

Tape Manager Reference

Version 4.0 Level U

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Overview

Tape Manager is designed to provide a mainframe-like environment that facilitates the use of tape as an IO media for COBOL programs as well as JCL accessible backup and restore features. As such, the Eden Tape Manager system is not intended to replace system or network tape backup systems, but instead compliment them.

Tape Manager features are built around an Eden Server plug-in that maintains control over both hardware devices and a catalog of Eden Server managed tape media.

As such, Tape Manager provides intelligent access to resources in either a media or device based environment depending upon the commands and device or media specifications in use. By allowing tape access either by specific hardware device names, or by cataloged media names, the Tape Manager use can easily be adapted to a wide range of applications.

The features provided by Tape Manager include:

- Backup and Restore of single files, groups of files and directories from either the system console or directly from Eden managed batch jobs through the use of the BACKUP and RESTORE commands.
- Access to tape media from COBOL programs using standard COBOL syntax.
- Catalog based, file level control of COBOL and BACKUP format data files on tape media.
- Direct device and media control through the use of the EJECT, ERASE, LABEL, VERIFY, LOAD, INVENTORY and TAPEMARK commands.
- Media and catalog verification through the use of the VERIFY command.
- Automatic monitoring of hardware devices and mounted media, including an automatic media mount prompt system that ensures tape media are properly accessed.
- Resource control limits tape access to the system console and or specific Eden Server PID's.
- Automatic sensing and control of media blocksize, allowing any size data record to be written to any media, regardless of the media formatted blocksize.
- Tape File access specified by Media or Device, allowing better device utilization.

- Ability to dynamically acquire and release tape devices so that devices may be shared between Eden server and other 3rd party tape applications.
- Support for tape changer / auto-loader devices, providing fully automated tape handling processing.
- Automatic cleaning of drives associated with changers.

Tape Manager Notebook

Devices Tab

The Tape Manager is managed through an Eden Server configuration notebook which is accessible through the Eden Console menu bar items 'Edit' and 'System Settings'. The Tape Manager notebook is shown below, in figure 1.

The screenshot shows the 'Tape Mgr Settings' window with the 'Devices' tab selected. The window has a blue title bar and four tabs: 'Devices', 'Media', 'System', and 'Changers'. The 'Devices' tab contains a 'Select Drive' section with a table of tape drives. Below the table is a 'Refresh' button. The 'Drive Use' section has two radio buttons: 'Use' (selected) and 'Do Not Use'. The 'Status / Usage' section has four text input fields: 'Status' (containing 'Wait, unlocked'), 'User' (empty), 'Media Name' (empty), and 'Operation' (containing 'QUERY'). The 'Cleaning' section has a 'Last Cleaned' text input field (containing '08/29/2004') and a 'Clean Now' button. The 'Action' section has 'Apply' and 'Cancel' buttons. At the bottom right of the window are 'OK', 'Cancel', and 'Apply' buttons.

Bus.ID	Device	Description	Media	Vol
0,6	Tape0	HP C1557A U812		
0,6	Tape1	HP C1537A L708	CHANGER2	0

Figure 1 - Devices tab

The Devices tab shown above is the initially displayed tab in the Tape Manager notebook and is used to define to Eden Server which of the attached SCSI tape devices will be used for Eden tape access.

The list box in the Select Drive area of the Devices tab will contain one entry for each of the up to 16 physical tape devices detected in the servers registry. Note, only SCSI based tape drives are supported and thus only SCSI drives will be listed.

To configure or monitor a tape drive, simply highlight the entry for the drive in the Select Drive list box. Once a drive has been selected, the remaining fields and controls on the Devices tab are activated and will display the values currently associated with the selected drive.

The controls and displays on the Devices tab, and their uses are:

The **Drive Use** area allows the selected drive to be included or excluded from the list of devices that Tape Manager will acquire and use for tape IO. If the **Use** radio button is selected Tape Manager will acquire the device and automatically monitor the name and status of any mounted media. If the **Do Not Use** button is selected, Tape Manager will not use the device in any way.

Note that Tape Manager can dynamically acquire and release devices through the use of the ACQUIRE and RELEASE commands. If a particular tape drive is to be used by another application, for example a server backup and restore program such as Backup Exec, or ArcServe, the drive should be configured as 'Do Not Use', then the ACQUIRE and RELEASE commands may be submitted at those times that Eden requires access to the drive.

The **Status / Usage** area provides a real-time display of several important items regarding the drive and any mounted media. The Status field shows the current drive in / out of use status and whether the drive is locked. Possible displayed values for drives that are marked 'Use' are:

Idle – Indicates the drive the drive is acquired but is not currently in use by a batch job or console command.

Wait – indicates that Tape Manager is performing some sort of background command or monitoring of the device. Note that Tape Manager regularly monitors Idle devices to determine if a media change / eject has occurred.

Busy – indicates the device is currently processing a command or that the device is in use by a batch job.

The **Media Name** field displays the name of the currently mounted media. The name displayed is that name which was assigned to the media when it was first cataloged via

a LABEL command. Note, three special names may also be displayed depending upon the contents of the mounted media. These names are:

NOTEDEN – is displayed when a formatted media is mounted and that media contains data written by an application other than Eden Server. Care should be taken when using media marked NOTEDEN as it is very likely that the media contains backup or other useful data required by another application / system.

NOHEADER – is displayed when a formatted media is mounted and that media is empty.

NOTFMT – is displayed when an unformatted / unprepared media is mounted in the drive.

Note that for all three of these types of media, a LABEL command must be run on the physical media before Tape Manager can use the tape.

The **User** field will, for drives marked as 'Busy', contain the identity of the entity using the drive. If the drive is being used by a command submitted from the console, the User field will contain 'Console'. If, however, the job is being accessed via batch job, the User field will contain the number of the Eden PID accessing the drive.

