Quantum.

DXi V5000, DXi4800 and DXi9000 Series Release Notes 4.5.0.1

Contents

Purpose of This Release

DXi 4.5.0.1 Software is a release supporting DXi V5000, DXi4800 and DXi9000/9100 disk backup systems.

What's New in DXi 4.5.0.1?

This software release contains the following new features:

Role-Based Access Control - DXi System Administrators can create user groups and assign users to those groups as Operators or Administrators, with access specified for NAS shares, OST LSUs, and (for physical systems) VTL Partitions. New commands are added as applicable in the new *User Access* section in the *DXi-Series Command Line Interface (CLI)* topic.

100 GB Ethernet Card - Previously available as an upgrade option only in DXi9100 systems, this card is now available as an option in DXi9000 SD and HD systems and DXi4800.

DXi Secure Snapshots - Secure Snapshots allows you to create point-in-time snapshots of shares, VTL partitions, or OST LSUs.

For more information, see the following reference material in your DXi V5000, DXi4800 and DXi9000 Series Documentation Center:

- *DXi Secure Snapshots* and *Manage Secure Snapshot*s in the *DXi-Series Command Line Interface (CLI)* topic.

- *DXi Secure Snapshots Best Practices Guide* on the *DXi Best Practices Guides* page.

> ℹ **Note: Quantum strongly recommends upgrading to the latest version of DXi software before installing capacity upgrades, regardless of the capacity increment.**

Product Compatibility List

The following table provides information about DXi hardware compatibility with DXi 4.5.0.1 Software.

Component	Description
DXi4800	• 1 Node • 1 to 2 RAID controller cards. • 0 to 4 Expansion modules (JBODs) • 1 x 1 GbE Ethernet ports • 2 x 10 GbE Ethernet ports • (Optional) Up to 8 x 25 GbE Ethernet ports (SFP28 optical or DAC Copper) • Additional optional network adapter providing combinations of up to 16 x 10 GbE Ethernet ports, 16 x 10 GBase-T Ethernet ports, or 8 x 16 Gb Fibre Channel ports (for VTL or PTT) • (Optional) Up to 8 x 100 GbE Ethernet ports (Optical or DAC Copper) • 8 TB - 315 TB usable capacity
DXi9000 SD	• 1 Node • 1 Array module (RBOD) • 0 to 9 Expansion modules (EBODs) • 1 x 1 GbE Ethernet ports • 2 x 10 GbE Ethernet ports • (Optional) Up to 8 x 25 GbE Ethernet ports (SFP28 optical or DAC Copper) • Additional optional network adapter providing combinations of up to 16 x 10 GbE Ethernet ports, 16 x 10 GBase-T Ethernet ports, or 16 x 16 Gb Fibre Channel ports (for VTL or PTT) • (Optional) Up to 8 x 100 GbE Ethernet ports (Optical or DAC Copper) • 51 TB - 1020 TB usable capacity

Component	Description
DXi9000 HD	• 1 Node • 1 Array module (RBOD) • 1 Expansion module (EBOD) • 1 x 1 GbE Ethernet ports • 2 x 10 GbE Ethernet ports • (Optional) Up to 8 x 25 GbE Ethernet ports (SFP28 optical or DAC Copper) • Additional optional network adapter providing combinations of up to 16 x 10 GbE Ethernet ports, 16 x 10 GBase-T Ethernet ports, or 16 x 16 Gb Fibre Channel ports (for VTL or PTT) • (Optional) Up to 8 x 100 GbE Ethernet ports (Optical or DAC Copper) • 204 TB - 1020 TB usable capacity
DXi9100	• 1 Node • 1-2 Array modules (RBODs) • 0-2 Expansion modules (EBODs) • 1 x 1 GbE Ethernet ports • 2 x 10 GbE Ethernet ports • (Optional) Up to 8 x 25 GbE Ethernet ports (SFP28 optical or DAC Copper) • Additional optional network adapter providing combinations of up to 16 x 10 GbE Ethernet ports, 16 x 10 GBase-T Ethernet ports • 16 x 16 Gb Fibre Channel ports (for VTL or PTT) • (Optional) Up to 8 x 100 GbE Ethernet ports (Optical or DAC Copper) • 204 TB - 2 PB usable capacity

Supported Web Browsers

The DXi GUI is compatible with Chromium-based web browsers. Quantum-tested Chromium-based browsers include Brave, Google Chrome, Microsoft Edge, Opera and Vivaldi. Mozilla Firefox is also compatible with the DXi GUI.

