# Quantum.

## Hardware Guide

## StorNext M330 Metadata Appliance

# Contents

**Chapter 3**     **Basic System Operations**     **31**

**Chapter 4**     **Contacting Quantum**     **53**

Chapter 1
# Introduction

# About the StorNext M330 Hardware

**About the StorNext M330 Metadata Appliance**

The StorNext M330 Metadata Appliance offers the powerful file-sharing capabilities of StorNext in an optimized appliance package. The StorNext M330 comes with a pair of metadata controller (MDCs) nodes in a High Availability (HA) configuration and a high-performance metadata array..

.MDCs coordinate SAN file access across clients. Additionally, the standby node can be used as a distributed data mover (DDM) host using the included license.

During installation, the StorNext M330 is configured for use in StorNext environments operating as a StorNext Metadata Controller (MDC) High Availability (HA) pair with access to both disk and tape libraries.

**About this document**

This document describes how to maintain the StorNext M330 after initial installation and configuration .

**Hardware Specification**

Each StorNext M330 MDC node contains the following:

- Two redundant, hot-swappable system hard drives in a RAID 1 configuration
- Redundant cooling fans and power

**Network Connectivity**

Here are the quantity and type of network ports available on the different system models:

- The StorNext M330 features one 2-port 8 Gb FC card for SAN network connectivity.
- The StorNext M330 features three configurable 1 GbE Ethernet ports per node.

 MDCs coordinate SAN file access across SAN clients. Additionally, the standby node can be used as a distributed data mover (DDM) host.

**Base System and Expansion  Description**

The StorNext M330 comes configured as a Base System with two Metadata Controller (MDC) nodes which share a common file system located on a single metadata array for storage.

**StorNext M330 Documents**

A complete list of documentation for the StorNext M330 Metadata Appliance is located on the following web page:

http://www.quantum.com/snmdcdocs

# Purpose of This Guide

This guide describes how to identify and operate the key features of the hardware components of the StorNext M330.

## How This Guide is Organized

This guide contains the following chapters:

- Chapter 1, Introduction provides an overview of this StorNext M330 Hardware Guide, and also includes document conventions, product safety statements, a list of related documents, and supported Internet browsers.
- Chapter 2, Hardware Overview provides an overview of the StorNext M330 system.
- Chapter 3, Basic System Operations provides basic operating instructions for the StorNext M330 system.
- Chapter 4, Contacting Quantum- provides information on contacting Quantum support.

## Notes, Cautions, and Warnings

The following describes important information about Notes, Cautions, and Warnings used throughout this guide.

### Note

Note: Emphasizes important information related to the main topic.

Consequences if not followed:

There are no hazardous or damaging consequences.

### Caution

Caution: Indicates potential hazards to equipment or data.

Consequences if not followed:

Failure to take or avoid this action could result in loss of data or harm to equipment.

### Warning

---

**WARNING:**  Indicates potential hazards to personal safety.

---

Consequences if not followed:

Failure to take or avoid this action could result in physical harm to the user or hardware.

## Document Conventions

This guide uses the following document conventions to help you recognize different types of information.

When a step includes substantial supporting information, the following document conventions are used to differentiate the supporting information from the procedural content:

### Hardware Conventions

---

**Conventions**

---

**Right side of the system** — Refers to the right side as you face the component being described.

---

**Left side of the system** — Refers to the left side as you face the component being described.

---

## Software Conventions

| Conventions | Examples |
| --- | --- |
| For all UNIX-based commands, the **#** prompt is implied, although it is not shown. | **TSM_control stop**<br>is the same as<br># TSM_control stop |
| For all UNIX-based commands, words in *italic* are variables and should be replaced with user-defined values. | **cvaffinity** *filename*<br>where *filename* is a variable and should be replaced with a user-defined value. |
| User input is shown in bold font. | **./install.stornext** |
| Computer output and command line examples are shown in monospace font. | `./install.stornext` |
| User input variables are enclosed in angle brackets. | **http://<ip_address>/cgi-bin/stats** |
| For UNIX and Linux commands, the command prompt is implied. | `TSM_control stop`<br>`is the same as`<br>`# TSM_control stop` |
| File and directory names, menu commands, button names, and window names are shown in bold font. | **/data/upload** |
| Menu names separated by arrows indicate a sequence of menus to be navigated. | **Utilities > Firmware** |

# Product Safety Statements

Quantum will not be held liable for damage arising from unauthorized use of the product. The user assumes all risk in this aspect.

This unit is engineered and manufactured to meet all safety and regulatory requirements. Be aware that improper use may result in bodily injury, damage to the equipment, or interference with other equipment.

**WARNING:** Before operating this product, read all instructions and warnings in this document and in the system, safety, and regulatory guide.

在使用本产品之前，请先阅读本文档及系统、安全和法规信息指南中所有的说明和警告信息。

警告　操作本產品前，請先閱讀本文件及系統、安全與法規資訊指南中的指示與警告說明。

ADVERSAL　Læs alle instruktioner og advarsler i dette dokument og i *Vejledning om system-sikkerheds- og lovgivningsoplysninger*, før produktet betjenes.

AVERTISSEMENT　Avant d'utiliser ce produit, lisez la totalité des instructions et avertissements de ce document et du *Guide d'informations sur le système, la sécurité et la réglementation*.

HINWEIS　Lesen Sie vor der Verwendung dieses Produkts alle Anweisungen und Warnhinweise in diesem Dokument und im System, Safety, and Regulatory Information Guide (Info-Handbuch: System, Sicherheit und Richtlinien).

| אזהרה | לפני ההפעלה של מוצר זה, קרא את כל ההוראות והאזהרות הכלולות במסמך זה וכן במדריך מידע בנושאי מערכת, בטיחות ותקינה |
|---|---|

| 警告 | この製品を使用する前に、本文書、および『システム、安全、規制に関する情報ガイド』に記載しているすべての警告と指示をお読みください。 |
|---|---|

| 경고 | 이 제품을 작동하기 전에 이 문서 및 시스템, 안전, 및 규제 정보 안내서에 수록된 모든 지침과 경고 표지를 숙지하십시오. |
|---|---|

| ПРЕДУПРЕЖДЕНИЕ | всеми инструкциями и предупреждениями, приведенными в данном документе и в *Справочном руководстве по устройству, технике безопасности и действующим нормативам*. |
|---|---|

| ADVERTENCIA | Antes de utilizar este producto, lea todas las instrucciones y advertencias en este documento y en la Guia informativa sobre sistema, seguridad y normas. |
|---|---|

| VARNING | Läs alla anvisningar och varningar i detta dokument och i *System, säkerhet och krav från myndigheter - Informationshandbok* innan denna produkt tas i bruk. |
|---|---|

n
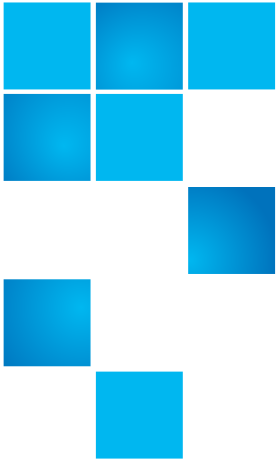
# Chapter 2
# Hardware Overview

This chapter contains the following sections:

- StorNext M330 Components
- StorNext M330 Connectivity on page 24
- Relocating the StorNext M330 System on page 30

# StorNext M330 Components

The StorNext M330 Metadata Appliance consists of the following components:

- StorNext M330 MDC Nodes
- StorNext M330 Metadata Array

Figure 1 shows the StorNext M330  System.

Figure 1   StorNext M330
System Components (Front)
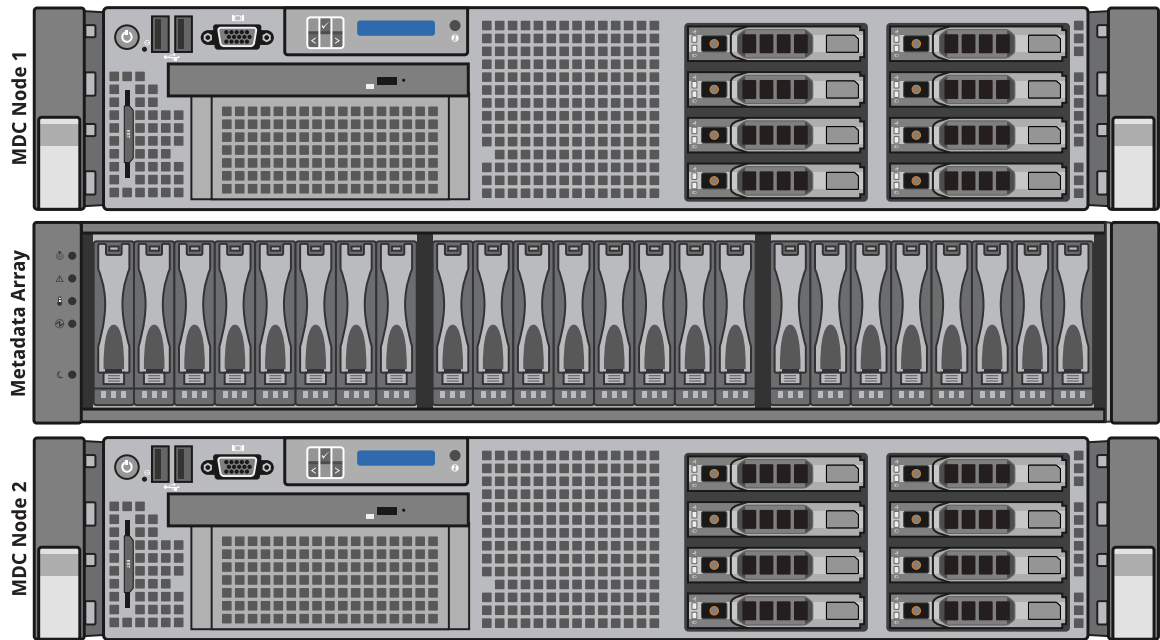


## StorNext M330 MDC Nodes

The two StorNext M330 MDC Nodes are servers that provide storage and control for the StorNext  platform software (host OS and StorNext software). The MDC Nodes contain redundant hard drives in a RAID 1 configuration, ensuring high availability of the system software.

