



Tape Storage Management Console

User Guide

First Edition (May 2000)
Part Number 201652-001
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:

Keys	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 without pressing the Enter key.
Enter	When you are instructed to <i>enter</i> information, type the information and then press the Enter 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-COMPAQ¹. 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>.

¹ 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!

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 will look for and report 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 engineers. 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 Web site for the latest available firmware needed by your device. Newer versions of TSMC are also delivered to you over the Web.

Assumptions about the Reader

This manual assumes that you have a working knowledge of Microsoft Windows NT 4.0. 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. As with any tool, though your level of knowledge will help you realize TSMC's capabilities.

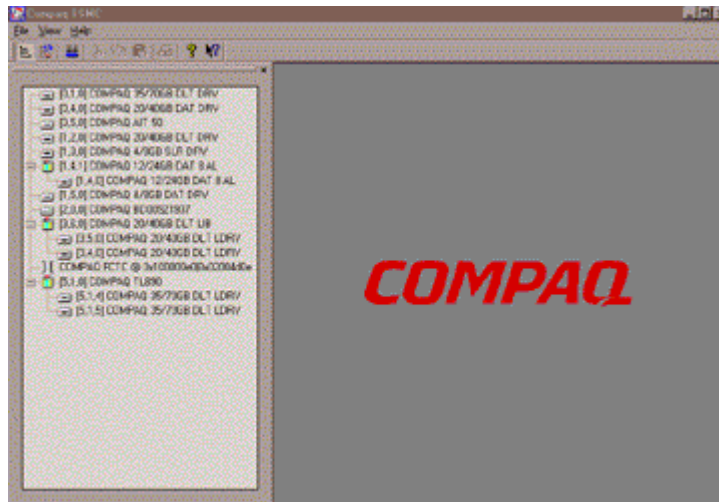


Figure 1-1. TSMC window after launch.

Advanced and Basic Mode Testing

TSMC starts up in *Basic Mode*. This enables the *Device Scan*, a *Device Inquiry*, and the ability to run Basic or Custom device tests. Users needing more testing will operate in *Advanced Mode*, which will give them access to specific SCSI commands.



CAUTION: TSMC can perform destructive tests. Please use with Compaq supplied testing tapes, which have **TST000-999** barcode labels. Please be careful to avoid over writing valuable data tapes.

SCSI

This section discusses SCSI concepts you will 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 two 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.

Your devices will be displayed by TSMC in the Device Tree window, identified by BUS, Target, and LUN(0,1,0). Icons indicate if the device is a tape drive, tape library, or fibre device.

SCSI ID

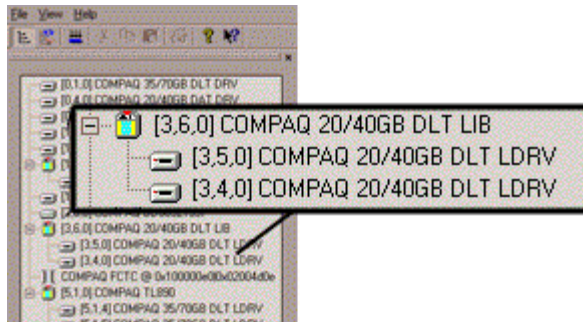







Figure 1-2. SCSI information displayed in Device Listing

As described in the previous section, TSMC displays each device with its corresponding SCSI Bus, ID and LUN. These numbers appear (in order) in the brackets next to each device's name.

ICONS

**Table 1-1
Icons**

Icon	Description
	Hard Disk Icon
	CD-ROM or Optical Device Icon
	Tape Device Icon
	Bridge Icon
	Tape Automation (also called Jukebox or Library) Icon

FIBRE

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)

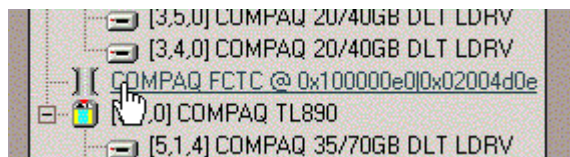


Figure 1-3. Example of fibre bridge in device listing

Attached to the bus will be either a Fibre attached device, a Fibre Switch, Fibre Hub, and/or a Fibre Bridge.

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 Compaq server that is Intel based and supports Microsoft Windows NT 4.0 with Service Pack 4.
- Any Compaq fast-wide SCSI 2 host adapter or Low Voltage Differential (LVD) with the driver *CPQ32FS2.SYS* installed
- Compaq Fibre Channel Host Bus Adapter with the driver *CPQFCALM.SYS* installed
- A Web Browser to view HTML Help files

Options

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

Assumptions

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



WARNING: Using unqualified 3rd party host adapters are not certified at this time. The device may have problems with firmware downloads.

