Hewlett Packard Enterprise HPE Support Center

HPE Library and Tape Tools - Command Line Functionality

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Overview

Certain key functions of Library and Tape Tools (L&TT) are available through the command line, allowing to sequence operations using scripts. Command line functionality (CLF) is different from the command line user interface (CSI version) in that it has no user interface, and therefore no user interaction.The CLF offers the following possibilities:

- **Simultaneous management of multiple remote devices**
  - Firmware upgrades can be performed on multiple devices located anywhere in theworld. A script is created on the local management machine. L&TT is installed on each remote server along with a separate script file. The local script simultaneously initiates the remote scripts to perform the upgrades concurrently. The status of each operation is reported back to the management machine.
  - Device health can be monitored on multiple devices using a local script that initiates remote scripts. The scripts execute a support ticket/report on each device and then parse the device analysis output to check for any problems.
- **Automated testing**
  - Tests can be run on devices. Each test has no user interaction, but pass/fail output isreported back for each device.
  - Device Analysis test can be run on devices. Each Device Analysis ticket is available ina directory on the remote machine. These tickets can be parsed and the output compared against a previous successful run.
  - Unattended repeated testing (Regression or stress tests) can be performed to expose any intermittent issues or memory leaks. The test itself might take only 10 minutes, butby running it repeatedly in a loop, intermittent problems can be detected. One strategy could be to run the test until a failure is encountered, at which point the testing is stopped and a support ticket or report can be generated automatically.
  - A combination of tests can be run unattended.

Running multiple instances of L&TT

Multiple instances of L&TT can run at the same time to test different elements of a device.

For example,

- One instance of L&TT can run a system performance test while another can run a device performance test on a selected device.
- In an autoloader, one instance of L&TT can run a device analysis test on the media changer while another runs a Read-Write test on the tape drive.
- In a library with 24 tape drives, 24 instances of L&TT can test each of the tape drives inparallel.

To run multiple instances of L&TT, use the optional *instname* option to specify a name for thesecond and subsequent instances of L&TT. L&TT uses the *instname* to create a folder for the L&TT runtime files.

L&TT displays a warning dialog when the second and subsequent instances of L&TT are started.

If multiple instances of L&TT are running on purpose, continue the new instance.

Running L&TT commands from removable media

L&TT commands can run from removable media, such as a USB flash drive or CD. See **Running L&TT from computers without L&TT installed** for instructions to install L&TT on the removable media (Click here to view the Advanced Installation page). Use the *dirpath* option in the commands to specify a directory forthe L&TT runtime files.

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Command line functions

This section lists the basic functions that can be performed using the CLF. The following conventions apply to all functions:

- All parameter values that contain white spaces must be entered in double-quotes. Forexample, if the file **firmware.frm** exists in the **C:\LTT Firmware Files** directory, thenthe file parameter must be specified as follows:

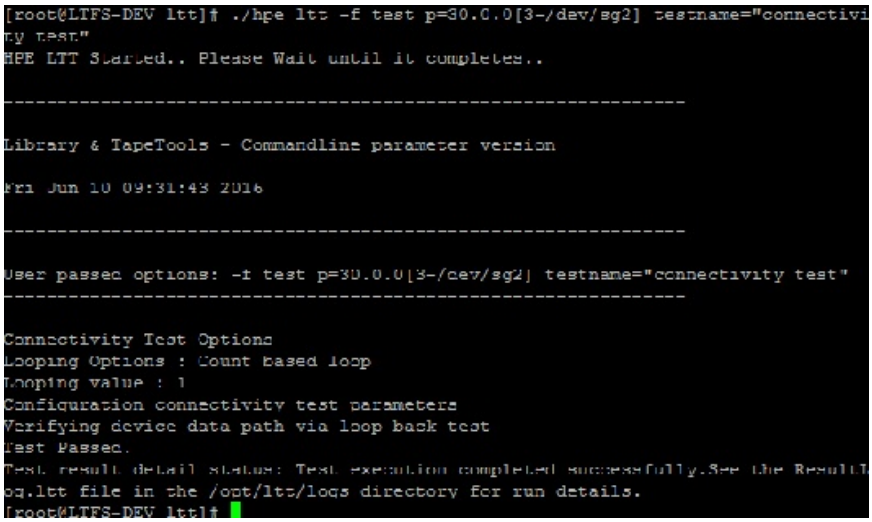
  file="C:\LTT Firmware Files\firmware.frm"

- If a test option name contains white spaces, then the whole option name/value pair must be entered in double quotes as follows:

  testopt="Looping Value:3"

The test options, test progress, and test results are displayed in the terminal window, as shownin Figure 1.