### MDC Node -  Front View

Figure 2 shows, and Table 1 describes the indicators and buttons on the front of the StorNext M330 MDC Node.

Figure 2  StorNext M330 MDC
Node – Front View
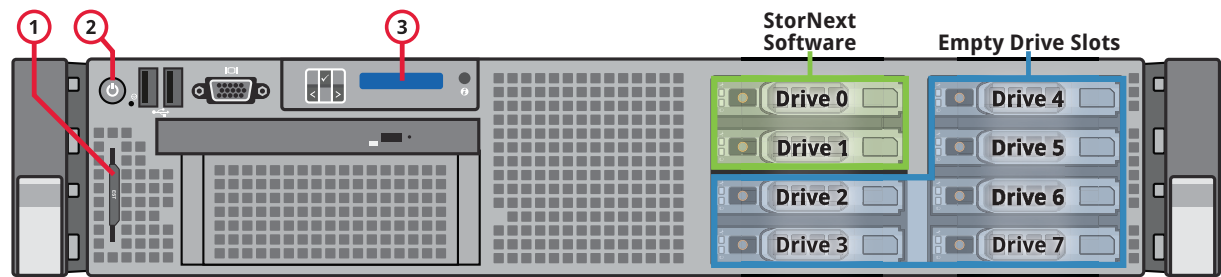


Table 1  StorNext M330 MDC
Node – Front View Indicators
and Buttons

| Item | Indicators and Buttons | Description |
|---|---|---|
| **1** | Service tag | The slide-out tab for the system information including information such as the Service Tag and Express Service Code. |
| **2** | Power-On Indicator | The power-on indicator lights when the system power is on. |
| | | The power button controls the DC power supply output to the system. When the system bezel is installed, the power button is not accessible. |
| **3** | LCD panel | The LCD panel shows the system ID, status information, and system error messages. |
| | | The LCD lights blue during normal system operation. When the system needs attention, the LCD lights amber, and the LCD panel displays an error code, followed by descriptive text. |
| | | Note: If the system is connected to AC power and an error has been detected, the LCD lights amber, regardless of whether the system has been powered on. |

## MDC Node - Hard Drive Indicator Patterns

The two hard drives located on the front of each MDC Node (in drive bays 0 and 1) are used to store the (operating system and StorNext software). Drive bays 2 through 7 are empty, and reserved for Quantum use. Unlabeled indicators, connectors, and buttons are reserved for Quantum Service.

For more information, see MDC Node - Hard Drive Indicator Patterns on page 12.

Figure 3   StorNext M330 MDC Node – Hard-Drive Indicator Patterns
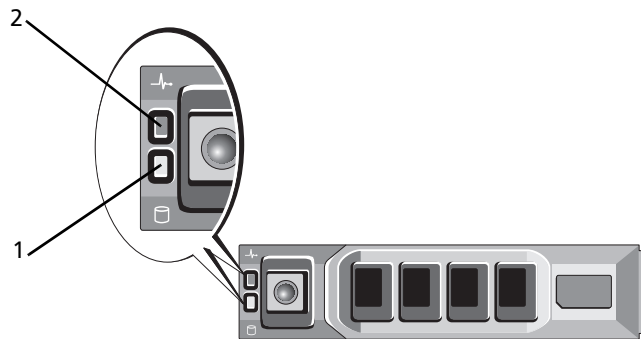


| | |
|---|---|
| **1** | Hard-drive activity indicator (green) |
| **2** | Hard-drive status indicator (green or amber) |

Table 2  StorNext M330 MDC
Node – Hard-Drive Activity and
Status Indicators

| Drive-Status Indicator Pattern (RAID Only) | Condition |
| --- | --- |
| Blinks green two times per second | Identify drive/preparing for removal. |
| Off | Drive ready for insertion or removal.<br><br>**Note:** When system power is applied, the drive status indicator remains off until all hard drives are initialized. Drives are not ready for insertion or removal during this time. |
| Blinks green, amber, and off | Predicted drive failure. |
| Blinks amber four times per second | Drive failed |
| Blinks green slowly | Drive rebuilding |
| Steady green | Drive online |

## MDC Node - Rear View

The back of each StorNext M330 MDC Node has a series of indicators, connectors, and buttons. Unlabeled indicators, connectors, and buttons are reserved for Quantum Service.

Figure 4 shows the rear indicators, connectors, and buttons of the system.

Figure 4  StorNext  MDC Node
– Rear View
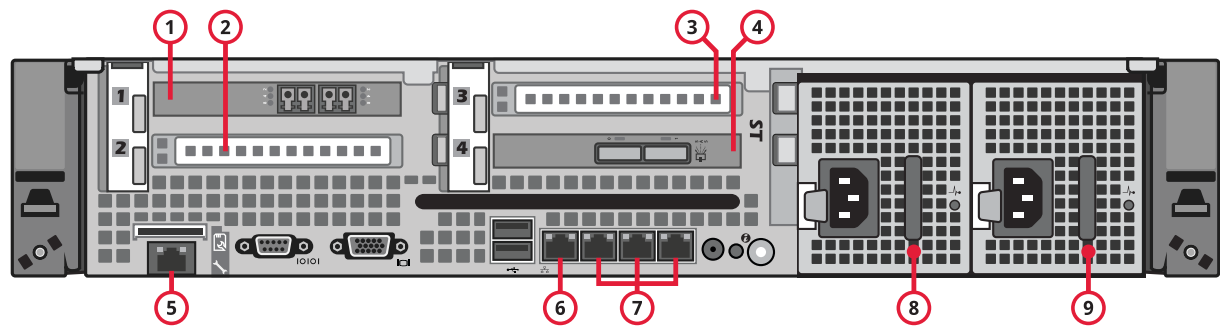


See Table 3 for information on the labeled components.

M330 MDC Node

| Item | Indicator, Connector and Button | Icon | Description |
|------|--------------------------------|------|-------------|
| 1 | PCIe slot 1 | | 2-port 8Gb FC HBA |
| 2 | PCIe slot 2 | | Reserved |
| 3 | PCIe slot 3 | | Reserved |
| 4 | PCIe slot 4 | | 2-port 6Gb SAS HBA |
| 5 | iDRACport | | Reserved for Quantum Service |
| 6 | Ethernet Service port | | Reserved for Quantum Service |
| 7 | Ethernet Port 2 connectors (3 configurable ports) | | (Customer-Facing) DLC or management |
| 8 | Power supply 1 (PS1) | | 870-W or 570-W Power Supply |
| 9 | Power supply 2 (PS2) | | 870-W or 570-W Power Supply |

**MDC Node – NIC Indicator Codes**

Figure 5 shows the StorNext M330 MDC Node NIC indicator codes.

Figure 5  MDC Node – NIC
Indicators
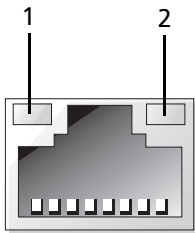


**1**  Link indicator

**2**  Activity indicator

| Indicator Status | Indicator Code |
| --- | --- |
| Link and activity indicators are off. | The NIC is not connected to the network. |
| Link indicator is green. | The NIC is connected to a valid network link at 1000 Mbps. |
| Link indicator is amber. | The NIC is connected to a valid network link at less than the maximum port speed (10/100 Mbps). |
| Activity indicator is blinking green. | Network data is being sent or received. |

**MDC Node – Power Supply Indicator Codes**

This section describes the StorNext M330 MDC Node power supply indicator codes (see Figure 6). The power supply indicators show if power is present, or if a power fault has occurred.

Figure 6  MDC Node - Power Supply Indicator
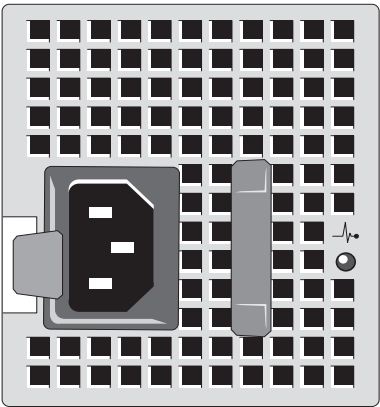


Table 3  Power Supply Status Indicator

| Indicator Status | Indicator Code |
|---|---|
| Not lit | AC power is not connected. |
| Green | In standby mode, a green light indicates that a valid AC source is connected to the power supply, and that the power supply is operational.<br>When the system is on, a green light also indicates that the power supply is providing DC power to the system. |
| Amber | Indicates a problem with the power supply. |

| Indicator Status | Indicator Code |
|---|---|
| Alternating green and amber | When hot-adding a power supply, this indicates that the power supply is mismatched with the other power supply (a high-output power supply and an energy smart power supply are installed in the same system). Replace the power supply that has the flashing indicator with a power supply that matches the capacity of the other installed power supply. |

**Caution:** When correcting a power supply mismatch, replace only the power supply with the flashing indicator. Swapping the opposite power supply to make a matched pair can result in an error condition and unexpected system shutdown. To change from a High Output configuration to an Energy Smart configuration or vice versa, you must power down the system.

