



Scalar i500 i3 Addendum

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Purpose of This Document

This Addendum describes new features and functional changes that are not included in the existing *Scalar i500 User's Guide*.

HP LTO-4 Tape Drive Support

The library now supports HP LTO-4 Fibre Channel and SAS tape drives.

Power and heat specifications for the UDS3 HP LTO-4 tape drive sled module are shown in [Library Power Consumption and Heat Output](#) on page 26.

IPv6 Support



The Scalar i500 tape library now supports Internet Protocol Version 6 (IPv6) and has been certified as IPv6 Ready.

You can choose whether you want to enable IPv6 on your library. The library comes with IPv6 disabled by default. If you enable IPv6, IPv4 remains enabled and you can use either or both IPv4 and IPv6.

Enabling and using IPv6 instead of or in addition to IPv4 does not affect library functionality. However, setting up network configuration is different for IPv6.

Enabling IPv6

The Scalar i500 tape library comes with IPv6 disabled by default. To enable IPv6, you must use the operator panel. You cannot enable IPv6 from the web client. To enable IPv6, do one of the following:

- **Setup Wizard - First Time Only** — The first time you run your library, the operator panel Setup Wizard runs.
 - a When the wizard asks “Do you want to set up Network Configuration now?” click **Yes**.
 - b Select the **IPv6** checkbox and click **Next**.
You receive a **Success** message.
 - c Click **Close** to close the **Success** message.
IPv6 is now enabled. The screen displays both your IPv4 and IPv6 addresses. On this screen, you can change the Library Name, but you cannot change any of the other network settings. To change the network settings, see [Configuring IPv6](#) below.
- **Any Time** — At any time from the operator panel, select **Tools > System Settings**. On page 2, select the **Enable IPv6** checkbox and click **Apply**.

Disabling IPv6

To disable IPv6, select **Tools > System Settings**. On page 2, clear the **Enable IPv6** checkbox and click **Apply**.

Configuring IPv6

One difference between configuring IPv6 and IPv4 network settings is that you can configure IPv4 network settings from the operator panel Setup Wizard, but you cannot do so for IPv6. To configure network settings for IPv6:

- 1 Enable IPv6 (see [Enabling IPv6](#) above).
- 2 Do one of the following:
 - From the operator panel, choose **Setup > Network Mgmt**.
 - From the web client, choose **Setup > Network Management > Network**.
- 3 Configure the settings. You can:
 - Enable/disable static IP
 - Set a static IPv6 address, network prefix, and gateway address
 - Enable/disable DHCP
 - Enable/disable stateless autoconfiguration
 - Set a new library name

IP Address Requirements and Conventions

The following requirements and conventions apply to IPv6 addresses:

- You can have both DHCP and static IP addresses at the same time.
- You can only have one static IP address (due to current system limitations).
- IPv6 addresses must be entered in the proper notation. IPv6 address can be entered in the most common notation, as eight groups of four hexadecimal digits. 2001:0ff8:55cc:033b:1319:8a2e:01de:1374 is an example of a valid IPv6 address. Also, if one or more of the four-digit groups contains 0000, you can substitute two colons for the four zeros. Using this notation, 2001:0ff8:0000:0000:0000:0000:01de:1374 is the same as 2001:0ff8::01de:1374.

Viewing IPv6 Addresses

To view your library's IPv6 addresses, do any of the following:

- From the operator panel, select **Setup > Network Mgmt > IP version 6** (you can also configure the settings here).
- From the operator panel, select **Tools > About Library** and then click **Network Info**.
- From the web client, select **Setup > Network Management > Network > Library's IPv6 network settings** (you can also configure the settings here).
- From the web client, select **Reports > Network Settings**.

Note: All IP addresses are listed. However, the only one whose type is identified is the static IP address.

Quantum Encryption Key Manager

Quantum Encryption Key Manager (Q-EKM) is a Java software program that generates, protects, stores, and manages encryption keys. These keys are used by the IBM LTO-4 tape drive to encrypt information being written to, and decrypt information being read from, tape media. Q-EKM is installed on a server or servers. The library is configured to communicate with these server(s). The encryption keys pass through the library-to-drive interface, so that encryption is “transparent” to the applications.

If you purchase Q-EKM after you purchased your library, you must install the license key on your library to enable the Q-EKM functionality.

When you purchase Q-EKM, Quantum’s Service department will schedule an appointment to install the application onto your server(s). Once the application is installed, you must configure Q-EKM settings on the library. These settings are not visible until after the license key is installed. For instructions on configuring your library to use Q-EKM, see *Setting Up Quantum Encryption Key Manager On Your Scalar i500 Library*.

