) and the instance you are configuring will *not* own the catalog; that is, the instance will be a *Request Node*.

#### **RMMMODE CONFSAMP**

Use this file if the tape catalog will be owned by DFSMS/MVS Removable Media Manager on z/OS rather than Tape Manager (RMM catalog).

Use the file name of the CONFSAMP file you choose from this list where *sample\_file\_name* is specified in Step 4 below.

To create an initial configuration file, perform the following steps:

1. Log on to the VM user ID your installation will use to modify the Tape Manager configuration file. Do *not* use TxTMM.
2. Link and access the minidisk that contains the samples:

```
CP LINK 5697J08C 2C2 2C2 RR
ACCESS 2C2 E
```

3. Link and access the minidisk that contains the configuration files:

```
CP LINK TxTMM 198 198 MR
ACCESS 198 F
```

4. Copy the CONFSAMP sample file selected above:

```
COPYFILE sample_file_name CONFSAMP E SYS CONFIG F
```

5. Modify the startup configuration file:

```
XEDIT SYS CONFIG F
```

## Guidelines for modifying the configuration file

When making changes to the SYS CONFIG file, keep the following guidelines in mind:

- The configuration statements can be continued with a comma. This format is demonstrated in the sample configuration file.
- Only one comment is allowed in a configuration record. Comments cannot be embedded or continued. Comments beyond the line continuation character are permitted. The comment left delimiter is the combination of the forward slash and the asterisk (/\*) and the right delimiter is the combination of the asterisk and the forward slash (\*).

The example below shows the device pool statement (DevPool) as well as the use of commas and comments:

```
DevPool,          /* Define a device pool for manual devices    */
  3490L,          /* Device pool name                            */
  600-601        /* Device pool devices                         */
```

## Configure a Shared Catalog environment

An environment where multiple instances of Tape Manager use a single Shared Catalog is known as a *Shared Catalog implementation*. Each Tape Manager instance has a set of Tape Manager service machines defined and each instance that shares a catalog is referred to as a *node*. Every node has a node name that is unique among the instances that share the catalog.

In a Shared Catalog environment, only one of the nodes, known as the *Catalog Node*, actually owns the catalog. The other instances are known as *Request Nodes*.

You must create a SYS CONFIG file on each catalog node and request node. The table below shows which configuration statements are valid for various nodes.

| Configuration statement | Valid for Dedicated Catalog? | Valid for Shared Catalog? |              |
|-------------------------|------------------------------|---------------------------|--------------|
|                         |                              | Catalog node              | Request node |
| Admins                  | Yes                          | Yes                       | Yes          |
| Attach                  | Yes                          | Yes                       | No           |
| CmdExit                 | Yes                          | Yes                       | Yes          |
| Dataset_Name_Required   | Yes                          | Yes                       | No           |
| Define_Local_Node       | No                           | Yes                       | Yes          |
| Define_Media            | Yes                          | Yes                       | No           |
| Define_Remote_Node      | No                           | Yes                       | Yes          |
| DevPool                 | Yes                          | Yes                       | No           |

Table 2. Valid configuration statements (continued)

| Configuration statement | Valid for Dedicated Catalog? | Valid for Shared Catalog? |              |
|-------------------------|------------------------------|---------------------------|--------------|
|                         |                              | Catalog node              | Request node |
| DevWait                 | Yes                          | Yes                       | No           |
| Disk                    | Yes                          | Yes                       | Yes          |
| Display_Text            | Yes                          | Yes                       | No           |
| Dmm                     | Yes                          | Yes                       | Yes          |
| DseID                   | Yes                          | Yes                       | No           |
| ExpStart                | Yes                          | Yes                       | No           |
| External_Security       | Yes                          | Yes                       | Yes          |
| FileOff                 | Yes                          | Yes                       | No           |
| FreeAcc                 | Yes                          | Yes                       | No           |
| FreeAuth                | Yes                          | Yes                       | No           |
| GenScratch              | Yes                          | Yes                       | No           |
| Library                 | Yes                          | Yes                       | No           |
| Library_Servers         | No                           | No                        | Yes          |
| LibTypPri               | Yes                          | Yes                       | No           |
| LibTypSec               | Yes                          | Yes                       | No           |
| Message_Consoles        | Yes                          | Yes                       | Yes          |
| Operations              | Yes                          | Yes                       | No           |
| PoolAuth                | Yes                          | Yes                       | No           |
| PoolDef                 | Yes                          | Yes                       | No           |
| PoolMax                 | Yes                          | Yes                       | No           |
| PoolWarn                | Yes                          | Yes                       | No           |
| RetnDflt                | Yes                          | Yes                       | No           |
| RetnMax                 | Yes                          | Yes                       | No           |
| ScrOwner                | Yes                          | Yes                       | No           |
| ScrName                 | Yes                          | Yes                       | No           |
| TapeLbl                 | Yes                          | Yes                       | No           |
| VolWait                 | Yes                          | Yes                       | No           |

## Node Definition example for a Shared Catalog Implementation

The following example shows sample configuration statements for a Shared Catalog implementation. The example is also designed to facilitate the movement of the Catalog Node from the default system to either of the systems on which a Request Node is defined. With this configuration, you can stop the Tape Manager service machines for the Catalog Node on the default system and bring up the Tape Manager service machines for the Catalog Node on a different system.

In an SSI environment, all of the service machines for the Catalog Node would be defined as single configuration IDs (i.e. USER IDs) and the all of the service machines for the Request Nodes could be

defined as multiple configuration IDs (i.e. IDENTITY IDs). To avoid conflicts when the Catalog Node is moved, the service machine names for the Catalog Node must be different from the service machine names for the Request Nodes. In this example, assume that the Catalog Node service machine names begin with TC (for example, TCTMM) and the Request Node service machine names begin with TR (for example, TRTMM).

**Note:** In a Shared Catalog implementation, the service machine names on the catalog node can be the same as those on the request node. However, if there is a possibility that the catalog node could be moved to the system where the request node is running, the service machine names on the catalog node must be different than those on the request node.

**Note:** The catalog node must have access to the same disks on any system where it will run, whether or not it is running in an SSI environment.

## Definitions for the Catalog Node

To facilitate the movement of the Catalog Node from the default system (SYS10) to either of the systems running the request nodes, some accommodations have been made. By omitting the **TCPIP\_Machine** parameter from the local node definition, the catalog node will use the default TCPIP machine name on the system where it is started.

Likewise, by specifying the **Host\_Addr** parameter as 0.0.0.0, the catalog node will use the default IP address on the system where it is started. Note that the **Host\_Name** parameter has been omitted since it would override the **Host\_Addr** parameter if it was resolved, thereby preventing communications on the systems where the Request Nodes are defined.

For the remote Request Nodes, the **Host\_Addr** values are specified and will be used if for some reason the host name does not resolve on the catalog system. The omission of the **TCPIP\_machine** parameter and the use of 0.0.0.0 to designate a default IP address both require PTF UI29840.

```
Define_Local_Node,
  Node_Name TMCAT,
  Node_Type CATALOG,
  Initial_Status START,
  Challenge_Password abc123,
  Host_Addr 0.0.0.0,
  Host_Port 31000,
  Retry_Minutes 1,
  Retry_Limit 10

Define_Remote_Node,
  Node_Name TMREQ20,
  Node_Type REQUEST,
  Initial_Status START,
  Challenge_Password 123abc,
  Host_Name SYS20,
  Host_Addr 192.160.20.20,
  Host_Port 32000,
  Device_Manager TRDMM,
  Retry_Minutes 1,
  Retry_Limit 10

Define_Remote_Node,
  Node_Name TMREQ30,
  Node_Type REQUEST,
  Initial_Status START,
  Challenge_Password 123abc,
  Host_Name SYS30,
  Host_Addr 192.168.20.30,
  Host_Port 33000,
  Device_Manager TRDMM,
  Retry_Minutes 1,
  Retry_Limit 10
```

Figure 1. System: SYS10 IP Address: 192.168.20.10

## Definitions for Request Nodes

This section includes examples of how to define request nodes. The use of the **Host\_Altaddrs** parameter below allows connections from the Catalog Node to originate from either system SYS20 or SYS30, in addition to the default system SYS10.

In the example below for TMREQ20, the alternate connections will be allowed from any of the following:

- the SYS20 or SYS30 resolved name addresses,
- the default IP address for SYS20 where TMREQ20 runs,
- the hard-coded address for system SYS30 where TMREQ30 runs.

The use of the **Host\_Altaddrs** parameter and the use of 0.0.0.0 to designate a default IP address require PTF UI29840.

```
Define_Local_Node,
Node_Name TMREQ20,
Node_Type REQUEST,
Initial_Status START,
Challenge_Password 123abc,
Tcpip_Machine TCPIP,
Host_Name SYS20,
Host_Addr 0.0.0.0,
Host_Port 32000,
Retry_Minutes 1,
Retry_Limit 10

Define_Remote_Node,
Node_Name TMCAT,
Node_Type CATALOG,
Initial_Status START,
Challenge_Password abc123,
Host_Name SYS10,
Host_Addr 192.168.20.10,
Host_Altaddrs,
  SYS20 SYS30,
  0.0.0.0 192.168.20.30,
Host_Port 31000,
Retry_Minutes 1,
Retry_Limit 10
```

*Figure 2. System: SYS20 IP Address: 192.168.20.20*

In the example below for TMREQ30, the alternate connections will be allowed from any of the following:

- the SYS20 or SYS30 resolved name addresses,
- the default IP address for SYS30 where TMREQ30 runs,
- the hard-coded address for system SYS20 where TMREQ20 runs.

The omission of the **Host\_Altaddrs** parameter and the use of 0.0.0.0 to designate a default IP address both require PTF UI29840.

```

Define_Local_Node,
Node_Name TMREQ30,
Node_Type REQUEST,
Initial_Status START,
Challenge_Password 123ABC,
Tcpip_Machine TCPIP,
Host_Name SYS30,
Host_Addr 0.0.0.0,
Host_Port 33000,
Retry_Minutes 1,
Retry_Limit 10

Define_Remote_Node,
Node_Name TMCAT,
Node_Type CATALOG,
Initial_Status START,
Challenge_Password abc123,
Host_Name SYS10,
Host_Addr 192.168.20.10,
Host_Altaddrs,
SYS20 SYS30,
192.168.20.30 0.0.0.0,
Host_Port 31000,
Retry_Minutes 1,
Retry_Limit 10

```

Figure 3. System: SYS30 IP Address: 192.168.20.30

## Password and Host information

The password and host information for a particular node is the same whether the node is being defined as a local node or a remote node.

- The host information that is specified for the *local* node is used to identify the socket on that node that will be used to listen for connection requests.
- The host information that is specified for a *remote* node is used to identify the socket on the remote node to which connection requests will be made.

## Specifying a Device Manager Machine (DMM)

The `Define_Remote_Node` statements in the catalog node configuration file also identify the names of the device manager service machines for each node. This name must match the value specified for the `Dmm` statement in the configuration file of each remote node. For example, the configuration file for SYS20 must contain this configuration statement:

```
Dmm TRDMM
```

Likewise, the configuration file for SYS30 must specify the following:

```
Dmm TRDMM
```

For more information on this statement, refer to [“Dmm” on page 37](#).

## Specifying a Library Manager Machine (LMM)

In this example, both of the request nodes will be sharing an automated tape library (ATL) with the catalog node. Assume that the following `Library` statement is in the configuration file on the catalog node:

```

Library NWAATL1,          /* Library name                */
        ONLINE,          /* Initial Tape Manager status */
        TCLM1 AT TMCAT,  /* LMM machine for catalog node */
        TRLM1 AT TMREQ20, /* LMM machine for request node */
        TRLM1 AT TMREQ30 /* LMM machine for request node */

```



The configuration file on node SYS20 contains a corresponding `Library_Servers` statement:

```
Library_Servers TRLM1
```

A similar statement is in the configuration file on the SYS30 node:

```
Library_Servers TRLM1
```

For more information on this statement, refer to [“Library\\_Servers” on page 42](#).

Be aware that the `TAPELIB` command can be used on the catalog node to provide library information for a request node dynamically. For example, the `TAPELIB` command to dynamically define the ATL for node SYS30 might look like:

```
TAPELIB CONFIG NWAATL1 SERVER TRLM1 AT SYS30
```

It is not necessary to dynamically define the library server on the request node. In this example, the TCTMM service machine on node SYS30 will attempt to start the TRLM1 service machine on node SYS30 the first time it receives a message from TCTMM on the catalog node for TRLM1 on SYS30. This is the process that might be used to add a library service machine to an active request node where the machine was not already defined.

Remote request nodes can be defined dynamically on the catalog node using the `NODECMD DEF` command. For more information on the `NODECMD` and `TAPELIB` commands, refer to the *IBM Tape Manager for z/VM User's Guide and Reference* (SC18-9349).

## Admins

---

Use the `Admins` statement to define the System Administrator(s). The scope of administrator privileges is discussed following the example below.

Specify the administrator IDs after the `Admins` keyword, being sure to leave at least one space between each ID. In the example, the System Administrators for this system are `ADMINID1` and `ADMINID2`.

Example:

```
Admins ADMINID1 ADMINID2 /*Authorized users */
```

### Scope of a system administrator ID

The scope of a Tape Manager system administrator ID depends on the following:

- when Tape Manager native security is used to control administrative command authority.
- when an External Security Manager (ESM) is used to manage that authority.

The information that follows describes how the authorities vary for a system administrator based on which type of security, native or external, is being used with Tape Manager.

### Definition and Scope of System Administrator IDs with Tape Manager Native Security

An administrator ID can be defined by one of the following methods:

- The `ADMINS` statement in the Tape Manager configuration file.
- The `CMDAUTH` command issued by an existing system administrator.

The scope of the administrative authority in each of the above cases is identical but only system administrator IDs defined in the Tape Manager configuration file will be retained when Tape Manager is restarted. System administrators have the authority to perform a number of functions that are not permitted for the general user:

- Define tape pools to the system and delete them from the system (Tape Manager catalog only).

- Grant access to any private tape pool and remove that access (Tape Manager catalog only).
- Add volumes to the system and delete them from the system (Tape Manager catalog only).
- Request volume-specific mounts of tape volumes that reside in the system pool (Tape Manager catalog only).
- Query and modify the attributes of any private tape pool and volumes owned by that pool (Tape Manager catalog only).
- Issue administrator commands, such as CMDAUTH, STATUS, and QUIT, and modify configuration settings with commands, such as CNFGSET and NODECMD.
- Dedicate tape devices to Tape Manager using the TAPEDEV command.
- Issue SMSG STATUS commands to the DMM and LMM machines.

In general, when the behavior of a command is different for a general user and an administrative user, the difference will be described in the documentation for that command.

For additional information on Tape Manager native security, refer to the CMDAUTH and POOLACC commands in the *IBM Tape Manager for z/VM User's Guide and Reference* (SC18-9349).

## Definition and Scope of System Administrator IDs when an External Security Manager (ESM) Controls Administrative IDs

System administrators are managed by an ESM whenever `Privileged_User_Authority YES` is specified in the `External_Security` configuration statement in the Tape Manager configuration file (`SYS CONFIG`), or when the `CNFGSET ESM` command has been issued with `PRIV YES` specified when ESM checking is active.

**Note:** Only the ESM settings specified in the configuration statement are retained when Tape Manager is restarted.

System administrators have the authority to perform a number of functions that are not permitted for the general user:

- Define tape pools to the system and delete them from the system (Tape Manager catalog only).
- Grant access to any private tape pool and remove that access (Tape Manager catalog only).
- Add volumes to the system and delete them from the system (Tape Manager catalog only).
- Request volume-specific mounts of tape volumes that reside in the system pool (Tape Manager catalog only).
- Query and modify the attributes of any private tape pool and volumes owned by that pool (Tape Manager catalog only).
- Issue administrator commands, such as CMDAUTH, STATUS, and QUIT, and modify configuration settings with commands, such as CNFGSET and NODECMD.

**Note:** The `CMDAUTH` command cannot be used to manage resources that are controlled by the External Security Manager when external security is active for Tape Manager. For example, when external security is controlling Tape Manager administrative IDs, the `CMDAUTH` command cannot be used to define additional administrative IDs.

- Dedicate tape devices to Tape Manager using the `TAPEDEV` command when the command is not restricted by the External Security Manager.

Only user IDs specified in the `ADMINS` configuration statement can issue `SMSG STATUS` commands to the DMM and LMM, and that authority is the only special authority granted by the `ADMINS` configuration statement. That is, a user in the `ADMINS` statement does not have any additional administrative authority unless the ID has also been granted administrator authority within the ESM.

In the event that an instance of Tape Manager that normally relies on an ESM for administrative checking is forced to run without the ESM available, only users in the `ADMINS` configuration statement will have the authority to grant Tape Manager native security permissions. It is for that reason that at least one user ID must be specified in the `ADMINS` configuration statement.

For additional information on how to use external security with Tape Manager, refer to [“Using an External Security Manager to control Tape Manager resources”](#) on page 71.

## ApplID

As of V1.3 of Tape Manager, the ApplID statement is no longer supported. However, like other invalid statements, it will be ignored and a warning message will be written to the log.

In previous releases of Tape Manager, the ApplID statement was used to specify the application identifier for the message repository (EUMUME TEXT) on the TMM machine.

Example:

```
ApplID      EUM
```

## Attach

The Attach statement is optional and is only necessary if a site has a reason to dedicate one or more drives to the Tape Manager system. This statement is used to specify a list of dedicated devices that the Tape Manager Device Management Machine (DMM) will attempt to attach at start up.

Attach is not valid for a request node in a Shared Catalog environment. To attach a device to a request node during Tape Manager start up, use the Attach statement with the AT parameter in the SYS CONFIG file on the catalog node. The format of the statement is:

```
Attach device AT nodename
```

where:

- *device* is a single device, a list of devices, or a range of devices.
- *nodename* is the value of Node\_Name as specified in the SYS CONFIG file for the request node.

For manual mounts, an available dedicated device in the associated device pool will always be used before an attempt is made to dynamically allocate a non-dedicated device from the pool.

**Note:** The specification of ATL devices in the Attach list is not recommended since the automated tape library normally manages the device allocations.

Specify one or more devices and/or a device range after the Attach keyword. You must have at least one space between each device ID.

Dedicated Catalog example:

```
Attach 501-502      /* Dedicate devices 501 and 502 */
```

Shared Catalog example:

```
Attach 501 AT TMCAT /* Dedicate device 501 on the catalog node */
Attach 502 AT TMREQ20 /* Dedicate device 502 on the request node */
Attach 503 AT TMREQ30 /* Dedicate device 503 on the request node */
```

## Manual mounts

If there are no dedicated devices or there is no dedicated device in the appropriate device pool, the list of devices in the associated device pool will be searched for a free device.

## ATL devices

It is strongly recommended that you do not specify automated tape library (ATL) devices in the Attach list. The automated tape library normally manages the device allocations.

## CmdExit

Use the CmdExit statement in the configuration file to control the site command exit processing when a user command exit (EUMCMD) will be used.



**Attention:** If the site does *not* plan to use the Tape Manager command exit feature, the CmdExit statement is not required and should be removed from the Tape Manager configuration file.

The file name of the command exit is EUMCMD EXEC and the exit can be used to alter the format of a command, reject a command, or allow a command to execute without modification.

**Note:** If you choose to omit the CmdExit statement, you can use the CmdExit command to define the command exit dynamically.

If you plan to use a command exit, it is normally recommended for the exit to run on the *TMM* machine. In this case, specify the TMM machine name in the CmdExit statement to run the exit within the TMM. However, if the exit issues any Tape Manager commands as part of the exit processing, the exit must run on the *CMM* machine. In this case, specify the name of the CMM machine on the statement.

Use ENABLE or DISABLE to set the initial status of the exit. If the exit is to run in the TMM machine, any remaining parameters that are specified are ignored.

When the CmdExit statement has DISABLE specified, the statement will be validated and the operands will be used if a CmdExit ENABLE command is issued without any overriding parameters. When a command exit is enabled on a Shared Catalog request node, the command exit will process the requests and forward any accepted commands to be executed remotely to the catalog node. Any command that is accepted on the request node and forwarded to the catalog node will also be subject to any exit processing that is enabled for the catalog node.

If the exit will run on the CMM, the transmit action, the response timeout value, the response timeout action, and sub-command timeout value must be specified. Valid values are listed in the below.

- The transmit action is either RUN or FAIL when a command cannot be transmitted to the CMM machine.
  - RUN. This value indicates that Tape Manager is to continue processing the command requested by the user without performing command exit processing.
  - FAIL. This value indicates Tape Manager should not process the command and an error message is returned to the user.
- The response timeout value is the number of 10 second intervals to wait for a response from the CMM before timing out.
- The response timeout action is either RUN or FAIL (see descriptions above) and is used if the exit process times out.
- The sub-command seconds is the number of seconds that the CMM machine will wait for a Tape Manager command (issued by the exit) to complete, while processing a user request.

Refer to “The Command Exit” on page 77 in this manual and the "CmdExit" command in the *IBM Tape Manager for z/VM User's Guide and Reference* (SC18-9349) for additional information.

The CmdExit statement has several parameters, which are described in the table below.

| Parameter   | Description   |
|-------------|---|
| Init status | Specifies the initial status of the exit as either ENABLE or DISABLE. |

Table 3. Parameters for CmdExit statement (continued)

| Parameter   | Description   |
|-------------|---|
| Exit ID     | <p>The ID of the exit processor is the name of the service machine where the command exit (EUMCMD EXEC) will be executed.</p> <ul style="list-style-type: none"> <li>• If you want the command exit to be executed on the TMM machine, specify TxTMM (the user ID of your TMM machine). The remaining parameters are ignored. This option should only be used if your command exit does not issue any Tape Manager commands.</li> <li>• If the command exit resides on a separate service machine, typically TxCMCMM, the remaining parameters are used for command exit processing. If the use of Tape Manager commands is required in the command exit, the exit must be executed on a service machine other than the TMM.</li> </ul> <p><b>Note:</b> Refer to sample command exit (EUMCMD EXEC_SAMP) provided on the TMCMM 191 disk for the correct method for issuing a Tape Manager command in the exit.</p> |
| Xmit ACTN   | <p>Indicates the desired action if the command cannot be sent to the exit processor. Valid actions are:</p> <ul style="list-style-type: none"> <li>• RUN. This value indicates Tape Manager should continue processing the original request if the command cannot be sent to the CMM machine.</li> <li>• FAIL. This value indicates Tape Manager should reject the original request if the command cannot be sent to the CMM machine.</li> </ul>  |
| Intervals   | <p>Specifies the number of 10-second intervals to wait for a command exit response before timing out.</p>   |
| TO ACTN     | <p>Indicates the desired timeout action if the exit process times out. Valid actions are:</p> <ul style="list-style-type: none"> <li>• RUN. This value indicates Tape Manager should continue processing the original request if a response from the CMM is not received within the timeout period.</li> <li>• FAIL. This value indicates Tape Manager should reject the original request if a response from the CMM is not received within the timeout period.</li> </ul>  |
| SubCMD Secs | <p>The subcommand seconds is the number of seconds that the command exit machine will wait for a subcommand (i.e. a command issued on behalf of a primary user request being processed by the exit).</p>  |

Example:

```

CmdExit,          /* Command Exit Settings          */
ENABLE,          /* Command Exit is enabled        */
TMCMM,           /* Command Exit service machine is TMCMM */
RUN,             /* Run the command if transmit fails */
3,              /* Wait 30 seconds for a response */
RUN,            /* Run the command if no response */
60              /* Command Exit subcommand timeout after 60 sec */

```

## Dataset\_Name\_Required

The Dataset\_Name\_Required statement is optional and controls the ability to mount a volume associated with a data set name, with WRITE access, by specifying only the volume serial number. Dataset\_Name\_Required can have a value of YES or NO. The default is YES.

- YES. When YES is specified, the volumes associated with a data set can only be mounted with WRITE access when the data set name is specified in the tape mount command.

- *NO*. When *NO* is specified and the first (or only) volume of a data set is mounted with *WRITE* access, without a reference to the data set name in the mount request, that occurrence of the data set will be deleted. Any other volumes that are associated with that occurrence will have the "use" status changed from *USED* to *FREE*.

If *NO* is specified and a volume is mounted for *WRITE* access with a data set name that does not match the original data set name, the mount volume will be associated with the new data set name. The original data set will be truncated starting with the mount volume.

For a multi-volume data set, it is possible to issue a *WRITE* mount request for the second or any subsequent data set volume(s), where the request does not specify the data set name. In this case, the list of volumes associated with the data set will be truncated, beginning with the requested volume. The other truncated volumes will have the "use" status changed from *USED* to *FREE*. The data set entry that is retained for the data set will include only those volumes up to, but not including, the referenced volume.

**Note:** The `Dataset_Name_Required` statement is not valid for a request node in a Shared Catalog environment.

Example:

```
Dataset_Name_Required YES      /* Write mount DSN vol requires DSName. */
```

## Define\_Local\_Node

---

Use the `Define_Local_Node` statement to define the Tape Manager local node in a Shared Catalog environment. Keep the following considerations in mind when defining a name for a local node:

- If the local node is a *request* node, a corresponding `Define_Remote_Node` statement with the same node name must be defined in the `SYS CONFIG` file on the catalog node.
- If the local node is a *catalog* node, a corresponding `Define_Remote_Node` statement with the same node name must be defined in the `SYS CONFIG` file on each of the request nodes.

The parameters for the `Define_Local_Node` statement are:

### Node\_Name

Specifies the name of the local node. The name can be the same as the user ID of the TMM machine name or any name composed of up to 12 alpha-numeric characters.

### Node\_Type

Specifies whether this is a catalog node or a request node. If this is the catalog node, the node type will be `CATALOG`; otherwise, the node type will be `REQUEST`.

### Initial\_Status

Specifies `START` if node communications are to be started at start up; otherwise, `STOP` should be specified.

### Challenge\_Password

Specifies an arbitrary value that is used to generate a hash value. A hash value is embedded in each message that passes between nodes to ensure the integrity of the message. The `Challenge_Password` parameter can be a maximum of 64 alpha-numeric characters and cannot contain spaces, commas, or comment delimiters (`/*` or `*/`).

### Tcpip\_Machine

(Optional) Specifies the name of the service machine that will provide the TCP/IP stack. Tape Manager will attempt to determine the name of the machine by using the following CMS command if the parameter is omitted:

```
IDENTIFY (TCPIP
```

If the name cannot be determined from the `IDENTIFY` command, the value defaults to `TCPIP`.

**Host\_Name**

Specifies the host name that will be used for the node. If the host name is resolved, the resolved value will be used rather than the value of the Host\_Addr parameter, if that parameter is also specified. The Host\_Name parameter is optional, but either a Host\_Name or a Host\_Addr (address) value must be specified.

**Host\_Addr**

Specifies the IPV4 address that will be used for the listening socket. If both the host name and host address are specified, the host address will be used only if the host name cannot be resolved. A host address of 0.0.0.0 indicates that the local default IP address will be used.

**Host\_Port**

Specifies the IP port number that will be used for the listening socket on the local node.

**Retry\_Minutes**

Specifies the time, in minutes, between connection retry attempts.

**Retry\_Limit**

Specifies the number of retries to attempt before stopping the connection attempts. A zero (0) can be specified to prevent automatic retry attempts. If a zero is specified or the retry limit is exceeded, the NODECMD command must be used to retry a connection. Once the retry count is exceeded, the remote node state will be "ENABLED" and the status will be "STOPPED". The "ENABLED" state will allow inbound connection requests from a remote node to be accepted.

Example:

```
Define_Local_Node,  
  Node_Name SYS10,  
  Node_Type CATALOG,  
  Initial_Status START,  
  Challenge_Password abc123,  
  Tcpip_Machine TCPIP,  
  Host_Name SYS1,  
  Host_Addr 192.168.20.100,  
  Host_Port 31000,  
  Retry_Minutes 1,  
  Retry_Limit 0
```

## Define\_Media

---

Media types and the corresponding device pool names are defined using the Define\_Media configuration statement in the SYS CONFIG file. These media types and device pool names are essentially labels that are at your discretion. Device pools are used primarily for manually mounted volumes since devices in an automated tape manager (ATL) are typically managed by the library.

Use the Define\_Media statement to define the valid media types. This statement is used to associate a media type with a device pool name or an automated tape library (ATL) name. At least one media type definition must exist before a volume with the media type can be added to the library.