**Caution:** The AC power supplies, which come with the system, support both 220 V and 110 V input voltages. When two identical power supplies receive different input voltages, they can output different wattages, and trigger a mismatch.

**Caution:** Combining AC and DC power supplies is not supported and triggers a mismatch.

## StorNext M330 Metadata Array

The StorNext M330 features a single Metadata Array.

### StorNext M330 Metadata Array

The StorNext M330 Metadata Array features a- 24-drive 2U storage enclosure. The StorNext M330 metadata array contains SAS hard disk drives and provides storage for the StorNext File System metadata and journal. The first drive of the metadata array is a global hot spare, and the next six are configured into three 1+1 RAID-1 mirrors. These mirrored sets are split into two stripe groups (SGs): SG0 combines three

LUNs into the metadata and journal for the shared file system. SG1 combines three LUNs into the shared HA file system, and includes the StorNext Storage Manager database.

The Metadata Array also contains redundant power supplies and dual Snowmass controllers. Each controller provides two 6 Gb Serial Attached SCSI (SAS) host ports. StorNext Metadata Arrays connect to StorNext MDC nodes via 6 Gb SAS.

Additional storage can be added to the Metadata Array by purchasing an expansion kit.

Hard drives are supplied in hot-swappable drive carriers that fit in the hard-drive bays.

The StorNext M330 Metadata Array has a series of indicators and buttons located on the front and back of the array:

- Metadata Array – Front LEDs on page 19
- Metadata Array – Rear View on page 20

## Metadata Array – Front View

The front of the StorNext M330 Metadata Array contains the left end cap, which contains the drive tray LEDs; the right end cap; and the drives (see Figure 7).

Figure 7   StorNext M330
Metadata Array – Front View
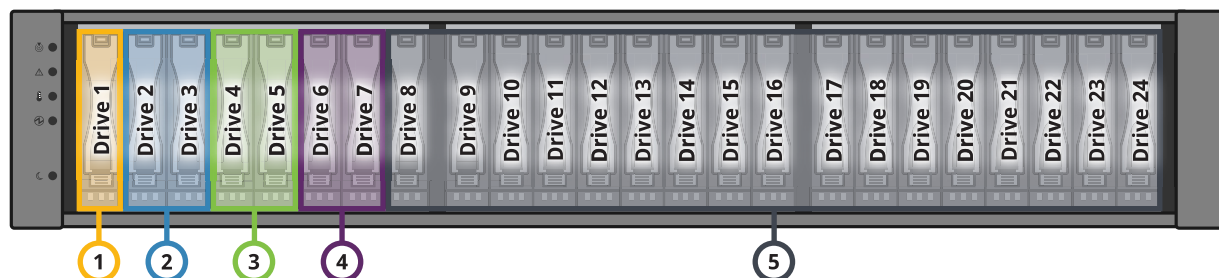
| Item | Description |
|------|-------------|
| 1 | HDD Global Hot Spare |
| 2-4 | Three RAID 1 LUNs in drive slots 2 through 7 |
| 5 | Empty Drive Bays - contain drive blanks (drive slots 8 through 24) |

## Metadata Array – Front LEDs

The front of the StorNext Metadata Array contains the left end cap, which contains the drive tray LEDs (see Figure 8).

Figure 8  Metadata Array Left End Cap LEDs
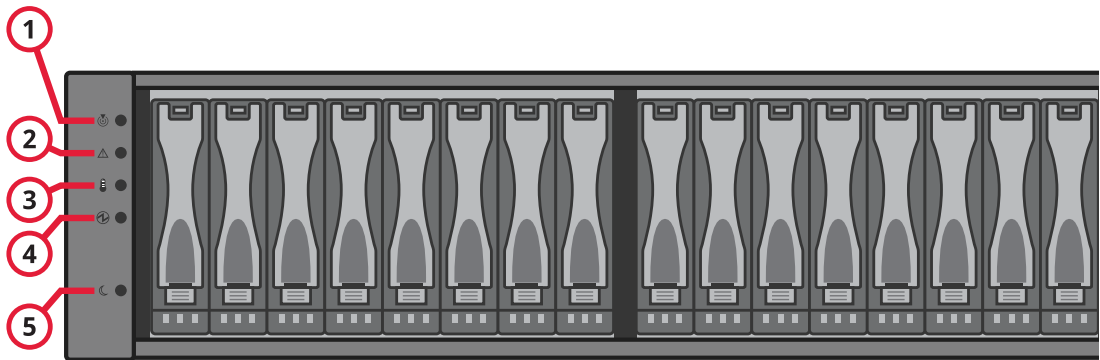


| Item | Icon | LED Description | Color | On | Off |
|------|------|-----------------|-------|-----|-----|
| 1 | | Drive Tray Locate | White | Identifies a drive tray that you are trying to find. | Normal status |
| 2 | | Service Action Required | Amber | A component within the drive tray needs attention. | Normal status |

| Item | Icon | LED Description | Color | On | Off |
|------|------|-----------------|-------|-----|-----|
| 3 | 🌡️ | Drive Enclosure Over-Temperature | Amber | The temperature of the drive tray has reached an unsafe level. | Normal status |
| 4 | ⚡ | Power | Green | Power is present. | Power is not present. |
| 5 | 🌙 | Standby Power | Green | The drive tray is in Standby Power mode. | The drive tray is not in Standby Power mode. |

## Metadata Array – Rear View

The StorNext M330 Metadata Array contains dual controller canisters for host connectivity and redundancy (see Figure 9).

Figure 9   Metadata Array – Rear View
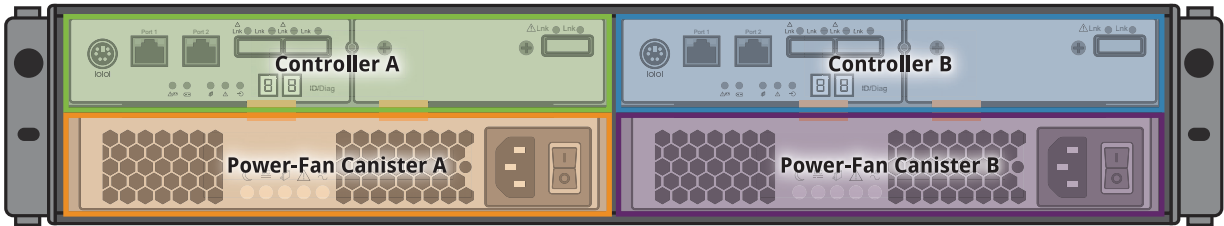


Figure 10 shows the storage controller's connectors, displays and LEDs. Unlabeled connectors are reserved for Quantum Service.

Figure 10  The Metadata Array
Controller Connectors and
LEDs
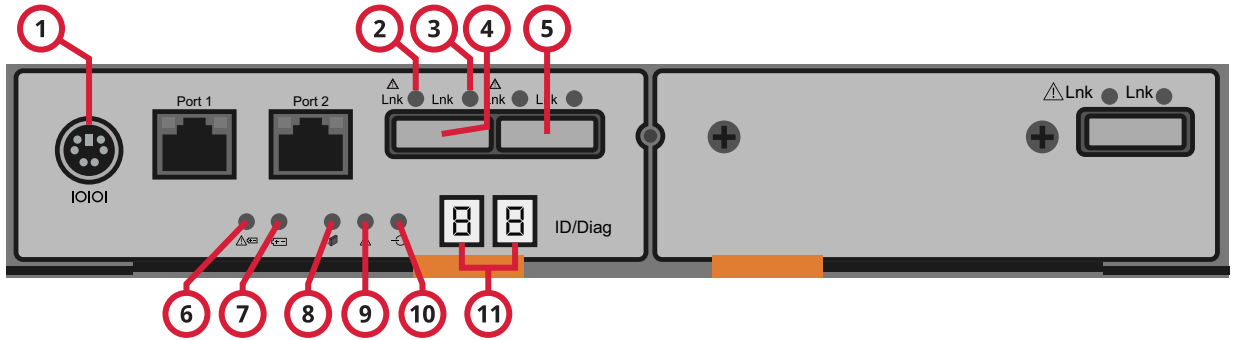


Table 4  Metadata Array
Controller – Rear Features and
Indicators

| Item | Description |
|------|-------------|
| 1 | Serial Port (For Service Only) |
| 2 | Host Fault LED |
| 3 | Host Active LED |
| 4 | Host Port Connector 1 (SFF-8088) |
| 5 | Host Port Connector 2 (SFF-8088) |
| 6 | Battery Service Action Required LED |
| 7 | Battery Charging LED |
| 8 | Controller Service Action Allowed LED |
| 9 | Controller Service Action Required LED |
| 10 | Cache Active LED |
| 11 | Seven-Segment Displays |

## Metadata Array — General LED Behavior

For more information about the Metadata Array LED locations and
general behavior, see Table 5.