The **Operation** field will display the current command being processed on the tape drive and or mounted media. Typically, the Operation field will display the specific command in progress at the time, however, when the device is under control of the COBOL file handler, RMSFH, the operation field will simply display 'RMSFH I/O'.

Media Tab

All media that are processed using the Tape Manager are also catalogued into the Eden Media catalog. Through the use of the tape catalog, the Tape Manager is able to ensure that backups, restores and RMSFH data file tape I/O always accesses the proper tape media as well as the correct file(s) on the media.

The Media tab of the Tape Manager notebook, shown below in figure 2, gives quick access to the tape catalog.

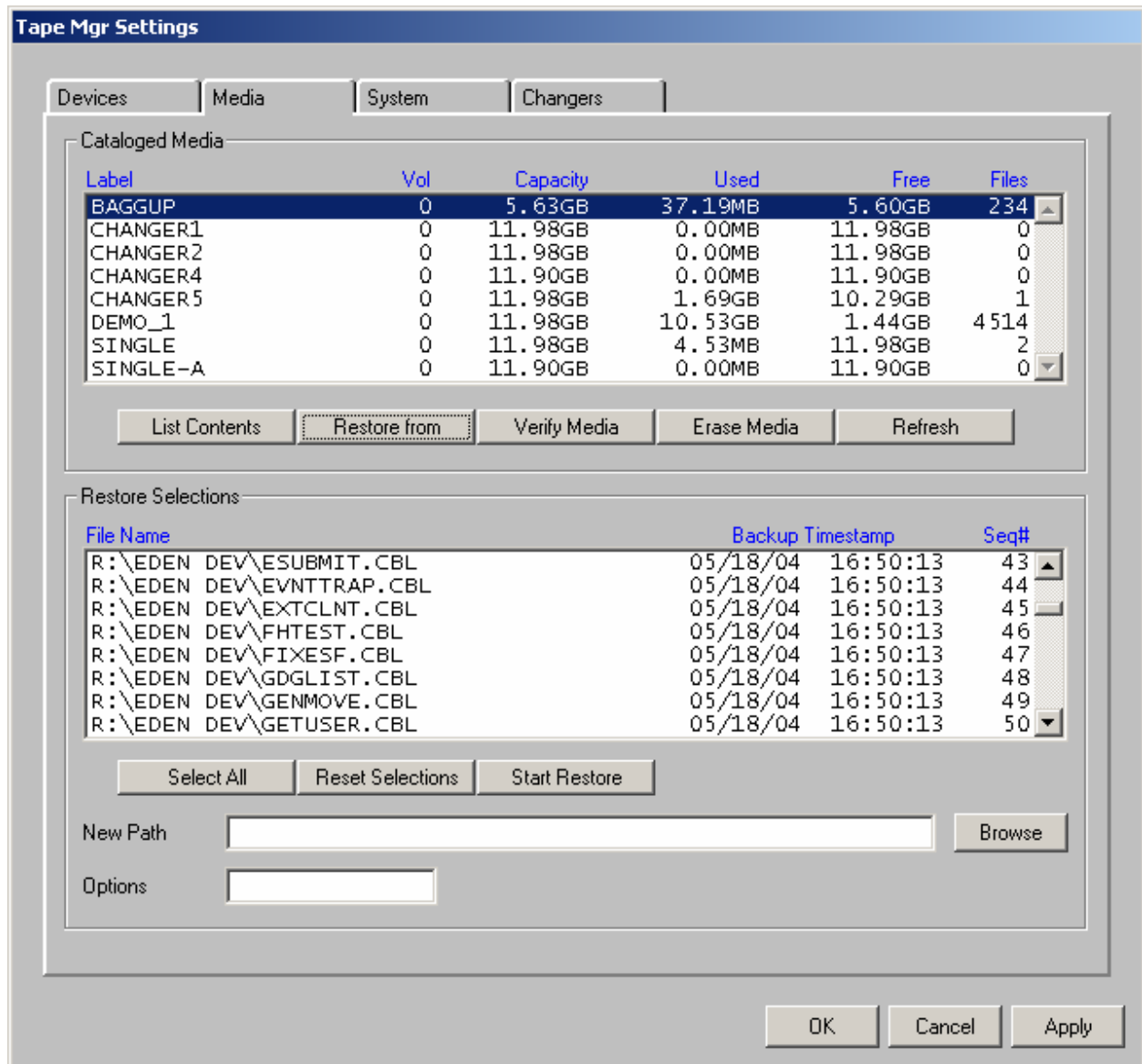


Figure 2 Media tab

The top portion of the media tab displays the list of all cataloged media. One entry per volume, per media name is shown in the list box. Media are displayed in alphabetic order by media name, and may be scrolled using the slider on the right of the list box. The **Refresh** button may be used at any time to update the media list.

When a tape entry in the cataloged media list box is selected, several media-based functions are enabled, which are accessible through highlighted push buttons displayed below the list box. These buttons and their functions are:

The **List Contents** button will generate a console TAPECAT command for the selected media. The command is sent to the console and all display output is shown on the server console. See the next section, Tape Commands, for information on the TAPECAT command.

The **Verify Media** button generates a console VERIFY command for the selected media. See the next section, Tape Commands, for information on the VERIFY command.

The **Erase Media** button generates a console ERASE command for the selected media. See the next section, Tape Commands, for information on the ERASE command.

The **Restore from** button activates the Restore Selections area of the tab, allowing for easy point-and-click creation of a restore job.

The Restore Selections area, when activated via the Restore from button, provides the ability to easily restore files without having to enter console commands or create a batch restore job. The Restore Selections area also provides an easy way to review the contents of media volumes, without the need to actually restore any files.

To restore files, the following controls are provided:

The **Select All** button will highlight all files listed in the restore selection list box. Note that use of the Select All button (or alternatively, manually selecting all listed files) will cause the restore to be submitted with a FILES=ALL parameter. Restores of this type will cause an entire media to be restored, including files stored on any subsequent volumes if the tape is a multi-volume media.