**Note:** The Define\_Media statement is not valid for a request node in a Shared Catalog environment.

Additional information that can be associated with each media type:

**Media Name**

The Media Name is required. It is an arbitrary, one- to six-character, alpha-numeric name for this media type.

**DEVPOOL Media Device Pool**

To specify a device pool name, use the DEVPOOL keyword followed by a device pool name that can be associated with a media type.

For an EMC or Dell virtual tape library (VTL), the DEVPOOL keyword and device pool name are required. The device pool name must match the corresponding DevPool statement for the devices in the EMC or Dell VTL.

For all other devices, the DEVPOOL keyword and device pool name are optional. If specified, this enables the allocation of a manual mount device in the device pool when a volume mount with the associated media type is requested.

### **MODE Media Mode**

To specify an access mode, use the MODE keyword followed by an optional access mode to indicate what types of mounts (read-only or read-write) the device pool is capable of handling. If the media mode is not specified, read-write is the default. Valid values are RO or RW.

### **SCRSEL Media Scratch Option**

Use the SCRSEL keyword to select, for a given Media Name, how Tape Manager determines which volume should be used for a scratch request:

- The SCRSEL RANDOM keyword randomly selects a scratch tape from a pool of eligible scratch volumes. This option is the default and strongly recommended for real volumes.
- The SCRSEL LASTVOL keyword chooses the last volume in a chain of eligible scratch volumes.

Over time, SCRSEL RANDOM tends to even out tape usage across a given pool, which is often desirable for real tapes. It is also suitable for virtual volumes when the SCRSEL LASTVOL explanation does not suggest otherwise.

When Tape Manager is started, volume chains of eligible scratch VOLSERS are ordered in an ascending manner and volumes are added to the end of the chain as they become eligible scratch volumes, typically because of expiration processing. Because SCRSEL LASTVOL always selects the last volume on the chain, it is not recommended for real volumes since it can result in lower-ordered volumes being unused while higher-ordered volumes are circulated. For virtual volumes, however, the circulation of a smaller number of volumes might be desirable to reduce the number of volumes that are ultimately flushed from cache.

### **SCRCAT Scratch Category**

The SCRCAT parameter is intended to be used with either a shared or dedicated Tape Manager catalog. It provides a means to specify a target scratch category for media types associated with an IBM Automated Tape Library when a volume expires or is modified to become a scratch candidate volume. The parameter can be useful for logical volumes when the specification of a Fast-Ready Scratch Category can keep the contents of an expired volume from being recalled into cache. A single parameter must be specified for the parameter and, when SCRCAT is specified, the VOLCAT parameter must also be specified.

Valid values for SCRCAT are:

- NONE is the default. When SCRCAT is NONE, then VOLCAT must be NONE.
- Any four-character hexadecimal value
- SCRATCH
- SCRATCHx, where 'x' is any hexadecimal character

### **EXPHOLD parameter**

The EXPHOLD parameter provides a means to coordinate with a library scratch category that specifies an Expire Hold period. A freed volume, subject to an expiration hold, that would otherwise become an eligible scratch volume will have the Used Flag set to F (free) and the System Hold (SSTAT) XH flag set to H (hold). The volume will be put into a scratch category when it is freed, and the Expire Hold Date will be added to the volume information. Once the hold period has elapsed, the XH flag will be set to N (no hold) by expiration processing, and the volume will become eligible for scratch processing if all other conditions for a scratch volume are met.

Specify an integer value for 'hold days'.

### **VOLCAT Volume Category**

The VOLCAT parameter is intended to be used in conjunction with the SCRCAT parameter. The VOLCAT parameter is only valid when the SCRCAT parameter is also specified. The value specified for VOLCAT will be applied to volumes with the associated media type whenever a volume becomes ineligible to be a scratch candidate volume because of a mount command or a modification of the volume attributes.



Valid values for VOLCAT are:

- NONE is the default. When SCRCAT is NONE, then VOLCAT must be NONE.
- Any four-character hexadecimal value
- Any abbreviation of VOLSPECIFIC of at least 3 characters

### **WARN Media Warn**

To specify a warning value, use the WARN keyword followed by an optional numeric value to indicate when a warning should be issued for available scratch volumes. A check will be made hourly and a warning will be issued if the number of scratch volumes in the system free pool drops below the warning threshold specified by the WARN value.

If no value is assigned, a value of zero (0) is assumed and no warning will be issued. If there are multiple statements for a media type, the largest warn value associated with that media type will be used.

### **Use with ATL media types**

For ATL media types, it is reasonable to supply only the media name and, if desired, a warning threshold. A device pool name is unnecessary for an ATL volume, because the mount request will be sent to the library associated with that volume. However, without an associated device pool, RDEV mount requests for such volumes will be treated as manual mount requests since there is now way to associate the RDEV with the library.

### **Device pools and RO/RW mounts**

If a device pool is only valid for read only (RO) mounts, that device pool will take precedence for read only mount requests. If a media type also has a read-write (RW) device pool defined, a device allocation will be attempted in the read-write device pool if there are no devices available in the read-only device pool.

Example #1:

```
Define_Media CART   DEVPOOL 3490M MODE RW
Define_Media CART   DEVPOOL 3490L MODE RO
Define_Media MCART  DEVPOOL 3590M MODE RW
Define_Media 3490E  WARN 10 DEVPOOL 3490M MODE RW
Define_Media 3590K  WARN 5
```

Example #2:

```
Define_Media 3490E DEVPOOL 3490M MODE RW WARN 10
```

Using the 3490E media examples above, if a mount request is made for a volume that has a media type of 3490E, Tape Manager will attempt to locate a device in the 3490M device pool. If there are no devices available in the device pool, Tape Manager will continue attempts to locate an available device until the time specified by the DevWait configuration statement is exceeded. Refer to the CNFGSET MEDIA command in the *IBM Tape Manager for z/VM User's Guide* for information related to run-time changes to the media information.

Example #3:

```
Define_Media 3590K WARN 5 SCRSEL RANDOM
```

In this example, scratch tapes will be randomly selected from the pool of eligible volumes.

Example #4:

```
Define_Media VTAPE SCRSEL LASTVOL SCRCAT A001 VOLCAT VOL
```

In this example, the Scratch Category (SCRCAT) for the scratch tapes used for virtual tape, LASTVOL, is A001 and the Volume Category (VOLCAT) associated with this SCRCAT is VOL.

## Tape Manager catalog considerations

For a Tape Manager catalog, keep in mind that a private tape pool is associated with a single media type, and a media type can be associated with one or more device pools. For example, the same media type can be associated with an ATL device pool and a manual device pool.

If multiple device pools are defined for a media type, dynamic allocation will be attempted and will correspond to the order of the device pool statements in the SYS CONFIG file. For read only (R/O) mounts, allocations from R/O device pools (if any) will always be attempted ahead of read-write (R/W) device pools.

## Define\_Remote\_Node

---

Use the Define\_Remote\_Node statement to define a Tape Manager remote node in a Shared Catalog environment. The parameters for the statement are:

### Node\_Name

Specifies the name of the remote node. The name must match the name specified in the Define\_Local\_Node statement in the configuration file on the remote node.

### Node\_Type

Specifies whether the remote node is a Catalog node or a Request node.

- If the local node is a catalog node, the remote node type must be REQUEST and multiple request nodes can be configured.
- If the local node is a request node, the remote node type must be CATALOG and only a single remote catalog can be configured.

### Initial\_Status

Specifies START if node communications are to be started at start up; otherwise, STOP should be specified.

### Challenge\_Password

Specifies the challenge password for a remote node. The password must match the password value specified in the Define\_Local\_Node statement in the configuration file on the remote node. The Challenge\_Password parameter can be a maximum of 64 alpha-numeric characters and cannot contain spaces, commas, or comment delimiters (/ \* or \* /).

### Host\_Name

Specifies a host name for the node. If the host name is resolved, the resolved value will be used rather than the value of the Host\_Addr parameter, if that parameter is also specified. The Host\_Name parameter is optional, but either a Host\_Name or a Host\_Addr (address) value must be specified.

### Host\_Addr

Specifies the IP address of the remote node. If both the host name and host address are specified, the host address will be used only if the host name cannot be resolved. If this address, or the address resolved for the Host\_Name value, does not match the address where the remote node is running, a connection to the node might still be established, depending on the value of the Host\_Altaddrs parameter. A host address of 0 . 0 . 0 . 0 indicates that the local default IP address will be used. Normally, the local default is used for the local node, but it will be accepted when specified for a remote node.

### Host\_Port

Specifies the IP port number of the remote node. The port number must match the port number specified in the Define\_Local\_Node statement in the configuration file on the remote node.

### Host\_Altaddrs

Specifies alternate addresses from which the remote node can connect. Possible values are:

#### Host\_AltAddrs NONE

Specifies that connection requests from the remote node must be from the addresses that were specified or resolved from the Host\_Addr and Host\_Name keywords. This is the default behavior when the Host\_AltAddrs keyword is not specified.

**Host\_AltAddrs ANY**

Specifies that connection requests from the remote node can originate from any IPV4 address. A sign-on request from an alternate IP address requires a correct response to the sign-on prompt. If a correct response is received, the local node will attempt to establish a session to the remote node at the alternate connection address. The local node will not attempt to connect to an alternate address unless the remote node first attempts to connect from that address.

**Host\_AltAddrs addrlist**

Specifies a list of host names and/or addresses from which the remote node can connect, in addition to the host name and/or address specified by the Host\_Addr and Host\_Name parameters. Either host names or addresses can be specified in the list.

An address of 0.0.0.0 indicates that the local default IP address will be used. Normally, the local default is used for the local node, but it will be accepted when specified for a remote node. Anything in the list that is not a valid IPV4 address will be treated as a host name that needs to be resolved.

A sign-on request from an alternate address requires a correct response to the sign-on prompt. If a correct response is received, the local node will attempt to establish a session to the remote node at the alternate connection address. The local node will not attempt to connect to an alternate address unless the remote node first attempts to connect from that address.

**Device\_Manager**

Specifies the name of the Device Management Machine (DMM) on the remote request node.

- The parameter is not valid when the remote node is a catalog node.
- The parameter is required when the remote node is a request node.

When specified, the ID must match the ID specified in the DMM statement in the configuration file on the remote node. The Device\_Manager parameter is only valid when the remote node is a request node.

**Retry\_Minutes**

Specifies the time, in minutes, between connection retry attempts for the remote node.

**Retry\_Limit**

Specifies the number of retries to attempt before stopping the retry connection attempts. A zero (0) can be specified to prevent automatic retry attempts. If a zero is specified or the retry limit is exceeded, the NODECMD command must be used to retry a connection. Once the retry count is exceeded, the remote node state will be "ENABLED" and the status will be "STOPPED". The "ENABLED" state will allow inbound connection requests from a remote node to be accepted.

Example:

```
Define_Remote_Node,  
Node_Name SYS20,  
Node_Type REQUEST,  
Initial_Status START,  
Challenge_Password 123abc,  
Host_Name SYS2,  
Host_Addr 192.168.20.200,  
Host_Port 32000,  
Device_Manager TRDMM,  
Retry_Minutes 1,  
Retry_Limit 0
```

## DevPool

---

Use the DevPool statements to specify the name of a device pool and the range of devices that are included in the device pool. The device pool name must be alphanumeric and from one to eight characters in length. Lowercase letters will be translated to uppercase.

There are different considerations for device pools used with manual mount devices and those with ATL devices. These considerations are described later in this section.

**Note:** The DevPool statement is not valid for a request node in a Shared Catalog environment.

## Manual mount devices

Device pools for manual mount devices are used to determine if an appropriate device is available (based on the defined media types) for a particular media type. If a drive from a device list is available, the mount request will be issued for a specific drive.

If none of the drives in the list are available, the device pool will be searched periodically for a free device until the mount times out. Multiple DevPool statements can be entered for the same device pool if multiple lines of device addresses are required.

Example:

```
DevPool,          /* Define a device pool for manual devices */
 3490L,          /* Device pool name */
 600-601         /* Device pool devices */

DevPool,          /* Define a device pool for manual devices */
 3490M,          /* Device pool name */
 500 501         /* Device pool devices */
```

## ATL mounts

Device pools for ATL devices are recommended and are useful when the specification of a device pool name for a scratch mount might be desirable. The device address parameter is also recommended for ATL device pools. If the device address parameter is not specified, any mount request for a volume with an ATL attribute that specifies an RDEV (real device number) will be converted to a manual mount request, even if the real device is managed by an ATL.

For RMM catalogs, the DevPoolCat statement can be used to specify the corresponding scratch categories for an ATL device pool.

In the following example, 3590A is the name of the device pool, ATL indicates this is an ATL device pool, and NWAATL1 is the name of the ATL.

Example:

```
DevPool,          /* Define a device pool for ATL devices */
 3590A,          /* Device pool name */
 ATL,            /* ATL device pool */
 NWAATL1        /* Library name */
 530-531         /* Device pool devices */
```

## Support for non-IBM Virtual Tape Library (VTL) mounts

Tape Manager provides support for some non-IBM VTL systems. Although the devices are in a VTL, Tape Manager treats them as manual devices. The libraries are designed to automatically respond to the display of manual mount messages when those messages are in a specific format.

The format of the display message is controlled by the DISPFMT parameter on the DEVPOOL statement, which can be set to one of the following:

- STD (the default)
- VTL1 (for Luminex devices)
- EMC (for EMC or Dell devices)

With DISPFMT VTL1, Tape Manager provides support for the Luminex CGX family of VTL devices, including CGX, MVTi, and MVTe.

For important additional information, see [Appendix G, “Virtual Tape Library \(VTL\) mounts for non-IBM libraries,” on page 109](#).

EMC or Dell Example:

```
DevPool,          /* Define a device pool for EMC VTL devices */
 EMCVTL,         /* 1 to 6-character device pool name */
```

```
500-507,      /* Device pool devices */
DISPFMT EMC   /* Specify EMC as the device type */
```

Luminex Example:

```
DevPool,      /* Define a device pool for Luminex VTL devices */
LUMVTL,       /* 1 to 6-character device pool name */
500-507,      /* Device pool devices */
DISPFMT VTL1 /* Specify Luminex as the device type */
```

## Use of DevPool with TAPEDEV

The TAPEDEV command provides a facility to manage device pools; however, a device pool change made with the TAPEDEV command is not permanent. The change will be lost when Tape Manager is restarted.

The TAPEDEV command can be used to do any of the following:

- Add or delete device pools.
- Add devices to or delete devices from a device pool.
- Display the devices in a device pool.

The status of devices in a device pool can be displayed using **TAPEDEV QRY**. All of the devices in the pool will be displayed, whether they are online or offline. Status for non-dedicated devices that are not in use by Tape Manager will be shown as UNKNOWN. The status of dedicated devices or devices that are in use by Tape Manager will be shown in the response. For more information on the TAPEDEV command, refer to the *IBM Tape Manager for z/VM User's Guide and Reference (SC18-9349)*.

## DevWait

Use the DevWait statement to specify the maximum amount of time to wait, in minutes, for a volume to be mounted once the volume is available, meaning once the volume is not in use for another request and the mount is requested. Also see “VolWait” on page 47.

Example:

```
DevWait 6      /* The mount timeout value for an available device */
               /* is 6 minutes.                               */
```

## Disk

Use the Disk statement to specify a virtual address or a directory ID to be used by the Tape Manager Machine (TMM). It is recommended that the specified addresses be used if a directory name is not specified. A directory ID may be used, rather than a minidisk (MDISK) virtual address, for DB1, DB2, DB1BKUP, and DB2BKUP. On a request node, only the TCPIP disk is valid.

Delete or comment out the DISK TCPIP statement unless you specified a host name in either the Define\_Local\_Node or Define\_Remote\_Node statements.

The DISK TCPIP statement specifies the virtual address of a CMS disk that may contain files that are required for host name resolution. The TCPIP DATA file on the disk may contain the NSINTERADDR statement that specifies the IP address of the name server(s). The TCPIP DATA is likely to be found on the TCPMAINT 592 disk.

If the DISK TCPIP statement is needed, it is recommended that a link to the disk be placed in the directory entry of the TMM user ID.

Several parameters can be used to specify a virtual address or directory ID. These parameters are described below.

### DB1

Contains the detail information for tapes and tape pools.

## DB2

Contains the tape pool volume files.

## DB1BACKUP

Specifies the Migration Tool backup disk for DB1 that can also be used for real-time backups.

## DB2BACKUP

Specifies the Migration Tool backup disk for DB2 that can also be used for real-time backups.

## TCPIP

Specifies the virtual address of a CMS disk that contains files that might be required for host name resolution. The TCPIP DATA file may contain the NSINTERADDR statement that specifies the IP address of the name server(s). The TCPIP DATA is likely to be found on the TCPMAINT 592 disk. If the TCPIP disk statement is needed, it is recommended that a link to the disk be included in the directory entry of the TMM user ID.

## USER

Specifies the virtual address for TxTMM to use to link to and access a user disk when the FILE parameter is specified on a command, such as TAPEADD.

**Note:** In a Shared Catalog environment:

- The DB1, DB2, DB1BACKUP, and DB2BACKUP statements should be specified only on the catalog node.
- Only the TCPIP and USER disk statements are valid for a request node.

Example:

```
/*      Name  Vaddr or Directory Name      */
/*      ----  -
/* DISK  DB1   0200                          */
/* DISK  DB2   0210                          */
/* DISK  DB1   VMDEVU:VMABCLIB.EUM.TXTMM.200 */
/* DISK  DB2   VMDEVU:VMXYZLIB.EUM.TXTMM.210 */

Disk DB1      0200
Disk DB2      0210
Disk DB1BKUP 1200
Disk DB2BKUP 1210
Disk USER    0C91
Disk TCPIP    0592
```

## Display\_Text

The Display\_Text statement controls the device display once a tape mount request is satisfied and the device is ready to attach to the appropriate ID. A device will be attached either to the ID that requested the tape mount or the ID specified in the ATT parameter of the TAPEMNT command.

The statement can have one or two parameters depending on whether the display is to show a single value or flash alternatively between two values. Either of these two parameters can be composed of the following:

- a symbolic value only
- a literal value only
- a combination of a symbolic value and a literal.

The length of the value(s) displayed will be truncated to eight (8) bytes. Only one symbolic value is permitted in each parameter specified. The parameters can be specified in upper or lower case, but will be treated as upper case parameters regardless.

The table below lists the symbolic values for which a substitution will occur.

| Symbolic Value | Definition                                    |
|----------------|---|
| &vol           | Substitute the VOLSER (for a labeled volume). |

Table 4. Symbolic values (continued)

| Symbolic Value | Definition  |
|----------------|---|
| &volser        | Same as &vol  |
| &user          | Substitute the user ID to which the device is attached. |
| &requestor     | Substitute the user ID that issued the TAPEMNT command. |
| &sysid         | Substitute the z/VM system name.                        |
| &tmmid         | Substitute the TMM ID.                                  |
| &rdev          | Substitute the real device address.                     |
| &vdev          | Substitute the virtual device address.                  |

Example #1:

This example shows the default value if the Display\_Text statement is omitted. This statement causes the display to flash between the VOLSER (plus an arrow) and the attach ID.

```
Display_Text &vol-> &user
```

Example #2:

The statement below causes only the VOLSER to be displayed.

```
Display_Text &vol
```

Example #3:

```
Display_Text ZVM_&sysid &vol
```

The statement in this example causes the display to flash between the system ID prefixed by the literal ZVM\_ and the volume ID. If the system ID in this example was greater than four (4) characters in length, only the first four characters of the ID would be displayed as appended to the ZVM\_ literal:

## Dmm

Use the Dmm statement to indicate the name of the service machine for the device manager, also known as the Device Management Machine (DMM).

Example:

```
Dmm      TMDMM          /* Userid for the Dev. Mgt. Machine */
```

## DseID

Use the DseID statement to specify the ID that will be used to run the Tape Manager Data Security Erase (TMDSE) utility to erase tapes. This utility is optional and is provided for Tape Manager catalog (non-RMM) customers to perform a Data Security Erase (DSE) when the DSE function is indicated. Refer to the *IBM Tape Manager for z/VM User's Guide and Reference* for more information on the TMDSE Utility.

The DseID has the authority to mount and erase any expired tapes that have a DSE action pending. The ID is not required to be an administrative ID, nor is it required to have any specific access privileges to pools that own the volumes for which a DSE action is pending. Specifying an ID in the DseID statement provides the ID all of the authorizations required to perform a data security erase.

Example #1:

```
DseID DSEOPER
```

Example #2:

```
DseID TMDSE
```

## ExpStart

Use the ExpStart statement to specify the start time for daily expiration processing. Specify the time using the format hh:mm:ss, where *hh* is 00 to 23, *mm* is 00 to 59, and *ss* is 0 to 59.

Example:

```
ExpStart 00:05:00 /* Start time for daily processing */
```

## External\_Security

Use the External\_Security statement only if you plan to use an External Security Manager (ESM) to control access to Tape Manager resources.

### Important:

For a detailed description of the ESM profiles that are used to manage the resources that can be controlled with the External\_Security statement, refer to [“Using an External Security Manager to control Tape Manager resources”](#) on page 71.

Refer to the *IBM Tape Manager for z/VM User’s Guide and Reference* (SC18-9349) for more information on the CNFGSET command and for more information on Tape Manager’s native security features in the CMDAUTH and POOLACC commands.

The parameters for this statement are:

### External\_Security\_Manager

Indicate YES if an ESM will be used to control access for Privileged\_User\_Authority, Command\_Authority, Private\_Pool\_Authority or System\_Authority, which are described below; otherwise, specify NO or do not use the External\_Security statement.

If NO is specified, the CNFGSET command can be used to activate ESM checking dynamically once Tape Manager is started. In this case, the subsequent settings in this statement will be used unless those settings are overridden when the CNFGSET command is issued.

### Privileged\_User\_Authority

Specify YES if an ESM will be used to control checking for the system administrator profile and the operations profile.

Specify NO if the Tape Manager native security will be used to control privileged users.

### Command\_Authority

Type YES if an ESM will be used to control the use of Tape Manager commands; otherwise, specify NO. The Tape Manager native security classifies command issuers as either administrative users, operations users or general users, while the use of an ESM can control the use of any Tape Manager command by specific users.

### Private\_Pool\_Authority

Indicate YES if an ESM will be used to control checking for pool administrator authority (using POOLADMIN profile), provide access to tape volumes in a private pool (using POOLVOLS profile), and check authority to use a private tape pool as a free pool for another private pool (using POOLFREE profile).

Select NO if access to private tape pools resources will be controlled with the Tape Manager native security.

**Note:** This setting is ignored on a request node in a Shared Catalog configuration.



## System\_Authority

Choose YES if an ESM will be used to control checking for the system free-pool profile, the system pool-definition profile and the system high-level qualifier profile.

Specify NO to control the resources associated with these profiles using the Tape Manager native security.

**Note:** This setting is ignored on a request node in a Shared Catalog configuration.

## ESM\_Unavailable

This setting controls processing when the ESM is unavailable. Valid values are listed below.

- Use FALLBACK to fall back to the Tape Manager native security.
- Use SUSPEND to accept only the commands from the system administrators or operations users specified in the Tape Manager configuration file. The native Tape Manager security will be in effect for those users.
- Use QUIT to terminate Tape Manager when the ESM is unavailable.

## Extended\_Profile\_Qualifier

The setting determines what, if any, extension will be inserted into the second qualifier position of the standard Tape Manager ESM security profiles when authorization checking is performed.

- Select NONE if you do not want an additional qualifier inserted.
- Choose TMMID if you want the user name of the TMM ID inserted into the second qualifier position.
- Select SYSID if you want the system name inserted into the second qualifier.
- Specify any other valid profile qualifier if you want that qualifier inserted into the second qualifier position.

## Example

```
External_Security,          /* External Security Settings */
External_Security_Manager YES, /* Use External Security Mgr */
Privileged_User_Authority YES, /* Use ESM for admn & oper auth */
Command_Authority YES,     /* Use ESM for command auth */
Private_Pool_Authority YES, /* Use ESM for private pools */
System_Authority YES,      /* Use ESM for system auth */
ESM_Unavailable QUIT,      /* Quit if ESM unavailable */
Extended_Profile_Qualifier NONE /* No extended profile qualifier */
```

## FileOff

Use the FileOff statement to specify the minimum authority (ADMIN, OPERATIONS, or USER) that is required to use the OFFSET parameter in the TAPEMNT command. If the FileOff statement is omitted, the default authorization level is OPERATIONS.

The OFFSET parameter on a TAPEMNT command can be used to position the tape before it is given to the user. For example, if OFFSET 0 is specified in the TAPEMNT command, the tape will be positioned at the beginning of the tape instead of past the volume label (assuming the tape has a volume label). Refer to the TAPEMNT command in the *IBM Tape Manager for z/VM User's Guide and Reference* (SC18-9349) for more information.

Example:

```
FileOff OPERATIONS
```

## FreeAcc

Use the FreeAcc statement to set the default access to the System Free Pool. Specify NONE or ALL.

**Note:** The FreeAcc setting is ignored if external security is active and the System\_Authority setting is YES. Also, FreeAcc is not valid on request nodes.

Other configuration statements, such as FreeAuth, and the POOLACC command may affect the setting you choose for FreeAcc. The use of FreeAcc is described in more detail below.

## Use with FreeAuth

When the FreeAuth statement is set to *Y*, the FreeAcc setting determines the permissions that are required to restrict or allow access to the free pool. You can choose to restrict everyone, then give permission to a few people, or you can give access to everyone, but restrict a few people. Consider the following:

- If the FreeAuth statement is set to *N*, meaning no authorization checking is to be done, the FreeAcc statement is not required and is ignored
- If the FreeAuth statement is set to *Y* and FreeAcc is *NONE*, authority to use the SYS pool is required.
- If the FreeAuth statement is set to *Y* and FreeAcc is *ALL*, the use of the SYS pool is allowed unless the requestor is explicitly prohibited.

## Use with POOLACC

When choosing a setting for FreeAcc, you may want to review the setting for the POOLACC command. Consider the following:

- If you want most users to have access to the system free pool, use FreeAcc *ALL*. Access to the pool can then be restricted for individual users by using the POOLACC SYS FREE command to set the access privilege to *NONE*.
- If you want most users to be restricted from accessing the system free pool, use FreeAcc *NONE*. Access to the pool can then be permitted for individual users by using the POOLACC SYS FREE command to set the access privilege to *TAPE*.

Example:

```
FreeAcc    NONE                /* No private pool use of system free pool */
```

## FreeAuth

---

Use the FreeAuth statement to indicate whether authority checking should be done for access to the system free pool. Possible values are "Y" (perform authority checking) and "N" (do not perform authority checking).

The setting is checked when either a POOLDEF or POOLMOD command has FREE POOL SYS specified. The POOLACC SYS SCRATCH command can be used to grant or restrict access to the system free pool. Refer to [“FreeAcc” on page 39](#) for information on how FreeAcc settings work in conjunction with FreeAuth.

**Note:** The FreeAuth setting is ignored if external security is active and the System\_Authority setting is YES. Also, FreeAuth is not valid on request nodes.

Example:

```
FreeAuth    Y                  /* Auth required for system scratch use */
```

## GenScratch

---

Use the GenScratch statement to control the type of mount message (a VOLSER or SCRATCH) that is issued for scratch requests on manual devices. This statement is optional and defaults to NO.

**Note:** The GenScratch statement is not valid on request nodes.

For an EMC or Dell virtual tape library (VTL), GenScratch must be set to NO.

If the GenScratch statement is not specified (or GenScratch NO is specified), a specific volume will be requested when a mount message is issued to the operator for a scratch mount request on a manual device and the VOLSER will be displayed on the device.

If GenScratch YES is specified, a scratch request can be converted to a generic scratch mount. In this case, the mount message issued to the operator for the request will indicate SCRATCH, rather than a VOLSER, and the display on the manual device will also display SCRATCH. A scratch mount request will be converted to a generic scratch request when the following is true:

- A suitable scratch volume is not pre-mounted on a dedicated device.
- The mount pool has a free pool defined.
- Either of the following is true:
  - The *preferred* mount type is manual and there is a manual tape in the free pool.
  - The *secondary* mount type is manual, there is a manual tape in the free pool, and there are no ATL tapes in the free pool.

A generic mount request can be satisfied by mounting a scratch volume from either the mount pool or the free pool on the designated manual device.

Example:

```
GenScratch YES          /* No VOLSER in manual scratch messages */
```

## Library

---

Use the Library statement to specify an automated tape library (ATL) name, followed by the initial status and the name of the Tape Manager library management machine and, optionally, the ALTLIB keyword parameter.

