



Release Notes

Product	DXi 2.2_68 Software for DXi6800
Supported Browsers (Remote Management Console)	Microsoft Internet Explorer 8.x or higher, Mozilla Firefox 7.x or higher
Date	December 2012

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Purpose of This Release

DXi 2.2_68 Software is the initial software release supporting the Quantum DXi6800 disk backup system.

This software release provides the following capabilities:

- **On Demand Capacity Upgrades** - Usable storage capacity for installed Array or Expansion modules can be upgraded at any time after purchase in increments of 13 TB, up to a total of 26 TB per module. Storage capacity upgrades are enabled simply by adding a license key and rebooting the system. To purchase a storage capacity upgrade license, contact your Quantum sales representative.
- **Data-at-Rest Encryption** - Data-at-Rest Encryption secures all data stored on the DXi6800, including file data and metadata, configuration files, and the DXi software and operating system. Data-at-Rest Encryption ensures a hard drive that is physically removed from the DXi cannot be read using another system or device.

In addition, this software release provides all of the features and enhancements introduced in DXi 2.2 Software:

- **OST Automatic Image Replication (AIR)** - If you are using Symantec NetBackup 7.1 or higher, you can configure an LSU for Automatic Image Replication. If enabled, data on an LSU is automatically replicated to a remote LSU that resides on a DXi in a different NetBackup domain.
- **Concurrent Optimized Duplication** - With Concurrent Optimized Duplication, as data is written to the storage server, it is simultaneously replicated to the target DXi. When optimized duplication or Automatic Image Replication subsequently occurs, the operation is more efficient because a portion of the required data has already been replicated to the target storage server.
- **DXi Accent Improvements** - DXi Accent supports Windows based media servers running Symantec Backup Exec or NetBackup. In addition, data sent from the media server to the DXi can be encrypted using AES (Advanced Encryption Standard) encryption methods.
- **Secure File Shred** - With Secure Shred, you can securely and permanently erase sensitive data stored on the DXi. To securely erase data, first delete files on NAS shares or storage servers, or erase tape cartridges on VTL partitions, then start secure shred. During secure shred, all residual data associated with the deleted files or cartridges is securely erased from the disk drives and is overwritten with random patterns.
- **VLAN Tagging** - You can enable VLAN tagging and Jumbo Frames for any configured network interface on the DXi.
- **Administrative Activity Log** - Use the **Activity Log** to view a record of all activities performed by administrative and service users in the past 90 days. You can view the user who performed the activity, the time the activity was performed, and other information. You can also download the activity log to an XML file.

- **Consolidated Job Scheduler** - All scheduled functions of the DXi are now managed on the **Scheduler** page, including the scheduling of replication, replication throttling, e-mail reports, healthchecks, and space reclamation.
- **Fibre Channel Port Management** - Detailed port layout diagrams make it easy to identify Fibre Channel Ports on the back of the system. Also, you can change the mode of a Fibre Channel port to initiator or target.
- **Site Map** - The **User Interface Site Map** displays a visual map of all management pages in the DXi remote management console. Use the map to quickly locate and jump to any page.
- **Space Reclamation Improvements** - Scheduled and on demand space reclamation has been tuned for increased performance, while automatic space reclamation during low space conditions provides maximum free space recovery. Also, the blockpool automatically reuses free bytes when ingesting data.
- **DXi Advanced Reporting** - The latest version of DXi Advanced Reporting (version 2.1.2) is included with DXi 2.2_68 Software. There is no need to install or update DXi Advanced Reporting.

Hardware Compatibility List

The following table provides information about hardware compatibility with DXi 2.2_68 Software. This information is current as of the publication date of these release notes.

Component	Description
DXi6802	<ul style="list-style-type: none">• 1 Node• 1 to 3 Array modules (RBODs)• 0 to 3 Expansion modules (EBODs)• 3 x 1GbE Ethernet ports• 2 x 10GbE Ethernet ports• (Optional) Additional network adapter providing 2 x 10 GbE Ethernet ports or 4 x 1GbE Ethernet ports• 4 x 8Gb Fibre Channel ports (VTL)• 2 x 8Gb Fibre Channel ports (PTT or VTL)• 13 TB to 156 TB usable capacity

OST Plug-In Support

The following components are required for OST (OpenStorage) operation with the DXi-Series:

- Symantec Veritas NetBackup 7.x or higher, and Backup Exec 2010 or higher (both available from Symantec).
- Quantum OST storage server (included with the Quantum DXi-Series software).
- Quantum OST Plug-in (downloaded separately through the remote management console or from the Quantum Service and Support Web site).

You must use the correct versions of all of these OST components. Refer to [Table 1](#) and [Table 2](#) for version compatibility information regarding the DXi-Series OST components. The tables include compatibility information for Windows, Linux, and Solaris operating systems. This information is current as of the publication date of these release notes.

For further information concerning the OST plug-in, see the *Quantum DXi-Series NetBackup and Backup Exec OST Configuration Guide* located on the documentation CD.

Table 1 Backup Exec 2010 (or later) Plug-in Compatibility List

Platform	Plug-in Version	DXi Software Version
Windows 2003/2008 32-bit	2.6.0	2.2_68
Windows 2003/2008 64-bit	2.6.0	2.2_68

Table 2 NetBackup 7.x (or later) Plug-in Compatibility List

Platform	Plug-in Version	DXi Software Version
RedHat Linux x86 64-bit	2.6.0	2.2_68
SUSE Linux x86 64-bit	2.6.0	2.2_68
Solaris 10 and Solaris 11 x86 64-bit	2.6.0	2.2_68
Solaris 10 and Solaris 11 SPARC 64-bit	2.6.0	2.2_68
HP-UX 11i v3 IA-64	2.6.0	2.2_68
IBM AIX 6.1 and 7.1 Power 64-bit	2.6.0	2.2_68
Windows 2003/2008 32-bit	2.6.0	2.2_68
Windows 2003/2008 64-bit	2.6.0	2.2_68

Replication Compatibility

The following table indicates the DXi software levels that can replicate data to one another. Combinations not shown in the table are not supported.

		Replication Source			
		DXi 1.4.4 DXi 1.5 DXi 1.6	DXi 2.0.0.2 DXi 2.0.x	DXi 2.1.x	DXi 2.2.x DXi 2.2_68
Replication Target	DXi 1.4.4 DXi 1.5 DXi 1.6	Yes	Yes	Yes	Yes
	DXi 2.0.0.2 DXi 2.0.x	Yes	Yes	Yes	Yes
	DXi 2.1.x	Yes	Yes	Yes	Yes
	DXi 2.2.x DXi 2.2_68	Yes	Yes	Yes	Yes

Note: The default number of allowed DXi replication sources is 10. If you need to change these default settings, contact Quantum Customer Support.