The **Reset Selections** button de-selects all items in the selection list box.

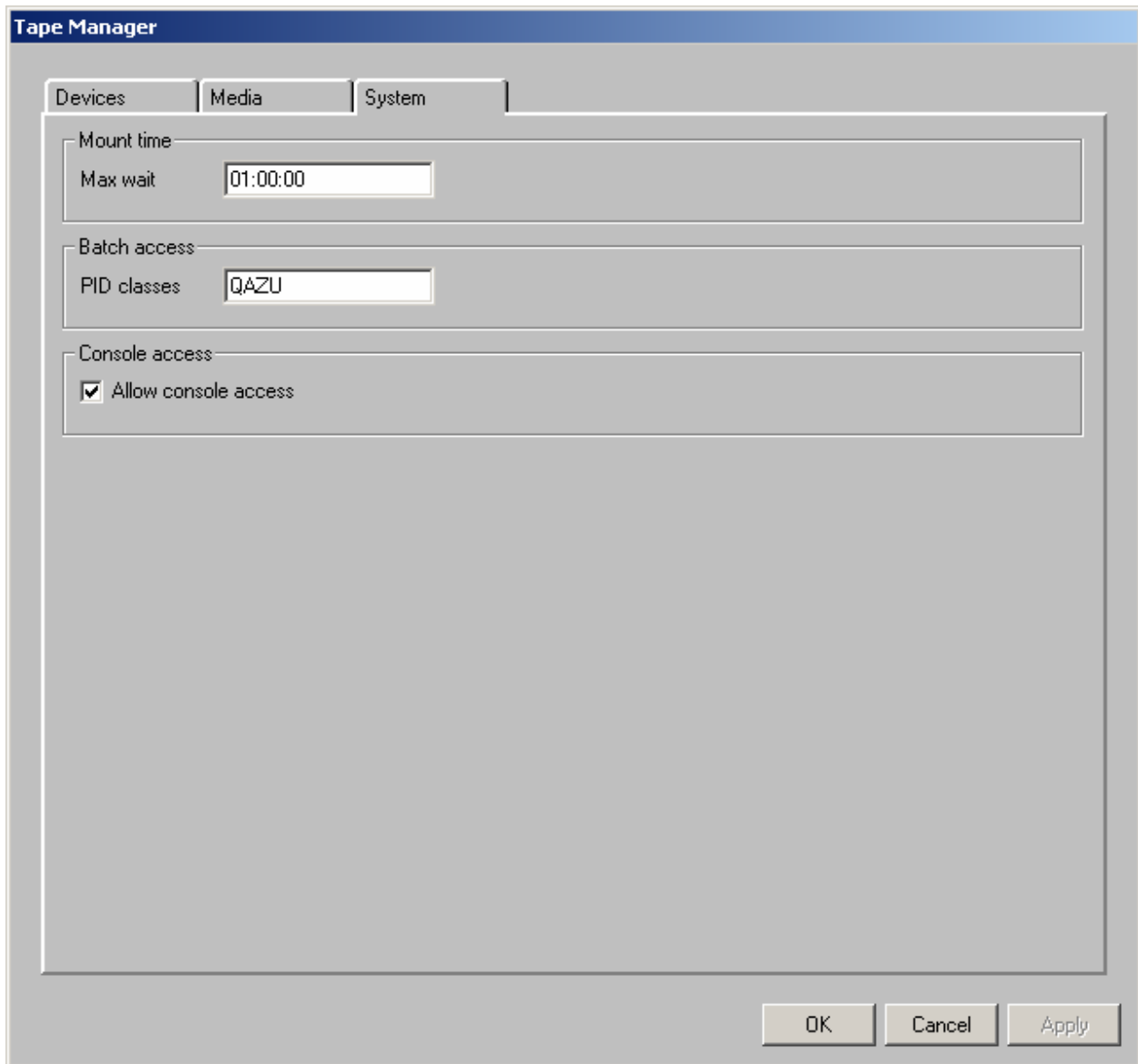
The **Restore Now** button starts the restore process by submitting the requested restore selections directly to the Tape Manager. Once submitted, the restore process will proceed normally, as though it had been submitted from the console keyboard. As such, mount requests and other messages will appear on the server console. It is recommended that once a restore request has been submitted that the Tape Manager notebook be closed so that the console will be visible.

The **New Path** control, if used, will force all files to be restored to the entered path, instead of being restored to the files original location. To override a files default restore to path, either type a drive and path (or UNC path) into the text area, or use the **Browse** button to select a path.

The **Options** field is currently not supported. Any entries made in this field will be ignored.

System Tab

The System tab, shown below in figure 3, provides the ability to control several system-wide features of Tape Manager.



The screenshot shows the 'Tape Manager' application window with the 'System' tab selected. The window has three tabs: 'Devices', 'Media', and 'System'. The 'System' tab contains three sections: 'Mount time' with a 'Max wait' field set to '01:00:00'; 'Batch access' with a 'PID classes' field set to 'QAZU'; and 'Console access' with a checked checkbox for 'Allow console access'. At the bottom right, there are three buttons: 'OK', 'Cancel', and 'Apply'.

Figure 3 – System Tab

Note that all entries made on the system tab are used globally, that is, they apply to all devices and media.

The **Mount Time** value, which is entered in HH:MM:SS format controls the length of time Tape Manager will wait for a media to be mounted. A value of 00:00:00 will cause Tape Manager to wait indefinitely. If a tape mount is pending and it's wait time is

exceeded, Tape Manager will automatically cancel the mount request as well as the underlying batch job, or Tape Manager command that requested the mount.

The **Batch Access** values allow the specification of up to 26 different PID classes. When accessing Tape Manager features from a batch job, the class of the running PID is compared to the list of PID Classes entered here. If the PID's class value is not in the list of class values entered, access to the device or media is restricted and the batch job is cancelled.

The **Console Access** check box controls whether or not Tape Manager commands may be issued directly from the server console. If this check box is not selected, Tape Manager commands entered via the console will be rejected.