1. The first positional parameter is the **Library Name**, which can be a maximum of 16 characters.
2. The second positional parameter is the **Initial Status**. The acceptable value for **Initial Status** can be either ONLINE or OFFLINE. Tape Manager will not attempt to use a library that is configured as OFFLINE.
3. The third positional parameter is the **Server Name** which, in a Shared Catalog implementation, can include the AT keyword to specify the node name of the library management machine on a request node. The **Server Name** is the name of the Tape Manager Library Management service machine that processes the mount requests for this library.

Optionally, the ALTLIB keyword parameter can be specified following the **Server Name**. Use the ALTLIB parameter, followed by a library name, to associate an alternate library with the primary library in environments where a logical volume might be accessible from multiple virtual libraries. A separate Library statement must be included in the configuration file for the alternate library. Tape Manager will attempt to initiate tape mount requests to the alternate library only when the following is true:

- The Tape Manager status of the primary library is OFFLINE.
- The status of the alternate library is ONLINE.
- The library name of the volume associated with the mount request is the primary library.

Only one Library statement can be specified for each library. See the TAPELIB command in the *IBM Tape Manager for z/VM User's Guide (SC18-9349)* for information relating to the dynamic definition or modification of an ATL.

For IBM libraries, the same Tape Manager library management machine can be specified on more than one library statement, as long as the RMS machine to which the server connects is configured for the libraries. The library name that is specified in the Library statement must be known to RMS.

For StorageTek (STK) libraries, the library name is an arbitrary logical library name. The name must match the library name specified when volumes in the STK library are added to Tape Manager. The name of an STK service machine must be specified as the **df1tHSC** value in the PROFILE EXEC of the Tape Manager

library management machine. The physical libraries that can be accessed by the library management machine are determined by the libraries that can accept commands from the specified STK service machine. A Tape Manager library management machine must be defined for each STK service machine that communicates with a library that manages volumes defined in the Tape Manager catalog.

This statement is not valid on a request node in a Shared Catalog environment. To mount tapes from an ATL on a request node, specify the request node's LMM user ID in the Library statement in the Tape Manager configuration file on the catalog node.

Dedicated Catalog example:

```
Library,
  NWAATL1,          /* Library name                */
  ONLINE,           /* Initial status               */
  TMLM1            /* Tape Manager library management machine */
```

Shared Catalog example:

```
Library,
  NWAATL1,          /* Library name                */
  ONLINE,           /* Initial Tape Manager status  */
  TCLM1 AT TMCAT,   /* Tape Manager library management machine on CAT node */
  TRLM1 AT TMREQ20 /* Tape Manager library management machine on REQ node */
```

Alternate library example:

```
Library,
  NWAATL1,          /* Library name                */
  ONLINE,           /* Initial status               */
  TMLM1,           /* Service machine name         */
  ALTLIB NWAATL2    /* Alternate library (optional) */
```

## Library\_Servers

For a request node, the Library\_Servers statement specifies the automated tape library (ATL) service machine list. Any library server that is defined on the Library\_Servers statement on a request node must also be specified on the Library statement in the Tape Manager configuration file on the catalog node.

**Note:** The Library\_Servers statement is only valid for a request node in a Shared Catalog environment.

Example:

```
/* Library_Servers LIBSRV1 LIBSRV2                */
Library_Servers TRLM1          /* LMM machine on the request node */
```

## LibTypPri

Use the LibTypPri statement to indicate the preferred mount type for the primary scratch source. For a scratch mount of a particular type (manual or ATL) to occur, the type must be specified in either the LibTypPri or LibTypSec configuration statement. This statement is required.

Possible values are:

- M - Manual
- A - ATL (automated tape library)

If you are using only EMC or Dell virtual type libraries (VTL) or want the EMC or Dell VTL to be the preferred mount location for scratch mounts, specify **M** for LibTypPri.

Example:

```
LibTypPri M /* Primary scratch type is Manual */
```

## LibTypSec

---

Use the LibTypSec statement to indicate the preferred mount type for the secondary scratch source. For a scratch mount of a particular type (manual or ATL) to occur, the type must be specified in either the LibTypPri or LibTypSec configuration statement. The LibTypSec statement is optional.

Possible values are:

- M - Manual
- A - ATL (automated tape library)

If you are using only EMC or Dell virtual type libraries (VTL) or want the EMC or Dell VTL to be the secondary mount location for scratch mounts, specify **M** for LibTypSec.

Example:

```
LibTypSec A          /* Secondary scratch type is ATL */
```

## Message\_Consoles

---

There are four Systems consoles that can be assigned using the Message\_Consoles statement. No messages are sent for consoles that are not assigned to a user ID. For example, the Operations console would typically be assigned to OPERATOR, but messages will not be sent to the OPERATOR user ID if it is not associated with the Operations ID in the Message\_Consoles statement. The message consoles are:

### Administration

Receives all messages. The intention is to provide a console, other than the TxTMM console, where most of the messages Tape Manager issues can be collected and observed. However, given that the ADMINISTRATION ID receives a lot of messages, it does not necessarily need to be associated with the ID of a system administrator.

If you are using a solution, such as IBM Operations Manager for z/VM, to monitor the Tape Manager service machines for relevant messages or errors, you may choose to omit this entry completely or leave the value blank.

### Operations

Receives limited, but significant, messages, including device messages, system error messages, and mount messages.

### Primary\_Mount

Receives tape mount-related messages.

### Secondary\_Mount

Receives tape mount-related messages.

At least one of the messages consoles must be defined. The operations console will be associated with the OPERATOR user ID until the configuration statement has been processed. Any error messages that occur before the statement is processed will be sent to the OPERATOR user ID.

### Example 1

```
Message_Consoles,  
Administration ADMNID,  
Operations      OPERID,  
Primary_Mount  MNTID1,  
Secondary_Mount MNTID2
```

### Example 2

```
Message_Consoles,  
Administration,  
Operations      OPERID,  
Primary_Mount  MNTID1,  
Secondary_Mount MNTID2
```

### Example 3

```
Message_Consoles,  
Operations OPERATOR
```

## Operations

Use the Operations statement to identify the operations personnel who have administrative authority for the TAPEDEV, TAPELIB, TAPEREQ, and TAPEQRY commands. The user ID's associated with the Operations statement will be ignored if External Security is active and the Privileged\_User\_Authority setting is YES.

Leave a space between ID's if listing more than one ID. An example is shown below.

Example:

```
Operations OPERATOR MNTID1 MNTID2
```

## PoolAuth

Use the PoolAuth statement to specify whether authorization is required to define a new pool to the system. The POOLACC SYS POOL command can be used to grant or restrict the ability to define pools.

**Note:** This setting is ignored if external security is active and the System\_Authority setting is YES. Also, the PoolAuth statement is only valid on catalog nodes in a shared environment.

Example:

```
PoolAuth Y /* Auth required to define pools. */
```

## PoolDef

Use the PoolDef statement to set the default authorization for defining new tape pools. Specify NONE or ALL.

**Note:** The PoolDef setting is ignored if external security is active and the System\_Authority setting is YES. Also, the PoolDef statement is only valid on the catalog node in a shared environment.

Other configuration statements, such as PoolAuth, and the POOLACC command may affect the setting you choose for PoolDef. The use of PoolDef is described in more detail below.

### Use with PoolAuth

When the PoolAuth statement is set to Y, the PoolDef setting determines whether to restrict or permit the definition of pools. You can choose to restrict everyone, then give permission to a few people, or you can give access to everyone, but restrict a few people.

- If the PoolAuth statement is set to N, indicating that no authorization checking is to be done, the PoolDef statement is not required and is ignored.
- If the PoolAuth statement is set to Y and PoolDef is set to NONE, non-administrative users who want to define pools that they will own must be granted authority to define the pools.
- If the PoolAuth statement is set to Y and PoolDef is set to ALL, users can define pools that they will own unless they are explicitly prohibited.

### Use with POOLACC

When choosing a setting for PoolDef, you may want to review the setting for the POOLACC command. Consider the following:

- If you want most users to be able to define new tape pools, use `PoolDef ALL`. Permission to define tape pools can then be restricted for individual users by using the `POOLACC SYS POOL` command to set the access privilege to `NONE`.
- If you want most users to be restricted from defining new pools, use `PoolDef NONE`. Permission to define new tape pools can be granted for individual users by using the `POOLACC SYS POOL` command to set the access privilege to `DEFN`.

Example:

```
PoolDef NONE /* Auth required to define pools */
```

## PoolMax

Use the `PoolMax` statement to specify the maximum number of tapes allowed in any pool.

**Note:** If a private pool provides free tapes for another private pool, it is possible for the pool providing the free tapes to exceed its maximum whenever free tapes are returned. In that case, a warning will be issued to indicate that the pool is above its maximum and the `PoolWarn` value will be applied to the total number of tapes in the pool, rather than the pool maximum.

Example:

```
PoolMax 1000 /* Maximum tapes default is 1000 */
```

## PoolWarn

Use the `PoolWarn` statement to specify the default warning level when a pool approaches the tape maximum. This value is a percentage between 1 and 100. A warning will be issued when the percentage of used tapes meets or exceeds the warning percentage. A tape is considered "used" when any of the following is true:

- The Use Status is "U" indicating that the volume is in use.
- The User Hold Status is "H" indicating that the volume is held.
- The System Hold Status is "H" indicating that the volume is held by the system.
- The volume is an external (or foreign) volume.
- The volume is flagged for Data Security Erase processing.

If a pool has a free tape pool defined, the used percentage is calculated using the pool maximum. Otherwise, the percentage is calculated using the total number of tapes in the pool.

A `PoolWarn` value of 80 would result in a warning when the tape utilization reaches 80% or more. A scan of the private pools will occur as part of the daily processing. Daily processing occurs each day following expiration processing.

**Note:** If a private pool provides free tapes for another private pool, it is possible for the pool providing the free tapes to exceed its maximum whenever free tapes are returned. In that case, a warning will be issued to indicate that the pool is above its maximum and the `PoolWarn` value will be applied to the total number of tapes in the pool, rather than the pool maximum.

Example:

```
PoolWarn 80 /* Default warning percentage is 80 */
```

## RetnDflt

Use the `RetnDflt` statement to indicate the number of days that will be the default period for pool retention. This number must be less than or equal to the retention maximum (`RetnMax`) value. If the retention default is greater than the retention maximum, an error message will be issued.

Example:

```
RetnDflt 100 /* Default retention is 100 days */
```

## RetnMax

Use the RetnMax statement to specify the maximum number of days for the pool retention period. This value must be greater than or equal to the retention default (RetnDflt) value or an error message will be issued.

Example:

```
RetnMax 99999 /* Maximum retention days is 99999 */
```

## ScrOwner

Use the ScrOwner statement to specify the default mount pool owner for scratch requests. An asterisk (\*) can be specified to default to the TAPEMNT request ID.

Example:

```
ScrOwner * /* Default scratch pool owner is the */  
/* user ID of the requestor */
```

## ScrName

Use the ScrName statement to specify the default mount pool name for scratch requests. An asterisk (\*) can be specified to default to the TAPEMNT request ID.

Example:

```
ScrName POOL1 /* Default scratch pool name is POOL1 */
```

## TapeLbl

Use the TapeLbl statement to specify the default authorization for use of non-standard labels (NL or BLP) in mount requests and to indicate whether checking is to be performed for exceptions.

- The first parameter on the statement indicates the type of non-standard label (NL or BLP).
- The second parameter is the default authorization setting.
- The third parameter determines if authorization checking will be performed for exceptions to the default setting.

Refer to the TAPELBL and CMDAUTH commands in the *IBM Tape Manager for z/VM User's Guide and Reference* for additional information.

| TapeLbl statement    | Description  |
|----------------------|--|
| TapeLbl BLP NONE NO  | BLP requests are not permitted and there are no exceptions. This is the default if the TapeLbl BLP statement is omitted. |
| TapeLbl BLP NONE YES | BLP requests are permitted only for authorized users.  |
| TapeLbl BLP ALL NO   | BLP requests are permitted for all users.  |
| TapeLbl BLP ALL YES  | BLP requests are permitted for all users who are not expressly prohibited.   |



Table 5. Examples of TapeLbl statements (continued)

| TapeLbl statement   | Description  |
|---------------------|--|
| TapeLbl NL NONE NO  | NL requests are not permitted and there are no exceptions. This is the default if the TapeLbl NL statement is omitted. |
| TapeLbl NL NONE YES | NL requests are permitted only for authorized users.   |
| TapeLbl NL ALL NO   | NL requests are permitted for all users.   |
| TapeLbl NL ALL YES  | NL requests are permitted for all users who are not expressly prohibited.  |

Example:

```
TapeLbl,          /* Label setting for the tape mount command      */
NL,              /* Settings for LABEL NL                          */
NONE,           /* Usage is not allowed                           */
YES             /* Unless the user is authorized                  */

TapeLbl,          /* Label setting for the tape mount command      */
BLP,            /* Settings for LABEL BLP                        */
NONE,           /* Usage is not allowed                           */
YES             /* Unless the user is authorized                  */
```

## VolWait

Use the VolWait statement to specify the time allowed, in minutes, for a volume to become available when it is in use for another request. The volume wait timer only applies if a volume is in use by another Tape Manager request.

The device wait (DevWait) timer only applies when a volume is *not* in use by another Tape Manager request (or once a volume that was in use is no longer in use). The DevWait timer includes the time used to obtain a suitable device and the time used to mount and ready a volume once the device is available. Refer to [“DevWait” on page 35](#) for more information.

**Note:** The VolWait statement is not valid for a request node in a Shared Catalog environment.

Example:

```
VolWait 10        /* Mount timeout for a volume that is in use      */
                  /* Wait up to 10 minutes                          */
```



---

## Chapter 4. Installation Verification Steps

This information describes the steps required to start and test various components of the Tape Manager installation and configuration. If any of the tests described in this section fail, you must update the Tape Manager configuration file (SYS CONFIG on the TxTMM 198 disk by default) or the PROFILE EXEC for one of the service machines.

---

### Start the service virtual machines

Once initial configuration is complete, start the Tape Manager Tape Management Machine (TMTMM, TCTMM, or TRTMM by default, depending on your environment). TxTMM will start the other Tape Manager service machines (TxDMM, TxLM1, etc.)

To start the Tape Manager Tape Management Machine, perform the following steps:

1. Logon to the TxTMM user ID. The PROFILE EXEC you created in [“Modify the TxTMM PROFILE EXEC”](#) on [page 12](#) should execute.
2. Verify there are no error messages.
3. Issue #CP DISC to leave TxTMM running disconnected.

---

### Check the status of Tape Manager

To verify that the Tape Manager service machines have been successfully started and are able to process requests:

1. Log on to an authorized user ID. This user ID must be authorized to issue the Tape Manager STATUS command. This can be done by giving the user administrator or operations authority (as defined in the configuration file using the Admins or Operations statement.)
2. Issue the following commands to instruct Tape Manager to output status information:

```
TAPCMD STATUS
CP SMSG TxDMM STATUS
CP SMSG TxLM1 STATUS
```

If you do not have a Library Manager Machine (TxLM1), then you can skip that command.

Replace TxDMM and TxLM1 with one of the following, based on your environment:

- Specify TMDMM and TMLM1 if you are in a Dedicated Catalog or RMM catalog environment.
  - Specify TCDMM and TCLM1 if you are in a Shared Catalog environment and this is the catalog node.
  - Specify TRDMM and TRLM1 if you are in a Shared Catalog environment and this is a request node.
3. Several messages from Tape Manager appear indicating the status of the servers.

---

### Verify tape pools can be defined

Follow the steps below to verify that tape pools can be defined.

1. Log on to a user ID authorized to issue the Tape Manager POOLDEF command. In this example, it's best if you issue the command from a user with administrator authority.
2. Define a new tape pool. In this example, the pool corresponds to a tape pool normally defined for use by Backup and Restore Manager for z/VM:

```
TAPCMD POOLDEF BKRADMIN BKRPOOL MEDIA media RETNMAX days FREEPPOOL SYS
```

In this command,

- The owner of the pool will be BKRADMIN.

- The pool name will be BKRPOOL.
  - The *media* must match a media type from the Define\_Media statement in the Tape Manager configuration file.
  - The *days* variable indicates the maximum number of days in the retention period.
  - The FREEPOOL SYS indicates that the new tape pool will use the system free pool to find scratch tapes.
3. Verify that the new tape pool was successfully created by issuing the command:

```
TAPCMD POOLQRY POOL * * LONG
```

Refer to the POOLQRY command in the *IBM Tape Manager for z/VM User's Guide* for more information on the POOLQRY command.

## Verify scratch tape volumes can be added to the system free pool

Follow the steps below to verify that the scratch tape volumes can be added to the system free pool.

1. Log on to a user ID authorized to issue the Tape Manager TAPEADD command. In this example, it's best if you issue the command from a user with administrator authority.
2. Add some tape volumes to Tape Manager as scratch tapes:
  - a. If you are using manual mount devices, issue this command:

```
TAPCMD TAPEADD VOL valid POOL SYS MEDIA media MAN
```

In this command,

- The *valid* is a single tape volser. Refer to the TAPEADD command in the *Tape Manager User Guide* for more information on adding a range or set of tape volsers.
  - The *media* must match a media type from the Define\_Media statement in the Tape Manager configuration file.
- b. If you are using tape volumes in an Automated Tape Library or Virtual Tape Server, issue this command:

```
TAPCMD TAPEADD VOL valid POOL SYS MEDIA media ATL libname SCRCAT scratchcategory
```

In this command,

- The *valid* is a single tape volser. See the TAPEADD command for more information on adding a range or set of tape volsers.
- The *media* must match a media type from the Define\_Media statement in the Tape Manager configuration file.
- The *libname* must match a tape library from the Library statement in the Tape Manager configuration file.
- The SCRCAT option is required if you have specified the ScrCat option on the Define\_Media statement in the Tape Manager configuration file. The *scratchcategory* must match the value specified on Define\_Media. If you have not specified the ScrCat option on Define\_Media, omit this option and value from the TAPEADD command.

## Verify access can be given to a tape pool

Follow the steps below to verify that access can be given to a tape pool.

1. Log on to a user ID authorized to issue the Tape Manager POOLACC command. It is best if you issue the command from a user with administrator authority.
2. Give a user ID the ability to mount tapes in the tape pool you previously created.

```
TAPCMD POOLACC BKRADMIN BKRPOOL USER userid TAPE
```

In this command, *userid* is a user ID on your system from which you will verify the tape mount process in the next step. Refer to the POOLACC command in the *IBM Tape Manager for z/VM User's Guide and Reference* for more information on authorizing users to tape pools.

## Verify tape mount requests can be processed

---

Follow the steps below to verify that tape mount requests can be processed.

1. Log on to a user ID authorized to issue the Tape Manager TAPEMNT command. In this example, it's best if you issue the command from a user with administrator authority.
2. Request a tape mount for one of the scratch tapes you've added and move it to the Backup Manager tape pool:

```
TAPCMD TAPEMNT SCR BKRADMIN BKRPOOL TEXT 'testing mount commands'
```

In this command, a scratch tape from the system free pool will be mounted, moved to the tape pool called BKRADMIN BKRPOOL and marked as used. It will have a description of "testing mount commands".

3. Once the tape is mounted, you can either write to it or just detach it.

## View a list of all the tapes in the Tape Manager catalog

---

Follow the steps below to view a list of all the tapes in the Tape Manager catalog.

1. Log on to a user ID authorized to issue the Tape Manager TAPEQRY command. In this example, it's best if you issue the command from a user with administrator authority.
2. To see a list of all tapes in the Tape Manager catalog, issue:

```
TAPCMD TAPEQRY POOL SYS ALL LONG
```

Refer to the TAPEQRY command in the *Tape Manager User Guide* for more information on the output.

## Change the status of a tape to be free

---

Follow the steps below to change the status of a tape to be free.

1. Log on to a user ID authorized to issue the Tape Manager TAPEMOD command. In this example, it's best if you issue the command from a user with administrator authority.
2. To scratch the tape we tested, issue the following command:

```
TAPCMD TAPEMOD VOL valid STATUS FREE
```

In this command, *valid* is the tape volser that was mounted above.

## Delete an empty tape pool

---

If you are not planning to use Backup and Restore Manager or you do not want to use the pool name suggested above for its tape pool, perform the following steps to remove the tape pool you created.

1. Log on to a user ID authorized to issue the Tape Manager POOLDEL command. In this example, it's best if you issue the command from a user with administrator authority.
2. To remove the tape pool created in "Verify tape pools can be defined", issue the following command:

```
TAPCMD POOLDEL POOL BKRADMIN BKRPOOL
```



---

## Chapter 5. Getting Started

This chapter provides more details on how to use Tape Manager. Typical procedures for tape management, such as defining pools and mounting scratch tapes, are described so you will understand how to perform these procedures with Tape Manager.

---

### The TAPCMD User Interface

The user interface for entering Tape Manager commands is the **TAPCMD** module. This component should be installed on a CMS minidisk or SFS directory for any user to whom you want to provide Tape Manager services. For more information on TAPCMD, see the *IBM Tape Manager for z/VM User's Guide and Reference*.

The generalized command interface is as follows:

```
TAPCMD tape_manager_command tape_manager_command_operands (tapcmd_options
```

When the TAPCMD module is invoked, it looks for its associated defaults file, which is TAPCMD DEFAULTS. The next section describes how the DEFAULTS file is used.

### TAPCMD DEFAULTS

The TAPCMD DEFAULTS file contains site-specific information the TAPCMD module requires for communication with the TMM (tape management machine), such as the name of the TMM and the defaults for synchronous or asynchronous processing. A sample TAPCMD DEFAULTS file is provided on the 5697J08C 310 disk (or in SFS directory VMSYS:5697J08C.TAPEMGR.TESTUSER) and copied to 5697J08C 410 disk (or SFS directory VMSYS:5697J08C.TAPEMGR.PRODUSER.) It must be customized for your installation.

A TAPCMD DEFAULTS file is required on each Tape Manager system. You can make the TAPCMD DEFAULTS file available to end-users on a CMS minidisk or SFS directory. Co-location with the TAPCMD module is recommended. The MAINT 19E ("system Y-disk") minidisk is recommended.

See ["Customizing TAPCMD DEFAULTS"](#) on page 9 for more information.

### Using multiple Tape Manager Machines

If you will be using multiple versions of Tape Manager, such as TEST and PROD, or need different versions for different groups of users, you can eliminate the hassle of typing extra parameters on every command by making a few changes to the user interface. First, copy and rename the user interface module, TAPCMD, to a name that is more meaningful to you, such as PRODTAP (or, alternatively, create a PRODTAP synonym for TAPCMD). Next, create a DEFAULTS file for the new user interface module, such as PRODTAP DEFAULTS.

Whenever you use the user interface module (i.e. TAPCMD or PRODTAP), the module looks for the following items in the associated DEFAULTS file:

- The name of the Tape Manager Machine (TMM), for example:

```
TMMID TMTMM
```

- An indication as to whether the command being issued is synchronous or not (WAIT/NOWAIT)
- The maximum time (in seconds) to wait for a command to complete before ending the wait (WAIT *wait-time*).

For example, let's assume that you want to use the defaults file to default to TMTMM for the TMM user ID (as shown above) and synchronous command processing with a wait timeout of 600 seconds. The following statements would be coded in the defaults file:

```
TMMID TMTMM
```

```
WAIT
```

```
WAIT 600
```

The first "wait" statement indicates that TAPCMD will default to synchronous processing. The second "wait" statement sets the default "timeout" value for synchronous commands to 600 seconds.

The user interface module (i.e. TAPCMD or PRODTAP) will attempt to obtain these items from the following sources, in order of priority:

1. Options on the command line always take precedence over all other sources.
2. If any needed information is not supplied on the command line, the user interface will look at the name under which it was invoked (i.e. TAPCMD or PRODTAP), and attempt to read the associated DEFAULTS file (i.e. TAPCMD DEFAULTS or PRODTAP DEFAULTS) for any needed values. The DEFAULTS file is the usual source of both the TMM name and the defaults for synchronous or asynchronous processing.
3. If the TMM name is not found in the DEFAULTS file, the user interface will again look at the name under which it was invoked and use that name as the default installation name for the TMM. For example, if you used PRODTAP for the name of the user interface, but did not provide a PRODTAP DEFAULTS file with the TMM name in it, Tape Manager would use *PRODTAP* as the TMM name.

If the original user interface name, TAPCMD, is used, the default installation name is *TMTMM* for the TMM.

4. If no default is found for WAIT/NOWAIT, Tape Manager assumes a default of NOWAIT.
5. If WAIT was specified, but no time to wait was given, the default is 300 seconds (5 minutes).

With multiple copies of Tape Manager, you have the flexibility to create "test" and "prod" versions, and meet the needs of multiple groups of users.

## Defining and controlling access to pools

---

The System Free Pool exists by default and contains any tapes that are not in a private pool. Tapes can be added directly to a private pool, in which case the System Free Pool may not contain any tapes at all. This section describes how to define and grant or restrict access to system and private tape pools.

**Note:** If you plan to use an external security manager to control pool access, refer to [“Using an External Security Manager to control Tape Manager resources”](#) on page 71.

### Controlling access to system free tapes

Any free tape that is not in a private pool is considered to be in the system free pool. The system free pool can be specified as a free tape source for a private pool when the private pool is defined, or later with the POOLMOD command.

Set `FreeAuth` to "Y" in the configuration file to restrict access to the system free pool by private pools, or set `FreeAuth` to "N" to allow access. If you have restricted access to a system free pool, you can grant access to specific individuals or pool owners by using the POOLACC command with the SYS POOL parameter.

**Note:** If you plan to use an external security manager to control access to the system free tape pool, refer to [“Using an External Security Manager to control Tape Manager resources”](#) on page 71.



## Controlling private tape pool definitions

The ability to define a private pool is typically restricted. Only a system administrator or an authorized user can define a private pool and the private pool must be uniquely identified by a pool owner and a pool name. The pool owner must be a valid CMS file name and the pool name must be a valid CMS file type of one to eight characters.

A non-system administrator with permission to define pools can only define pools that are owned by him/her. The owner of a pool defined by an administrator does not have administrative privileges for the pool by default and cannot change the pool attributes. Non-system administrators that define their own private pools will have administrative access to any pools they define.

The Tape Manager configuration file (SYS CONFIG) controls pool definition authorization. Set the PoolAuth parameter to "Y" to indicate pool definition authority is to be controlled by system administrators or set PoolAuth to "N" to indicate that pools can be defined by any user. If PoolAuth is set to "Y", the PoolDef parameter specifies the default pool definition authority:

- If PoolDef is set to NONE, the permission to define pools must be granted by a system administrator using the POOLACC command.
- If PoolDef is set to ALL, any user can define pools, but permission to define pools can be restricted by a system administrator using the POOLACC command.

When PoolAuth is set to "N", the PoolDef keyword is ignored, but authorizations can still be made with the POOLACC command to prepare for a switch to set PoolAuth to "Y" at a future time.

The default access to a pool can be altered using the POOLACC command. If you have restricted the authority to define pools, you can grant permission to specific individuals by using the POOLACC command with the SYS POOL parameter. This is helpful if you need to grant permission to non-administrative users that require pool definition authority.

**Note:** If you plan to use an external security manager to control private tape pool definitions, refer to [“Using an External Security Manager to control Tape Manager resources”](#) on page 71.

## Defining alternate message recipients for private pools

When running on a Tape Manager catalog, it is possible to assign users to receive messages that are associated with a specific private pool. A user can be designated to receive either *exception messages* or *mount messages* for each private pool that is defined.

### Receiving exception messages for a private pool

Certain exception messages that pertain to private pool threshold values are sent to the pool owner, by default, when the pool owner is an ID that is defined to the system. The messages are also received by the Administration ID that is defined on the Message\_Consoles statement in the SYS CONFIG file.

An *alternate user ID* can be designated to receive the exception messages that are by default sent to the pool owner. This can be useful to designate a single user ID that will see exception messages for a group of private pools or to designate a message recipient for pools where the owner of the pool is not an ID that is defined to the system. The ID to receive the exception messages can be assigned with the EXCEPTID parameter when the pool is defined using the POOLDEF command, or after the pool is defined using the POOLMOD command.

### Receiving mount messages for a private pool

Messages pertaining to tape mounts are normally sent to the Primary\_Mount and Secondary\_Mount ID's, which are defined in the Message\_Consoles statement in the SYS CONFIG file. The system allows the designation of one or two ID's to receive all of the messages that pertain to mount activity.

