StorNext 5.x Xcellis Workflow Director Release Notes

StorNext 5 Releases Supported	Release Notes Date
StorNext 5.4.1	May 2018
StorNext 5.4.0.4	August 2017
StorNext 5.4.0.2	December 2016
StorNext 5.4.0.1	November 2016
StorNext 5.3.2.1	July 2016
StorNext 5.3.1.1	May 2016
StorNext 5.3.0	November 2015

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About StorNext 5

StorNext 5 is a new generation of Quantum StorNext that performs faster, scales farther, and expands flexibility. StorNext 5 has been built from the ground up with a new architecture designed to meet the needs of today's evolving digital workflows.

The complete list of documentation for StorNext 5, including the StorNext 5 Release Notes, can be found here:

http://www.quantum.com/sn5docs

What StorNext Releases are compatible with my system?

See the StorNext Release Compatibility page of the Appliance InfoHub on quantum.com for further information.

Upgrade StorNext Software and System Firmware

Before upgrading your system, refer to Known Issues – StorNext 6.x. This section contains important information you need to know before upgrading.

See Upgrade the System (Upgrade Firmware) for the steps necessary to upgrade to the latest StorNext release and hardware firmware for your system.

Quantum Appliance Licenses

See Quantum Appliance Licenses on the Quantum Appliances InfoHub.

General Notes

Refer to the General Notes section of the Quantum Appliances InfoHub for important information you should know about your system.

Fixed Issues, Enhancements and Notes – StorNext 5.x

This section lists the fixed issues that affect Xcellis Workflow Director for different StorNext Releases.

StorNext 5 Releases:

Fixed Issues, Enhancements and Notes for StorNext 5.4.1

This release only changes the base StorNext software. Because there is nothing new or fixed specifically related to your system hardware, there is nothing else to report for this release.

See the StorNext 5.4.1 Release Notes for information about StorNext software enhancements and fixed issues for this release.

Fixed Issues, Enhancements and Notes for StorNext 5.4.0.4

This release only changes the base StorNext software. Because there is nothing new or fixed specifically related to your system hardware, there is nothing else to report for this release.

Note: In order to upgrade firmware to StorNext 5.4.0.4, your system must be running StorNext 5.4.0.x.

See the StorNext 5.4.0.4 Release Notes for information about StorNext software enhancements and fixed issues for this release.

Fixed Issues, Enhancements and Notes for StorNext 5.4.0.3

Note: StorNext 5.4.0.3 is obsolete and replaced by 5.4.0.4. However, the Fixed Issues, Enhancements and Notes for the StorNext 5.4.0.3 still apply.

See the StorNext 5.4.0.3 Release Notes for information about StorNext software enhancements and fixed issues for this release.

Fixed Issues, Enhancements and Notes StorNext 5.4.0.2

This release provides an iDRAC firmware upgrade to version 2.41.40.40. This update prevents motherboard failures that, in very rare cases, could occur during a StorNext software upgrade on systems with an iDRAC version earlier than 2.30.30.30. (To determine your system's current iDRAC version, the easiest way is to look at `/opt/DXi/hwdetect/FirmwareReport.txt` and search for the iDRAC string. Another way is to run the command `racadm getversion`)

The following table lists the fix for this StorNext release.

Table 1: Fixed Issues for StorNext 5.4.0.2

CR Number	SR Number(s)	Description
65688	n/a	Update iDRAC firmware to 2.41.40.40.

This release was an enhancement for your hardware only. Because this release did not change the base StorNext software, there are no StorNext software Release Notes for this release.

Fixed Issues, Enhancements and Notes for StorNext 5.4.0.1

Note: StorNext 5.4.0.1 is no longer supported for upgrades. Upgrade to 5.4.0.2 or 5.4.0.4 instead.

- Xcellis Workflow Director (WFD) Metadata-only QXS 424 Chassis now supports 6 drive minimum configurations.
- Xcellis WFD systems now support 4-port 16 Gb Fibre Channel, 2-port 40 GbE NIC HBA, and 2-port 56 Gb Infiniband HCA expansion cards.
- Xcellis WFD systems support the Dynamic Application Environment (DAE) by way of a DAE purchase which includes a new StorNext DAE feature license and sometimes additional server memory, which allows 3rd-party applications to be hosted within a virtual machine environment installed on the WFD system.
- **Capture State** enhancements to the StorNext GUI, to enhance the method and information captured in various log files for the system. See **Service > Capture State** in the *StorNext User's Guide*, and the online help on the **Capture State** page.

