



## **Tape Storage Management Console Version 1.2**

Reference Guide

Second Edition (September 2000)  
Part Number 201652-002  
Compaq Computer Corporation

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# About This Guide

This guide is designed to be used as step-by-step instructions for installation and as a reference for operation, troubleshooting, and future upgrades.

## Text Conventions

This document uses the following conventions to distinguish elements of text:

<b>Keys</b>	Keys appear in boldface. A plus sign (+) between two keys indicates that they should be pressed simultaneously.
USER INPUT	User input appears in a different typeface and in uppercase.
<i>FILENAMES</i>	File names appear in uppercase italics.
Menu Options, Command Names, Dialog Box Names	These elements appear in initial capital letters.
COMMANDS, DIRECTORY NAMES, and DRIVE NAMES	These elements appear in uppercase.
Type	When you are instructed to <i>type</i> information, type the information <b>without</b> pressing the <b>Enter</b> key.
Enter	When you are instructed to <i>enter</i> information, type the information and then press the <b>Enter</b> key.

## Symbols in Text

These symbols may be found in the text of this guide. They have the following meanings.



**WARNING:** Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or loss of life.

---



**CAUTION:** Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.

---

**IMPORTANT:** Text set off in this manner presents clarifying information or specific instructions.

---

**NOTE:** Text set off in this manner presents commentary, sidelights, or interesting points of information.

## Getting Help

If you have a problem and have exhausted the information in this guide, you can get further information and other help in the following locations.

### Compaq Technical Support

You are entitled to free hardware technical telephone support for your product for as long you own the product. A technical support specialist will help you diagnose the problem or guide you to the next step in the warranty process.

In North America, call the Compaq Technical Phone Support Center at 1-800-OK-COMPAQ<sup>1</sup>. This service is available 24 hours a day, 7 days a week.

Outside North America, call the nearest Compaq Technical Support Phone Center. Telephone numbers for world wide Technical Support Centers are listed on the Compaq website. Access the Compaq website by logging on to the Internet at <http://www.compaq.com>.

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<sup>1</sup> For continuous quality improvement, calls may be recorded or monitored.



## **Compaq Website**

The Compaq website has information on this product as well as the latest drivers and Flash ROM images. You can access the Compaq website by logging on to the Internet at <http://www.compaq.com/storage>

## **Compaq Authorized Reseller**

For the name of your nearest Compaq Authorized Reseller:

- In the United States, call 1-800-345-1518.
- In Canada, call 1-800-263-5868.
- Elsewhere, see the Compaq website for locations and telephone numbers.

# Chapter 1

## Introduction

Welcome to the Tape Storage Management Console (TSMC).

This product is offered to both Compaq customers and trained service personnel. The diagnostics, tests and tools that make up TSMC are designed to aid in the installation and continued use of Compaq tape and tape automation products.

The tool searches for and reports problems and failures with tape and tape automation products connected via Fibre Channel, SCSI, or serial interfaces. This is primarily accomplished through the use of Standard and Custom tests that are built into TSMC. These tests emulate No Trouble Found (NTF) tests developed by Compaq. If you are installing a device for the first time, you can run TSMC to verify that the tape drive or tape library you purchased is properly installed and is available to your system before you attempt to load any other application software.

In addition, you can load firmware into tape drives or tape libraries either concurrently or individually with the TSMC tool. If you are connected to the World Wide Web, TSMC will search the appropriate Compaq website for the latest available firmware needed by your device. Newer versions of TSMC are also delivered to you over the Web.

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**IMPORTANT:** When using TSMC, be sure that you are in offline mode and that no other applications are issuing tape commands to your devices.

---

## Assumptions about the Reader

This manual assumes that you have a working knowledge of Microsoft Windows NT 4.0 and/or Microsoft Windows 2000. You should also have a basic knowledge of the terms employed in describing and using the SCSI interface and the application of SCSI devices. These are suggested levels and not absolute requirements. TSMC is a flexible tool and can be used equally well by both the novice and the expert.

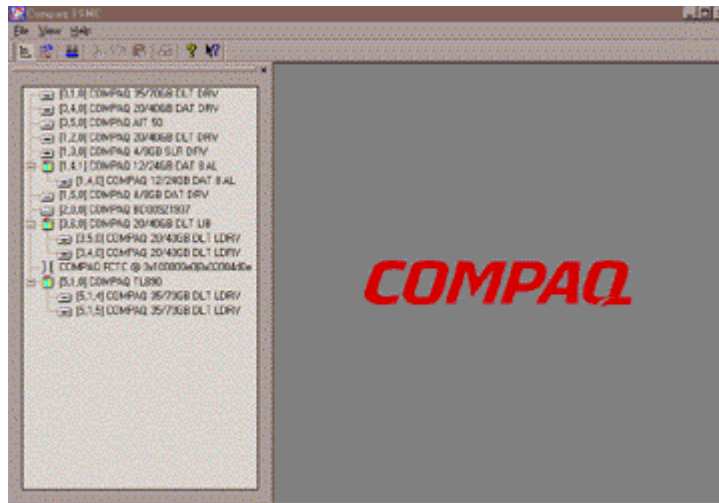


Figure 1-1. TSMC window after launch

## Advanced and Basic Mode Testing

TSMC starts up in Basic Mode. This enables the Device Scan, a Device Inquiry, and the ability to run Standard or Custom device tests. You can operate in Advanced Mode for additional testing, which gives you access to specific SCSI commands.



**CAUTION:** Do not use data tapes when performing TSMC tests. Data tapes are over written when performing TSMC tests. Use only Compaq-supplied testing tapes, which have **TST000-999** barcode labels.

## SCSI Requirements

This section discusses SCSI concepts you need to understand for a successful installation of TSMC.

Every SCSI system bus requires that you:

1. Have a host bus adapter (HBA) or initiator and target device.
2. Connect the HBA or initiator and target device with cabling, or daisy chain a string of target devices together to the initiator.
3. Terminate devices at both ends, either at the device/adaptor or by adding an inline/external terminator.

## SCSI ID

Your devices are displayed by TSMC in the Device Tree window, as shown in Figure 1-2.

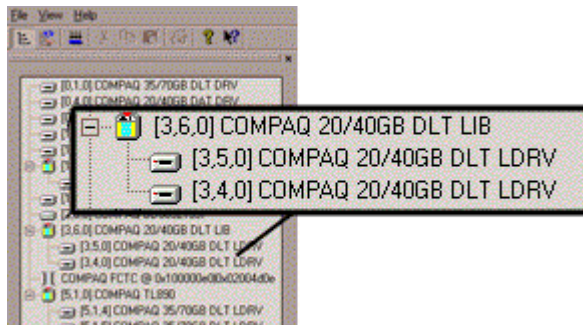


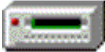




Figure 1-2. SCSI information displayed in Device Listing

Icons indicate if the device is a tape drive, tape library, or fibre device. Next to each icon, TSMC displays the corresponding SCSI Bus, ID, and LUN in order in the brackets before each device name.

## Device Listing Icons

<b>Table 1-1 Device Listing Icons</b>	
Icon	Description
	Hard Disk
	CD-ROM or Optical Device
	Tape Device
	Bridge
	Tape Automation (also called Jukebox or Library)

## Fibre Products

The following devices are supported in the Compaq Storage Area Network (SAN).