An *alternate user ID* can be designated for either of the system message ID's for each private pool that is defined. This feature can be useful either for an audit function or to reroute messages to an alternate location.

It is important to understand that any ID that is designated to receive mount messages for a private pool can also query and cancel mount requests for that pool. An alternate ID for mount messages can be assigned with the MNTID1 and/or MNTID2 parameter when the pool is defined using the POOLDEF command, or after the pool is defined using the POOLMOD command.

## Controlling access to private pool free tapes

One private pool can serve as a source of free tapes for another private pool. The POOLACC command with the FREE operand can be used to authorize other private pools to use this private pool as a source of free tapes.

**Note:** If you plan to use an external security manager to control free pool access, refer to [“Using an External Security Manager to control Tape Manager resources”](#) on page 71.

## Understanding pool access privileges

The tape pool access options are ADMN, TAPE, WRITE, READ, and NONE. The access privileges are inclusive, meaning that an ADMN user has all of the privileges of TAPE, WRITE, and READ, plus administrative privileges. A TAPE user has WRITE and READ privileges, plus tape handling privileges. The table below defines the privileges.

*Table 6. Tape pool access privileges*

| Authority | Description  |
|-----------|--|
| ADMN      | The user can alter the attributes of the pool with the POOLMOD command or delete the pool with the POOLDEL command.<br><br>To define a pool, the user must be a system administrator or be granted pool definition authority by an administrator using the POOLACC SYS POOL command.<br><br>When a pool is defined by a system administrator, the pool owner is granted TAPE access by default if the pool owner is a valid system ID. If the owner of the pool defines the pool, the owner is granted ADMN access by default. |
| TAPE      | The user can utilize tape management commands for the pool. The commands include TAPEMOD, TAPEDEL, TAPEMOV, and POOLXFR.   |
| WRITE     | The user is permitted to mount tapes in the pool with WRITE access.  |
| READ      | The user can mount tapes in the pool with READ access.   |
| NONE      | The user cannot access tapes in the pool.  |

In addition, system administrators (as specified on the Admins statement in the Tape Manager configuration file) have broad authority. System administrators have the authority to issue any Tape Manager command. System administrators must be explicitly authorized to mount volumes in a private pool. As system administrators, they have the authority to grant themselves this access for each private pool.

## Managing tapes

Tapes are added to the system inventory with the TAPEADD command. A tape can be added to the System Free Pool (also called the System Pool) or directly to a private pool that has been previously defined. External tapes (also called foreign tapes) can only be added to a private tape pool.

Any tape in the System Free Pool must have a status of FREE, but a tape in a private pool can have a status of USED or FREE. The initial status of a tape is set when the tape is added to the inventory.

- The system will change the status of a FREE tape to USED if the tape is mounted with write access for a private pool request.

- The system will change the status from USED to FREE when a tape is processed during expiration date processing.

## Type of library

The TAPEADD command defaults to manual (MAN) when tapes are added to the inventory. Be sure to specify ATL and a library name in the TAPEADD command for any volumes that are in an automated tape library. If necessary, the TAPEMOD command can be used to modify the library type after a volume has been added.

## Use of TAPEDEL to remove volumes

The TAPEDEL command can be used to remove volumes from the Tape Manager inventory. It is recommended that internal volumes reside in the system free pool before the TAPEDEL command is issued. It is recommended that external volumes in a private pool have the use status set to FREE before the TAPEDEL command is executed.

## Understanding expiration processing and scratch tapes

---

The expiration process runs once daily based on the time specified in the EXPSTART configuration statement. The expiration process will:

- Select any volume that has a use status of Used and an expiration date less than the date on which the process runs.
- Change the use status to Free and the expiration date to zeros for any of the selected volumes that are not bypassed for one of the following reasons:
  - A system hold is in effect (System Hold Flag indicates Hold).
  - A user hold is in effect (User Hold Flag indicates Hold).
  - A volume is an external volume (Internal/External Flag indicates External).
- Write an explanatory message to the TxTMM console when a volume selected for expiration processing is bypassed.
- For volumes that are not bypassed, move any volume that resides in a pool, with an associated free pool, back to the free pool, unless there is a DSE operation pending for a volume.

## Scratch mount requests

A volume that has a use status of Free will always have an expiration date of zeros. However, a status of Free is not sufficient for the volume to qualify as a scratch volume. The following requirements must be met for a volume to be eligible to satisfy a scratch mount request:

1. The use status of the volume is Free (Use Status Flag indicates Free).
2. There is not a "user hold" on the volume (User Hold Flag indicates No Hold).
3. There is not a "system hold" on the volume (System Hold Flag indicates No Hold).
4. The volume is an internal volume (Internal/External Flag indicates Internal).
5. The volume does not have a DSE action pending (DSE Flag indicates No DSE).
6. The volume is not enqueued by another Tape Manager request.
7. If the volume is in an automated tape library then the library status must be ONLINE.

The first five items in this list are related to volume attributes and hold conditions that can be reported by the TAPEQRY command. Volume attributes and hold conditions are described in the next section.

The last two items are runtime conditions. Volumes that are enqueued can be determined with the TAPEREQ ENQ command. The status of an automated tape library can be determined using the TAPELIB QRY command.

As an example, the following command can be used to determine all of the volumes in the system free pool that are eligible to satisfy a scratch mount request (runtime conditions permitting):

```
tapcmd tapeqry pool sys only status f hstat n sstat n int nodse
```

**Note:** If you take volumes offsite, consider placing a user hold on those volumes. By doing this, if a volume reaches its expiration date while offsite, the hold status will prevent Tape Manager from expiring it and therefore prevent Tape Manager from attempting to use the volume to satisfy a scratch request.

## Understanding category managed media

The need for Tape Manager to manage categories was emphasized with the increased usage of virtual (or logical) volumes. With those systems, it can be useful to set the library category of a volume to a fast-ready (or scratch) category when a volume becomes an eligible scratch volume, which can occur because of expiration processing or by issuing commands, such as TAPEMOD or POOLDEL.

The fast-ready scratch category ensures that data associated with a volume is not recalled when Tape Manager performs a scratch mount. If the intent is to specify a fast-ready category, verify that the Scratch Category is defined in the library accordingly. Tape Manager will attempt to manage the library category code so that it is consistent with the Tape Manager scratch status, but Tape Manager does not use the category code for scratch mounts.

As of PTF UI54509, for IBM automated tape libraries, Tape Manager allows the specification of Scratch Category and Volume Category codes when a media type is defined. The change enables Tape Manager to manage the library category code of volumes of the corresponding media type when using a Tape Manager (i.e., non-RMM) catalog. When a volume becomes eligible to be used as a scratch volume, for example, during expiration processing, the category will be set to the Scratch Category. When a volume transitions from a scratch status to a non-scratch status, the category will be set to the Volume Category.

For Scratch Categories, Tape Manager supports scratch and expiration processing in IBM automated tape libraries, allowing you to more efficiently manage cache (disk) space in the library. Based on the settings you define in the library for each Scratch Category, expired tape contents are removed from the cache, allowing more space for active tape content.

Tape Manager also allows you to prevent using an expired tape as a scratch tape during the expiration period defined in the library for the Scratch Category. During Tape Manager expiration processing for a volume that has a Scratch Category (ScrCat) and Expiration Hold period (ExpHold) defined:

- The volume is moved to the Scratch Category defined in Tape Manager.
- The Tape Manager Expire Hold date for the volume is set to the current date.
- The Tape Manager Expire Hold (XH) flag is set to H (hold) in the volume System Status (SSTAT) field.

The XH flag will prevent the volume from being used for scratch mounts until the Expire Hold period has ended. When expiration processing determines that the Expire Hold period has elapsed, the XH flag will be set to no-hold, the Expire Hold date will be "zeroed" (filled with 0's) and the volume will become available for scratch mounts.

## Mounting scratch tapes that are category managed

When Tape Manager performs a scratch mount of a volume that is category managed, based on the media type of the volume, Tape Manager will do the following:

1. Mount the volume.
2. Send a SETVOL command to RMSMASTR (via the Library Manager Machine) to set the library category to the Volume Category associated with the media before giving the volume to the user.

When Tape Manager performs a read-write, volume-specific mount of a volume that is category managed, Tape Manager will do the following:

1. Send a SETVOL command to RMSMASTR to set the library category of the Volume Category.
2. Mount the volume.

A read-only, volume-specific mount of a category managed volume occurs without any SETVOL commands being sent to RMSMASTR, unless the volume status suggests that the volume is in a scratch category. In that case, the category will be set to the Volume Category before mounting the volume to preserve any information still on the volume.

## System Status (SSTAT) Flag

Prior to PTF UI54509, the System Status Hold flag (SSTAT), which could only be set by Tape Manager and not by a command, was a single-character, multi-valued hold flag for internal values that were mutually exclusive. Regardless of the value, the field could only be cleared by the TAPEMOD command using SSTAT NOH. With this update (PTF UI54509), the SSTAT flag can now represent multiple independent values, which can be set or cleared independently.

The SSTAT flag will show an "H" when any of the hold flags are set and the TAPEQRY command is issued with the SHORT parameter. To see the settings for the individual SSTAT flags, the TAPEQRY command can be issued with the LONG parameter. When LONG is used, the hold status will be shown for all of the SSTAT flags as N (no hold) or H (hold).

The various SSTAT flags are listed below:

### **VF – TMVERIFY flag**

This value will be "H" if the volume data was modified by the TMVERIFY utility. Mount requests are allowed, but the volume is not an eligible scratch volume.

### **NV – No Volume flag**

This value will be "H" if a TAPEREQ command has been issued with the NOVOL parameter. Mount requests are allowed, but the volume is not an eligible scratch volume.

### **NI – Not in Library flag**

This value will be "H" if a scratch request to an automated tape library received a Not-In-Library response. Mount requests are allowed, but the volume is not an eligible scratch volume.

### **NM - No Match flag**

This value will be "H" if the volume was mounted by an automated tape library for a scratch request and the internal label does not match the VOLSER. Mount requests are allowed, but the volume is not an eligible scratch volume.

### **NL - No Label flag**

This value will be "H" if the volume was mounted by an automated tape library for a scratch request and the volume is unlabeled. Mount requests are allowed, but the volume is not an eligible scratch volume.

### **RO - Read Only flag**

This value will be "H" if the volume was mounted by an automated tape library for a scratch request and the volume is read-only. Mount requests are allowed, but the volume is not an eligible scratch volume.

### **UK - Unknown flag**

This value will be "H" if there was a non-specific SSTAT hold prior to the update. Mount requests are allowed, but the volume is not an eligible scratch volume.

### **VC - Volume Category**

This value will be "H" if an attempt to set the category of the volume to the Volume Category could not be verified. No mounts are allowed, and the volume is not an eligible scratch volume.

### **XH - Expire Hold flag**

This value will be "H" if there is an Expiration Hold period in effect for the volume.

The SSTAT flags can be reset to "no hold" individually or all at once using the TAPEMOD command with the SSTAT keyword.

- To reset a specific flag, use SSTAT *value* where the two-character flag value is substituted for *value*.

For example, to reset only the RO flag, use the following command:

```
TAPEMOD SSTAT RO
```

- All of the flags can be reset to "no hold" by using TAPEMOD with SSTAT NOH.

For example, to reset all of the SSTAT flags, use the following command:

```
TAPEMOD SSTAT NOH
```

## Defining Category Managed media types

The category values associated with a media type can be specified in the Define\_Media configuration statement by specifying the VolCat (volume category) and ScrCat (scratch category) keywords. These same keywords can be used to specify categories with the CNFGSET MEDIA command when defining a new media type or modifying an existing media type. Use of the SCRSEL RANDOM option is recommended when defining category managed media types with a fast-ready scratch category.

Valid values for ScrCat (the Scratch Category) are listed below. These values are used directly by Tape Manager on commands to DFSMSRMS. Refer to Appendix C in *IBM TotalStorage 3494 Tape Library: A Practical Guide to Tape Drives and Tape Automation* (SG24-4632) for an understanding of scratch category values.

| Value     | Additional information                                       |
|-----------|--|
| SCRATCH   |  |
| SCRATCHx  | Specify the value of "x" as a single, hexadecimal character. |
| hex value | Specify any four-character hexadecimal string.               |

**Note:** The specification of SCRATCH may result in category SCRATCH0 in the library.

Valid values for Vol (the Volume Category) are listed below. These values are used directly by Tape Manager on commands to DFSMSRMS. Refer to Appendix C in *IBM TotalStorage 3494 Tape Library: A Practical Guide to Tape Drives and Tape Automation* (SG24-4632) for an understanding of volume category values.

| Value       | Additional information  |
|-------------|---|
| VOLspecific | Specify an abbreviation that is three or more characters for VOLSPECIFIC. |
| hex_value   | Specify any four-character hexadecimal string.                            |

### Example of Define Media Category statement

The example below shows how the VolCat and ScrCat keywords can be used with the Define\_Media statement. In this example:

- ScrSel is set to RANDOM, as recommended for category managed media.
- VolCat is set to VOL, indicating that RMS commands issued by Tape Manager will specify VOLSPECIFIC for the volume category.
- ScrCat is set to SCRATCH0, indicating that RMS commands issued by Tape Manager will specify SCRATCH0 for the scratch category.

```
Define_Media VTAPE,  
  DevPool VTSDEVS,  
  Mode RW,  
  ScrSel RANDOM,
```

```
VolCat VOL,  
ScrCat SCRATCH0
```

### Example of Define Media Category statement with an Expire Hold period

The example below shows how the VolCat and ScrCat keywords can be used with the Define\_Media statement and includes Expire Hold (ExpHold).

- ScrSel is set to RANDOM, as recommended for category managed media.
- VolCat is set to VOL indicating that RMS commands issued by Tape Manager will specify VOLSPECIFIC for the volume category.
- ScrCat is set to SCRATCH0 indicating that RMS commands issued by Tape Manager will specify SCRATCH0 for the scratch category.
- ExpHold is set to 1 indicating that expired tapes will not be used as scratch tapes for a period of one day. IBM recommends that this value match the Expire Time set in the automated tape library when the fast ready scratch category is defined.

```
Define_Media VTAPE,  
  DevPool VTSDEVS,  
  Mode RW,  
  ScrSel RANDOM,  
  VolCat VOL,  
  ScrCat SCRATCH0,  
  ExpHold 1
```

### Example of CNFGSET MEDIA Category command

The example below shows how the VolCat and ScrCat keywords are used with the CNFGSET command. In this example,

- ScrSel is set to RANDOM, as recommended for category managed media.
- ScrCat is set to 0080 indicating that the RMS commands issued by Tape Manager will specify 0080, which is SCRATCH0, for the scratch category.
- VolCat is set to FFFF, indicating that RMS commands issued by Tape Manager will specify FFFF for the volume category. This is equivalent to specifying VolCat VOL.

```
TAPCMD CNFGSET MEDIA ADD VTAPE DEVPOOL VTSDEVS SCRSEL RANDOM MODE  
RW SCRCAT 0080 VOLCAT FFFF
```

### Example of CNFGSET MEDIA Category command with an Expire Hold period

The example below shows how the VolCat and ScrCat keywords are used with the CNFGSET MEDIA command and Expire Hold (EXPHOLD). In this example,

- ScrSel is set to RANDOM, as recommended for category managed media.
- ScrCat is set to 0080 indicating that the RMS commands issued by Tape Manager will specify 0080, which is SCRATCH0, for the scratch category.
- ExpHold is set to 1 indicating that expired tapes will not be used as scratch tapes for a period of one day. IBM recommends that this value match the Expire Time set in the automated tape library when the fast ready scratch category is defined.
- VolCat is set to FFFF, indicating that RMS commands issued by Tape Manager will specify FFFF for the volume category. This is equivalent to specifying VolCat VOL.

```
TAPCMD CNFGSET MEDIA ADD VTAPE DEVPOOL VTSDEVS SCRSEL RANDOM MODE  
RW SCRCAT 0080 EXPHOLD 1 VOLCAT FFFF
```

## Understanding volume attributes and hold conditions

---

This section contains extended descriptions of some of the volume attributes represented by the flag fields returned by the TAPEQRY command. These volume attributes can be set by the site either with the TAPEADD command when a volume is added or with the TAPEMOD command once a volume is in the Tape Manager inventory. The exception is the System Status flag, which is only set to HOLD by Tape Manager, but can be cleared by the site using the TAPEMOD command once any ambiguities for a volume have been resolved.

The discussion that follows is ordered to correspond to the order of the flags in the Flags field of the TAPEQRY output (when either the SHORT or LONG operand is in effect):

### Manual/ATL Flag

A value of M indicates that a mount message will be sent to the tape mount console to request a manual mount of the volume. A value of A indicates that a mount message will be sent to an LMM machine to request an automated mount of the volume.

### Use Status Flag

This flag is also referred to as the *status* flag. A value of F indicates that a volume is FREE and a value of U indicates that a volume is USED. A used volume will be eligible for expiration processing once the expiration date has passed. During the expiration process, the expiration date will be set to zeros and the use status flag will be set to F if there are no conditions that cause the volume to be bypassed for expiration processing. When the status is FREE, the volume can be used to satisfy a scratch mount request as long as all of the other conditions for a scratch volume, described in [“Understanding expiration processing and scratch tapes” on page 57](#), are met.

### User Hold Flag

A value of H (Hold) indicates that the volume is held and a value of N (No Hold) indicates the volume is not held. A user held volume can be mounted by any user who is authorized to mount the tape in general, but the volume is not eligible for expiration processing when the use status is USED and it cannot be used for a scratch volume when the use status is FREE.

### System Status Flag

Prior to PTF UI54509, the System Status Hold flag (SSTAT), which could only be set by Tape Manager and not by a command, was a single-character, multi-valued hold flag for internal values that were mutually exclusive. Regardless of the value, the field could only be cleared by the TAPEMOD command using SSTAT NOH. With this update (PTF UI54509), the SSTAT flag can now represent multiple independent values, which can be set or cleared independently.

The SSTAT flag will show an "H" when any of the hold flags are set and the TAPEQRY command is issued with the SHORT parameter. To see the settings for the individual SSTAT hold flags, the TAPEQRY command can be issued with the LONG parameter. When LONG is used, the hold status will be shown for each of the following SSTAT flags as N (no hold) or H (hold).

If any of the System Status flags are set, the following rules apply:

- The volume can be mounted by VOLSER by any user who is authorized to mount the tape in general.
- The volume is not an eligible scratch volume; that is, the volume cannot be mounted by a TAPEMNT SCR command.
- If the Expire Hold flag is set to hold (XH), expiration processing will reset the flag to "no hold" (NH) when the expiration hold period has elapsed. The XH flag will prevent the volume from being used for scratch mounts until the Expire Hold period has ended. At that point, if no other conditions prevent it, the volume will become an eligible scratch volume.

When the XH flag is set, the Expire Hold Date field, which can be displayed using the TAPEQRY command with the LONG option, will contain either zeros or the date on which the hold flag was set. When expiration processing determines that the Expire Hold period has elapsed, the XH flag will be set to "no hold", the Expire Hold date will be "zeroed" (filled with 0's) and the volume will become available for scratch mounts.



- Expiration processing will be bypassed for volumes that have any of the System Status flags set. The associated message will indicate whether Expire Hold (within an expire hold window) or System Hold (any other hold flags) was the reason.

Refer to [“System Status \(SSTAT\) Flag”](#) on page 59 for descriptions of all of the System Status Flag values.

### Internal/External Flag

A value of I indicates that the volume is an internal volume and a value of E indicates the volume is an external (or foreign) volume. The differences between Internal and External volumes are described below.

An *internal* volume has the following characteristics:

- Used to satisfy a scratch request when the Use Status is set to FREE, the User Hold is NO, the System Hold is NO, and the DSE flag indicates NODSE.
- Eligible for expiration processing.
- Can reside in either the system free tape pool or a private tape pool.
- During expiration processing, a warning message is issued when a User Hold or System Hold is in effect for the volume and the expiration date of the volume is less than the current date.

An *external* volume has the following characteristics:

- Never used to satisfy a scratch request.
- Ineligible for expiration processing.
- Must reside in a private tape pool and cannot reside in a system free tape pool.
- During expiration processing, a warning message is issued whenever an external volume is encountered and the expiration date of the volume is less than the current date.

### Data Security Erase (DSE) Flag

This flag prevents an expired volume from being used as a scratch volume until the flag has been reset (by either the TMDSE utility process or by a TAPEMOD command). The flag value is either N when no DSE process is required or D when a DSE process is required.

A volume for which the DSE flag is set will be processed by expiration processing once the expiration date has passed; however, when the DSE volume resides in a pool that has a free pool, the expiration process will not move the volume to the free pool. The DSE volume will be moved to the free pool once the DSE flag has been reset, assuming there are no other conditions that prevent the volume from being used as a scratch volume.

## Understanding tape mounts and free pools

---

There are two basic types of tape mounts: *scratch* and *volume-specific* mounts. You specify the type of mount with the TAPEMNT command when you request the mount.

Only volume-specific mounts are allowed for tapes in the *System Pool*, and the requestor must be a system administrator. Normally, a mount from the System Pool would be for the purpose of reviewing the contents of a tape or for some other administrative purpose. The status of a tape in the System Pool is not changed, e.g., the status of the tape is not set to USED when it is mounted.

Mounts for *private pools* may be either scratch or volume-specific mounts. If a private pool contains a suitable scratch tape, the scratch mounts are filled from the private pool. If a private pool does not have a suitable scratch tape, a scratch mount will fail unless the private pool has a FREEPOOL association, in which case the free pool will be examined to locate an appropriate volume. A volume from the free pool will be moved to the private pool for which the scratch mount was requested.

The free pool can be specified when the private pool is defined, or it can be specified later using the POOLMOD command. A free pool can be specified as either the system free pool (FREEPOOL SYS) or as a private pool (FREEPOOL pool\_owner pool\_name).

## Using the System Free Pool as a free pool

The Tape Manager configuration file controls the authorization requirements for using the System Free Pool as a free pool for a private pool.

- If FreeAuth is set to **N**, no authorization checking is required and FREEPOOL SYS can be specified for any private pool.
- If FreeAuth is set to **Y**, the FreeAcc setting determines access to the System Free Pool.
- If FreeAcc is set to **NONE**, permission to use the System Free Pool as a free pool must be granted by using the POOLACC command with SYS SCRATCH specified.
- If FreeAcc is set to **ALL**, the System Free Pool can be specified as a free pool for any private pool, unless access has been restricted by use of the POOLACC command.

If a private pool uses the System Free Pool as a free pool and a used tape in the private pool expires (i.e., the expiration date passes and the tape is eligible for expiration processing), the expired tape is returned to the System Free Pool if all of the following are true:

- The tape's user hold status is NOHOLD.
- The tape's system hold status is NOHOLD.
- The tape is an internal volume.
- The tape does not have a Data Security Erase action pending.
- There are no tape mount requests pending for the tape.

The same is true if a tape in a private pool becomes eligible for scratch status by using a command, such as TAPEMOD, which can be used to set the status to FREE.

## Using a private pool as a free pool

A private pool can also be designated as a free pool if it has a default access of TAPE or permission has been granted for the free pool using the POOLACC command with the FREE parameter. If a private pool uses a free pool and a used tape in the private pool expires (i.e., the expiration date passes and the tape is eligible for expiration processing), the expired tape is returned to the free pool if all of the following are true:

- The user hold status of the tape is NOHOLD.
- The system hold status of the tape is NOHOLD.
- The tape is an internal volume.
- The tape does not have a Data Security Erase action pending.
- There are no tape mount requests pending for the tape.

The same is true if a tape in a private pool becomes eligible for scratch status by using a command, such as TAPEMOD, which can be used to set the status to FREE.

## Using the LABEL parameter with the TAPEMNT command

The TAPEMNT command with the LABEL parameter can be used to mount a non-labeled volume or a volume with an internal label that is different from the external label. Valid values for the LABEL parameter are:

### **SL (standard label)**

This value is used to mount labeled volumes and it is the default when the LABEL parameter is not specified.

### **NL (non-labeled)**

This value is used to mount tapes that are not labeled.

### **BLP (bypass label processing)**

This value can be used to mount labeled, non-labeled or mislabeled volumes.

The authority to specify LABEL NL or LABEL BLP is controlled by the TAPELBL settings in the configuration file. The TAPELBL command can be used by system administrators to temporarily modify the configuration settings, query the current settings, and control usage for specific users.

## Using the DSE parameter with the TAPEMNT command

For a Tape Manager catalog, the DSE and NODSE parameters on the TAPEMNT command can be used to set the Data Security Erase (DSE) attribute of the volume being mounted.

- For *read only* volume-specific mounts, the parameters are ignored and the DSE setting of the volume is not changed.
- For *read-write* volume-specific mounts and for scratch mounts, the parameters are respected regardless of the default DSE setting of the pool.

The table below shows the results for various DSE combinations:

*Table 9. Results of DSE combinations*

| Type of mount                     | TAPEMNT DSE parameter | Pool DSE default setting | Volume DSE setting before TAPEMNT | Volume DSE setting after TAPEMNT |
|-----------------------------------|-----------------------|--------------------------|-----------------------------------|----------------------------------|
| Scratch mounts                    | DSE                   | any                      | NODSE                             | DSE                              |
|                                   | NODSE                 | any                      | NODSE                             | NODSE                            |
|                                   | not specified         | DSE                      | NODSE                             | DSE                              |
|                                   | not specified         | NODSE                    | NODSE                             | NODSE                            |
| Volume-specific read-write mounts | DSE                   | any                      | any                               | DSE                              |
|                                   | NODSE                 | any                      | any                               | NODSE                            |
|                                   | not specified         | DSE                      | DSE                               | DSE                              |
|                                   | not specified         | DSE                      | NODSE                             | DSE                              |
|                                   | not specified         | NODSE                    | DSE                               | DSE                              |
| Volume-specific read only mounts  | any                   | any                      | DSE                               | DSE                              |
|                                   | any                   | any                      | NODSE                             | NODSE                            |
|                                   | not specified         | any                      | DSE                               | DSE                              |
|                                   | not specified         | any                      | NODSE                             | NODSE                            |
|                                   | not specified         | any                      | DSE                               | DSE                              |

## Using data set names in a Tape Manager catalog

The Tape Manager facilities associated with the use of data set names include:

- support for multi-volume data sets
- support for multiple occurrences of the same data set name
- expiration processing to support single and multi-volume data sets
- the Dataset\_Name\_Required configuration statement
- the SYSHLQ pool owner
- the TAPEDSN command

- other commands, including TAPEMNT, TAPEMOD, TAPEDEL, TAPEEOV, TAPEREQ, POOLDEF and POOLACC
- the DMSTVI exit

The Tape Manager support for data set names does not include:

- a requirement for or verification of any data set headers on any volume associated with a data set
- positioning based on data set headers
- the use of apostrophes or lower case letters for data set names

## Support for multi-volume data sets

Multi-volume data sets can be created using features of the TAPEMNT and TAPEEOV commands as described below. The system limits the number of volumes associated with a data set occurrence to eight volumes and all of the volumes must belong to the same pool.

## Support for multiple occurrences of the same data set name

The existence of multiple occurrences of the same data set name, involving different sets of volumes, is supported. The most recently created occurrence of a data set name is considered to be the default (or cataloged) version of the data set; i.e., if a non-scratch tape mount command is issued for a data set name and a VOLSER is not specified, a volume lookup will occur for the most recently created occurrence of the data set.

## Expiration processing

A data set occurrence is deleted when a volume associated with that occurrence of the data set expires. All of the volumes associated with a multi-volume data set have the same expiration date and all of the volumes are freed when the data set occurrence is deleted.

## Dataset\_Name\_Required configuration statement

The Dataset\_Name\_Required configuration statement controls the ability to perform a volume-specific mount request, with write access, for a volume that is associated with a data set. For more details, refer to [“Dataset\\_Name\\_Required” on page 27](#).

## SYSHLQ pool owner

The SYSHLQ pool owner is reserved for system use. A site that has private pools defined with SYSHLQ as the pool owner will need to transfer the volumes in those pools to other pools and delete the pools that have SYSHLQ as the pool owner.

**Note:** See the POOLDEF, LIKEU, and POOLXFR commands in the *IBM Tape Manager for z/VM User's Guide and Reference* for more information on transferring the volumes in one pool to another pool.

