

rdx8000

Removable Hard Disk Storage System



Quantum®

User Guide

PN 6-67387-03 Rev A

FCC

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Commercial use statement:

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Note: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Class A ITE

This is a Class A product based on the standard of the VCCI Council. If this equipment is used in a domestic environment, radio interference may occur, in which case, the user may be required to take corrective actions.

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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Introduction

1. Scope

This document provides information about installing, operating, troubleshooting, and servicing an RDX 8000 product. This document is intended for system administrators and users who need information on the RDX 8000 product.

2. Contact Quantum

www.quantum.com/serviceandsupport

Description

1. Introduction to the RDX 8000

1.1 Overview and applications

The RDX 8000 is a multi-cartridge data storage device designed to support up to 8 RDX cartridges. It may be utilized as a table top unit or rack mounted in a 2U high space with the included rack mounting ears. The RDX 8000 connects to the user's computer network via one or two 1 GB/sec network port using iSCSI protocol. The RDX 8000 unit is capable of operating in one of three user selected modes designed to address a variety of operating environments.

The RDX 8000 unit features an Operator Control Panel (OCP) to display status and error information as well as a Web based remote management interface (RDX 8000). The RDX 8000 is also used by the system user to configure the unit for operation in their specific environment (initial set up) as well as provide the ability to remotely monitor and control unit operations/status.

The RDX 8000 is compatible with most operating systems and environments that support iSCSI network protocol. However, the RDX 8000 requires either direct support from the operating system or a compatible backup application to take full advantage of its many features.

1.2 RDX 8000 product features

- Compatible with all capacities of RDX data cartridges.
- Provides up to 8 TB of native data storage capacity using standard RDX data cartridges.
- Unit can be used as a table top or rack mounted with included rack mounting ears.
- Supports up to 216 GB per hour data transfer rate in JBOD mode using standard frame.
- Supports up to 280 GB per hour writing and up to 430 GB per hour reading in JBOD mode using jumbo frames.
- The RDX 8000 displays cartridge status via the front panel display (OCP) with simple icons and provides more detailed information via RDX 8000 - the Web based remote management interface.

1.3 RDX cartridge features

- Forward and backwards compatible with all RDX docks
- High speed transfer rate for fast backups
 - Superior vibration control insures optimum data transfer speed
- High level of data reliability
 - Error rate determined by HDD model in cartridge
 - Ruggedized cartridge to protect from data loss due to normal user handling of cartridge – Cartridge materials engineered to protect from data loss due to ESD
- Cartridge includes a fault indicator at the front of the cartridge to inform users when the cartridge is faulty.
- Cartridge includes a write protect switch to protect the cartridge from accidental overwrite of user data.
- Cartridge includes venting to enable cooling of the HDD.
- Cartridge includes gripping features for automation.
- Cartridge provides a rear opening for use with a latch to control media removal.
- Cartridge profile is unsymmetrical (keyed) to prevent incorrect insertion.

1.4 Operation modes

The RDX 8000 is capable of being configured during installation by the user to present up to eight RDX cartridges to the host system (via the iSCSI Initiator) as one of three different configurations of RDX based storage devices. The appropriate operating mode can be selected to support the intended application and data management/backup application in use. Please see the online RDX 8000 software-compatibility matrix <http://www.quantum.com/ServiceandSupport/CompatibilityGuides/Index.aspx> for additional information. Below is a brief description of each operating mode.

For more information, refer to “5.11.1 Device - Set Operating Mode” on page 42.

1.4.1 Mode 1 — RDX 8000 Tape Library:

As of firmware version 1.2, the unit appears to the host application as an 8 slot library (autoloader, media changer) containing one to three generic LTO tape drive(s). The application controls which cartridge is “inserted” into one of the available “tape drives”. This mode requires the use of a data management/backup applications which supports a library (media changer) containing one to three tape drives.

Note that the RDX 8000 unit is emulating the LTO tape format to the host application including the actual file format recorded on the RDX cartridge. RDX cartridges which are recorded in this mode are not write/read interchangeable with standard RDX docks.

Use of this mode requires the user to pre-format the standard RDX media to the tape format mode. The RDX 8000 unit identifies the current cartridge format via the OCP and RDX 8000 interfaces.

1.4.2 Mode 2 — RDX 8000 JBOD (default setting):

The RDX 8000 unit appears to the host operating system as 8 individual RDX cartridge drives, each with their own drive letter.

Note that, depending on the host operating system, drive letters may only appear when an RDX cartridge is inserted into a RDX 8000 slot. Removal of media via cartridge eject may cause the drive letter to disappear.

This mode may be used with Windows or Linux operating systems for standard disk operations or with data management/backup application designed to operate with individual RDX storage units in a grouped configuration.

2. Front panel

The front panel of the RDX 8000 is constructed of durable plastic and is designed to provide both visual appeal and protection from entry of dust/dirt. The eight spring-loaded cartridge bay doors prevent entry of dust when no cartridge is inserted, protect the unit from ESD, and control the cooling airflow through the device. The bezel surface may be cleaned with a water dampened lint free cloth.

2.1 Front panel layout

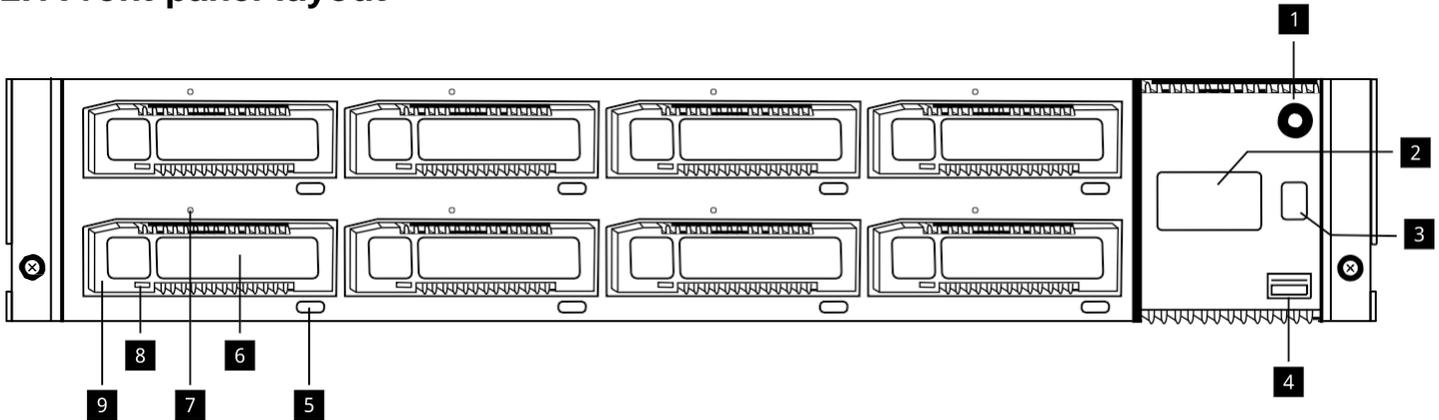


Figure 1 — Front panel

Number	Description
1	AC power button - Soft power switch with LED button indication (2 colors) and power icon graphic.
2	Operator Control Panel (OCP) - 64x128 graphics display with RGB back light.
3	OCP Navigation Button - display mode selector switch - used to play/pause information on the operator display. Also used to locally acknowledge/clear error messages.
4	USB 2.0 service port - used in future implementation for special maintenance and configuration functions.
5	Cartridge eject button (8 places) - soft eject button with LED through button indication (2 colors) - used to eject individual RDX cartridges (when allowed by application).
6	Cartridge identification label (on RDX media)- May be used to identify individual cartridges
7	Emergency eject port (8 places) - used to manually eject individual cartridges when unit power is off or in error conditions.
8	Cartridge indicator - RDX cartridge fault indication LED.
9	RDX cartridge slot (8 places) - RDX dock location that accepts any type of RDX standard media.

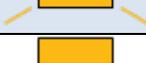
Table 1 — Front panel

2.2 LED Behavior

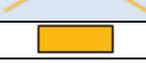
2.2.1 Power button

LED State	Status	Description
 Off	No power	No AC Power is present at the RDX 8000 rear connector.
 Blinking green	Unit starting	Unit is in the process of becoming ready for operation.
 Steady green	Power on	Unit is ready for operation.
 Blinking amber	Unit shutting down	Unit is in the process of shutting down.
 Steady amber	Standby	Unit is in standby, AC power is present.

2.2.2 Cartridge eject button

LED State	Status	Description
 Off	No power	No AC Power is present at the RDX 8000 rear connector.
 Blinking green	Unit starting	Unit is in the process of becoming ready for operation.
 Steady green	Power on	Unit is ready for operation.
 Blinking amber	Unit shutting down	Unit is in the process of shutting down.
 Steady amber	Standby	Unit is in standby, AC power is present.

2.2.3 Cartridge indicator

LED State	Status	Description
 Off	No power	No cartridge inserted
 Blinking green	Unit starting	Cartridge is inserted and the RDX is operating properly.
 Steady green	Power on	Unit is ejecting the cartridge.
 Blinking amber	Unit shutting down	Prevent media removal set, host is accessing the cartridge.
 Steady amber	Standby	Unit has detected a fault condition.

3. Rear panel

The rear panel of the RDX 8000 provides access to the power connector, Ethernet ports, power supply and cooling fan.

3.1 Rear panel layout

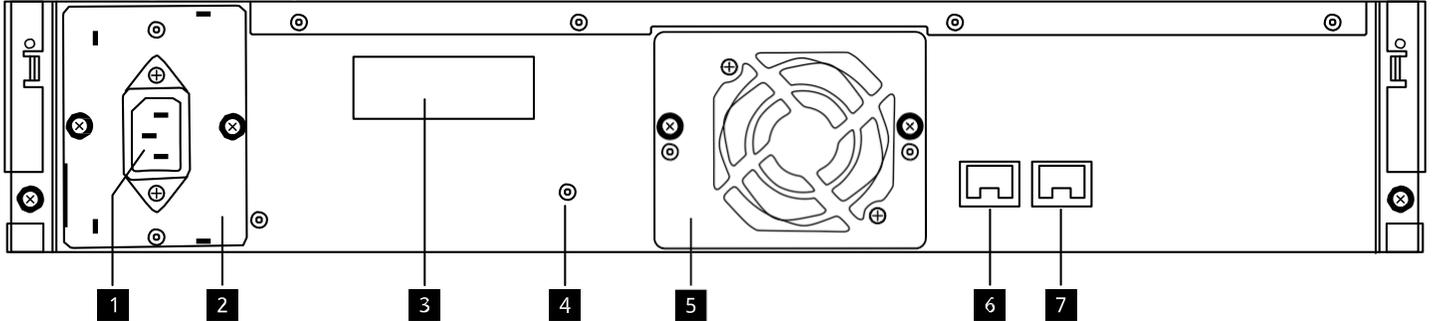


Figure 2 — Rear panel

Number	Description
1	IEC Power connector -- AC Power connection
2	Power supply CRU For replacement see section CRU replacement, Power supply
3	Product identification label
4	Hard reset port - Reset system defaults For more information see section Save/Restore configuration
5	Cooling Fan CRU For replacement see section CRU replacement, Cooling fan
6	Gigabit Ethernet port 2
7	Gigabit Ethernet port 1
8	Removable back plate (for future options)

Table 2 — Rear panel

3.2 Ethernet port LED behavior

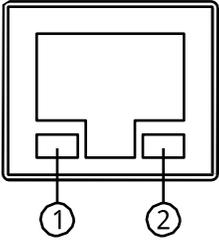


Figure 3 — Ethernet port

Number	Description
1	Link/Activity LED: Blinking – indicates a link is established. Off – indicates no link is established
2	Speed LED: Amber on – indicates a Gigabit connection (1000 Mbps). Green on – indicates a 100-Mbps connection. Off – indicates a 10-Mbps connection.

Table 3 — Ethernet port

4. Product installation

4.1 General installation considerations

This section provides instructions for installing the RDX 8000.