Table 5  Metadata Array – LED
Locations and Behavior

| LED | Icon | Location | General Behavior |
|---|---|---|---|
| Power | | • Drive enclosure<br>• Controller canister<br>• Power-fan canister | **On** – Power is applied to the drive tray or the canister.<br>**Off** – Power is not applied to the drive tray or the canister. |
| Locate | | • Front bezel on the drive tray | **On or blinking** – Indicates the drive tray that you are trying to find. |
| Over-Temperature | | • Front bezel on the drive tray | **On** – The temperature of the drive tray has reached an unsafe condition.<br>**Off** – The temperature of the drive tray is within operational range. |
| Standby Power | | • Front bezel on the drive tray | **On** – The drive tray is in Standby mode, and the main DC power is off.<br>**Off** – The drive tray is not in Standby mode, and the main DC power is on. |
| Service Action Allowed | | • Controller canister<br>• Power-fan canister<br>• Drive | **On** – It is safe to remove the Controller canister, the power-fan canister, or the drive.<br>**Off** – Do not remove the Controller canister, the power-fan canister, or the drive.<br>**Note:**  The drive has an LED, but no symbol. |

| LED | Icon | Location | General Behavior |
|---|---|---|---|
| Service Action Required (Fault) | ⚠ | • Controller canister<br>• Power-fan canister<br>• Drive | **On** – When the drive tray LED is on, a component within the drive tray needs attention.<br>**On** – The Controller canister, the power-fan canister, or the drive needs attention.<br>**Off** – The Controller canister, the power-fan canister, and the drive are operating normally.<br>**Note:** The drive has an LED, but no symbol. |
| AC Power | AC ∼ | • Controller canister<br>• Power-fan canister | **On** – AC power is present.<br>**Off** – AC power is not present. |
| DC Power | DC ⎓ | • Power-fan canister | **On** – Regulated DC power from the power-fan canister is present.<br>**Off** – Regulated DC power from the power-fan canister is not present. |
| Link Service Action Required (Fault) | ⚠ | • Controller canister | **On** – The cable is attached, and at least one lane has a link-up status, but one lane has a link-down status.<br>**Off** – The cable is not attached, and all lanes have a link-up status, or the cable is attached, and all lanes have a link-down status. |
| Link Up | Two LEDs above each expansion connector | • Controller canister | **On** – The cable is attached, and at least one lane has a link-up status.<br>**Off** – The cable is not attached, or the cable is attached and all lanes have a linkdown status. |

# StorNext M330 Connectivity

This section covers:

- StorNext M330 Power Cabling
- StorNext M330 SAS Cabling
- StorNext M330 SAN Cabling
- StorNext M330 LAN Cabling

**StorNext M330 Power Cabling**

Connect the power cables for each component into an available power outlet (see Figure 11 on page 25).

| **Note:** | Quantum recommends attaching the primary and secondary power connections to alternate power sources for resiliency. Quantum also recommends that one of these power sources be an uninterruptible power source, such as battery backup or generator, or be connected to redundant AC power supplies to avoid system interruption in the case of a power failure. |
|---|---|

Figure 11  StorNext M330
Power Connections
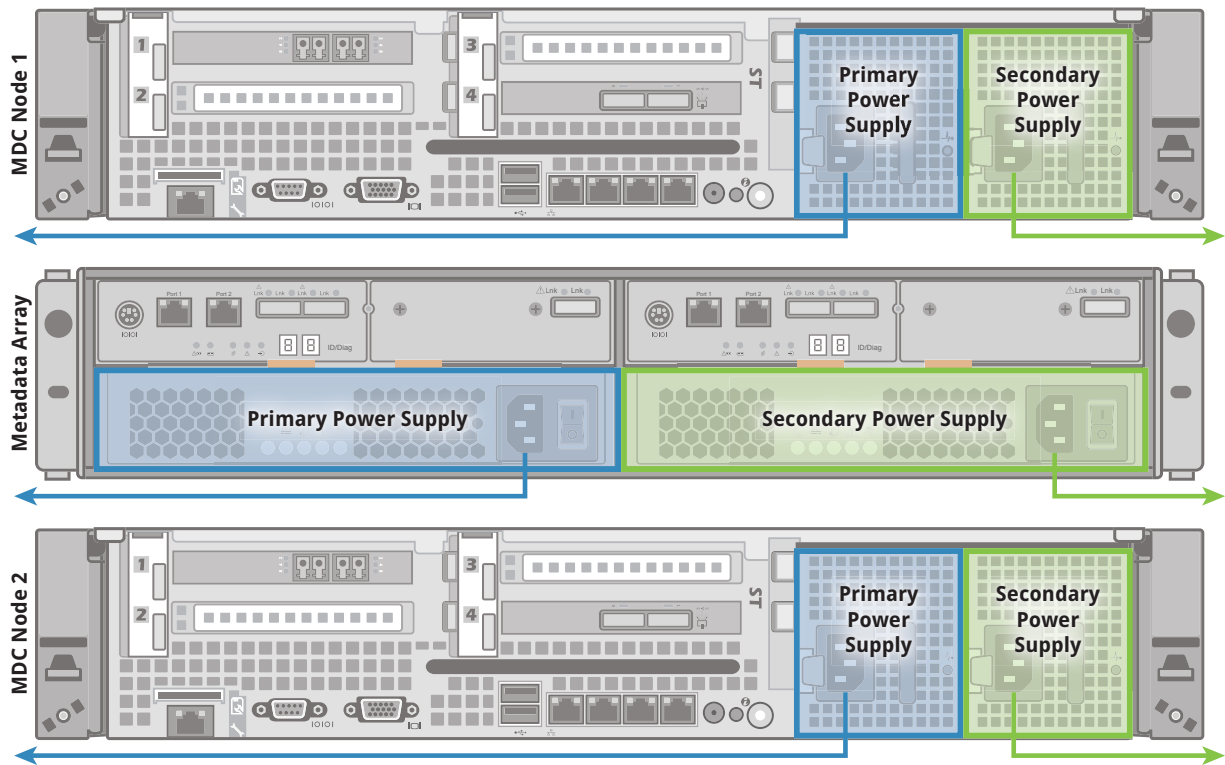
## StorNext M330 SAS Cabling

Connect the Serial Attached SCSI (SAS) ports cables between the nodes and the Metadata Array as shown in Figure 12.

Figure 12   StorNext M330 SAS Cabling

**MDC Node 1**



**Metadata Array**
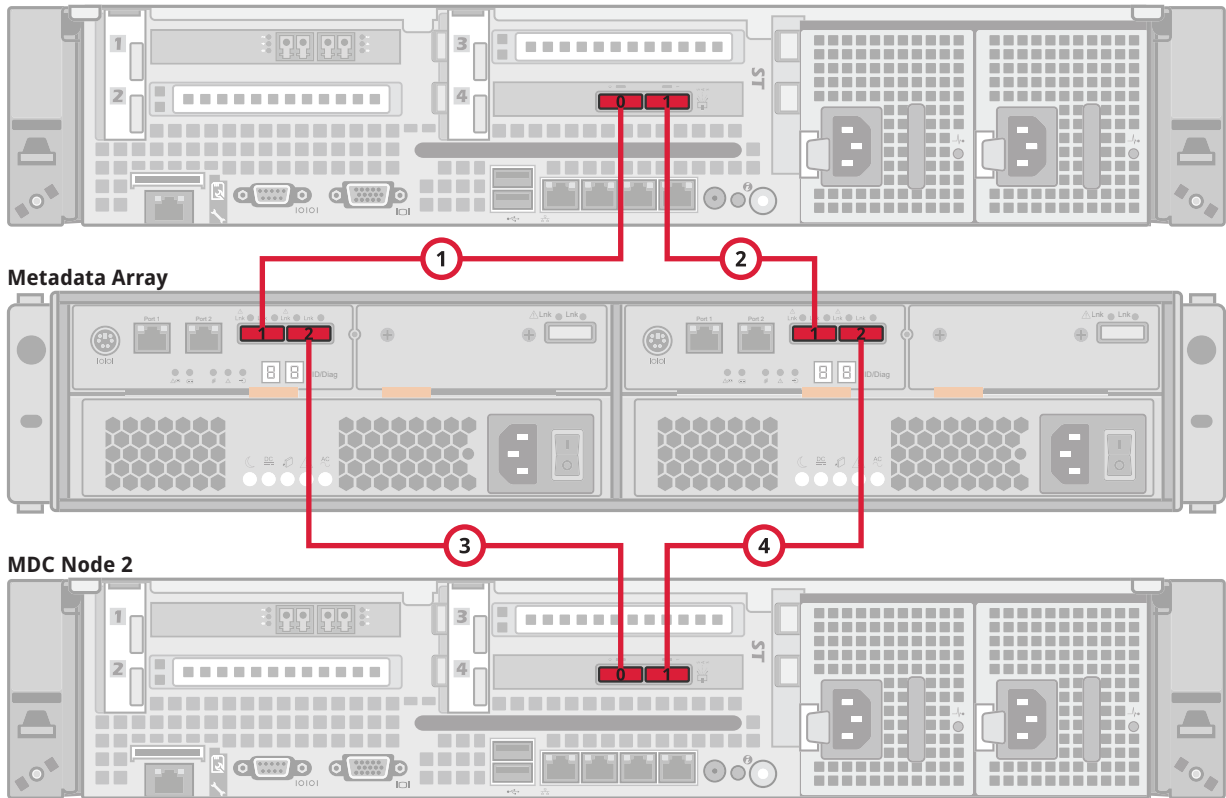
**MDC Node 2**

## StorNext M330 LAN Cabling

The number of customer-facing network ports depends on the model type. Each MDC node also contains an iDRAC port and a dedicated service port. By default, each StorNext M330 model ships with one bonded network interface: Bond 0.  All ports, excluding the service and iDRAC ports, are customer-configurable. Instructions for changing the

default configuration are located in the "Step 3: System" section of the latest version of the *StorNext User's Guide*.