- Fibre-supported Devices
- 8 and 12 port hub
- Switch
- Fibre to SCSI Bridge (for attaching fibre to SCSI tape libraries)

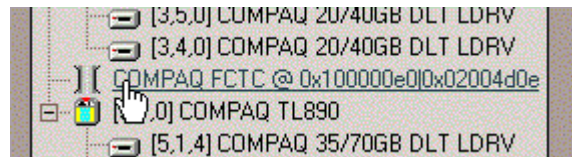


Figure 1-3. Example of fibre bridge in device listing

Either a Fibre-supported device, Fibre Switch, Fibre Hub, and/or Fibre Bridge will be attached to the bus.

**NOTE:** Fibre Hubs are not identified on the Bus.

### **Fibre Bridge**

With a Fibre Bridge, a SCSI device is attached to the SCSI connections on the bridge. The Bridge appears as one device, regardless of the number of SCSI buses internal to it.

# Chapter 2

## Installation

### System Requirements

The following are the system requirements for TSMC:

- Any Intel-based Compaq server that supports:
  - Microsoft Windows NT 4.0 with Service Pack 4 or greater
  - Microsoft Windows 2000 Professional, Server, and Advanced Server
- Any Compaq fast-wide SCSI 2 host adapter or Low Voltage Differential (LVD) with the driver *CPQ32FS2.SYS* (available on the Compaq SmartStart CD-ROM) installed

**NOTE:** Support is constantly being updated. Check the Compaq website for the latest information on supported adapters.

- Compaq Fibre Channel Host Bus Adapter with the driver *CPQFCALM.SYS* (available on the Compaq SmartStart CD-ROM) installed
- A Web browser to view HTML Help files

TSMC assumes you are only using Compaq tape drive or tape automation products.



**CAUTION:** Using unqualified 3<sup>rd</sup> party host adapters that are not certified may cause problems with firmware downloads.

---

## Internet Access

Internet access allows for program updates and access to firmware files. Without Internet access you will need to copy files from a network server or media.

## Installing TSMC Software

The following sequence should be performed when installing your TSMC software for the first time.

---

**IMPORTANT:** Before continuing, exit any Windows programs.

---

1. Insert your TSMC CD-ROM into the CD-ROM drive.
2. If the Install program does not automatically start up, locate the file *SETUP.EXE* on your CD-ROM, then double-click on it to start installation.
3. After the program has been initialized a Welcome screen appears. Click **Next**.
4. The TSMC license agreement appears:
  - Click Accept if you agree to the terms. The Install Folder screen appears.
  - Click Decline if you do not agree to the terms. The installation aborts.
5. The Install Folder screen allows you to choose where to install TSMC. The default is C:\PROGRAM FILES\COMPAQ TSMC. Click **Next** to continue, or **Browse** to install TSMC in a different directory.
6. The Shortcut Folder screen creates shortcut icons in the default folder, or you can type a new name or select from an existing folder. After selecting a Shortcut folder, click **Next**.
7. Setup now has enough information to start installing TSMC.
  - a. To make changes, click **Back** on the Ready to Install screen.
  - b. To abort now or during install, click **Cancel**.
  - c. To continue, click **Install**.
8. After clicking **Install**, the Installing Files screen shows the progress of setup.



9. After all of the files have been copied, the Finished Screen is displayed. Click **Finish** to allow Setup to examine your system's Advanced SCSI Programming Interface (ASPI Layer).
10. If your ASPI components are not up to date, the ASPI Layer Check screen appears and Setup recommends installation of newer ASPI components. Click **Yes** to install them.  
  
If your ASPI components are up to date, Setup tells you so. Click **OK**.
11. Setup is complete. You must reboot your system for changes to take effect. Click **Yes** to reboot your system before running TSMC.



**CAUTION:** When using TSMC, be sure that you are in offline mode and that no other applications are issuing tape commands to your devices.

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# Chapter 3

## Screen Layout

### Startup

Double-clicking the TSMC icon executes the program.



**CAUTION:** When using TSMC, be sure that you are in offline mode and that no other applications are issuing tape commands to your devices.

### Device Scan

After TSMC is launched, a screen briefly appears as TSMC scans all the SCSI and Fibre buses on your system.

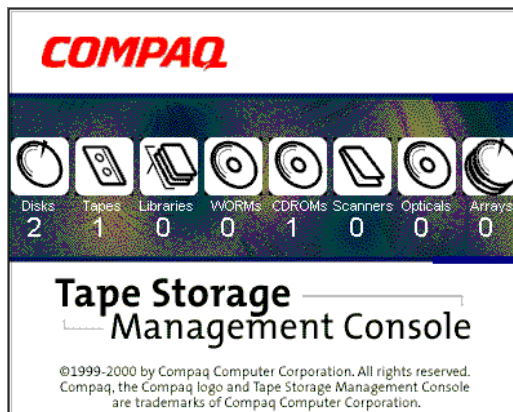


Figure 3-1. Device scan

These buses and devices are then displayed in a device tree. The display shows all devices attached to the buses, even if these devices are not supported by TSMC.

**NOTE:** Initial scans on Windows 2000 may take up to 30 seconds

## Device Listing

When scanning is complete, the Device Listing screen appears, showing each SCSI or Fibre device. The number of SCSI devices on a Bus can range from 0 to 7, or 0 to 15 with Wide SCSI. Fibre devices can be directly attached or as part of a switch network, therefore the numbers get much larger.

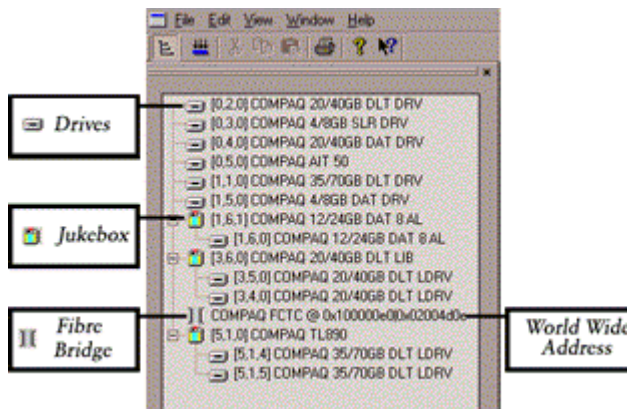


Figure 3-2. Device Listing

**NOTE:** Drives in jukeboxes are displayed in association with the libraries in which they reside. Some drives may display incorrectly if the library is in standby mode or if a drive is unavailable and the user has not reconfigured the library. To ensure correct display, place the library online or reconfigure the library as needed.

## Device Description

Icons indicate if the device is a tape drive, tape library, or fibre device. Next to each icon, TSMC displays the corresponding SCSI Bus, ID, and LUN in order in the brackets before each device name.

## Selecting a Device to Work On

Use your mouse to click on a tape device in the Device Listing. This opens the device qualifier screen for the selected device.

## Qualifier Screens

All SCSI diagnostic commands are executed from the Device Qualifier screens. The appropriate screen is automatically selected when you click on a device listing. For example, in testing DLT based libraries you would test the individual DLT drive with a Sequential Qualifier screen or test your jukebox with the Tape Automation Qualifier screen. Open the Qualifier screens by clicking on a device in the Device Listing screen.

## Sequential Qualifier Screen

Figure 3-3 shows the Sequential Qualifier screen in Basic Mode.