4.1.1 Selecting a location

Select a location that meets the following criteria:

Criteria	Definition
Mounting orientation	Horizontal only-either sitting on a table top or mounted in a 19" equipment rack via the included rack mount ears. The RDX 8000 weighs 15.7 lbs (7.1 kg) when fully populated with cartridges and must be placed on or mounted in a system capable of supporting
Rack requirements	Standard EIA rack 2U space
Room temperature Operating Non-operating	+10° – +40° C, gradient 10°C/hour - 30° – +60° C, gradient 20°C/hour
Power source	100-240 VAC input voltage 50-60 Hz line frequency 1.2-0.6 A Locate the RDX 8000 within 6 ft. of an AC outlet. The AC power cord is the RDX 8000 main AC disconnect device and must be easily accessible at all times.
Air quality	Place the RDX 8000 in an area with minimal sources of particulate generation. Excessive dust and debris can damage the system. Avoid locating the unit in areas near frequently used doors and walk- ways, smoke-filled rooms, or areas where it may easily be
Humidity Operating Non-operating	20 – 80 % non-condensing 20 – 90 % non-condensing

For further information, see section [“1.1 Physical specification”](#) on [page 75](#).

4.1.2 Installation precautions

Select a location that meets the following criteria:

	CAUTION	Static sensitive Risk of damage to devices <ul style="list-style-type: none">• A discharge of static electricity damages static-sensitive devices or micro circuitry.• Proper packaging and grounding techniques are necessary precautions to prevent damage.
	NOTICE	<ul style="list-style-type: none">• Do not expose the unit to moisture.• Use the unit on a firm level surface free from vibration.• Do not place anything on top of the unit.

4.1.3 Unpacking the unit

Before unpacking the unit, clear a work surface to unpack the RDX 8000. Select either a table top location or if the unit is to be rack mounted an open rack location at least 2U spaces in vertical height.

Make sure that the intended operating location provides access to the network connection(s) which will be used and an accessible AC power outlet within 6 ft. of the unit.

	NOTICE	If the temperature in the room where the unit will be installed varies by 15° C (30° F) from the room where the unit was stored, allow the unit to acclimate to the surrounding environment for at least 12 hours before unpacking it from the shipping container.
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Unpacking the RDX 8000:

1. Before opening and removing the RDX 8000 from the box, inspect the container for shipping damage. If you notice any damage, report it to the shipping company immediately.
2. Open the RDX 8000 over pack box.
3. Carefully remove the accessory tray and shipping materials from the top of the over pack box.
4. Remove the inner box containing the RDX 8000.
5. Open the RDX 8000 box.
6. Lift the RDX 8000 out of the carton and remove the bag from the unit.
7. Save the packaging materials for future use.

	NOTICE	Do not place the unit on either end or sides as this may damage the unit.
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Identifying the product components

Confirm that you received the following accessories in the over pack box (some items optional depending upon the user configuration):

- Power cord (region dependent)
- Printed Quick Start Guide
- RDX cartridges

Confirm that you received the following in the RDX 8000 box:

- RDX 8000 unit
- Rack mounting ears with included mounting hardware
- Torx driver for installing rack mounting ears

Required additional equipment for a successful installation:

- Ethernet cable
- RDX cartridges (if not ordered with unit)
- Application software (depending upon usage)

4.2 Installing in a rack

	NOTICE	First read Section “14” on page 14. If the unit will not be rack-mounted, skip to “4.3 Installing cables and connections” on page 17.
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Required tools:

- #3 Phillips screwdriver

Rack mounting the RDX 8000:

1. Determine the location in the rack for the unit to be installed.
2. Use a pencil to mark the location on each vertical rail in the rack.
3. Install the rack ears of the unit using T10 Torx screwdriver to tighten the Torx screws included in the rack mount kit.

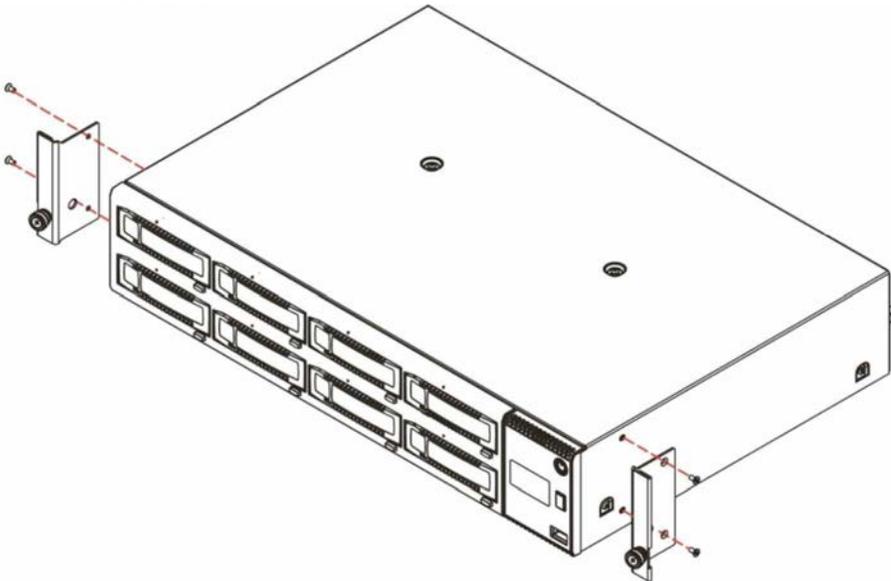


Figure 4 — Installing the rack ears

4. Locate and install appropriate clip nuts into rack rails.
5. Secure the unit to the rack using a #3 Phillips screwdriver or your fingers to tighten the two captive thumb screw(s) on each side of the unit.

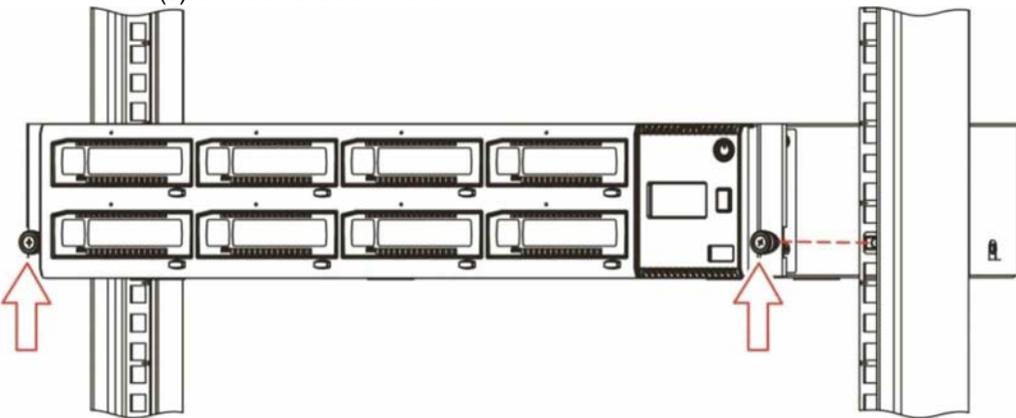


Figure 5 — Securing the unit to the rack

4.3 Installing cables and connections

	DANGER	High voltage Risk of electric shock <ul style="list-style-type: none">• Do not remove cover. No user-serviceable parts are inside.• Refer servicing to qualified service personnel.
	WARNING	Usage of unapproved power cords Risk of personal injury Risk of damage to devices Before connecting a power cord to the unit: <ul style="list-style-type: none">• Ensure that the power cord meets individual country specific safety requirements.• Use a sufficient conductor amp capacity to avoid overheating the unit. The manufacturer disclaims all liability in the event a non-manufacturer approved power cord is used.

To connect the power cord to the unit:

1. Plug the power cord into the power connector (AC connector) on the rear panel of the power supply; see section Rear panel,
2. Plug the power cord into an appropriate electrical outlet.

To connect the network cable:

The connection to the Ethernet network is via an industry standard RJ45 copper interface on the rear panel of the unit; see section Rear panel.

1. Insert the Ethernet cable into the Ethernet port #1 of the unit.
2. When the plug is in the full seated position, a positive click should be heard.

4.5 Powering up and powering down the unit

The RDX 8000 power button indicator will be solid amber when AC power is present at the unit indicating the unit is in Standby mode.

Press and release the power button on the front panel to power up the RDX 8000. During the power up process the power button indicator will change from solid amber to flashing green indicating the unit is in the process of becoming ready. The RDX 8000 unit will take approximately 3.5 minutes to complete the power up boot sequence. During power up a progress bar will be displayed in the OCP after approximately 90 seconds providing boot progress indication for the remaining start up sequence operations.

	NOTICE	The RDX 8000 will always start from standby mode if the last power shutdown of the unit was performed via a normal shutdown to standby mode (shutdown initiated by the pressing the power button).
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If the unit was stopped or rebooted because of an AC power interruption the unit will automatically boot backup to operation mode without the necessity of a power button push. This allows the RDX 8000 to recover from power errors without additional operator intervention.

After successful completion of the power up sequence, the network interface will be available if an active network connection was detected. The RDX 8000 OCP (Operator Control Panel) will also become active and will display the RDX 8000 unit's IP address for port 1. Please take note of this IP address which will be used to access the RDX 8000 and for the iSCSI communication.

To power down the unit press and hold the power button for 4 seconds and release. The power indicator will flash amber indicating the unit is in the process of powering down. Once the unit has completed the power shutdown sequence the power indicator will be solid amber indicating the unit is in Standby Mode.

	NOTICE	Do not insert RDX cartridges until the preliminary RDX 8000 configuration process is completed!
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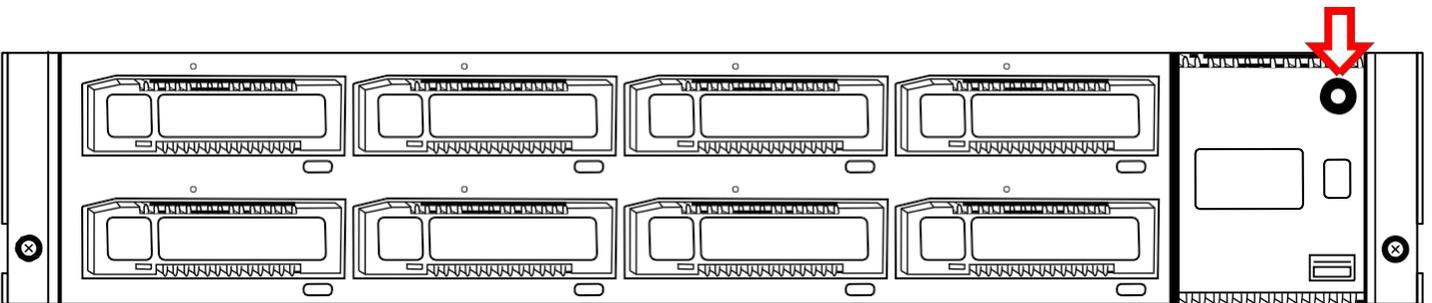


Figure 6 — Power up/down the unit

5. Product configuration

5.1 Product configuration process

Once the RDX 8000 unit has been powered up the unit may be configured to the user's desired network settings and operational mode. The unit may be configured via the built in RDX 8000 (Remote Management Interface). The RDX 8000 is accessed over the customer's local IP network using an internet browser application.

The RDX 8000 is compatible with the following internet browser applications:

- Mozilla Firefox
- Internet Explorer
- Google Chrome

5.2 IP address assignment

The RDX 8000 comes configured to communicate over Ethernet port 1 and will search for an IP address as follows:

Note: The network cable must be plugged in before powering on the unit.

1. The unit will look for an active network connection. If no connection is found, the OCP will display No Link
2. When an active network connection is detected, the RDX 8000 will search the user's local network for a DHCP server.
3. If a DHCP server is found it will receive the assigned IP address from the local DHCP server and use this address for operations. The IP address will appear on the System Information screen of the OCP.
4. If after 60 seconds no DHCP server is found the unit will use the APIPA protocol to assign a static IP address. The assigned static IP address will appear on the OCP.

Once an IP address is assigned the unit may be reconfigured to a new static IP address or redirected to a DHCP server by logging into the unit via the RDX 8000 interface.

5.3 OCP – Operator Control Panel

The RDX 8000 unit includes an LCD based display located on the right side of the unit's front bezel – referred to as the Operator Control Panel or OCP. Highlights of the OCP are:

- 64 dot high by 128 dot width graphics display with color backlight
- Displays both text and icon based information
- Under normal conditions the backlight uses white light
- A flashing amber backlight is used to alert the user to error conditions. The errors may be acknowledged and cleared via a long press of the Display Navigation button push on the unit front panel. The error may also be cleared by reading the error message in the System Information Block in the RDX 8000.
- OCP has an automatic sleep mode and will turn off the entire display after 1 minute with no interaction as long as there are no pending error notifications.

5.3.1 OCP Display Content

Once the RDX 8000 unit completes the power up boot sequence the OCP will become active. The OCP will display the system information screen which identifies the unit's iSCSI QN name, current IP address / status of Ethernet port 1, as well as the unit current firmware revision level.