Additional Information

- For correct operation of the remote management console enable JavaScript in your Web browser.

- If you experience Web browser issues, update to the latest version of your web browser.

Plug-In Support

DXi 4.5.0.1 Software supports the following Plug-Ins:

- Accent File System Plug-In Support below

- OST Plug-In Support on the next page

- RMAN Plug-In Support on page 7

Accent File System Plug-In Support

The Accent File System (Accent FS) performs deduplication to minimize bandwidth and sends only unique data over the network. Since the Accent File System appears as a native file system on the *media server* backup host, any program that can write to a file system can use the Accent File System.

The Accent File System uses FUSE (File System in User Space) to export file system requests to a custom daemon. The daemon converts file system requests as appropriate, and transports new user data to the DXi using the distributed deduplication features of the Blockpool API with the DXi's Blockpool (Accent).

The Accent File System is intended to be used by backup applications not supported directly by Quantum application-specific plugins - such as the OST plugin (which has its own share type).

For more information, including supported OS and software versions, see *Install > Accent Plug-in installation* in your DXi V5000, DXi4800 and DXi9000 Series Documentation Center.

The latest AccentFS Plug-in version is available for download from the *Service and Support > Client Plugins* page, at:
http://www.quantum.com/serviceandsupport/softwareanddocumentationdownloads/ostclientplugin/index.aspx#accentfs.

Required Components

The following components are required for Accent FS operation with the DXi-Series:

Server Requirements:

- DXi software version 4.0.1 or greater.
- One or more application-specific shares.

Client Server Requirements:

- FUSE-libs RPM must be installed.
- Supported platforms:
  - Red Hat Enterprise Linux (RHEL) OS 7
  - CentOS 7(Linux)

OST Plug-In Support

The Quantum OST plug-ins are based on Veritas OpenStorage API specification Version 11.1.

The latest OST Plug-in version is available for download from the *Service and Support > Client Plugins* page, at:
https://www.quantum.com/serviceandsupport/softwareanddocumentationdownloads/ostclientplugin/index.aspx#ost.

For more information on OST Plug-in installation, including supported OS and software versions, see *Install > OST Plug-in Installation* in your DXi V5000, DXi4800 and DXi9000 Series Documentation Center.

Required Components

The following components are required for OST (OpenStorage) operation with the DXi V5000, DXi4800 and DXi9000 Series:

- Veritas NetBackup 7.6.x or later or Backup Exec 2014 or later.
- If using the Veritas NetBackup 52xx Appliance platform, version 2.6.0.2 or later.
- Quantum OST Plug-in (downloaded separately through the remote management console or from the Quantum Service and Support Web site).

> - Quantum OST storage server (included with the DXi software).

RMAN Plug-In Support

The Quantum RMAN plug-ins are based on Oracle Recovery Manager (RMAN) API specification Version 2.1.

The latest RMAN Plug-in version is available for download from the *Service and Support > Client Plugins* page, at:
https://www.quantum.com/serviceandsupport/softwareanddocumentationdownloads/ostclientplugin/index.aspx#rman.

For more information, including supported OS and software versions, see *Install > RMAN Plug-in installation* in your product's Documentation Center.

Required Components

The following components are required for RMAN operation with DXi V5000, DXi4800 and DXi9000 Series systems:

- Oracle 11, 12, 18 or 19

- Quantum RMAN Plug-in (downloaded separately through the remote management console or from the Quantum Service and Support Web site).