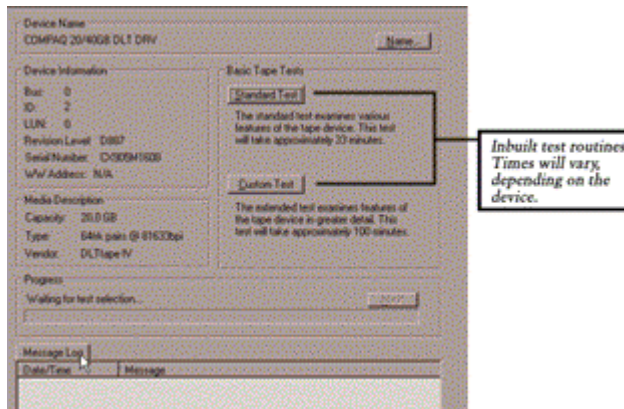


Figure 3-3. Sequential Qualifier screen (Basic Mode)

Figure 3-4 shows the Advanced Mode, with advanced functions displayed in addition to the Basic Mode tests.

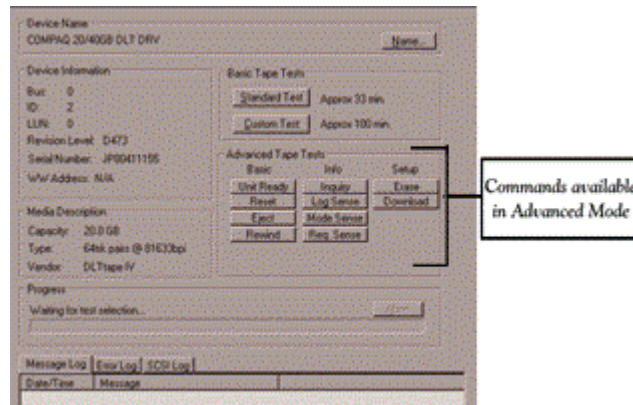


Figure 3-4. Sequential Qualifier screen (Advanced Mode)

## Tape Automation Qualifier Screen

This screen appears for testing Libraries and Autochangers. Basic and Advanced Modes are shown in figures 3-5 and 3-6, respectively.

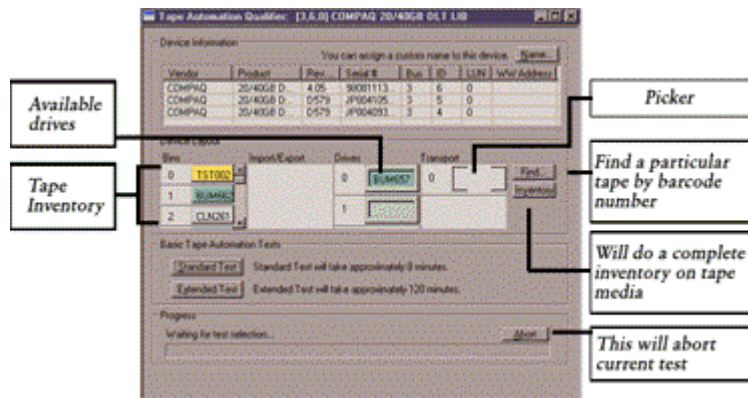


Figure 3-5. Tape Automation Qualifier screen (Basic Mode)

The screenshot displays the Tape Automation Qualifier screen in Advanced Mode. It is divided into several sections:

- Device Information:** A table listing device details.
 

Vendor	Product	Rev. ...	Serial #	Bus	ID	LUN	v/v
COMPAQ	TL891	0514 ...	3G06CR8...	4	0	0	
COMPAQ	35/70GB DLT LDRV	2150 ...	C>A2051...	4	4	0	
COMPAQ	35/70GB DLT LDRV	2150 ...	C>A2050...	4	5	0	
- Device Layout:** A section for managing bins and drives.
 

Bins	Import/Export	Drives	Transport
0		0	0
1	TST034		
2	AD1339	1	
3	HB0011		
- Tape Automation Tests:** A section for configuring tests.
 

Test	Duration	Basic	Info	Setup	Motion
Standard Test	8 mins.	Unit Ready Reset	Inquiry Log Sense Mode Sense Req. Sense	Download	Home Move EI Pos. to EI Clean Drive
Extended Test	120 mins.				
- Progress:** A section showing the current status: "Waiting for test selection..." with an "Abort" button.
- Message Log:** A table at the bottom for logging messages.
 

Message Log	Error Log	SCSI Log
Date/Time	Message	

Callouts on the right side of the screen provide additional context:

- Evokes a complete barcode scan of tape inventory on supported libraries:** Points to the "Inventory" button in the Device Layout section.
- Robotic commands in Tape Automation (Advanced Mode):** Points to the "Basic", "Info", "Setup", and "Motion" tabs in the Tape Automation Tests section.
- Message Logs Error Logs SCSI Logs:** Points to the Message Log table at the bottom.

Figure 3-6. Tape Automation Qualifier screen (Advanced Mode)

## Menu and Toolbar Commands

### Menu Options

TSMC uses common menu commands, such as File, Print, and Exit. The Menu Bar is located in the upper left hand corner of the TSMC screen. The Edit and Window options will appear when a device is selected.

### File Menu

The File menu options are described in the following table.

**Table 4-1**  
**File Menu**

Menu Item	Function
Force Serial Download	If a download (see Chapter 5, Commands) fails, your device might not respond to any commands. As a result, it will not appear in the device listing. This command allows you to force a serial download, thereby recovering a device that would otherwise be unusable.

*continued*

**Table 4-1**  
**File Menu** *continued*

Menu Item	Function
Force Rescan	Initializes all attached SCSI buses and discovers any devices on them. It also updates the Windows NT or Windows 2000 device list, even if the devices were not attached on boot.  You can also access the Force Rescan function by clicking the Rescan icon located on the toolbar.
Close	Closes the topmost tool window. You must abort or cancel all running or pending tests before closing a window.
Export Log	Allows you to export the selected log to a file. The exported file is in plain text (ASCII) format.
Print	Prints the selected log.
Print Setup	Displays the standard print setup dialog, allowing you to select or configure a printer.
Exit	Closes the application. You must abort or cancel all running or pending tests before closing the application window.



## Edit Menu

The Edit menu options are described in the following table.

**Table 4-2**  
**Edit Menu**

Menu Item	Function
Undo	Undoes the last typing action. You cannot 'undo' a test that you ran. This function exists so that you can undo a change you made to a particular test parameter in the tool windows.
Cut	Removes the highlighted information from its current location; allows paste elsewhere.
Copy	Keeps highlighted information in its current location; allows paste elsewhere.
Paste	Places cut or copied information at the current pointer location.



## View

The View menu options are described in the following table.

**Table 4-3**  
**View Menu**

Menu Item	Function
Device Listing	Displays or hides the list of devices detected by TSMC.  You can also access the Display/Hide Device Listing function by clicking the Show/Hide icon located on the toolbar.
Toolbar	Displays or hides the toolbar.
Status Bar	Displays or hides the Status Bar, the part of the application window that shows the current state of the application.
Options	Sets behavior and display characteristics of TSMC using the option tabs shown in figures 4-1 through 4-5.



## Options Screen

From the Options screen, you can set behavior and display characteristics of TSMC using the option tabs shown in figures 4-1 through 4-5.