The normal display mode rotates through nine screens. The System Information screen is followed by eight individual screens indicating slot status. Following slot 8 the rotation is repeated, beginning with the System Information screen.

After initial power up the OCP will hold on the System Information screen. The OCP may be set to automatically rotate through all screens by pushing and holding the OCP Navigation button for three seconds (long push).

The general layout of the Slot Status screen is shown in the figure below:

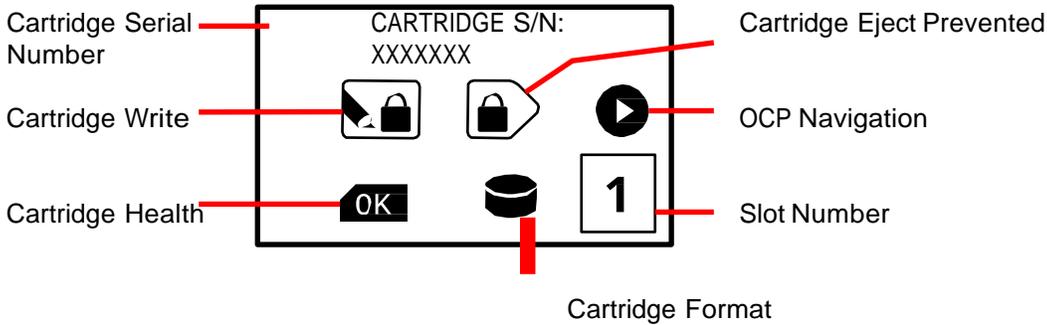


Figure 7 — OCP Slot Status

5.3.2 OCP Icons

The RDX 8000 makes use of graphic icons to indicate some conditions to the user. These icons are used both on the local OCP display and in the Active System Graphic in the RDX 8000. The RDX 8000 icons in use are shown in the table below.

Group	Icon	Meaning
OCP Navigation		Step to next bay/cartridge info
		Pause at current screen
Cartridge Format		Disk standard format on cartridge
		Tape format on cartridge (tape emulation)
Cartridge Status		Write to cartridge prevented (Write Protect)
		Eject of cartridge prevented (Prevent Set)
Cartridge Metrics (RDX 8000)		Temperature
		Number of insertion cycles
		Accumulated operational time
Cartridge Status (OCP only)		Cartridge status not OK
		Cartridge status OK
	Slot Empty	No cartridge inserted

Table 4 — Icon Table

5.3.3 OCP Navigation

The RDX 8000 OCP supports the viewing option of pausing the display at any individual screen and manually stepping through screens. The OCP navigation operates as follows:

- To pause the (currently cycling) display press and hold the OCP Navigation button for approximately 3 seconds.
- The OCP will change to Pause mode indicated by the OCP Navigation icon changing to the step icon.
- To step the OCP display to the next screen (when the OCP is in pause mode) press and release (short button press) the OCP Navigation button. You may repeat this operation to step through the OCP screen rotation until you reach the desired screen.
- To resume the normal OCP automatic cycling press and hold the OCP Navigation button for approximately three seconds. The OCP Navigation will resume the auto rotation mode indicated by the OCP icon changing to the pause icon.
- When in display rotation the RDX 8000 OCP automatically cycles through the nine information display screens unless there is a pending error condition. Any pending error will cause a local alerting condition, indicated by a text message in display with a flashing amber backlight.
- If there is a current error the error message may be acknowledged/cleared by pushing and releasing the OCP Navigation button. Errors may also be cleared remotely in the RDX 8000 interface.
- Multiple errors will queue so it may be necessary to push the OCP Navigation button multiple times to clear errors. Each push will update any pending error message to indicate the condition which triggered the error.

5.4 iSCSI Connection

The RDX 8000 uses the iSCSI protocol to communicate data with the host system. Depending on the operating mode, the RDX 8000 will present itself as one or more iSCSI identities:

JBOD mode:

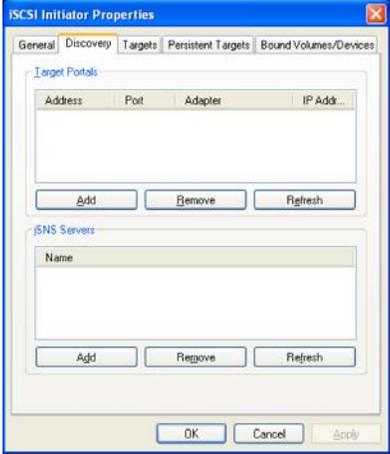
The RDX 8000 will present each of the eight slots as a separate iSCSI target. The target iqn's will have the format of unit iqn with a "-x" appended at the end, where "x" is the slot number

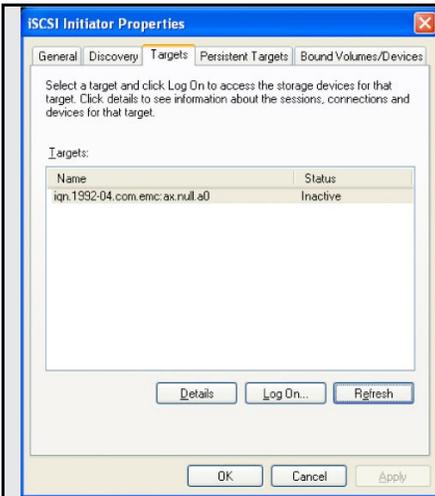
Tape Library Mode:

The RDX 8000 will present itself as a single iSCSI target. When an iSCSI connection is completed, the RDX 8000 will be presented as a Media Changer and one to three LTO tape drives, depending on the configuration.

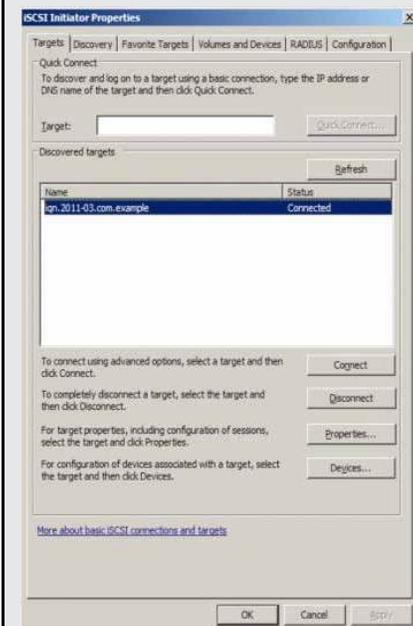
5.4.1 General Set up of the iSCSI Initiator

The following procedure is used to set up the RDX 8000 as an iSCSI Target.

	<ol style="list-style-type: none"> 1. Open Microsoft iSCSI Initiator. 2. On the "Discovery" tab and under "Target Portals" click "Add".
	<ol style="list-style-type: none"> 3. Type the current IP address (for DNS or static IP address) or the DNS name (displayed as "Host name" in the system information block of the RDX 8000) of the RDX 8000 unit then click "OK".
	<ol style="list-style-type: none"> 4. The IQN(s) for the RDX 8000 unit should be shown under available targets. 5. Highlight the RDX 8000 IQN by clicking on it. 6. Depending upon which version of MS Initiator in use you may need to either click "Log On" or "Connect". 7. The RDX 8000 IQN should now change to CONNECTED. 8. The RDX 8000 is now connected via iSCSI.



9. If the System Mode is Tape Library:
In Device Manager. The RDX 8000 will be identified as a Media Changer and a tape drive.
10. If the System Mode is JBOD:
In Disk Management 8 Removable Media drives will be identified. Depending on the host operating system, 8 drives may be visible in Windows Explorer.



Linux CentOS:

Use the following commands to install the iSCSI Initiator and Connect and Disconnect the RDX 8000 as an iSCSI Target in Linux operating systems:

To Connect:

1. Install Open-iSCSI initiator by entering the following command:

```
# yum install iscsi-initiator-utils
```

For Ubuntu and Debian operating systems, enter the following command:

```
$ sudo apt-get install open-iscsi
```

2. Discover iSCSI Targets using the following command, replacing the variable *IP address* with the actual IP address for your RDX 8000:

```
# iscsiadm -m discovery -t sendtargets [or st]-p ip address
```

For example:

```
# iscsiadm -m discovery -t st -p 192.168.64.103
```

The results will depend on the configured mode of the RDX 8000:

- JBOD – Eight iSCSI targets

- Tape Library mode – one iSCSI target.

3. Connect to the selected iSCSI target(s):

- To connect to all targets:

```
# iscsiadm -m node -L all
```

- To connect to an individual target, enter the following command, replacing *target IQN name* with the iSCSI qualified name (IQN) of the target and replacing *ip address* with the RDX A8 IP Address:

```
# iscsiadm -m node -T target IQN name -p ip address --login
```

For example :

```
# iscsiadm -m node -T iqn.2011-05.com.quantum:RDX8000-0000BD-1 -p 192.168.646.103 --login
```

Once the target is connected, the Linux host can use the iSCSI disks as a normal disk. It appears under */dev/sdx* devices and can be formatted and mounted like a normal disk.

To Disconnect:

1. Use the following command, replacing *target IQN name* with the iSCSI qualified name (IQN) of the target and replacing *ip address* with the RDX 8000 IP Address:

```
# iscsiadm -m node -T target IQN name -p ip address --logout
```

5.5 Cartridge Ejection

The RDX 8000 is configured to ensure the integrity of the data written to the cartridges. For that reason, the cartridges are put into the Ejection Protection mode when an iSCSI connection is completed. This mode prevents the user from ejecting the cartridges using the front panel eject buttons or the Eject function in the RDX 8000. The user can work through the operating system to eject the cartridge using the Eject function.

The RDX 8000 does have a Windows based Eject Service that can be installed to provide front-panel eject capability while an iSCSI connection is established. This service watches the data transfers and allows the transfer to successfully complete before allowing the ejection of the cartridge. The service is packaged with an RDX utility that allows the user to view specific details of the RDX cartridges. The service can be installed on each host that creates an iSCSI connection with the RDX 8000.

The Eject Service/Utility can be downloaded from the RDX 8000 Web site at:

<http://www.quantum.com/ServiceandSup- port/SoftwareandDocumentationDownloads/RDX8000/Index.aspx>.

To install the service:

1. Download the RDX 8000 Utility file to a known location on your host.
2. Extract the files from the .zip file using Right-click - Extract from the operating system, or use another unzip application. The folder contains applications for both 32bit and 64bit operating systems.
3. Double-click the application that is appropriate for your operating system. The installer begins the service and utility installation process. If an existing version of the utility is found, the user will be prompted that the previous version will be removed.
4. The Install Wizard will open. Accept default values and repeatedly click next (unless a customized install is desired/required).
5. When the installation is complete, the Eject Service – RDXMon.exe – will be installed and running. It will be visible in the Task Manager and the Services console in Administrative Tools.

RDX Utility

The RDX Utility is installed along with the Eject Service and allows the user to view detailed information regarding the RDX cartridges in use.

When started, the utility displays all of the RDX cartridge docks or slots recognized by the Host, indicating if a cartridge is inserted or not. Double clicking on the drive will display detailed information about the cartridge, as well as the dock/ slot the cartridge is in.