The SYSHLQ pools are used in conjunction with the POOLACC command to control the use of specific data set name high-level qualifiers. Refer to the [“POOLACC command” on page 68](#) for additional information.

## Data set names and other commands

This section explains how several pool and tape commands use data set names. Each command is described below. The TAPEDSN command is described first because it is mentioned in some of the other commands' information. Refer to the *IBM Tape Manager for z/VM User's Guide and Reference* for additional syntax and usage information for any of the commands listed in this section.

**Note:** If you plan to use an external security manager to control the use of data set high-level qualifiers, refer to [“Using an External Security Manager to control Tape Manager resources” on page 71](#).

## TAPEDSN command

The TAPEDSN command can be used to list and alter data set information directly. The command includes facilities to query, add, delete and rename data sets. It also provides a facility to query a volume and get the data set information associated with the volume. For example, if a data set volume is freed inadvertently, the TAPEDSN command can be used to redefine the data set for that volume and change the use-status for the volume back to USED.

**Note:** Refer to the *IBM Tape Manager for z/VM User's Guide and Reference* for additional syntax and usage information on the commands described in this section.

### TAPEDSN QRY

The TAPEDSN QRY function allows the specification of wild card characters to query data set information. Three special characters are provided:

#### Asterisk (\*)

The asterisk represents a string of characters of arbitrary length, including all valid characters for data set names.

#### Percent (%)

The percent sign represents a single non-numeric character.

#### Pound sign (#)

The pound sign represents a single numeric character.

**Note:** When any of these characters are "special" to CP or CMS, an appropriate escape sequence must be entered in the command line for the characters to be passed to Tape Manager.

The TAPEDSN QRY VOL function allows the specification of a single VOLSER and will return any data set information that is available for the volume or an appropriate message if the volume is not associated with a data set.

### Returned data set information

The data set information returned for a data set occurrence includes the data set name, the data set volume flags and the data set volume list. There are eight volume flags, one for each volume up to the maximum of eight volumes that are allowed for a multi-volume data set. The flag values are:

#### A (active)

This flag indicates there is a corresponding volume in the volume list.

#### U (undefined)

This flag indicates there is not a volume in the list.

#### P (pending)

This flag indicates that the status of a volume is in question.

For example, a single-volume data set would show volume flags with the value AUUUUUUU and a two-volume data set would show volume flags with the value AAUUUUUU.

When rewriting an existing multi-volume data set, the disposition of some volumes might be indeterminate until the mount completes. In that case, a value of "P" might show up for a volume for which the status is unknown.

For example, suppose a tape mount command is issued that specifies the data set name and the second volume of a three-volume data set, with WRITE access. If only the second volume is written, the third volume of the data set will be truncated and the volume flags will be AAUUUUUU. However, until it is determined that the third volume will not be mounted (i.e., the mount of the second volume completes and no TAPEEOV command has been issued), the value of the volume flags will be AAPUUUUU.

**Note:** Refer to ["TAPEEOV command" on page 69](#) for more information.

## **TAPEDSN DEL**

The TAPEDSN DEL function allows an administrator or authorized user to delete an occurrence of a data set. A user that is not a system administrator requires TAPE access for the pool that owns the volume(s) associated with a data set in order to delete the data set. If more than one occurrence of the data set exists then the VOLSER of the first volume associated with the data set is also required.

When a data set occurrence is deleted, all of the volumes that were associated with the data set have the use-status set from USED to FREE.

## **TAPEDSN ADD**

The TAPEDSN ADD function allows an administrator or authorized user to create a data set entry in the event an occurrence is inadvertently deleted. This command requires the associated volumes to be in a private pool with a use-status of FREE.

## **TAPEDSN REN**

The TAPEDSN REN function allows an administrator or authorized user to rename a data set occurrence. If more than one occurrence of the data set exists, the VOLSER of the first volume associated with the data set is also required.

## **POOLACC command**

A special pool owner of SYSHLQ is reserved to manage permissions associated with the usage of data set name high-level qualifiers (HLQ).

The POOLACC SYSHLQ command can be used to delete authority or to set authority to NONE, DEFN or CNTL. These permissions control the ability of a user to create a data set occurrence with a specific HLQ using the TAPEMNT DSN command and the scratch (SCR) operand or using the TAPEDSN ADD function.

- **DEFN.** A user with DEFN authority can create new data sets with the HLQ.
- **CNTL.** A user with CNTL authority can create new data sets with the HLQ and grant others access to the HLQ. By default, a user ID has CNTL access to the HLQ that corresponds to the user ID.
- **NONE.** A user that is not a system administrator has a default access of NONE to HLQ's that do not correspond to their own user ID.

By default, a system administrator can modify the privileges for an HLQ but cannot create a data set with a particular HLQ (other than one that corresponds to the ID of the administrator) without first explicitly having authority to the HLQ granted.

## **POOLDEF command**

The pool definition command does not allow the definition of a pool with an owner of SYSHLQ, because the SYSHLQ pool owner is reserved for system use. A site that has private pools defined with SYSHLQ as the pool owner will need to transfer the volumes in those pools to other pools and delete the pools that have SYSHLQ as the pool owner.

**Note:** See the POOLDEF, LIKEU, and POOLXFR commands in the *IBM Tape Manager for z/VM User's Guide and Reference* for more information on transferring the volumes in one pool to another pool.

The SYSHLQ pools are used in conjunction with the POOLACC command to control the use of specific data set name high-level qualifiers. Refer to the [“POOLACC command” on page 68](#) for additional information.

## **TAPEMOD command**

The TAPEMOD command does not permit the use-status of a volume associated with a data set name to be changed from USED to FREE. Other than expiration processing, the volumes associated with an occurrence of a data set can only have the use-status changed to free by using the TAPEDSN delete function.

## TAPEDEL command

The TAPEDEL command with the POOL SYS and FORCE options can be used to forcibly delete a volume associated with a data set from the system. When any volume associated with a data set is deleted from the system, the data set is itself deleted and the use-status of any other volumes associated with the data set is set to FREE.

It is recommended that the TAPEDSN delete function be used to delete a data set before any related volumes are deleted from the system, specifically because the use of TAPEDEL FORCE is never recommended.

## TAPEMNT command

The TAPEMNT command provides support for the DSN, VOLNUM and PREREQ operands. The DSN operand can be used to:

- Specify the DATASET name.
- Specify VOL (the default) for volume-specific requests.
- Specify SCR for scratch requests.
- Request a volume lookup for an existing data set when neither VOL or SCR is specified.
- Specify a prerequisite mount request when used in conjunction with the TAPEEOV command (See [“TAPEEOV command” on page 69](#) below.) to create multi-volume data sets.

The VOLNUM operand can be used to:

- Specify a particular volume in a multi-volume data set based on the volume count (relative to one).
- Specify LAST to reference the last (or only) volume in a data set.

The PREREQ operand can be used in conjunction with the TAPEEOV command to create a multi-volume tape data set. See the [“TAPEEOV command” on page 69](#) for more information.

The volumes associated with a data set are owned by a private pool and access to the data set is controlled by access to the pool, not by the data set name. All of the volumes associated with a specific data set occurrence are effectively enqueued by the first mount request for any volume associated with that occurrence.

## TAPEEOV command

The purpose of the TAPEEOV command is to provide a means to create multi-volume data sets. The TAPEEOV command must be entered before the mount of the current volume ends. A typical sequence of commands to create a multi-volume data set might look something like:

```
TAPEMNT DSN USERA.FILE1 SCR
```

When this mount completes, a request number will be associated with the mount request. For this example, let's assume that the request number for the completed mount is 000222. The request number is returned in the EUM0072I message and it is also available in the information returned by TAPEREQ QRY.

Before detaching the device associated with the request (leading to the completion of the request), the TAPEEOV command is issued to extend the data set to another volume:

```
TAPEEOV DSN USERA.FILE1 PREREQ 222
```

This informs Tape Manager that the data set will be extended:

```
DET 181
```

This will complete request 222 when the device is returned:

```
TAPEMNT DSN USERA.FILE1 PREREQ 222
```

The next scratch volume will be mounted and it will extend the volume list associated with `USERA.FILE1`. Additional `TAPEEOV`, `DET`, `TAPEMNT` sequences can be completed to continue the extension of the data set to additional volumes, up to a maximum of eight volumes per data set.

Note that the `PREREQ` number must continue to be 222 regardless of the request numbers of the additional `TAPEMNT` commands. To extend the data set to a third volume, the commands are:

```
TAPEEOV DSN.USERA.FILE1 PREREQ 222
DET 181
TAPEMNT DSN.USERA.FILE1 PREREQ 222
```

A similar sequence could be used to mount and read a multi-volume data set, the difference being that `SCR` would not be specified on the initial `TAPEMNT` command.

## TAPEREQ command

The `TAPEREQ` command can be used to query or cancel both `TAPEMNT` and `TAPEEOV` commands. When a system administrator issues a `TAPEREQ QRY ALL` command, information relating to any outstanding tape mounts or `EOV` requests will be displayed.

The `TAPEREQ` command can also be used to cancel both `TAPEMNT` and `TAPEEOV` commands. To cancel a `TAPEEOV` command, the value that was specified in the `PREREQ` field of the `TAPEEOV` command must be used for the request number. It is possible for both a `TAPEMNT` and a corresponding `TAPEEOV` to have the same request number; in that case, if a `TAPEREQ` cancel is issued for the common request number, the `TAPEEOV` request will be deleted. An additional `TAPEREQ` (with the `FORCE` operand) would be needed to also cancel the `TAPEMNT` request. See the `TAPEREQ` documentation in the *IBM Tape Manager for z/VM User's Guide and Reference* for additional information.

The `TAPEREQ` command can also be used with the `QRY ENQ` operands to query any information about enqueues that are the result of `TAPEMNT` or `TAPEEOV` commands. See the `TAPEREQ` "usage notes" in the *IBM Tape Manager for z/VM User's Guide and Reference* for additional information.

## DMSTVI exit

Refer to [Appendix D, "Using DMSTVI," on page 101](#) for a detailed explanation of the Tape Manager `DMSTVI` exit.

## Library Types

---

The system supports use of both manual and automated tape libraries (ATLs). A *primary library type* must be specified in the Tape Manager configuration file by specifying a setting for the `LibTypPri` statement:

- M - manual mounts
- A - ATL mounts

The scratch process will always attempt to satisfy a mount from volumes with the primary library type, which can be set for a volume by the `TAPEADD` or `TAPEMOD` command.

If a *secondary library type*, `LibTypSec`, is specified in the configuration, the scratch process will also attempt to satisfy scratch requests from volumes with the secondary library type.

Generally, the following order will be followed to locate a scratch volume from volumes of the appropriate media type:

1. Check the private pool for volumes of the primary library type.
2. Check the private pool for volumes of the secondary library type.
3. Check the free pool for volumes of the primary library type.
4. Check the free pool for volumes of the secondary library type.

Checks for secondary library type will only be made if the secondary library type is specified in the configuration file. Checks for free pool volumes will only be made if the private pool has a free pool specified.



## ACF support for a Tape Manager catalog

---

When GenScratch YES is specified and Tape Manager is running operations on a Tape Manager catalog, you can take advantage of automatic loader support on non-dedicated manual tape drives that are equipped with an automatic cartridge facility (ACF).

Tape Manager allows dynamically allocated ACF devices to be used for both volume-specific mounts as well as scratch mounts. The following information describes a general operations procedure and additional considerations when using dynamically allocated ACF devices:

1. Initially the drives should be empty with scratch tapes in the autoloader. The drives must be in SYSTEM mode, not AUTO mode.
2. If the first mount request is for a:
  - *scratch* tape – The START button needs to be pressed to initiate the autoloader.
  - *non-scratch* tape – Load the drive with the specified tape and ready the drive. This will initiate the autoloader.
3. Once the device has been readied and the autoloader has been initiated, the autoloader should continue normally.
4. If the drive is unloaded when there are no tapes in the autoloader, the autoloader will need to be initiated as described above.

The ACF devices can also be dedicated to Tape Manager subject to the following restrictions:

- The drives are ONLY used for scratch mounts.
- The drives are operated in AUTO mode.
- The drives are READY and loaded with a scratch volume.

When a scratch mount is requested and Tape Manager finds a suitable scratch volume (i.e., a scratch volume in either the mount pool or, if one exists, the free pool) mounted on a dedicated manual device, the device is assigned to the scratch request and attached to the appropriate ID. No mount message is issued for the tape operators.

## Using an External Security Manager to control Tape Manager resources

---

If you use an External Security Manager (ESM), that supports the RACROUTE macro and the FACILITY class, you can configure Tape Manager to use the ESM as its authorization mechanism instead of using its own internal authorization mechanisms. A number of the facilities managed by Tape Manager can alternatively be managed by an ESM, as described in the discussion of the profiles that follows.

### Overview of setup using IBM Resource Access Control Facility (RACF)

The TxTMM ID must have authority to issue checks for access to a resource on behalf of another user. An example on how to do this for IBM Resource Access Control Facility (RACF) is provided; however, refer to the latest documentation for your particular release of ESM for details.

To use RACF as the authorization mechanism, perform the following steps:

1. Authorize communication with the RACF/VM server through IUVC.
2. Authorize third-party authorization checks.
3. Identify the RACF/VM server to which RACROUTE will be sent.
4. Specify site appropriate settings in the External\_Security configuration statement.
5. Ensure that RACF profiles and permissions are in place for the External Security configuration settings.

Each of these steps is described below.

## Authorize communication with RACF/VM

The TxTMM service machine communicates with RACF through IUCV. There are two options for authorizing this communication. You should consider which option is appropriate for your system's security administration policies.

The more general option is to have the RACF/VM server (usually called RACFVM) include an IUCV ALLOW statement in its directory entry. This will permit any user in the system to establish communication with the RACF server.

The more restricted option is to have Tape Manager include an IUCV statement for the RACF/VM server (for example, IUCV RACFVM PRIORITY MSGLIMIT 255) in its directory entry. This approach permits only the users with an IUCV RACFVM statement in their directory entry to establish communication with the RACF server.

## Authorize third-party checks

Authority to issue third-party authorization checks is controlled by the ICHCONN profile in the FACILITY class in RACF/VM. You must create this profile if it does not exist and give the Tape Manager server (TxTMM) UPDATE access to it.

## Identify the RACF/VM server

The RACROUTE interface must be able to identify the RACF/VM server. This is done with the RACF SERVMACH file, which is normally loaded to the CMS Y-disk during RACF installation. If you want to use a different RACF server, or your installation has removed the RACF SERVMACH file from general access, you should provide a tailored RACF SERVMACH file to the Tape Manager service machine TxTMM.

## Specify the security settings in the External\_Security configuration file statement

Update the Tape Manager configuration file SYS CONFIG to specify External\_Security\_Manager YES to enable profile checking.

### Privileged\_User\_Authority

When set to YES, this setting activates ESM checking for both the system administrator profile and the operations profile.

### Private\_Pool\_Authority

When set to YES, this setting activates ESM checking for the pool administrator profile, the pool volume profile and the pool free tape profile.

### System\_Authority

When set to YES, this setting activates ESM checking for the system free pool profile, the system pool definition profile and the system high-level qualifier profile.

The profiles are described in the discussion that follows. Refer to the Tape Manager configuration documentation in this guide for additional information on the External\_Security statement.

Two runtime options (ESM and NOESM) are supported to override the External\_Security\_Manager setting at start up, without the need to modify the configuration file. An example of a command to autolog the TMM machine and force the ESM setting to NO would be:

```
CP XAUTOLOG TMTMM # NOESM
```

This command will pass the NOESM runtime option to the TMM machine at start up, as long as the site allows the log on parameter to be passed to the program. If the command is entered from the command line, it may be necessary to use an escape character (typically a double quote) to pass the pound sign as a parameter, depending on the CP TERM settings.

Using the NOESM option can be a convenient way to start Tape Manager in a situation where Tape Manager typically runs with an ESM, but the ESM is not available for some reason. Remember that only

administrators that are defined in the Admins statement in the Tape Manager configuration file will have administrator privileges when running with the NOESM option.

The settings available in the External\_Security configuration statement can also be modified dynamically by a system administrator using the CNFGSET ESM command, but the configuration settings in the Tape Manager configuration file will take effect when Tape Manager is restarted. Refer to the POOLACC and CMDAUTH commands in the *IBM Tape Manager for z/VM User Guide* for more information about the native security facilities provided by Tape Manager.

## Define Tape Manager FACILITY class profiles and grant permissions

If an extended profile qualifier has been set in the External\_Security configuration statement, the extended form of the profile names that follow should be used and the value of the extended qualifier should be substituted for "qual". The use of these profiles is enabled only if External\_Security\_Manager YES is specified in the External\_Security configuration statement.

The profiles must be defined in the FACILITY class and that class must be active in the External Security Manager. A brief explanation is provided in the profile descriptions when the protection offered by the external security profiles differs substantially from the protection offered by the security provided in Tape Manager.

## Using the administrator profile to authorize system administrators

This section applies to the following authorities:

```
EUM.AUTH.ADMN or EUM.qual.AUTH.ADMN
```

The system administrator profile is used to check for administrator authority when Privileged\_User\_Authority YES is specified in the External\_Security configuration statement. Otherwise, Tape Manager will check for that authority based on the security settings provided by Tape Manager. The profile is valid when using the Tape Manager catalog or when using a z/OS DFSMS Removable Media Manager catalog (RMM catalog).

An access authority of READ to the profile will provide administrator authority to an individual or group when profile checking is active. Consider creating a user group for those users that require system administrator authority and providing that group READ access to the profile. Administrators have broad authority and are not subject to the standard operational security checks, with the exception that an administrator may not mount a tape in a private pool without an appropriate permission for the pool.

**Note:** It is *strongly recommended* that an appropriate group of system administrators and operations ID's be defined using the Admins and Operations statements in the Tape Manager configuration file. This provides sufficient operational authority in the event that it is necessary to operate Tape Manager when the ESM is not available. Additional permissions can be granted by system administrators using the CMDAUTH command when the ESM is not active.

## Using the operations profile to authorize operations users

This section applies to the following authorities:

```
EUM.AUTH.OPER or EUM.qual.AUTH.OPER
```

The operations profile is used to check for operations authority when Privileged\_User\_Authority YES is specified in the External\_Security configuration statement. Otherwise, Tape Manager will check for that authority based on the security settings provided by Tape Manager. The profile is valid in Tape Manager catalog and RMM catalog operations.

An access of READ to the profile will provide operations authority to an individual or group when profile checking is active. Consider creating a user group for those users that require operations authority and providing that group READ access to the profile.

Operators are permitted to issue commands that are necessary to monitor and operate the system on a normal basis. These commands include the ability to manage Tape Manager devices and automated tape libraries, manage tape mount requests, query volume information, quiesce the system (allowing only administrator commands), and manage communications between Tape Manager nodes in a Shared Catalog environment.

## Using the command profile to authorize the use of commands

This section applies to the following authorities:

```
EUM.CMND.command or EUM.qual.CMND.command
```

The command profile is used to check for the authority of a user, other than a system administrator, to issue a specific command when `Command_Authority YES` is specified in the `External_Security` configuration statement. The profile is valid in Tape Manager catalog and RMM catalog operations.

**Note:** There is no similar check for the authority to issue a specific command with the security provided by Tape Manager. ESM support is required.

An access permission of `READ` provides a user the authority to issue the command while a permission of `NONE` means that a user cannot use the command. The authority to use a command is not necessarily sufficient authority for the command to execute successfully – that authority only ensures that the command will not be rejected based on the command name.

For example, if a command requires administrator authority, the issuer must also be a system administrator for the command to complete successfully. Consider using a generic form of this command (such as, `EUM.CMND.*` or `EUM.qual.CMND.*`), with a universal access of `READ`, to provide the same default ability for any user to issue any command, as when an ESM is not used to protect the commands.

## Using the pool administrator profile to authorize a private pool administrator

This section applies to the following authorities:

```
EUM.POOLADMN.pool_owner.pool_name or EUM.qual.POOLADMN.pool_owner.pool_name
```

The pool administrator profile is used to check for pool administrator authority for a private pool (`pool_owner pool_name`) when `Private_Pool_Authority YES` is specified in the `External_Security` configuration statement. The profile is valid only in Tape Manager catalog operations. By default, only system administrators (defined on the `Admins` statement in the Tape Manager configuration file) can modify the settings of a private tape pool.

Providing a user that is not an administrator an access of `READ` to the profile will permit the user to manage the settings of a specific private tape pool. To allow the user to manage multiple pools with the same owner, consider using a generic profile (such as, `EUM.POOLADMN.pool_owner.*` or `EUM.qual.POOLADMN.pool_owner.*`).

The external security pool administrator authority is different than the same authority with Tape Manager. When the security provided by Tape Manager is used, a pool administrator has full authority to the volumes in the pool. With external security, however, the pool administrator authority is restricted to modifying the pool settings and additional authority to the volumes must be provided via the `POOLVOLS` profile to provide the authority to mount volumes in the pool.

## Using the pool volume profile to control access to private pool volumes

This section applies to the following authorities:

```
EUM.POOLVOLS.pool_owner.pool_name or EUM.qual.POOLVOLS.pool_owner.pool_name
```

The pool volume profile is used to protect tape volumes that are in a private pool (`pool_owner pool_name`) when `Private_Pool_Authority YES` is specified in the `External_Security` configuration statement. The profile is valid only in Tape Manager catalog operations.

The three access permissions that can be used with this profile are ALTER, UPDATE and READ. These permissions correspond to the TAPE, WRITE and READ authorities that are used with the security provided by Tape Manager.

- Providing TAPE access to a private pool (with ALTER) allows the user to modify volume attributes for volumes in the pool (using the TAPEMOD command), and to mount volumes in the pool with either read or write access.
- Providing WRITE access to the pool (with UPDATE) allows the user to mount volumes in the pool with either read or write access.
- Providing READ access to the pool (with READ) allows the user to mount volumes in the pool with READ access.

To manage multiple pools with the same owner, consider using a generic profile (such as, `EUM.POOLVOLS.pool_owner.*` or `EUM.qual.POOLVOLS.pool_owner.*`). If this profile is not defined (or the facility class is inactive for some reason), the user ID that corresponds to the pool owner will have TAPE access to the pool by default.

## Using the pool free tape profile to allow a private pool to be used as a scratch pool for another private pool

This section applies to the following authorities:

```
EUM.POOLFREE.pool_owner.pool_name or EUM.qual.POOLFREE.pool_owner.pool_name
```

The pool free tape profile is used to check for the authority to use a private tape pool (`pool_owner pool_name`) as a free pool for another private pool when `Private_Pool_Authority YES` is specified in the `External_Security` configuration statement. The profile is valid only in Tape Manager catalog operations.

A private tape pool can contain scratch volumes or the pool can draw scratch volumes from another private pool or the system free pool. The authority to this profile is checked when a pool is being defined that uses a private free pool or when an existing pool is being modified to use a private free pool.

The security provided by Tape Manager requires the owner of the pool being defined or modified to have free-tape authority for the free pool. With *external* security, the user that issues the command to define or modify the pool must have READ access to this profile, regardless of the pool owner of the pool to be defined or modified.

To manage multiple pools with the same owner, consider using a generic profile (such as, `EUM.POOLFREE.pool_owner.*` or `EUM.qual.POOLFREE.pool_owner.*`). If this profile is not defined (or the facility class is inactive for some reason), the user ID that corresponds to the pool owner will have the authority to use the pool as a free pool by default.

## Using the system free pool profile to allow the system tape pool to be used as a free pool for a private pool

This section applies to the following authorities:

```
EUM.SYS.SCRATCH or EUM.qual.SYS.SCRATCH
```

The system free pool profile is used to check for the authority to use the system free pool as the free pool for a private pool when `System_Authority YES` is specified in the `External_Security` configuration. The profile is valid only in Tape Manager catalog operations.

A private tape pool can contain scratch volumes or the pool can draw scratch volumes from another private pool or the system free pool. The authority to this profile is checked when a pool is being defined that uses the system free pool or when an existing pool is being modified to use the system free pool.

The security provided by Tape Manager requires the owner of the pool being defined or modified to have authority use the system free pool. With *external* security, the user that issues the command to define or

modify the private tape pool must have READ access to this profile, regardless of the pool owner of the pool to be defined or modified.

To manage multiple pools with the same owner, consider using a generic profile (such as, `EUM.POOLFREE.pool_owner.*` or `EUM.qual.POOLFREE.pool_owner.*`). If this profile is not defined (or the facility class is inactive for some reason), the user ID that corresponds to the pool owner will have the authority to use the pool as a free pool by default.

## Using the system pool definition profile to permit the definition a of private tape pool by the pool owner

This section applies to the following authorities:

```
EUM.SYS.POOLDEF or EUM.qual.SYS.POOLDEF
```

The system pool definition profile is used to check for the authority to define a private tape pool when `System_Authority YES` is specified in the `External_Security` configuration. The profile is valid only in Tape Manager catalog operations.

The profile is checked for READ access when a user ID that is not a system administrator attempts to define a private tape pool. A user with READ access to this profile can only define private tape pools for which the user is a pool owner. When this permission is granted, consider granting the user pool administration authority for pools owned by that user to provide the authority to modify the settings of any pools the user defines.

## Using the system high-level qualifier menu to manage data set names

This section applies to the following authorities:

```
EUM.SYS.HLQ.hlq or EUM.qual.SYS.HLQ.hlq
```

The system high-level qualifier (HLQ) profile is used to check for the authority to create a data set with the high-level qualifier when `System_Authority YES` is specified in the `External_Security` configuration statement. The profile is valid only in Tape Manager catalog operations.

If a profile is not defined, the user ID that corresponds to "hlq" is allowed to use that high-level qualifier by default. Providing UPDATE access to the profile is equivalent to providing DEFINE authority to the HLQ with the security provided by Tape Manager.

- A user ID that requests a tape mount that will create a data set with high-level qualifier "hlq" requires UPDATE access to the profile.
- A user ID that is not a system administrator and uses the TAPEDSN command to *create* a data set that begins with the high-level qualifier "hlq" requires UPDATE access to the profile.
- A user ID that is not a system administrator and uses the TAPEDSN command to *rename* a data set to a data set name that begins with the high-level qualifier "hlq" requires UPDATE access to the profile.
- A user ID that is not a system administrator and uses the TAPEDSN command to *query* data sets that have a high-level qualifier of "hlq" requires READ access to the profile.

The security provided by Tape Manager for the same functions requires DEFINE authority in all cases, including TAPEDSN QRY.

## Chapter 6. Using Exits

This chapter describes Tape Manager exits that you can use to either execute commands or perform hourly processing.

### The Command Exit

Tape Manager checks for a command exit, EUMCMD EXEC, to see if it is located on the Tape Manager Machine (TMM), and also checks the configuration file for a CmdExit statement. If the EUMCMD EXEC is located on the TMM and there is *no* CmdExit statement in the configuration file, the command exit will be enabled for use. This command exit, if it exists and is enabled, will be called on both request and catalog nodes.

The CmdExit *configuration statement* can be used to control the initial status of the command exit and the CMDEXIT *administrative command* can be used to determine or set the status of the command exit once Tape Manager is running. For more information on the CmdExit configuration statement, refer to “CmdExit” on page 26. For more information on the CMDEXIT command, refer to the “Administrative Commands” chapter in the *IBM Tape Manager for z/VM User's Guide and Reference*.

Rules for the command exit are as follows:

- The format of the string passed to the command exit will vary depending on the environment.
  - *When running with a Dedicated Catalog or an RMM catalog*, the exit will be passed the user ID of the command issuer in the first word of the string, followed by the command string that was entered by the issuer, which will be separated from the user ID by a space.
  - *When running with a Shared Catalog*, the exit will be passed the user ID of the command issuer in the first word of the string, the node location (either REMOTE or LOCAL) in the second word of the string, the node name in the third word of the string, followed by the command string that was entered by the user, which will be separated from the node name by a space. The *node name* is the value specified in the Define\_Local\_Node statement in the configuration file on the Tape Manager node where the command was issued.

The exit is not passed the user interface command (TAPCMD). The command string is not translated to upper case prior to the call.

- The exit should return a string that contains a numeric return code in the first word and, if the command was modified, the modified command string with at least one space between the modified command and the return code.
- A site-specific rejection message can be passed to the requestor when the command exit returns an eight (8) by specifying the site message after the eight separated by one or more commas. If a site message is not returned, a default message will be returned to the requestor indicating the request was rejected by the command exit.