Note: If data is replicated from a DXi running DXi 2.x Software to another DXi running 2.x, that data cannot be failed back to a DXi running system software 1.x. Perform a failback to a DXi running DXi 2.x Software.

Known Issues

DXi 2.2_68 Software has the following known issues:

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- [Space Reclamation Known Issues](#) on page 9
- [Network Known Issues](#) on page 10
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- [GUI Known Issues](#) on page 11
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- [Installation and Upgrade Known Issues](#) on page 20
- [Miscellaneous Known Issues](#) on page 21
- [Cosmetic Issues](#) on page 25

Replication Known Issues

Bug Number	SR Number	Description	Workaround
7269		Replicating a filename which begins with & in a directory caused all of the files in the entire directory to replicate to the target.	Do NOT use the & character in a filename.
7915		Aborting a synchronization job when a namespace and synchronize are queued up aborts only the synchronization and leaves the namespace replication in a queued state.	Manually abort the namespace replication.
11683		If the same user exists on both source and target systems, the user should be prompted to overwrite permissions on the target system before synchronization or Directory/File Based replication occurs.	Set the same permissions on both source and target for the same user.
13617		If the replication target is changed while a namespace replication on a NAS share or VTL is in progress (such as due to a power outage), the replication may become stuck or stay queued up.	Cancel the queued job and restart the replication or wait until the next scheduled replication to take effect.

Bug Number	SR Number	Description	Workaround
13692		No Service alert is logged for failback jobs when the failure is due to a power outage.	Re-initiate the failback after system resumes operation.
14974	1132956	A Target system will fail a failback operation if the replication target IP (source role) is not configured.	Use an IP address on the Target system to specify the network address of the Source system.
18326		If Directory/File Based Replication is enabled for a share and then disabled at a later time, a replication report will not show any of the replication activity that occurred during the time that Directory/File Based Replication was enabled.	Re-enable Directory/File Based Replication for the share, then run the replication report again to see the historical replication activity.
18787		A manual or scheduled replication initiated immediately after changing the replication target may fail.	Perform the replication again.
18845		An error occurs if the same DXi is configured to be a source as well as the target for replication.	Do not include the configured target DXi in the list of source DXis.
20351		If data is replicated from a DXi running DXi 2.x Software to another DXi running 2.x, that data cannot be failed back to a DXi running system software 1.x.	Perform a failback to a DXi running DXi 2.x Software.
20674		An error is returned when attempting to delete a replication source if the source was added with an invalid (cannot be resolved) host name.	Pause replication before deleting a source with an invalid host name.
21612		When recovering or failing back an NFS share, the value of the Commit attribute (sync or async) is not preserved.	Manually reset the Commit attribute for the share after it is recovered on the target, or fail back the share to the source.
24005		A missing file error occurs during replication or space reclamation. This can occur if files were deleted while replication or space reclamation was in progress.	Retry the replication or space reclamation. To avoid this issue, do not delete files while performing replication or space reclamation.
24277		If several synchronization jobs are queued, and then while the first job is in progress the other jobs are canceled, the DXi will begin synchronizing the canceled jobs after finishing the first job in the queue.	Cancel the synchronization jobs again.

Bug Number	SR Number	Description	Workaround
23228		When attempting to recover or synchronize a VTL partition, a capacity mismatch error occurs if the target DXi does not support the library emulation and drive type used by the original partition.	When creating the source partition, make sure to use a library emulation and drive type supported by the target.
24731		If the configured replication target does not support VTL, enabling replication at the time of partition creation results in an error, and the partition is not created. If you then attempt to create the same partition again, with the same name and replication enabled, the DXi will become unresponsive and must be rebooted.	If the configured replication target does not support VTL, do not enable replication at the time of partition creation.
26167		When performing a failback from a DXi running 2.1 or 2.1.x software to a DXi running software version 2.0.x or earlier, the failback fails if a valid source IP address has not been specified on the DXi running 2.1 or 2.1.x software.	On the DXi running 2.1 or 2.1.x software, specify a valid Source IP Address on the Configuration > Replication > Send page.
29341		It is possible to configure two identical replication schedules for the same share or partition.	If this is done, one of the scheduled replication jobs will succeed and the other will fail. Ignore the failed job and delete the redundant schedule.
31605		On the Home page and the Status > Disk Usage page, the value for Data Size After Reduction is larger than the value for Data Size Before Reduction .	<p>This issue can occur when replication is enabled for a share or partition, but replication is rarely or never run. In this case, continuously replicated data accumulates on the target system, but this data is not included in the value for Data Size Before Reduction until a replication job is performed and a snapshot is saved.</p> <p>To correct the issue, manually initiate replication of the share or partition on the Replication > Send page, and allow the replication complete.</p> <p>To avoid this issue in the future, schedule replication for the share or partition on the Configuration > Scheduler page. Alternately, you can enable Directory/File or Cartridge Based replication for the share or partition.</p>

Bug Number	SR Number	Description	Workaround
32006		<p>An error occurs when attempting to enable replication on a VTL partition if there is an OST storage server on the system that uses the same name but with a different case.</p> <p>For example, if the VTL partition is named "Chrome" and the OST storage server is named "chrome", the error occurs. If the OST storage server is named "Chrome", the error does <i>not</i> occur.</p> <p>Note: NAS shares are not affected.</p>	Use unique names for VTL partitions and OST storage servers.
32098		When replicating a share to a system running DXi 1.x Software while data is being written to the share, the replication service stops and a service ticket is generated	<p>The replication service is automatically restarted. You can safely close the service ticket.</p> <p>To avoid this issue, upgrade the target system to DXi 2.x Software.</p>
32166		The following administration alert occurs: Directory/File Based Trigger Delete FAILED. Wild cards are not allowed in path specification for replication.	<p>Replication does not support asterisks [*] or ampersands [&].</p> <p>Remove or rename any affected files, then perform a synchronization to propagate the deletions to the target.</p>
31828		When replication throttling is configured for a 10 GbE network interface, actual network performance is higher than the specified throttle value.	If replication throttling is required, configure network segmentation so that replication traffic uses a 1 GbE interface instead.