Replication Compatibility

The following DXi software releases can replicate data to the DXi appliance. DXi software releases not shown in the list are not recommended.

		DXi 3.0.x	DXi 3.1.x	DXi 3.2.x	DXi 3.4.x	DXi 4.x
Replication Target	**DXi 3.0.x**	Yes	Yes	Yes	Yes	Yes
	DXi 3.1.x	Yes	Yes	Yes	Yes	Yes
	DXi 3.2.x	Yes	Yes	Yes	Yes	Yes
	DXi 3.4.x	Yes	Yes	Yes	Yes	Yes
	DXi 4.x	Yes	Yes	Yes	Yes	Yes

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

DXi REST API Compatibility

DXi software version 4.3 is compatible with DXi REST API version 1.2.

The following table provides the applicable DXi REST API version for each DXi software version.

DXi REST API VERSION	DXi Software Version
1.1	4.0.3
1.2	4.1
1.2	4.1.1
1.2	4.2
1.2.1	4.3
1.2.2	4.5

Resolved Issues

The following issues were resolved in DXi 4.5.0.1 Software.

Bug Number	SR Number	Description
39135		Scroll bar was added the Security Notice dialog in the DXi GUI.
51120	535530	DXi GUI has resolved handling for expired LDAP passwords.
51733		DXi GUI has added Role-Based Access Control (RBAC), which allows creating groups with specific rights to view and modify shares, LSUs and for physical systems (not V5000) VTL partitions, then add users as either Operators or Administrators.

Bug Number	SR Number	Description
51739	570009 558169 567424 583540 624687 612437	BPW ddup.stats may drop after an unclean shutdown. Added msync() to the EOF update calls in BPW.
51798	569283	dart.quantum.com now displays graphs with correct timezone.
52179	583900	Issues with slower replication in some other cases with disabled cluster cache index was resolved.
52282	590457	BPW deadman expiration date hook failed to collect bpwd-specific GDB info.
52742	600833 601874	LLDP is now disabled on Intel X710 network cards due to issues with Cisco Switches.
52794	N/A	If a local server is setup as NTP server, the IP of the server will be removed during a software upgrade.
53052	597806	(New installations only.) BLOB Budget of Quanta 2 was too aggressive for 4.x systems, affected the balance of BLOB budgeting to negatively impact performance.
53301	625106	Failback replication - failback now works when source had only two labels (one dot only).
53826	644749 645394 645840	Fixed cases where NFS files and shares report permission denied or show unavailable attributes, after DXi reboots, and some other cases.
53843	644749	Fixed a case where NFS reported IO errors after interrupted operations.

Known Issues

DXi 4.5.0.1 Software has the following known issues:

- Replication Known Issues

- CLI Known Issues

- GUI Known Issues

- NAS Known Issues

- RMAN Known Issues

- VDMS Known Issues

- DXi Advanced Reporting Known Issues

Replication Known Issues

Bug Number	SR Number	Description	Workaround
36811		Some chargeback reporting statistics are not maintained for failback operations.	The Input Bytes for the failback operation can be viewed on the source for the failback operation. On the **Replication > Send** page, hold the cursor over the job status and note the value displayed for **Original Data Size**. **ⓘ Note:** After the failback operation is complete, chargeback reporting on the target for the failback operation will accurately report the User Data Size of the data replicated.
37000	A0599191	If replication is disabled and the re-enabled for a share or partition on the **Replication > Send** page, previously configured Directory/File or Cartridge Based Replication settings are lost.	This is expected behavior. When replication is disabled, all replication settings for the share or partition are cleared. To re-configure the share or partition for Directory/File or Cartridge Based replication, select it and click **Configure**. **ⓘ Note:** You can disable or enable replication for all shares or partitions on the **Replication > Actions** page. This method preserves replication settings for all shares or partitions.

CLI Known Issues

Bug Number	SR Number	Description	Workaround
35104		When using the **--edit emailrecipient** CLI command, the same e-mail address can be assigned to multiple recipients.	Use the **Configuration > Notifications > Email > Recipients** page in the remote management console to edit e-mail recipients.

