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StorNext M440 Site Planning Guide

The StorNext M440 Metadata Appliance combines the high-performance, heterogeneous software file sharing and tiered, vendor-agnostic archiving benefits found in Quantum's StorNext data management software with the simplicity of purpose-built hardware.

The StorNext M440 Metadata Appliance is offered in four models:

- M441D (HDDs only)
- M441Q (HDDs only)
- M445D SSD (HDDs and SSDs)
- M445Q SSD (HDDs and SSDs)

Included with Your StorNext M440

The StorNext M440 is fully configured and pre-tested in the factory. Every StorNext M440 system comes with an accessory kit containing rack-mount hardware, and the *StorNext M440 User Essentials* (6-67746-01) document.

The StorNext M440 includes factory-installed with the following:

- A High Availability license
- 10 SAN client (any OS) licenses
- A Distributed Data Mover (DDM) License for the secondary MDC node (Supported on the standby MDC node).

Professional Installation Requirements

The StorNext M440 Metadata Appliance requires onsite professional installation via Quantum or by a trained Quantum ASSP partner. The two StorNext Installation order part numbers are:

Part number	Description
SSP4H-NSYN-000x	Quantum M440 Metadata Appliance Initial Onsite Installation & Configuration
SSP4H-NSYX-000x	Quantum M440 Metadata Appliance with Metadata Disk Expansion Kit Initial Onsite Installation & Configuration

For more information about the ASSP program, see [Quantum ASSP Program](#) on page 16.

Site Requirements

Quantum installation must be purchased with the StorNext M440.

Installation sites will need the following:

- A Storage Area Network (SAN) array compatible with QLogic 8Gb Fibre Channel HBA
- A compatible SAN switch
- A standard 19-inch rack
- Power outlet compatibility with North American type NEMA 5-15P plugs or European CEE 7/7 plugs, or NEMA C13/14 if plugging into a rack power distribution unit (PDU).
- 100-240 VAC, 50-60HZ
 - A base system can draw up to:
 - 7.3 AMPS at 100 VAC
 - 3.1 AMPS at 240 VAC
 - A base system with an expansion kit can draw up to:
 - 8.6 AMPS at 100 VAC
 - 3.5 AMPS at 240 VAC

Shipping Information

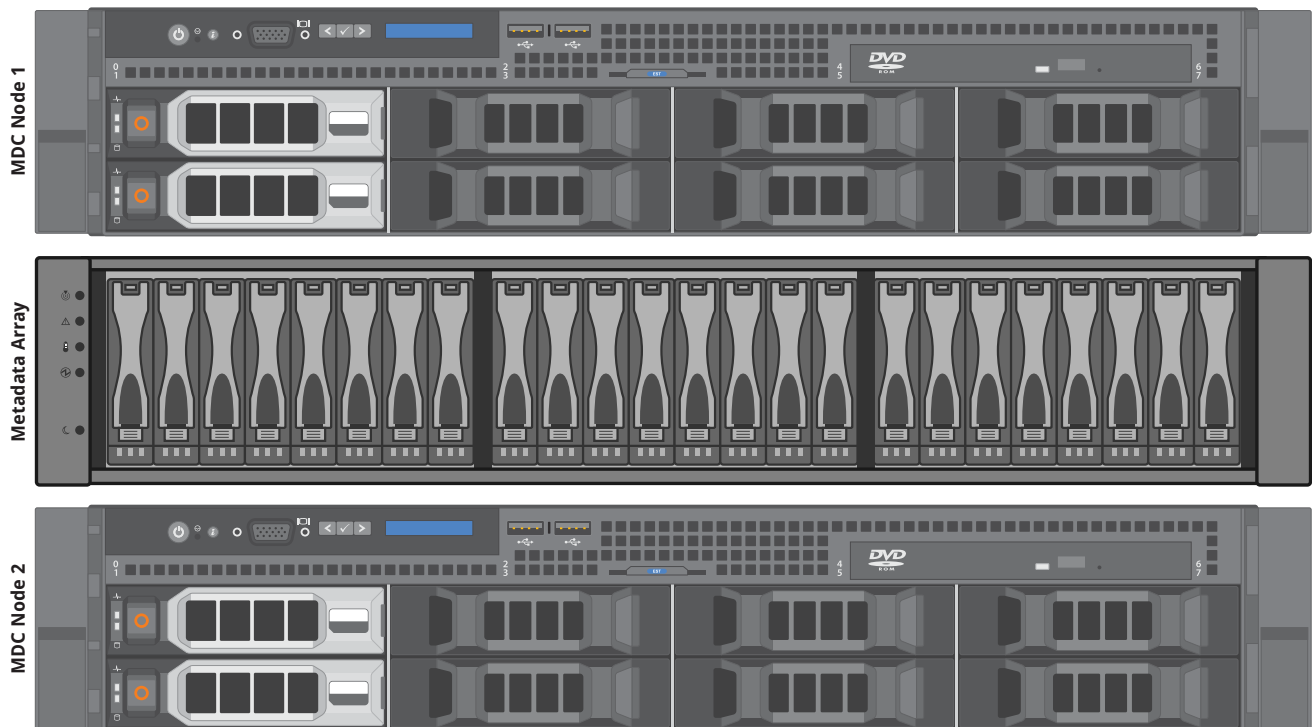
The StorNext M440 ships on a pallet. Note that:

- A base system weighs a total of 230 lb (104kg)
- A base system and expansion kit, when ordered together, weigh a total of 233 lb (106kg).

StorNext M440 System Components

The StorNext M440 system consists of two MDC nodes and one metadata array (see [Figure 1](#)).

Figure 1 StorNext M440
System Components



To see the front view of the MDC Nodes and the metadata array storage, see [Figure 2](#) and [Figure 3](#) on page 5.

Figure 2 StorNext M440
Metadata MDC Node - Front
View

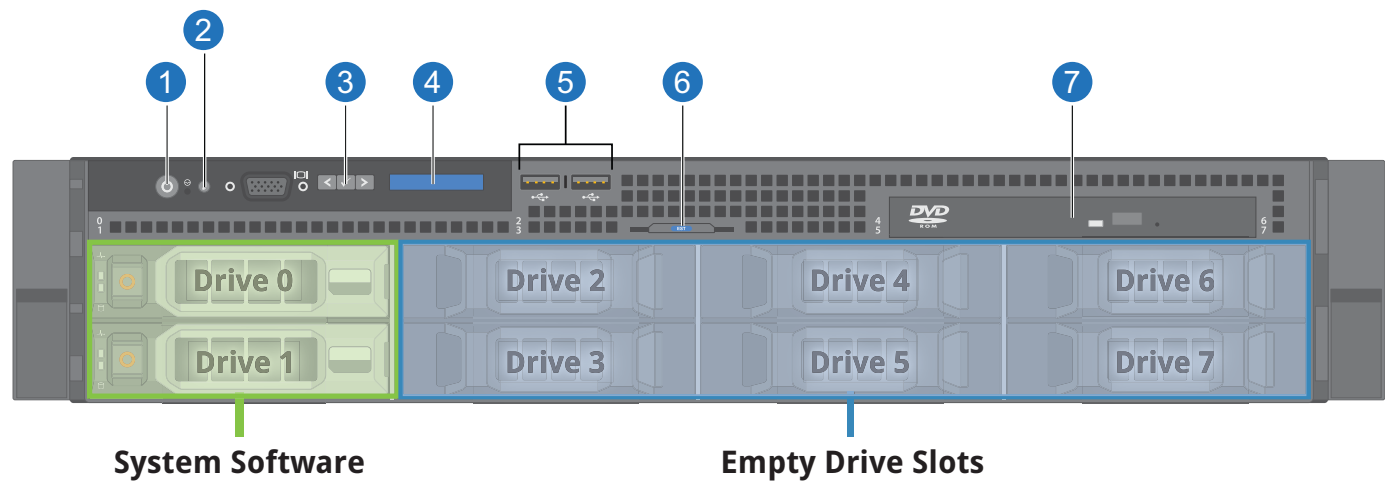


Table 1 StorNext M440
Metadata MDC Node -
Indicators and Buttons

[Table 1](#) provides StorNext M440 Metadata MDC Node indicators and buttons.