Space Reclamation Known Issues

Bug Number	SR Number	Description	Workaround
20826		After upgrading the system software, the Space Reclaimed statistics are incorrect on the Space Reclamation > General page.	The statistics will be correct after space reclamation is run.

Network Known Issues

Bug Number	SR Number	Description	Workaround
8628		A replication IP address should not be required to configure the network if the user does not use replication.	Enter a "dummy" IP address. This will be fixed in a future revision.
20448		If a Domain Suffix Search List has not been specified on the Network page, and the DXi is added to an Active Directory server, the DXi is added to the domain with the suffix localdomain . After this, the DXi cannot be managed using Active Directory.	Specify the correct domain suffix in the Domain Suffix Search List before adding the DXi to an Active Directory server. (If adding multiple entries to the list, make sure the correct path is first in the list.)
20572		When using Active Directory, the DXi is not automatically added to the DNS server in the parent domain after the DXi is added to a child domain.	Cross domain joining is not supported by Samba. Instead, manually add a DNS entry to the DNS server.
20574		Unable to manage DXi Local Users and Groups from the Active Directory controller after the DXi is added to a child domain.	Log off of the Active Directory controller, then log back on. Users and groups will be listed correctly.
21603		If the DXi is assigned an IP address in the 10.17.21.0 to 10.17.21.24 range, a network connection to the DXi cannot be established.	The IP addresses in this range are reserved. Configure the DXi using a different IP address.
23808		A CIFS share cannot be mapped when using Windows 2008 R2 SP1 with the RequireSecuritySignature registry key set to 1.	Edit the Windows 2008 registry and set the following key to 0: HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\LanmanWorkstation\Parameters\RequireSecuritySignature
30169 30805	1419732	Running the Network Analyzer on the Utilities > Analyzer > Performance page fails if NetServer is enabled on both the source (driver) DXi and the target DXi.	Only enable NetServer on the target DXi, and leave it disabled on the source (driver) DXi. To enable or disable NetServer, use the Utilities > Analyzer > Settings page.
31942		On the Configuration > System > Network page, enabling jumbo frames (MTU 9000) for a bonded 10 GbE network device causes breaks in network transmission.	Make sure to select MTU 1500 for bonded 10 GbE network devices.

CLI Known Issues

Bug Number	SR Number	Description	Workaround
13604		Enabling jumbo frames disrupts active network configurations.	Don't change the setting if I/O is running.
14032		By default the "syscli --getstatus jumbo" command displays only bonded network devices' jumbo frame status. If some network devices are not bonded (segmented) the "syscli --getstatus jumbo" will not display jumbo frame status for those devices when using the command without any option specified. Note: The --getstatus jumbo command has been deprecated.	To display all the network devices' jumbo frame status, use the "--all" option in the command (i.e. syscli --getstatus jumbo --all). To display a single network device jumbo frame status, specify the network device using the "--dev" option in the command. For example, "syscli --getstatus jumbo --dev eth0" command displays ETH0 device jumbo status.

GUI Known Issues

Bug Number	SR Number	Description	Workaround
7874		Alert > Service Tickets > View Recommended Actions - Quantum Support link hyperlink missing.	Manually copy and paste the hyperlink into your browser to access the Quantum Support web page.
7935		When selecting all share administrators including default domain administrator for deleting, the GUI should display an error indicating that it can not delete the default domain administrator.	The default domain administrator can NOT be deleted.
11790 11792 11954		Username beginning with "#" or "\$" characters, or OST LSU names beginning with the "_" character are not displayed correctly.	Do not use these characters to begin usernames or OST LSU names
15310		When the system is running a backup and a partition is created with > than 5000 cartridges, the GUI displays: PLEASE WAIT... The system is either busy with a previous request or in the process of restarting the web-based interface.	This is normal operation. Wait until the GUI becomes responsive. Do NOT reboot the system.

Bug Number	SR Number	Description	Workaround
20673		On the Email Home > On Demand page, after viewing and saving a configuration data report, the OK button is disabled.	Refresh the Web browser to return enable the OK button.
21019		Immediately after a fresh software install, the disk capacity statistics displayed in the remote management console are incorrect.	Wait a few minutes for the disk capacity statistics to be updated.
22417		When adding an SNMP community, the following error displays: The IP Address/Network Mask pair does not imply a valid network address. This error occurs even though the pair is in fact valid.	Leave the Network Mask field blank when creating the community.
23165		When deleting host access groups on the Host Mapping page, the job status indicator does not complete.	The host access groups were successfully deleted. To clear the job status indicator, navigate to another page in the remote management console, then navigate back.
24567		In the OST Wizard , on Step 3: Add LSUs , if you sort the list of LSUs by name, and then select one or more LSUs, the Delete button remains disabled.	Click Previous to return to the previous step, then click Next to return to Step 3. Select the LSUs to delete, and click Delete .
24644		On the Utilities > Diagnostics > System Diag File page, after clicking Generate New to create a new system diagnostics file, the message No file has been generated appears, and the Download Current button remains disabled.	Check the Admin Alerts page to see if an admin alert was generated. If the /scratch file system is out of space, the system cannot create a new diagnostics file, and an admin alert is generated.
26174		On the Configuration > VTL > Media > Actions , when Show All Media is selected in the Action drop-down box, an Unresponsive Script error dialog box may display if there is a very large number of media.	Keep clicking Continue on the error dialog box until the media displays. To avoid this error, view media for a particular partition, or apply a barcode filter.
26245		On the Configuration > Scheduler page, the horizontal scroll bar does not allow you to scroll to the right to see the entire view.	Navigate to a different page in the remote management console, and then navigate back to the Scheduler page.
26021		Web browser save password features (and similar third party browser add-ons) are not able to store and recall the DXi password when logging on.	To maintain proper security, enter the password manually each time you log on to the DXi.