The following table lists the fixed issues/enhancements for this StorNext release.

Table 2: Enhancements for StorNext 5.4.0.1

CR Number	SR Number(s)	Description
63526	n/a	Add upgrade status messages from the upgrading node to be displayed in the limited mode GUI on the running node. See Monitoring upgrade progress - the "Firmware Upgrade Status" page.

See the StorNext 5.4.0.1 Release Notes for information about StorNext software enhancements and fixed issues for this release.

Fixed Issues, Enhancements and Notes for StorNext 5.3.2.1

Note: StorNext 5.3.2 is obsolete and replaced by 5.3.2.1.

Note: Upgrades to StorNext 5.3.2.1 require StorNext 5.3.1 or 5.3.1.1 to be installed prior to the upgrade.

Note: All Fixed Issues and enhancements that applied to StorNext 5.3.2 also apply to 5.3.2.1 for Xcellis Workflow Director.

The following table lists the fixed issues/enhancements for this StorNext release. See also Fixed Issues, Enhancements and Notes for StorNext 5.3.1 on the next page.

Table 3: Fixed Issues/Enhancements for StorNext 5.3.2/5.3.2.1

CR Number	SR Number(s)	Description
63928	3711106	The **`/etc/ld.so.conf.d/cvfs.conf`** file is now included on the system after fw upgrade to StorNext 5.3.2.1.
62454	3701100	On upgrades to StorNext 5.0 to 5.3.x from StorNext releases prior to 5.0 on HA systems (for Metadata Appliances), the directory **`/usr/adic/wsar_agent/tmp`** is created on the nodes during the upgrade process.

See the StorNext 5.3.2 Release Notes for information about StorNext software enhancements and fixed issues for this release.

Fixed Issues, Enhancements and Notes for StorNext 5.3.2

Note: StorNext 5.3.2 is obsolete and replaced by 5.3.2.1. However, the Fixed Issues, Enhancements and Notes for the StorNext 5.3.2 still apply.

See the StorNext 5.3.2 Release Notes for information about StorNext software enhancements and fixed issues for this release.

Fixed Issues, Enhancements and Notes for StorNext 5.3.1.1

Note: StorNext 5.3.1.1 supports Xcellis Workflow Director systems systems only. Even though StorNext 5.3.1 was not applied to Xcellis Workflow Director systems, all the fixed issues and enhancements delivered for 5.3.1 still apply to Xcellis Workflow Director systems.

The following table lists the fixed issues/enhancements for this StorNext release.

Table 4: Fixed Issues/Enhancements for StorNext 5.3.1.1

CR Number	SR Number(s)	Description
62874	3677894	The newest shipping models for QXS-412 or QXS-424 arrays are now correctly identified while using the StorNext Pro install Application.
62897	n/a	Provisioning of fully-populated (24-drive) QXS-424 dedicated metadata arrays now continues without error while using the StorNext Pro Install Application.

See the StorNext 5.x Release Notes for information about StorNext software updates.

Fixed Issues, Enhancements and Notes for StorNext 5.3.1

The following table lists the fixed issues/enhancements for this StorNext release.

Table 5: Fixed Issues/Enhancements for StorNext 5.3.1

CR Number	SR Number(s)	Description
62017	**n/a**	**Update `glibc` for systems to take a CentOS fix for CVE-2015-7547.**
62003	n/a	Firmware upgrade includes the iSCSI software initiator.
61671	n/a	NAS now allows unbonded 10 GbE interfaces on Xcellis Worklow Director systems as of StorNext 5.3.1 and NAS 1.2.3.
61527	n/a	Updated system BIOS to 1.5.4.
61388	3619338	Enhanced log collection scripts to include additional NAS logging
61253	n/a	Memory checking looks for a minimum of 64 GB using any size RDIMMs. Previously checked for 64 GB of 8GB RDIMMs.