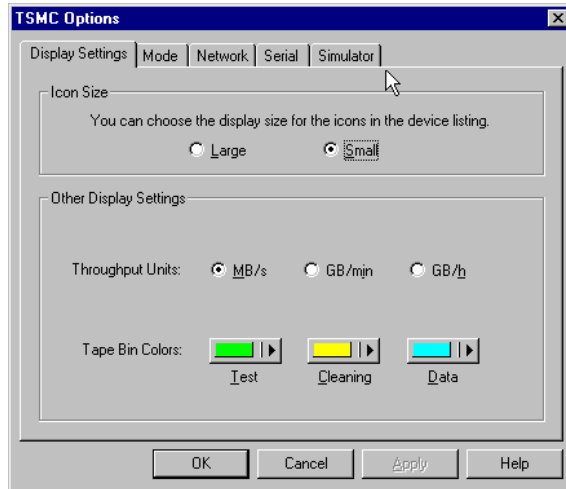


Figure 4-1. Display Settings tab

Desired throughput units for all subsequent tests that display rate information are selected from the Display Settings tab, as shown in Figure 4-1.

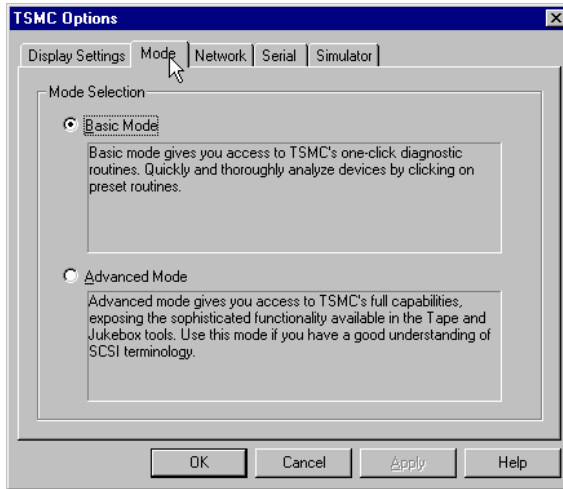


Figure 4-2. Mode tab

Select Advanced or Basic as the default startup mode for all tool windows opened, as shown in Figure 4-2.

**NOTE:** Changing this option does not affect tool windows already opened.

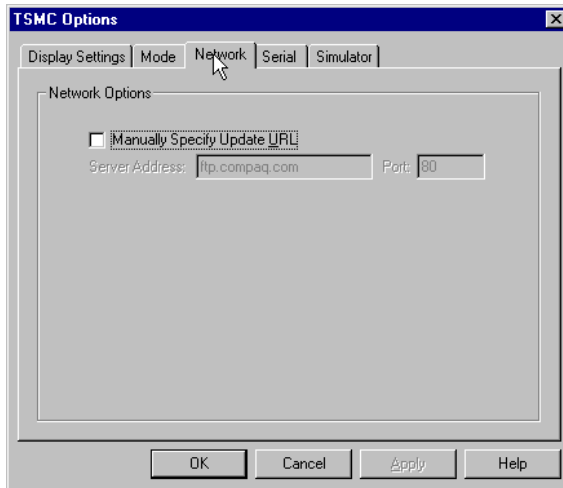


Figure 4-3. Network tab

These options provide alternative connection paths if the default websites are unavailable, as shown in Figure 4-3.

---

**IMPORTANT:** Use this option only if directed by Compaq support personnel.

---

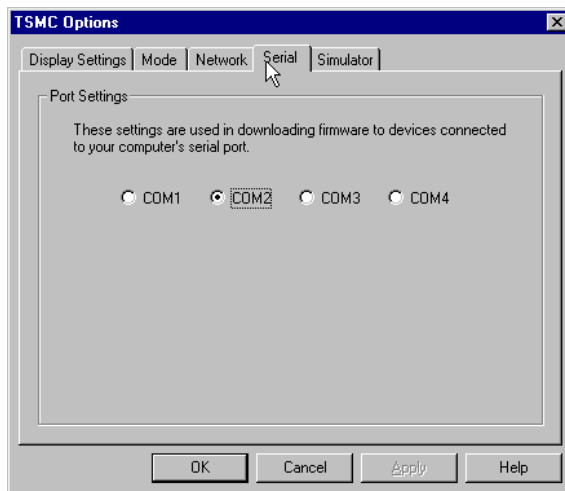


Figure 4-4. Serial tab

If you have tape libraries that support firmware updates via serial ports, you can set the serial port to use, as shown in Figure 4-4.

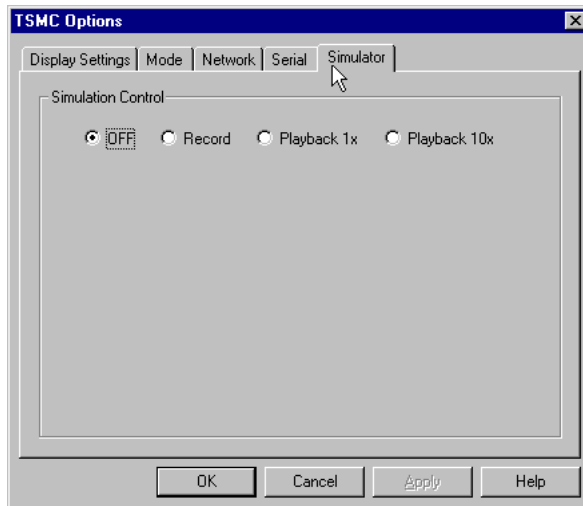


Figure 4-5. Simulator tab

---

**IMPORTANT:** Use this option only if directed by Compaq support personnel.

---

## Window Menu

The Window menu options are described in the following table.

<b>Menu Item</b>	<b>Function</b>
Cascade	Places the first tool window in the upper left corner of the application's client area (where the Compaq logo is located). All subsequent windows are placed progressively down and to the right from that first window.
Tile	Displays all open tool windows, splitting available client area space equally among the windows.
Arrange Icons	Organizes all minimized tool windows in the client area.

## Help Menu

The Help menu options are described in the following table.

<b>Menu Item</b>	<b>Function</b>
Help Topics	Shows topics for which help is available.
Update Software	Retrieves the latest versions of the application and database from the Internet, then opens the database to show you any available updates. See Figure 4-6.
Visit Web Site	Launches your default browser and connects to Compaq's web site.
About TSMC	Displays application copyright and version information.

## Update Software

Select a version to download and click **Retrieve**.

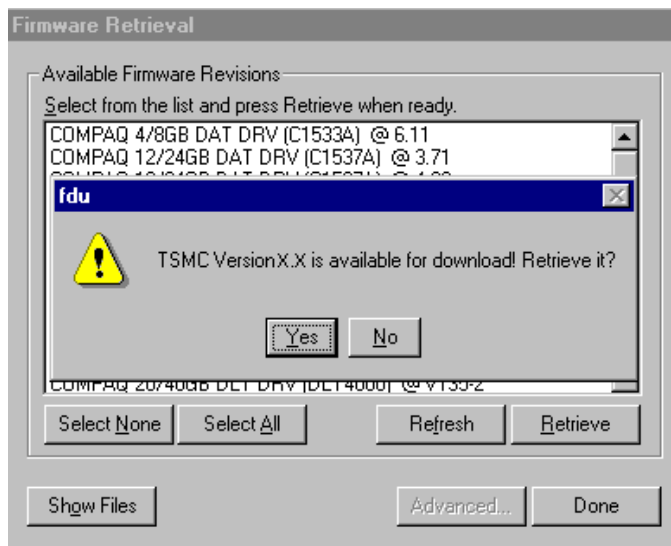


Figure 4-6. Firmware Retrieval screen

After clicking **Retrieve**, TSMC displays a dialog that indicates download progress. When the download is complete, the application asks you if you want to start the installation of the new version. If you answer yes, make sure that you close the running copy of TSMC before installing any new software.