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. Locate your TSMC CD-ROM and insert in drive.
2. If the Install program does not automatically start up, locate the file Setup.exe on your CD-ROM, double click on it to start installation.
3. After program has been initialized you will be greeted with a Welcome screen. Click Next.
4. The TSMC license agreement will appear:
 - Click Accept if you agree to the terms. If you click agree the Install Folder screen will appear.
 - Click Decline if you do not agree to the terms. If you click Disagree the installation will abort.
5. The Install Folder screen allows you to choose where to install TSMC. The default is C:\Program Files\Compaq TSMC. Select *Next* on this screen, or *Browse* to install in different directory.
6. The Shortcut Folder Screen will create shortcut icons in the default folder, or you can either type a new name or select from an existing folder. After selecting a Shortcut folder, select *Next*.
7. Setup now has enough information to start installing TSMC. If you need to make changes, select the *Back* button from the Ready to Install screen. To abort now or during install, select on the *Cancel* button. When you are ready to continue install, select *Install*.
8. The Installing Files Screen will show the progress of setup. Selecting the *Cancel* button will abort setup.

9. After all of the files have been copied, you will see the Finished Screen. Select *Finish* to allow Setup to examine your system's Advanced SCSI Programming Interface (ASPI Layer).

NOTE: If Setup detects that `cpqsdm.sys` (Compaq filter driver) is not installed under certain conditions, it will prompt you to install it.

10. If your ASPI components are not up to date, you will see a screen called ASPI Layer Check appear. Setup will recommend installation of newer ASPI components. Select *Yes* to install them.

If your ASPI components are up to date, Setup will tell you so. Select *OK*.

11. Setup is complete. You must reboot your system for changes to take effect. Select *Yes* to reboot system before running TSMC.

Chapter 3

Screen Layout

Startup

Device Scan

TSMC begins by scanning all the SCSI and Fibre busses on your system. These busses and devices are then displayed in a “device tree.”

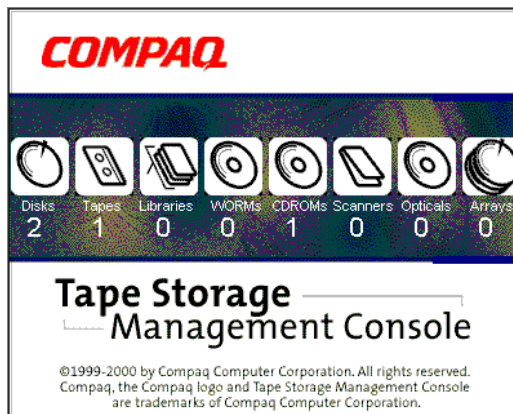


Figure 3-1. Device scan

As you select the TSMC icon and begin executing the program, a screen will appear briefly as your SCSI bus is interrogated or scanned. Your SCSI devices and controllers will appear in the Device Listing. The display shows a count of all devices even if these devices are not supported by TSMC.

Device Listing

The Device Listing screen will appear. Here you will see each device, which may be SCSI or Fibre. The number of SCSI devices on a Bus can range from 0 to 7 or 0 to 15 with Wide SCSI. With Fibre where by devices can be directly attached or part of a switch network, the numbers get much larger.

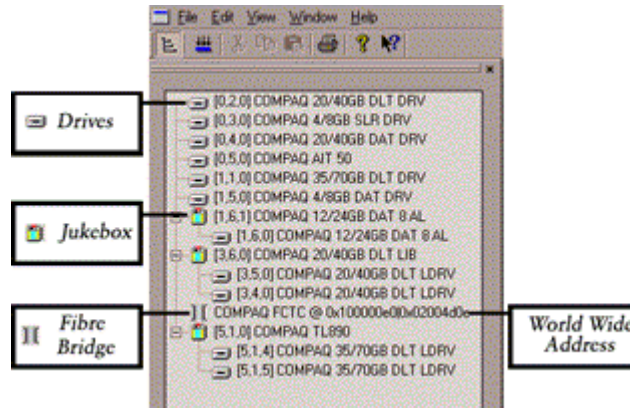


Figure 3-2. Device Listing.

NOTE: Drives in jukeboxes will be displayed in association with the libraries in which they reside. For several libraries, including the TL895 and ESL9000 these drives will display incorrectly if the library is in standby mode or if a drive is unavailable and the user has not reconfigured the library. To insure correct display, place the library online or reconfigure the library as needed.

Device Description

The device information will be displayed in brackets with the Bus, ID, and LUN. The device description will be displayed outside of brackets.

Selecting a Device to Work On

Use your mouse to click on a tape device. This will open the device qualifier screen for the selected device.

Qualifier Screens

What Is a Qualifier Screen?