Refer to the following table to see the effects of various return codes.

| If the exit returns a return code of: | Then the result is this:   |
|---------------------------------------|--|
| 0                                     | The original command will be processed as if the exit had not been called.   |
| 4                                     | The modified command that follows the return code will be processed, instead of the original command.              |
| 8                                     | The original command will be rejected and an error message will be returned to the ID that originated the command. |

Table 10. Results of return codes (continued)

| If the exit returns a return code of: | Then the result is this:   |
|---------------------------------------|--|
| anything other than 0, 4, or 8        | The original command will be processed as if the exit had not been called. An error message will be issued to all operations IDs and administrator IDs (if any) specified in the Message_Consoles statement in the Tape Manager configuration file (SYS CONFIG). |

### Example 1: Running with a Dedicated Catalog or an RMM catalog

The user, USER1, enters this command:

```
tapcmd tapereq qry all
```

The string passed to the command exit would be the following:

```
USER1 tapereq qry all
```

### Example 2: Running with a Shared Catalog

The user, USER1, running on a request node, REQNODE, enters this command:

```
tapcmd tapereq qry all
```

The string passed to the command exit running on a catalog node, CATNODE, would be the following:

```
USER1 REMOTE REQNODE tapereq qry all
```

If a command exit was running on the request node, REQNODE, the string passed to that exit would be the following:

```
USER1 LOCAL REQNODE tapereq qry all
```

The command exit on a request node will always be called with the "LOCAL" node location, because request nodes do not accept commands from other nodes.

## The Hourly Processing exit

Tape Manager provides support for a customer-written process to be executed on an hourly basis. If the TMM locates an EUMHRLY EXEC file on an accessed disk at start up, the TMM will execute the EXEC whenever a change in the hour is detected, which is normally within the first 10 seconds of the start of a new hour. If the TMM machine is down at the top of the hour, the EXEC will be executed when the TMM machine is restarted. The hourly processing exit is valid for both Tape Manager catalog and RMM catalog operations.

A sample exec (EUMHRLY SAMPEXEC) is provided on the sample disk (2C2) of the installation ID (5697J08C). The sample exec demonstrates the use of the migration tool to backup the Tape Manager catalog on a daily basis. When a backup is performed in the Tape Manager exit, a reliable backup can be produced since the catalog is stable during the exit processing. An external process can then backup catalog backup disks to tape (if desirable) and the integrity of the backup disks will be intact. Refer to [“Using the Migration Tool to perform automated backups”](#) on page 104 for additional information.



---

## Appendix A. Using a z/OS RMM Tape Catalog

This section outlines considerations when using Tape Manager with the IBM DFSMS/MVS Removable Media Manager (RMM) repository. Some sites prefer to use RMM to manage the catalog of tape volumes. Communication with an RMM agent (provided by Tape Manager and installed on z/OS) can be specified in the Tape Manager configuration file.

The Tape Manager catalog is not used when running an RMM catalog operation, and all tape requests are deferred to the RMM agent for authorization checking and catalog management. The Tape Manager RMM agent for z/OS, running as a started task, communicates via a TCP/IP socket connection to a dedicated service machine component (TMRMM) on VM, which relays the information to the Tape Manager service machine (TMTMM).

The RMM interface provides support for Tape Manager mount requests to be managed by a remote RMM repository (RMM catalog operation) and is mutually exclusive with using the Tape Manager tape catalog. The interface allows tape mount requests to be authorized based on the ID of the requestor and the tape volume associated with the request. Support is provided for scratch and volume-specific mount requests, tape mounts by data set name, multi-volume data sets, and the DMSTVI OS simulation exit.

---

### Tape Manager configuration file considerations

The RMM statement in the Tape Manager configuration file indicates a remote repository will be used. The statement has additional parameters that are used to establish connectivity to the remote z/OS agent. A sample RMM statement is:

```
RMM rmmid tcpip local_ip_addr local_port# remote_ip_addr remote_port#
```

The RMM statement parameters are used as follows:

- The *rmmid* parameter identifies the Tape Manager RMM Interface service machine, normally TMRMM.
- The *tcpip* parameter refers to the name of the TCP/IP service machine on the z/VM system where Tape Manager is installed.
- The *local\_IP\_address* and the *local\_port#* parameters identify the TCP/IP address and port number of the Tape Manager RMM Interface service machine. The address can be specified as either a standard TCP/IP address or as a host name.
- The *remote\_IP\_address* and the *remote\_port#* parameters identify the address and port number of the Tape Manager started task agent running on z/OS. The address can be specified as either a standard TCP/IP address or as a host name.

An optional RmmDevPool statement is supported. It provides a default device pool for scratch requests in an RMM catalog.

The optional configuration statement, RmmScrDflt, is provided to define the default source for scratch tapes. The default source can be a real device address, a device pool, or a scratch pool that was defined with the optional RmmScrPool statement.

For an RMM catalog, Tape Manager includes support for Automated Tape Library (ATL) scratch mounts by category code. The RmmScrPool statement supports the use of source and target scratch categories when an ATL device pool is specified. Source and target categories are also available on the DevPoolCat statement when the statement references an ATL device pool.

---

### Tape Mount command

The tape mount command, TAPEMNT, has some parameters that are not supported for an RMM catalog. This section describes the TAPEMNT parameters that are different or not supported when using an RMM catalog.

## Unsupported parameters

To provide command compatibility with a Tape Manager catalog, the following fields are *not* supported and are ignored when present in an RMM request:

- DSE (Data Security Erase processing)
- NODSE (No Data Security Erase processing)
- TEXT (Text in the volume catalog entry)

## Using parameters with TAPEMNT

There are other considerations when using parameters with the TAPEMNT command. Review the following items when using the TAPEMNT command with an RMM catalog:

- The RDEV parameter is valid for RMM requests and is mutually exclusive with the DEVPOOL parameter.
- If multiple RMM scratch mounts are eligible for a mounted scratch volume, the volume will be used for the oldest request.
- The tape pool owner (powner) and tape pool name (pname) parameters cannot be used with RMM scratch requests.
- Scratch mounts for an ATL device or device pool are resolved via a category scratch mount request to the ATL if there is related category information in the configuration file; otherwise, the scratch request is treated as a manual mount.
- Any volume mounted on an appropriate manual device and that is not associated with another mount request is a candidate volume for a manual scratch mount. If RMM indicates that the volume is a valid scratch volume, the volume will be allocated to any media-compatible, manual, scratch mount request. Otherwise, the manual scratch mount waits for another candidate volume to be mounted.

## Using multi-volume data sets

Tape mounts for multi-volume data sets are supported using the TAPEEOV command and when using the DMSTVI exit that is supplied with Tape Manager. Volume-specific mounts of scratch tapes are not permitted, which is consistent with standard RMM processing.

## Dynamic device allocation for manual mount requests

---

Tape Manager may attempt to dynamically allocate a mount device when a dedicated device is not available to satisfy a mount request, providing a means exists. The use of device pools, scratch pools and the Define\_Media configuration statement can facilitate dynamic device allocation.

## Satisfying scratch requests

For scratch requests that use a device pool or real device, dynamic device allocation will be attempted if there are no dedicated devices to satisfy the request. The use of the RmmScrPool and RmmScrDflt statements can also provide a means to associate a scratch request with a device pool for mount requests that do not explicitly specify a device pool or real device.

## Using media types

The Define\_Media configuration statement can be used to specify a default device pool for manual (non-ATL) mounts. The RMM agent will return the RMM Media Name information to the TMM when a mount authorization request is made. If the RMM Media Name matches one of the media types specified in the SYS CONFIG file (or defined dynamically using the CNFGSET command), the associated device pool will be used as a default device pool for the volume.

## ACF support

Support for drives with an Automatic Cartridge Facility (ACF) is provided for non-dedicated (i.e., dynamically allocated) devices only. If an ACF drive is to be used only for scratch mounts, the drives can be in either AUTO or system mode, and can be loaded and ready initially.

If an ACF drive is to be used for both scratch and non-scratch mounts, the following restrictions apply:

- Initially the drives should be empty with scratch tapes in the autoloader.
- The drives must be in SYSTEM mode, not AUTO mode.
- If the first mount request is for a scratch tape, the START button needs to be pressed to initiate the autoloader.
- If the first mount request is for a non-scratch tape, load the drive with the specified tape and ready the drive. This will initiate the autoloader.
- Once the device has been readied and the autoloader has been initiated, the autoloader should continue normally. If the drive is unloaded when there are no tapes in the autoloader, the autoloader will need to be initiated as described above.

## Restricting a device pool to scratch mounts

The following procedure can be used to help ensure that a pool of devices is used only for scratch mounts:

1. Define a "scratch" device pool that contains only the devices that will be used for scratch mounts.
2. Do not define those devices to any of the "standard" device pools.
3. Specify the "scratch" device pool name in the configuration RmmScrDflt statement.

Please note that this procedure does not guarantee that a drive will be used for scratch only. If the scratch device pool is specified in a volume-specific tape mount request, the operator will be prompted to mount the requested volume on one of the devices in the pool. At that time, the request can either be cancelled or the drive can be manually loaded to satisfy the request.

## Tape security for an RMM catalog

---

Requests for volume-specific mounts and scratch mounts are authorized by the z/OS RMM agent. The z/OS agent provides an authorization interface to the IBM z/OS RACF security product and supports the use of the following:

- the TAPEVOL class,
- the TAPEDSN setting, and
- the tape access list.

An authorization exit point is provided that allows the results of the RACF checking to be respected or modified.

## Using the Tape Manager RMM command

---

The command TAPCMD RMM can be used to pass RMM commands, such as those normally issued from the TSO command area, to the RMM agent running on the z/OS system. The parameter of the RMM command is the actual RMM command that will be executed on the remote system. For example, to list the volume information for volume V00001, use TAPCMD RMM LISTVOL V00001.

The output of the command is consistent with the text that would result from issuing the RMM command as a TSO command. The output can be returned as messages (queued or displayed) or as a VM reader file.



---

## Appendix B. Configuring Tape Manager for RMM catalog

After you install Tape Manager, you are ready to configure the product so that it contains your customized information. Communication with the DFSMS/MVS component, Removable Media Manager (RMM) for z/OS, can be requested in the system configuration (SYS CONFIG) file. In this case, the RMM catalog is used, not the Tape Manager catalog, and all tape requests are deferred to the Tape Manager for z/OS RMM agent for authorization checking and catalog management.

A sample configuration file (RMMMODE CONFSAMP) is provided. The rest of this chapter describes the statements that can be used in the SYS CONFIG configuration file, based on the RMMMODE CONFSAMP sample file. Examples are provided so you can see how to use each statement and its parameters.

### Location and name of configuration file

A sample configuration file, RMMMODE CONFSAMP, is located on the 5697J08C 2C2 disk. This sample may be used as a guideline for creating the site configuration file.

It is recommended that you copy this sample file and rename it SYS CONFIG. The configuration file can be located on any disk (or directory) accessed by Tape Manager, but the recommended approach is to place the configuration file on the TMTMM 198 disk. The 198 disk will be accessed automatically by Tape Manager with file mode "E" if the disk is detected at start up.

### Guidelines for modifying the configuration file

When making changes to the SYS CONFIG file, keep the following guidelines in mind:

- The configuration statements can be continued with a comma. This format is demonstrated in the sample configuration file.
- Only one comment is allowed in a configuration record. Comments cannot be embedded or continued.

Comments beyond the line continuation character are permitted. The comment left delimiter is the combination of the forward slash and the asterisk (/\*) and the right delimiter is the combination of the asterisk and the forward slash (\*).

The example below shows the device pool statement (DevPool) as well as the use of commas and comments:

```
DevPool,          /* Define a device pool for manual devices    */
  3490L,          /* Device pool name                            */
  600-601        /* Device pool devices                         */
```

---

## Admins

Use the Admins statement to define the System Administrator(s). The scope of administrator privileges is discussed following the example below.

Specify the administrator IDs after the Admins keyword, being sure to leave at least one space between each ID. In the example, the System Administrators for this system are ADMINID1 and ADMINID2.

Example:

```
Admins ADMINID1 ADMINID2 /*Authorized users */
```

### Scope of a system administrator ID

The scope of a Tape Manager system administrator ID depends on the following:

- when Tape Manager native security is used to control administrative command authority.
- when an External Security Manager (ESM) is used to manage that authority.

The information that follows describes how the authorities vary for a system administrator based on which type of security, native or external, is being used with Tape Manager.

## Definition and Scope of System Administrator IDs with Tape Manager Native Security

An administrator ID can be defined by one of the following methods:

- The ADMINS statement in the Tape Manager configuration file.
- The CMDAUTH command issued by an existing system administrator.

The scope of the administrative authority in each of the above cases is identical but only system administrator IDs defined in the Tape Manager configuration file will be retained when Tape Manager is restarted. System administrators have the authority to perform a number of functions that are not permitted for the general user:

- Define tape pools to the system and delete them from the system (Tape Manager catalog only).
- Grant access to any private tape pool and remove that access (Tape Manager catalog only).
- Add volumes to the system and delete them from the system (Tape Manager catalog only).
- Request volume-specific mounts of tape volumes that reside in the system pool (Tape Manager catalog only).
- Query and modify the attributes of any private tape pool and volumes owned by that pool (Tape Manager catalog only).
- Issue administrator commands, such as CMDAUTH, STATUS, and QUIT, and modify configuration settings with commands, such as CNFGSET and NODECMD.
- Dedicate tape devices to Tape Manager using the TAPEDEV command.
- Issue SMSG STATUS commands to the DMM and LMM machines.

In general, when the behavior of a command is different for a general user and an administrative user, the difference will be described in the documentation for that command.

For additional information on Tape Manager native security, refer to the CMDAUTH and POOLACC commands in the *IBM Tape Manager for z/VM User's Guide and Reference* (SC18-9349).

## Definition and Scope of System Administrator IDs when an External Security Manager (ESM) Controls Administrative IDs

System administrators are managed by an ESM whenever `Privileged_User_Authority YES` is specified in the `External_Security` configuration statement in the Tape Manager configuration file (`SYS CONFIG`), or when the `CNFGSET ESM` command has been issued with `PRIV YES` specified when ESM checking is active.

**Note:** Only the ESM settings specified in the configuration statement are retained when Tape Manager is restarted.

System administrators have the authority to perform a number of functions that are not permitted for the general user:

- Define tape pools to the system and delete them from the system (Tape Manager catalog only).
- Grant access to any private tape pool and remove that access (Tape Manager catalog only).
- Add volumes to the system and delete them from the system (Tape Manager catalog only).
- Request volume-specific mounts of tape volumes that reside in the system pool (Tape Manager catalog only).

- Query and modify the attributes of any private tape pool and volumes owned by that pool (Tape Manager catalog only).
- Issue administrator commands, such as CMDAUTH, STATUS, and QUIT, and modify configuration settings with commands, such as CNFGSET and NODECMD.

**Note:** The CMDAUTH command cannot be used to manage resources that are controlled by the External Security Manager when external security is active for Tape Manager. For example, when external security is controlling Tape Manager administrative IDs, the CMDAUTH command cannot be used to define additional administrative IDs.

- Dedicate tape devices to Tape Manager using the TAPEDEV command when the command is not restricted by the External Security Manager.

Only user IDs specified in the ADMINS configuration statement can issue SMSG STATUS commands to the DMM and LMM, and that authority is the only special authority granted by the ADMINS configuration statement. That is, a user in the ADMINS statement does not have any additional administrative authority unless the ID has also been granted administrator authority within the ESM.

In the event that an instance of Tape Manager that normally relies on an ESM for administrative checking is forced to run without the ESM available, only users in the ADMINS configuration statement will have the authority to grant Tape Manager native security permissions. It is for that reason that at least one user ID must be specified in the ADMINS configuration statement.

For additional information on how to use external security with Tape Manager, refer to [“Using an External Security Manager to control Tape Manager resources” on page 71.](#)

## ApplID

---

As of V1.3 of Tape Manager, the ApplID statement is no longer supported. However, like other invalid statements, it will be ignored and a warning message will be written to the log.

The ApplID statement specified the application identifier for the message repository (EUMUME TEXT) on the TMM machine.

Example:

```
ApplID      EUM
```

## Attach

---

The Attach statement is optional and is only necessary if a site has a reason to dedicate one or more drives to the Tape Manager system. This statement is used to specify a list of dedicated devices that the Tape Manager Device Management Machine (DMM) will attempt to attach at start up.

Attach is not valid for a request node in a Shared Catalog environment, but it does support node names with the AT parameter when specified for a catalog node. The parameter can include multiple devices and/or multiple device range specifications.

For manual mounts, an available dedicated device in the associated device pool will always be used before an attempt is made to dynamically allocate a non-dedicated device from the pool.

**Note:** The specification of ATL devices in the Attach list is not recommended since the automated tape library normally manages the device allocations.

Specify one or more devices and/or a device range after the Attach keyword. You must have at least one space between each device ID.

Example:

```
Attach 501-502      /* Dedicate devices 501 and 502 */
```

## Manual mounts

If there are no dedicated devices or there is no dedicated device in the appropriate device pool, the list of devices in the associated device pool will be searched for a free device.

## ATL devices

It is strongly recommended that you do not specify automated tape library (ATL) devices in the ATTACH list. The automated tape library normally manages the device allocations.

## CmdExit

---

Use the CmdExit statement in the configuration file to control the site command exit processing when a user command exit (EUMCMD) will be used.



**Attention:** If the site does *not* plan to use the Tape Manager command exit feature, the CmdExit statement is not required and should be removed from the Tape Manager configuration file.

The file name of the command exit is EUMCMD EXEC and the exit can be used to alter the format of a command, reject a command, or allow a command to execute without modification.

**Note:** If you choose to omit the CmdExit statement, you can use the CmdExit command to define the command exit dynamically.

If you plan to use a command exit, it is normally recommended for the exit to run on the *TMM* machine. In this case, specify the TMM machine name in the CmdExit statement to run the exit within the TMM. However, if the exit issues any Tape Manager commands as part of the exit processing, the exit must run on the *CMM* machine. In this case, specify the name of the CMM machine on the statement.

Use ENABLE or DISABLE to set the initial status of the exit. If the exit is to run in the TMM machine, any remaining parameters that are specified are ignored.

When the CmdExit statement has DISABLE specified, the statement will be validated and the operands will be used if a CmdExit ENABLE command is issued without any overriding parameters. When a command exit is enabled on a Shared Catalog request node, the command exit will process the requests and forward any accepted commands to be executed remotely to the catalog node. Any command that is accepted on the request node and forwarded to the catalog node will also be subject to any exit processing that is enabled for the catalog node.

If the exit will run on the CMM, the transmit action, the response timeout value, the response timeout action, and sub-command timeout value must be specified. Valid values are listed in the below.

- The transmit action is either RUN or FAIL when a command cannot be transmitted to the CMM machine.
  - RUN. This value indicates that Tape Manager is to continue processing the command requested by the user without performing command exit processing.
  - FAIL. This value indicates Tape Manager should not process the command and an error message is returned to the user.
- The response timeout value is the number of 10 second intervals to wait for a response from the CMM before timing out.
- The response timeout action is either RUN or FAIL (see descriptions above) and is used if the exit process times out.
- The sub-command seconds is the number of seconds that the CMM machine will wait for a Tape Manager command (issued by the exit) to complete, while processing a user request.

Refer to “The Command Exit” on page 77 in this manual and the "CmdExit" command in the *IBM Tape Manager for z/VM User's Guide and Reference* (SC18-9349) for additional information.

The CmdExit statement has several parameters, which are described in the table below.



Table 11. Parameters for CmdExit statement

| Parameter   | Description  |
|-------------|--|
| Init status | Specifies the initial status of the exit as either ENABLE or DISABLE.  |
| Exit ID     | <p>The ID of the exit processor is the name of the service machine where the command exit (EUMCMD EXEC) will be executed.</p> <ul style="list-style-type: none"> <li>If you want the command exit to be executed on the TMM machine, specify TxTMM (the user ID of your TMM machine). The remaining parameters are ignored. This option should only be used if your command exit does not issue any Tape Manager commands.</li> <li>If the command exit resides on a separate service machine, typically TxCMM, the remaining parameters are used for command exit processing. If the use of Tape Manager commands is required in the command exit, the exit must be executed on a service machine other than the TMM.</li> </ul> <p><b>Note:</b> Refer to sample command exit (EUMCMD EXECSAMP) provided on the TMCMM 191 disk for the correct method for issuing a Tape Manager command in the exit.</p> |
| Xmit ACTN   | <p>Indicates the desired action if the command cannot be sent to the exit processor. Valid actions are:</p> <ul style="list-style-type: none"> <li>RUN. This value indicates Tape Manager should continue processing the original request if the command cannot be sent to the CMM machine.</li> <li>FAIL. This value indicates Tape Manager should reject the original request if the command cannot be sent to the CMM machine.</li> </ul>   |
| Intervals   | Specifies the number of 10-second intervals to wait for a command exit response before timing out.   |
| TO ACTN     | <p>Indicates the desired timeout action if the exit process times out. Valid actions are:</p> <ul style="list-style-type: none"> <li>RUN. This value indicates Tape Manager should continue processing the original request if a response from the CMM is not received within the timeout period.</li> <li>FAIL. This value indicates Tape Manager should reject the original request if a response from the CMM is not received within the timeout period.</li> </ul>   |
| SubCMD Secs | The subcommand seconds is the number of seconds that the command exit machine will wait for a subcommand (i.e. a command issued on behalf of a primary user request being processed by the exit).  |

Example:

```

CmdExit,          /* Command Exit Settings          */
ENABLE,          /* Command Exit is enabled        */
TMCMM,           /* Command Exit service machine is TMCMM */
RUN,             /* Run the command if transmit fails */
3,              /* Wait 30 seconds for a response   */
RUN,            /* Run the command if no response   */
60              /* Command Exit subcommand timeout after 60 sec */

```

## Define\_Media

The Define\_Media configuration statement is optional for an RMM catalog. However, it is required if the RMM Media Name field is to be used to dynamically assign a device pool for a manual mount request, and this field is returned from the RMM agent on mount authorization requests. The RMM Media Name must match the Media Name field in RMM on z/OS.

If the RMM Media Name field is not blank and it matches a media type in the SYS CONFIG file, and if no device pool or RDEV was specified on the TAPEMNT request, an attempt will be made to dynamically allocate a device from a device pool associated with the media type in the SYS CONFIG file.

If multiple device pools are defined for a particular media type, dynamic allocation will be attempted and will correspond to the order of the device pool statements in the SYS CONFIG file. If a device pool is only valid for read-only (R/O) mounts, allocations from R/O device pools (if any) will always be attempted ahead of read-write (R/W) device pools.

There are three parameters that can be associated with each media type:

#### Media Name

Specifies the required one- to six-character alpha-numeric name for this media. This name must match the Media Name field in RMM on z/OS.

#### Media Device Pool

Specifies an optional device pool name that can be associated with a media type. This enables the allocation of a manual mount device in the device pool when a volume mount with the associated media type is requested.

#### Media Mode

Specifies an optional access mode to indicate what types of mounts (read-only or read-write) the device pool is capable of handling. If the media mode is not specified, read-write is the default. Valid values are RO or RW.

Example:

```
Define_Media CART   DEVPPOOL 3490M MODE RW
Define_Media CART   DEVPPOOL 3490L MODE RO
```

## DevPool

---

Use the DevPool statements to specify the name of a device pool and the range of devices that are included in the device pool. The device pool name must be alphanumeric and from one to eight characters in length. Lowercase letters will be translated to uppercase.

There are different considerations for device pools used with manual mount devices and those with ATL devices . These considerations are described later in this section.

**Note:** The DevPool statement is not valid for a request node in a Shared Catalog environment.

## Manual mount devices

Device pools for manual mount devices are used to determine if an appropriate device is available (based on the defined media types) for a particular media type. If a drive from a device list is available, the mount request will be issued for a specific drive.

If none of the drives in the list are available, the device pool will be searched periodically for a free device until the mount times out. Multiple DevPool statements can be entered for the same device pool if multiple lines of device addresses are required.

Example:

```
DevPool,           /* Define a device pool for manual devices */
  3490L,           /* Device pool name */
  600-601          /* Device pool devices */

DevPool,           /* Define a device pool for manual devices */
  3490M,           /* Device pool name */
  500 501          /* Device pool devices */
```

## ATL mounts

Device pools for ATL devices are recommended and are useful when the specification of a device pool name for a scratch mount might be desirable. The device address parameter is also recommended for ATL device pools. If the device address parameter is not specified, any mount request for a volume with an ATL attribute that specifies an RDEV (real device number) will be converted to a manual mount request, even if the real device is managed by an ATL.

For RMM catalogs, the DevPoolCat statement can be used to specify the corresponding scratch categories for an ATL device pool.

In the following example, 3590A is the name of the device pool, ATL indicates this is an ATL device pool, and NWAATL1 is the name of the ATL.

Example:

```
DevPool,      /* Define a device pool for ATL devices */
  3590A,      /* Device pool name */
  ATL,        /* ATL device pool */
  NWAATL1     /* Library name */
  530-531     /* Device pool devices */
```

## Using DevPool with unload parameters

The DevPool statement may be used with two unload parameters in the RMM catalog, which are the following:

- UNLDFND - Unload not found.
- UNLDNSCR - Unload not scratch.

The unload parameters can be used separately or together, and are associated with each device in the device pool. If a device is in any device pool that has an unload parameter specified, the unload attribute will be associated with that device for any mount request that uses the device.

Without these unload parameters, if a volume is READY in a dynamically allocated device for a scratch mount and RMM indicates that the volume is not a scratch volume or that volume is unknown to RMM, the default behavior is for the drive to be detached with the volume still loaded at the mount point. The reason for leaving the volume loaded is that the volume might have been mounted for some other request.

However, in some cases, and particularly with auto-loaders, the site might prefer to have the volume unloaded so that the drive can be utilized for other requests. This is especially true if the devices are only intended to be used by Tape Manager. The unload parameters can be used in this case to ensure the volume is unloaded.

The parameters are checked only for dynamically allocated (non-dedicated) device pool mounts and they are not checked when the RDEV parameter is specified on the mount command. A device pool mount can occur when the DevPool parameter is specified on the mount command or when RMM returns a media name that corresponds to a device pool in the device media type.

The device pool name must be alphanumeric. Lower case letters will be translated to uppercase. The name must be eight (8) characters or less.

Example:

```
DevPool,      /* Define a device pool for manual devices */
  3490M,      /* Device pool name is 3490M */
  600-601,    /* Device pool devices are 600 and 601 */
  UNLDNSCR,  /* Unload volume if RMM returns NOT SCRATCH */
  UNLDFND    /* Unload volume that is not defined to RMM */
```

## Use of DevPool with TAPEDEV

The TAPEDEV command provides a facility to manage device pools; however, a device pool change made with the TAPEDEV command is not permanent. The change will be lost when Tape Manager is restarted.

The TAPEDEV command can be used to do any of the following:

- Add or delete device pools.
- Add devices to or delete devices from a device pool.
- Display the devices in a device pool.

The status of devices in a device pool can be displayed using **TAPEDEV QRY**. All of the devices in the pool will be displayed, whether they are online or offline. Status for non-dedicated devices that are not in use by Tape Manager will be shown as UNKNOWN. The status of dedicated devices or devices that are in use by Tape Manager will be shown in the response. For more information on the TAPEDEV command, refer to the *IBM Tape Manager for z/VM User's Guide and Reference* (SC18-9349).

## DevPoolCat

The DevPoolCat statement is only valid for RMM catalog installations. This statement specifies the scratch category and target category that are required to support scratch mounts, based on an ATL device pool. The device pool name must correspond to an ATL device pool name that is also defined in the Tape Manager configuration file.

Specify the category codes carefully and only after verifying the values are correct and consistent with site standards. Consider using standard Removable Media Services VM scratch category codes (such as SCRATCHx, where x is 0-9 or A-F) so that the DFSMS/RMS SET VOLCAT command can be used to set the category code for the volumes to be used as scratch volumes by Tape Manager to the desired value.

You may also want to use the standard VM target category code, VOLSPECIFIC, as the target category for non-scratch volumes. Once a scratch volume is mounted, Tape Manager will change the category code of the volume from the scratch category to the target category.

You should also review the documentation for RMS Bulk Processing Files in the *z/VM: DFSMS/VM Removable Media Services* manual for additional information, especially if you plan to use non-standard (i.e., hexadecimal) category codes.