Bug Number	SR Number	Description	Workaround
27206		When generating a storage array diagnostics file, the operation does not appear to complete even after a long period of time elapses.	Press F5 to refresh the page. Or navigate to another page, and then navigate back to the Utilities > Diagnostics > Storage Array Diag File page.
28361		Generating a Storage Array Diagnostics File takes a long time to complete, but there is no warning about this on the Utilities > Storage Array Diag File page.	This is expected behavior. Generating a Storage Array Diagnostics File can require 60 minutes or more depending on the system configuration. Wait for the operation to complete.
29729		On the Configuration > System > Security > Data-at-Rest page, if an incorrect premium feature key (PFK) file is uploaded using Internet Explorer, an error message is not returned. Instead, a message displays stating the PFK file was successfully uploaded.	Use Firefox to upload a PFK file on the Data-at-Rest page.
29730		On the Configuration > System > Security > Data-at-Rest page, when uploading a premium feature key (PFK) file is uploaded using Internet Explorer, the border around the file name turns red.	The red border does not indicate an error. However, you should use Firefox to upload a PFK file on the Data-at-Rest page (see bug 29729 above).
29832		When a scheduled space reclamation event is deleted on the Scheduler page, the Administrative Activity Log records the deletion but does not record the type of event that was deleted.	When looking at the Administrative Activity Log , if you have questions about the type of event that was deleted, note the user and time of deletion, and then consult the appropriate person.
29153		After editing an event on the Scheduler page, a new event cannot be added by clicking and dragging.	Refresh the browser window, and then click and drag to add a new event.
30735		On the Scheduler page, if a monthly or weekly event is edited and changed to a daily event, any subsequent attempts to edit a single instance of the event will fail.	Delete the recurring event and then create a new daily recurring event. You can then edit single instances of the new recurring event as needed.
30999		When creating or editing an event on the Configuration > Scheduler page, all times are relative to the workstation from which the GUI is accessed, rather than the DXi.	If the DXi is a different time zone than the workstation used to access the GUI, make sure to account for the time zone differences when scheduling events.
31164		The Status > Logs > Activity Log page is difficult to read and use if the Internet Explorer window is resized to a small size.	Use Firefox to view the page.

Bug Number	SR Number	Description	Workaround
31969		If the syscli --change password command is used to change a Web password (admin or monitor) so that it is longer than 15 characters, the password cannot be used to log on to the remote management console. The GUI does not accept passwords longer than 15 characters.	Use the syscli --change password command to change the password so that it is 15 characters or less, and then log on to the remote management console again.
32101		On the Network page, it is possible to inadvertently add an empty entry to the Routing Details table for an interface. Once added, the empty route table entry cannot be deleted.	<p>The empty route table entry will not affect system operation. To remove the entry, do one of the following:</p> <ul style="list-style-type: none"> • In the IP Address table, first delete the interface associated with the empty route entry. Then add the interface again to the IP Address table, using the same settings, and click Update to store the changes. (Do <i>not</i> click Apply at the bottom of the page, as this will force a reboot of the system.) • Click Reset at the bottom of the page. This will undo all recent changes and reset the Network page to the last saved settings.

VTL Known Issues

Bug Number	SR Number	Description	Workaround
21688		The following error occurs when editing a partition to reduce the number of storage slots: Error: setting number of slots: 150. Error: -1	To remove slots, the slots at the end of the range of slots must be empty. Export cartridges from the highest numbered slots, and then edit the partition again.
22019		Media can be recycled (erased) on the Media Actions page even if it is write protected (WP).	The WP status is respected by the host but not the DXi. Do not recycle media that has data.

Bug Number	SR Number	Description	Workaround
30808		When using the VTL Configuration Wizard , if you add a host group in step 5 but do not specify a host in the Host drop-down box, an error will occur when trying to confirm the settings in step 6.	Make sure to specify a valid host when adding a host access group.
31619		Creation of virtual tape cartridges is slow when data is being written to or read from NAS shares.	Avoid creating virtual tape cartridges during periods of NAS ingest.

NAS Known Issues

Bug Number	SR Number	Description	Workaround
19332		NFS recovery jobs performed with a supported backup application fail to complete.	Make sure the backup client system has a minimum of 8 GB of RAM.
19935		Attempting to delete a share while performing I/O on the share (for example, copying files to the share) results in an error. After this error occurs, the share cannot be deleted, and replication cannot be performed to the share.	Wait for I/O on a share to complete prior to deleting a share.
19936		A file/directory path with more than 244 characters cannot be accessed on a mapped NAS share.	Limit file/directory paths on a mapped NAS share to 244 characters or less.
21407		Empty files and directories can still be created on NFS shares when the DXi is in a low space condition.	Do not attempt to write files and directories to NFS shares on the DXi when it is in a low space condition. Run space reclamation to free up disk space before writing additional files.
23218		When mounting NFS shares on Solaris clients using the noac option, performance is degraded.	Do not use the noac option when mounting shares, or use a non-Solaris client.
29705		Backup failures occur due to timeouts under heavy, concurrent VTL and NAS ingest.	Use the following CLI command to configure NFS shares for asynchronous mode: syscli --nfscommit async [--share <sharename>]
27908	1387940 1408612	Files copied to exported NFS and CIFS shares do not retain their original creation time.	To determine the creation time, examine the original file rather than the copy on the share.

OST Known Issues

Bug Number	SR Number	Description	Workaround
10041	1423609 1066048 1236048	Subsequent Optimized Duplication jobs may fail or become stuck when running jobs are canceled or stopped.	Restart the NetBackup services.
13795	1913763	Unable to delete undiscovered OST devices from Backup Exec 2010.	Reestablish connection from the Backup Exec OST device and the DXi system. The connection can be reestablished by re-starting Backup Exec services or rebooting the DXi system. Once the connection is established, the device will be discovered, and the you will be able to delete it. Alternately, upgrade to Backup Exec 2010 R2, which contains a fix for this bug.
15286		New OpenStorage Devices added to Backup Exec 2010 initially show as "Undiscovered".	Press Refresh in the Backup Exec View pull-down menu until the device show as discovered.
15322		Optimized Duplication Succeeds, but the following error is shown: V-79-8192-4881 - The count of Files and Directories processed is not available for this operation. The File and Directory count might be displayed as zero.	This is expected behavior. You are able to restore using the duplicated image with no issues.
20587		On a NetBackup media server, temporary files created during backups are not removed.	This issue is resolved. To remove any temporary files that were created by previous versions, delete all files in the / tmp/dm/shadow directory on the NetBackup media server.
23109		(DXi6700 only) There is a small chance of observing a discrepancy in the aggregate statistics for DXi Accent and the statistics for individual media servers.	Navigate to another page in the remote management console, then navigate back.