Figure 1: Example CLF output



NOTE: When executing command line functions in VMS, replace the **hpe_ltt** string with**@start_ltt**. The rest of the command syntax is the same.

The following functions are available through the command line:

- Configuring L&TT
- Scanning the bus
- Listing supported tests (CLF)
- Running tests (CLF)
- Performing a firmware update
- Generating a report or support ticket (CLF)
- Converting a support ticket to XML (CLF)

Configuring L&TT

Element	Details	
Description	Set the L&TT password and configure I/O history and I/O mode settings from the command line. Any one parameter or a combination of parame This information is device independent.	
Syntax	`hpe_ltt -f settings [password=<password>] [iohistory=enable|disable] [iomode=NTMP|ASPI] [instname=<instance name>] [dirpa`	
Parameters	password	• Optional. • Specify a password. • Passwords in L&TT are used to unlock certain functionality of the program. • The password can be entered alone,or in combination with other parameters. Click here to view the section Using password for more information . • If the password is invalid, L&TT resets the password to an empty string.
	iohistory	• Optional. • Specify **enabled** or**disabled**. • When enabled, L&TT generates a detailed event log that captures all L&TT diagnostic interaction, all SCSI commands sentand program, and any software interactions or issues. • If aninvalid value is provided, L&TT retains the existing setting.

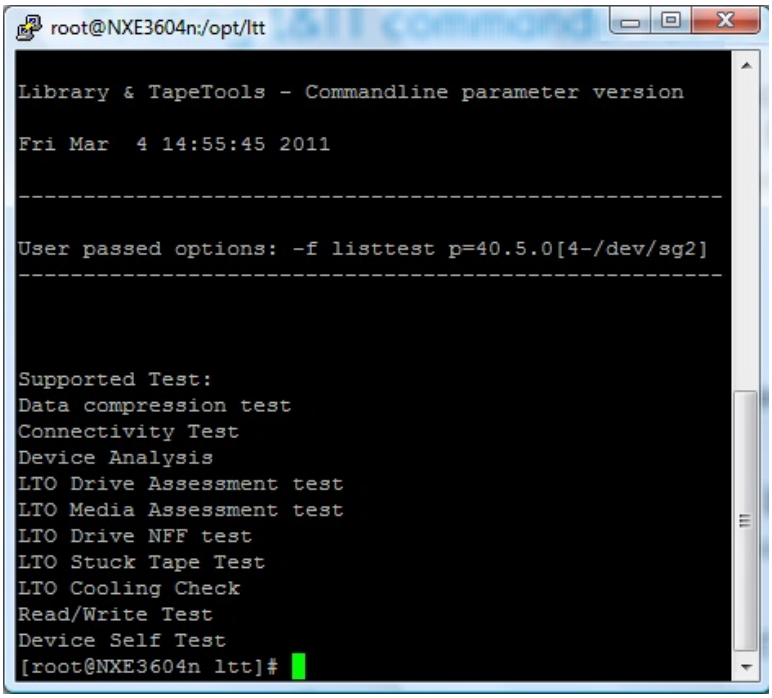
Element	Details	
	iomode	• Optional. • Specify NTMP or ASPI forthe I/O mode. • This parameter is valid for the Windows version of L&TT only. Click here to view I/O mode for more information . • If an invalid value is provided, L&TT retains the existing setting.
	instname	• Specify a name for this instance of L&TT. • This parameter is optional for the first instance of L&TT and required for all other instances of L&TT. • If this parameter is supplied, the log files fromthis instance will be created in a **logs_<instance name>** folder inthe logs fold installation directory or directory specified by **dirpath**.
	dirpath	• Specify the absolute path for thetemporary directory used by L&TT for its runtime files. • This parameter is optional when L&TT is run from the system installation directory and required when L&TT is run from remova USB flash drive or CD. • When running L&TT from the system installation directory, if **dirpath** is specified and **instname** is not specified, the L&TT runt in the dirpath directory. • If dirpath is specified, the L&TT runtime files will be created in **<dirpath>/logs_<instancename>**.
Example	*hpe_ltt -f password="my password" iohistory=disableiomode=NTMP*	