You can also access the Update Software function by clicking on the Update Software button on the toolbar when no device windows are open. When device windows are open, this toolbar button becomes a shortcut to the Download function. (See the section, “Firmware Download Utility,” in Chapter 5.)

# Chapter 5

## Commands

### Basic and Advanced Functions

SCSI devices often need to be programmed, or setup to function properly for a particular operating environment. Additionally, the media often needs to be examined and perhaps formatted, partitioned, or otherwise prepared.

Testing devices and media can be accomplished with Basic Testing or with Advanced Testing Mode. Advanced Mode allows for individual command execution, along with the same Standard and Custom Tests as in Basic Mode.

### Basic Mode Commands

The Basic Mode is comprised of a Standard Test and a Custom Test. These tests are also available from the Advanced Mode screen.

**NOTE:** See Chapter 6 for additional information on running the Standard and Custom NTF tests.

### Standard Test

The Standard Test examines various features of the tape device or library. The time to perform this test varies depending on devices. See Chapter 6.

## Custom Test

The Custom Test examines features of the tape device in greater detail. The time to perform this test will vary depending on devices. See Chapter 6.

## Advanced Mode Commands

The Advanced Mode Commands are comprised of Basic, Info, Setup and Motion Commands. The Motion Commands are only available on the Tape Automation Qualifier screen.

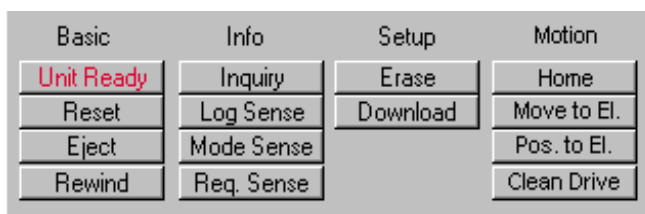


Figure 5-1. Advanced Mode commands available for a tape device or library

**NOTE:** Some command buttons become disabled if no internal testing information is available for the device.

## Basic Commands

The Basic commands are Unit Ready, Reset, Eject, and Rewind. Most of these commands are self explanatory, and are easy to execute by clicking the appropriate button. Eject and Rewind may take several minutes to complete.

## Info Commands

The Info commands are Inquiry, Log Sense, Mode Sense, and Request Sense. These commands are used to provide operational and error information for SCSI devices. By selecting these commands you can view available Log, Mode, or Inquiry Pages and Page Contents. In addition, these pages are written to the Message log, and can be saved to a file if needed.



## Inquiry

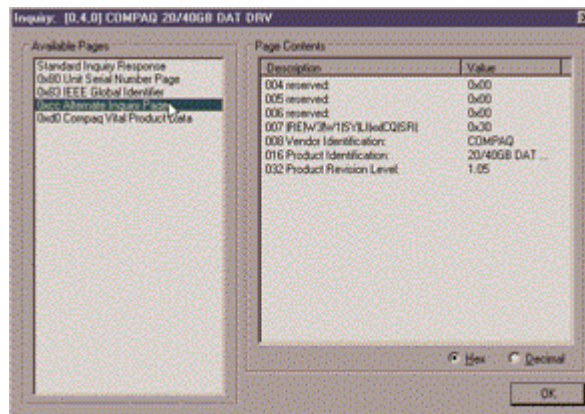


Figure 5-2. Inquiry dialog

The Inquiry dialog, shown in Figure 5-2, displays detailed device parameters. Click on a page in the left column to see its contents.

## Log Sense

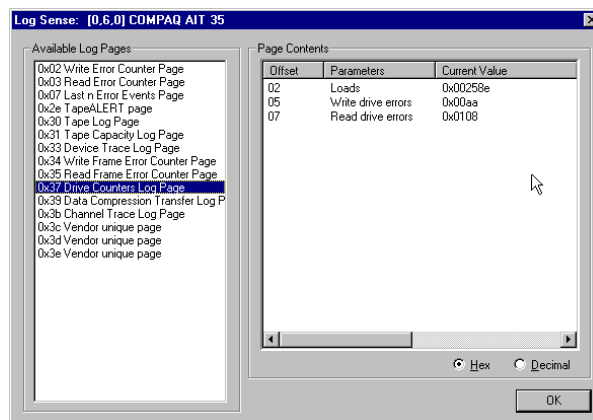


Figure 5-3. Log Sense dialog

The Log Sense dialog, shown in Figure 5-3, displays current and historical statistical information about the device. Click on a page in the left column to see its contents.

## Mode Sense

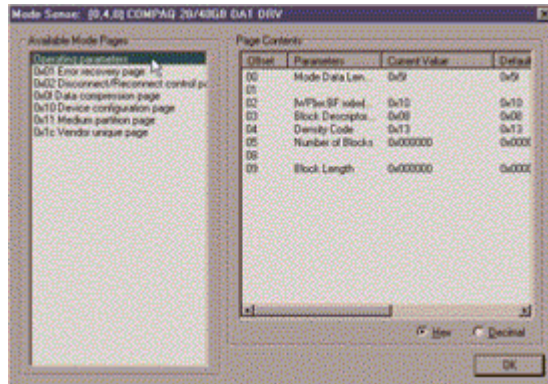


Figure 5-4. Mode Sense dialog

The Mode Sense dialog, shown in Figure 5-4, displays mode parameter pages for the device. Click on a mode page in the left column to see its contents.

## Request Sense

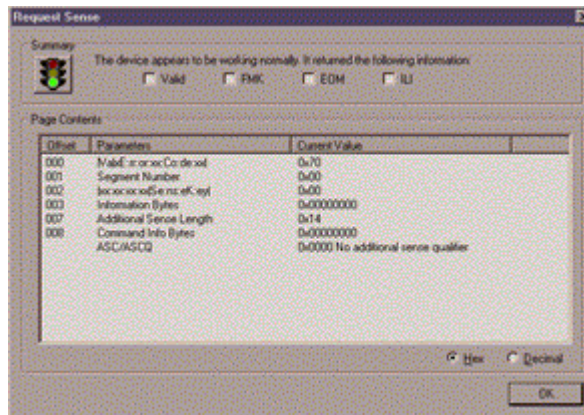


Figure 5-5. Request Sense dialog.

The Request Sense dialog, shown in Figure 5-5, displays status information for the device. The green traffic light indicates that the device is working normally; a red traffic light indicates that something is wrong with the device.

## Setup Commands

The Setup commands are Erase and Download.

### Erase

This command issues an erase to the device, which causes a sequential access device, such as a tape drive, to be repositioned to the beginning of tape, and all data “zeroed” out from the start to the logical end of tape. Note that the abort function may not work; the device itself handles the erase command, and not all devices can stop an erase once started.



**CAUTION:** Use caution when running the Erase command. The quick erase writes a new Beginning of Tape (BOT) and completes in less than 30 seconds. The long erase, once issued, cannot be aborted and runs to completion. The drive reports “busy”, and if you need to close TSMC and re-open it while an erase is running, the bus can report back as busy and TSMC may not complete its scan.

---

## Downloading Firmware Updates

TSMC keeps track of all available firmware versions for specific Compaq products.

TSMC has two options to get firmware or application updates from the Web. You can use the Download command available in the TSMC program, or use the *FDU.EXE* program located in the TSMC directory.

### File Retrieval (*FDU.exe*)

*FDU.EXE* is a separate program that can be run from outside of TSMC. This program can be run from any Microsoft Windows NT or Microsoft Windows 2000 system to get firmware or application updates. *FDU.EXE* can be found in the parent directory of TSMC.