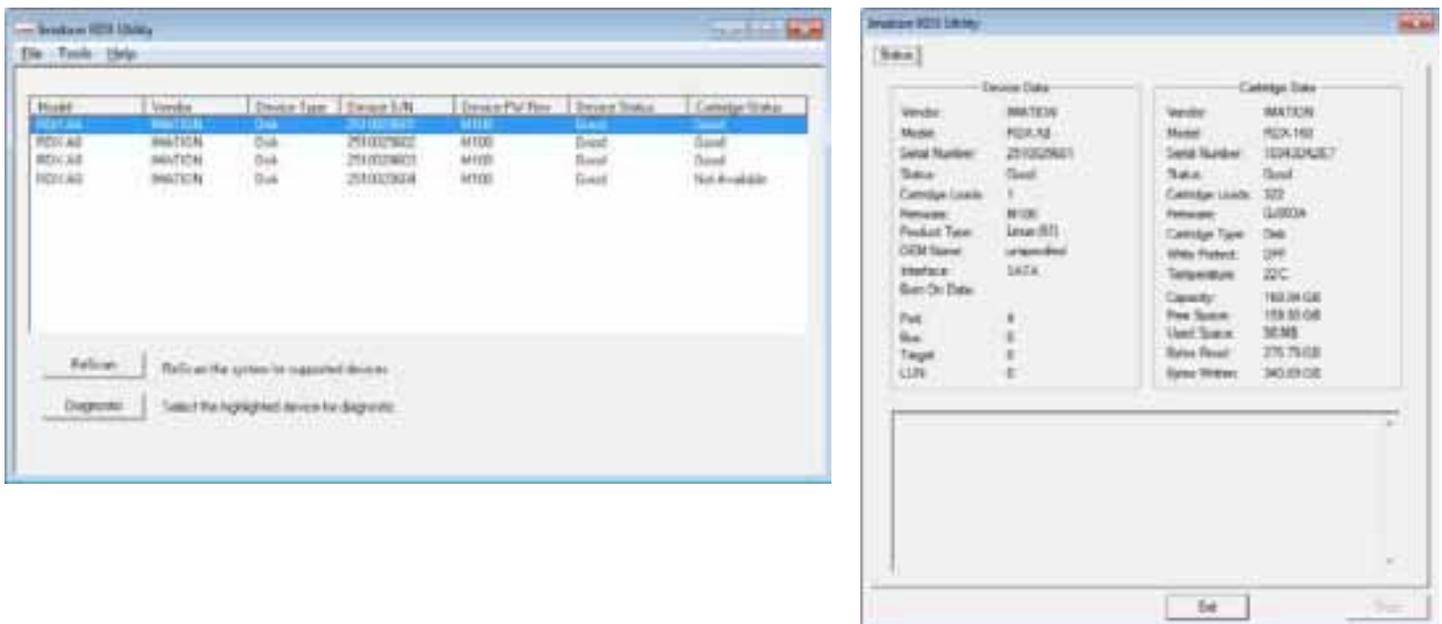


Figure 8 — RDX Utility

5.6 Introduction to the RDX 8000

The RDX 8000 unit uses the Web based RDX 8000 to allow the user to configure and monitor the unit. The RDX 8000 IP address may be viewed in the OCP and is displayed between the cartridge monitoring pages for slot 8 and slot 1 (#1 out of 9 screens in continuous rotation). Once the RDX 8000 IP address is known, browse to the unit with your Web browser application by entering the RDX 8000 IP address in your browser address bar. You may enter “XXX.XXX.XXX.XXX” where the “X”s indicates the actual IP address. The IP address protocol does not require leading zeros so 172.16.1.43 is a valid IP address.

The overall menu structure of the RDX 8000 is shown in the chart below. If logged into the RDX 8000 interface with User level credentials the menus for “CONFIGURE”, “MANAGE” and “DIAGNOSTICS” will neither be visible nor accessible by the user.

5.6.1 RDX 8000 Flow Chart

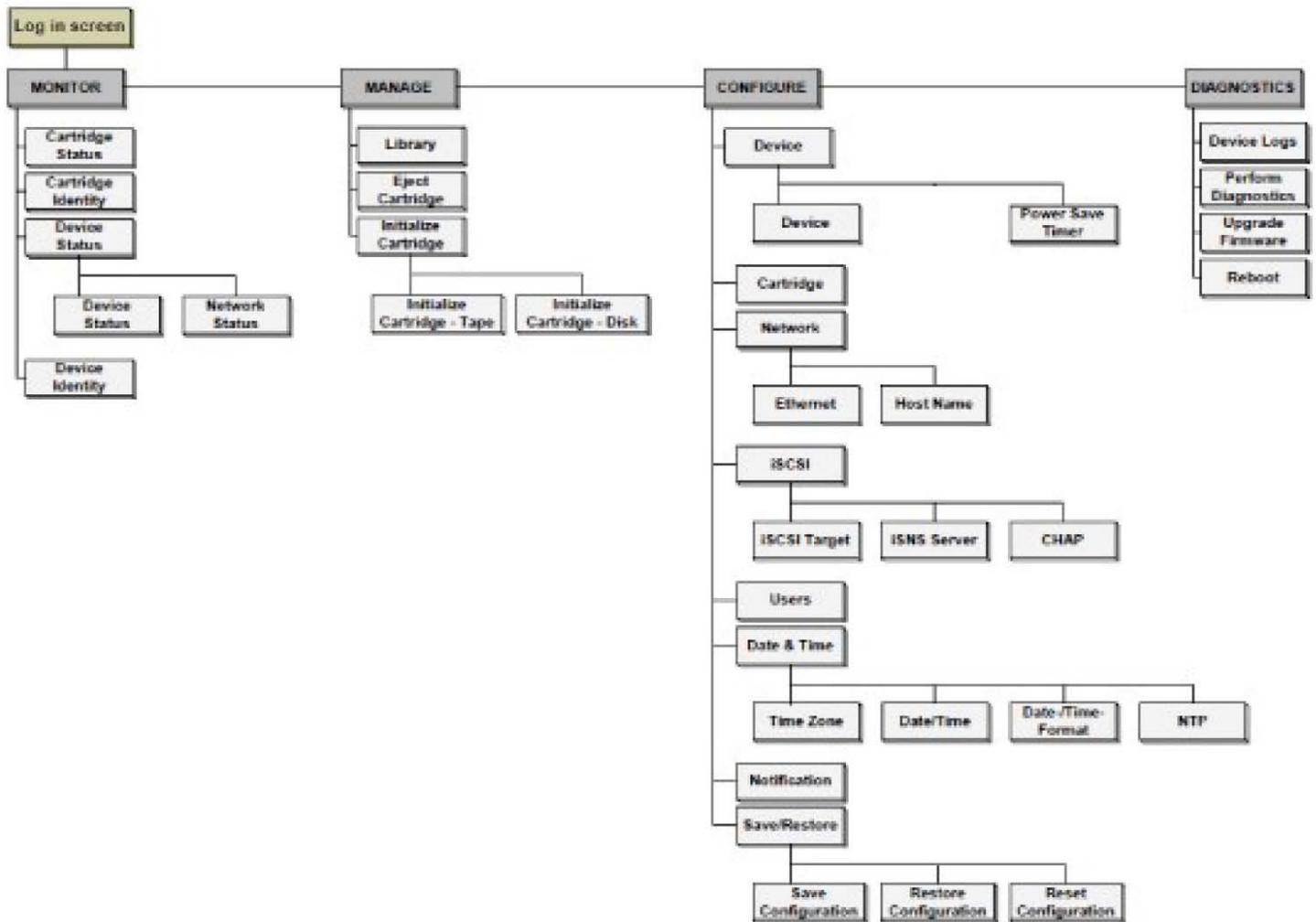


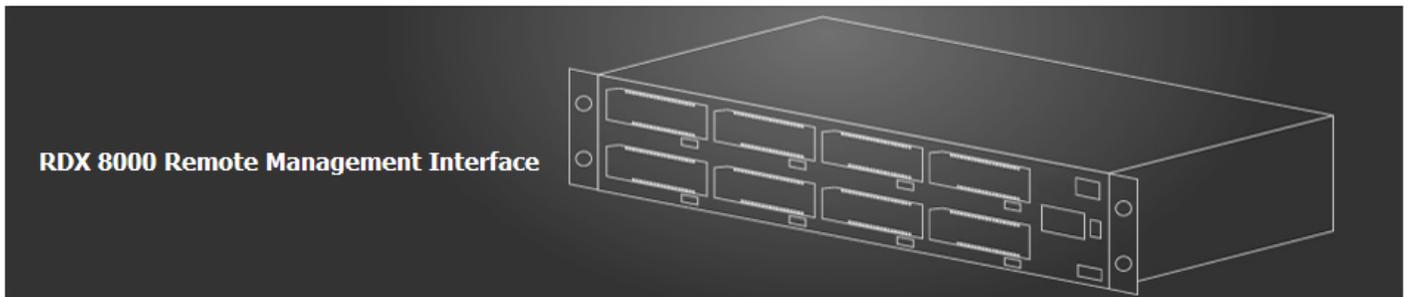
Figure 9 — RDX 8000 Flow Chart

5.7 Login Procedures

Access the RDX 8000 remote management interface via a Web browser. Using the IP address visible on the unit's front panel OCP, enter the IP address into your browser address bar and navigate to the RDX 8000 Login page.

5.7.1 Login Page

Quantum.



System Name: RDX8000
Date & Time: 07/05/2012 01:05 PM

User	<input type="text"/>
Password	<input type="password"/>
<input type="checkbox"/> secure SSL encryption	
<input type="button" value="login"/>	

Figure 10-RDX 8000 Login Page



Figure 11 — RDX 8000 Login Detail

Number	Description
1	System Name: Displays the name currently assigned to the RDX 8000 unit. The factory default setting is “RDX 8000”. This field may be changed on the “CONFIGURE/Device” tab. This field may only consist of alphanumeric characters.
2	Date & Time: The current system date and time is displayed in MM/DD/YY and 12 Hr. time format. This field may be changed on the “CONFIGURE/Date & Time” tab. These fields may only consist of alphanumeric characters.
3	User Name & Password Authentication: This is the location where the user enters in their specific login information. Access to RDX 8000 RMI menus is granted by login levels as described in “Table 6 — Default User Accounts” on page 26.
4	Secure SSL encryption: The RDX 8000 unit supports a secure connection option to the host system. The SSL certificate is unsigned resulting in a security warning when activating the SSL connection.

Table 5 — RDX 8000 Login Detail

Following are default account names and passwords:

User Level	Username	Password
User	user	std001
Administrator	administrator	adm001
Service	service	ser001

Table 6 — Default User Accounts

The user name and the password field are both case sensitive. New user accounts may be created on the “CONFIGURE/ Users” tab.

5.7.2 SSL Encryption Page

Selecting SSL encryption will cause the following screen to be displayed.

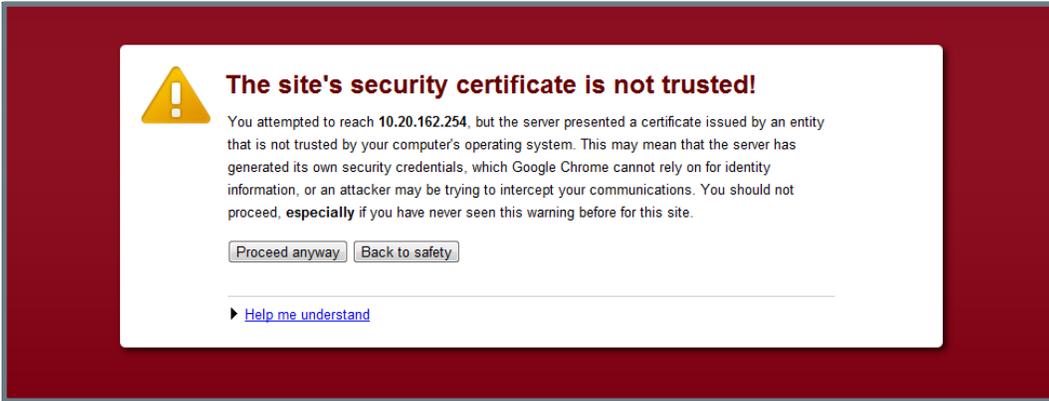


Figure 12 — SSL Encryption Warning

Select "Continue to this Web site."

5.7.3 RDX 8000 features:

- The RDX 8000 grants access or ability to perform operations based upon user rights.
- The RDX 8000 grants the Administrator and Service levels full access to device set up, diagnostics, and logging.
- The RDX 8000 grants the User level only the ability to monitor device and cartridge status.

User Level	MONITOR	CONFIGURE	MANAGE	DIAGNOSTICS
Administrator	•	•	•	•
Service	•	•	•	•
User	•			

Table 7 — RDX 8000 User Access levels

5.8 RDX 8000 Pages

Upon a successful login into the RDX 8000 all users will be directed to the RDX 8000 “MONITOR/Cartridge Status” tab. An overview of the main graphic elements is displayed below. The main navigation is performed via selection (via mouse click) of the Main Topic Bar (element 1 in the RDX 8000 page chart) and then selection of the associated Sub Topics (element 2). Key elements are the Active System Graphic (element 7) and the System Information Block (element 3) which is visible on all RDX 8000 pages.

5.8.1 RDX 8000 Page Chart

The screenshot displays the RDX 8000 Remote Management Interface. At the top left, a user information box shows 'User: administrator' and 'User Level: Administrator'. The main navigation bar includes 'MONITOR', 'MANAGE', 'CONFIGURE', and 'DIAGNOSTICS'. A secondary navigation bar shows 'Cartridge Status', 'Cartridge Identity', 'Device Status', and 'Device Identity'. The central area features a graphical representation of eight cartridge slots, each with a status indicator. Below this is a 'System Information' block and a 'Cartridge Status' table.