Item	Indicators and Buttons
1	Power Switch
2	Video Port (Service Only)
3	LCD Buttons
4	LCD Panel
5	USB Ports (Service only)
6	Service Tag
7	DVD Drive

Figure 3 StorNext M440 Metadata Array - Front View

[Figure 3](#) provides the StorNext M440 Metadata Array front view.

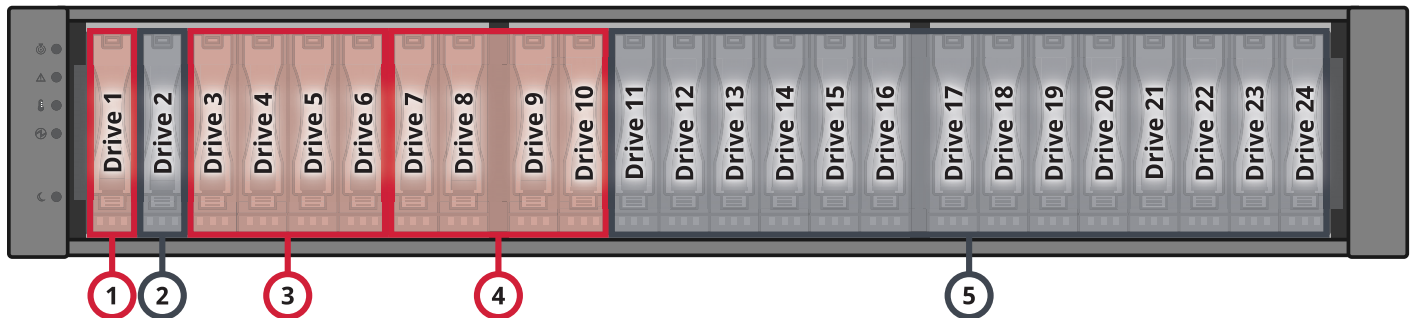


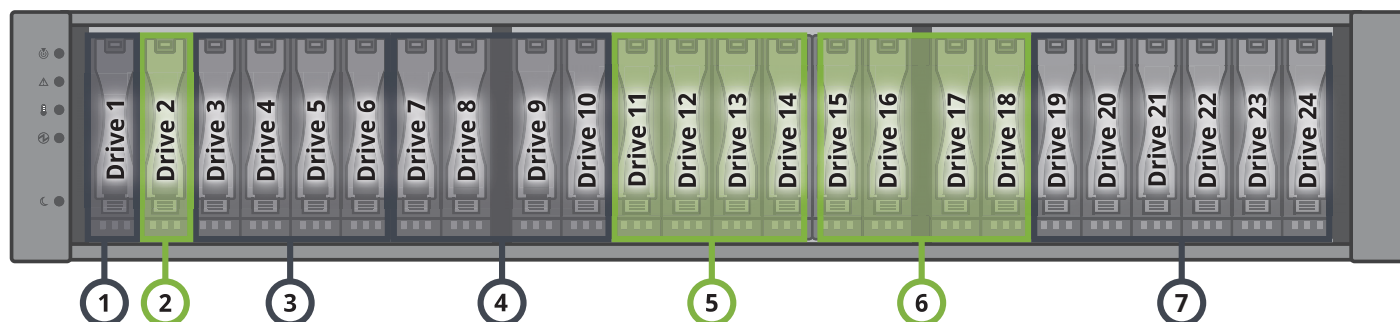
Table 2 StorNext M440 Metadata Array Drive Slots

[Table 2](#) provides drive slot usage within the StorNext M440 metadata array.

Item	Description	Drive Slot	RAID Type
1	HDD Global Hot Spare	1	n/a
2	Empty Drive Bay - M441D and M441Q SSD Global Hot Spare - M445D SSD and M445Q SSD	2	n/a
3	2 x 1+1 HDD RAID 1 HA File System Metadata and Journal	3-6	2 RAID 1 Mirrors for HA File System Metadata and Journal
4	2 x 1+1 HDD RAID 1 for User File System Metadata - M440 2 x 1+1 SSD RAID 1 for User File System Metadata - M445D SSD and M445Q SSD	7-10	2 RAID 1 Mirrors for User File System Metadata
5	Empty Drive Bays - contain drive blanks	11-24	n/a

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Figure 4 StorNext M440
Metadata Array Expansion Kit
(Front View)



[Figure 4](#) provides the StorNext M440 Metadata Array expansion kit front view.