**NOTE:** The *FDU.EXE* program appears in the Start Menu as File Retrieval.

## Download Command

After selecting the Download command, you are asked if you want to use the firmware database. Click **Yes** if you want to use Compaq recommended firmware updates. Click **No** if you have a specific firmware file that you want to use.

If you clicked **Yes**, several dialogs appear and disappear. TSMC opens the database and compares the list of available updates to the specific information for your device. It then produces a list of firmware versions that you can use for your device. That list is displayed in the Available Updates dialog shown in Figure 5-6. If you have Internet access, the firmware file you select is automatically downloaded. If you do not have Internet access, click on the Use Local Media button and then click **OK** to browse for the firmware file from a local source.

If no firmware versions are available for download, click **Skip**. TSMC will go straight to the download dialog, where you can manually specify a file for download.

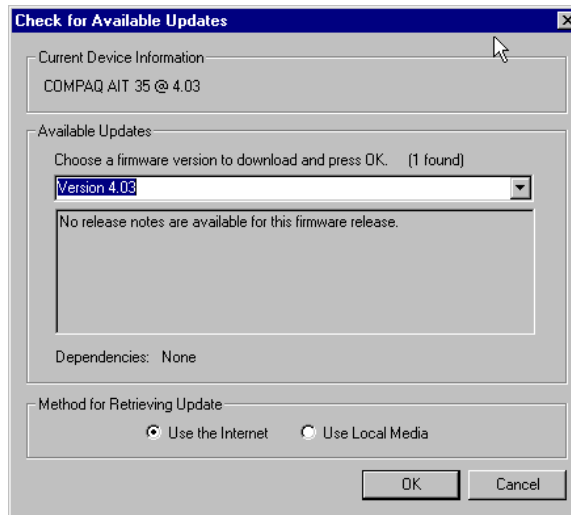


Figure 5-6. Selecting a firmware version in the Available Updates dialog



**CAUTION:** Make your selection carefully -- firmware dictates the behavior of your device, and different firmware versions will each make your device behave differently.

You will reach the download dialog, shown in Figure 5-7, if you answered No to the 'use database' prompt or if you did not cancel the Available Updates dialog. As the download dialog starts, it communicates with your device to determine the optimal download parameters.

Before proceeding be sure to read the following cautions:



**CAUTION:** Do not interrupt the download process or eliminate power to the device while the download process is running. Doing so may render your device unusable.



**CAUTION:** ESL9000 and TL895 libraries use serial port downloads. Make sure a serial cable is attached to the device and your host computer. If a download fails to succeed, TSMC enforces a "forced re-download". Follow the directions on your screen to complete the procedure.

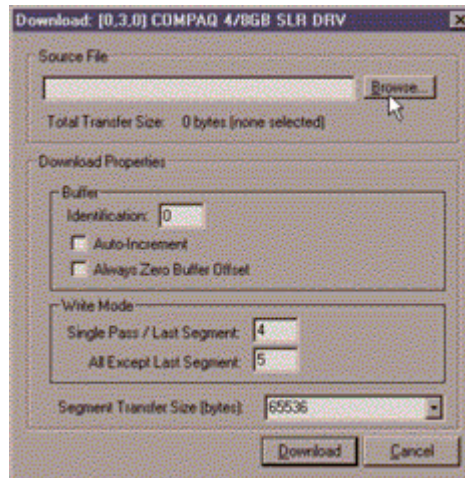


Figure 5-7. Download dialog with no file selected.

**IMPORTANT:** The default parameters, shown in Figure 5-7, might be the ones that TSMC selects. You should not change these settings.

**NOTE:** If selecting a firmware file from other than the Internet, it is recommended that you put the file on a hard disk instead of reading it from a floppy.

Remember that TSMC determines download parameters for you when you select a firmware file. If you must change download parameters, consult with Compaq support personnel.

Your tape device may need to be in a specific state to receive new firmware. For example, the media may need to be ejected prior to the firmware download. Check your tape device documentation for specific instructions.

After specifying a file or arriving to this dialog after using the firmware database click on **Download**. Do not interrupt the download process or eliminate power to the device while the download process is running. Doing so may render your device unusable.

**NOTE:** After firmware updates are made to devices, you should close and exit TSMC then re-open it. This will properly update the device (library or drive) information, reflecting the firmware update.

## **Motion Commands**

The Motion Commands allow you to move cartridges and test the robotics of your library. These commands include Home, Move Element, Position to Element, and Clean Drive.

### **Home**

This command resets the robotics arm to its starting point. Note that some devices do not reposition their arm physically in response to this command.

### **Move Element**

This command allows you to move cartridges from one location to another within a library. You select a source tape, drive, or transport and then a destination. You can also choose to repeat the move by choosing a repetition value from the list.

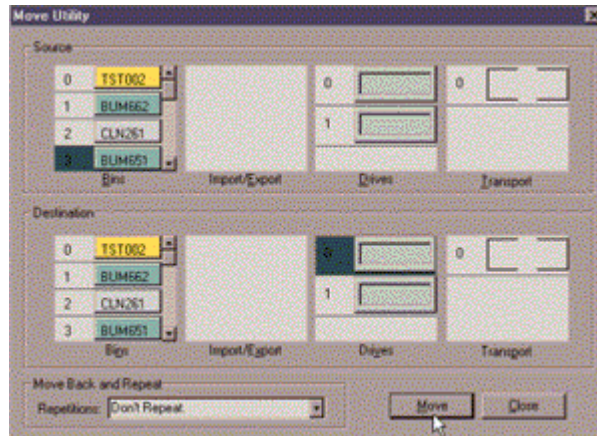


Figure 5-8. Selecting a source and destination

In this case the tape labeled BUM651 will be moved from Slot 3 to Drive 0. Both Source and Destination screens will be updated when the move is complete.

## Position to Element

This command moves the robotics arm to the slot address you specify.

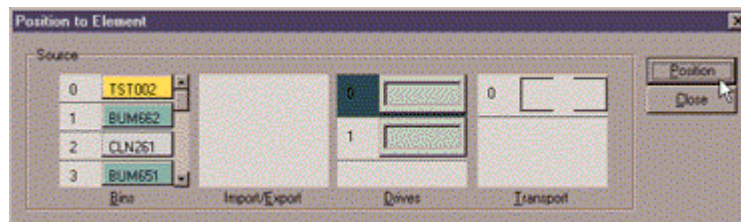


Figure 5-9. The Position to Element dialog

## Clean Drive

Using the Clean Drive dialog, you specify a cleaning tape to use in a particular drive. Note that the interface is identical to that of the Move dialog. The cleaning mechanism of most tape drives involves moving a cleaning tape to the drive. The drive then automatically cleans itself.

---

**IMPORTANT:** Only use cleaning tapes that are distinguished with barcode labels.

---

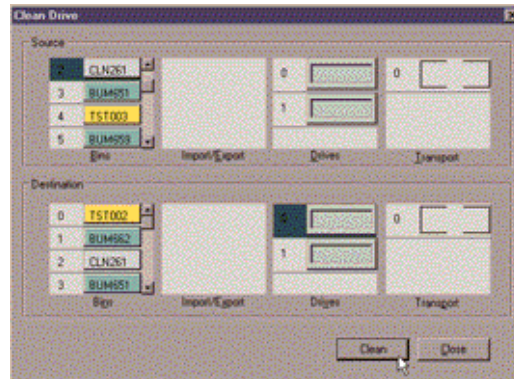


Figure 5-10. The Clean Drive dialog

## Inventory Commands

The Inventory commands are Find, Inventory, and Initialize.