Bug Number	SR Number	Description	Workaround
23253		<p>If a storage server is configured to use multiple LSUs, and if LSU spanning is configured, when one LSU gets full and NetBackup is handling a disk full condition, the following errors are logged in OST Plug-in log:</p> <pre> ERROR - 20110526 14:53:50 11818 /pgnimage.cpp:2500 Write to image failed. dm_error: - 812, STS Error: 2060031 ERROR - 20110526 14:53:50 11818 /pgnimage.cpp:2584 EXIT pgn_write_image: (out of space:2060031) ih=0x13c1ed00, bytesWritten=0 OR ERROR - 20110414 23:27:36 20648 /pgnbfst.cpp:1153 Received error(2060031) from server, OST_RESERVE_LSUSPACE for 262144 bytes failed </pre>	<p>If the NetBackup spanning worked as expected, and if the job completed successfully, these errors may be ignored.</p>
24628 26580		<p>When DXi Accent is enabled, a maximum number of jobs (backups, restores, and/or optimized duplications) can be run against the DXi. The maximum is 10 total jobs for DXi4500 and DXi6510 and 20 total jobs for all other DXi models.</p> <p>When the limit is reached, the following error is logged to the OST Plug-in log:</p> <pre> VServer "hybrid-dedupe-no- encrypt" limit reached (limit 20). </pre> <p>Also, the following error is logged in the NetBackup progress log:</p> <pre> Critical bpdm (pid=12515) image open failed: error 2060020: storage server connection limit exceeded </pre>	<p>If the connection limit is reached on the DXi, the OST Plug-in retries for 300 seconds by default. If the connection cannot be established within 300 seconds, the connection times out and an error is returned.</p> <p>The default connection timeout is 300 seconds. The timeout value can be increased using the following setting in <code>/usr/Quantum/QuantumPlugin.conf</code>.</p> <pre> DATA_CONNECTION_BUSY_TIMEOUT </pre>

Bug Number	SR Number	Description	Workaround
26627		<p>When attempting to perform an optimized synthetic full backup using NetBackup running on a Windows-based media server, a normal synthetic full backup occurs instead. During a normal synthetic full backup, all data is read back to the media server, resulting in a longer backup window.</p> <p>Note: This issue usually occurs with existing storage servers and disk pools.</p>	<p>Make sure the storage server and disk pools are correctly configured for optimized synthetic full backups. To do this, run the following commands on the media server:</p> <pre>nbdevconfig -changests -stype Quantum -storage_server <ss_name> -setattribute nbdevconfig -changedp -stype Quantum -dp <dp_name> -setattribute OptimizedImage</pre> <p>To verify the configuration, run the following commands and make sure they return the flag OptimizedImage:</p> <pre>nbdevquery -liststs -U nbdevquery -listdp -U</pre> <p>For more information, see the following Symantec online support article: http://www.symantec.com/business/support/index?page=content&id=TECH77767</p>
26147		<p>When using OST with a media server configured with RedHat Linux and a Chelsio 10GbE card, restore operations take significantly longer to complete than backup operations.</p>	<p>Use the perftune.sh and ifup-local scripts (provided by Chelsio) to correctly set kernel parameters on the media server. To do this, you must copy the perftune.sh and ifup-local scripts to /sbin on the media server. For more information, refer to the Chelsio driver installation instructions (in the ReadMe file included with the driver).</p>
29854		<p>In NetBackup 7.5, when you click Refresh on the Change Disk Pool dialog box, the following error displays: The snapshot property of one or more volumes in the disk pool has changed. This property cannot be changed after initial configuration.</p>	<p>To resolve this issue, refer to the following Symantec support article: http://www.symantec.com/docs/HOWTO67378</p>
30134		<p>In NetBackup 7.5, when attempting to change a Replication operation to a Duplication operation on the Storage Lifecycle Policy Editing Window, the storage unit is not updated and remains blank.</p>	<p>Make the change a second time. On the second attempt, the storage unit is correctly updated.</p>

Bug Number	SR Number	Description	Workaround
30180		OST path to tape traffic is not routed directly from the DXi to the physical tape library, and instead is routed through the NetBackup media server, when the operation is initiated by a Storage Lifecycle Policy.	To resolve this issue, refer to the following Symantec support articles: http://www.symantec.com/business/support/index?page=content&id=TECH193964 http://www.symantec.com/business/support/index?page=content&id=TECH184142
30429		If an LSU that is enabled for Automatic Image Replication (AIR) belongs to a disk pool for which spanning is enabled, when an opportunity for spanning occurs, the LSU is not spanned, and NetBackup fails the backup with the following or similar error: Critical bptm (pid=24097) backups created for eventual duplication to remote master servers cannot span multiple volumes.	LSUs that are enabled for Automatic Image Replication cannot be spanned. If an LSU is configured for AIR, make sure spanning is disabled for the disk pool it belongs to. Note: When an LSU is configured for AIR, it can take up to five minutes for the change to be visible in NetBackup.
30515		Automatic Image Replication (AIR) jobs run between a UNIX media server and a Windows media server fail.	NetBackup does not support image replication between different operating systems. Always perform Automatic Image Replication between media servers that use the same operating system.
31095		NetBackup 7.5 and 7.6 may have problems recognizing or accepting the DXi replication topology configured for Automatic Image Replication (AIR). This occurs because Quantum's implementation of Automatic Image Replication does not correctly publish storage server names to NetBackup such that NetBackup can correctly distinguish between storage server names. Note: Quantum OST is unique among OST implementations in that it separates the DXi appliance from the OST storage server. In other implementations, the appliance is the storage server. On the DXi, the storage server is a logical construct which allows the DXi to have multiple storage servers.	When configuring AIR, use storage server names that are unique among the DXi systems involved in an AIR configuration.

Installation and Upgrade Known Issues

Bug Number	SR Number	Description	Workaround
13711		If a power cycle occurs while uploading the software image, the system displays only an "Activation Error Occurred!" message.	Do not power cycle in middle of an upgrade. Begin the upgrade again.
13366		The system goes into diagnostic mode if a SAS cable is pulled during storage expansion upgrade.	Don't pull cables during storage capacity upgrade.
15362		During installation, warnings appear that the Inode Expand Min , Inode Expand Max , and Inode Expand Inc configuration variables are deprecated.	These warnings do not affect installation and can be ignored.
21270		When upgrading to DXi 2.0 Software, the 1.4.x diagnostic files are deleted.	Before upgrading to 2.0, save copies of the 1.4.x collect logs to a location that is not on the DXi.
24366	1293264	(DXi4500 only) When upgrading to 2.x Software, the following service ticket is generated: fs 'vol0':FSS on host 127.0.0.1 not currently accessible	This is expected behavior during a successful upgrade. You may safely close the service ticket.
24372		After upgrading from 1.4.x to 2.0.x, the following error appears in the upgrade1to2.out log. <pre>*** Speedy VMC_MEDIA_TYPE_GENERIC table upload *** Error of appending row 9 Loare1: (903) duplicate value for primary or unique key Loare1: system error: 0 Loare1: (903) duplicate value for primary or unique key in adding row number 1</pre>	You may safely disregard this error. The upgrade completed successfully.
26455	1329228	A custom setting for MI thread count in the /etc/init.d/ost file is lost when upgrading and is reset to the default value (20 threads).	Prior to upgrading, note the value for MI threads in the /etc/init.d/ost file, and then reset the value following the upgrade. Note: In general, in DXi 2.1.x Software, it is no longer necessary to alter the MI thread setting to optimize performance.