Example:

```
DevPoolCat,
 3590A      /* Device pool name          */
 0004      /* Scratch category (for example, RMM MEDIA4) */
 000F      /* Target category (for example, RMM PRIVATE) */
```

## DevWait

Use the DevWait statement to specify the maximum amount of time to wait, in minutes, for a volume to be mounted once the volume is available, meaning once the volume is not in use for another request and the mount is requested. Also see [“VolWait” on page 47](#).

Example:

```
DevWait 6      /* The mount timeout value for an available device */
              /* is 6 minutes.                          */
```

## Disk

Use the Disk statement to specify a virtual address and file modes to be used by the Tape Manager Machine (TMM). It is recommended that the specified addresses be used if a directory name is not specified. A directory ID may be used, rather than a CMS minidisk virtual address, for DB1.

Several parameters can be used to specify a virtual address or directory ID. These parameters are described below.

**DB1**

Specifies a disk that contains files managed by Tape Manager. The statement is required in RMM catalog installations if, and only if, the site intends to authorize users for non-standard label processing (NL or BLP) for the tape mount command. Refer to [“TapeLbl” on page 46](#) for more information.

**USER**

Specifies the virtual address and file mode that will be used to link to and access a user disk when a FILE parameter is specified on an administrative command, such as CMDAUTH. It is required if, and only if, the FILE parameter will be used on the CMDAUTH or TAPELBL commands.

**TCPIP**

Specifies a disk that contains files that might be required for host name resolution. The TCPIP DATA file contains the NSINTERADDR statement that specifies the IP address of the name server(s). The TCPIP DATA is likely to be found on the TCPMAINT 592 disk.

Example:

```

/*      Name  Vaddr or Directory Name      */
/*      ----  - - - - - - - - - - - - - - - */
/* Disk  DB1   0200                        */
/* Disk  DB1   VMDEVU:VMDEVLIB.EUM.TMTMM.200 */
/*                                          */
Disk  DB1   0200
Disk  USER 0C91
Disk  TCPIP 0592

```

## Display\_Text

The Display\_Text statement controls the device display once a tape mount request is satisfied and the device is ready to attach to the appropriate ID. A device will be attached either to the ID that requested the tape mount or the ID specified in the ATT parameter of the TAPEMNT command.

The statement can have one or two parameters depending on whether the display is to show a single value or flash alternatively between two values. Either of these two parameters can be composed of the following:

- a symbolic value only
- a literal value only
- a combination of a symbolic value and a literal.

The length of the value(s) displayed will be truncated to eight (8) bytes. Only one symbolic value is permitted in each parameter specified. The parameters can be specified in upper or lower case, but will be treated as upper case parameters regardless.

The table below lists the symbolic values for which a substitution will occur.

| Symbolic Value | Definition  |
|----------------|---|
| &vol           | Substitute the VOLSER (for a labeled volume).           |
| &volser        | Same as &vol  |
| &user          | Substitute the user ID to which the device is attached. |
| &requestor     | Substitute the user ID that issued the TAPEMNT command. |
| &sysid         | Substitute the z/VM system name.                        |
| &tmmid         | Substitute the TMM ID.                                  |

| Table 12. Symbolic values (continued) |  |
|---------------------------------------|--|
| Symbolic Value                        | Definition                             |
| &rdev                                 | Substitute the real device address.    |
| &vdev                                 | Substitute the virtual device address. |

#### Example #1:

This example shows the default value if the `Display_Text` statement is omitted. This statement causes the display to flash between the VOLSER (plus an arrow) and the attach ID.

```
Display_Text &vol-> &user
```

#### Example #2:

The statement below causes only the VOLSER to be displayed.

```
Display_Text &vol
```

#### Example #3:

```
Display_Text ZVM_&sysid &vol
```

The statement in this example causes the display to flash between the system ID prefixed by the literal `ZVM_` and the volume ID. If the system ID in this example was greater than four (4) characters in length, only the first four characters of the ID would be displayed as appended to the `ZVM_` literal:

## Dmm

Use the `Dmm` statement to indicate the name of the service machine for the device manager, also known as the Device Management Machine (DMM).

Example:

```
Dmm      TMDMM          /* Userid for the Dev. Mgt. Machine */
```

## External\_Security

Use the `External_Security` statement only if you plan to use an External Security Manager (ESM) to control access to Tape Manager resources.

Refer to [“Using an External Security Manager to control Tape Manager resources”](#) on page 71 in this manual for additional information.

Refer to the *IBM Tape Manager for z/VM User's Guide and Reference* (SC18-9349) for more information on the `CNFGSET` command and for more information on Tape Manager's native security features in the `CMDAUTH` and `POOLACC` commands.

The parameters for this statements are:

### External\_Security\_Manager

Specify YES if an ESM will be used to control access for `Privileged_User_Authority`, `Command_Authority`, `Private_Pool_Authority` or `System_Authority`, which are described below; otherwise, specify NO or do not use the `External_Security` statement.

If NO is specified, the `CNFGSET` command can be used to activate ESM checking dynamically once Tape Manager is started. In this case, the subsequent settings in this statement will be used unless those settings are overridden when the `CNFGSET` command is issued.

### Privileged\_User\_Authority

Specify YES if an ESM will be used to control checking for the system administrator profile and the operations profile.

Specify NO if the Tape Manager native security will be used to control privileged users.

### Command\_Authority

Specify YES if an ESM will be used to control the use of Tape Manager commands; otherwise, specify NO. The Tape Manager native security classifies command issuers as either administrative users, operations users or general users, while the use of an ESM can control the use of any Tape Manager command by specific users.

### ESM\_Unavailable

This setting controls processing when the ESM is unavailable. Valid values are:

- Specify FALLBACK to fall back to the Tape Manager native security.
- Specify SUSPEND to accept only the commands from the system administrators or operations users specified in the Tape Manager configuration file. The native Tape Manager security will be in effect for those users.
- Specify QUIT to terminate Tape Manager when the ESM is unavailable.

### Extended\_Profile\_Qualifier

The setting determines what, if any, extension will be inserted into the second qualifier position of the standard Tape Manager ESM security profiles when authorization checking is performed.

- Specify NONE if you do not want an additional qualifier inserted.
- Specify TMMID if you want the user name of the TMM ID inserted into the second qualifier position.
- Specify SYSID if you want the system name inserted into the second qualifier.
- Specify any other valid profile qualifier if you want that qualifier inserted into the second qualifier position.

### Example

```
External_Security,          /* External Security Settings */
External_Security_Manager YES, /* Use External Security Mgr */
Privileged_User_Authority YES, /* Use ESM for admn & oper auth */
Command_Authority YES,     /* Use ESM for command auth */
Private_Pool_Authority YES, /* Use ESM for private pools */
System_Authority YES,     /* Use ESM for system auth */
ESM_Unavailable QUIT,     /* Quit if ESM unavailable */
Extended_Profile_Qualifier NONE /* No extended profile qualifier */
```

## FileOff

Use the FileOff statement to specify the minimum authority (ADMIN, OPERATIONS, or USER) that is required to use the OFFSET parameter in the TAPEMNT command. If the FileOff statement is omitted, the default authorization level is OPERATIONS.

The OFFSET parameter on a TAPEMNT command can be used to position the tape before it is given to the user. For example, if OFFSET 0 is specified in the TAPEMNT command, the tape will be positioned at the beginning of the tape instead of past the volume label (assuming the tape has a volume label). Refer to the TAPEMNT command in the *IBM Tape Manager for z/VM User's Guide and Reference (SC18-9349)* for more information.

Example:

```
FileOff OPERATIONS
```

## Library

---

The LIBRARY statement specifies an ATL name (known to RMS), the initial status of the library, and the name of the Tape Manager library management machine. The library name can be a maximum of 16 characters. Only one LIBRARY statement can be specified for each library.

Dedicated Catalog example:

```
Library,
  NWAATL1,      /* Library name          */
  ONLINE,       /* Initial status        */
  TMLM1        /* Tape Manager library management machine */
```

## Operations

---

Use the Operations statement to identify the operations personnel who have administrative authority for the TAPEDEV, TAPELIB, TAPEREQ, and TAPEQRY commands. The user ID's associated with the Operations statement will be ignored if External Security is active and the Privileged\_User\_Authority setting is YES.

Leave a space between ID's if listing more than one ID. An example is shown below.

Example:

```
Operations OPERATOR MNTID1 MNTID2
```

## RetnDflt

---

Use the RetnDflt statement to indicate the number of days that will be the default period for pool retention. This number must be less than or equal to the retention maximum (RetnMax) value. If the retention default is greater than the retention maximum, an error message will be issued.

Example:

```
RetnDflt 100 /* Default retention is 100 days */
```

## RetnMax

---

Use the RetnMax statement to specify the maximum number of days for the pool retention period. This value must be greater than or equal to the retention default (RetnDflt) value or an error message will be issued.

Example:

```
RetnMax 99999 /* Maximum retention days is 99999 */
```

## Rmm

---

Use the Rmm repository statement to identify the local TCP/IP stack and the socket connections for the RMM Interface machine and the z/OS started task agent. The port number for the z/OS started task is specified as a parameter on the EXEC statement in the started task procedure.

You may require access to the TCPIP DATA file to use a host name in the Rmm statement, rather than an IP address, if Name Services is used to get the IP address of the host. The TCPIP DATA file contains the NSINTERADDR statement that specifies the IP address of the name server(s). The TCPIP DATA is likely to be found on the TCPMAINT 592 disk.

Example:

```
Rmm,
  TMRMM, /* The VM RMM communications service machine name */
```



```

TCPIP, /* The VM TCP/IP service machine name */
RS54, /* The host name (or IP address) of the VM system */
9999, /* The port number for the VM RMM communications server */
RS52, /* The host name (or IP address) of the z/OS agent */
35042 /* The port number of the z/OS agent started task */

```

## RmmCmdWait

Use the RmmCmdWait statement to specify a timeout value, in minutes, for requests that are made using the RMM command to issue RMM commands remotely.

Example:

```
RmmCmdWait 3
```

## RmmScrDflt

Use the RmmScrDflt parameter in RMM catalog installations to specify the default scratch type and name. It is used when a scratch mount is requested without scratch selection criteria.

Only one RmmScrDflt statement should appear in the Tape Manager configuration file. If multiple RmmScrDflt statements are specified, the last RmmScrDflt statement will be used and any other RmmScrDflt statements will be ignored.

Valid default scratch types and name values are listed in the next table.

| <i>Table 13. Parameters for RmmScrDflt statement</i> |   |
|--|---|
| Type   | Name value  |
| SCRP   | RmmScrPool name   |
| DEVP   | DevPool name  |
| RDEV   | Real device address<br><br><b>Note:</b> The use of a real device address as a default scratch source is permitted, but it is not recommended. |

### Example #1

```
RmmScrDflt SCRP
ATL1
```

### Example #2

```
RmmScrDflt DEVP
3590A
```

### Example #3

```
RmmScrDflt RDEV 530
```

## RmmScrPool

The RmmScrPool statement can be used to associate a scratch pool name with an automated tape library (ATL) name, and the scratch and target categories for the library. It can also be used to define a manual scratch pool name that is composed of dedicated devices. The function is similar to that of the DevPoolCat statement for an automated tape library. An RmmScrPool name can be referenced by

the SCRPOOL parameter of a TAPEMNT command or by the RmmScrDflt statement that designates the default scratch pool.

The parameters are:

```
pool_type pool_name library_name scratch_category target_category
```

These names and categories will be used when requesting scratch tapes. The parameters are specified in the following order and are described in the table below:

**Note:** Specify the category codes carefully and only after verifying the values are correct and consistent with site standards.

| <i>Table 14. Parameters for RmmScrPool statement</i> |  |
|--|--|
| <b>Parameter</b>                                     | <b>Description</b>   |
| pool_type  | Specify either MAN (manual) or ATL (automated tape library).   |
| pool_name  | Specify one to eight characters for the name of the scratch pool.  |
| library_name   | Specify one to eight characters for the name of the library associated with the scratch pool. This parameter is optional for manual scratch pools. |
| scratch_category                                     | Specify a valid, four-character hex value for the scratch category. This parameter is required for ATL scratch pools.                              |
| target_category                                      | Specify a valid, four-character hex value of the ATL target category. This parameter is required for ATL scratch pools.                            |

When a scratch mount refers to a manual scratch pool name (e.g., NOATL below), a message will be issued to mount a volume in that device pool. Any dedicated device that is READY and not associated with another request is considered to be a potential scratch volume for the scratch request. No attempt is made to dynamically allocate a device for tape mounts where SCRPOOL refers to a manual pool defined by an RmmScrPool statement.

The example below also shows the definition of a manual scratch pool named NOATL. A reference to this scratch pool in a TAPEMNT scratch request would result in a mount request message asking for a scratch to be mounted in the NOATL device pool.

Example of ATL scratch pool:

```
RmmScrPool,
  ATL,           /* ATL scratch pool           */
  ATL1,         /* Scratch pool name is ATL1  */
  NWAATL1,      /* Library name               */
  0004,         /* Scratch category (for example, RMM MEDIA4) */
  000F          /* Target category (for example, RMM PRIVATE) */
```

Example of manual scratch pool:

```
RmmScrPool,
  MAN,          /* Manual scratch pool       */
  NOATL        /* Scratch pool name is NOATL */
```

## RmmVolMntScr

Use the RmmVolMntScr statement to specify whether to allow a volume-specific tape mount of a volume that has a status of SCRATCH in the RMM catalog. The parameters for this command are listed below.

### ADMN

Only administrators can allow the volume mount of a scratch tape.

### OPER

Operators and administrators can allow the volume mount of a scratch tape.

**YES**

Allow all volume mounts of scratch tapes.

**NO**

Do not allow any volume mounts of scratch tapes.

Example:

```
RmmVolMntScr ADMN
```

## TapeLbl

Use the TapeLbl statement to specify the default authorization for use of non-standard labels (NL or BLP) in mount requests and to indicate whether checking is to be performed for exceptions.

- The first parameter on the statement indicates the type of non-standard label (NL or BLP).
- The second parameter is the default authorization setting.
- The third parameter determines if authorization checking will be performed for exceptions to the default setting.

Refer to the TAPELBL and CMDAUTH commands in the *IBM Tape Manager for z/VM User's Guide and Reference* for additional information.

| TapeLbl statement    | Description  |
|----------------------|--|
| TapeLbl BLP NONE NO  | BLP requests are not permitted and there are no exceptions. This is the default if the TapeLbl BLP statement is omitted. |
| TapeLbl BLP NONE YES | BLP requests are permitted only for authorized users.  |
| TapeLbl BLP ALL NO   | BLP requests are permitted for all users.  |
| TapeLbl BLP ALL YES  | BLP requests are permitted for all users who are not expressly prohibited.   |
| TapeLbl NL NONE NO   | NL requests are not permitted and there are no exceptions. This is the default if the TapeLbl NL statement is omitted.   |
| TapeLbl NL NONE YES  | NL requests are permitted only for authorized users.   |
| TapeLbl NL ALL NO    | NL requests are permitted for all users.   |
| TapeLbl NL ALL YES   | NL requests are permitted for all users who are not expressly prohibited.  |

Example:

```
TapeLbl,          /* Label setting for the tape mount command */
NL,              /* Settings for LABEL NL */
NONE,           /* Usage is not allowed */
YES,            /* Unless the user is authorized */

TapeLbl,          /* Label setting for the tape mount command */
BLP,            /* Settings for LABEL BLP */
NONE,           /* Usage is not allowed */
YES,            /* Unless the user is authorized */
```

## VolWait

Use the VolWait statement to specify the time allowed, in minutes, for a volume to become available when it is in use for another request. The volume wait timer only applies if a volume is in use by another Tape Manager request.

The device wait (DevWait) timer only applies when a volume is *not* in use by another Tape Manager request (or once a volume that was in use is no longer in use). The DevWait timer includes the time used to obtain a suitable device and the time used to mount and ready a volume once the device is available. Refer to [“DevWait” on page 35](#) for more information.

**Note:** The VolWait statement is not valid for a request node in a Shared Catalog environment.

Example:

```
VolWait 10          /* Mount timeout for a volume that is in use    */
                   /* Wait up to 10 minutes                */
```

---

# Appendix C. Installing the z/OS RMM Agent Started Task

The sample JCL provided in this appendix can be used to download and install the required files for the RMM agent provided by Tape Manager. Some modifications to the JCL are required and those requirements are documented in the JCL as comments. Some site preparations are needed to run the agent, including setup of the started task and the related security elements. Instructions are provided in this appendix for the authorizations required for a RACF security environment.

---

## Installing Tape Manager

Read the information in Chapter 2, “Installing Tape Manager,” on page 9 to install Tape Manager. Where appropriate, RMM-specific information and steps are listed in this chapter. Follow the procedures outlined in Chapter 2, substituting the RMM information whenever it is provided.

---

## Creating the RMM agent files

Sample JCL for creating the z/OS RMM agent files can be found on the installation ID (5697J08C) sample disk (2C2) in the RMMINST JCL member. The JCL contains instructions for making site specific changes to the sample. This JCL will FTP two sequential files from the 5697J08C sample disk that were created with the TSO TRANSMIT command and create the z/OS product files using the TSO RECEIVE command.

The output files that are required for the FTP download are pre-allocated in the FTP step. The RECEIVE output files will be dynamically allocated in the RCV step.

**Note:** This JCL contains mixed-case data and does not have sequence numbers. If the TSO EDIT command is used to edit the file, ensure that the CAPS OFF and NUMBER OFF settings are used.

The RMMINST JCL will create the CNTL and LOAD data sets, which are described below:

- The CNTL data set contains a sample JCL member that can be used as a basis for creating a site-specific started task procedure.
- The LOAD data set contains the executable modules required to run the agent. The execution load library must be an authorized library.

---

## Modifying the started task procedure

The EUM.VMTM.CNTL file contains a sample procedure for the started task. The started task name and data set names can be modified to site-specific standards. Consider the following items when modifying the started task procedure:

- The first word in the VMTZOS parameter is the host name of the local TCP/IP stack. The second word is the port number for the socket connection from the Tape Manager RMM service machine (TMRMM), which runs on z/VM.
- The TCP/IP address or the host name of the z/OS Agent host and the port number must be supplied in the Tape Manager configuration file on z/VM as parameters of the RMM keyword.
- Access to OMVS is required for OE and TCP/IP access.
- The execution load library must be authorized.

---

## Assigning RACF authorities for the started task

The table below lists the permissions that are required for the started task. In particular, the table lists the type of authority that is required for various RMM RACF profiles in the FACILITY class.

| Type of Authority | Name of Profile          |
|-------------------|--------------------------|
| CONTROL           | STGADMIN.EDG.LISTCONTROL |
| CONTROL           | STGADMIN.EDG.MASTER      |
| CONTROL           | STGADMIN.EDG.VRS         |
| UPDATE            | STGADMIN.EDG.OPERATOR    |
| UPDATE            | STGADMIN.EDG.FORCE       |

## Understanding the z/OS agent command exit (ZVMRMME1)

The z/OS RMM Agent command exit is ZVMRMME1. As distributed, no exit is active and no members in the CNTL PDS have this name. There are two sample exits: ZVMRMME1 and ZVMRMME2. Both exits have the same name, ZVMRMME1, internally and can be assembled without any changes by pointing the ASMRMME1 JCL to them or by renaming them to ZVMRMME1. Consider the following:

1. The ZVMRMME1 exit will change the security context for all RMM commands from VM to the user ID EUMMSTR, without regard.
2. The ZVMRMME2 exit is more selective and will change the context of any LISTVOLUME/LV command to EUMMSTR, but will let other commands execute in the context of the issuing user. This enables you to have some granularity in security. The ZVMRMME2 exit is intended to be easy to extend. It uses an internal table to determine what commands are allowed from any user.

When the RMM agent receives its first RMM command after start up, it will attempt to load module ZVMRMME1. If it is not found, the exit will not be active for this execution, and you will see this message:

```
RMM Command User exit failed.
```

If the exit should ABEND, it will be disabled for the remainder of that execution and you will see the same message again.

Documentation on the format of the parameter list is included in the sample exits. Reviewing the code in the exits would be helpful in understanding how the parameters are used and how operations are performed by the exits.

## Understanding the z/OS agent mount exit (ZVMRMMM1)

The z/OS RMM agent mount exit is ZVMRMMM1. As distributed, no exit is active and no members in the CNTL PDS have this name. There is one sample exit, which is ZVMRMMM1. This exit has the name, ZVMRMMM1, internally and can be assembled without any changes by pointing the ASMRMMM1 JCL to it or by renaming it to ZVMRMMM1.

The ZVMRMMM1 exit causes any mount to be allowed, regardless of the success or failure of the security checks (except from a user ID, PDTOWNA, which will be arbitrarily denied; we left this example in for illustration).

When the RMM agent receives its first mount after start up, it will attempt to load module ZVMRMMM1. If it is not found, the exit will not be active for this execution, and you will see this message:

```
RMM Mount User exit failed.
```

If the exit should ABEND, it will be disabled for the remainder of that execution and you will see the same message again.

Documentation on the format of the parameter list is included in the sample exit. Reviewing the code in the exit would be helpful in understanding how the parameters are used and how operations are performed by the exit.

---

## Appendix D. Using DMSTVI

DMSTVI is an exit point provided by CMS to aid in tape management. If a CMS FILEDEF process meets certain requirements, CMS will search for a DMSTVI module. If the module is provided, CMS will load and call DMSTVI at several processing points: FILEDEF, OPEN, CLOSE, and EOV. This intent is that DMSTVI will provide an interface from CMS's "OS simulation" to the site's VM tape management product, so that programs using OS simulation against tape data sets can have the correct tapes mounted automatically.

This appendix is provided to help explain the operation of DMSTVI and how it works with Tape Manager for z/VM.

---

### Data passed from CMS to DMSTVI

Because DMSTVI is an exit point, it can only operate within the framework allowed by CMS. Therefore, it may be helpful to understand what information CMS will pass to DMSTVI in different circumstances, and what DMSTVI will then pass onto the tape management subsystem.

There are five primary pieces of information that CMS will provide to DMSTVI:

1. The name of the FILEDEF for which DMSTVI is being called. This name is eight characters or less and corresponds to the DDNAME in z/OS.
2. A data set name, if provided with the CMS LABELDEF command.
3. An indication as to whether the FILEDEF is for input (read only) or output (read/write).
4. A volser, if CMS has been provided a specific volser by either the FILEDEF or LABELDEF commands.

**Note:** In CMS, a "true" scratch request is indicated by providing CMS with a volser of "SCRATCH" in the FILEDEF or LABELDEF command. Anything else, including omitting any volser, causes CMS to consider the FILEDEF a non-scratch request.

5. The specific tape name on which this mount is desired.

**Note:** CMS allows for 16 tapes at addresses 180-187 and 288-28F. They have corresponding tape names of TAP0-TAP7 and TAP8-TAPF, respectively.

Note that there are potential combinations that do not make sense, such as an input (read only) FILEDEF with a volser of SCRATCH, or a non-SCRATCH input FILEDEF for which neither a volser nor data set name was provided.

In general, the DMSTVI provided by Tape Manager for z/VM does not try to validate or reject such combinations; the request will be formatted appropriately and sent to the TMM. Any rejection because of incompatible parameters will occur in the TMM. There is one exception: when neither a volser or data set name is provided for an input request.

If a data set name is provided, DMSTVI will use it; if not, DMSTVI will generate an internal name consisting of *userid.filedef.Dddmmyy.Thhmmss*, which will be used in requests to the TMM and, if in an RMM catalog installation, reflected to RMM to associate with new output files. The following definitions apply:

- *Userid*. The VM userid issuing the request.
- *filedef*. The CMS FILEDEF name
- *ddmmyy*. The date with two-digit day, month, and year.
- *hhmmss*. The time with 2-digit hour, minute, and second.

In most cases, the internal name described above is sufficient. However, if the request is for input (i.e. read only), and neither a volser or data set name is provided, DMSTVI must detect this inconsistency. Otherwise, a generated data set name passed to the TMM might cause incorrect results.

The table below shows possible combinations of input from CMS and what DMSTVI will send to the TMM:

Table 16. Possible combinations

| <b>VOLSER</b> | <b>DSNAME</b>   | <b>Input or Output</b> | <b>Sent to TMM</b>                   |
|---------------|-----------------|------------------------|--------------------------------------|
| SCRATCH       | None            | Input                  | M DSN (generated DSN) SCR R/O*       |
| SCRATCH       | None            | Output                 | M DSN (generated DSN) SCR R/W        |
| SCRATCH       | Provided by DSN | Input                  | M DSN (provided DSN) SCR R/O*        |
| SCRATCH       | Provided by DSN | Output                 | M DSN (provided DSN) SCR R/W         |
| Volser        | None            | Input                  | M DSN (generated DSN) VOL volser R/O |
| Volser        | None            | Output                 | M DSN (generated DSN) VOL volser R/W |
| Volser        | Provided by DSN | Input                  | M DSN (provided DSN) VOL volser R/O  |
| Volser        | Provided by DSN | Output                 | M DSN (provided DSN) VOL volser R/W  |
| None provided | None            | Input                  | Failed by DMSTVI**                   |
| None provided | None            | Output                 | M DSN (generated DSN) R/W            |
| None provided | Provided by DSN | Input                  | M DSN (provided DSN) R/O             |
| None provided | Provided by DSN | Output                 | M DSN (provided DSN) R/W             |

**Notes:**

1. The two combinations followed by an asterisk (\*) in the "Sent to TMM" column are combinations that will be rejected as inconsistent by the TMM.
2. The combination marked by two asterisks (\*\*) in the "Sent to TMM" column will be failed by DMSTVI and nothing is sent to the TMM.
3. Passing a SYSPARM string to DMSTVI that contains embedded blanks, such as "DISP NEW CATLG", requires that you use the SYSPARM (?) option on the FILEDEF command. This option causes CMS to prompt for the string. SYSPARMS that consist of a single token with no embedded spaces can be passed in the FILEDEF command.

For a Tape Manager catalog, the SYSPARM is used only to pass the pool owner and the pool name for a scratch mount. Please reference the HELP files for specifics on which parameters are valid in a particular situation.

For an RMM catalog, the only values that may be passed via the SYSPARM are a disposition (DISP OLD, DISP NEW, or DISP MOD) and/or a catalog value (CATLG, NOCATLG, or RECATLG).

4. For a Tape Manager catalog, data sets that are created by a TAPEMNT command issued by the DMSTVI exit should be managed using the TAPEDSN command, like any other tape data set.
5. DMSTVI is automatically loaded and called by CMS for qualifying FILEDEFs, so you must ensure -- especially during testing -- that this version of DMSTVI is only available to the appropriate users.

## Using DMSTVI with a different UI module

DMSTVI uses the standard user interface module to pass commands to the TMM and receive return codes and responses. The default name for the user interface module is TAPCMD, and this is also the default name in DMSTVI.

If you have renamed your user interface module, or wish to create a special version of it for use with DMSTVI, perform the procedure described in the appendix titled "Tape Manager Local Modification - EUMUIM ASSEMBLE example" which is found in the *Program Directory for Tape Manager for z/VM*.



## Appendix E. Migration of Tape Manager Catalog

This appendix describes how to migrate the Tape Manager catalog files from Version 1 Release 2 to Version 1 Release 3. Tape Manager has extended some records in Release 3; as a result, the Tape Manager catalog files must be reformatted.

The migration process is designed to occur automatically the first time Tape Manager is started if the program detects that a migration is required. The process includes a facility to back up the catalog prior to migration using two additional disks that are specified in the Tape Manager configuration file. The process also provides automatic recovery of the catalog in some exceptional cases if the process terminates abnormally. Additionally, the migration processing has provisions for restarting the migration automatically in the event the process is interrupted by an external event, such as a system shutdown.

### Tape Manager configuration file

Two additional DISK statements are required in the configuration file (shown below). The statements are used to specify the backup disks for the DB1 disk and the DB2® disk. As with the catalog disks, the backup disks can be either a minidisk or an SFS directory, and a minidisk can be backed up to a minidisk or an SFS directory; likewise, an SFS directory can be backed up to either a minidisk or an SFS directory.

In Release 2, the sample configuration file DISK statements for the catalog disks were:

```
DISK  DB1  0200  U
DISK  DB2  0210  V
```

In Release 3, the file mode parameter is ignored if specified. The sample configuration file DISK statements for the catalog and backup disks are:

```
DISK  DB1  0200
DISK  DB2  0210
DISK  DB1BKUP 1200
DISK  DB2BKUP 1210
```

The migration tool can also be used to simply back up the catalog. (Refer to [“Using the Migration Tool to perform automated backups”](#) on page 104 for more information.) Therefore, even though the backup disks are only required for the initial migration of the catalog, the disks can also be used to perform the automated backups in the operational environment. The backup disks should empty for the initial start up and, for minidisks, formatted for CMS use.