The Q-EKM license corresponds to the size of your library. If you purchase Q-EKM for a particular number of tape drives and later expand the library, you must purchase an additional Q-EKM license at that time. Your new license key contains the entire license corresponding to your expanded library size. The new license key replaces your current license key.

[Table 1](#) describes the licenses available for the different library configurations.

Table 1 Q-EKM License Configurations

	5U	14U	23U	32U	41U
Default Number of Tape Drives Licensed	0	0	0	0	0
License Capacity	5U license	14U license	23U license	23U license plus one 9U license	23U license plus two 9U licenses
Maximum Number of Drives licensed for Q-EKM	2	6	10	14	18

For more information about the Q-EKM server and Q-EKM best practices, refer to the *Quantum Encryption Key Manager User’s Guide*.

Advanced Reporting

Advanced Reporting is a new, licensable feature that provides the following reports that you can configure for viewing and analysis:

- **Drive Resource Utilization Report**—Provides tape drive usage information, showing you which tape drives are working at optimum capacity and which are under-utilized. This can help you allocate your tape drive resources properly.
- **Media Integrity Analysis Report**—Provides TapeAlert count for various combinations of tape drives, tape cartridges, and TapeAlert flags. This can help you determine if a problem is due to a specific tape drive or tape cartridge.

In addition to configuring and viewing the reports, you can also:

- Save and reuse report configurations as templates.
- Save or e-mail the report data in a comma-separated values (.csv) file, enabling you to import the data into a spreadsheet program and manipulate it.
- Delete the data in the Advanced Reporting history logs.

For information on how to use the advanced reporting capabilities, see the online help and the *Advanced Reporting Instructions* document that you receive when you purchase this feature.

The Advanced Reporting license applies to your entire library, regardless of library size. This means you only need to purchase the license once. If you increase the size of your library, your existing license applies to your new library configuration.

TapeAlert Flag Descriptions

TapeAlert is an open industry standard that flags errors and provides possible solutions for storage devices and their media. This section provides information about TapeAlert flags issued by tape drives, including the identifying number, severity, recommended message, and probable cause. [Table 2](#) explains the severity codes, and [Table 3](#) lists all the existing TapeAlert flags and their descriptions.

Support for specific TapeAlert flags may vary based on tape drive type and firmware revision. Not all tape drives support every TapeAlert. Consult your tape drive SCSI manual for more information.

For more information on TapeAlert, see <http://www.t10.org/index.html> for INCITS SCSI *Stream Commands - 3 (SCC-3)*.

Table 2 TapeAlert Flag Severity Codes

I	Informational.
W	Warning – The system may not be operating optimally. Continued operation without corrective action may cause a failure or raise critical TapeAlert flags.
C	Critical – Either a failure has already occurred or a failure is imminent. Corrective action is required.

Table 3 TapeAlert Flag Descriptions

No.	Flag	Severity	Recommended Application Client Message	Probable Cause
1	Read warning	W	The tape drive is having problems reading data. No data has been lost, but there has been a reduction in the performance of the tape.	The drive is having severe trouble reading.
2	Write warning	W	The tape drive is having problems writing data. No data has been lost, but there has been a reduction in the capacity of the tape.	The drive is having severe trouble writing.
3	Hard error	W	The operation has stopped because an error has occurred while reading or writing data which the drive cannot correct.	The drive had a hard read or write error.
4	Media	C	Your data is at risk: 1 Copy any data you require from this tape. 2 Do not use this tape again. 3 Restart the operation with a different tape.	Media can no longer be written/read, or performance is severely degraded.
5	Read failure	C	The tape is damaged or the drive is faulty. Call the tape drive supplier help line.	The drive can no longer read data from the tape.
6	Write failure	C	The tape is from a faulty batch or the tape drive is faulty: 1 Use a good tape to test the drive. 2 If the problem persists, call the tape drive supplier help line.	The drive can no longer write data to the tape.