The default M330 network interface configuration is as follows:

- Ethernet Port 1 (Eth1) is configured as the GUI/management network port.

- Two interfaces, Ethernet Port 2 (Eth2) and Ethernet Port 3 (Eth3), are bonded together by default into Bond 0 for the Metadata network. Bond 0 can be broken in the GUI. In this case, Eth2 will be configured as a standalone port, and Eth3 will be disabled.

Figure 13 shows the customer-facing Ethernet ports on the StorNext M330.

Figure 13  StorNext M330
Network Ports
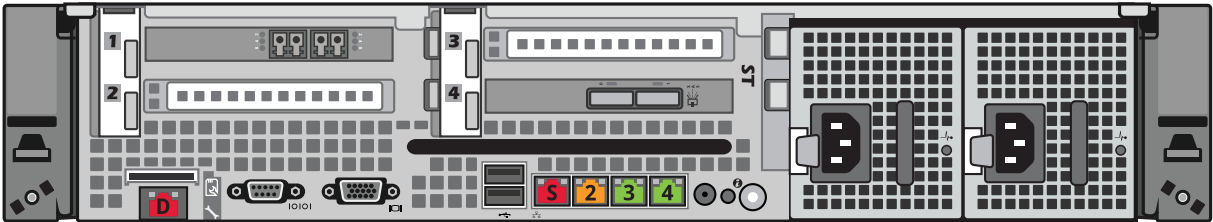


Table 6 identifies the logical port configuration, port function and default bonding for the StorNext M330.

Table 6  StorNext M330
Network Configuration

| Ethernet Port Number | Logical Ethernet Port Number | Physical Port Location | Port Function | Bond |
|---|---|---|---|---|
| D | N/A | iDRAC Port | Service | N/A |
| S | eth0 | Integrated Port 1 | | |
| 2 | eth1 | Integrated Port 2 | GUI and Management (Configurable from Service Menu) | N/A |
| 3 | eth2 | Integrated Port 3 | Metadata (Configurable from Service Menu) | Bond 0 When not bonded, eth2 is usable and eth3 is not usable |
| 4 | eth3 | Integrated Port 4 | | Bond 0 When not bonded, eth3 is not used |

## StorNext M330 SAN Cabling

Each StorNext M330 MDC node contains one 2-port 8Gb Fibre Channel (FC) host bus adapter (HBA) card in PCIe expansion slot 3.

Note:  If small form-factor pluggable (SFP) FC adapters are needed, use only Intel-based SFP adapters. SFP adapters from other vendors are not compatible with the FC HBA card used in the StorNext M330. Twinax cables have the adapters built into the end of the cable, so they do not require SFP adapters.

### Fibre Channel Zoning

Each Fibre Channel port supports dual-port tape drives and libraries. StorNext clients should not be zoned to access the tape drives/libraries unless they are acting as a Distributed Data Mover host.

Separate Fibre Channel zoning is required for tape and disk. If the system has a tape library, use FC port 1  for disk, and FC port 2 for tape . The actual zoning configuration for these devices is dependent on variables such as the Fibre Channel switch vendor, the WWPN of the HBA ports, and the external hardware.

Connect the FC host ports to your SAN as shown in Figure 14 on page 29.

Figure 14  StorNext  SAN Cabling
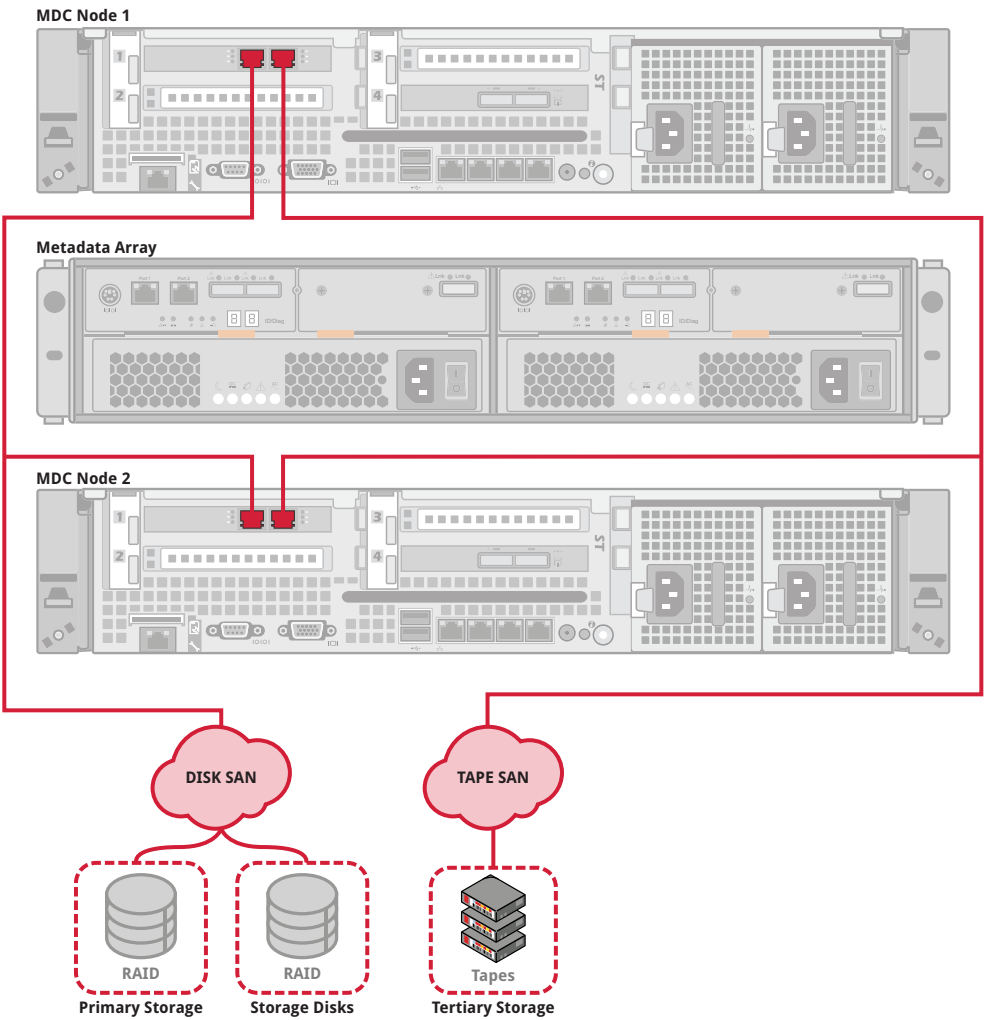
# Relocating the StorNext M330 System

If you ever need to relocate the StorNext M330 system to a different location, please contact Quantum Customer Support for additional information. The StorNext M330 system must be relocated by a qualified Quantum field service engineer.
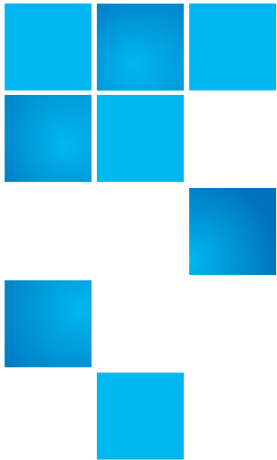
This chapter is divided into the following sections:

# Powering On All StorNext M330 System Components

Figure 15 on page 33 illustrates the location of the power switches, and the specific order to follow when powering on the StorNext M330 system components.

---

**Note:**  Before continuing, verify that all power switches on every component are in the **OFF** position.

---

**1** Turn on both power switches on the back of the Metadata Array.

---

**Note:**  Before powering up the MDC Nodes, make sure that the Metadata Array drive LEDs are all green, and the seven-segment display on the Metadata Array indicates "85". This indicates that the Metadata Array is ready for I/O. The system is then ready for powering up the MDC Nodes.

---

**2** Turn on the power switch on the front of each of the MDC Nodes. Callout number 3 in Figure 15 on page 33 shows the location of the power switches and the power on sequence.