### Find

Selecting this command allows you to locate a specific tape in your library by barcode. The search is case sensitive.

**NOTE:** If you leave the field blank, Find takes you to the first cartridge.

### Inventory

This command issues an inventory request from the tape library. The information returned from the library to TSMC is from the last inventory performed by the library. The following sections of the TSMC screen are updated:

- Bins
- Import/Export (if applicable)
- Drives
- Transport (if applicable)



## **Initialize**

This command performs a forced inventory of tapes inside the library. Barcodes are scanned and stored in memory.

**NOTE:** This process can take along time depending on the size of your library of tapes.

# Chapter 6

## Tools

### Testing Tools

The Testing Tools and qualifiers are procedures suggested by Compaq to serve as a vendor return test for a variety of tape drives. In addition, you can run the tests to verify that the devices, libraries, and auto changers are properly installed. There are two types of Tape Tests: Standard and Custom. These tests can be run from the Basic or Advanced Modes.

The Standard and Custom tests on the tape drives run an Initialization, Buffer Test, Write/Read Test, and a Filemark Test.

**NOTE:** When running concurrent operations on Microsoft Windows NT or Microsoft Windows 2000 systems, the multiple window displays do not update simultaneously, only the last device opened shows the correct message log reporting when running a Custom or Standard test. Once the last test completes, all messages update in order.



**CAUTION:** Do not use data tapes when performing TSMC tests. Data tapes are over written when performing TSMC tests. Use only Compaq-supplied testing tapes, which have **TST000-999** barcode labels.

---



**CAUTION:** Depending on where you are in the test the ABORT command on Extended and Standard library tests may force an application error on the next command issued.

---

## Initialization

This test issues a test unit ready, standard inquiry, rewind tape, and reset log pages. The Rewind Command causes a rewind of the tape to the physical beginning of tape.

## Buffer Test

This test issues Write Buffer /Read Buffer commands to the device

## Write/Read Test

The Read test allows blocks of data to be viewed. Write allows you to write data to any accessible byte and block on the drive.



**CAUTION:** Any data written to a device overwrites the existing data, causing it to be lost. Always make sure you have adequate backups.

---

## Filemark Test

This test is used to separate data. It may also be used at the beginning of tape to set the density of certain devices. These devices function by positioning to the beginning of tape, and then detecting the density of the data in the block following, and then automatically switching to the detected density.

The Space Command causes a tape device to space forward a specified number of filemarks, thus allowing you to skip datasets and position the tape exactly where you want it.

## Standard Test Procedure for Tape Drives

Testing times will vary, depending on the device.

**Table 6-1**  
**Standard Test for Tape Drives**

<b>Test Type</b>	<b>Test performed</b>
Initialization	Issue a test unit ready command request
	Issue standard inquiry commands
	Issue Rewind Command
	Save and reset log page parameters
Buffer Test	Issue Write Buffer/Read Buffer
Write/Read Test	Write/Read/Verify X blocks, with an increasing pattern with compression on
	Save and reset log pages
	Write/ Read/Verify X blocks, with a decreasing pattern with compression off
	Save and reset the parameters of log pages
	Reset all log pages
	Read/Verify
	Write/Read/Verify X blocks, with a random pattern with compression on
	Save and reset the parameters of log pages
	Reset all log pages
	Filemark Test
	Issue Rewind Command
	Issue a Filemark Command
	Issue a Space Command to go back
	Issue a Space Command to go ahead
	Issue an Erase Command

*continued*

**Table 6-1**  
**Standard Test for Tape Drives** *continued*

Test Type	Test performed
Partition Test (Helical Scan Devices)	Add A Partition
	Remove the Partition

## Standard Test for Tape Libraries

The standard test procedure for libraries performs a series of moves from the slots to drives and from drives to slots. The following moves are performed:

- Move from a slot to a drive
- Move from a drive to a slot
- Move from a slot to the load port (libraries containing load ports)
- Move from a load port to a slot (libraries containing load ports)

## Custom Test Procedures for Tape Drives

The Custom test runs an Initialization, Buffer Test, Write/Read Test, and a Filemark Test. These tests are similar to the Standard tests, but implement the tests more often, and in more locations. These times will vary, depending on the device.

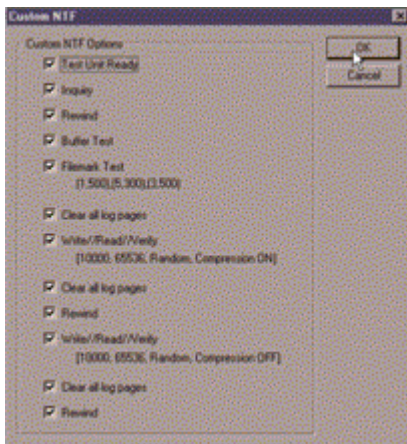


Figure 6-1. Custom NTF with default selections

**NOTE:** You can remove tests from the default settings, but you cannot add additional tests.

---

**Table 6-2**  
**Custom Test for Tape Drives**

---

Test Type	Test performed
Initialization	Issue a test unit ready command request
	Issue a standard inquiry command request
	Issue a standard inquiry command request
Buffer Test	Issue a Write Buffer command
	Issue Read Buffer command

*continued*

**Table 6-2**  
**Custom Test for Tape Drives** *continued*

Test Type	Test performed
Filemark Test	Issue a test unit ready command request
	Issue Rewind Command
	Issue a Filemark Command
	Issue a Space Command to go back
	Issue a Space command to go ahead
	Issue an Erase command.
	Issue a test unit ready command request
	Issue Rewind Command
	Issue Filemark Commands
	Issue a Space Command to go back
	Issue a Space command to go ahead
	Issue an Erase command.
	Issue a test unit ready command request
	Issue Rewind Command
	Issue Filemark Commands
Issue a Space Command to go back	
Issue a Space command to go ahead	
Reset all log pages	
Save and reset the parameters of log pages	
Write/Read Test	Write/Read/Verify certain blocks with a random pattern with compression on. Save the parameters of log pages. Reset all log pages.
	Write/Read/Verify certain blocks with a random pattern with compression on. Save the parameters of log pages. Reset all log pages.

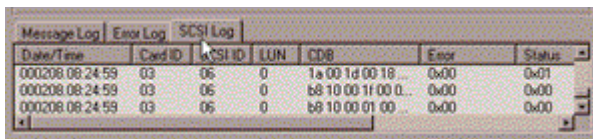
## Extended Test Procedures for Libraries

The extended test procedure for libraries performs the same tests as the standard test for libraries, but the moves performed are more extensive. The moves listed below are performed:

- Move from a slot to a drive
- Move from a drive to a slot
- Move from a slot to the load port (libraries containing load ports)
- Move from a load port to a slot (libraries containing load ports)

## Result Reporting

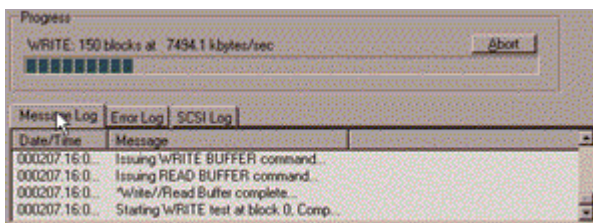
Test results are displayed in the **Message Log**, **Error Log**, and **SCSI Log**, located at the bottom of the Advanced Qualifier screen.