No.	Flag	Severity	Recommended Application Client Message	Probable Cause
7	Media life	W	<p>The tape cartridge has reached the end of its calculated useful life:</p> <ol style="list-style-type: none"> 1 Copy any data you need to another tape. 2 Discard the old tape. 	The media has exceeded its specified life.
8	Not data grade	W	<p>The tape cartridge is not data-grade. Any data you write to the tape is at risk. Replace the cartridge with a data-grade tape.</p>	The drive has not been able to read the MRS* stripes.
9	Write protect	C	<p>You are trying to write to a write-protected cartridge. Remove the write-protection or use another tape.</p>	Write command is attempted to a write-protected tape.
10	Media removal prevented	I	<p>You cannot eject the cartridge because the tape drive is in use. Wait until the operation is complete before ejecting the cartridge.</p>	Manual or software unload attempted when prevent media removal on.
11	Cleaning media	I	<p>The tape in the drive is a cleaning cartridge.</p>	Cleaning tape loaded into drive.
12	Unsupported format	I	<p>You have tried to load a cartridge of a type which is not supported by this drive.</p>	Attempted load of unsupported tape format.
13	Recoverable mechanical cartridge failure	C	<p>The operation has failed because the tape in the drive has experienced a mechanical failure:</p> <ol style="list-style-type: none"> 1 Discard the old tape. 2 Restart the operation with a different tape. 	Tape snapped/cut or other cartridge mechanical failure in the drive where medium can be demounted.
14	Unrecoverable mechanical cartridge failure	C	<p>The operation has failed because the tape in the drive has experienced a mechanical failure:</p> <ol style="list-style-type: none"> 1 Do not attempt to extract the tape cartridge. 2 Call the tape drive supplier help line. 	Tape snapped/cut or other cartridge mechanical failure in the drive where medium cannot be demounted.
15	Memory chip in cartridge failure	W	<p>The memory in the tape cartridge has failed, which reduces performance. Do not use the cartridge for further write operations.</p>	Memory chip failed in cartridge.
16	Forced eject	C	<p>The operation has failed because the tape cartridge was manually demounted while the tape drive was actively writing or reading.</p>	Manual or forced eject while drive actively writing or reading.

No.	Flag	Severity	Recommended Application Client Message	Probable Cause
17	Read-only format	W	You have loaded a cartridge of a type that is read-only in this drive. The cartridge will appear as write protected.	Media loaded that is read-only format.
18	Tape directory corrupted on load	W	The directory on the tape cartridge has been corrupted. File search performance will be degraded. The tape directory can be rebuilt by reading all the data on the cartridge.	Tape drive powered down with tape loaded, or permanent error prevented the tape directory being updated.
19	Nearing media life	I	<p>The tape cartridge is nearing the end of its calculated life. It is recommended that you:</p> <ol style="list-style-type: none"> 1 Use another tape cartridge for your next backup. 2 Store this tape cartridge in a safe place in case you need to restore data from it. 	Media may have exceeded its specified number of passes.
20	Cleaning required	C	<p>The tape drive needs cleaning:</p> <ol style="list-style-type: none"> 1 If the operation has stopped, eject the tape and clean the drive. 2 If the operation has not stopped, wait for it to finish and then clean the drive. <p>Check the tape drive user's manual for device-specific cleaning instructions.</p>	The drive thinks it has a head clog or needs cleaning.
21	Cleaning requested	W	<p>The tape drive is due for routine cleaning:</p> <ol style="list-style-type: none"> 1 Wait for the current operation to finish. 2 Then use a cleaning cartridge. <p>Check the tape drive user's manual for device-specific cleaning instructions.</p>	The drive is ready for a periodic cleaning.
22	Expired cleaning media	C	<p>The last cleaning cartridge used in the tape drive has worn out:</p> <ol style="list-style-type: none"> 1 Discard the worn-out cleaning cartridge. 2 Wait for the current operation to finish. 3 Then use a new cleaning cartridge. 	The cleaning tape has expired.

No.	Flag	Severity	Recommended Application Client Message	Probable Cause
23	Invalid cleaning tape	C	The last cleaning cartridge used in the tape drive was an invalid type: <ol style="list-style-type: none"> 1 Do not use this cleaning cartridge in this drive. 2 Wait for the current operation to finish. 3 Then use a valid cleaning cartridge. 	Invalid cleaning tape type used.
24	Retension requested	W	The tape drive has requested a retension operation.	The drive is having severe trouble reading or writing, which will be resolved by a retension cycle.
25	Multi-port interface error on a primary port	W	A redundant interface port on the tape drive has failed.	Failure of one interface port in a dual-port configuration (for example, Fibre Channel).
26	Cooling fan failure	W	A tape drive cooling fan has failed.	Fan failure inside tape drive mechanism or tape drive enclosure.
27	Power supply failure	W	A redundant power supply has failed inside the tape drive enclosure. Check the enclosure user's manual for instructions on replacing the failed power supply.	Redundant power supply unit failure inside the tape drive enclosure or rack subsystem.
28	Power consumption	W	The tape drive power consumption is outside the specified range.	Power consumption of the tape drive is outside specified range.
29	Drive preventive maintenance required	W	Preventive maintenance of the tape drive is required. Check the tape drive user's manual for device-specific preventive maintenance tasks or call the tape drive supplier help line.	The drive requires preventative maintenance (not cleaning).
30	Hardware A	C	The tape drive has a hardware fault: <ol style="list-style-type: none"> 1 Eject the tape or magazine. 2 Reset the drive. 3 Restart the operation. 	The drive has a hardware fault that requires reset to recover.