GUI Known Issues

Bug Number	SR Number	Description	Workaround
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 in a different time zone than the workstation used to access the GUI, make sure to account for the time zone differences when scheduling events.
35426		On the **Configuration > OST > Storage Servers** page, if there are multiple pages of storage servers, the **Delete** button is unavailable (gray) if all storage servers on a page are selected even if all the storage servers meet the deletion criteria (no backup images or active connections).	This occurs if a storage server on another page does not meet the deletion criteria. De-select at least one storage server on the displayed page, and the **Delete** button will be available.
36926		When adding a scheduled event on the **Scheduler** page, the message `Saving, please wait` displays, the but the save action does not complete, and the schedule is not set.	Refresh the browser window, and add the scheduled event again.
39824		On the **Status > Hardware > Details > Storage Arrays** page, an **Attention** link displays next to **Controllers** and **Volumes**, but clicking the link displays an empty list of non-normal controllers or volumes.	Even though the **Attention** link displays, drives that are rebuilding are considered normal by the system. Click the **Controllers** or **Volumes** link to see a list of all drives.

Bug Number	SR Number	Description	Workaround
42779		The **PTT** page allows any number concurrent PTT backup jobs to be configured. When more concurrent backup jobs are started than the PTT license allows (3), the additional jobs fail.	Do not configure more than 3 concurrent PTT backup jobs.

NAS Known Issues

Bug Number	SR Number	Description	Workaround
27908	1387940 1408612 1465392 1493203	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.
53875		Deleting and recreating a share with the same name will cause the share to be inaccessible.	Use a different name for the share, or reboot the DXi.

RMAN Known Issues

Bug Number	SR Number	Description	Workaround
45854		Incorrect pop-up failure message appears when attempting to configure an RMAN share replication to a target that does not support RMAN shares. Depending on the target configuration, the following error messages appear: "Source and Target Share Type's are not matching. Source share type is cifs and Target share type is nfs" "Source and Target Share Type's are not matching. Source share type is cifs and Target share type is cifs"	If this error message appears, you are attempting to replicate to a target that does not support RMAN shares. Replicate to a target that supports RMAN shares.

VDMS Known Issues

Bug Number	SR Number	Description	Workaround
47806		VDMS cannot be enabled if a "veeam" account is defined on a connected or disconnected windows workgroup.	Delete the "Veeam" account from the windows workgroup.

DXi Advanced Reporting Known Issues

Bug Number	SR Number	Description	Workaround
39487		On the **Replication Ingest** report, data for small replication jobs is not graphed accurately, especially when longer time ranges are selected.	See the exported CSV file **(Reports > Replication Ingest > Export Replication Chargeback**) for the correct data.

Documentation

For the latest DXi V5000, DXi4800 and DXi9000 Series documentation using 4.5.0.1 software, see the following DXi Documentation Centers:

- **DXi V5000 Documentation Center:** www.quantum.com/dxiv5000docs
- **DXi4800 Documentation Center:** www.quantum.com/DXi4800Docs
- **DXi9000 Series Documentation Center:** www.quantum.com/DXi9000Docs

Supported Backup Applications

For the current list of backup applications supported for use with DXi 4.5.0.1 Software:

1. Click on:

   https://www.quantum.com/swcompguide.aspx

   The **Support > Software Compatibility With Tape Libraries** page appears.

2. In the **Compatibility Guide** list, select **Software / Disk-Based Backup Systems.**

3. (Optional) Select your system and software from the **Storage Device** and **Application Software** lists.

> **(i) Note:** If the storage device and application software are not selected, a full list of all available devices and software will appear and requires a minute or two to populate. Select your system and software for a faster-appearing, shorter list.

4. Click **Submit.**

> **(i) Note:** Contact the backup application vendor for the latest software revision information.

DXi Additional Notes

For additional information about DXi 4.5.0.1 Software, refer to the following sections.