Date/Time	Card ID	SCSI ID	LUN	CDB	Error	Status
000208 08:24:59	03	06	0	1a 00 1d 00 18	0x00	0x01
000208 08:24:59	03	06	0	b8 10 00 1f 00 0	0x00	0x00
000208 08:24:59	03	06	0	b8 10 00 01 00	0x00	0x00

Figure 6-2. Selecting log on a tool window

## Message Log



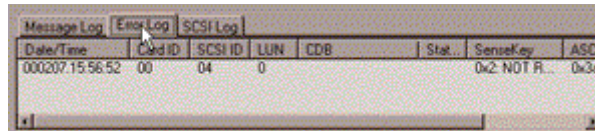
Date/Time	Message
000207 16:0...	Issuing WRITE BUFFER command.
000207 16:0...	Issuing READ BUFFER command.
000207 16:0...	*Write/Read Buffer complete.
000207 16:0...	Starting WRITE test at block 0. Comp...

Figure 6-3. Message log being updated during test

This log shows you every command executed so far in ascending order.



## Error Log

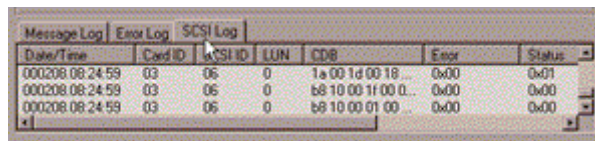


Date/Time	Card ID	SCSI ID	LUN	CDB	Stat.	SenseKey	ASC
000207.15.56.52	00	04	0			0x2 NOT R...	0x3a

Figure 6-4. Error log showing Device Not Ready response

This log shows you SCSI commands that failed or returned an error.

## SCSI Log



Date/Time	Card ID	SCSI ID	LUN	CDB	Error	Status
000208.08.24.59	03	06	0	1a 00 1d 00 18	0x00	0x01
000208.08.24.59	03	06	0	b8 10 00 1f 00 0...	0x00	0x00
000208.08.24.59	03	06	0	b8 10 00 01 00	0x00	0x00

Figure 6-5. SCSI log showing several different CDB's being executed sequentially

This log shows every SCSI command issued to the current device.

## Frequently Asked Questions

### How To...

#### Run a Request Sense Test

Follow these steps to determine if the device will report back an error:

1. Make sure that you are in Advanced Mode.
  - a. Select View, then Options from the menu.
  - b. Select Advanced from the Tool Mode, then click OK.
2. Click on a tape device in the device listing.

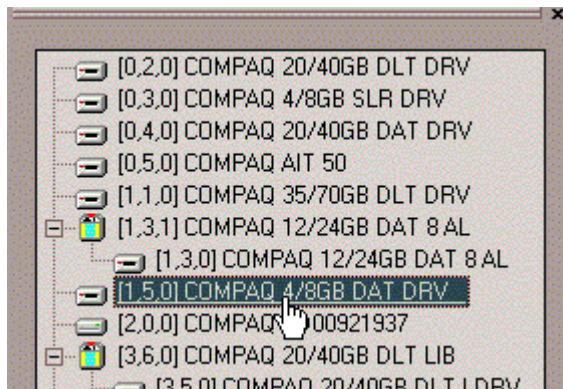


Figure 7-1. Device tree listing

3. On the resulting Sequential Qualifier screen, click on the Request Sense button.
4. The Request Sense dialog will appear, indicating the status of the device.
  - A green traffic light indicates that the device is working normally.
  - A red traffic light indicates that the device is not working normally.

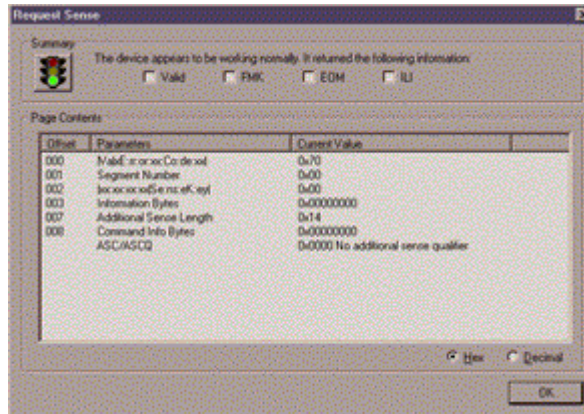


Figure 7-2. The Request Sense dialog

## Look at Soft Error Rates

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**IMPORTANT:** Soft errors may indicate worn media or dirty tape heads.

---

Follow these steps to view the soft errors recorded by a drive.

**NOTE:** These instructions are for DAT drives.

1. Make sure that you are in Advanced Mode.
2. Select the device you want to analyze.
3. Select Log Sense from the resulting tool window.
4. Select Drive Counters Log Page from Available Log Pages.
5. In the Page Contents pane, look at the Offset, Parameters, Current Value and Threshold Defaults for the error rates you are interested in.

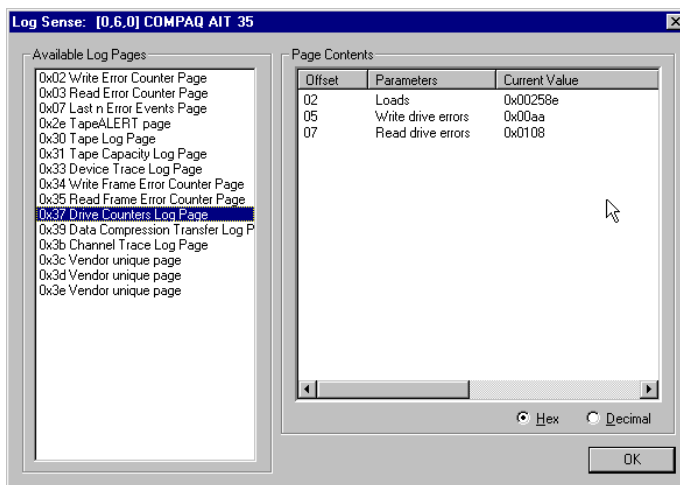


Figure 7-3. Log Sense dialog displaying soft error rates

## Update Your Firmware and Software

TSMC maintains a database of the most recent firmware versions for many Compaq products. You can get the latest version database by clicking on Update Software in the Help menu or by clicking on the Download toolbar button with no device tool windows open.

---

**IMPORTANT:** Be sure to keep your database version current.

---

To update your firmware, click on the Download button in the Advanced tool windows or click on the Download button in the toolbar.

## What If My Device Fails the Test?

If the tape device fails to pass a standard or custom test, you should perform the following steps, if possible.

1. Rerun the test.
2. Replace the cartridge and rerun the test.

**NOTE:** If the replacement cartridge is new, try a cartridge from a different batch. Compaq recommends that you set aside a cartridge employed in any previously successful test as a reference.

3. Clean the drive using a recommended cleaning cartridge. Rerun the test.
4. Contact Compaq if the device still fails.

### **What if the Tests Fail to Complete?**

If standard tests are not complete in 30 minutes or less, TSMC may have sent a mode command, causing the device to run slowly. Look at the log to see if there is activity. If activity is occurring very slowly, as in 1 event every couple of seconds, abort the test.

### **What If I am Having Trouble Seeing Devices on my SAN?**

SAN environments can become unstable and TSMC may report back erroneous results. Check and reset FIBRE to SCSI bridges if you suspect that TSMC is having a problem with a device attached to a bridge.