No.	Flag	Severity	Recommended Application Client Message	Probable Cause
31	Hardware B	C	<p>The tape drive has a hardware fault:</p> <ol style="list-style-type: none"> 1 Turn the tape drive off and then on again. 2 Restart the operation. 3 If the problem persists, call the tape drive supplier help line. 	<p>The drive has a hardware fault that is not read/write related or requires a power cycle to recover.</p>
32	Primary interface	W	<p>The tape drive has a problem with the host interface:</p> <ol style="list-style-type: none"> 1 Check the cables and cable connections. 2 Restart the operation. 	<p>The drive has identified an interface fault.</p>
33	Eject media	C	<p>The operation has failed:</p> <ol style="list-style-type: none"> 1 Eject the tape or magazine. 2 Insert the tape or magazine again. 3 Restart the operation. 	<p>Error recovery action.</p>
34	Microcode update fail	W	<p>The microcode update has failed because you have tried to use the incorrect microcode for this tape drive. Obtain the correct microcode and try again.</p>	<p>Microcode update failed.</p>
35	Drive humidity	W	<p>Environmental conditions inside the tape drive are outside the specified humidity range.</p>	<p>Drive humidity limits exceeded.</p>
36	Drive temperature	W	<p>Environmental conditions inside the tape drive are outside the specified temperature range.</p>	<p>Cooling problem.</p>
37	Drive voltage	W	<p>The voltage supply to the tape drive is outside the specified range.</p>	<p>Drive voltage limits exceeded.</p>
38	Predictive failure	C	<p>A hardware failure of the tape drive is predicted. Call the tape drive supplier help line.</p>	<p>Predictive failure of drive hardware.</p>
39	Diagnostics required	W	<p>The tape drive may have a hardware fault. Run extended diagnostics to verify and diagnose the problem. Check the tape drive user's manual for device-specific instructions on running extended diagnostic tests.</p>	<p>The drive may have a hardware fault that may be identified by extended diagnostics (i.e., SEND DIAGNOSTIC command).</p>
40-46	Obsolete			

No.	Flag	Severity	Recommended Application Client Message	Probable Cause
47 – 49	Reserved			
50	Lost statistics	W	Media statistics have been lost at some time in the past.	Drive or library powered down with tape loaded.
51	Tape directory invalid at unload	W	The tape directory on the tape cartridge just unloaded has been corrupted. File search performance will be degraded. The tape directory can be rebuilt by reading all the data.	Error prevented the tape directory being updated on unload.
52	Tape system area write failure	C	The tape just unloaded could not write its system area successfully: 1 Copy data to another tape cartridge. 2 Discard the old cartridge.	Write errors while writing the system area on unload.
53	Tape system area read failure	C	The tape system area could not be read successfully at load time: 1 Copy data to another tape cartridge.	Read errors while reading the system area on load.
54	No start of data	C	The start of data could not be found on the tape: 1 Check that you are using the correct format tape. 2 Discard the tape or return the tape to your supplier.	Tape damaged, bulk erased, or incorrect format.
55	Loading or threading failure	C	The operation has failed because the media cannot be loaded and threaded. 1 Remove the cartridge, inspect it as specified in the product manual, and retry the operation. 2 If the problem persists, call the tape drive supplier help line.	The drive is unable to load the media and thread the tape.
56	Unrecoverable unload failure	C	The operation has failed because the medium cannot be unloaded: 1 Do not attempt to extract the tape cartridge. 2 Call the tape driver supplier help line.	The drive is unable to unload the medium.

No.	Flag	Severity	Recommended Application Client Message	Probable Cause
57	Automation interface failure	C	The tape drive has a problem with the automation interface: 1 Check the power to the automation system. 2 Check the cables and cable connections. 3 Call the supplier help line if problem persists.	The drive has identified an interface fault.
58	Microcode failure	W	The tape drive has reset itself due to a detected microcode fault. If problem persists, call the supplier help line.	Microcode bug.
59	Write Once Read Many (WORM) medium – integrity check failed	W	The tape drive has detected an inconsistency during the WORM medium integrity checks. Someone may have tampered with the cartridge.	Someone has tampered with the WORM medium.
60	WORM medium – overwrite attempted	W	An attempt had been made to overwrite user data on a WORM medium: 1 If a WORM medium was used inadvertently, replace it with a normal data medium. 2 If a WORM medium was used intentionally: a) Check that the software application is compatible with the WORM medium format you are using. b) Check that the medium is bar-coded correctly for WORM.	The application software does not recognize the medium as WORM.
61 – 64	Reserved			

* Media Recognition System (MRS) is a method where pre-defined stripes are placed at the beginning of the media to identify the media. The MRS stripes are read to determine if the media is of data-grade. Data-grade media should be used in SCSI streaming devices since it is of the required quality and consistency to be used to store data (i.e., audio/video grade media should not be used).