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

Sequential Qualifier Screen

The following screens appear in Basic and Advanced Mode when you click on a tape device:

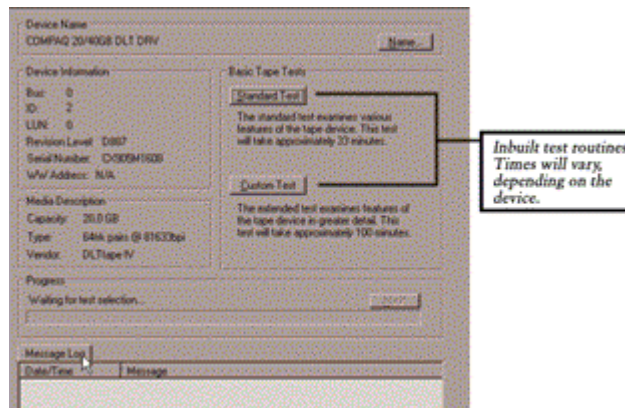


Figure 3-3. Sequential Qualifier (Basic Mode)

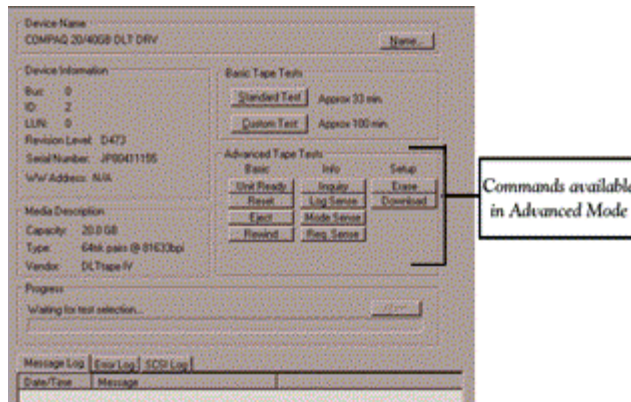


Figure 3-4. Sequential Qualifier (Advanced Mode) with advanced functions displayed in addition to basic mode tests.

Tape Automation Qualifier Screen

This is the screen that will appear for testing Libraries and Autochangers. Basic and advanced modes appear as in figures 3-5 and 3-6 respectively.

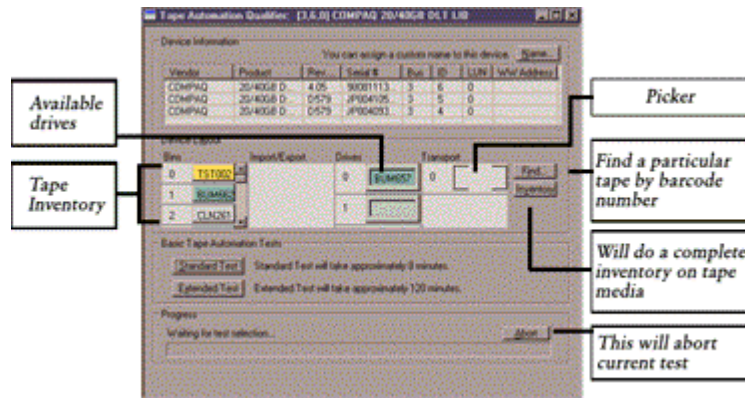


Figure 3-5. Tape Automation Qualifier (Basic Mode)

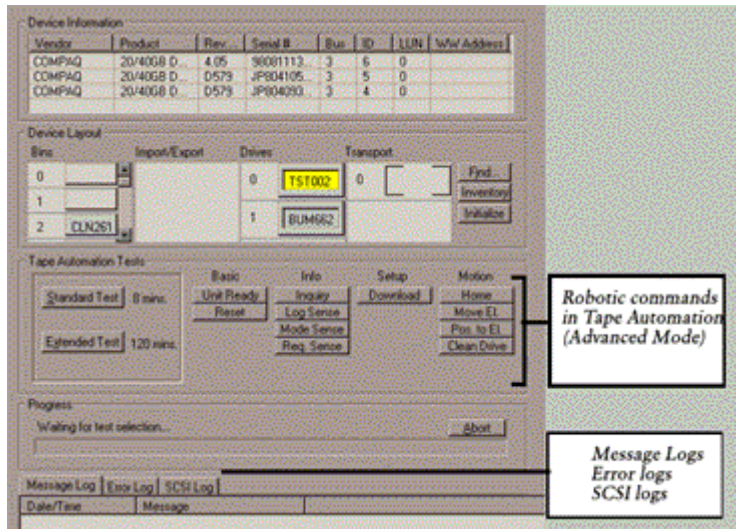


Figure 3-6. Tape Automation Qualifier (Advanced Mode).

Menu and Toolbar Commands

Menu

TSMC uses menu commands, such as File, Print, and Exit that should be very familiar to you. 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

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.
Force Rescan	This command initializes all attached SCSI busses and discovers any devices on them. Note that the command also updates Windows NT's device list, even if the devices were not attached on boot. *

continued

Table 4-1
File Menu *continued*

Menu Item	Function
Close	This command closes the topmost tool window. Note that you must abort or cancel all running or pending tests before closing a window.
Export Log	Selecting this command allows you to export the selected log to a file. The exported file is in plain text (ASCII) format.
Print	This command prints the selected log.
Print Setup	This command displays the standard print setup dialog, allowing you to select or configure a printer.
Exit	This command closes the application. You must abort or cancel all running or pending tests before closing the application window.
* You can also access the Force Rescan function by clicking the Rescan icon located on the toolbar.	



Edit

The Edit menu options are described in the following table.