Scanning the bus

Element	Details	
Description	L&TT can be launched from the command line to scan the bus. Output of the scan is written to the **saved_scan.txt** file in the L&TT root directory. In L&TT 4.12 and newer versions the scan results are also displayed to the terminal. This file is overwritten each time a scan is performed. The output is written in the following format: `<device path>:<vendor ID>:<product ID>:<firmware version>` The device path varies depending on the operating system. The device path is specified with the p = parameter when running a ticket, test, or firmware upload. The *password* and *iohistory* parameters are optional. I/O mode cannotbe set while doing the scan; it must be set before performing the scan.	
Syntax	`hpe_ltt -f scan [iohistory=enable|disable] [instname=<instance name>] [dirpath=<directory path>]`	
Parameters	iohistory	• Optional. • Specify **enabled** or**disabled**. • When enabled, L&TT generates a detailed event log that captures all L&TT diagnostic interaction, all SCSI commands sentand received by the program, and any software interactions or issues. • If an invalid value is provided, L&TT retains the existing setting.
	instname	• Specify a name for this instance of L&TT. • This parameter is optional for the first instance of L&TT and required for all other instances of L&TT. • If this parameter is supplied, the log files from this instance will be created in a**logs_<instance name>** folder inthe logs folder of the L&TT installation directory or directory specified by **dirpath**.
	dirpath	• Specify the absolute path for the temporary directory used by L&TT for its runtime files. • This parameter isoptional when L&TT is run from thesystem installation directory and required when L&TT is run from removable media, such as a USB flash drive or CD. • When running L&TT from the system installation directory, if **dirpath** is specified and **instname** is not specified, the L&TT runtime files will be created in the dirpath directory. • If dirpath is specified, the L&TT runtime files will be created in **<dirpath>/logs_<instancename>**.
Example	`hpe_ltt -f scan` This command produces the following output in a file named **saved_scan.txt** in the current folder: **2/0.4.0:HP:Ultrium 3-SCSI:G54D** From this output, the device hardware path is: **2/0.4.0** For each device L&TT finds during the scan there will be a corresponding entry in this file.	

Listing supported tests (CLF)

Element	Details	
Description	Run this command to see a list of tests supported for a device. The list is description displayed on the terminal.	
Syntax	`hpe_ltt -f listtest p=<device path>`	
Parameters	p	• Enter the device path. The format for the device path is specific to the operating system. • To determine theformat for the operating system anddevice, scan the bus. Click here to view the section Scanning the bus for more information . • The output of the scan iswritten to the **saved_scan.txt** filein the L&TT root directory. • The output is in the proper format for use in this command. This parameter is required.

Element	Details
Example	`hpe_ltt -f listtest p=2.3.0[2-4/0/4/1/0.3.0]` Results in the following: 

Running tests (CLF)

Element	Details
Description	L&TT can be launched from the command line to perform various tests. L&TT runs the test specified by the **testname** parameter on the device s The following tests are currently supported from the command line: • Connectivity test • Device Analysis test • Device Self-test • Drive Assessment test • LTO Media Assessment Full Tape test
Syntax	`hpe_ltt -f test p=<device path> testname=<test name>[password=<password>] [iohistory=<enable|disable>] [testopt=<option1 `
Parameters	p • Enter the device path. The format for the device path is specific to the operating system. • To determine the format for the operating system and device, scan the bus. Click here to view the section Scanning the bus for more information . • The output of the scan iswritten to the **saved_scan.txt** filein the L&TT root directory. • The output is in the proper format for use in this command. This parameter is required.
	testname Enter the test name to perform. The test names for the supported tests are: • Connectivity test. • Device Analysis. • Device Self-test. • LTO Drive Assessment test. • LTO Media Assessment test. • DDS Media Assessment test. For the proper syntax, see the Command line syntax entry for the desired command in **Diagnostic tests** (Click here to view the This parameter is required.
	iohistory • Optional. • Specify **enabled** or**disabled**. • When enabled, L&TT generates a detailed event log that captures all L&TT diagnostic interaction, all SCSI commands sent a • If an invalid value is provided, L&TT retains the existing setting.

Element	Details	
	testopt	• Optional. • A test may have one or more options, or no options. • The **Allow Overwrite** test option must be set to**True** for any test that writes data to atape and is executed through the co • For each option, enter the option name/value pair in the following format: *testopt=<option1_name:option1value>* *testopt=<option2_name:option2value> etc.* • For more information about available options, valid values, and command line syntax, see the desired command in **Diagno**
	instname	• Specify a name for this instance of L&TT. • This parameter is optional for the first instance of L&TT and required for all other instances of L&TT. • If this parameter is supplied, the log files from this instance will be created in a**logs_<instance name>** folder in the logs
	dirpath	• Specify the absolute path for the temporary directory used by L&TT for its runtime files. • This parameter is optional when L&TT is run from the system installation directory and required when L&TT is run from rem • When running L&TT from the system installation directory, if **dirpath** is specified and **instname** is not specified, the L&TT r • If dirpath is specified, the L&TT runtime files will be created in **<dirpath>/logs_<instancename>**.