Kerberos

Kerberos is a new addition to the library Lightweight Directory Access Protocol (LDAP) configuration screen. The library supports the Microsoft® Active Directory® LDAP server. If you use Microsoft Active Directory, you must use either:

- Windows® Services for Unix® 2.5 or
- Kerberos

If you use Kerberos, you don't need to use Windows Services for Unix 2.5. Use Kerberos if you want to use Microsoft Active Directory without Windows Services for Unix 2.5.

You can view, enable, and configure Kerberos settings from the web client. You cannot use the operator panel.

To configure Kerberos:

- 1 Make sure that both the library and the Kerberos server are set to the same time (within 5 minutes). Otherwise, the authentication will fail. It is recommended that you use Network Time Protocol (NTP) to synchronize the time between the library and the Kerberos server.
- 2 From the web client, select **Setup > User Management > Remote Authentication**.
- 3 Under Authentication Type, select **Kerberos (Active Directory®)**.
- 4 Fill in the following Kerberos fields in addition to all the LDAP fields:
 - **Realm** – The Kerberos realm name, typed in all uppercase letters. Usually the realm name is the Domain Name Service (DNS) domain name.
 - **KDC (AD Server)** – The server on which Kerberos is installed.
 - **Domain Mapping** – The domain portion of the library's fully qualified domain name.
 - **Service Keytab** – Click the **Browse** button to select the service keytab file. The service keytab file is a file you generate on your Kerberos (AD) server. To generate the file, follow these instructions:

Generating the Service Keytab file

- 1 Set up an Active Directory domain on the Windows 2003 server.
- 2 At the command prompt, enter **dcpromo**.
- 3 Install Windows Support Tools on the Windows 2003 server as follows:
 - a Go to www.microsoft.com and search for "windows server 2003 support tools sp2" or click on the following link:
<http://www.microsoft.com/downloads/details.aspx?FamilyID=96a35011-fd83-419d-939b-9a772ea2df90&DisplayLang=en>
 - b Download both **support.cab** and **suptools.msi**.
 - c Run **suptools.msi** to begin installation.

- 4 Create a computer account in Active Directory.
 - Do not select any of the checkboxes during creation.
 - The account name will be used for <computer account> fields shown in the following steps.

- 5 At the command prompt, map SPN to the computer account. Use the following format:

```
setspn -A library/<fqdn of library> <computer account>
```

For example:

```
setspn -A library/delos.dvt.mycompany.com krbtest
```

- 6 At the command prompt, create the keytab file for the SPN. Use the following format:

```
ktpass -out library.keytab -princ  
library/<fqdn of library>@<realm>  
+rndPass -ptype KRB5_NT_SRV_HST -crypto RC4-HMAC-NT -mapUser <realm>/  
computers/<computer account>
```

For example:

```
ktpass -out library.keytab -princ library/delos.dvt.mycompany.com@OURREALM.LOCAL  
+rndPass -ptype KRB5_NT_SRV_HST -crypto RC4-HMAC-NT -mapUser ourrealm.local/  
computers/krbtest
```

Resetting Tape Drives

The Reset Drives operation power cycles the tape drive while the tape drive remains in the drive sled in the library. You may want to perform a reset if a tape drive does not come ready or is not behaving properly (for example, if a tape is stuck in the tape drive and will not unload).

After the reset operation completes, the tape drive is rebooted and reconfigured. This takes about 60 seconds. Wait 60 seconds before performing further tape drive operations.

<p>Note: This operation should not be performed concurrently by multiple administrative users. You can access the screen, but you cannot apply changes while another administrative user is performing the same operation.</p>

The paths to open the appropriate screens are as follows:

- From the web client, select **Tools > Drive Operations > Reset Drives**.
- From the operator panel, select **Tools > Drive Mgmt > Reset drives**.

Automatically Creating Partitions

On previous versions of library, automatic partition creation did not allow you to mix tape drive interface types (SCSI, Fibre Channel, SAS) within a partition. The default number of partitions created was equal to the number of unassigned tape drive interface types.

Now, available library resources are grouped into partitions according to tape drive interface and vendor.

The maximum number of partitions that you can create is equal to the number of unassigned tape drives in the library. On the **Automatically Create Partitions** screen, you can select the number of partitions to create, from a minimum of one to a maximum that equals the number of unassigned tape drives in your library.