Table 4-2
Edit Menu


Menu Item	Function
Undo	Undo 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	Remove the highlighted information from its current location; allows paste elsewhere.
Copy	Keep highlighted information in its current location; allows paste elsewhere.
Paste	Place 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	Shows or hides the list of devices detected by TSMC. *
Toolbar	Shows or hides the toolbar.
Status Bar	Shows or hides the Status Bar, the part of the application window that shows the current state of the application.
Options	Set behavior and display characteristics of TSMC using the dialog shown in figures 4-1 through 4-5.

* You can also access the Show/Hide Device Listing function by clicking the Show/Hide icon located on the toolbar. 

Options

Set behavior and display characteristics of TSMC using the dialog shown in figures 4-1 through 4-5.

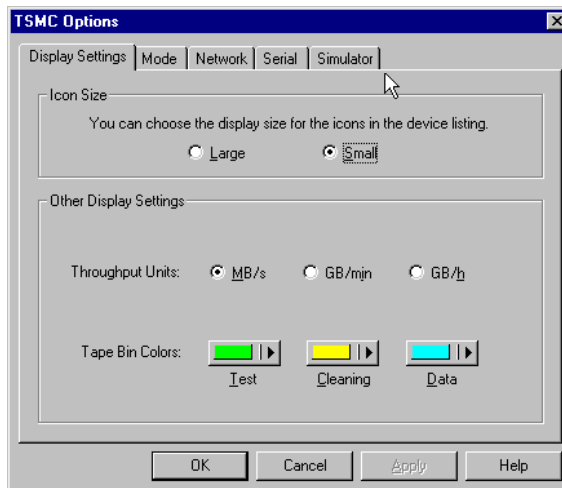


Figure 4-1. The options dialog display settings

Desired throughput units for all subsequent tests that display rate information are selected from the Display Settings Tab.

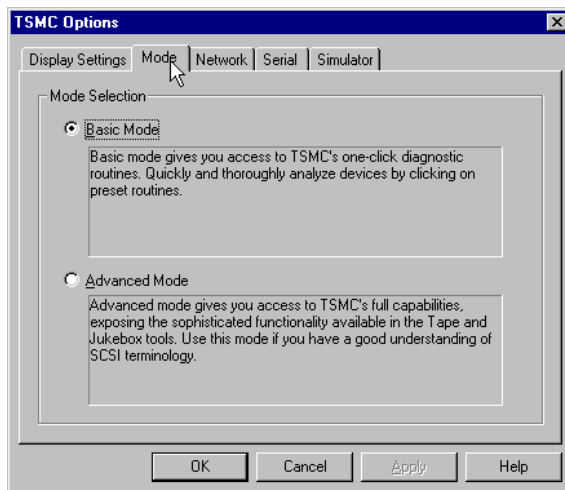


Figure 4-2. The options dialog mode tab options

Select Advanced or Basic as the default startup mode for all tool windows opened.

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

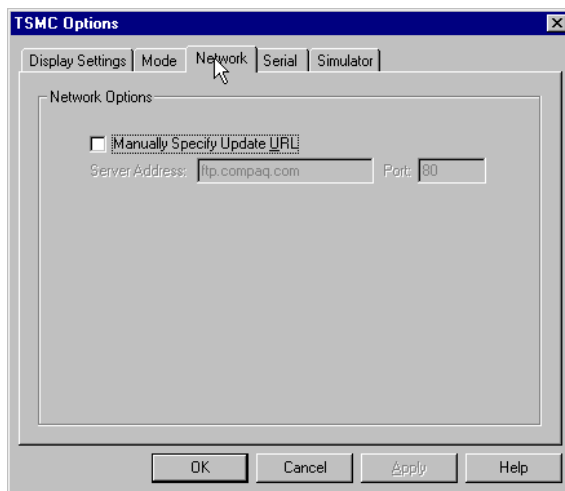


Figure 4-3. The options dialog network tab options

These options provide alternative connection paths if the default websites are unavailable.

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

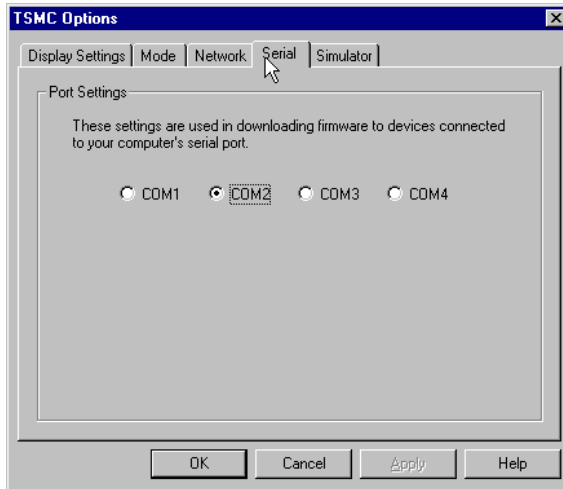


Figure 4-4. The options dialog serial tab options

Users with tape libraries that support firmware updates via serial ports can set the serial port to use.