### Creating Backups of the Catalog Disks

The migration tool automatically creates backups of the catalog disks to the backup disks specified in the configuration file. It is recommended that you back up the disks independently to provide an additional level of protection. It is also recommended that copies of the Release 2 configuration file (SYS CONFIG) and media file (SYS MEDIA) be available on the TMM 191 disk in case a rollback to Release 2 code is required.

### Initial start up

The migration is designed to run automatically on the TMM machine when the Release 3 code runs for the first time. It is recommended that the TMM machine be logged on and not disconnected in case there are any prompts that require a response. For example, if files are found on the backup disk, a prompt will be issued for permission to erase the files.

In the event of any unusual circumstances or error conditions during the migration, you are strongly encouraged to contact IBM Technical Support for assistance. The TMM machine will continue with normal operation (no restart required) when the migration completes normally.

## Contingency Considerations

---

However unlikely, if it becomes necessary to revert back to Version 1 Release 2 of the Tape Manager catalog, a toleration PTF and other provisions have been made to assist in this process. These contingency considerations are described below.

### **Details concerning the toleration PTF**

A toleration PTF will be issued for Release 2 prior to the GA release of Release 3. The toleration code provides the ability to run Release 2 code with either a Release 2 or a Release 3 catalog. The toleration PTF is only intended to support the GA Release 3 catalog in event that an unforeseen error occurs in the GA code that requires the Release 3 code to be backed off. It is strongly recommended that you contact IBM Technical Support prior to returning to the use of Release 2 code.

### **Provisions to Revert a Release 3 Catalog Back to a Release 2 Catalog**

The migration tool can also be used to revert a Release 3 catalog to a Release 2 format. Problems can arise if the toleration PTF is not in place on the Release 2 system and an event occurs that requires the catalog to be reverted to Release 2 code. Some of the extended Release 3 catalog data might be lost, depending on the Release 3 features a site has utilized, when a Release 3 catalog is reverted to a Release 2 catalog. It is strongly recommended that you contact IBM Technical Support prior to reverting the catalog.

## Using the Migration Tool to perform automated backups

---

Once it is established that the Release 3 code is performing acceptably, you may want to use the migration tool for automated backups of the Tape Manager catalog. Special considerations are described in this section.

### **Considerations for automated backups**

Be aware that the first time a backup occurs, the existing files on the backup disks, which are likely to be the Release 2 files that were backed up at migration time, will be erased. Although tape mounts and other tape operations using the Release 3 catalog will make the Release 2 catalog obsolete, it is strongly recommended that you keep a copy of the Release 2 catalog until you are satisfied with the Release 3 catalog.

### **Performing automated backups using the EUMHRLY EXEC**

When Tape Manager finds the EUMHRLY EXEC on an accessed disk, it will be executed at (or near) the beginning of each hour. This EXEC can be used for any processing you want to do each hour. See the EUMHRLY SAMPEXEC file on the 5697J08C sample disk (2C2) for an example of how to back up the Tape Manager catalog each hour by calling the MGRBKUP EXEC from the EUMHRLY EXEC.

---

## Appendix F. Using StorageTek automated tape libraries

This appendix describes how to use StorageTek (STK) automated tape libraries with IBM Tape Manager for z/VM. Defining STK automated tape libraries and performing various Library Manager Machine (LMM) processes are described below.

---

### Defining the StorageTek Automated Tape Library

An automated tape library (ATL) can be defined using the LIBRARY configuration file statement or dynamically using the TAPELIB statement. In either case, the library name is an arbitrary name of up to 16 characters that must match the library name associated with the volumes that are associated with the library (using either the TAPEADD or TAPEMOD command).

Refer to “Tailor the Library Management Machine” on page 13 and the “DevPool” on page 33 and “Library” on page 41 configuration statements in for additional details when defining a StorageTek library.

---

### Library Manager Machine (LMM) mount processing

The LMM mount processing can be divided into the following phases:

1. Request an appropriate device for the volume to be mounted.
2. When a device is returned, attach the device to the device management machine (DMM).
3. When the volume is mounted, notify the tape management machine (TMM).

Throughout the request processing, the LMM will periodically check on the status of the request. A return code of one (RC 1) indicates that the request is pending. When the volume is mounted and ready, a message will be sent from the LMM to the TMM to indicate that the mount completed and the drive on which the volume was mounted. Normally, two messages will be sent from the DMM for a successful tape mount.

- The first message occurs when the DMM detects the device that was attached by the LMM.
- The second message occurs when the DMM detects the device that was attached is in a READY state.

When the DMM "ready" message is received by the TMM, the device will be given to the appropriate user (either the requestor or an ID specified with the ATT parameter). Because this process involves attaching the device to the DMM before the volume is actually mounted, problems with the interface can, in unusual circumstances, leave a device attached to the DMM. The TMM machine will attempt to detach any non-dedicated and unallocated device from the DMM approximately 30 minutes after the first device message is received if the device has not been allocated, by virtue of the drive becoming READY and associated with a mount request, within that timeframe. For this reason, it is recommended that the time specified by the DEVWAIT configuration statement be less than 30 minutes, which is typical.

---

### Library Manager Machine eject processing

Tape Manager supports requests to eject a volume from an STK library on both the TAPEMOD command and the TAPEMNT command. In either case, the initiating command is processed asynchronously to the eject request that is sent to the STK library. The tape management machine (TMM) will monitor the EJECT request independently from the TAPEMOD or TAPEMNT request and, if the eject request completes within a window of approximately 20 minutes, the requestor will be notified as to whether the eject request was successful or not. If the eject request does not complete within the 20 minute timeframe, the requestor will be notified that Tape Manager could not verify the ejection of the volume from the library.

An eject request might fail if a required library resource is not available at the time of the request. If that happens, the requestor will be notified that the request failed. Also, even if the volume is moved to

an available station, the eject request might not complete until the volume is physically removed from the station. In that case, the LMM that initiated the EJECT request will continue to monitor the request until it completes, even though the TMM might have sent a message at the end of the 20 minute window indicating that the eject could not be verified.

It is recommended that any volumes ejected from the STK library, using Tape Manager resources, be removed promptly so that the LMM processing for the eject request will complete.

## LMM return codes for StorageTek

Requests associated with a StorageTek automated tape library can be initiated by either a mount request, which might also include an eject request, using the TAPEMNT command, or an eject request, using the TAPEMOD command. In either case, a Tape Manager return code will be passed from the LMM to the TMM. When an error is reported from the StorageTek Tape Management Interface (TMI) a Tape Manager LMM RC = 141 indicates that related StorageTek return and reason code information is available in the reason code field (RSN). That information is represented as an eight-character (four-byte) hexadecimal code that is formatted as follows:

| <i>Table 17. LMM return codes for StorageTek automated tape library</i> |   |
|---|---|
| <b>RC 141 Reason Code</b>   | <b>Information</b>  |
| 1st byte  | Identifies the failing function code of the StorageTek Tape Management Interface ACSRQ request. |
| 2nd byte  | Contains the SLXCMDRC (command RC) field.   |
| 3rd byte  | Contains the last two bytes of the SLXRC (return code) field.                                   |

Consult the StorageTek documentation or support resources for additional information. In some cases, the SLXRC returns codes may be found in the *StorageTek HSC or ELS Messages and Codes* manual.

## Volume not in library

In some cases, when the LMM is able to determine that a StorageTek return code is the result of a “Volume Not In Library” condition, the LMM will return a generic Tape Manager result, RC 8 RSN 3340 to the TMM. The TMM machine will then issue an explicit error message to indicate that the volume was not in the library.

## Additional Tape Manager return codes for an LMM connecting to a StorageTek service machine

The LMM return code information will be sent to the TMM unless it is a return code that causes the LMM to retry the request. Below is a list of error codes that can occur on the LMM:

| <i>Table 18. Return/Error codes for LMM connected to StorageTek Service Machine</i> |                             |  |
|---|-----------------------------|--|
| <b>RC</b>   | <b>Explanation</b>          | <b>Action</b>  |
| 108 - 110   | Tape Manager Internal Error | Restart of the LMM. Contact IBM technical support if the problem persists. |

Table 18. Return/Error codes for LMM connected to StorageTek Service Machine (continued)

| RC        | Explanation  | Action   |
|-----------|--|--|
| 132       | INIT Failed for StorageTek Interface   | The LMM will retry the INIT. Make sure the StorageTek service machine that was specified as the default HSC machine ('dfltHSC' in the PROFILE EXEC on the LMM 191 disk) is running and ensure that the LMM machine is authorized for an IUCV connection to the default HSC machine. Make sure that the LMM is authorized for commands (CMDS) when running StorageTek Host Software Component for VM or that the LMM is authorized for the Tape Management Interface (TMI) when running the StorageTek VM Client. |
| 133 – 140 | Tape Manager Internal Error  | Contact IBM technical support. Restart of the LMM if the error persists.   |
| 141       | StorageTek Library Error   | Refer to the discussion in " <a href="#">LMM return codes for StorageTek</a> " on page 106.  |
| 142       | Tape Manager Internal Error  | Contact IBM technical support. Restart of the LMM if the error persists.   |
| 143       | No Drive Available   | The LMM will retry the request until it completes or is cancelled by the TMM as a result of a request timeout or cancellation.   |
| 144       | No drive information was returned via the StorageTek Tape Management API in response to the "Query Drive List" request for the mount volume. | Use the STK z/VM command interface to verify that the volume attributes are correct. You may want to contact Oracle support for additional information. If the problem persists, contact IBM Support.  |
| 164 – 178 | IUCV Error   | The LMM will retry the request. Make sure the StorageTek service machine that was specified as the default HSC machine ('dfltHSC' in the PROFILE EXEC on the LMM 191 disk) is running and ensure that the LMM machine is authorized for an IUCV connection to the default HSC machine.   |
| 999       | Interface abend  | The LMM will retry the request. Contact IBM technical support if the problem persists.   |

In case of a persistent error, an IPL of the LMM machine can be performed without restarting Tape Manager, although mount requests pending in the LMM will be lost and the requests will time out. Before the LMM is restarted, be sure to do the following:

1. Detach any of the tape drives associated with the StorageTek library (or libraries) managed by the LMM that might be attached to the DMM machine.
2. Verify that the default TMM, the default DMM and the default HSC machine values specified in the PROFILE EXEC on the LMM A-disk (191 disk) are correct, since the TMM and DMM ID's will not be passed from the TMM, as happens when the TMM autologs the LMM.



---

## Appendix G. Virtual Tape Library (VTL) mounts for non-IBM libraries

Tape Manager directly supports additional non-IBM VTL library devices, including some EMC/Dell and Luminex libraries, through the use of mount display messages, without the involvement of the Tape Manager LMM or other ATL-related service machines (such as DFSMS Removable Media Manager). The VTL devices must be defined to Tape Manager as manual tape devices, using the DevPool configuration statement, including the DISPFMT parameter.

The DISPFMT parameter specifies the format of the mount message that is sent to the display for a manual device when the device is allocated to a pending mount request. When a properly formatted mount message is displayed, the EMC/Dell or Luminex VTL will automatically mount the corresponding virtual volume on the device.

1. GenScrt NO (the default Tape Manager configuration setting) is required when DISPFMT is used to drive VTL devices. This means that volume-specific mount messages will be sent to the display for scratch mounts after Tape Manager has selected an appropriate scratch volume.
2. A failure of the VTL will be interpreted by Tape Manager as a "time out" for a manual mount request and no status information for the VTL will be available for Tape Manager to report.

Valid DISPFMT operands are the following:

- STD (for real manual mount devices)
- VTL1 (for Luminex libraries)
- EMC (for EMC or Dell libraries)

DISPFMT STD is the default (if DISPFMT is not specified) and causes the standard mount message to be sent to the device. When DISPFMT specifies either VTL1 or EMC, the device pool must be defined as a manual mount device pool. The STD format is typically not suitable for automated VTL libraries as the VTL will not automatically mount the desired volume and manual intervention will be required. See [“Support for non-IBM Virtual Tape Library \(VTL\) mounts”](#) on page 34 for specific information regarding the DEVPOOL parameters.

To enable the VTL support, all of the following must be true:

- A unique media type must be designated for the VTL volumes.
- The media type must specify a manual (non-ATL) device pool that contains the VTL devices and the DevPool statement for that device pool must specify the appropriate DISPFMT parameter. The device pool must be defined in SYS CONFIG since the TAPEDEV command does not support the DISPFMT parameter.
- One or more VTL volumes must be defined to Tape Manager as *manually mounted* volumes with the media type that was designated for the VTL volumes.
- Either the LibTypPri or the LibTypSec configuration statement must be set to "M" (manual) to enable scratch mounts on the VTL, because the devices are defined as manual mount devices.

**Note:** The Tape Manager library machine (TMLM1) is not involved in the mount of the VTL volumes because the mount requests are treated as if they are for a manual device. If the VTL is unable to satisfy a Tape Manager manual mount request, the request will fail with a timeout error and no status information for the VTL will be available for Tape Manager to report.

## Sample configuration statements

### Define a media type for the EMC/Dell VTL:

```
Define_Media EMCVT,  
  DEVPOOL EMCVTL,  
  MODE RW
```

### Define a manual mount device pool for the EMC or Dell devices:

```
DevPool EMCVTL,  
  500-507,  
  DISPFMT EMC
```

### Define a media type for a Luminex VTL:

```
Define_Media LUMVT,  
  DEVPOOL LUMVTL,  
  MODE RW
```

### Define a manual mount device pool for the Luminex devices:

```
DevPool LUMVTL,  
  500-507,  
  DISPFMT VTL1
```

### Specify scratch mounts using specific volumes:

```
GenScratch NO /* Include VOLSER in manual scratch messages */
```

### Specify manual mount to be preferred mount type for scratch mounts:

```
LibTypPri M /* Primary scratch type is Manual */
```

### And/Or the secondary mount type:

```
LibTypSec M /* Secondary scratch type is Manual */
```



# Appendix H. Vault Management Sample Code

As of PTF UI54509, a vault management example is included on the installation sample disk (5697J08C 2C2 disk). The purpose of the code is to assist in management of off-site tapes.

## Using the Vault Management Service Machine (VMSM)

The default service machine name is VMSM (Vault Management Service Machine). All of the files, except the sample directory entry, are functional and recommended to reside on the VMSM 191 disk.

The sample files include:

- a sample VMSM DIRECT file
- a sample VMSM EXEC
- a sample VMSM PROFEXEC file to be copied to the VMSM 191 as the PROFILE EXEC
- a sample VMSM PARM file (see details below)

The Vault Management Service Machine (VMSM) can be started with up to three parameters (any of EXPIRE, EJECT, or PICK) to perform vault management tasks. If no parameters are passed to the VMSM at startup, the VMSM EXEC is started with the parameter list: EXPIRE EJECT PICK. Each of the VMSM startup parameters corresponds to a sub-process within the EXEC.

### EJECT

The EJECT process determines if any volumes need to be vaulted. For any volumes selected, the EJECT process allocates a vault and a slot number for the volume, issues an EJECT to the library, and generates the "Eject Report" to indicate the assigned vault and slot numbers.

An example of an "Eject Report" is shown below:

```
VMSM Eject Report 22 Apr 2014 11:16:53
Vault  Slot      Volume  Pool  Pool
V001   000000001  P20072  CSHOW2  P00L2
V002   000000001  P20070  CSHOW2  P00L3
V002   000000002  P20071  CSHOW2  P00L3
V002   000000003  P20079  CSHOW2  P00L3
```

### PICK

The PICK process determines if any of the vaulted volumes are due to be returned to the library. The process generates a "Pick Report" for each volume that is to be returned on-site from the vault.

An example of a "Pick Report" is shown below:

```
VMSM Pick Report 22 Apr 2014 11:21:58
Vault  Slot      Volume  Pool  Pool  Library
V001   000000001  P20072  CSHOW2  P00L2  NWAATL1
V002   000000002  P20071  CSHOW2  P00L3  NWAATL1
```

### EXPIRE

The EXPIRE process frees any of the volumes that have been returned to the library because of the PICK process. The freed volumes are then available to be used as scratch volumes again. The process generates an "Expire Report" that shows the Old Vault Name and Old Slot Number.

An example of an "Expire Report" is shown below:

```
VMSM Expire Report 22 Apr 2014 11:57:33
Old Vault  Old Slot      Volume  Pool  Pool
V001   000000004  P20072  CSHOW2  P00L2
V002   000000002  P20071  CSHOW2  P00L3
```

## Requirements

The VMSM should have Tape Manager administrative privileges (See the ADMINS statement in the configuration file and “Admins” on page 23), or ADMN privileges to all the pools specified in the VMSM PARM file (See the POOLACC command in the *IBM Tape Manager for z/VM User's Guide*, SC18-9349).

The VMSM must be authorized to use DFSMS/RMS services. Follow the directions for authorizing the LMM in “Tailor the Library Management Machine” on page 13.

The VMSM must have access to the DFSMSRM MODULE. A link to the DFSMS 1B5 disk is included in the VMSM directory and that disk is accessed in the VMSM PROFILE EXEC.

The VMSM must have access to the TAPCMD MODULE and an appropriate TAPCMD DEFAULTS file. If there is not a defaults file on an accessed disk then TAPCMD will default to TMTMM.

## Files used with VMSM

---

Several different types of files, such as parameter files and report files, can be used with the Vault Management Service Machine (VMSM). Each file type has a unique purpose.

### Parm file (VMSM PARM)

The Parm file (VMSM PARM) is used to assign slot ranges to vaults and to associate Tape Manager tape pools with the vaults. There are three record types in the Parm file that are designated by tags ending with a colon (: ) symbol:

- MSG :
- VAULT :
- POOL :

A tag must be the first word of each record. Tagged records containing lower case letters will be translated to upper case letters for processing. The record formats are described below.

#### MSG:

This tag is followed by a list of user IDs that will be sent both messages and reports. In addition, a log file will be created on the VMSM 191 disk when the process runs.

#### VAULT:

This tag is followed by a one- to eight-character vault name. The vault name is followed by a slot range. The maximum size for either the lower or upper range value is eight (8) digits. Using range values that are adequate, but not overly excessive, will help to optimize the efficiency of the processing. The bounds of the range value must be separated by a hyphen (-), and can have a space before and after the hyphen, if you prefer.

#### POOL:

This tag is followed by the Pool Owner and Pool Name of a Tape Manager tape pool. The Pool Owner and Pool Name must be followed by a vault name and the vault name must appear in one of the "VAULT:" records.

An optional slot *range* value can be specified after the vault name. If a range is specified, that range will override the value specified in the corresponding "VAULT:" record. That approach allows volumes from the same tape pool to be grouped into a slot range that is a subset of the vault range.

Lines in the VMSM PARM file that do not start with one of the tags (MSG : , VAULT : , or POOL : ) will be ignored and treated as comments. A message will be written to the console indicating the number of non-tagged lines.

Extra parameters on VAULT : and POOL : records will be ignored. An invalid, optional range value in a POOL : record will be treated as an error rather than an extra parameter. Anything beyond the range value will be ignored.

**Note:** It is strongly recommended that any pool that is designated for vaulting should have a free pool. That way, when volumes are selected during VMSM's EXPIRE processing, the volumes will return to the

free pool. This approach improves processing efficiency and means that the only volumes in the tape pools are ones that are also in the vault file. See the FREEPOOL parameter of the POOLDEF or POOLMOD command in the *IBM Tape Manager for z/VM User's Guide (SC18-9349)* for information on assigning a free pool.

The Parm File is created and managed by the installation.

### **Vault file (VMSM VAULT)**

The Vault file (VMSM VAULT) contains a list of volumes that are in the vault. It is a comma-delimited, formatted file that can be uploaded via FTP and saved as a CSV file type. The file is created and managed by the VMSM. If there are no volumes in any of the vaults then the vault file will not exist, rather than having a file with no records. If necessary, the file will be created by the EJECT processing whenever a vault slot is allocated to a volume. It is assumed that a slot holds only one volume.

### **Log file (VMSM LOG)**

The Log file (VMSM LOG) is created by the VMSM for each run. The file contains more detailed information than the messages sent to the :MSG:" user IDs.

### **Expire Report (VMSM EXPRREPT)**

The Expire Report file (VMSM EXPRREPT) is created by the EXPIRE process whenever one or more volumes expire. The report shows the Old Vault and Old Slot that were previously allocated to the volumes. Once a volume has been selected and processed by the EXPIRE process the volume is once again free to be used as a scratch volume. The selection criteria for a volume that is to be expired are:

- The volume must be in a pool designated by a "POOL:" record.
- The volume must have a use-status of USED.
- The volume must have a hold-status of HOLD.
- The volume must have an expiration date LESS THAN or EQUAL TO the processing date.
- The volume must have a library type of ATL and be in the designated library.

If vaulted volumes are returned to the library prior to the expiration date (and consequently without appearing on a Pick Report), the volumes will still go through the EXPIRE process once the expiration date has been passed, and the slot allocations will also be freed, just as they would have been had the volume not been inserted back into the library early. If the vaulted volumes are brought on-site temporarily, the Vault File can be used to return any of those volumes back to the allocated vault and slot.

### **Eject Report (VMSM EJCTREPT)**

The Eject Report file (VMSM EJCTREPT) is created by the EJECT process whenever one or more volumes are ejected. The report shows the Vault and Slot Number that are allocated to each ejected volume.

Volumes that are ejected have the library type and library name retained within Tape Manager and have the Hold Status set to HOLD. That status will prevent the volumes from expiring and being used as scratch volumes while the volumes are off-site. Retention of the library type and library name allows the volume to be inserted back into the library without the need to reiterate the library information.

The selection criteria for a volume that is to be ejected are:

- The volume must be in a pool designated by a "POOL:" record.
- The volume must have a use-status of USED.
- The volume must have a hold-status of NOHOLD.
- The volume must have an expiration date later than the processing date.
- The volume must have a library type of ATL and be in the designated library.

## Pick Report (VMSM PICKREPT)

The Pick Report file (VMSM PICKREPT) is created by the PICK process whenever one or more volumes with assigned slots pass their expiration date(s). In that case, any of those volumes that are not already in the Tape Manager designated library will appear in the Pick Report. The report can be used to retrieve the volumes from the designated Vault and Slot and to insert the volumes back into the designated library.

The selection criteria for a volume to appear in a pick report is:

- The volume must be in a pool designated by a "POOL:" record.
- The volume must have a use-status of USED.
- The volume must have a hold-status of HOLD.
- The volume must have an expiration date EARLIER THAN or EQUAL TO the processing date.
- The volume must not already exist in the Tape Manager designated library.

## Notes on Vault processes

---

This section contains additional information you may want to consider when using the various Vault files.

### Use of single and multiple tape pools with vaults

A tape pool is associated with exactly one vault but multiple tape pools can be associated with the same vault.

### Use of TAPCMD TMMID and the DEFAULTS file

The TAPCMD TMM ID will default to the TAPCMD DEFAULTS value and to TMTMM if there is not a DEFAULTS file.

### Expire processing for pool volumes in the VMSM PARM file

If a volume is in the library and the expiration date has passed and there is no entry in the vault file, the tape will be freed by the expire process and a message will be written to the console to indicate that the vault record was not found. This process only applies to volumes that are in pools tagged in the VMSM PARM file.

### Reserved fields

For volumes in tape pools that are subject to vaulting, any use of the Tape Manager HSTAT field or TEXT field is not permitted for any other purpose, because the VMSM processing updates those fields.

When a slot is allocated to a volume by the EJECT process, the Tape Manager TEXT field of the volume is also updated with the vault name and slot number. The TAPEQRY command supports regular expressions for the TEXT field using wild-card characters. See the TAPEQRY help file or the TAPEQRY command in the *IBM Tape Manager for z/VM User's Guide* (SC18-9349) for additional information.

## Suggestions

---

A few suggestions are included to ensure the optimal use of the Vault Management Service Machine with the CP XAUTOLOG command, and for testing.

### Considerations for testing

When testing, use the TAPEMOD EXPDAYS 0 command to prime ejected volumes for PICK and EXPIRE processing. If the primed volumes are inserted back into the library before a PICK cycle is run, the volumes will be expired (by default) and a PICK report will not be generated.

## Using the VMSM EXEC with the CP XAUTOLOG command

The VMSM EXEC can be run manually by logging onto the VMSM user ID and issuing commands (VMSM, VMSM PICK, VMSM PICK EXPIRE, etc.). However, it is designed to be run disconnected via the CP XAUTOLOG command. See the appropriate *z/VM CP Commands and Utilities Reference* manual for your level of z/VM for details of the XAUTOLOG command.

Some typical examples are shown below.

**Note:** The logical escape character (" by default) and the logical LINEND character (# by default) are required to pass the parameter through the CP XAUTOLOG command.

### Example #1: All functions

To run all functions, issue the following command:

```
XAUTOLOG VMSM
```

### Example #2: PICK function

To run only the PICK function, issue the following command:

```
XAUTOLOG VMSM "#PICK
```

### Example #3: PICK and EJECT functions

To run the PICK and EJECT functions, issue the following command:

```
XAUTOLOG VMSM "#PICK EJECT
```



---

## Appendix I. Messages and codes

This appendix lists the messages associated with Tape Manager and the user interface, and the associated return codes. These messages and codes are the same for all of the tape and pool commands.

### Tape Manager Messages file

---

A list of the Tape Manager EUM messages is included on the sample disk (2C2) of the installation ID as of PTF UI29840. The file name is MESSAGES\_SAMPDATA and the message numbers in that file may be used for automation purposes. A typical message in the file will contain symbolic references that are depicted as an ampersand (&) concatenated with a number. Those references identify fields in the message for which substitution will occur at runtime.

### User Interface Messages

---

The following table lists the messages generated by the TAPCMD interface.

| <i>Table 19. User interface messages</i>                                       |                    |
|--|--------------------|
| <b>Message text</b>  | <b>Return code</b> |
| Command exceeds available buffer length.                                       | 4016               |
| Incorrect operand <value>.   | 4004               |
| Invalid option (value).  | 4004               |
| Required operand is missing.   | 4008               |
| Conflict detected at option <value>.   | 4012               |
| Maximum WAIT value is (2**31)-1 seconds.                                       | 4020               |
| HNDEXT return code was <value>.  | 4024               |
| VMCF authorize return code was <value>.  | 4028               |
| CP SMSG return code was <value>.   | 4032               |
| Tape Manager ID <value> is not logged on.                                      | 4036               |
| Tape Manager ID <value> is not accepting requests.                             | 4040               |
| No response from server in specified time.                                     | 4044               |
| Invalid filemode <value>.  | 4048               |
| Filemode <value> is not accessed.  | 4052               |
| Disk <value> is not owned by your user ID.                                     | 4056               |
| Invalid virtual address <value>.   | 4060               |
| Option <value> was specified more than once.                                   | 4064               |
| Files for batch processing cannot be on DOS or OS disks or in SFS directories. | 4068               |

### Return codes for user interface messages

---

The following table describes the return codes associated with user interface messages:

Table 20. User interface return codes

| <b>Return code</b> | <b>Description</b>   |
|--------------------|--|
| 0                  | Finished correctly   |
| 4000               | Invalid user interface option.                                   |
| 4004               | Incorrect operand on a user interface option.                    |
| 4008               | A required operand for a user interface option was not supplied. |
| 4012               | A conflict exists in the specified user interface options.       |
| 4016               | The command exceeds the user interface buffer capacity.          |
| 4020               | The WAIT time exceeded the maximum allowed.                      |
| 4024               | The required HNDEXT could not be established.                    |
| 4028               | Unable to authorize for VMCF.                                    |
| 4032               | Unable to issue an SMSG command to the TMM.                      |
| 4036               | The TMM user ID is not logged on.                                |
| 4040               | The TMM user ID is not accepting requests.                       |
| 4044               | The WAIT time expired with no reply from the TMM.                |
| 4048               | An invalid file mode was specified for the FMODE option.         |
| 4052               | The specified file mode (FMODE option) is not accessed.          |
| 4056               | The VADDR specified is not in this user's directory entry.       |
| 4060               | The VADDR is not valid (not hex, or larger than x'FFFF').        |
| 4064               | Duplicate VADDR or FMODE option specified.                       |
| 4068               | The file mode (FMODE option) specified is not an EDF disk.       |



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