Examples	• To run the Connectivity test on a drive at device path 2/0.4.0 on Windows:
	`hpe_ltt -f test p=2/0.4.0 testname="Connectivity Test"`
	• To run the previous test with I/O history enabled:
	`hpe_ltt -f test p=2/0.4.0 testname="Connectivity Test"iohistory=enable`
	• To run the previous test with a test option that causes the test to be run threetimes:
	`hpe_ltt -f test p=2/0.4.0 testname="Connectivity Test"testopt="Looping Value:3"`
	• To run the LTO Drive Assessment Test on a drive at path 2/0.4.0 on Windows:
	`hpe_ltt -f test p=2/0.4.0 testname="LTO Drive AssessmentTest" testopt="Allow Overwrite:True"`
	• To run the LTO Drive Assessment test on a drive at path 2/0.4.0 on Windows,with I/O history enabled:
	`hpe_ltt -f test p=2/0.4.0 testname="LTO Drive AssessmentTest" testopt="Allow Overwrite:True" iohistory=enabled`
	• To run the DDS Drive Assessment test on a drive at path 236/0.3.0 onWindows:
	`hpe_ltt -f test p=2/0.4.0 testname="DDS Drive AssessmentTest" testopt="Allow Overwrite:True"`	

Performing a firmware update

Element	Details	
Description	• L&TT can be launched from the command line to update firmware on a device. • L&TT updates the firmware on the device specified by the device path (**p**) parameter using the firmware file specified in the **file** paramete	
Syntax	`hpe_ltt -f firmware p=<device path> file=<firmware file> password=<password> iohistory=<enable|disable> downgrade=<yes|no`	
Parameters	p	• Enter the device path. The format for the device path is specific to the operating system. • To determine the format for the operating system and device, scan the bus. Click here to view the section Scanning the bus for more information . • The output of the scan is written to the **saved_scan.txt** filein the L&TT root directory. • The output is in the proper format for use in this command. This parameter is required.
	file	• Enter the full path, including the filename, of the firmware file to be used to update the device. • If there are any white spaces in the path or filename,use quotation marks around the path,as follows: *file="C:\LTT FirmwareFiles\firmware.frm"* This parameter is required.
	password	• Optional. • Specify a password. • Passwords in L&TT are used to unlock certain functionality of the program. Click here to view the section Using password for more information . • In the case of a firmware upload, a factory password is required only if the **downgrade** or **override product id** pa • If the password is invalid, L&TT resets the password to an empty string and the firmware downgrade or product ID
	iohistory	• Optional. • Specify **enabled** or **disabled**. • When enabled, L&TT generates a detailed event log that captures all L&TT diagnostic interaction, all SCSI commanc • If an invalid value is provided, L&TT retains the existing setting.
	downgrade	• Optional. • Specify **Yes** or**No**. • The default value is **No**. • When set to **Yes**, a firmware downgrade is permitted. • Enter a valid factory password using the password parameter to enable firmware downgrades.

Element	Details	
	override product id	• Optional. • Specify **Yes** or**No**. • The default value is **No**. • When set to **Yes**, this option allows mapping of the device firmware to a product irrespective of the device's produc • Enter a valid factory password using the password parameter to enable firmware downgrades.
	instname	• Specify a name for this instance of L&TT. • This parameter is optional for the first instance of L&TT and required for all other instances of L&TT. • If this parameter is supplied, the log files from this instance will be created in a**logs_<instance name>** folder in t
	dirpath	• Specify the absolute path for the temporary directory used by L&TT for its runtime files. • This parameter is optional when L&TT is run from the system installation directory and required when L&TT is run fr • When running L&TT from the system installation directory, if **dirpath** is specified and **instname** is not specified, th • If dirpath is specified, the L&TT runtime files will be created in **<dirpath>/logs_<instancename>**.
Examples	To update firmware on a device at path 2/0.4.0 on Windows: `hpe_ltt -f firmware p=2/0.4.0 file="C:\LTT firmwarefiles\LTT_Ultrium_3-SCSI_G54D_STANDALONE.frm"`	

Generating a report or support ticket (CLF)