Changers Tab

Tape changers that are found by the Tape Manager will be listed on the Changers Tab as shown below in figure 4.

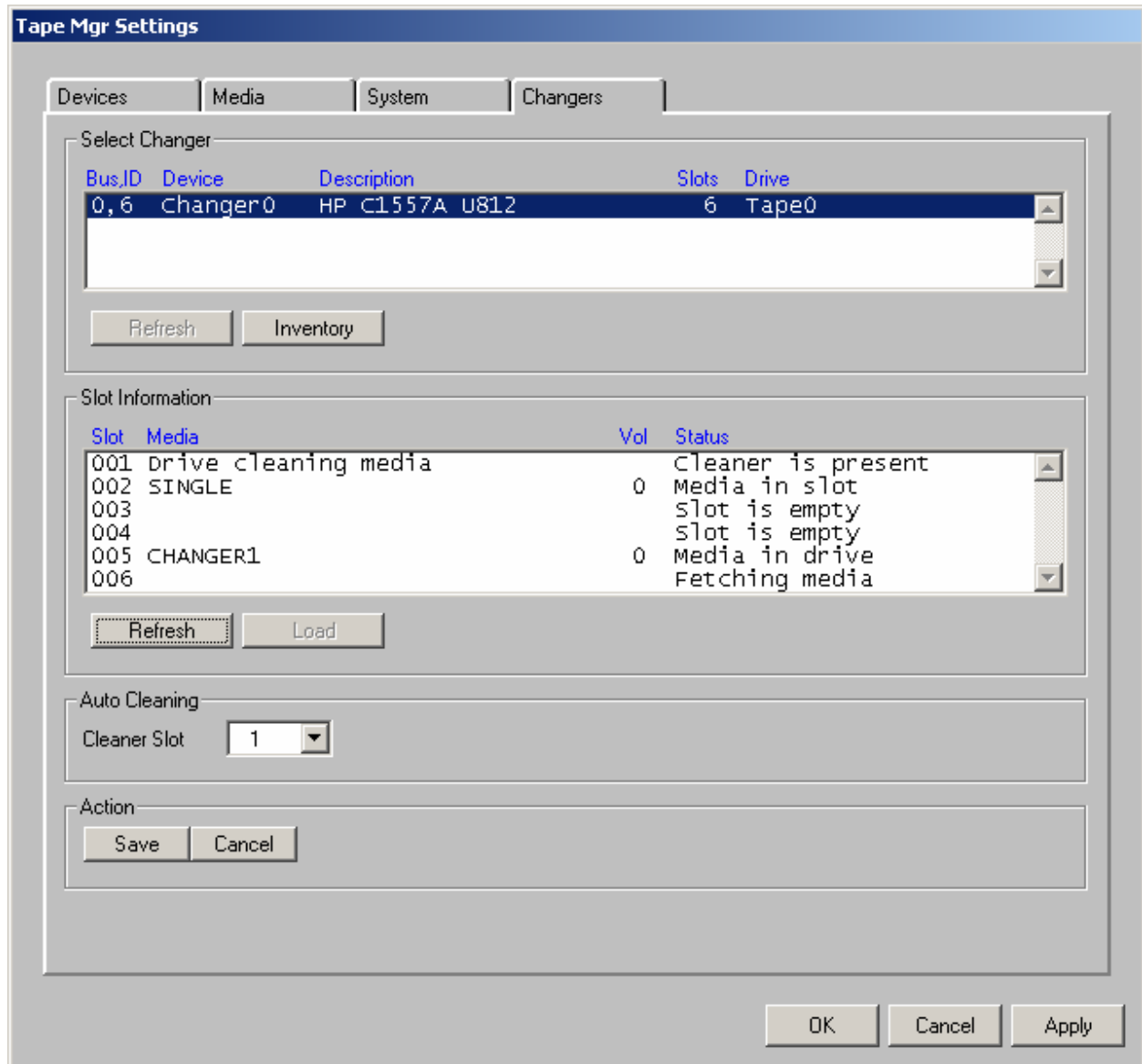


Figure 4 – Changers Tab

Note that only those changer devices which are associated with useable tape drives are listed on this tab. Typically the Tape Manager is able to automatically associate changers with their drives, however, for devices where the tape drive and changer are located on separate SCSI buses or have different SCSI addresses, Tape Manager will include these changers here so that a manual association may be made.

In the event Tape Manager cannot associate a changer to a particular drive, the

changer will be listed showing a 'Drive' name of 'Unknown'. In this case, simply select the changer entry and a drive association dialog box will automatically appear.

The first **Refresh** button, located directly beneath the Changer list, may be pressed while no changer is selected. If any new changers are found, for example, due to enabling a previously disabled tape drive, they will be shown following the Refresh button.

The **Inventory** button may be used when a changer is selected to cause that changers slots to be inventoried. Note, however, that the Tape Manager automatically detects when the changers magazine is inserted or removed and when a new magazine is inserted it is automatically inventoried at that time. Use of the Inventory button is therefore only required when using changer devices that have external magazines that allow the operator to change the slot contents while the drive is in use. Note also that a changer inventory may also be performed from the server console by using the INVENTORY command. See Appendix A of this document for information on the INVENTORY command.

The **Slot Information** list will display the contents of all known slots in the currently selected changer. When a changer is selected information on the slot contents will be displayed, including the media name, media volume number and the slot status. The media name will in the case of slots defined as a cleaner slot will simply indicate the media name as 'Drive cleaning media'. The possible status text that may be displayed, and the meaning of each is shown in the table below:

Fetching media	The media is being loaded from the slot to the drive.
Stowing media	The media is being ejected from the drive and placed back in it's home slot. Note, in the event a tape is found in the drive when the Tape Manager starts, the media's "home slot" cannot be determined. In this case the media is placed in the first open slot.
Media in drive	The media has been loaded by Tape Manager into the drive and may be accessed by either Tape Manager or an Eden Server batch job.
Cleaner is present	A drive cleaning media has been found in the slot, or the slot has been configured by either the device or Tape Manager to be a cleaning slot. See the Tape Manager reference for more information on proper use of cleaning media.
Media in slot	The media is currently in it's slot.
Slot is empty	The slot contains no media or cleaning tapes.
Uninventoried	The slot contains some media, but Tape Manager has not yet inventoried the slot. Note that an inventory of the slots is likely currently in progress or will very shortly be automatically started by the Tape Manager.