System Information

Status: ■ READY

System Name:
RDX8000

System Date & Time Stamp:
02/10/2012 01:03 PM

System Mode:
JBOD

IP-Address:
10.20.162.13
fe80::20e:11ff:fe20:af

Host name:
RDX8000-2000AF.quantum.com

Firmware Version:
R1.21 0x2238

Cartridge Status

Slot#	Status	Remaining Capacity	Type	Temperature	Action
1	Ok		Disk	20 °C / 68 °F	
2	Ok		Disk	21 °C / 69.8 °F	
3	Ok		Disk	21 °C / 69.8 °F	
4	Ok		Disk	23 °C / 73.4 °F	
5	Ok		Disk	21 °C / 69.8 °F	
6	Ok		Disk	23 °C / 73.4 °F	
7	Ok		Disk	23 °C / 73.4 °F	
8	Ok		Disk	23 °C / 73.4 °F	

Figure 13 — RDX 8000 Home Page

Numb	Description
1	Logged in user / Login user level: This field is visible on all pages. It shows the current user account name and user credential level
2	Main topic bar: This field is visible on all pages. The four main RDX 8000 RMI menus are accessed from this set of choices by selecting with a point and click. Operators with User level credentials will not have access to the "MANAGE", "CONFIGURE" and "DIAGNOSTIC" menus.
3	Sub topic bar: This field is visible on all pages. The content of the sub topic bar changes with the main topic selection.
4	System Information Block: This field is visible on all pages. The System Information Block covers key global parameters related to overall system status and identification. If the system has pending errors they will be indicated by the status icon and additional information will be available under the associated information button.
5	Sub Topic details: The subtopic details change with the main topic selection.
6	Active System Graphic: This field is visible on all pages. The status of individual cartridge slots may be verified by the graphic. The system graphic and the OCP use the same icon indications. Additional information is available via mouse over of each cartridge graphic (for slots which have cartridges
7	Logout button / Change password: This field is visible on all pages. The user may change their password

5.8.2 RDX 8000 System Information Block

The System Information Block provides an overview of global system information.

The fields are summarized below.

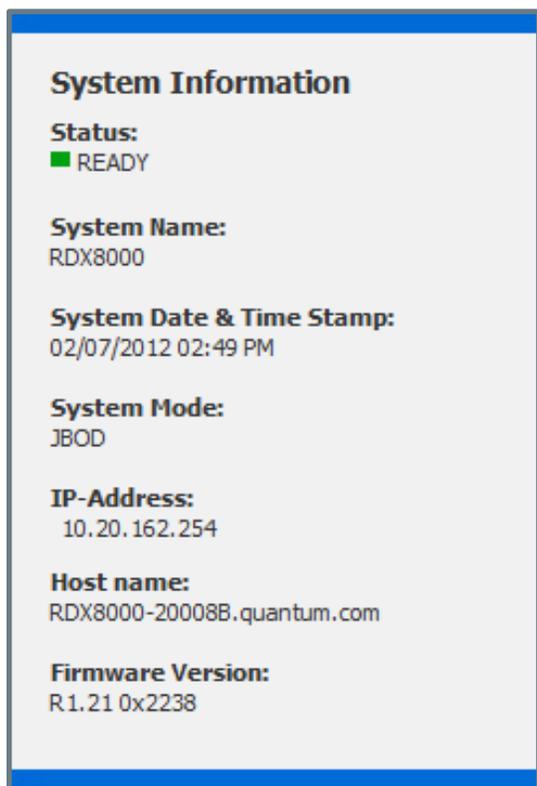


Figure 14 — RDX 8000 System Information

Status:

This graphic indicates the global system status by color; green indicates good status, yellow indicates warning status, red indicates critical error status. If the system is currently in either warning or critical error status mode additional information will be available via an information button icon located next to the status indication.

System Name:

The user configurable System Name appears at log in and with remote e-mail alerts.

System Date & Time:

The current system date and time is displayed.

System Mode:

This field displays the current RDX 8000 system operating mode.

IP Address (for Ethernet port 1):

The current port IP address is displayed in this field.

Host Name:

The Host Name field displays the host name and domain name together. This naming will be associated with the IP address as the DNS name.

Firmware Version:

The current unit firmware level and firmware image checksum are displayed in this field.

5.9 Monitoring cartridge and device status – The MONITOR tab

The RDX 8000 unit user home page is the “MONITOR” tab for all account logins. Following is a brief description of each function.

5.9.1 Cartridge Status page

This section depicts the Monitor Cartridge Status page and describes each field on the page.

Slot#	Status	Remaining Capacity	Type	Temperature	Action
1	Ok		Disk	22 °C / 71.6 °F	
2					
3	Ok		Disk	21 °C / 69.8 °F	
4	Ok		Disk	21 °C / 69.8 °F	
5	Ok		Disk	21 °C / 69.8 °F	
6	Ok		Disk	22 °C / 71.6 °F	
7	Ok		Disk	21 °C / 69.8 °F	
8	Ok		Disk	21 °C / 69.8 °F	

System Information

Status: ■ READY

System Name: RDX8000

System Date & Time Stamp: 02/07/2012 01:01 PM

System Mode: JBOD

IP-Address: 10.20.162.254

Host name: RDX8000-2008B.quantum.com

Figure 15 — RDX 8000 Monitor Cartridge Status

Slot #:

This field shows the row heading indicating the slot number.

Status:

OK -- indicates normal operation of the cartridge. Error -- indicates a problem with the RDX cartridge.

Remaining Capacity:

This field shows the remaining storage capacity of the media when in tape emulation mode only. Note that in JBOD mode cartridge remaining capacity must be viewed from the host file system.

Type:

This field indicates the format of the cartridge as either tape or disk. Note that using the RDX 8000 in Tape Library emulation mode requires that the cartridges be formatted as tape.

Temperature:

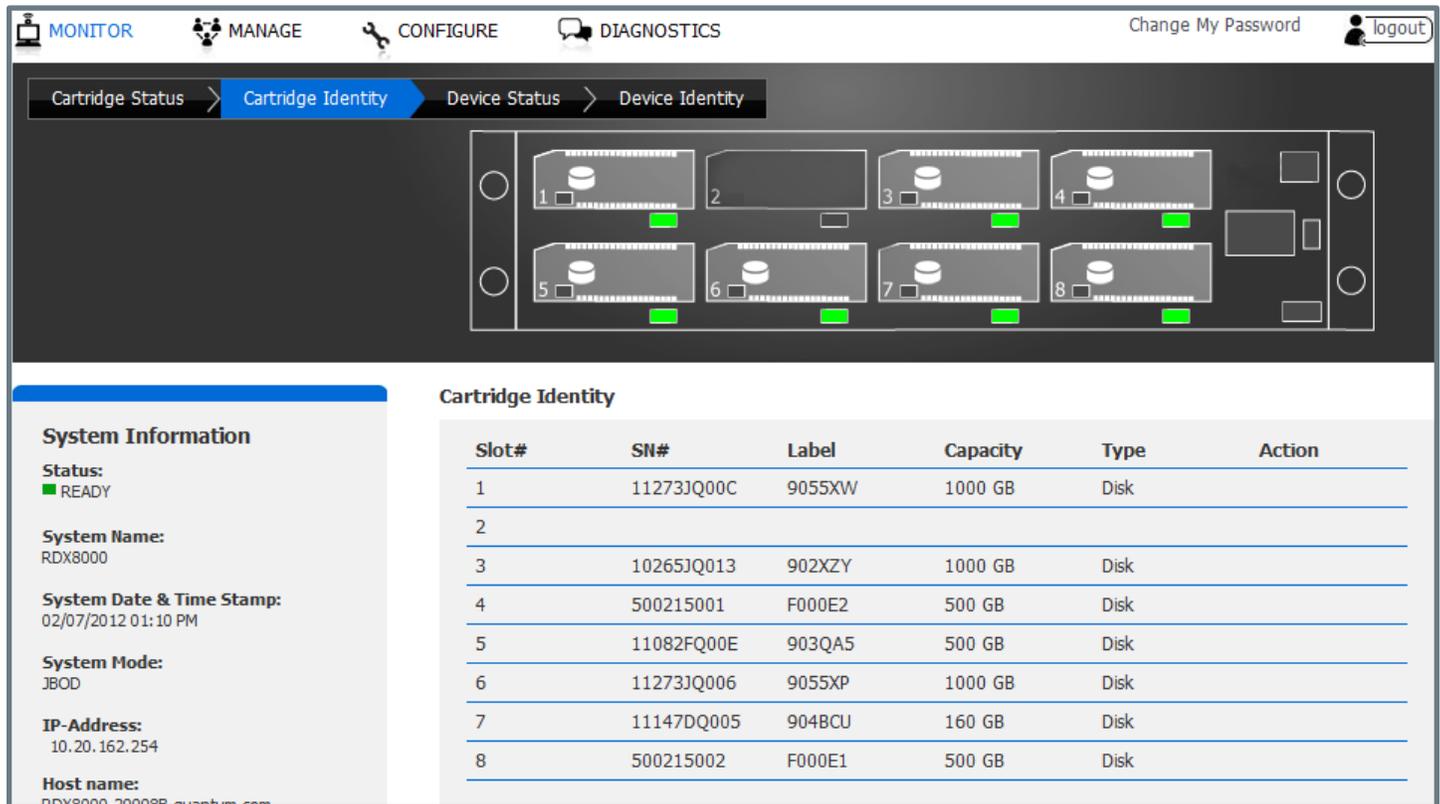
This field shows the individual cartridge temperature in both Celsius and Fahrenheit scales.

Action:

This field is reserved for future use.

5.9.2 Cartridge Identity page

This section depicts the Monitor Cartridge Identity page and describes each field on the page.



System Information

Status:
■ READY

System Name:
RDX8000

System Date & Time Stamp:
02/07/2012 01:10 PM

System Mode:
JBOD

IP-Address:
10.20.162.254

Host name:
RDX8000-20008B.quantum.com

Cartridge Identity

Slot#	SN#	Label	Capacity	Type	Action
1	11273JQ00C	9055XW	1000 GB	Disk	
2					
3	10265JQ013	902XZY	1000 GB	Disk	
4	500215001	F000E2	500 GB	Disk	
5	11082FQ00E	903QA5	500 GB	Disk	
6	11273JQ006	9055XP	1000 GB	Disk	
7	11147DQ005	904BCU	160 GB	Disk	
8	500215002	F000E1	500 GB	Disk	

Table 8 — RDX 8000 Monitor Cartridge Identify

Slot #:

This field shows the row heading indicating the slot number.

SN#:

This field displays the physical RDX cartridge serial number.

Label:

This field displays the cartridge label. Note that this label field will always display the default cartridge label when the RDX 8000 system is operated in JBOD mode. When the RDX 8000 system is operated in Tape Library mode, Tape formatted RDX cartridges will display either the default cartridge label or the user assigned custom label.

Capacity:

This field shows the storage capacity of the RDX cartridge in GB.

Type:

This field indicates the format of the cartridge as either tape or disk. Note that using the RDX 8000 in Tape Library mode requires that the cartridges be formatted as tape.

Action:

This field is reserved for future use.

5.9.3 Device Status page

This section depicts the Monitor Device Status page and describes each field on the page.

The screenshot shows the RDX 8000 Monitor Device Status page. At the top, there is a navigation bar with 'MONITOR', 'MANAGE', 'CONFIGURE', and 'DIAGNOSTICS'. Below the navigation bar, there are tabs for 'Cartridge Status', 'Cartridge Identity', 'Device Status', and 'Device Identity'. The 'Device Status' tab is active. The main content area displays a grid of eight cartridge slots, each with a status indicator (green or red). Below the grid, there are two panels: 'System Information' and 'Device Status'. The 'System Information' panel shows 'Status: READY', 'System Name: RDX8000', 'System Date & Time Stamp: 02/07/2012 01:11 PM', 'System Mode: JBOD', 'IP-Address: 10.20.162.254', and 'Host name: RDX8000-20008B.quantum.com'. The 'Device Status' panel shows 'Status: WARNING', 'Name: RDX8000-20008B', 'Power On Time: 0 day; 1 hour; 28 minutes', 'Temperature: 35 °C / 95 °F', 'Slots Free/Available: 1/8', 'Library Time: 02/07/2012 01:11 PM', 'Fan Speed: Fan Speed Level 1 (2415 Fan RPM)', 'Fan Status: Fan OK', and 'Power Supply Status: Power Good'.

Figure 16 — RDX 8000 Monitor Device Status

Status:

This field displays the overall system status.

Name:

This field displays the System Name.

IP Address:

This field displays the IP address for the device. This address is used to provide access both to the RDX 8000 connection and the iSCSI connection.

Total Power On Time:

This field displays the total power on time since the last system reboot event.