Bug Number	SR Number	Description	Workaround
28397	1395064	If a DXi that is configured with DNS entries is disconnected from the network prior to a software upgrade, the upgrade will not succeed.	If the DXi must be disconnected from the network during an upgrade, remove any DNS entries on the Configuration > System > Network page prior to the upgrade.
29410		During a software upgrade, if the DXi is booted from the software DVD before the firmware (.fw) file is uploaded and activated, the following error occurs upon a subsequent attempt to activate the firmware image: The firmware file is not present.	Despite the error, the upgrade will succeed after the firmware image is activated. In the future, to avoid this issue, do not boot from the software DVD before activating the firmware image. Note that the software DVD is <i>not</i> required for 2.x to 2.x upgrades.
30829		After upgrading to 2.1 Software or later, the Integrity healthcheck is disabled.	The Integrity healthcheck is currently not supported in 2.1 or later software. Run the De-Duplication healthcheck instead.

Miscellaneous Known Issues

Bug Number	SR Number	Description	Workaround
12454		If a single file is replicated using the Command Line Interface (CLI), the ACL for that file will be lost.	Use Synchronize option from the GUI. See the <i>DXi-Series User's Guide</i> for further information.
12523		Occasionally, the NTP server cannot be contacted, resulting in the following admin alert: WARNING: Unable to access NTP server/pool.	Check the NTP settings on the Configuration > System > Date & Time page and change if necessary. Before a valid NTP Server can be configured by hostname or selected from an NTP Server Pool on the Configuration > System > Date & Time page, a Primary DNS server must be configured on the Configuration > System > Network page. When updating the NTP settings through the Getting Started Wizard , configure the Primary DNS Server in the Network step prior to configuring the NTP server in the Date & Time step.
13621		NTP server error and Admin Alert are produced after changing from NTP 24-hr to 12-hr NTP format.	Verify time format has changed. If the time format has changed, ignore the alert.

Bug Number	SR Number	Description	Workaround
15848		Backups jobs running to a DXi6550 with the optical option via a Dell 8024f switch may not complete or will complete with very slow performance.	Change the Dell 8024f settings from RSTP to Classic STP . Refer to the Dell switch documentation for more information.
17553		Long backups on a NetBackup client running on Windows 2003 can fail due to insufficient system resources.	Edit the registry settings on the client as described in the following Microsoft knowledge base article: http://support.microsoft.com/kb/304101/en-us
18370 19091 27478		Errors are received after a DSET log is generated on the Utilities > DSET page. After retrieving a DSET log, the system status can also briefly show the system board as "failed".	You may ignore these error messages, and download the DSET log as usual.
20336		When FC port 9 is pulled or down, a correct RAS ticket is generated, but Admin Alerts incorrectly reports that the wrong HBA FC port numbers (FC0, FC1, FC2, FC3, FC4, and FC5) are down.	Although the FC port numbering is incorrect, the Admin Alert is a valid alert indicating that a customer-facing FC link is down. This alert will be fixed in a future release.
20707		If one of the processes in the DataPath cores, this can cause other processes in the DataPath to core as well. Process cores will results in RAS alerts. DataPath consists of the following processes: bpwd, bpwapid, qfsd, ost, ndmp, nas_control, nfslock, smb, nfs	If a core occurs, only the first core requires investigation, as it is the root cause. The subsequent cores are expected and can be disregarded.
23372		After a reboot, the DXi comes up in diagnostic mode, and attempting to retrieve a collect log does not proceed past the step Collecting -FC scst- .	Reboot the DXi again using the remote management console or the CLI.
24495		The online help content for the Utilities > Diagnostics > Healthchecks > General page does not include Contact Support in the list of possible healthcheck statuses.	If running a healthcheck results in the Contact Support status, contact Quantum Customer Support.
26066		When using Quantum Vision to view status and reporting data for a DXi, data is not collected from the DXi at the frequency specified in Vision.	Upgrade to Quantum Vision 4.1 or later.
26248		When a good drive is removed from a storage array, the resulting service ticket incorrectly states that the drive has failed.	Drive status is correctly report on the Status > Hardware > Details > Storage Arrays page.

Bug Number	SR Number	Description	Workaround
26610	1349564	Spectra Logic T120 and greater libraries cannot be discovered on the Configuration > PTT > Physical Device Discovery page.	Before attempting to discover the Spectra Logic, place the library into STK L700 emulation mode. Data partitions must be individually configured to use the Sun/StorageTek L700 emulation mode. Only data partitions configured to use the STK L700 emulation mode are recognized by the DXi.
27883		Unable to use Firefox browser to access the iDRAC console on a DXi8500.	In Firefox, navigate to Options > Advanced > Encryption and click View Certificates . In the list, delete all Dell certificates.
28540		Backups are slow or fail when attempting to write a large number of small files (for example, 8KB files) to a NAS share.	The DXi is optimized for backup use (a small number of large files) rather than for use as primary NAS storage (a large number of small files). Do not use the DXi as primary NAS storage; instead, use the DXi with a backup application to store backup images on NAS shares.
28699		When running a Retina Security scan, the following security event is reported: OpenSSH X11 Port Forwarding Session Hijack Vulnerability.	This is a false positive result and can be safely ignored. The version of OpenSSH included with DXi 2.1.x Software already includes the required security fixes.
28747		When running a Retina Security scan, the following security event is reported: IBM WebSphere Application Server JavaHashTable Denial of Service.	This is a false positive result and can be safely ignored. IBM WebSphere Application Server is not included with DXi Software.
28805		When running a Nessus Security scan, the following security event is reported: Signing is disabled on the remote SMB server.	SMB server signing is disabled by default to allow interoperability with a wide range of Windows clients. To enable SMB server signing, use the Configuration > NAS > Advanced Setting page in the remote management console.
29384		Plugging and unplugging a Fibre Channel cable on an Array module multiple times in rapid succession may cause the system to reboot.	After plugging or unplugging a Fibre Channel cable from an Array module, wait 10 minutes before plugging or unplugging it again.
29959		DXi Advanced Reporting cannot be accessed on a DXi with critically low or no free space.	Delete data and run space reclamation to free up space on the DXi.