The second **Refresh** button on the tab, located directly beneath the Slot Information list, may be used when no slot is selected. Using the Refresh button will cause the displayed slot information to be updated with the most current information.

The **Load** button located directly beneath the Slot Information list may be used when a particular slot is selected. Using the Load button will cause Tape Manager to initiate a 'fetch' operation and make the tape available for use. Note that if the drive already contains a mounted media, that media will be ejected / stowed prior to loading this media. In the event the mounted media is in use, the load request will be deferred until the drive is no longer busy, at which time the mounted media will be ejected and the load operation will then start.

The **Cleaner Slot** drop down list may be used to indicate to the Tape Manager which, if any, slot in the loaded magazine contains a cleaner tape. Having a defined cleaning slot enables Tape Manager to automatically clean the drive whenever it is required, without any operator intervention. *Be sure to see the section in the Tape Manager Reference regarding the proper use of cleaning slots in changer devices.*

If changes to the Cleaner Slot are made, the **Save** button located in the Action area should be used to save this information for future use by Tape Manager. Once the Save button is used the display is reset and the Changer List is un-highlighted, allowing another changer to be selected.

The **Cancel** button located in the Action area may be used to stop displaying the selected changers information and to allow a new changer to be selected.

Tape Commands

The following pages describe the tape commands supported by the Eden Tape Manager. Unless otherwise noted, all Tape Manager commands may be entered from the server console and from within batch jobs.

Note that all Tape Manager commands are available from both the system console as well as from within .bat JCL files. When submitted from the system console, any command output, response or error messages will be displayed on the system console.

When submitted from within a .bat JCL file, the output, response or error message from the command will appear in the job's Detail Log file, and in some cases, the output may also be routed to a print queue entry. The commands which will output to a print queue entry are: TAPECAT and all forms of the LIST command. Note that to cause the output to be routed to a print queue entry, the job must include a SETQ statement referencing Ddname "SYSRPT" prior to execution of the Tape Manager command.

For example, to cause the output from a TAPECAT command to be stored as a print queue entry, the following JCL might be used:

```
SETQ MYREPT=TAPMGR.rpt, CLASS=A, DISP=H  
TAPECAT MEDIA=MYTAPE
```

ACQUIRE

Description: Causes Tape Manager to obtain an exclusive handle to the device, allowing Tape Manager to use the device.

Syntax: ACQUIRE DEVICE=*device-name*

Notes: *device-name* should represent a valid SCSI tape device attached to the system. Such device names are always in the format of TAPE*n* where *n* is a one or two digit value between 0 and 15.

Examples: ACQUIRE DEVICE=TAPE9

Causes tape Manager to acquire device TAPE9.

CATALOG

Description: Causes Tape Manager to read all system information from an uncataloged tape and to create catalog entries for all volumes and files on the tape.

Syntax: CATALOG DEVICE=device

Notes: The indicated DEVICE must be a valid Eden supported device, and that device must contain a valid Eden tape media, that is not currently in the systems Tape Catalog. Typically, the CATALOG command is used only when tapes from an Eden server system are to be read by a second Eden Server system. CATALOG may also be used to re-create catalog entries for media that were accidentally or incorrectly 'PURGE'ed.

Examples: CATALOG DEVICE=TAPE0

Causes catalog entries to be created for all items on the media currently mounted in the indicated device.

BACKUP

Description: Causes Tape Manager to backup selected files to an existing tape media in either Append or Overwrite mode.

Syntax: BACKUP MEDIA=*media* | DEVICE=*device* FILES=*files,files* [OPTIONS=?]

Notes: MEDIA or DEVICE one must be specified, but not both. If MEDIA is specified, Tape Manager will search for the media in its managed devices. A mount request for the media will be generated if the media is not already mounted. If DEVICE is specified, the backup will use the media mounted in the device. If no media is mounted in the device the BACKUP will be cancelled.

FILES must be specified and must reference at least one file or directory. If multiple file specifications are to be backed up, they must be separated by a comma. In the event a file or path specification includes an imbedded space, the file specification must be enclosed in quotes. When running BACKUP from a batch job, it is possible to have BACKUP read its list of file names from SYSIN. To use this method, specify FILES=:SYSIN and then include the file names directly following the BACKUP command, terminating the list of files with the End-of-Input marker "/*".

OPTIONS may be used to specify the write mode for the media. If OPTIONS=A is specified, the backup operation will append new backup files to the end of the existing files on the media. If OPTIONS=O is specified, the backup will erase existing file(s) on the media and start backing up new files at the beginning of volume 0 of the media. If OPTIONS is omitted, the default action is to append new files.

Examples: BACKUP MEDIA=TEST FILES=C:*. * OPTIONS=O

Causes backup to overwrite the TEST media with all files in the C:\ directory.

BACKUP MEDIA=TEST FILES="C:\program files*. *",c:*. *

Causes backup to append the TEST media with all files in the C:\Program Files directory as well as all files in the C:\ directory

EJECT

Description: Causes Tape Manager to eject a media from a drive

Syntax: EJECT MEDIA=*media* | DEVICE=*device*

Notes: MEDIA or DEVICE one must be specified, but not both. If MEDIA is specified, Tape Manager will search for the media in it's managed devices. If the tape is not mounted, the EJECT is cancelled. If DEVICE is specified, the media currently mounted in the named device is ejected. If no media is mounted in the device, the EJECT is cancelled.