Element	Details	
Description	L&TT can be run from the command line to generate a report or support ticketon a device.	
Syntax	`hpe_ltt -f ticket p=<device path> [directory=<outputdirectory>] [-format <XML>][instname=<instance name>] [dirpath=<abso`	
Parameters	p	• Enter the device path. The format for the device path is specific to the operating system. • To determine the format for the operating system and device, scan the bus. Click here to view the section Scanning the bus for more information . • The output of the scan is written to the **saved_scan.txt** file in the L&TT root directory. • Examine this file to determine the proper format. This parameter is required.
	directory	• Optional. • Specify the directory name to override the default location in which L&TT saves the report or support ticket.
	format	• Specify **XML** to save the report/ticketin XML format. • Use Internet Explorer or any XML browser to view the report or support ticket. • This parameter is optional. • If no format is specified, the L&TT format support ticket will be generated.
	instname	• Specify a name for this instance of L&TT. • This parameter is optional for the first instance of L&TT and required for all other instances of L&TT. • If this parameter is supplied, the log files from this instance will be created in a**logs_<instance name>** folder inthe logs folde installation directory or directory specified by**dirpath**.
	dirpath	• Specify the absolute path for the temporary directory used by L&TT for its runtime files. • This parameter is optional when L&TT is run from the system installation directory and required when L&TT is run from remova USB flashdrive or CD. • When running L&TT from the system installation directory, if **dirpath** is specified and **instname** is not specified, the L&TT runt in the dirpath directory. • If dirpath is specified, the L&TT runtime files will be created in **<dirpath>/logs_<instancename>**.

Examples	• To generate a support ticket under the logs folder:
	`./hpe_ltt -f ticket p=2/0.4.0`
	• To generate a support ticket in XML format:
	`hpe_ltt -f ticket p=2/0.4.0 -format XML`
	• To generate a support ticket in XML format and with I/O history enabled inthe eventlog:
	`hpe_ltt -f ticket p=2/0.4.0 -format XML iohistory=enabled`	

Converting a support ticket to XML (CLF)

Element	Details
Description	L&TT can be run from the command line to convert a support ticket to XMLformat. The converted support ticket is the same as if it was originally created in XML format.
Syntax	`hpe_ltt -f xmlticket file=<ticketfilename>[instname=<instance name>] [dirpath=<absolutepath directory>] filename=<xml fil`

Element	Details	
Parameters	file	• Specify the path and name of the support ticket to be converted. • The support ticket can have either a **.lzt**or **.ltd** file extension. • L&TT will automatically extract the **.ltd** files outof the **.lzt** file, and create **.xml** files with the same names as the **.ltd** files. • The detail level will be **everything**.
	instname	• Specify a name for this instance of L&TT. • This parameter is optional for the first instance of L&TT and required for all other instances of L&TT. • If this parameter is supplied, the log files from this instance will be created in a**logs_<instance name>** folder inthe logs fol
	dirpath	• Specify the absolute path for the temporary directory used by L&TT for its runtime files. • This parameter is optional when L&TT is run from the system installation directory and required when L&TT is run from remov • When running L&TT from the system installation directory, if **dirpath** is specified and **instname** is not specified, the L&TT rur • If dirpath is specified, the L&TT runtime files will be created in **<dirpath>/logs_<instancename>**.
	filename	Specify the name of the XML file thatis created after conversion.

Examples		• In Windows, to convert a support ticket **st_HPUltrium_5-SCSI_20110304_100315_HU10028CWM.lzt** to a XMLsupport ticket:
		`hpe_ltt -f xmlticket file="C:\ProgramFiles\Hewlett-Packard Enterprise\HPE Library and Tape Tools\logs\st_HPUltrium_5`
		• In UNIX , to convert a support ticket**st_HPUltrium_5-SCSI_20110304_100315_HU10028CWM.lzt** to a XMLsupport ticket:
		`./hpe_ltt -f xmlticketfile=/opt/ltt/logs/st_HPUltrium_5-SCSI_20110304_100315_HU10028CWM.lztfilename=sticket.xml`

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Return values

When an operation is performed from the command line, L&TT returns a value indicating success or failure. Depending on the operation performed, the value returned has different meanings.When L&TT is run from a script, a return value greater than 0 indicates an error condition.

Return values are as follows:

Return Value	Description
Generic	
0	Success
1	Abnormal exit/operation failure.
Tests	
0	Success
1	Abnormal exit/operation failure
2	Invalid test name specified
3	Passed with warnings
4	Failed
Firmware	
0	Success
1	Abnormal exit/operation failure
2	Firmware file corrupt or missing
3	Product ID mismatch, config code mismatch, permission mismatch
4	Update finished with check condition
5	Update complete; manual intervention required
6	Generic firmware update failure
Report/support ticket	
0	Success
1	Abnormal exit/operation failure
2	Invalid target directory; unable to create directory
3	Ticket generation failure (data acquisition/parse/decode problem)
4	File permission issue; unable to write to file.