Bug Number	SR Number	Description	Workaround
31338		After removing a good hard drive and then reinserting it, the system does not generate a service ticket.	Do <i>not</i> remove a hard drive that has not failed. If you accidentally remove a good drive, wait two minutes before reinserting the drive.
31887		<p>If Data-at-Rest Encryption is enabled when an Array module (RBOD) or Expansion module (EBOD) is not in an optimal state (for example, a rebuild is in progress), the GUI reports the following error: EnableHarddrivesecurity failed. In addition, the Data-at-Rest page shows Data-at-Rest Encryption as disabled.</p> <p>Attempting to enable Data-at-Rest again with the same passphrase or a new passphrase results in additional error messages stating enabling hard drive security failed or is not supported.</p> <p>Note: If you plan to use Data-at-Rest Encryption, Quantum recommends enabling it immediately after installation of the new system.</p>	<p>Wait for the RBOD or EBOD to become optimal again (check the Status > Hardware page). Then re-enable Data-at-Rest Encryption. You <i>must</i> enter the same passphrase that was used when initially attempting to enable Data-at-Rest Encryption.</p> <p>The GUI will report the following error: EnableHarddrivesecurity failed! because encryption had been enabled. User need to refresh the GUI and encryption status will change from disable to enable.</p> <p>This error message can be safely ignored. Refresh the Web browser, and the Data-at-Rest page will now correctly show Data-at-Rest Encryption as enabled.</p> <p>Note: If you use a different passphrase to re-enable encryption, the GUI will report the following error: EnableHarddrivesecurity: Hard drive security is not supported on this platform. Also, Data-at-Rest Encryption will <i>not</i> be enabled. You <i>must</i> use the same passphrase that was used the first time you tried to enable Data-at-Rest Encryption.</p>

Cosmetic Issues

Bug Number	SR Number	Description	Workaround
11800		Although all NAS shares are deleted, if there is at least 1 OST share, the target will still have value and display grayed out.	This issue can be ignored and does not impact functionality.
11803		On the Ethernet performance page, the "average" drop-down menu reflects "all" ports and not just the "active" ports.	When viewing the Ethernet performance "average," be aware that the calculation is affected by potentially inactive ports, including one of the service ports.
12092		Service Ticket: Recommended Actions: Contains information on barcode/ cartridge when a NAS share fails.	This issue can be ignored and does not impact functionality. This will be fixed in a future release.
20505		If you have used the Configuration Wizards to configure the system, after the DXi reboots, the green check marks on the Wizards menu that indicate a wizard was completed no longer display.	This is cosmetic only. All settings made using the Configuration Wizards are retained after a reboot.
21497		The first time an NFS share is modified after a CIFS share is modified, a message appears incorrectly stating that the CIFS service was started successful.	Click OK to dismiss the message.
29034		The DXi remote management console does not display the SAS port layout for the DXi8500 3TB Node.	To see the SAS port layout on the rear of the System Node, refer to the <i>Quantum DXi8500 User's Guide</i> (6-67205-03).

Documentation

The following documents are currently available for the DXi6800:

Document Number	Document Title
6-67758	<i>DXi6800 Site Planning Guide</i>
6-67756	<i>DXi6800 User Essentials</i>
6-67199	<i>DXi6000 User's Guide</i>
6-67757	<i>DXi6800 Installation and Configuration Guide</i>
6-67762	<i>DXi6800 Capacity Upgrade Guide</i>
6-67079	<i>DXi-Series NetBackup and Backup Exec OST Configuration Guide</i>
6-67081	<i>DXi-Series Command Line Interface (CLI) Guide</i>
6-67211	<i>DXi-Series Backup Application Specific Path to Tape (PTT) Configuration Guide</i>
6-67082	<i>DXi-Series SNMP Reference Guide</i>

Supported Backup Applications

The following backup applications are supported for use with DXi 2.2_68 Software:

Backup Application	Revision
Symantec NetBackup	7.x and later
Symantec Backup Exec	2010 R3 and later
EMC NetWorker	7.4 and later
CommVault Simpana	7.0 and later
CA ARCserve	12.5 and later
Oracle Secure Backup	10.2 and later
IBM Tivoli Storage Manager	5.5.4 and later
HP Data Protector	6.0 and later
Dell NetVault	8.x and later
ASG-Time Navigator	4.2 and later
Syncsort Backup Express	3.1.x and later
Note: Contact the backup application vendor for the latest software revision information.	

Additional Notes

For additional information about DXi 2.2.1 Software, refer to the following sections.

- [Data Before Reduction Statistics](#)
- [Configuring a Constant Replication Bandwidth Throttle](#)
- [Making Multiple Changes to a Recurring Scheduled Event](#)
- [Free Space](#)
- [System Metadata](#)
- [Date & Time Configuration](#)
- [Network Hostname Restrictions](#)
- [Internet Explorer Security Level](#)
- [Changing the Number of Allowed Sources](#)
- [Quantum Vision](#)
- [StorageCare Guardian](#)
- [OST NetBackup Version](#)
- [Running Healthchecks](#)

Data Before Reduction Statistics

The categories that make up the **Data Before Reduction** value on the **Status > Disk Usage** page changed after the *User's Guide* and online help were finalized. Refer to the information below regarding **Data Before Reduction**. In addition, the amount of data in all OST storage servers appears on the **Home** page, under **Data Reduction Statistics**.

Data Before Reduction

The **Data Before Reduction** value represents the original, native size of all data that has been processed by the data deduplication and compression engines.

Data before reduction is divided into the following categories:

- **Incoming Replication** - The amount of data stored on the DXi via replication from another DXi. This does *not* include incoming data from Directory/File or Cartridge Based Replication, or incoming data from Failback replication.
- **NFS Deduplicated Shares** - The amount of data stored in deduplicated shares configured in Network File System (NFS) format for Linux systems. This includes incoming data from Directory/File Based Replication, and incoming data from Failback replication.
- **CIFS Deduplicated Shares** - The amount of data stored in deduplicated shares configured in Common Internet File System (CIFS), also known as Server Message Block (SMB), format for Windows systems. This includes incoming data from Directory/File Based Replication, and incoming data from Failback replication.