Table 3 StorNext M440
Metadata Array Expansion Kit
Drive Slots

[Table 3](#) provides drive slot usage within the StorNext M440 metadata array once the expansion kit drives have been installed.

Item	Description	Drive Slot(s)	RAID Type
1	*HDD Global Hot Spare	1	n/a
2	**HDD Global Hot Spare - M441D and M441Q **SSD Global Hot Spare - M445D SSD and M445Q SSD	2	n/a
3	*2 x 1+1 HDD RAID 1 HA File System Metadata and Journal	3-6	2 RAID 1 Mirrors for HA File System Metadata and Journal
4	*2 x 1+1 HDD RAID 1 for User File System Metadata - M440 2 x 1+1 SSD RAID 1 for User File System Metadata - M445D SSD and M445Q SSD	7-10	2 RAID 1 Mirrors for User File System Metadata
5	**HDDs	11-14	2 RAID 1 Mirrors for HA File System Metadata and Journal

Item	Description	Drive Slot(s)	RAID Type
6	**HDDs	15-18	2 RAID 1 Mirrors for User File System Metadata
7	Empty Drive Bays - contain drive blanks	19-24	n/a

* - StorNext M440 Base System Metadata Array items
 ** - Expansion Kit items

Figure 5 StorNext M440 MDC Node (Rear View)

Figure 5 provides a rear view of the StorNext M440 MDC Node.

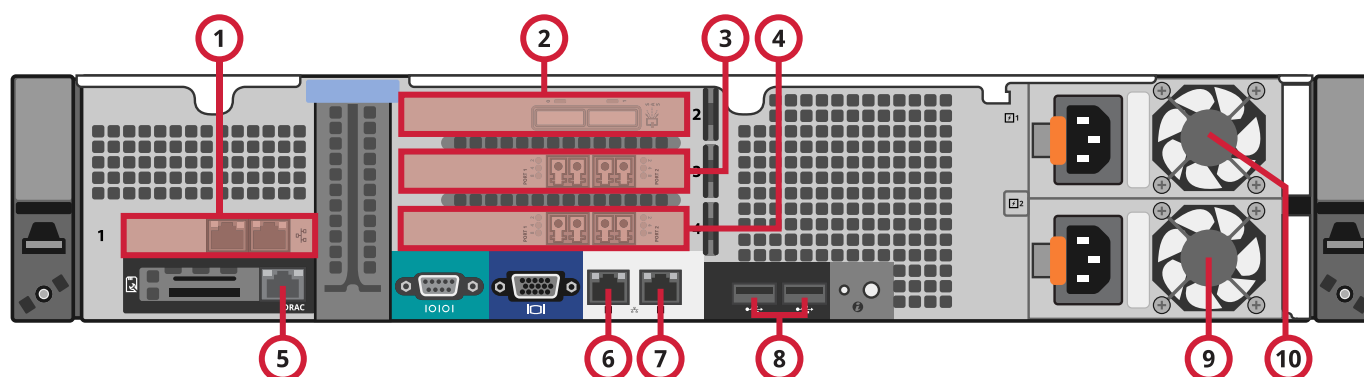


Table 4 StorNext M440 MDC Node Item Descriptions (Rear View)

Table 4 provides a description of the items located on the rear of the StorNext M440 MDC Node.

Item	Description
1	Slot 1 - Customer facing 2-Port 1GbE NIC card
2	Slot 2 - Dell PERC Dual-Port 6 Gb SAS HBA
3	Slot 3 - Empty (StorNext M441D) Slot 3 - QLogic Dual-Port 8 Gb FC HBA (StorNext M441Q)
4	Slot 4 - QLogic Dual-Port 8 Gb FC HBA

Item	Description
5	iDRAC Port (For Service Only); each node has a unique IP address: Node 1 IP address: 10.17.21.51 Node 2 IP address: 10.17.21.52
6	Integrated Service Only Port (For Service Only); each node has a unique IP address: Node 1 IP address: 10.17.21.1 Node 2 IP address: 10.17.21.2
7	Integrated 1GbE (Customer-Facing) Ports
8	USB Ports
9	Secondary Power Supply
10	Primary Power Supply

StorNext M440 Specifications

EMI Certification

This product is certified under the regulatory model name E19S.