CR Number	SR Number(s)	Description
62017	**n/a**	**Update `glibc` for systems to take a CentOS fix for CVE-2015-7547.**
61157	n/a	Updated NAS version to NAS 1.2.1.
61089	n/a	Enhanced the upgrade process to ensure custom `innodb_buffer_pool_size` memory settings for MySQL are preserved after firmware upgrades.
61088	n/a	The **Configuration > System > Network** page in the StorNext GUI now correctly displays all ports after firmware upgrades.
61082	n/a	New `quantum_connect` RPM included with this release.
61080	n/a	Updated Open Manage to version 8.2 on CentOS7.
61079	n/a	On system firmware upgrades, will update firmware for I350 Quad Ethernet NICs to version 16.5.20.
61075	n/a	Enhanced log collection scripts to include StorNext Connect logs.
61073	3565236	Fixed an issue where `hwmond` previously didn't catch a failed PSU if the return string contained the extra words "Failure detected".
61070	n/a	Fixed minor spelling errors in the **Service Menu**
61068	n/a	Fixed an issue which could have caused the firmware upgrade process to fail.
60814	3635792	Fixed an issue where, when hosted applications were run on a server node and active inside a SNFS file system, StorNext services restarts or stops (e.g. **`systemctl stop cvfs`**) no longer result in blocked processes, fail overs now occur correctly, and both no longer require a power cycle of the primary server node to rectify the situation.
60744/ 55220	n/a	NFS version 4 is now disabled on CentOS 7 systems, during NAS 1.2.1 installation.

CR Number	SR Number(s)	Description
62017	**n/a**	**Update `glibc` for systems to take a CentOS fix for CVE-2015-7547.**
57627	n/a	After the system was booted, if NICs were present in slots that previously contained NICs with different speeds (Example: 10 GbE vs. 1 GbE), the system would use the same Ethernet alias names defined for the network interfaces as previously-installed NICs. The ethernet alias names shown in the StorNext Metrics GUI page now reflect the change in network device type representing the alias.

See the StorNext 5.x Release Notes for information about StorNext software updates.

Known Issues

This section lists the known issues that affect Quantum Appliances.

CR Number	SR Number	Description	Workaround (if applicable)
68773	n/a	If a configured bridge device assigned to a DAE virtual machine (VM) is removed on the Networking page of the StorNext GUI, you will not be able to start the DAE VM.	If the virtual machine cannot be started because the bridge was removed, do the following: 1. Recreate the bridge in the StorNext GUI. **OR** a. Open an ssh session to the command line of the system and run `virsh edit <vmname>`. This opens the `<vmname>` file for editing using vi commands. b. Remove the bridge entries from the XML file using vi commands. 2. When finished making the changes, enter the following to save the changes and

CR Number	SR Number	Description	Workaround (if applicable)
			exit the editor: `:wq`
68017	n/a	Scenario: • NAS 1.3.0 or 1.4.0 is installed on Xcellis Workflow Director systems. • NAS failover for NFS clusters (NFS-HA) is enabled. • NAS services were not stopped on the NAS Master node before StorNext services (cvfs) were stopped (for instance, to initiate a system failover). • Your system is running StorNext 5.4.0.2 or earlier. **Note:** If you have already stopped cvfs and did not first stop NAS, follow the workaround in CR 68001 below. Possible effects: • The system can keep NAS services active that will prevent the StorNext file system from unmounting NAS shares. • This could cause the primary server to perform a hard system stop, initiating a failover. • NAS non-Master node unmounts might hang. • Client access to NAS shares are prevented.	To prevent these conditions, before stopping StorNext services (cvfs) using **`systemctl cvfs stop`** or **`stop cvfs`**, first stop NAS. See Stop NFS-HA on Xcellis Workflow Director Before Using the cvfs Command.
67997	n/a	For Xcellis Workflow Director systems configured with NAS failover for NFS clusters (NFS-HA), after StorNext services are restarted, NAS shares are not accessible from NAS clients.	To fix this condition: 1. Restart the NAS controller services on the NAS Master. (See Restart the controller.) 2. Access the NAS shares using the nas_vip address from NAS clients.

CR Number	SR Number	Description	Workaround (if applicable)
67880	n/a	The NAS network interface changed after upgrading from NAS 1.1.0 to 1.4.0.	To reinstate the SMB interface, do the following: 1. Open the Samba Tips and FAQs page in the Appliance Controller Console Doc Center. 2. Expand the “Why Isn't My Samba Server Connecting to My StorNext NAS Network?” section. 3. Expand the “Reset the Samba server's connection” section, and follow the procedure described there.

CR Number	SR Number	Description	Workaround (if applicable)
			Note: Your client system directory maps should function again after resetting the Samba server connection.
66280	SR0314771	A platform upgrade from version 5.2.1 to 5.4.0.2 failed due to NAS upgrade failure.	Manually upgrade the nodes to NAS version 1.2.5 before attempting the platform upgrade to version 5.4.0.2.