The default number of partitions created is the number of distinct tape drive interface/vendor combinations of the tape drives that are not currently assigned to a partition. For example:

- If your library contained two tape drives, a SCSI IBM LTO-2 and a SCSI IBM LTO-3, one partition would be created since they are the same interface type and vendor.
- If your library contained two tape drives, a SCSI IBM LTO-2 and a SCSI HP LTO-2, two partitions would be created because the tape drive vendors are different.

If you choose to create fewer partitions than the default, but more than one partition, some resources will not be assigned to a partition. However, if you choose to create one single partition, all available resources will be assigned to the one partition.

Time Zones and Daylight Saving Time

The time zone settings has been expanded and the ability to set daylight saving time has been added.

You can only set time zones and daylight saving time on the web client. The path to open the appropriate screen is **Setup > Date & Time**.

Standard Time Zones – To select a standard time zone, disable **Use Custom Time Zone** and select your time zone from the drop-down list.

Custom Time Zones – If your time zone does not appear on the list, or you want more control over your time settings, enable **Use Custom Time Zone** and then set a Universal Coordinated Time (UTC) offset. The offset can be set to an accuracy of one minute.

Daylight Saving Time – When you set a standard time zone, the library automatically adjusts for daylight saving time. There is no need to manually reset the clock for time changes. When you set a custom time zone, the library does not automatically adjust for daylight saving time. You must enable the **Use Custom Daylight Saving Time** setting. Once enabled, you can set start and stop times to an accuracy of one minute.

Closing All RAS Tickets

An option now exists to close all RAS tickets. The **Close All Tickets** button closes all RAS tickets without resolving them.

Caution: Be careful when pressing the **Close All Tickets** button. This closes all RAS tickets even if they are not resolved. It is recommended that you view, analyze, and close each RAS ticket individually.

From either the web client or the operator panel, select **Tools > All RAS Tickets** and click or press **Close All Tickets**.

Manually Cleaning Tape Drives

Previously, when manually cleaning tape drives, you had to use a cleaning cartridge inserted in the topmost I/E station slot. Now, if you have at least one cleaning slot configured, and you are using the web client, you can choose to use a cleaning tape from either a configured cleaning slot or the topmost I/E station slot. If two or more cleaning slots are configured and have cleaning tapes in them, the library chooses which cleaning tape to use. If you have zero cleaning slots configured, or if you are using the operator panel, you must use a cleaning tape in the topmost I/E station slot. During this operation, the partition is taken offline.

Viewing, Saving, and E-mailing Library Logs

The library collects specific information in log files that you can view onscreen, save to your computer, or e-mail to a recipient. The following library logs are available:

- **Installation Verification Test Summary Log** – This log is saved each time you run the Installation Verification Test (IVT). The log saves only the information from the most recently run test. If you run the test again, the new information overwrites the previous information. This option presents the summary log.
- **Installation Verification Test Detailed Log**– This log is saved each time you run the Installation Verification Test (IVT). The log saves only the information from the most recently run test. If you run the test again, the new information overwrites the previous information. This option presents the detailed log.
- **Command History Log** – Available only if you are using FC I/O blades. When you select this report, you choose the FC I/O blade and device for which you want to run the report. The **Blade** menu lists all FC I/O blades installed in the library (if more than one are installed). The **Devices** menu lists the devices associated with the selected FC

I/O blade. The report shows all commands from the selected device to the selected blade. When the log file reaches its maximum size (approximately 1 MB), the oldest information is replaced as new information is added.

- **Cleaning Log** – Shows all cleanings that have been performed in the library since code level 500 was installed. When the log reaches its maximum size, the oldest information is replaced as new information is added. The comma-separated values (csv) file provides the following information:

Date and Time, Barcode Label of the cleaning cartridge, Location Coordinates of the cleaning cartridge, Location Coordinates of the tape drive that was cleaned, Pass/Fail, Result Code (service use only), Source of Cleaning Request (Manual, Auto, MoveMedium), Expiration (Expired or “-”, where “-” means no data or not applicable), Reserved, Reserved.

- **Slot Position Log** – Shows current information for all slots in the library. The comma-separated values (csv) file provides the following information for each slot:

Date and Time, Cell Type (Picker, Drive, Storage, or IE), Object Present? (Y, N), Location Coordinates, X Position, Y Position, Angle Position, X Calibration Offset, Y Calibration Offset.

- **RAS Tickets Log** – Records all RAS tickets for the library. When the log file reaches its maximum size (approximately 4 MB compressed), the oldest information is replaced as new information is added.

You can only view these reports from the web client. The path to open the report from the web client is **Reports > Log Viewer**.

Downgrading Library Firmware

The following notes have been added regarding downgrading library firmware:

Note: Downgrading library firmware to an earlier version results in library configuration information being restored to the last saved configuration. Also, be aware that if you downgrade from one major firmware version to an earlier major version, library configuration settings will be reset to the factory defaults. You can restore the other configurable items using a configuration file that was saved when the earlier version of library firmware was installed on the library, or you can reconfigure your library's settings.