Examples: EJECT MEDIA=TEST-2

Causes Tape Manager to eject media TEST-2 from whatever drive it is mounted in.

EJECT DEVICE=TAPE0

Causes Tape Manager to eject whatever media is mounted in device TAPE0.

ERASE

Description: Causes Tape Manager to erase all tape headers and labels from a tape media.

Syntax: ERASE MEDIA=*media* | DEVICE=*device*

Notes: MEDIA or DEVICE one must be specified, but not both. If MEDIA is specified, Tape Manager will search for the media in it's managed devices. If the tape is not mounted, a mount request will be issued for the media. If DEVICE is specified, the media currently mounted in the named device is ejected. If no media is mounted in the device, the ERASE is cancelled.

If the media being erased is a multi-volume media, each subsequent media volume will be erased. Mount request(s) for subsequent volume(s) will be generated as each successive volume is erased.

Examples: ERASE MEDIA=MYTAPE

Causes Tape Manager to search for the MYTAPE media in it's managed drives and to then erase the media. If the media is not mounted, a mount request will be issued for it.

ERASE DEVICE=TAPE3

Causes Tape Manager to erase the media mounted in the TAPE3 device.

INVENTORY

Description: Causes Tape Manager to take a full inventory of the media in a tape changer device's slots.

Syntax: INVENTORY DEVICE=*device*

Notes: DEVICE must specify a valid changer device name, such as CHANGER1.

Note that typically the INVENTORY command is not required to be manually submitted because the Tape Manager monitors all changer devices and automatically requests a slot inventory whenever a new magazine is inserted.

To prevent unwanted drive cleanings, INVENTORY will never automatically load any media from a changer slot if that slot is defined as a cleaning slot. Note that cleaning slots may be device defined (depending upon the specific devices features) or it may be configured using the Changers Tab of the Tape Manager notebook.

The INVENTORY command is available only from the system console and by using the 'Inventory' button on the Changers tab of the Tape Manager notebook. INVENTORY may not be submitted from a batch job.

Examples: INVENTORY DEVICE=CHANGER3

Causes Tape Manager to load each slot in device CHANGER3 and to evaluate the media contents of each media that is loaded.

LABEL

Description: Causes Tape Manager to write a tape header on the media and to record the tape name in the tape catalog.

Syntax: LABEL DEVICE=*device* MEDIA=*media* [BLOCKSIZE=*size*] [FORCE]

Notes: DEVICE and MEDIA are both required parameters. DEVICE indicates the device in which the media to be labeled is currently mounted. MEDIA indicates the name that will be assigned to the newly labeled media. If the media mounted in the indicated device already contains a Tape Manager cataloged media, the optional FORCE parameter must be included.

The optional BLOCKSIZE parameter provides the ability to format the media with a non-standard blocksize. If omitted, LABEL will format the media using the default blocksize for the device. Note that valid blocksize values may vary from one device to another. Consult the device documentation for valid block size values. Also, read the Tape Manager General Information section in this document for more information on block sizes.

Examples: LABEL DEVICE=TAPE0 MEDIA=NEWTAPE FORCE

Causes Tape Manager to label the media mounted in device TAPE0 with a name of NEWTAPE. Additionally, if the mounted media already contains Eden data, the media will be erased (including any catalog entries) prior to being labeled.

LABEL DEVICE=TAPE0 MEDIA=TEST BLOCKSIZE=16384

Causes Tape Manager to label the scratch or otherwise 'non-Eden' tape media mounted in device TAPE0. The label will also set the media's blocksize to a value of 16,384 bytes per block.

LIST

Description: Causes Tape Manager to display a list of specific information on either tape devices, tape changer devices or tape media.

Syntax: LIST MEDIA | DEVICES | CHANGERS

Notes: One and only one of the parameters, MEDIA, DEVICES or CHANGERS must be specified.

Examples: LIST MEDIA

Provides a brief, one line per tape volume, display of all cataloged media.

LIST DEVICES

Provides a brief one line per tape drive list of all known Tape Drive devices.

LIST CHANGERS

Provides a display of Tape Changer devices, the slots contained therein and the media in each slot.

LOAD

Description: Causes Tape Manager to load a tape from a changer device slot to the associated tape drive.

Syntax: LABEL DEVICE=*changer-device* SLOT=*slot*

Notes: DEVICE must specify a valid changer device name, such as CHANGER0. SLOT must be the number of a valid media containing slot in the changer, where the first slot is always slot number 1.

The LOAD command will not cause a cleaner media to be loaded.

If the drive associated with the specified changer already contains a mounted media, the LOAD command will eject and stow the loaded media prior to affecting the load of the requested media. If the drive in question is busy at the time the LOAD command is submitted, the Tape Manager will defer the LOAD until the drive becomes available.

Examples: LOAD DEVICE=CHANGER2 SLOT=3

Causes Tape Manager to label the media mounted in device TAPE0 with a name of NEWTAPE. Additionally, if the mounted media already contains Eden data, the media will be erased (including any catalog entries) prior to being labeled.

PURGE

Description: Causes Tape Manager to delete all references to a particular media from the systems Tape Catalog.

Syntax: PURGE MEDIA=*media*

Notes: The indicated media name will be completely removed from the Tape Catalog. Removal will occur under all circumstances, including if the media is currently mounted in an Eden tape drive.

If a media PURGE is performed, and it is later discovered the wrong media was purged, the catalog entries for the media may be rebuilt by using the CATALOG command.

Examples: PURGE MEDIA=TEST_TAPE

Causes all volume and file entries for the media named 'TEST_TAPE' to be removed from the system tape catalog.

RELEASE

Description: Causes Tape Manager to release a previously acquired tape device, allowing other applications to access the device.

Syntax: RELEASE DEVICE=*device*

Notes: DEVICE is a required parameter. The device in question must already be acquired by Tape Manager. Once released, a drive may be re-acquired for Tape Manager use by submitting an ACQUIRE command.