- [Email Reports](#)
- [Configuring a Constant Replication Bandwidth Throttle](#)
- [System Metadata](#)
- [Date & Time Configuration](#)
- [Network Hostname Restrictions](#)
- [Internet Explorer Security Level](#)
- [Changing the Number of Allowed Sources](#)
- [Quantum Vision](#)
- [Cloud Based Analytics (CBA)](#)
- [Running Healthchecks](#)
- [DXi Advanced Reporting - Decrease in Before Reduction Data](#)

Email Reports

Quantum recommends enabling **Email Reports** after upgrading to DXi 4.5.0.1 Software (if not already enabled). When enabled, **Email Reports** periodically sends system configuration and status information to Quantum, including any software upgrades you have installed using the new **Software Upgrade Utility**. Quantum Support can use this information to provide a better support experience in the future.

To configure Email Reports:

1. Make sure a valid outgoing e-mail server is specified on the **Configuration > Notifications > Email > Server** page.

2. (Optional) Specify any additional recipients to receive the reports on the **Configuration > Notifications > Email > Email Reports > Recipients** page.

3. Make sure a weekly **Email Reports** schedule is configured on the **Configuration > Scheduler** page. Configure two weekly recurring events: one for **Status** reports and one for **Configuration** reports.

Configuring a Constant Replication Bandwidth Throttle

ⓘ **Note:** This feature is unavailable in DXi V5000 systems.

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:** This can also be done in the GUI. On the **Replication > Send** page, expand the **Target DXis** table and click the button to the right of **Throttling.** Its label is either *None* or the current throttle value.

ⓘ **Note:** For more information about using CLI commands, see *Operate > DXi-Series Command Line Interface (CLI)* in your product's Documentation Center.

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:

> **System Metadata = [File System Used Space] - [Reclaimable Space] - [Blockpool Reduced Data Size] - [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 the blockpool is protecting). During space reclamation, this value will decrease as the reconciliation process removes the protection for data that is no longer needed by the users' objects.

- **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 system, 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 **129.6.15.30**; 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 **108.61.73.244**) 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 V5000, DXi4800 and DXi9000 Series 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 (4.4.1 or later) to operate with DXi 4.5.0.1 Software.

Cloud Based Analytics (CBA)

Note: For DXi V5000 systems this feature is available in the licensed subscription version with Quantum Service and Support.

Configuring and enabling CBA requires that you update your system to the latest version of Quantum Software (4.1 or later).

Note: Cloud-Based Analytics (CBA) is the latest technology for ensuring world class support for Quantum DXi products. CBA will eventually replace StorageCare Guardian but customers familiar with StorageCare Guardian may wish to continue using it for your DXi V5000, DXi4800 and DXi9000 Series. Quantum does not recommend using CBA and StorageCare Guardian at the same time.

Running Healthchecks

Quantum recommends that you ensure the system is running the default **Healthcheck** utility (**Utilities > Diagnostics > Healthchecks**) daily to ensure data integrity.

DXi Advanced Reporting - Decrease in Before Reduction Data

Backup expiration by your backup application causes the Before Reduction data to decrease immediately in graphs like Data Volume Overview. In earlier versions of the software, backup expiration was not reflected in Before Reduction data until space reclamation was run. The effect of this change is an immediate drop in Before Reduction data any time you expire backups.

Contacting Quantum

More information about this product is available on the Service and Support website at http://www.quantum.com/serviceandsupport/get-help/index.aspx. The Service and Support Website contains a collection of information, including answers to frequently asked questions (FAQs). You can also access software, firmware, and drivers through this site.

For further assistance, or if training is desired, contact the Quantum Customer Support Center:

Region	Support Contact
North America	1-800-284-5101 (toll free)
	+1-720-249-5700
EMEA	+800-7826-8888 (toll free)
	+49 6131 324 185
Asia Pacific	+800-7826-8887 (toll free)
	+603-7953-3010

For worldwide support:

https://www.quantum.com/serviceandsupport/get-help/index.aspx#contact-support