Figure 15  StorNext M330
Power-On Sequence
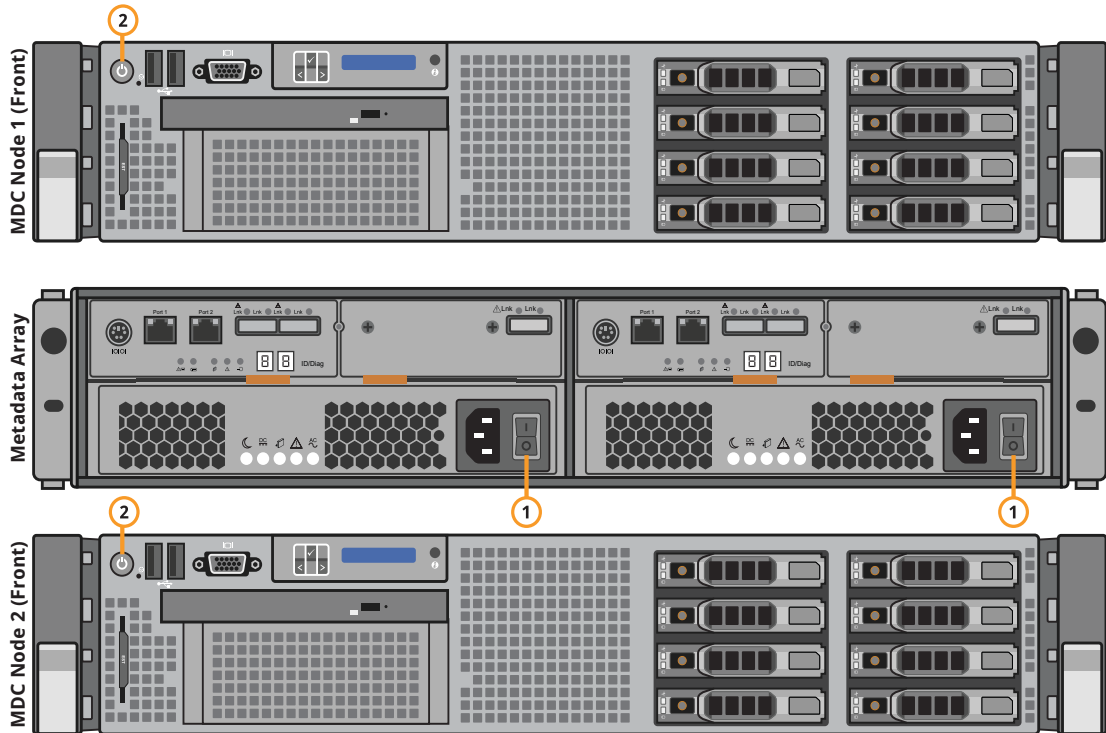


# Shutting Down All StorNext M330 System Components

To cleanly shut down the StorNext M330 Operating System and software and power off the hardware:

**1** Halt all I/O access to SAN and/or LAN clients.

2  For each SAN and/or LAN client, unmount and/or unshare the file systems. Refer to that client's operating system administrator's guide for instructions.

3  Open an **ssh** connection to the MDC node currently acting as the secondary node, and log in as the **stornext** user.

4  To log in to the MDC node currently acting as the secondary node enter:

   • User: **stornext**

   • Password: enter the customer-supplied password (the default password is **password**)

5  Enter **sudo rootsh**.

6  Enter the password for the **stornext** user account a second time.

7  Enter **/sbin/poweroff**. Both the operating system and the StorNext software are gracefully shut down, and then the system powers off.

8  Open an **ssh** connection to the MDC node currently acting as the primary node.

9  To login to the MDC node currently acting as the primary node enter:

   • User: **stornext**

   • Password: enter the customer-supplied password (the default password is **password**)

10  Enter **sudo rootsh**.

11  Enter the password for the **stornext** user account a second time.

12  Enter **/sbin/poweroff**. Both the operating system and the StorNext software are gracefully shut down, and then the system will powers off.

13  Turn off the Metadata Array module power switches.

# Powering On a Single MDC Node of the StorNext M330

To turn on power to the system:

**1** Push the power switch on the front of the MDC node currently operating as **secondary** (see Figure 16 on page 35).

Figure 16  Turning On Single MDC Node Power

**System (Front)**



**Power Button**
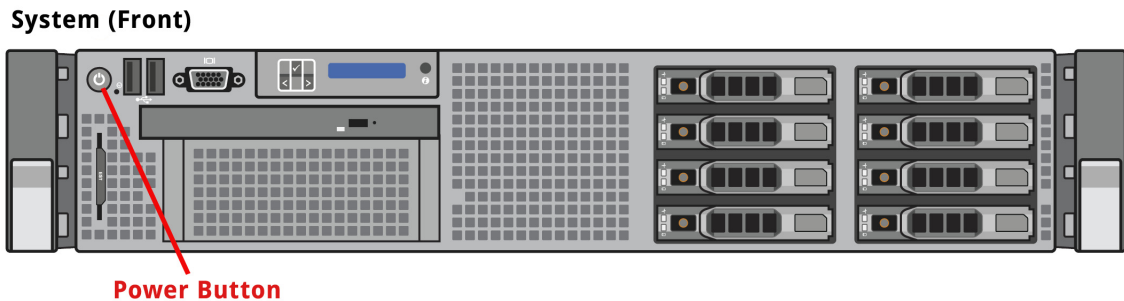
**2** Perform a system failover (see Initiating a Graceful System Failover on page 48), if you desire to set the system back to the state it was in prior to the shut down for the FRU/CRU replacement.

# Shutting Down a Single MDC Node of the StorNext M330

To shut down a single MDC node:

**1** Open an SSH connection to the MDC node you wish to access using either IP address **10.17.21.1** or **10.17.21.2** on the MDC/Metadata network.

> **Note:** Use the IP addresses assigned within the network if different from the defaults used here.)

**2** Enter **stornext** for the username at the prompt.

**3** Enter the **stornext** password. The default password is "password", but may have been changed after initial configuration.

**4** At the command prompt enter the following to gain root user access:

```
sudo rootsh
```

**5** Enter the password for the **stornext** user account again when prompted.

**6** Press Enter.

**7** Enter the following:

```
service cvfs fullstop
```

**8** Wait until the **secondary** MDC node becomes the **primary**, and leave your SSH connection to this node open. (Time may vary.)

**9** Open an SSH connection to the MDC node now operating as the **primary**.

**10** Confirm that the MDC node is operating as the **primary** by entering the following at the command line:

```
snhamgr -m status
```

**11** Verify the output is (bold used for clarification):

```
:default:primary:default:stopped:
```

**12** Go back to the SSH terminal session for the **secondary** MDC node
(previously running as **primary**), and enter the following:

```
/sbin/poweroff
```

**13** Remove power cables from the MDC node.

You will know the system is shut down when your monitor goes
blank, or you lose your connection with the system.

---

**Note:** For systems running a release of StorNext prior to StorNext 5
release 5.1, a RAS ticket on systems with open manage prior to
7.4 may be generated when one of the MDC nodes is powered
off. This RAS ticket, which indicates a failure of the appliance, is
incorrect. There is no loss of functionality if one node is shut
down during the servicing of that node.

---

# System Serial Numbers and Service Tag

The StorNext M330 Metadata Appliance system serial number and the
service tag number may be needed when contacting Quantum Support.

**Locating the System
Serial Number**

The System Serial Number is located in the following locations:

- In a sleeve on the back of each MDC node, the metadata array.
- Scrolling on the LCD panel on the front of each MDC node.
- From the Service Menu of each MDC node.
- In the title bar and on the Help > About page of the StorNext M330
  Metadata Appliance GUI as shown here:

Figure 17  Locating the System
Serial Number on the GUI
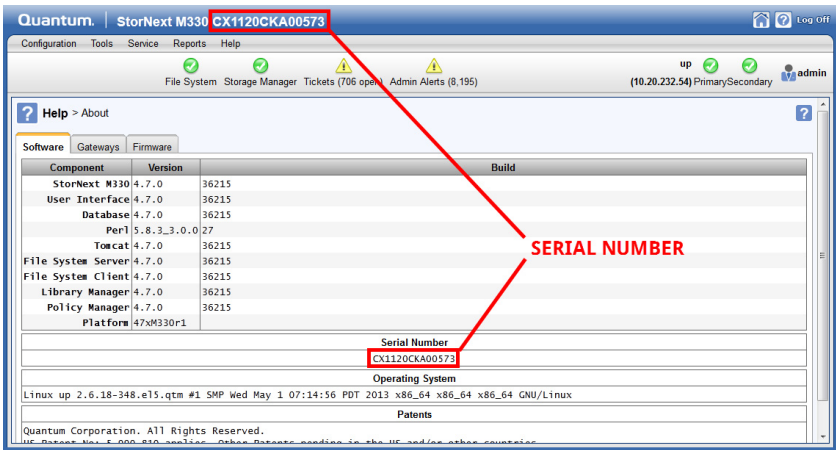


**Serial Number Format**

System serial numbers are alpha-numeric (example: CX1234CKD5678).

**Locating the Service
Tag Number**

The Service Tag Number is located on the service tag, which is located on a pullout tray on the front of each MDC Node of the StorNext M330 Metadata Appliance.

# Before Upgrading Firmware

**TSM Indexing Delay for
Large Databases**

A database index named `classndxatimeme` will be automatically added to the tmdb.tier000files% and tmdb.tier001files% tables upon starting TSM for the first time after upgrading to StorNext 5 release 5.0.1 (and later). This index improves the performance of certain operations such as truncation policies. However, the creation of this

index can take hours for very large databases. TSM will be unavailable after upgrading to StorNext 5 release 5.0.1 (and later) until the indexing has completed.

**Note:** This does not apply to upgrades from StorNext 5 release 5.0.1 to StorNext 5 release 5.1.

## Running the Script

To minimize TSM downtime after upgrade, the `classndxatimeme` index can be created prior to upgrading to StorNext 5 release 5.0.1 (and later) using the `index_tierfiles.pl` script availablefrom the StorNext Metadata Appliances page on CSWeb. The script can be run while TSM is running, although it may impact the performance of other operations while the index is being added to the database.

**Note:** The following script should only be executed against StorNext release versions supported for direct upgrade to StorNext 5 release 5.0.1 (and later).