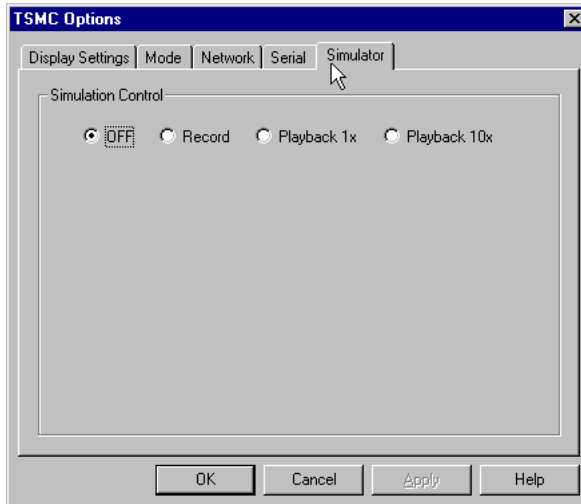


Figure 4-5. The options dialog simulator tab options



CAUTION: Use this feature only if directed by Compaq personnel

Window

The Window menu options are described in the following table.

Table 4-4
Window Menu

Menu Item	Function
Cascade	This command 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	Selecting Tile shows all open tool windows, splitting available client area space equally among the windows.
Arrange Icons	This command organizes all minimized tool windows in the client area.

Help

The Help menu options are described in the following table.

Table 4-5
Help Menu

Menu Item	Function
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 OK to retrieve it.

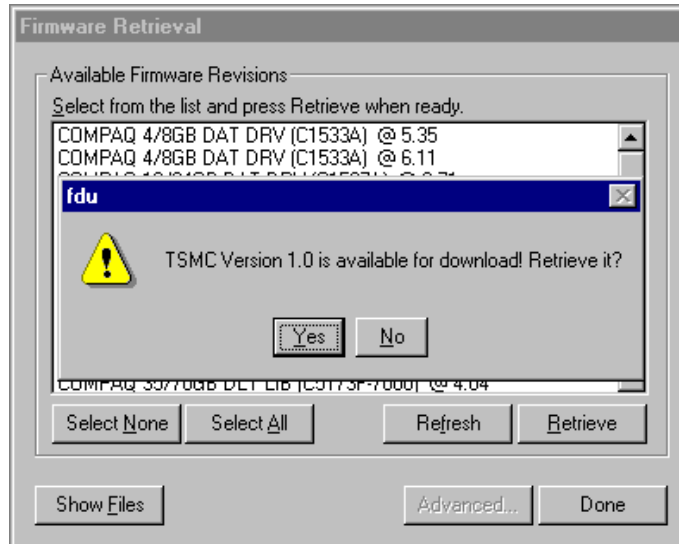


Figure 4-6. The Available Updates dialog showing one version of the application for download

TSMC will display a dialog that indicates download progress. When the download is complete, the application will ask 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 tool windows are open. When tool windows are open, this toolbar button becomes a shortcut to the Download function.

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 the Advanced Testing Mode. Advanced mode allows for individual command execution, along with the same Standard and Custom test as in Basic Mode.

Basic Mode Commands

The Basic Tape Test is comprised of a Standard Test and a Custom Test. These tests are available from the Basic and Advanced mode screens.

NOTE: Chapter 6 will go into more detail on running the Standard and Custom Windows NTF tests.

Standard Test

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

Custom Test

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

Advanced Mode Commands

The Advanced Tape Tests are comprised of Basic, Info, Setup and Motion Commands. The Motion Commands are only available in the Tape Automation Qualifier Screen.

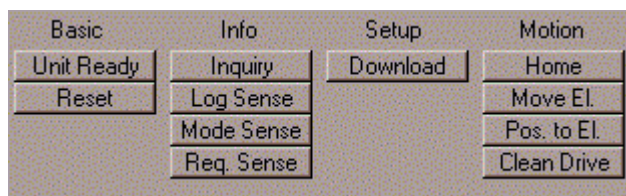


Figure 5-1. Advanced mode commands available for a Library

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

Basic Commands

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

Info Commands

The Info commands consist of Inquiry, Log Sense, Mode Sense, and Request Sense. These are used to provide handy operational and error information for SCSI devices. By selecting these commands you will be able to 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

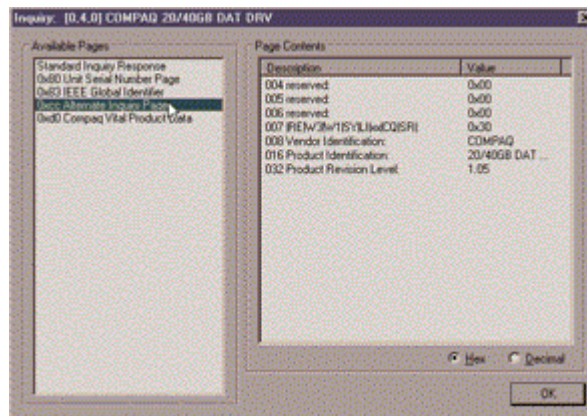


Figure 5-2. Inquiry dialog.