Temperature:

This field displays the current system temperature in both Celsius and Fahrenheit scales.

Slots Free/Available:

This field displays the number of empty cartridge slots followed by the total number of slots.

Library Time:

This field displays the current unit date and time from the internal system clock. The unit time may be set on the "CONFIGURE/Date & Time" tab.

Fan Speed:

This field displays at which of 4 speeds the fan is currently running.

Fan Status:

This field displays the system fan status -- Fan OK or Fan Error. The Fan Status will be set to Fan Error if: the fan is not running, not running at the proper speed, or if an over temperature condition is sensed.

Power Supply Status:

This field displays the power supply status -- Power Good or Power Error. The Power Supply Status will be set to Power Error if any of the monitored voltages fall below or exceed normal operating parameters.

5.9.4 Network Status Page

This section depicts the Monitor Network Status page and describes each field on the page.

System Information

Status:
■ READY

System Name:
RDX8000

System Date & Time Stamp:
07/05/2012 02:21 PM

System Mode:
JBOD

IP-Address:
10.20.161.5

Host name:
RDX8000-2000AF.quantum.com

Firmware Version:
R1.33 0x39b6

Device Status | **Network Status**

Status

IP Address	10.20.161.5
Bonding Mode	active-backup

Eth1

MAC Address	00:0E:11:20:00:AF
Link State	up
Link Speed	1000 MB/s
Duplex	full

Eth2

MAC Address	00:0E:11:20:00:AF
Link State	down
Link Speed	
Duplex	

DNS

IPv4 Server 1	10.20.164.200
IPv4 Server 2	10.20.160.81

Figure 17 — RDX 8000 Monitor Network Status

IP Address:

This field displays the primary IP address of the RDX 8000.

Bonding Mode:

This field displays the active bonding mode of the RDX 8000.

MAC Address:

This field displays the main hardware Media Access Control address for the unit. The MAC address is a worldwide unique address assigned to the unit. The MAC address is embedded in the unit and is not changeable by the customer.

Link State:

This field displays the current status of the network connection; Up indicates a network connection is established. Down indicates either no network connection or a failed network connection.

Link Speed:

This field indicates the current network connection speed for the link. To achieve maximum performance the RDX 8000 should be connected to the network via a 1 GB/s connection.

Duplex:

This field indicates full duplex or half duplex network connection. Most networks support full duplex communications.

5.9.5 Device Identity Page

This section depicts the Monitor Device Identity page and describes each field on the page.

System Information

Status:
■ READY

System Name:
RDX8000

System Date & Time Stamp:
02/07/2012 01:13 PM

Device Identity

Vendor	QUANTUM
Product	RDX8000
Serial Number	CN16100034
Firmware Version	R1.21 0x2238

Figure 18 — RDX 8000 Monitor Device Identity

Vendor ID:

This field shows the manufacturer of the RDX 8000 device.

Product ID:

This field shows the product name.

Serial Number:

This field shows the master serial number of the unit.

Firmware Version:

This field shows the current firmware revision level and firmware checksum.

5.10 Managing the unit – The MANAGE tab

Access to the Manage functions is granted to Administrator and Service level account logins. Following are the levels of the “MANAGE” tab.

5.10.1 Managing the library

The “MANAGE/Library” function is available when the operation mode of the RDX 8000 unit is set to “Tape Library”.

In “Tape Library” mode, this feature allows the user to “manually move” tape formatted RDX cartridges from any storage slot to the virtual tape drive(s). The virtual tape drive allows the cartridge to be visible to the host as an emulated LTO tape within an emulated LTO tape drive and for the host to write or read data from the cartridge with applications designed to support LTO tape drives. The “MANAGE/Library” function will only allow movement of properly formatted (tape format) cartridges into the virtual drive. Cartridge format is indicated by the icon in the image for each storage slot location. Disk formatted cartridges will appear with the exception mark (red exclamation mark) to indicate an abnormal condition.

The cartridge may be unloaded from the virtual drive by selecting the appropriate drive and then clicking on the left pointing arrow (unload drive) operator in the center. Also, selecting any other cartridge from the storage slot side and choosing the load button will result in the automatic unload of the cartridge in the drive. The RDX 8000 will only store cartridges back into their original storage slot location (it is not possible to ‘move” cartridges to a different storage slot).

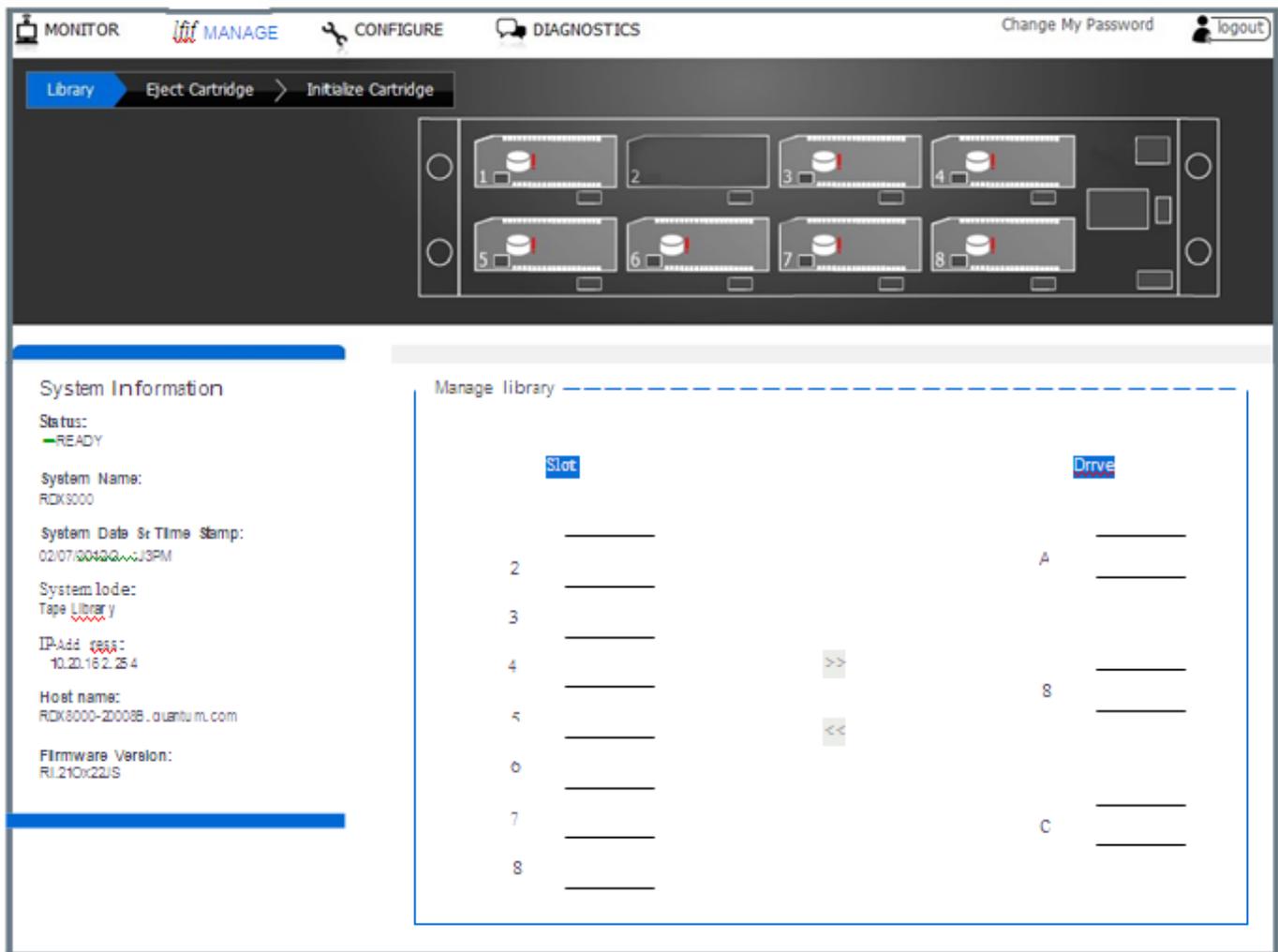


Figure 19-RDX 8000 Manage Library

5.10.2 Ejecting cartridges

Depending on the RDX 8000 System Mode, and current activity, cartridges may be ejected on the MANAGE/Eject Cartridge screen. The cartridge is ejected by selecting the appropriate slot from the drop down menu and clicking the Eject button.

In Tape Library mode, the software application may lock the cartridges from local eject and require that they are ejected through the software application.

In JBOD mode, connecting to an iSCSI host will put the cartridges in Ejection Protection mode, disabling ejection via the Web interface and the front panel Eject button. If the cartridges are ejection protected, the Ejection Protection icon will be displayed in the Active System Graphic, and on the OCP. In this mode the cartridges may be ejected in the Windows operating system of the iSCSI host by right-clicking on the drive in Windows Explorer and clicking Eject.

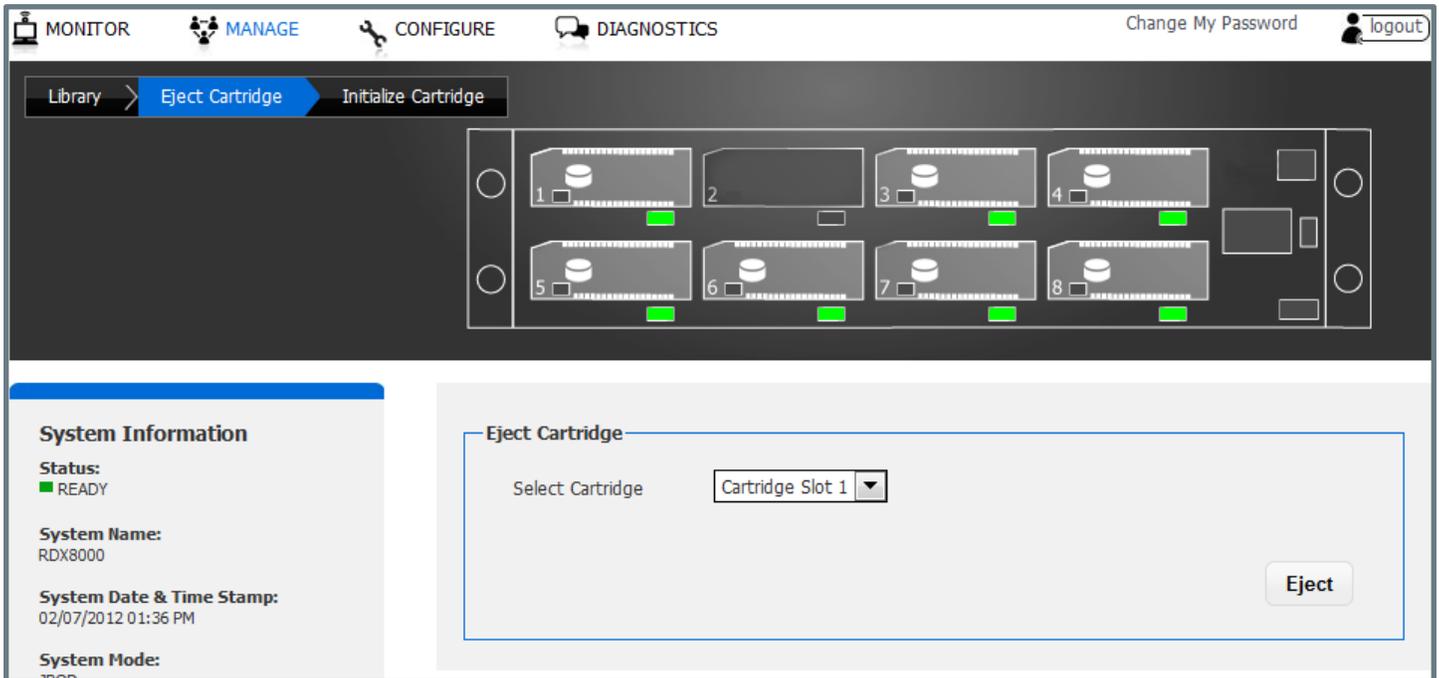


Figure 20 — RDX 8000 Eject Cartridge

5.10.3 Initializing cartridges

The RDX 8000 uses a specially format on the RDX cartridges to support emulation of tape. In order to apply this special format the user performs a “pre-format” operation via the Initialize Cartridge function. This cartridge formatting operation is only necessary to perform once and it is suggested the user prepare all cartridges which will be used in the media pool at one time.

Pre-formatting is only required if the system will be used in Tape Library mode. It is not necessary to format RDX cartridges if the system will be used in JBOD mode.