Examples: RELEASE DEVICE=TAPE12

Causes Tape Manager to release control of the TAPE12 device.

RESTORE

Description: Causes Tape Manager to restore, from tape to disk, one or more files that were backed up using the Tape Manager BACKUP command.

Syntax: RESTORE MEDIA=*media* | DEVICE=*device*
FILES=*files* | SEQUENCES=*seq*
[NEWPATH=*path-name*]

Notes: MEDIA or DEVICE must be specified, but not both. If MEDIA is specified Tape Manager will search it's managed drives for the required volume of the media. If the required volume is not mounted, a mount request will be issued for the media. Note that the files to be restored may affect which volume of the media is required. If the files to be restored reside on volume 3 of a media, then only that media will be required to be mounted.

FILES or SEQUENCES must be specified, but not both. FILES may specify one or more distinct file names, however wildcard characters are not allowed except when specifying FILES=*.*. If multiple file names are specified, the names must be separated by commas. When running RESTORE from a batch job, the FILES parameter may be set so that RESTORE reads it's list of file names from SYSIN. To use this type of processing, specify FILES=:SYSIN

SEQUENCES may be specified instead of FILES, and in the case where a backup tape contains multiple copies of the same file name, SEQUENCES is required so as to uniquely identify the specific copy of a file to restore. If multiple sequences are to be restored, the sequence numbers must be separated by a comma. If a range of sequences are to be restored the range may be entered in the format of seq1-seq2. If all sequences are to be restored SEQUENCES=ALL may be specified.

The optional NEWPATH parameter allows for the specification of a restore-to path that is different from the original location of the files being restored. If NEWPATH is omitted, files will be restored to their original locations. If NEWPATH is specified, all files restored as a result of the submitted command will be restored to the path specified in NEWPATH.

Examples: RESTORE MEDIA=TEST FILES=*.*

Restores all backup files from the media named TEST. If the media is not mounted in a Tape Manager controlled device, a mount request will be issued for volume 0 of the media.

RESTORE DEVICE=TAPE2 SEQUENCES=1-9,12,15 NEWPATH=C:\

Causes Tape Manager to restore backup file sequences 1 through 9, plus 12 and 15 from the media currently mounted in device TAPE2. Also, all files will be restored to the c:\ directory, regardless of their original locations.

RESTORE MEDIA=TEST SEQUENCES=ALL

Restores all backup files from the media named TEST. All files are restored to their original locations.

REWIND

Description: Rewinds a mounted tape to the beginning of the media

Syntax: REWIND DEVICE=*device* | MEDIA=*media*

Notes: DEVICE or MEDIA must be specified, but not both. If MEDIA is specified, the indicated media must be mounted in a Tape Manager controlled device. If the media is not mounted, or DEVICE specifies a drive that does not contain an Eden media, the command is cancelled.

Examples: REWIND MEDIA=DEV_2

Rewinds the currently mounted volume in the DEV_2 media set, if it is mounted.

TAPECAT

Description: Causes Tape Manager to display catalog information for either an entire media (all volumes, all files), a specific backup file (from all tapes) or a specific RMSFH created data file (from all tapes).

Syntax: TAPECAT MEDIA=*media* | BACKUP=*backup-file* | FILE=*rmsfh-file*

Notes: If MEDIA is specified, Tape Manager will display a complete list of all information related to the media, including capacity, used and free space values and a list of all files (regardless of backup or RMSFH format) stored on all volumes of the tape.

If BACKUP is specified, Tape Manager will display all occurrences of backup files that match the name specified. All occurrences of the backup file across all tape media and volumes will be listed. Wildcard characters are not allowed. Note, file name may not include drive or path information.

If FILE is specified, Tape Manager will display all occurrences of the RMSFH created data file that match the name specified. All occurrences of the RMSFH data file across all tape media and volumes will be listed. Wildcard characters are not allowed. Note, file name may not include drive or path information.

Examples: TAPECAT MEDIA=TEST

Causes Tape Manager to display the contents and all known information about the cataloged media named TEST.

TAPECAT BACKUP=TEST.DAT

Cases Tape Manager to display the media names and volume numbers of all tape media that contain backup copy(s) of the file named TEST.DAT.

TAPECAT FILE=TEST.DAT

Cases Tape Manager to display the media names and volume numbers of all tape media that contain RMSFH created data files named TEST.DAT.

TAPEMARK MOVE

Description: Repositions a mounted tape media. Positioning may be specified in terms of relative tapemarks, forwards or backwards from the current position, or to the end of the currently recorded data area of the tape.

Syntax: TAPEMARK DEVICE=*device* | MEDIA=*media* MOVE +/-*count* | EOD

Notes: DEVICE or MEDIA must be specified, but not both. If MEDIA is specified, the indicated tape must be mounted in one of Tape Managers tape drives. If DEVICE is specified the currently mounted tape in the device will be used for the operation. If an unmounted media or an empty tape drive is specified, the TAPEMARK is cancelled.

MOVE must specify either a relative number of tapemarks or the constant 'EOD', which indicates the end of the recorded data area on the tape. If a relative number of tapemarks, i.e., +1 or -9 is specified, the tape is repositioned by reading forwards or backwards until the indicated number of tapemarks have been read.

Examples: TAPEMARK DEVICE=TAPE0 MOVE EOD

Causes the media mounted in device TAPE0 to be repositioned to the first block beyond the end of the currently recorded data area. Note, the 'currently recorded data area' is defined as that portion of the tape which has been written to.

TAPEMARK MEDIA=DEV_2 MOVE -3

Causes the DEV_2 media, which must be mounted in a Tape Manager controlled drive, to be moved backwards (towards the beginning of the media) 9 tapemarks.

TAPEMARK WRITE

Description: Writes one tapemark on a tape at the current media location.

Syntax: TAPEMARK DEVICE=*device* | MEDIA=*media* WRITE

Notes: DEVICE or MEDIA must be specified, but not both. If MEDIA is specified, the named media must be mounted in a Tape Manager controlled device. IF DEVICE is specified, the indicated device must contain an Eden tape.