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

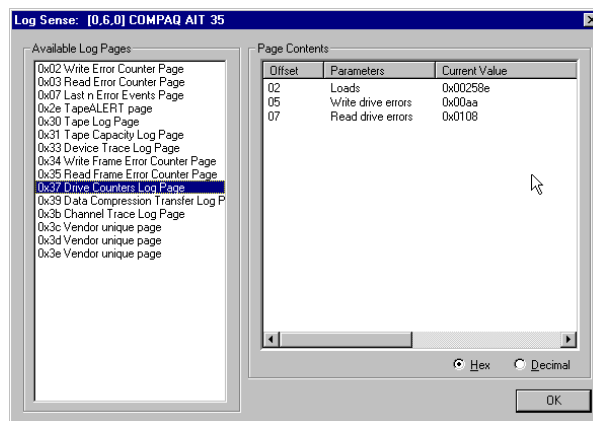


Figure 5-3. Log Sense dialog

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

Mode Sense

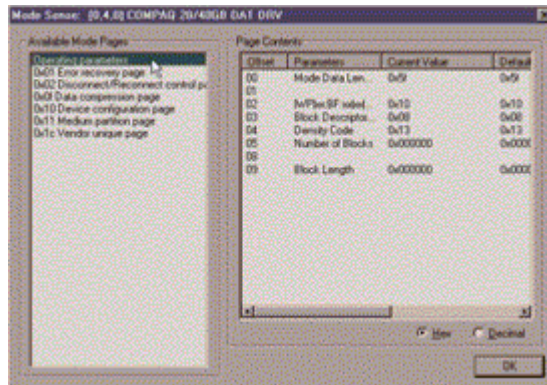


Figure 5-4. Mode Sense dialog

The Mode Sense dialog displays mode parameter pages for the device. Click on a mode page in the left column to see its contents.

Request Sense

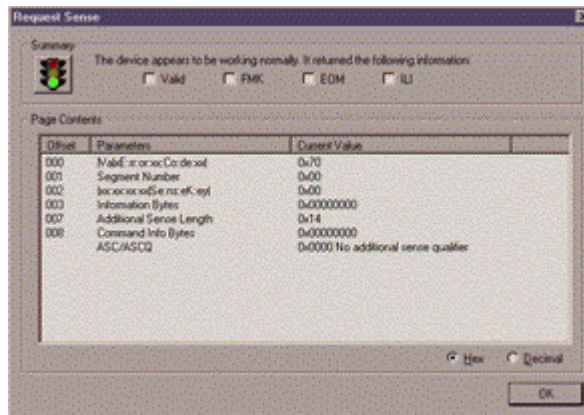


Figure 5-5. Request Sense dialog.

The Request Sense dialog 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

Setup commands consist of Erase and Download.

Erase

This command issues an erase to the device, which will cause 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 will not necessarily work; the device itself handles the erase command, and not all devices can stop an erase once started.



CAUTION: The Erase command should be used with great care! The quick erase writes a new BOT and completes in less than 30 seconds. The long erase, once issued, cannot be aborted and will run to completion. The drive will report "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.

Download

The brain of modern SCSI devices is the firmware, or Microcode. Keeping the "intelligence" of a device in software allows you to upgrade it when manufacturers make improvements. Until now, it has been difficult for consumers and experts alike to keep their device firmware updated. TSMC deals with the maintenance issue for you by keeping 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 Windows NT 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 will be 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, you will see 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 will automatically be 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, you can press Skip. TSMC will go straight to the download dialog, where you can manually specify a file for download.

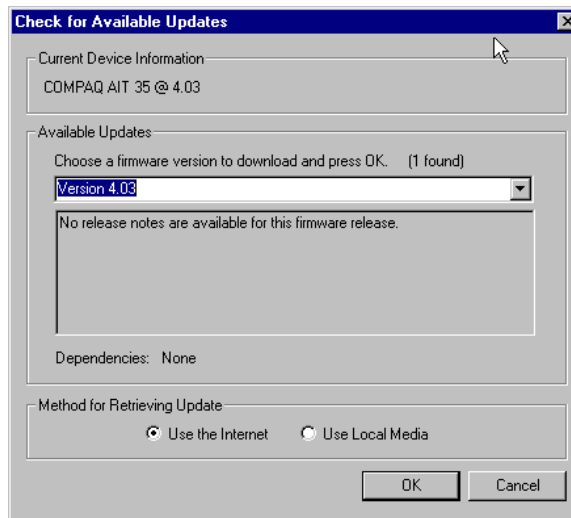


Figure 5-6. Selecting a firmware version in the Available Updates dialog



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. You can adjust the parameters shown in the dialog, but be aware that those changes can have a dramatic impact on the success or failure of the download procedure.

Before we go into much detail, there are two issues of which you should be aware:



CAUTION: Do not interrupt the download process or eliminate power to the device while 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 device and your host computer. If a download fails to succeed, TSMC will enforce a “forced re-download”. Follow the directions on your screen to complete the procedure.