To manually add the index:

**1** Download the `index_tierfiles.pl` file from CSWeb.

**2** Login to the primary MDC, and access the command line of the system.

  • User: **stornext**

  • Password: (enter the password for the **stornext** account)

**3** Type **sudo rootsh** to gain root user access.

**4** Enter the password a second time.

**5** Copy the `index_tierfiles.pl` file downloaded from CSWeb to the **/tmp** directory on the primary MDC node.

**6** Source the profile:

`. /usr/adic/.profile`

**7** Verify that the database is up by running:

`mysql_control start`

**8** Execute:

`/tmp/index_tierfiles.pl`

# Upgrading Firmware

The Firmware Upgrade option allows you to perform a firmware upgrade on StorNext M330 Metadata Appliances. Upgrading the firmware also upgrades StorNext, if applicable.

---

**Note:** Use the StorNext M330 Metadata Appliance GUI to perform all firmware upgrades and HA conversions.

---

## Upgrade Considerations

Before you begin the upgrade you should note the following considerations so you can plan accordingly:

Consider the following prior to upgrading the M330 Metadata Appliance:

- Not all StorNext releases may be upgraded to a given StorNext release. As a result, an upgrade to the current version of StorNext may require multiple, incremental upgrades, depending on the version of StorNext currently installed on the StorNext M330.

  For information about supported upgrade paths for StorNext, consult the *StorNext Compatibility Guide*. If your system is running a StorNext release prior to the supported upgrade releases for a given StorNext release, consult an earlier version of the *StorNext Compatibility Guide* that applies to your specific upgrade, and the dependencies for StorNext Clients in the environment.

- Firmware upgrade installation files must first be acquired from Quantum.

## Obtain the Firmware Upgrade Files

To obtain the firmware files (both are required) you wish to install for the Metadata Appliance:

---

**Note:** The two files are large - around 2 GB total, so plan time to download the files for the upgrade.

---

  **a** Go to the CSWeb site and log in.

      **b**  Navigate to the StorNext Products page for your appliance (on the lefthand side of the CSWeb site, look for the appropriate link under the StorNext Products section).

         The first section of the page contains Downloads for the given appliance.

      **c**  Scroll down to the Current Software section, and download both firmware image files.

- Firmware upgrade installation files, which contain the .fw suffix, must be uploaded to the system prior to beginning the upgrade process. Uploading the firmware upgrade files in a network with low latency should only take a matter of minutes. High network latency in your environment can slow the upload of these files onto the Metadata Appliance.

- When using the firmware upgrade process from the StorNext GUI, the license for the system will be automatically applied to the StorNext M330.

**For StorNext 5 and Later Upgrades Only:**

- The upgrade is applied to both nodes sequentially, beginning with the secondary node. When the secondary node has completed its upgrade, the system will failover from the primary to the secondary, and begin upgrading the primary system. While the node firmware upgrade is being applied, metadata operations are not interrupted. However, if a metadata array firmware upgrade is required, the downtime is approximately 30 minutes, since both nodes will need to reboot after the FW update is applied. The StorNext GUI is available on the node acting as primary during the upgrade of the node acting as secondary.

- The secondary node of the MDC no longer requires an HA conversion, since both nodes are left in the HA configuration.

- Storage Manager components no longer require a restart as part of the firmware upgrade procedure.

**For Upgrades Prior to StorNext 5 Only:**

- Each StorNext firmware upgrade requires a reboot of both nodes. In some cases, multiple reboots of the nodes are required. The StorNext GUI is not available during reboots which can each take 30 minutes or longer per node. The GUI for the secondary node should not be started during this process.

- Each time the firmware upgrade is done, the secondary node of the Metadata Appliance is left out of the HA configuration. As a result, you will need to convert the StorNext M330 to an HA system after each upgrade in order to regain failover operations. After the HA conversion, both nodes will reboot, which can take 30 minutes or longer per node.

- The Storage Manager components will need to be restarted after the HA conversion is complete by clicking the **Start** button in the Storage Manager panel of the **Tools > System Control** page.

## Upgrade Procedure

To upgrade the StorNext M330:

1 Download the required firmware file(s) from Quantum CSWeb for the StorNext release needed.

2 Log into the StorNext GUI.

3 Choose **Tools > Firmware Upgrade**.

The **Firmware Upgrade** page appears.

Figure 18 Firmware Upgrade Page
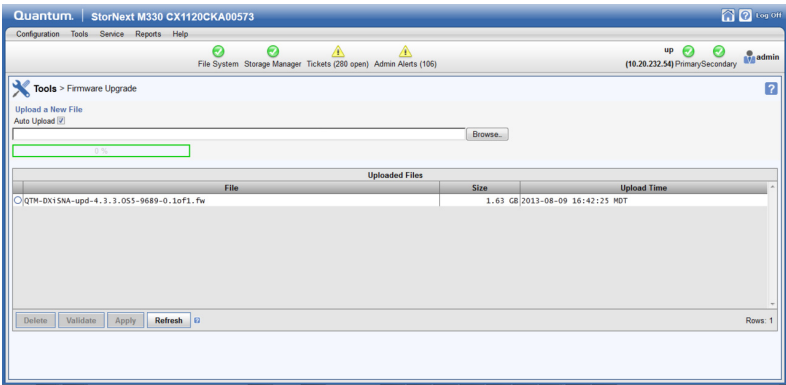


4 Do one of the following:

a Select **Auto Upload** to upload the file immediately after you select it.

b Do not select **Auto Upload**.

5 Click **Browse...**, and then navigate to the directory where the file resides. Firmware files are identifiable by the **.fw** extension.

---

**Note:** There are two **.fw** files required for updating firmware. The filenames are similar to QTM-DXiSNA-upd-5.1.0.OS6-15147-15110.1of2.fw and QTM-DXiSNA-upd-5.1.0.OS6-15147-15110.2of2.fw. Since it is a two-part upgrade, upload both files to the GUI. To begin activation of the upgrade, select either of the uploaded files and then click **Apply**. Both parts are applied to the system.

---

If you selected the **Auto Upload** option, the file is immediately uploaded. Proceed to Step 7.

**6** If you did not select the **Auto Upload** option and want to validate the file before uploading, click **Validate**. After a message informs you that the file is valid, click the **Upload** button located to the right of the **Browse...** button.

---

**Note:** Files are automatically validated after you click **Apply** (Step 7), but you won't receive a message telling you the file is valid.

---

**7** Click **Apply** to begin the upgrade.

The green status indicator at the top of the page indicates upload progress, not the upgrade progress. To monitor upgrade progress, check the logs available under the Reports menu.

**If Upgrading to StorNext 5 from StorNext 4.7.0:**

The upgrade process is complete. There is no interruption of metadata operations during or after the upgrade.

**If Upgrading to StorNext 5 from StorNext Releases Prior to StorNext 4.7.0:**

---

**Note:** After the upgrade to the primary MDC node completes, metadata operations will be interrupted for 30 minutes or more, and both MDC nodes will reboot, which could take an additional 30 minutes to complete, before you are able to log back in, so plan upgrade times accordingly.

---

**If Upgrading to StorNext Releases Prior to StorNext 5:**

---

**Note:** After the upgrade to the primary MDC node completes, metadata operations will be interrupted for 30 minutes or more, and both MDC nodes will reboot, which could take an additional 30 minutes to complete. It could be a long time before you are able to log back in, so plan upgrade times accordingly.

---

**8** Convert the system to HA, according to <u>Converting to HA</u> on page 45. (Not necessary when upgrading to StorNext 5).

## GUI Feedback During Upgrades

There are some indications within the GUI that the system is being upgraded. Here are some notes about this visual feedback:

**If Upgrading to StorNext 5 from StorNext 4.7.0:**

- For systems without a defined virtual IP, the secondary MDC nodes is upgraded first, followed by a fail over to the secondary MDC node, which takes the role of the primary MDC node. The GUI will run on the primary MDC node until the secondary MDC node completes its upgrade, and the system fails over to the secondary MDC node. At that point you will need to bring up the GUI for the secondary MDC node, while the primary MDC node completes its upgrade. At the end of updating the primary MDC node, the system will not automatically fail over again, it only fails over once.

- If a virtual IP is used, the GUI will need to be refreshed to display the GUI once the secondary MDC node upgrade and failover is complete. The assumes the role of the primary when the failover occurs. Once the original primary MDC node completes its upgrade, it will assume the role of the secondary MDC node.

**If Upgrading to StorNext Releases Prior to StorNext 5:**

- On the primary MDC node, the GUI will display different status messages throughout the installation, including messages that the system will reboot, and red icons indicating that the primary MDC node, secondary MDC node, File System, and Storage Manager are also disabled.

- The current user account will eventually time out and the GUI will stop functioning when the power to Metadata Appliance is removed during reboot. Status updates will cease and the GUI will not be fully-functional again until the system completes rebooting both MDC nodes.

### Post-Upgrade Failover

If you desire to failover your system after the upgrade, see

## Deleting Uploaded Files

Follow these steps to delete uploaded files you no longer need:

1 Log into the StorNext GUI.

2 Choose **Tools > Firmware Upgrade**.

3 The **Firmware Upgrade** page appears

4 Select from the list the file you want to delete, and then click **Delete**. (If you want to delete multiple files, you must delete them one at a time.)

5 When a confirmation appears, click **Yes** to proceed or **No** to abort.

When a message informs you that the file was successfully deleted, click **OK**.

# Converting to HA

**Note:** If you are upgrading to StorNext 5 or later from StorNext 4.7 or later, and have previously converted your system to HA configuration, the conversion process is unnecessary. Previously-converted systems will not be taken out of HA configuration, so the option to convert to HA is unavailable.