- **Deduplicated Partitions** - The amount of data stored in deduplicated partitions. This includes incoming data from Cartridge Based Replication, and incoming data from Failback replication.
- **OST Storage Servers** - The amount of data stored in deduplicated OpenStorage (OST) storage servers. This includes incoming data for OST and DXi Accent.

Configuring a Constant Replication Bandwidth Throttle

The **Configuration > Scheduler** page can be used to create a recurring series of replication throttle events. However, if you want a replication throttle bandwidth to always be in effect at all times, you need to configure a constant replication throttle bandwidth. To configure a constant replication throttle bandwidth, do not use the **Scheduler** page to schedule the throttle event. Instead, use the following CLI command:

```
syscli --add throttle --service REP --bw <bandwidth><K|M>
```

For example, to enforce a constant replication throttle of 32KB/s at all times:

```
syscli --add throttle --service REP --bw 32K
```

Note: For more information about using CLI commands, see the *DXi-Series Command Line Interface (CLI) Guide (6-67081)*.

Making Multiple Changes to a Recurring Scheduled Event

This section describes the expected result when making multiple changes to a recurring scheduled event in DXi 2.1 Software and later. This information applies only when a DXi administrator has performed *all* of the following steps in the order listed:

- 1 Create a recurring event having two or more instances in the series.
- 2 Edit one or more instances within the series, creating exception instances, using one or both of the following methods:
 - a Deleting (one or more instances within the series).
 - b Changing the start time (of one or more instances within the series).
- 3 Finally, change the base start time of the entire recurring event series.

The change in step 3 will cause the system to fill in the holes in the series that were left by the instances that were deleted or moved in step 2. This is the expected behavior.

If the instances that were moved in step 2b are no longer needed after step 3, they should be manually deleted. Similarly, if the new instances filled in by step 3 are not needed, then they should be manually deleted.

Free Space

The free space available on the DXi is the sum of free space in the file system and the free space available for ingest data in the deduplication engine. The presentation layers (OST/NFS/CIFS) looking for available free space on the DXi can only present the free space in the file system. This may make it look like the DXi is low on space. The free space in the deduplication engine is available for ingest and will be used for ingest automatically by the system.

System Metadata

The **System Metadata** statistic appears in two locations in the DXi remote management console:

- On the **Home** page, under **Disk Usage > Show More**.
- On the **Status > Disk Usage** page, under **Used**.

The **System Metadata** statistic represents all internal usage of disk space on the DXi. This statistic is calculated using the following formula:

$$\text{System Metadata} = [\text{File System Used Space}] - [\text{Reclaimable Space}] - [\text{Blockpool Reduced Data Size}] - [\text{Non-Deduplicated Data Size}]$$

The following values are used in this formula:

- **File System Used Space** - All space used by all parts of the system. This includes temporary files (such as those used by replication, space reclamation, and healthchecks), as well as cached files that have not yet been truncated.
- **Reclaimable Space** - The disk space that can be used for new deduplicated data. The DXi will automatically compact reclaimable space to create more free space as needed.
- **Blockpool Reduced Data Size** - The amount of deduplicated data in the blockpool that has non-zero reference counts (that is, data that is not a candidate for space reclamation). During space reclamation, this value will decrease as reference counts are decremented.
- **Non-Deduplicated Data Size** - The size of data stored on shares that do not have data deduplication enabled. This value increases or decreases as data is added to or removed from these shares.

Because **System Metadata** is affected by many values and represents the internal operations of the DXi, you might not always be able to easily correlate changes in this statistic to your typical usage patterns.

Date & Time Configuration

The date and time settings are configured using either the **Getting Started Wizard** at installation or the **Configuration > System > Date & Time** page in the remote management console.

Although you may specify the date and time manually for your system, we highly recommend that you configure your system to use NTP (Network Time Protocol) to maintain accurate date and time settings.

If you have configured at least one DNS (Domain Name Server) IP address during network configuration, then you should select one of the Timeserver Pools. The Timeserver Pool most appropriate for your system will depend upon your geographical location. For example, if you are located in the United States we recommend you select us.pool.ntp.org.

If you have not configured your system to utilize at least one DNS IP address, then you cannot use a timeserver pool and must specify an NTP timeserver IP address, directly. The **Date & Time** page will provide a recommended default timeserver address of **208.66.174.71**; however, it is possible that the default timeserver may occasionally fail to respond to an NTP query. In this case you may receive an error message attempting to apply NTP settings using the default timeserver address. If you experience an issue with the default

timeserver, we recommend that you try an alternate timeserver address (such as 192.43.244.18) or select another timeserver address from the NTP support Web site at: <http://support.ntp.org>

Network Hostname Restrictions

The network hostname must not exceed 64 characters.

Internet Explorer Security Level

The remote management console has been designed to function with Internet Explorer's default security level. If you happen to experience problems logging into the remote management console, then you can view/set your browser's security level by clicking on Internet Explorer's **Tools** menu, selecting the **Internet Options** menu item, and clicking on the **Security** tab in the new window that opens.

Changing the Number of Allowed Sources

The default number of allowed DXi replication sources is 10. If you need to change these default settings, contact Quantum Customer Support.

Quantum Vision

You must update to the latest version of Quantum Vision (4.0.4 or later) to operate with DXi 2.2.x Software.

StorageCare Guardian

You must update to the latest version of StorageCare Guardian (2.0.7 or later) to operate with DXi 2.2.x Software.

OST NetBackup Version

You must use NetBackup version 7.x or higher to resolve the following known issue in older versions of NetBackup:

- Subsequent Optimized Duplication jobs may fail or become stuck when running jobs are canceled or stopped.

Running Healthchecks

Quantum recommends running the **Healthcheck** utility (**Utilities > Diagnostics > Healthchecks**) daily to ensure data integrity.

Contacting Quantum

More information about this product is available on the Service and Support website at www.quantum.com/support. The Service and Support Website contains a collection of information, including answers to frequently asked questions (FAQs).

For further assistance, or if training is desired, contact Quantum:

United States	1-800-284-5101 (toll free) +1-720-249-5700
EMEA	+800-7826-8888 (toll free) +49-6131-3241-1164
APAC	+800-7826-8887 (toll free) +603-7953-3010
For additional contact information:	www.quantum.com/support
To open a Service Request:	www.quantum.com/osr

For the most updated information on Quantum Global Services, please visit: www.quantum.com/support