Using the trace file

When an operation is performed using the command line, L&TT creates a trace file,**toolactivity.log**, in the **logs** directory. This file contains details of the options entered,status of the operation, and other decoding messages. The trace file is not overwritten on subsequent runs of L&TT; the file is ed in append mode. Script developers should parse this file,in addition to the event log, to find the status of the attempted operation.

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Using passwords

A number of tool features are available only when enabled with a password. The password is intended to prevent inexperienced users from accessing functionality that may be harmful to their system when used improperly. These features include:

- Firmware downgrade does downgrading of firmware revisions. The device product ID and revision string sequence must match.
- Override/Update product ID allows selection of any firmware file (which matches the same device type) and updating of the product ID string (for devices which support this capability).
- Manual product identification allows overriding of the tool mapping to associate a specific device (independent of Product ID) to a specific device family supported by the tool. This option is most often used when the Product ID (SCSI Inquiry) string is incorrect because it has been changed, corrupted, or the device is running on boot code.
- Factory details lets selecting factory details anywhere that it is an option. The most common use is in viewing additional device details in the support ticket.
- Advanced scripting disables signature checking and allows selecting **unsupported** devices and run scripts on them.
- View event log lets user load (and view) an event log.

There are two types of passwords that are used with L&TT. Temporary passwords enable users to downgrade firmware, override/update product ID, and override device mapping. Support personnel passwords (for internal HPE use only) enable all the above options. To obtain a password, contact support provider or call center.

Setting passwords

To set the password in the Windows version of L&TT:

1. Select **Options**, **Enable Factory Overrides**. The **Factory Password** dialog box appears.
2. Enter the password and click **OK**. Assuming the password is valid, the password-protected functions of L&TT would now be accessed.

To set the password in the CSI version of L&TT:

1. From the Main screen, enter the *preferences* command. The **Preferences** screen appears.
2. Enter the number that corresponds to the password option. L&TT prompts for the current password.
3. Enter the password. If the password is valid, then L&TT returns to the **Preferences** screen. The password-protected functions of L&TT can now be accessed.

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I/O Mode

L&TT selects the I/O mode that is most appropriate for the system it is running on. However, this initial screen allows for manual selection of the I/O mode in certain cases. It currently operates in the following I/O modes:

- **NT Miniport** - Uses an interface that is native to Windows NT 4.0, 2000, XP, and WindowsServer 2003. It is the preferred I/O mode on systems where it is available because it does not require the installation of the ASPI interface. However, there are some limitations to the Windows NT Miniport I/O mode related to using devices that are **claimed** by other applications, or that are used with nonstandard OS drivers. In those cases, selecting theASPI I/O mode can make a device accessible.

  L&TT supports Microsoft Storport technology. Storport is a new storage driver model created by Microsoft for Windows Server 2003 and future Windows operating systems. Storport offers a higher performance architecture and better Fibre Channel compatibility in Windows systems. If Storport drivers are installed, L&TT automatically uses Storport when **NT Miniport** is slected.
- **ASPI** - Uses an optional I/O programming interface that is available on all versions of Windows. This I/O mode can be used with any Windows operating system. It may require the installation or update of additional OS components, possibly requiring a reboot of the system during installation.

  NOTE: ASPI does not support Windows Server 2003. However, in most cases, it will function properly. If ASPI is installed with Windows Server 2003, L&TT can use it, after ASPII/O mode is selected. However, HPE recommends using the default NT MiniPortI/O option with Windows Server 2003.

- **Ethernet** - Uses the ethernet interface. After selecting this option, choosing from the available set of libraries (MSL G3, ESL G3, ESL-e, MSL6480, and EML-e).

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Connectivity test

Details/Other Test	Connectivity Test
Description	Writes data to the internal buffers in product to verify that the physical connection between host and the storage device is operational. No media is required. **NOTE:** • If no options are specified, by default L&TT runs the test with looping options set to Count based loop with a looping value of 1. • Test will not overwrite any data on media present in the drive. • The connectivity test is available from the command-line syntax.
When to run	When there is a question about the integrity of the bus connection from the device to the host computer.
Duration	Less than 1 minute

Options	• Looping options
	Specify Count based loop or Time based loop(min). In either case, the actual value is entered separately using the Looping value parameter.
	Example: To set a time-based loop of 10 minutes:
	`testopt="Looping Options:Time based loop(min)"`
	`testopt="Looping value:10"`
	• Looping value
	Specify an integer greater than zero.
	Example: To set a count-based loop to iterate five times:
	`testopt="Looping Options:Count based loop"`
	`testopt="Looping value:5"`

Available for	LTO-1 to LTO-7 tape drives both standalone and library drives.