This section describes the configuration steps necessary to convert two StorNext MDC nodes into a High Availability MDC pair connected to a shared file system. Converting to HA consists of selecting the dedicated

unmanaged StorNext file system for use as the controlling shared file system, and then instructing StorNext to convert each MDC node to operate as one MDC node of the HA pair.

- The UIDs for the **quantumdb** and **tdlm** users and the **adic** group **must** be identical on both MDC nodes of an HA pair. If the UIDs are not identical, the MySQL database will not start (due to file permission errors), which in turn prevents storage manager from fully starting up.

**HA Conversion Procedure**

Follow these steps to configure HA:

1 Choose **Tools > High Availability > Convert**.

Figure 19  Tools > HA > Convert
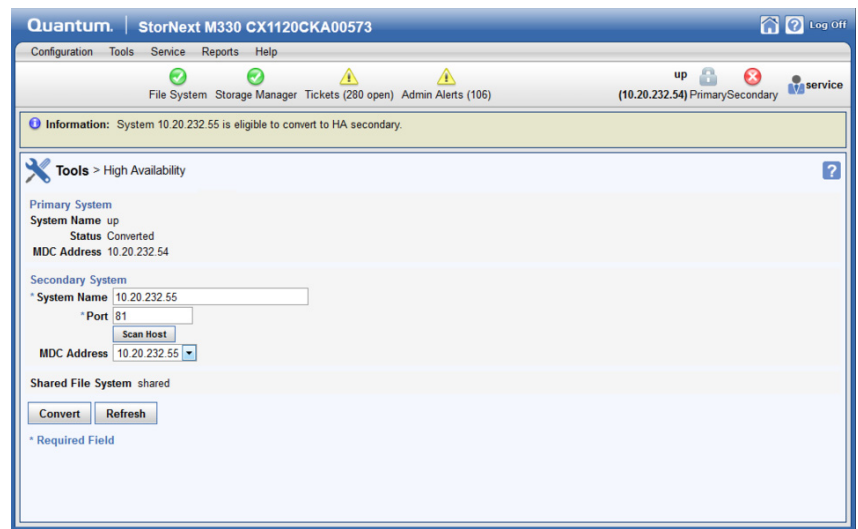


**Note:**  The primary MDC node **Status** displays "**Converted**".

2 The IP address of the secondary MDC node of the StorNext M330 will appear in the System Name field along with a port number. Click **Scan Host**. The system should resolve the secondary MDC node - the MDC Address will auto-fill with a value.

3 Click **Convert** to convert the secondary MDC node.

---

**Note:** Both MDC nodes will reboot, which can take 30 minutes or more per node to complete.

---

**4** Storage Manager may need to be started following the HA conversion if the system was in config mode at the time that HA conversion was initiated. To restart the Storage Manager components, click the **Start** button in the Storage Manager panel of the **Tools > System Control** page.

### GUI Feedback During HA Conversion

There are some indications within the GUI that the system is being upgraded. Here are some notes about this visual feedback:

- After the StorNext upgrade has completed, and the HA configuration has been done, the GUI for the secondary MDC node provides a message stating it is not the primary MDC node and a link to launch the primary MDC node.

---

**Caution:** Do not login to the GUI of the secondary MDC node at any point during the upgrade/HA conversion process. System configuration and licensing for the system could be compromised.

---

- When you are able to log into the primary /node, after accepting the EULA, the system will automatically display the **Tools > System Control** page. Click the **Start** button to restart the Storage Manager components.

- Wait until the system icons for both MDC nodes of the system as well as File System and Storage Manager are green, which indicates normal operation.

### Post-Conversion Steps

If you are using the DDM feature, do the following:

- If you use the secondary MDC node as a DDM mover, make sure the file systems are mounted.

## Initiating a Graceful System Failover

During StorNext 5 release 5.0 or later upgrades, the Metadata Appliance fails over once. Because of this single failover, the MDC node originally operating as primary is set as the secondary after the upgrade. This procedure provides the steps necessary to set the MDC nodes back to the system state prior to the upgrade for this scenario.

To initiate the failover of a Metadata Appliance after converting to HA or any time a failover is desired:

1  Open an SSH connection to the MDC node operating as the **primary**.

2  Login to the command line of the **primary** MDC node.

   - User: **stornext**

   - Password: (the customer should have the password for the **stornext** account)

3  Type **sudo rootsh** to gain root user access.

4  Enter the password a second time.

5  Confirm that the MDC node is operating as the **primary** by entering the following at the command line:

```
snhamgr -m status
```

6  Verify the output is (bold used for clarification):

```
:default:primary:default:running:
```

7  On the MDC node operating as the **primary**, initiate an HA failover to the MDC node operating as the **secondary**.

```
service cvfs stop
```

8  Wait until the **secondary** MDC node becomes the **primary**, and leave your SSH connection to this node open. (Time may vary.)

9  Open an SSH connection to the MDC node now operating as the **primary**.

**10** Login to the command line of the **primary** MDC node.

- User: **stornext**
- Password: (the customer should have the password for the **stornext** account)

**11** Type **sudo rootsh** to gain root user access.

**12** Enter the password a second time.

**13** Confirm that the MDC node is operating as the **primary** by entering the following at the command line:

```
snhamgr -m status
```

**14** Verify the output is:

```
:default:primary:default:stopped:
```

**15** From the SSH connection to the MDC node now operating as the **secondary**, enter the following:

```
service cvfs start
```

**16** Confirm that the MDC node is operating as the **secondary** by entering the following at the command line:

```
snhamgr -m status
```

**17** Verify the output is:

```
:default:running:default:primary:
```

**18** Repeat if desired to fail over to the original system operating as the **primary**.

**19** Verify that all clients have full access.

**20** Test access to all file systems.

# Additional Common Operations

**Changing the MDC VIP Address**

To change the Virtual IP address for the M330, do the following:

**Note:** This procedure must be used any time the VIP address needs to be changed after initial system configuration.

1 Open an ssh connection to the M330 using the IP for the MDC node operating as the primary from either the customer's LAN client or Metadata network.

2 Log on using the **stornext** credentials. The default password is "password".

3 Type the **sudo rootsh** command to grant root user privileges after entering the password for the **stornext** user account again when prompted.

4 From the command line, update the VIP Address using the following command (refer to the **vip_control man page** or the *StorNext Man Pages Reference Guide* for information on changing the address).

```
vip_control
```

5 To update the firewall rules for the MDC node operating as the primary, type the following:

```
/opt/DXi/scripts/netcfg.sh --reset_snvip
```

6 Close the ssh connection for the MDC node operating as the primary.

7 Open an ssh connection to the M330 using the IP for the MDC node operating as the secondary.

8 Log on using the **stornext** credentials. The default password is "password".

9 Type the **sudo rootsh** command to grant root user privileges after entering the password for the **stornext** user account again when prompted.

10 From the command line, update the VIP Address using the following command (refer to the **vip_control man page** or the *StorNext Man Pages Reference Guide* for information on changing the address).

```
vip_control
```

11 To update the firewall rules for the MDC node operating as the primary, type the following:

```
/opt/DXi/scripts/netcfg.sh --reset_snvip
```

## StorNext Operations

For more information on performing advanced StorNext operations, refer to the following within this document or by accessing documents from the StorNext M330 GUI:

- For information on how to monitor the hardware components for both MDC nodes, refer to the "The Hardware Status Report" section of the latest version of the *StorNext User's Guide*.

- For instructions on how to capture system state logs and support bundles, refer to the "The Capture State Function" section of the latest version of the *StorNext User's Guide*.

- For instructions on how to capture DSET logs, refer to the "Capture DSET" section of the latest version of the *StorNext User's Guide*.

- For information on changing the network configuration, refer to the "Step 3: System" section of the latest version of the *StorNext User's Guide*.

- For information on setting up the distributed data mover (DDM) feature, refer to "Distributed Data Mover (DDM)" section of the latest version of the *StorNext User's Guide*.

- For information on StorNext Advanced Reporting, refer to the *StorNext Advanced Reporting User's Guide*.

The *StorNext User's Guide* also contains chapters such as these, which you will find useful:

- StorNext File System Tasks

- StorNext Storage Manager Tasks

- StorNext Reports

- Service Menu Functions

# Chapter 4
# 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).

To request a software upgrade, visit http://www.quantum.com/ServiceandSupport/Upgrade/Index.aspx. For further assistance, or if training is desired, contact the Quantum Technical Assistance Center.

## Contacts

Quantum company contacts are listed below.

### Quantum Home Page

Visit the Quantum home page at:

http://www.quantum.com

## Comments

To provide comments or feedback about this document, or about other Quantum technical publications, send e-mail to:

doc-comments@quantum.com

## Getting More Information or Help

StorageCare™, Quantum's comprehensive service approach, leverages advanced data access and diagnostics technologies with cross-environment, multi-vendor expertise to resolve backup issues faster and at lower cost.

Accelerate service issue resolution with these exclusive Quantum StorageCare services:

**Quantum.**
**Global Services**

- **Service and Support Website** - Register products, license software, browse Quantum Learning courses, check backup software and operating system support, and locate manuals, FAQs, firmware downloads, product updates and more in one convenient location. Benefit today at:

  http://www.quantum.com/ServiceandSupport/Index.aspx

- **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. Sign up today at:

  http://www.quantum.com/osr

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

| 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 worldwide support:

http://www.quantum.com/ServiceandSupport/Index.aspx

## 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

StorNext M330 Metadata Appliance  Hardware Guide