CR Number	SR Number	Description	Workaround (if applicable)
61671	n/a	NAS did not allow unbonded 10 GbE interfaces on Xcellis Worklow Director systems prior to 5.3.1 and NAS 1.2.3. Prior to these releases, unbonded "pXpY" names are not recognized by the controller.	For Xcellis systems on StorNext releases prior to 5.3.1 and NAS 1.2.3, with 10 GbE interfaces, bond the 10 GbE interfaces. Once this is done, the interface will display a name of "bondX:Y" under the **Alias** column in the **Configuration** section of the page, which is recognized by the controller. See Change Bonding Options for 10 GbE Interfaces on page 21.
60814	3635792	This was fixed in Stornext 5 Release 5.3.1 (see Fixed Issues, Enhancements and Notes for StorNext 5.3.1 on page 7). When hosted applications are run on a server node and are active inside of an SNFS file system, StorNext service restarts may hang, requiring the server node to be rebooted. Also, stopping StorNext services (using **`systemctl stop cvfs`**) on a node currently acting as primary previously can result in blocked processes that prevent fail overs from occurring, and require a power cycle of the primary server node to rectify the situation.	Workaround: Any applications running locally on the server node acting as primary must be stopped prior to any other operations that may result in StorNext being stopped or restarted. This includes rebooting the server node, exiting HA Config Mode, or upgrading firmware.

CR Number	SR Number	Description	Workaround (if applicable)
60774/ 55220	n/a	**Note:** This issue was fixed by way of the NAS 1.2.1 release and StorNext 5.3.1. See 60744/55220 on page 8. (NAS-only issue) NFS version 4 is not supported and must be disabled.	There currently is no workaround for NFS v4 support prior to StorNext 5.3.1/NAS 1.2.1. See How to Disable NFS v4 on page 19. If you are running StorNext NAS and export NFS shares, you must disable NFSv4 (which is enabled by default on CentOS 7) .
60614	n/a	Your system, and all other Connect-managed Linux StorNext SAN clients must have the latest Connector installed so that statistics can be passed to StorNext Connect. If a system is managed by StorNext Connect and you upgrade the firmware on that system to StorNext 5 Release 5.3.0 firmware **PRIOR** to upgrading the StorNext Connect Connector, the Volume Storage widget on the StorNext Connect Dashboard will display no data for those systems.	For steps to take to update the Connect Connector(s) before upgrading system firmware, see Update the StorNext Connect Connector before doing a firmware upgrade. For steps to take if you have already upgraded firmware but did not first update the Connector(s), see Repair a StorNext Connect System After Firmware Upgrades.

CR Number	SR Number	Description	Workaround (if applicable)
55384	n/a	If **dmnfsthreads** is not set on mount, **nfsds** may be over-commited when there are many NFS processes waiting for offline files.	For managed file systems serving NFS, Quantum recommends using the "dmnfsthreads=16" mount option. This setting ensures that NFS remains responsive when Storage Manager is retrieving data from an archive tier.
55318	n/a	Strange UID on ACL when file created on non ads client.	All systems accessing the StorNext SAN or LAN clients, or the NAS clients, must be part of the same identity domain. Accessing StorNext from different identity domains can result in inconsistent file ownership attributes, as well as potential access problems.
55220	n/a	(See CR 60774/55220 on the previous page)	
54451	n/a	StorNext supports case-sensitive file names. For configurations with different client types, such as Windows and Mac sharing the same files, the default case type may be different.	There currently is no workaround for this issue. SMB is operating as expected.

CR Number	SR Number	Description	Workaround (if applicable)
55993/ 54445	n/a	(NAS-only issue) Setting Unix permissions on a Mac Samba client sometimes silently fails. This problem occurs when: 1. The Samba mount is done using **`sysadm`** credentials. 2. Active Directory is not used. 3. Local Mac credential authentication is used when creating files.	To make sure the Mac Samba client does not fail, make sure User ID used for the Mac Samba client matches the User ID used for the NAS gateway server. File creation and permission setting changes done while using Active Directory and an active Mac Samba client will now work as expected.
45702	n/a	If you replace an HDD drive with an SSD or vice versa, the StorNext GUI will show a status of "Missing" and an equivalent RAS ticket instead of displaying an "Incompatible" status.	Replacement drives must be the identical type of drive removed. HDDs can only use HDD spares, and SSDs can only use SSD spares. Replacement drives must also be the same size or larger than the failed drive. The array controller will generate errors if an incompatible drive is used as a replacement.
38128	1395540	Using the GUI while a large Media import is kicked off via the command line can cause the StorNext GUI to timeout or crash.	Wait until a bulk load from tape is finished prior to opening the StorNext GUI.