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Device analysis test details

Details/Device specific test	Device Analysis test
Description	The Device Analysis test runs a device-specific script that carries out a detailed examination of the device. The test examines all available logs from the device to description look for any known issues, customer use issues, and common error patterns. The test also provides summary information and presents suggestions as to the cause of certain errors and any remedial actions for the user. This option is useful if a a problem is suspected with the device. The device analysis test is executed manually through the tests screen or automatically whenever a support ticket is generated. The device analysis test is unique among all the tests offered by L&TT device analysis test performs SCSI operations directly on a device, and also uses a set of predefined, device-specific rules to analyse device logs and configurations. If any known issues are discovered during the analysis, the user is notified of the problem and the program suggests an appropriate course of action. The device analysis test automates failure analysis of a device by determining: • Whether a known or unknown problem exists with a device. • If the problem can be resolved in the field through maintenance or simple. • Whether a device is to be returned or serviced. **NOTE:** • Test does not change the configuration of the drive or media. • Command-line syntax - The Device Analysis test is available from the command line.
When to run	Run this test to verify that basic functions of the device are operating properly, not logged any critical errors, and to verify that firmware is up to date.
Duration	Less than 1 minute.
Options	None.
Available for	All the devices supported by L&TT.

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Device self-test details

Details/Other test	Device Self-test

Details/Other test	Device Self-test
Description	This test executes the internal self-test of the device and reports any failures. This test is useful in confirming that the device itself is operating properly. Not all devices support an internal self-test. **NOTE:** • If no options are specified, L&TT runs the test with looping options set to count based loop with a looping value of 1. • Test will not overwrite any data on media present in the drive. • Command-line syntax - The Device Self-test is available from the command line.
When to run	Run this test as a quick check of the integrity of the device.
Duration	Less than 1 minute.

Options	• **Looping options** - Specify Count based loop or Time based loop(min). In eithercase, the actual value is entered separately using the Looping value parameter.
	Example: To set a time-based loop of 10 minutes:
	`testopt="Looping Options:Time based loop(min)"`
	`testopt="Looping value:10"`
	• Looping value - Specify an integer greater than zero.
	Example: To set a count-based loop to iterate five times:
	`testopt="Looping Options:Count based loop"`
	`testopt="Looping value:5"`

Available for	LTO-1 to LTO-7 tape drives both standalone and library drives.

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Drive assessment test

Details/Device specific test	Drive Assessment test
Description	The LTO drive assessment test is the most important test in the L&TT diagnostics suite. The test is used to assess the health of a tape drive, providing a clear pass or fail result in about 15 minutes and determines when the drive or autoloader is Fit for Purpose (FFP). **NOTE:** • Requires a good tape that is overwritten as part of test. • L&TT offers the test applicable to the tape drive. The test fails to run with a tapeis partitioned. • In the L&TT test menu, the Assessment test may be prefixed with the device type.For example: LTO Drive Assessment test. • The Drive Assessment test can be stopped before it completes. To abort the test from the GUI, click **Abort Test**. To abort the test from the CSI, use the `Ctrl-A` key combination. • The textual output of the test will give the ultimate summary - PASS or FAIL. Thetest results can be emailed to HPE support for confirmation. • Library specific: If the test is being run on an autoloader or library and the device is configured in circular or stacker mode (dependent on the particular autoloader), when an unload command is received from the host (such as is issued with the assessment test), the autoloader, or library moves the next available cartridge into the drive. If the magazine is not loaded with data cartridges and cleaning cartridges in the correct order to meet the needs of the test, the test will fail.HPE recommends using the single cartridge process when running the assessment test on an autoloader or library. • If the drive to be tested is part of an autoloader or library, the autoloader or library must be in random mode before running the test. • If there is an issue with the backup or restore process and the assessment test passes the drive, further diagnostics are necessary to find the root cause of the issue elsewhere in the system.
Test performed	Requires that a cartridge must be loaded or in the process of loading when the test is started. • Checks whether the drive is requesting cleaning. • Performs an unload/load cycle, checking for any mechanical issues. • Writes two wraps of data using varying tape speeds in both directions measuring write and read-while-write margin.
When to run	• Run this test if a drive has failed. • Run the media test option, when directed to do so by an HPE tool or support.
Duration	• Test times vary greatly depending on drive type, media quality, and options selected. Average time for a healthy drive with good tape can range from 10 to20 minutes. • A marginal drive (or drive with marginal tape) may take substantially longer.