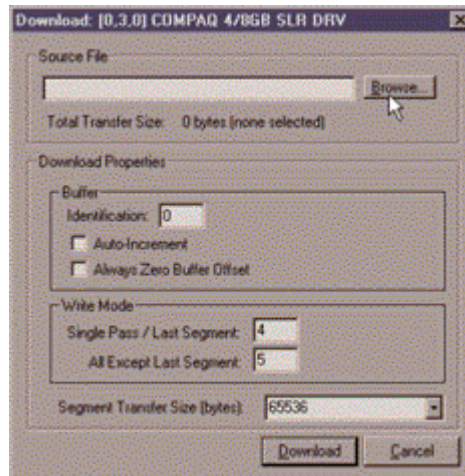


Figure 5-7. Download dialog with no file selected.

IMPORTANT: The default parameters -- those shown above -- might be the ones that TSMC selects. You generally should not change these settings.

NOTE: If selecting a firmware file from other than the Internet, we recommend putting 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's 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 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 then properly update device (library or drive) information reflecting the firmware update.

Motion Commands

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

Home

This command will reset 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 allows you to move cartridges from one location to another within a jukebox. 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.

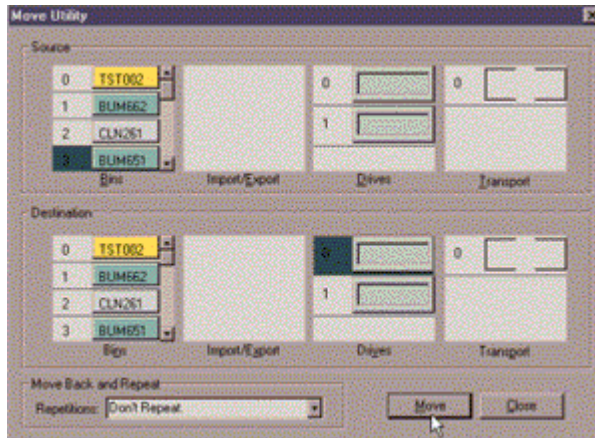


Figure 5-8. Selecting a source and destination

In this case the tape labeled BUM651 will be moved 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.

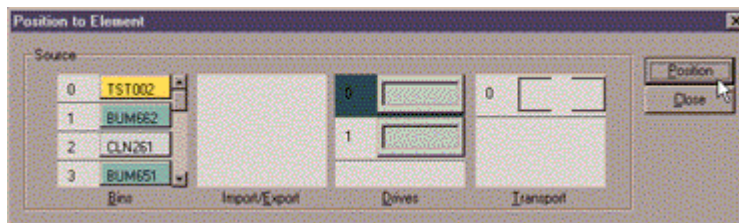


Figure 5-9. The Position to Element dialog.

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.

Chapter 6

Tools

Testing Tools

The Testing Tools and qualifiers are a procedure suggested by Compaq to serve as a vendor return test for a variety of tape drives. In addition, you can run the Basic tests to verify that the devices, libraries, and auto changers are properly installed. There are 2 Basic Tape Tests, Standard and Custom. These tests can be run from the Basic or Advanced screens.

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

NOTE: When running concurrent operations on Windows NT systems, the multiple window displays will not update simultaneously, only the last device opened will show the correct message log reporting when running a custom or standard test. Once the last test completes, all messages will update in order.



CAUTION: TSMC performs destructive tests. Please use with Compaq supplied testing tapes, which have TST000-999 barcode labels. Please be careful to avoid over writing valuable data tapes.



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 will issue 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 will overwrite 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

In addition to Standard test, a Partition Test will be run on Helical Scan Devices. Times will vary, depending on the device.

Table 6-1
Standard Test for Tape Drives

Test Type	Test performed
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 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.

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 bin slots to drives and from drives to bin slots. The following moves are performed:

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

Custom Test Procedures for Tape Drives

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

NOTE: These general descriptions are provided so you can understand the overall nature of these tests; the specifics are proprietary to Compaq.

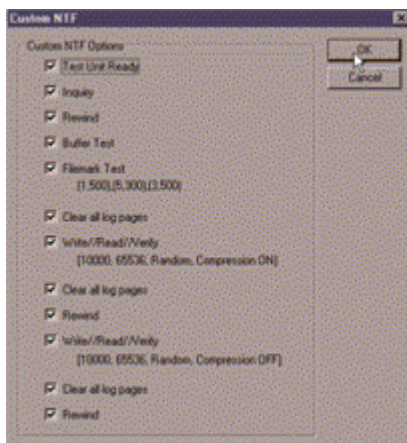


Figure 6-1. Custom NTF with default selections

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.

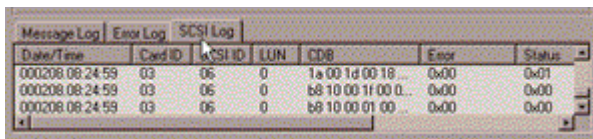
Extended Test Procedures for Libraries

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

Result Reporting

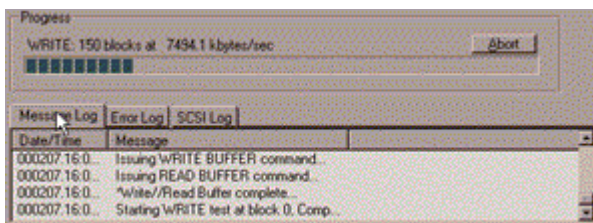
Test results are displayed in the **Message Log**, **Error Log**, and **SCSI Log**, located at the bottom of the Advanced Qualifier screen.