Known Issues Workarounds

Stop and Restart NAS Failover for NFS Clusters (NFS-HA) on Xcellis Workflow Director Systems Before Using the cvfs Command

If your configuration meets the criteria for this issue, do the following.

Note: This applies to dual-server (HA) systems only.

Stop NAS Failover for NFS Clusters (NFS-HA)

1. Log in to the NAS console command line as the **sysadmin** user. (See Access the Console Command Line.)
2. Determine if the NAS failover for NFS clusters function (NFS-HA) is running. Enter:

   ```
   nascluster show
   ```

   Look for the following line in the output:

   ```
   NFS-HA: Enabled
   ```

   If this is shown, continue to the next step.

   However, you are safe stop `cvfs` if this output is shown:

   ```
   NFS-HA: Disabled
   ```

3. Stop the NAS failover for NFS clusters function (NFS-HA). Enter:

   ```
   nascluster set nfs-ha no
   ```

4. Enter **yes** when prompted.

Stop StorNext Services (cvfs)

1. Enter the following to log off as the **sysadmin** user:
   exit
2. Stop `cvfs`. Enter:
   systemctl cvfs stop

3. Verify that the other server node is currently operating as primary StorNext. Enter:
   `snhamgr -m status`
   Repeat this command until you see the following output:
   `:default:stopped:default:primary:`

Start StorNext Services (cvfs)

1. Start StorNext services – `cvfs`. Enter:
   `systemctl cvfs start`

Start NAS Failover for NFS Clusters (NFS-HA)

After you have restarted cvfs, do the following to properly restart NAS Failover for NFS Clusters (NFS-HA):

1. Log in to the NAS console command line as the **sysadmin** user. (See Access the Console Command Line.)
2. Restart the NAS failover for NFS clusters function (NFS-HA). Enter:

   ```
   nascluster set nfs-ha yes
   ```

3. Enter **yes** when prompted.
4. Verify that the NAS fail-over for NFS clusters function (NFS-HA) is running. Enter:

   ```
   nascluster show
   ```

   You should see the following line in the output:

   ```
   NFS-HA: Enabled
   ```

5. If you want to configure the node to be the NAS Master again, you will have to manually which node is the NAS Master. (See Transfer NAS Services to Another Node.)

How to Disable NFS v4

To disable NFSv4 on Xcellis Workflow Director systems, especially those systems running NAS 1.2.0 or earlier, perform the following on node 2:

Edit the nfs File

1. Open an SSH connection to the appropriate server and use the IP address assigned to the node on the Management or LAN Client network, or use the Service Port IP address, if connected to the Service Port.

   Service Port IP addresses (if used):

> **Note:** Node 2 is the server node sold with single-node (non-HA) Workflow Director and Artico systems.

2. Log in to the server node with the following credentials:
   - User name: **`stornext`**
   - Password: **`<stornext user accountpassword>`**

   > **Note:** **`password`** is the default password for the stornext user account. If the password has been changed, use the current password.

3. Enter **`sudo rootsh`** to gain root user access.
4. Enter the password for the **`stornext`** user account again.
5. Edit **/etc/sysconfig/nfs** file. (See Example: Use vi to Edit the nfs File below)
6. Change the value for RPCNFSDARGS to "-N 4". When finished, the line must be: RPCNFSDARGS="-N 4"
7. Change the value for RPCMOUNTDOPTS to "-N 4". When finished the line must be: RPCMOUNTDOPTS="-N 4"
8. Save the file.

Restart NFS

1. Enter the following to restart the NFS configuration:

```
systemctl restart nfs-config
```

2. Enter the following to restart the NFS server:

```
systemctl restart nfs-server
```

After You Restart NFS on Node 2

Repeat both the Edit the nfs File on the previous page and Restart NFS above sections on node 1.

If you need to create new NFS shares to export for user access, you may do this now. See the About the Manage NAS App section of the **StorNext Connect Documentation Center** for information about NAS configuration using StorNext Connect.