Details/Device specific test	Drive Assessment test
Results	• If the test reports that the drive is good, the user can be confident that the drive is working as advertised and is not the cause of any backup or restore issues in the drive. A device that is determined to be FFP performs according to its specification. • If the test fails, HPE support will accept that assessment without further diagnostics,making it a key test for both end users and HPE support. If a device fails the assessment test, it must be replaced. If it passes, the problem is likely not with the health of that device.
Available for	• LTO-1 (Ultrium 215 and 230), LTO-2 (Ultrium 448 and 460) drives, and LTO-3drives (Ultrium 920 and 960) • LTO-4 (Ultrium 1760 and 1840), LTO-5 (Ultrium 3000 and 3280), LTO-6 (Ultrium6250 and Ultrium 6650) • LTO-7 (Ultrium 16000 and Ultrium 16750)

LTO Media assessment full tape test

Details/Media Specific Test	LTO Media Assessment Full Tape Test
Description	The LTO Media assessment test evaluates two aspects of the LTO media - the data stored on the media and the tape cartridge itself. The default is to perform a read description only test, which analyses the backup currently on the LTO data cartridge to check whether the backup is fit for purpose (FFP). The other test category is an overwrite test, which overwrites the existing data on the LTO data cartridge. The overwrite test ensures that the media can be successfully written to, which will check whether the Media is FFP. **CAUTION: This test is destructive if user set the Allow Overwrite test option asTRUE. The test overwrites the data on the media present in the device.**
When to run	Run this test with the **Allow Overwrite** option set to TRUE when wanting to check whether a backup is fit for purpose. Run this test with the **Allow Overwrite** option set to False when user wants to check that a tape cartridge is fit for purpose.
Duration	Approximately 20 minutes using the default test options, depending on the drive type.
Options	HPE recommends using the default options, which will perform a Read Only (Backup Assessment) test and attempt to read two wraps of data from the tape. Use the Allow Options Overwrite and Amount of Media to test options to modify the default behavior of the test. • Allow overwrite (default False) - To run the Read Only (Backup Assessment)test, set the Allow Overwrite option to False, or leave it unset. To run the Overwrite(Media Assessment) test, set the Allow Overwrite option to True. • Amount of media to test - The actual amount of data read varies by LTO drive/tape generation, but is enough for a valid read margin calculation to be performed.Unless EOD (End of Data) is reached during the read of the default amount ofdata, the test will be unable to report that the Backup is FFP, but it can be a good indication of the health of the backup. To test the backup fitness, set the amount of media to test option to entire tape, which will ensure that the data is read from the tape until EOD is reached. The other test options allow the test to be run outside of the standard operation parameters, which are not recommended: • ○ Enable passive test (default True) - When this option is set to True, the passive stage of the test is run. When this option is set to False, the passive stage ofthe test is not run. There is no benefit to disable the passive stage of the test because it runs quickly and gives useful feedback on the history of the tape. ○ Check WORM integrity (default True) - When this option is set to True, the Read Only test is run on a WORM cartridge, which checks the integrity of the WORM media and that the WORM cartridge is not tampered. This test does not allow writing to a WORM cartridge. ○ Ignore cleaning requests(default false) - If the tape drive to be tested is requesting cleaning, the drive must be cleaned before running the test.However, if a cleaning cartridge is not available, user can bypass this check by setting this option to True. In that case, the test will report that non standard test options were used so the results of the test cannot be guaranteed. **NOTE:** Test overwrites all data on the media whenthe allow overwrite option is true. Before testing the drive as part of an autoloader or library, the autoloader or library must be in random mode. The test will not run with a tape that has been partitioned.
Available for	All LTO drives until LTO-6. HPE recommends using the LTO data assessment test, instead of the LTO media assessment read Only test. If the read only (backup assessment) test fails, the backup must run again, but it is must to run the Overwrite test first to check that the media is suitable to continue using for backup operations. If the overwrite (media assessment) test fails, the media must be retired and no longer used for backup operations (that is, it is no longerFFP). The test makes no attempt to determine the reason for the problem with themedia, it is intended only to determine whether it is FFP. The test also does a passive analysis of the tape history. In this part of the test, the LTO cartridge memory is analyzed looking for signs of health and usage problems. The historica information-based status of the tape is reported at the end of the test.

Link to the list of available documents

Click here to view a list of documents available for the HPE Library and Tape Tools .

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