Appliance

Hardware	<ul style="list-style-type: none"> • 6U system • Dual metadata controllers (MDCs) with automatic failover • One dedicated metadata array
Software included in base price	<ul style="list-style-type: none"> • 10 File System SAN client licenses • One High Availability license option • Distributed Data Mover (DDM) license for secondary MDC node
Hardware reliability	<ul style="list-style-type: none"> • Dual metadata controllers with automatic failover • Redundant power supplies • Redundant cooling fans • Automated SAS I/O path failover • One Hot Spare in the Base system or two Hot Spares with the Expansion Kit • 2GB mirrored RAID battery-backed cache • Two drives: RAID 1 for metadata and boot disks

Appliance Software Environment

StorNext version	StorNext 4.3.1 or later
Number of user file systems	Two with the base unit, and four with the expansion kit
Client OS support	Linux, Windows, AIX, HP-UX, UNIX, Solaris, and Mac OS

Appliance Physical Characteristics

Width (side to side)	17.7 in (45cm)
Depth (front to back)	26.8 in (68.1cm)
Height	10.5 in (26.7cm)
Weight (standalone)	57.54 lb (26.2kg)

Appliance Cables

Ethernet	Six 25-ft (7.6m) Ethernet cables with RJ45 connectors
Fibre Channel (FC)	Four or eight 19-ft (5.8m) optical Fibre Channel cables with LC connectors
SAS	Four 3-ft (1m) SAS cables for metadata array to MDC node cabling.

Electrical per MDC Node

North American power	<ul style="list-style-type: none"> Two 10-ft (3m) NEMA 5-15P locking power cords Two 4-ft (1.2m) NEMA c13 to C14 power cords (rack power)
European power	<ul style="list-style-type: none"> Two 7-ft (2m) CEE 7/7 locking power cords Two 4-ft (1.2m) NEMA c13 to C14 power cords (rack power)
Input voltage	100 to 240VAC
Frequency	50 to 60Hz
Rated current	10.0 – 5.0 amps
Maximum power consumption	275 watts

Customer-facing Ports, Per MDC Node

Fibre Channel I/O	Two or four 8Gb Fibre Channel ports
Ethernet I/O	Three 1GbE ports

Electrical per Metadata Array

North American power	<ul style="list-style-type: none"> Two 10-ft (3m) NEMA 5-15P locking power cords Two 4-ft (1.2m) NEMA c13 to C14 power cords (rack power)
European power	<ul style="list-style-type: none"> Two 7-ft (2.1m) CEE 7/7 locking power cords Two 4-ft (1.2m) NEMA c13 to C14 power cords (rack power)
Input voltage	100 to 240VAC
Frequency	50 to 60Hz
Rated current	3.1 – 1.3 AMPS
Maximum power consumption	301 watts

Metadata Array and Expansion Kit

Array chassis	2U chassis with 24 2.5"-slots
Base Array drives	<ul style="list-style-type: none"> M441D/M441Q – Nine 2.5" SAS HDDs M445D/M445Q SSD – Five 2.5" SAS HDDs and five SSDs
Base array & expansion drives	<ul style="list-style-type: none"> M441D/M441Q – Eighteen 2.5" SAS HDDs M445D/M445Q SSD – Nine 2.5" SAS HDDs and nine SSDs
RAID configuration	RAID 1 array with one or two hot spares
Metadata & Journal	Each file system is stored in a dedicated RAID 1 stripe
SAS I/O	For the metadata array, two SAS controllers with two 6 Gb SAS connections each.