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

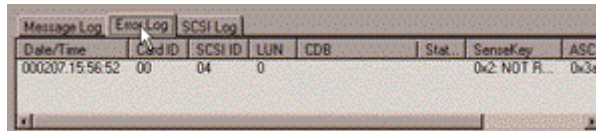


Date/Time	Message
000207 16:0...	Issuing WRITE BUFFER command.
000207 16:0...	Issuing READ BUFFER command.
000207 16:0...	*Write/Read Buffer complete.
000207 16:0...	Starting WRITE test at block 0. Comp...

Figure 6-3. Message log being updated during test

This log shows you, in non-machine language, every command executed so far in ascending order.

Error Log

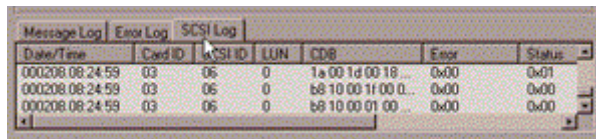


Date/Time	Card ID	SCSI ID	LUN	CDB	Stat.	SenseKey	ASC
000207.15.56.52	00	04	0			0x2 NOT R...	0x3a

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

This log shows you SCSI commands, in machine language 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.

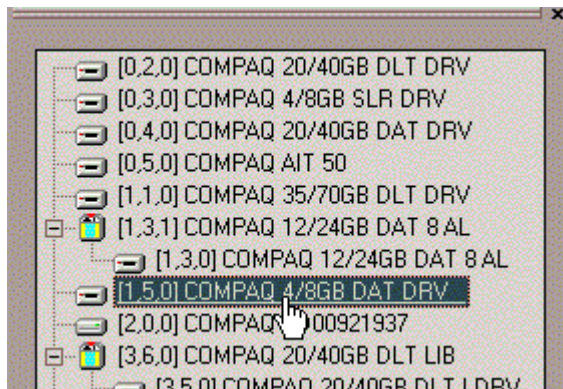


Figure 7-1. Device tree listing

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.

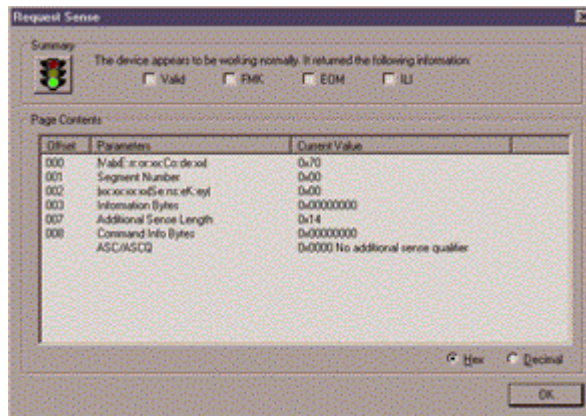


Figure 7-2. The Request Sense dialog

Look at Soft Error Rates

IMPORTANT: Soft errors are an indication of 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.

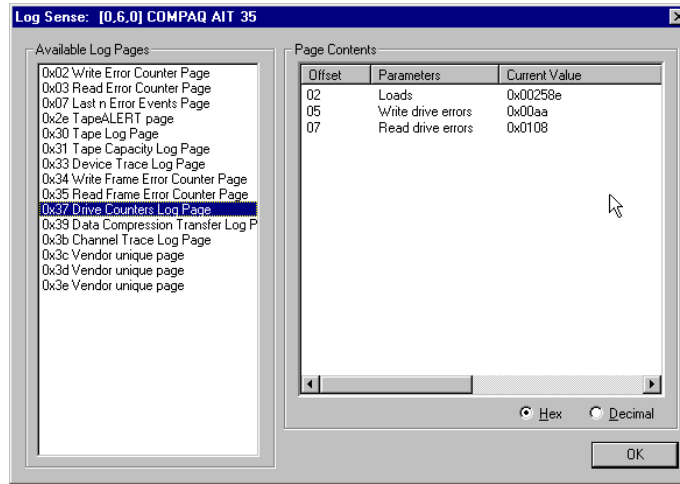


Figure 7-3. Log Sense dialog displaying soft error rates.

Update Your Firmware and Software

Even the most advanced users have difficulty keeping track of the newest firmware releases for particular hardware. TSMC removes any ambiguity from the firmware update process. The application maintains a database of the most recent firmware versions for many Compaq products. Keeping your firmware updated is as simple as clicking on the Download button in the Advanced tool windows or clicking on the download button in the toolbar.

Most importantly, keep your version database current! 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.

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, you should attempt to use a cartridge from a different batch than the original cartridge. We recommend that you set aside a cartridge employed in any previously successful test, as this could prove to be a useful 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 a test seems to run forever on certain drives, such as the SLR models, a mode command sent by TSMC may cause the device to run very slowly. If standard tests aren't complete in 30 minutes or less, 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.