	NOTICE	Converting the RDX cartridge into tape format mode or reformatting from tape format back to disk format mode destroys any previously written user data on the cartridge (the RDX cartridge will contain no user data - be blank).
--	---------------	---

Pre-formatting RDX cartridges to Tape Library mode

The “Initialize Cartridge” function prepares standard RDX cartridges for use as tape cartridges. The function is available when the System Mode is set to Tape Library.

To format a cartridge, select the “Initialize Cartridge - Tape” tab. In the Select Cartridge box select which cartridge will be formatted as Tape, and click Initialize. Only those inserted cartridges which are formatted as Disk will be available to format as Tape.

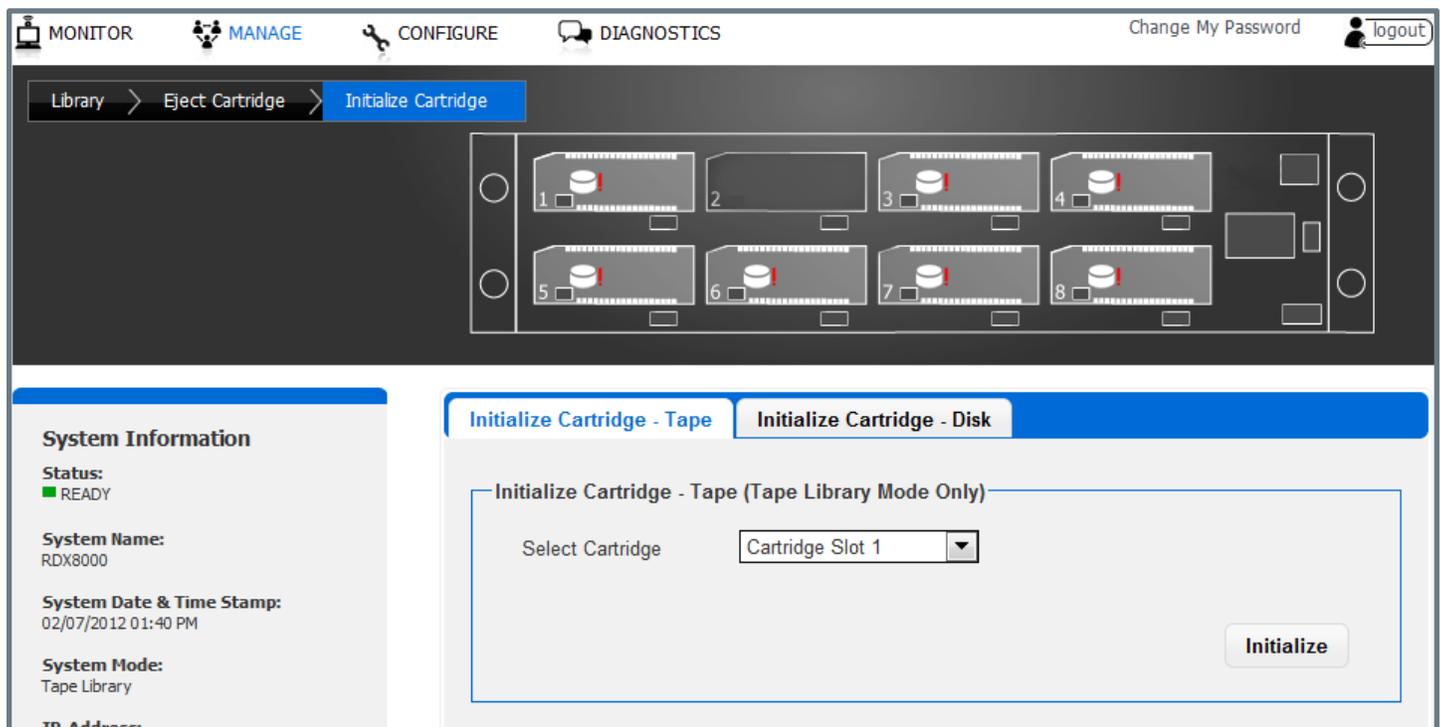


Figure 21 — RDX 8000 Initialize Cartridge

An attempt to format a cartridge which has the write-protect switch set will result in “Cartridge in Slot X Activated Failed”.

	NOTICE	Initializing the RDX cartridge into tape mode or from tape format back to disk format destroys any previously written user data on the cartridge. The RDX cartridge will contain no user data and will be blank.
--	---------------	--

Re-formatting tape format RDX cartridges back to standard RDX disk

To convert previously tape formatted RDX cartridges back into standard RDX disk format select the “MANAGE/Initialize Cartridge - Disk” tab and select which cartridge(s) will be formatted back to standard disk format. Conversion of cartridges from tape emulation back to disk format is done using the NTFS format. The partition will be created so that is aligned on a 4K sector boundary.

5.11 User operations – The CONFIGURE tab

The CONFIGURE tab allows the user to set various operating parameters of the RDX 8000. The CONFIGURE tab is available to users with access level of Administrator or Service.

5.11.1 Device - Set Operating Mode

The Device page allows the user to configure the operating mode of the RDX 8000, as well as the System Name and the Global Cartridge Lock status.

Bonding Mode:

The Bonding Mode will select the function of the two Ethernet ports. The options are:

- Off – Ethernet port 1 is the functioning port, and port 2 is disabled.
- Active Backup – The RDX 8000 will use one of the two Ethernet ports at a time. Port 1 is the primary port. If there is a failure on the current active network connection, and the other port has an active network connection, the RDX 8000 will switch over to that network connection.
- 802.3ad – This mode uses both network ports in a load balancing configuration. Both network ports must be connected to the same managed network switch that is also configured for 802.3ad link aggregation.
- Adaptive Load Balancing – This mode uses both network ports for data load balancing. This mode does not require a managed switch for operation.

System Mode

The System Mode field allows the user to select the operating mode of the device. The choices are ‘Tape Library’, and “JBOD”. If you choose Tape Library mode there is an additional field which appears allowing the configuration of the drive count. 1 to 3 drives may be selected.

The RDX 8000 system comes pre-configured from the factory as default in the “JBOD” operation mode. If you have completed installation of the iSCSI initiator and connected to the unit via the Targets tab, you are ready to address the eight drives. To operate the RDX 8000 in the Tape Library mode change the operation mode via the RDX 8000 interface.

The Operating Mode selected will apply to all eight slots of the RDX 8000 unit.

MONITOR MANAGE CONFIGURE DIAGNOSTICS Change My Password logout

Device > Cartridge > Network > iSCSI > Users > Date & Time > Notification > Save/Restore

System Information

Status: ■ READY

System Name: RDX8000

System Date & Time Stamp: 02/07/2012 11:25 AM

System Mode: JBOD

IP-Address: 10.20.162.254

Host name: RDX8000-20008B.quantum.com

Firmware Version:

Device Power Save Timer

Device

System Mode: JBOD

System Name: RDX8000

Global Cartridge Lock: Disabled

Submit

Figure 22 — RDX 8000 Configure Device - JBOD Mode

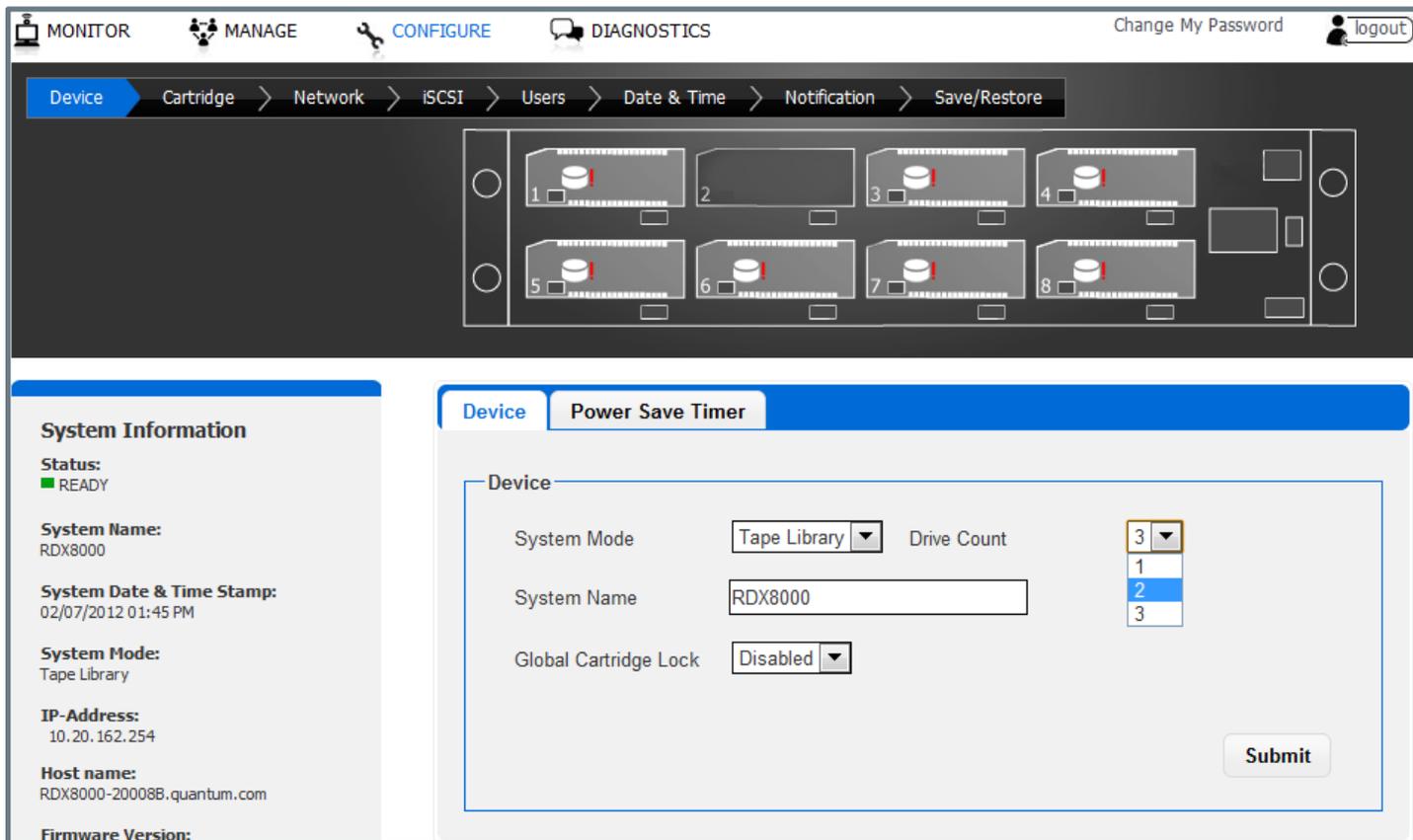
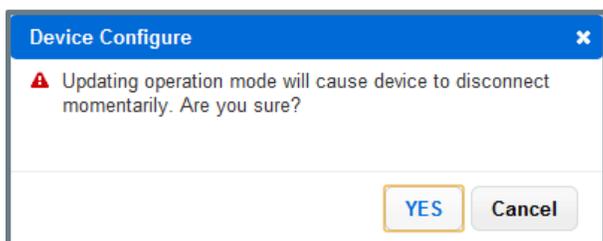


Figure 23 — RDX 8000 Configure Device - Tape Library Mode

To change the RDX 8000 operating mode, select the desired operation mode from the System Mode box. Click the “Submit” button to apply the changes. A confirmation dialog will appear as follows:



	NOTICE	A change in the operating mode of the RDX 8000 may cause the device to become unavailable for data access for your particular environment.
--	---------------	--

After a change in operating mode, it may be necessary to disconnect and reconnect the iSCSI connection or reboot the host computer system to insure proper detection of the RDX 8000 system.

Listed below is a description of the fields and selections on this page.

JBOD mode

JBOD mode allows the RDX 8000 to appear to the host operating system as 8 individual storage drives -- each with their own drive letter.

Tape Library mode

The RDX 8000 tape library mode allows data to be recorded to sequentially to RDX cartridges like traditional backup tape devices. In order to make use of this mode a small standard RDX partition is created on the RDX cartridge along with a large hidden partition for recording the tape format emulation. When an RDX cartridge is formatted as a tape cartridge the small partition remains so that standard RDX systems can recognize the cartridge has been formatted to emulate tape. Please do not store any user data files in the visible partition.

	NOTICE	Usage of the RDX 8000 in tape library mode requires pre-formatting of the RDX cartridges into the tape format mode before they may be used with tape backup applications.
--	---------------	---

RDX cartridges which have been formatted into tape mode will not data interchange with single RDX docks (single RDX docks will be incapable of reading RDX 8000 tape mode cartridges).