Example: Use vi to Edit the nfs File

1. Enter the following:

```
vi /etc/sysconfig/nfs
```

2. Move the cursor to the closing quotation mark in RPCNFSDARGS.
3. Enter the following:

```
i -N 4
```

4. Write the file and quit vi as follows:

```
:wq
```

5. For this example, you would have to Restart NFS on the previous page and then repeat both the Edit the nfs File on page 19 and the Restart NFS on the previous page sections again on node 1.
6. Close the SSH session for the server(s).

Change Bonding Options for 10 GbE Interfaces

Note: Perform this procedure only for releases prior to 5.3.1.

The following apply for 10 GbE interfaces used for NAS:

- Make sure both interfaces use a specific bond number and are **Not** configured with the "Not Bonded" option.
- Make sure the bond you chose is not currently in use for other ports, and that you only bond each 10 GbE interface in its own bond (a bond of 1) or bond both 10 GbE interfaces used for NAS together.

Note: If you changed a 10 GbE port from a "Not Bonded" to a specific bond number, you will have to re-enter **Primary IP**, **Secondary IP**, **Netmask** and **Gateway IP addresses** for the bond.

- Bonds can only be created on similar ports (that is, 1 GbE ports can only be bonded with other 1 GbE ports, and 10 GbE ports can only be bonded with other 10 GbE ports).

Note: If you make any **Network** and/or **Date & Time** changes and click **Apply**, both nodes will reboot, which could take 30 minutes or longer.

Re-enable DDM on the Secondary Node After HA Failover

Once the MDC node acting as secondary finishes rebooting and becomes functional again, use fsddmconfig (or the GUI) from the server node currently acting as primary to re-enable DDM for the standby server node, as follows:

1. Open an SSH connection to the appropriate server and use the IP address assigned to the node on the Management or LAN Client network, or use the Service Port IP address, if connected to the Service Port.

   Service Port IP addresses (if used):

   Note: Node 2 is the server node sold with single-node (non-HA) Workflow Director and Artico systems.

2. Log in to the server node with the following credentials:
   - User name: **`stornext`**
   - Password: **`<stornext user accountpassword>`**

   Note: **`password`** is the default password for the stornext user account. If the password has been changed, use the current password.

3. Enter **`sudo rootsh`** to gain root user access.
4. Enter the password for the **`stornext`** user account again.
5. On the command line of the system enter the following:

```
# fsddmconfig -u -s e
standby_system_hostname
```

   If a system running DDMs periodically displays an **Admin Alert** when it fails over, cycles a client node, or upgrades while the server node operating as secondary is rebooting but not completely down, change the timeout value to allow more time to communicate with the node. Update the TSM configuration parameter **`DDM_CLIENT_RETRY_TIMEOUT`** from the default 30 seconds to a larger value depending on how long the node is taking to reboot. In the event the server node acting as secondary will be down for an extended period of time, the node should be taken offline. Additionally, if this parameter is set too high, and the standby server does not come back, the command that is currently running (e.g., store or retrieve) will not return until after the specified timeout.

   For more information about the **DDM_CLIENT_RETRY_TIMEOUT** parameter that can be placed into the **`fs_sysparm_override`** configuration file, refer to the **`/usr/adic/TSM/config/fs_sysparm.README`** file.

   Caution: Incorrect modification of the **`fs_sysparm_override`** configuration file can cause a serious, adverse effect on StorNext functionality. Before modifying this file, Quantum recommends you to contact Technical Support.

Contacting Quantum

More information about StorNext is available on the Quantum Service and Support website at http://www.quantum.com/ServiceandSupport. The Quantum Service and Support website contains a collection of information, including answers to frequently asked questions (FAQs).

Quantum Appliance Upgrades

To request a StorNext software upgrade for Quantum appliances, open a support ticket at:

http://www.quantum.com/customercenter/

For further assistance, or if training is desired, contact the Quantum Technical Assistance Center.

Contacts

For information about contacting Quantum, including Quantum office locations, go to:

http://www.quantum.com/aboutus/contactus/index.aspx

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

- **eSupport** - Submit online service requests, update contact information, add attachments, and receive status updates via email. Online Service accounts are free from Quantum. That account can also be used to access Quantum's Knowledge Base, a comprehensive repository of product support information. Get

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http://www.quantum.com/customercenter/

For further assistance, or for training opportunities, 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: http://www.quantum.com/serviceandsupport/get-help/index.aspx#contact-support	

Worldwide End-User Product Warranty

For more information on the Quantum Worldwide End-User Standard Limited Product Warranty:

http://www.quantum.com/serviceandsupport/warrantyinformation/index.aspx