Climatic Environment

Temperature	<ul style="list-style-type: none"> Operating: 50° to 95°F (10° to 35°C) with a maximum temperature gradation of 10°C per hour <p>Note: 35°C (95°F) is the maximum temperature for the StorNext M440 at sea level. For altitudes above 2,950 ft (899.2m), decrease the operating temp 0.9°C for every 1,000 ft (304.8m) of altitude.</p> <ul style="list-style-type: none"> Shipping and Storage: -4° to 140°F (-20° to 60°C)
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Climatic Environment

Relative Humidity	<ul style="list-style-type: none">• Operating: 20% to 80%, non-condensing• Shipping and Storage: 5% to 95%, non-condensing
Altitude	<ul style="list-style-type: none">• Operating: 0 to 10,000 ft (0 to 3048m)• Shipping and Storage: 0 to 35,000 ft (0 to 10688m)
Heat	Operating: 2389 BTUs

Shock and Vibration

Maximum Vibration	<ul style="list-style-type: none">• Operational: 0.26 G's random vibration, 5 to 350Hz• Non-operational: 0.5 G's random vibration, 5 to 350Hz
Maximum Shock	<ul style="list-style-type: none">• Operational: 2 G's for 11ms, 1/2 sine• Non-operational: 3.5 G's for 11ms, 1/2 sine

Selecting an Installation Location

When choosing an installation site for the StorNext M440 system, consider the following requirements:

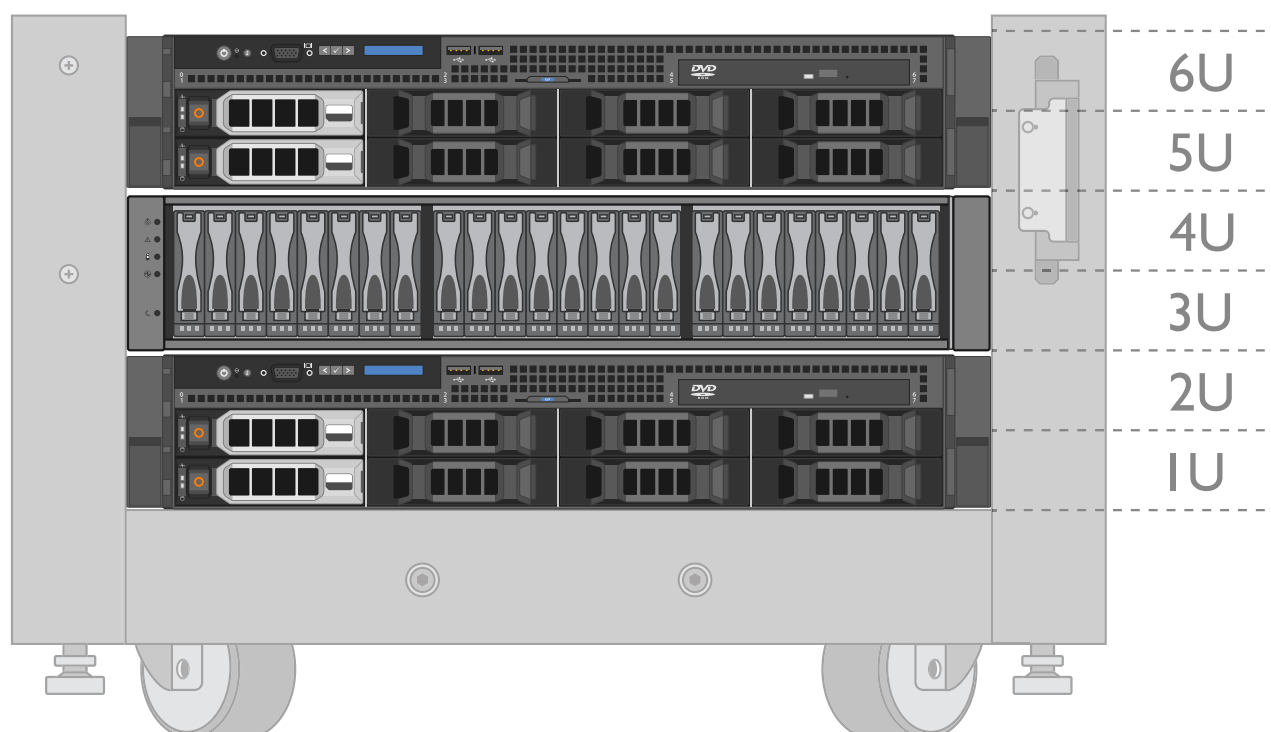
- [Rack Space Requirements](#)
- [Climatic Environment](#) on page 11

Rack Space Requirements

This section provides information about the rack space requirements, and specific details about the StorNext M440 components and configuration options.