If a tapemark is written in the middle of the recorded data area of a media, the data recorded beyond the tapemark location will become inaccessible.

Examples: TAPEMARK DEVICE=TAPE2 WRITE

Writes one tapemark on the media that is currently mounted in the TAPE2 device.

UNLOCK

Description: Causes a tape device to release its manual eject lock, allowing the eject button to be usable.

Syntax: UNLOCK DEVICE=*device* | MEDIA=*media*

Notes: DEVICE or MEDIA must be specified, but not both. If MEDIA is specified, the named media must be loaded in a Tape Manager controlled device, and the device may not be busy.

Examples: UNLOCK MEDIA=DEV_1

Causes the device that contains media DEV_1 to be unlocked.

VERIFY

Description: Compares the contents of a physical tape media to the recorded information for that tape in the Tape Manager media catalog, reporting on differences and discrepancies.

Syntax: `VERIFY MEDIA=media | DEVICE=device`

Notes: MEDIA or DEVICE must be specified, but not both. If MEDIA is specified, Tape Manager searches for volume 0 of the indicated media. If the media is not mounted, a mount request is issued for the tape. If DEVICE is specified, the media mounted in the indicated device is verified, if the mounted volume is volume 0. If volume 0 is not mounted, the verify is cancelled.

Verify will report any discrepancies noted between the cataloged information and the media and file headers recorded on the tape. Items checked include date and time stamps, physical block locations for headers, file names, backup file sizes (RMSFH file sizes cannot be checked). The contents of specific files on the tape media are not compared to corresponding disk files. It is, therefore, not possible to use VERIFY to ensure a backup file on tape contains the same data as the disk file it was backed up from.

Examples: `VERIFY MEDIA=TEST`

Causes Tape Manager to verify the catalog and media items for the tape named TEST.

Automatic Drive Cleaning

For tape drives that have associated changer devices, Tape Manager is capable of providing automatic cleaning whenever the tape drive either reports that it is in need of a cleaning or whenever a read or write error is reported by the drive.

If your hardware includes a tape changer and you intend to use the automatic cleaning features of Tape Manager it is very important that a fixed cleaning slot be defined and that cleaning cartridges are never placed in any other slot when inserting magazines into the changer.

Failure to define and consistently use one and only one slot as a cleaning slot may cause excessive use of the cleaning cartridge as well as excessive wear of the tape read/write head. This is due to the fact that upon Tape Manager start-up as well as after recognizing that a new magazine has been inserted, the Tape Manager will automatically load and inventory all slots that are not marked as the cleaning slot. With most tape drive hardware the simple act of loading a cleaning cartridge to a drive is what actually triggers the drive cleaning.

Depending upon the actual tape drive and changer device's features, the drive itself may be able to define it's own cleaning slot. In such a case Tape Manager will be able to sense the drives configuration and will automatically use the device defined slot as the cleaning slot.

Appendix A – Tape media contents

Like mainframe based tape systems, Eden's Tape Manager and the tape handling features of RMSFH are designed to support tape as a general IO media for sequential data files.

In order to sufficiently support the access and use of tape under Eden Server, Tape Manager creates and maintains certain constructs on each physical tape media, as well as entries in the systems media catalog, which is an indexed file maintained by Tape Manager.

Each tape media used by Tape Manager contains one media descriptor record which is the first recorded data on the tape. The media descriptor record contains the media create date, tape name, volume number and other items. A matching copy of this media descriptor is maintained in the tape catalog on disk. Note that in the event of a multi-volume media, each volume contains its own media descriptor record and associated catalog record.

The media descriptor record is followed by a tapemark.

Following the media descriptor and associated tapemark, the tape contents will always include a series of file data blocks. A complete file on tape always consists of three items: 1) A file header record which contains file name, type (backup or RMSFH), byte size, file attributes (for backup files) and RMSFH data file information (file type and record length information) 2) data blocks containing the files contents and 3) a closing tapemark denoting the end of the file.

A tape media, regardless of the number of volumes, may contain up to 999,999.999 files. If during the record of a file, the current media volume is filled, Tape Manager will automatically eject the current media and prompt for the next volume. In the event that a single volume media is filled, Tape Manager prompts for a scratch volume to be mounted and automatically labels the tape as the next volume in the media set.

Note that in the event a single file spans volumes, the beginning data block of the n+1 volume of the media will not be a tape file header (as may be expected), but will simply contain the continuation of the file from the earlier volume.

There are no size limitations imposed by Tape Manager, except that imposed by the number of available tape volumes.

Differing somewhat from other tape systems, especially mainframe tape systems, is the method in which Tape Manager handles media block-sizes. Many tape systems require that tape blocks be at least as large as the largest data record being written to the tape.

To simplify tape use under Eden, all Tape Manager and RMSFH tape access is designed to perform it's own internal blocking, thus allowing any type of tape IO on any media regardless of blocksize. As such, it is generally recommended that use of a devices default blocksize is the most efficient. Use of the default blocksize can be achieved by simply omitting the BLOCKSIZE parameter when running LABEL commands.

Appendix B – Supported Devices

Tape Manager will support most, if not all, stand-alone SCSI tape devices either internal or external. Tape Manager has been tested and found to work well with stand-alone drives from the following manufacturers:

Hewlett Packard
Seagate
Exabyte
Tandberg

Support for changer devices is provided for some SCSI based changers. Tape Manager will generally support any changer that is attached to the same SCSI port and address as its associated tape drive is. Tape Manager does not, however, include any logic which may be required for lower-end changers that require any special robotic arm (i.e., changer mechanism) positioning or on-the-fly calibration. Tape Manager has been tested and found to work well with drive/changer combination products from the following manufacturers:

Hewlett Packard
Tandberg

Tape Manager does not support any changer or drive devices which are not SCSI attached.