Note: If you are running firmware version 400G or higher and want to downgrade, please note the following: If your library is Quantum branded, you cannot downgrade to version 320G or lower (there is no lower version available for Quantum branded). If your library is ADIC branded, you can downgrade if there are no FC I/O blades installed in the library. If FC I/O blades are installed, you cannot downgrade to a version 320G or lower. Firmware versions 320G and lower do not support FC I/O blades.

Working With Control Paths

The information on automatic control path assignment and how to change control paths has been updated as follows:

The library automatically assigns control paths when you set up partitions. You can modify the control path at any time. [Table 4](#) describes how these control paths are assigned and how to change them.

Table 4 Control Path
 Assignment During Partition
 Creation

If the library contains:	And the partition contains:	Then the default control path for the partition is:	If you want to change the control path, note the following:
No FC I/O blades	Any combination of tape drive interface types (SCSI, FC, or SAS)	The first tape drive assigned to the partition	You must select a tape drive as the control path.

If the library contains:	And the partition contains:	Then the default control path for the partition is:	If you want to change the control path, note the following:
One or more FC I/O blades	At least one FC tape drive	The FC I/O blade	It is recommended that you allow the FC I/O blade to be the control path for the partition. (You can select a tape drive as control path if the tape drive is not connected to an FC I/O blade; however, your host will end up seeing multiple medium changers. In addition, using the FC I/O blade as the control path allows you to utilize the LUN mapping and host port failover features.)
One or more FC I/O blades	No FC tape drives	The first tape drive assigned to the partition	You must select a tape drive as the control path.

Only one tape drive in a partition can be selected as the control path per partition. In the event that the control path connection to the host application fails, you can select a new control path for the partition.

Control paths should not be selected for partitions that contain FC tape drives connected to a host applications through FC I/O blades, unless the control path tape drive is NOT connected to an FC I/O blade.

The **Setup > Control Path** screens list a selected partition's tape drives, including the tape drive that is currently designated as the control path. You can designate a new control path for the partition by selecting a different tape drive. You can also disable a partition's control path by clearing the current control path selection.

Caution: Do not select an FC tape drive as control path if it is connected to an FC I/O blade. The control path will be filtered out by the FC I/O blade and will not be visible to the host.

Note: You may need to modify settings in your host application as a result of modifying the control path. See your host application documentation.

Note: Bold column headings in the table can be sorted. For example, selecting the **Location** column heading will sort by location coordinates.

Note: If you have more than one FC I/O blade in the library, each FC I/O blade will present each partition — that does not have a tape drive as the control path — as a target device to the host. Thus the host may see the same partition multiple times. To minimize confusion, you should configure host mapping so that each host sees each device only once.

The paths to open the appropriate screens are as follows:

- From the Web clientweb client, select **Setup > Control Path**.
- From the operator panel, select **Setup > Control Path**.

Firmware Update Tape Features Removed

The firmware update (FUP) tape operations have been removed. You can no longer:

- create a FUP tape
- erase a FUP tape
- use a FUP tape to upgrade tape drive firmware

SMI-S Disabled By Default

On previous versions of the library firmware, SMI-S was always enabled by default. Now, SMI-S is disabled by default. If you want to enable SMI-S, you must manually enable it from the operator panel by selecting **Tools > System Settings > Enable SMI-S**.

Changes in the Operator Panel and Web Client

Some functions that previously were available on both the operator panel and the web client are no longer available on the operator panel and instead can only be accessed from the web client. Some items have changed location in the user interface.

Setup Wizard Changes

From the operator panel, you can now only access the Setup Wizard upon initial startup of the library. In previous versions, you could access the Setup Wizard at any time from the Setup screen. Administrative users can still access the Setup Wizard from the web client at any time by selecting **Setup > Setup Wizard**.

Operator Panel Changes

Some functions have changed locations, as follows:

Function	Previous Location	Current Location
Enter/assign IP addresses	Operator panel: Setup Wizard	This is still available on the Setup Wizard for IPv4. Additionally, for IPv4 and IPv6, you can use: Operator panel: Setup > Network Mgmt Web client: Setup > Network Management > Network
View IP addresses	Operator panel: Setup Wizard Operator panel: Tools > About Library	<u>For IPv4 only:</u> This is still available on the operator panel Setup Wizard . <u>For IPv4 and IPv6:</u> Operator panel: Tools > About Library > Network Info Operator panel: Setup > Network Mgmt > IP version 6 Web client: Reports > Network Settings
Access the Setup Wizard after initial setup	Operator panel: Setup > Setup Wizard	Web client: Setup > Setup Wizard
Add new license keys for additional features	Operator panel: Setup Wizard	Operator panel: Setup > Licenses Web client: Setup > License
Enable/disable NTP	Operator panel: Setup Wizard Operator panel: Setup > Date & Time	Web client: Setup > Setup Wizard Web client: Setup > Date & Time
Enable LDAP and view LDAP settings	Operator panel: Setup > User Mgmt	Web client: Setup > User Management > Remote Authentication
Enable/disable SSL settings	Operator panel: Setup > Network Mgmt > SSL tab	Operator panel: Tools > System Settings
Create SNMP trap registration	Operator panel: Setup > Network Mgmt > Trap Registration	Web client: Setup > Network Management > SNMP Trap Registrations

Function	Previous Location	Current Location
Modify SNMP trap registration	Operator panel: Setup > Network Mgmt > Trap Registration	Web client: Setup > Network Management > SNMP Trap Registrations (currently you cannot modify an item; you must delete it and create another one)
Delete SNMP trap registration	Operator panel: Setup > Network Mgmt > Trap Registration	Web client: Setup > Network Management > SNMP Trap Registrations
Test SNMP trap registration	Operator panel: Setup > Network Mgmt > Trap Registration	Web client: Setup > Network Management > SNMP Trap Registrations
Enable/disable SNMP v1 and v2c	Operator panel: Setup > Network Mgmt > SNMP Version	Operator panel: Tools > System Settings > Enable SNMP V1/V2 Web client: Setup > Network Management > SNMP
Enable/Disable DHCP	Operator panel: Setup > Network Mgmt > Network Configuration > Use DHCP	<u>For IPv4:</u> Operator panel: Setup > Network Mgmt > IP version 4 > Use DHCP Web client: Setup > Network Management > Network > Library's IPv4 network settings <u>For IPv6:</u> Operator panel: Setup > Network Mgmt > IP version 6 > DCHP Configuration Web client: Setup > Network Management > Network > Library's IPv6 network settings
DNS Configuration - set primary and alternate DNS addresses	Operator panel: Setup > Network Mgmt	Web client: Setup > Network Management > Network
Enable/disable SMI-S	Not available; always enabled	Operator panel: Tools > System Settings
Create a firmware update tape	Operator panel and Web client: Tools > Drive Mgmt	This feature has been disabled.

Function	Previous Location	Current Location
Update drive firmware from tape	Operator panel and Web client: Tools > Drive Mgmt	This feature has been disabled.
Erase a firmware update tape	Operator panel and Web client: Tools > Drive Mgmt	This feature has been disabled.

New Module Terminator (CAN Bus Terminator) Placement

The module terminators previously came in the accessory kit. They now come secured to the back of the control module by a plastic tie (see [figure 1](#)). The module terminators look very similar to SCSI terminators. However, they serve a different function and are required for installation. Do not discard them!

Figure 1 Module Terminators
New Location



Library Power Consumption and Heat Output

The *Scalar i500 User's Guide* lists typical library power consumption and heat output. Some of the numbers have been revised, and the FC I/O blade has been added. The revised specifications are shown in [table 5](#) below.

Note: "Typical" values for tape drives assumes tape drives are writing.

Table 5 Library Typical Power Consumption and Heat Output

Library Configuration	Typical Power Consumption (Watts)	Typical Heat Output (BTU/Hour)
Subassembly Power Consumption:		
Scalar I500 Library (no drives installed; robot moving; LCB installed)	79	269
UDS3 IBM Ultrium 2 Drive Sled Module (SCSI)	29	99
UDS3 IBM Ultrium 2 Drive Sled Module (Fiber Channel)	32	109
UDS3 IBM Ultrium 3 Drive Sled Module (SCSI)	27	92
UDS3 IBM Ultrium 3 Drive Sled Module (Fibre Channel)	29	97
UDS3 IBM Ultrium 4 Drive Sled Module (SCSI)	40	135
UDS3 IBM Ultrium 4 Drive Sled Module (Fibre Channel)	42	143
UDS3 IBM Ultrium 4 Drive Sled Module (SAS)	43	148
UDS3 HP LTO-4 Drive Sled Module (Fibre Channel)	40	135
UDS3 HP LTO-4 Drive Sled Module (SAS)	37	127
Fibre-Channel I/O Blade (7404)	36	123
Control Module:		
Minimum (no drives installed; robot not moving)	47	160
Maximum (2 drives writing; robot moving)	166	565
Expansion Module:		
Minimum (no drives installed; robot not moving)	12	41
Maximum (4 drives writing, 2 Fibre-Channel I/O blades installed; robot moving)	256	879