The StorNext M440 system occupies 6U of rack space and should be racked with the metadata array between the two MDC nodes, as shown in [Figure 6](#).

Figure 6 Rack Configuration for the StorNext M440 System



Internal Rack Dimensions

The minimum rack space required for the StorNext M440 follows:

- Width – 19 in (48.3cm)
- Depth – 28.4 in (72.06cm)
- Height – 6 U

Supported Rack Rail Hole Types

Rack hole types include:

- 10-32/M5 Mounting Hardware Supported
- Square Holes
- Circular Through Holes (un-threaded)

Component Weights

The out-of-box weight of the following components are:

- MDC Nodes – 47 lb (21.3kg) each
- Metadata Storage – Metadata Array 58.6 lb (26.6kg); Expansion Kit 57 lbs (25.6kg)

Clearance Information

For proper air flow, the following clearances are required for the front and back of the StorNext M440 system:

- Doors removed – 6.5 in (16.5 cm)
- Doors installed – Front and Back: 23 in (58.4 cm)

Service

StorNext M440 Warranty

The StorNext M440 standard warranty includes one year of Quantum 's Bronze Support Plan. This includes 5x9 telephone support and next-business-day on-site response.

StorNext M440 customers may choose to purchase additional years of Bronze support, or a warranty uplift that offers extended hours and more comprehensive on-site support.

All add-on StorNext software features must be purchased with the equivalent service level of the StorNext M440; similarly, all add-on StorNext software licenses must co-terminate with the StorNext M440 service contract, so that the termination dates are the same for all components.

For questions about support or coverage in any of the Quantum service zones, contact Quantum customer support.

Warranty coverage or uplifts may not be available in all areas. Please contact your local Quantum representative for more information concerning areas and type of warranty and service coverage that is available.

Service Levels

The StorNext M440 includes one year of Bronze Support as a product warranty. Uplift support plans are also available—and advisable:

- Next Business Day Gold: 7x24xNBD on-site
- Gold Support: 7x24x4hr on-site
- Extension of Bronze: 5x9xNBD on-site

Service renewal prices are the same as the initial prices and are sold on an annual basis.

All add-on StorNext software features must be purchased with the equivalent service level of the StorNext M440; similarly, all add-on StorNext software licenses must co-terminate with the StorNext M440 service contract, so that the termination dates are the same for all components.

Equivalent service levels between StorNext Software and the StorNext M440 appliance are:

Software Service Levels	StorNext M440 Service Levels
Silver (5x9 telephone)	Bronze (5x9xNBD on-site)
Gold (7x24 telephone)	Next Business Day Gold (7x24x4hr on-site)

Warranty coverage or service uplifts may not be available in all areas. Contact your Quantum representative for information concerning available warranty and service coverage.

Quantum ASSP Program

The Quantum Authorized Software Service Provider (ASSP) program has been extended to cover both StorNext software as well as the StorNext M440 Metadata Appliance. Quantum ASSP partners will be eligible to offer first tier support on the StorNext M440 once they've been trained and certified on the StorNext M440 product.

Quantum ASSP partners who have been trained on the installation and configuration of the StorNext M440 may also choose to offer their own professional onsite installation services for the StorNext M440 product.

For inquiries about the Quantum ASSP program for StorNext, contact your local Quantum representative.



For assistance, contact the Quantum Customer Support Center:

USA: **1-800-284-5101 (toll free) or +1-720-249-5700**

EMEA: **+800-7826-8888 (toll free) or +49-6131-3241-1164**

APAC: **+800-7826-8887 (toll free) or +603-7953-3010**

Worldwide: **<http://www.quantum.com/ServiceandSupport>**

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About Quantum

Quantum is a proven global expert in Data Protection and Big Data management, providing specialized storage solutions for physical, virtual and cloud environments. From small businesses to major enterprises, more than 50,000 customers trust Quantum to help maximize the value of their data by protecting and preserving it over its entire lifecycle. With Quantum, customers can Be Certain they're able to adapt in a changing world—keeping more data longer, bridging from today to tomorrow, and reducing costs. See how at www.quantum.com/BeCertain.