System Name

The user may change the name assigned to the RDX 8000. The factory default setting is "RDX 8000". This field may be changed by entering a new name in the System Name field. The name may only contain alphanumeric characters. Click Submit to apply the changes.

Global Cartridge Lock

Enabling the Global Cartridge Lock allows the user to prevent the cartridges from being ejected by the front panel Eject Request buttons. When enabled, cartridges may still be ejected through the Eject Cartridge function in the Manage section of the RDX 8000, if the cartridges are not Ejection Protected. Cartridges may always be ejected through the operating system via the Right-click Eject methodology.

MTU Size:

The Maximum Transmission Unit (MTU) Size controls the maximum data packet size -- or frame size -- over the network. The choices are 1500 (Standard frame) and 9000 (Jumbo frame). 1500 is the default size.

See the Appendix for a suggested procedure for implementing the RDX A8 in a Jumbo Frames environment

Stack:

The Stack selects the version of the Internet protocol the RDX 8000 will use when communicating on the network. Current selection option, and default choice, is IPV4.

Bonding Mode:

The Bonding Mode will select the function of the two Ethernet ports. The options are:

- Off – Ethernet port 1 is the functioning port, and port 2 is disabled.
- Active Backup – The RDX 8000 will use one of the two Ethernet ports at a time. Port 1 is the primary port. If there is a failure on the current active network connection, and the other port has an active network connection, the RDX 8000 will switch over to that network connection.
- 802.3ad – This mode uses both network ports in a load balancing configuration. Both network ports must be connected to the same managed network switch that is also configured for 802.3ad link aggregation.
- Adaptive Load Balancing – This mode uses both network ports for data load balancing. This mode does not require a managed switch for operation.

5.11.2 Setting the RDX 8000 Wake up/Sleep mode – CONFIGURE/Device/Power save Timer

The RDX 8000 has the ability to schedule auto power on and auto power off events. The user may set both a daily power on time and a daily power off time and choose to enable each one individually.

The power off time will shut down the unit at the configured and enabled shutdown time regardless of the status of any data (read/write) activity. Time is entered in HH:MM:SS:AM/PM format. To enable Power On/Power Off select Enable, and then click Submit.

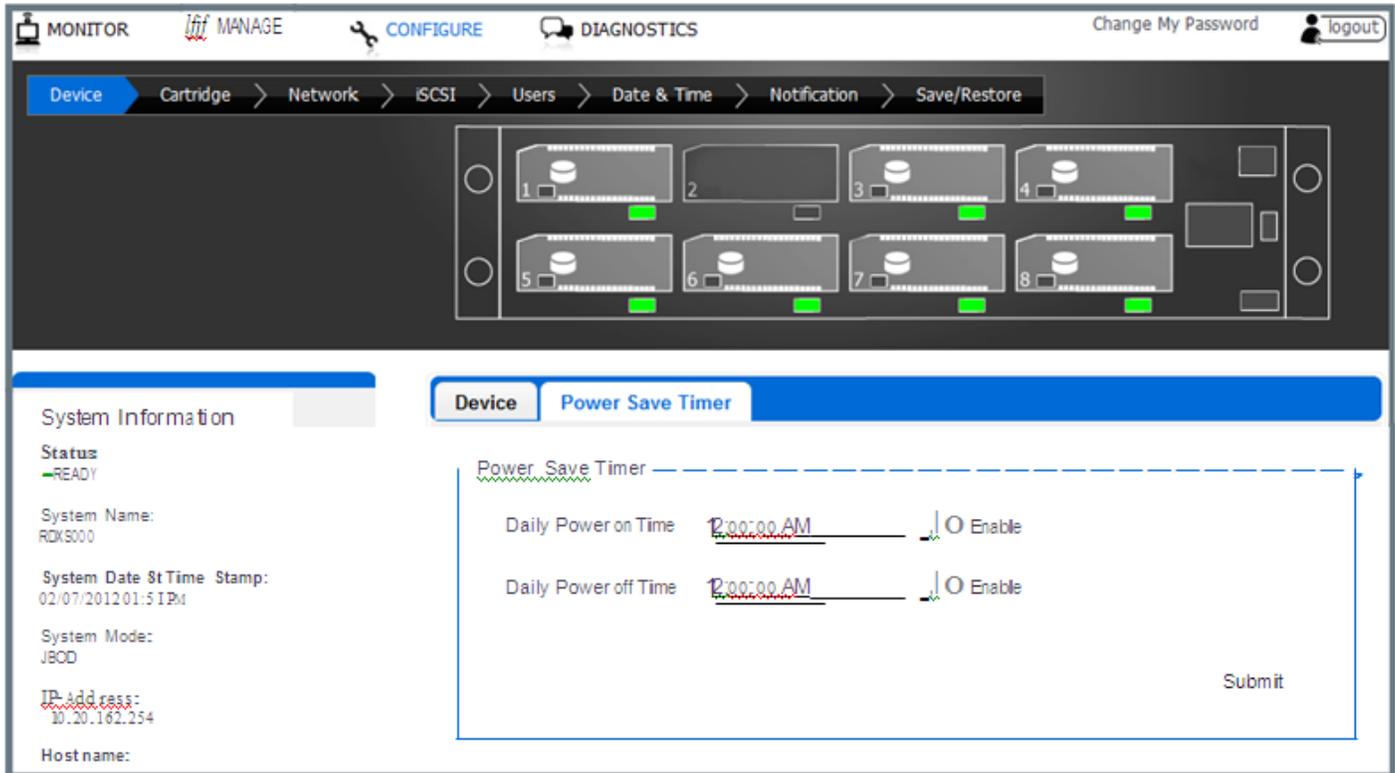


Figure 24-RDX 8000 Configure Power Save Timer

5.11.3 Cartridge - Labeling tape format cartridges

In Tape Library mode the user may label tape formatted cartridges. Custom RDX cartridge labeling may be created under the “CONFIGURE/Cartridge” menu.

To alter the cartridge label, click Edit for the desired cartridge. There will be a pop up dialogue where the user may enter a custom label up to 25 characters long.

This custom label will both be displayed in the RDX 8000 and shown as the volume label in the tape backup application. It is strongly recommended that if the user intends to use custom labels they first assign these labels before the RDX media is added to the tape application media set.

The custom assigned label will only be available in the tape emulation mode. The custom label may be deleted at any time and the cartridge will revert back to the factory assigned cartridge label.

Slot#	SN#	Label	Action
1	11273JQ00C	9055XW	Edit Delete
2			
3	10265JQ013	902XZY	Edit Delete
4	500215001	F000E2	Edit Delete
5	11082FQ00E	903QA5	Edit Delete
6	11273JQ006	9055XP	Edit Delete
7	11147DQ005	904BCU	Edit Delete
8	500215002	F000E1	Edit Delete

Figure 25 — RDX 8000 Configure Cartridge

5.11.4 Network settings

The "CONFIGURE/Network" tab allows the user to configure the parameters for the network interface.

The screenshot displays the RDX 8000 Remote Management Interface. At the top, it shows the user as 'administrator' and the system as 'RDX 8000 Remote Management Interface'. The navigation menu includes 'MONITOR', 'MANAGE', 'CONFIGURE', and 'DIAGNOSTICS'. The 'CONFIGURE' tab is active, and the breadcrumb trail indicates the current location: 'Cartridge Status > Cartridge Identity > Device Status > Device Identity'. A visual representation of the tape library shows 8 slots, with slots 1-6 containing tape cartridges and slots 7 and 8 empty. Below the visual is a 'System Information' sidebar and a 'Cartridge Status' table.

Slot#	Status	Remaining Capacity	Type	Temperature	Action
1	Ok	750 GE	Tape	25 °C / 77 °F	
2	Ok	750 GE	Tape	26 °C / 78.8 °F	
3	Ok	1000 GB	Tape	26 °C / 78.8 °F	
4	Ok	500 GE	Tape	26 °C / 78.8 °F	
5	Ok	500 GE	Tape	26 °C / 78.8 °F	
6	Ok	1000 GB	Tape	26 °C / 78.8 °F	
7					
8	Ok	500 GE	Tape	26 °C / 78.8 °F	
Total	Total Remaining Capacity	5000 GB			

Figure 26-RDX 8000 Configure Ethernet

MTU Size:

The Maximum Transmission Unit (MTU) Size controls the maximum data packet size or frame size over the network. The choices are 1500 (standard frame) and 9000 — 1500 (jumbo frame) is the default size.

Stack:

The Stack selects the version of the Internet protocol the RDX 8000 will use when communicating on the network. Current selection option and default choice is IPv4.

Method:

The Method will select the IP addressing mode the RDX 8000 will use. The two options are DHCP or Manual. The RDX 8000 default configuration is DHCP.

- DHCP – the RDX 8000 will seek out the DHCP-server on your network and automatically obtain an IP address from the server each time it powers up.
- Manual – The RDX 8000 will use the IP address and other network parameters set on this page for network communication.

IP Address:

Manually assigned IP address that the RDX 8000 will use for network communication.

Netmask:

Netmask used for network communication.

Gateway:

IP Address of gateway in network.

DNS1:

A DNS server allows the RDX 8000 to communicate with other network clients via their host name. Enter the IP Address of preferred DNS server.

DNS2:

IP Address of secondary DNS server.

To save the changes made on this page click the “Submit” button.

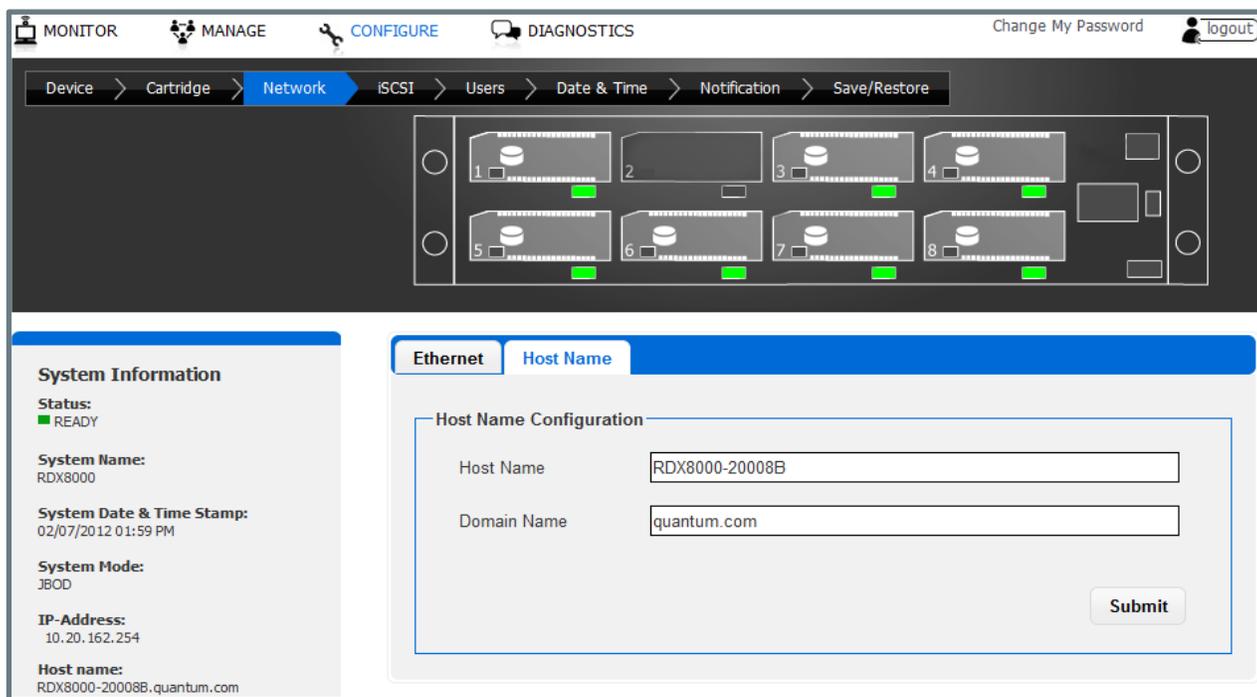


Figure 27 — RDX 8000 Configure Host Name

Host Name:

Enter the name you wish to use to address this RDX 8000. It is recommended that you use a name that is relevant to its location and or its purpose.

Domain Name:

Enter the name of the domain or workgroup for the attached network. To save any changes on this page click the “Submit” button.

5.11.5 iSCSI Settings

iSCSI settings are accessed on the “CONFIGURE/iSCSI” tab:

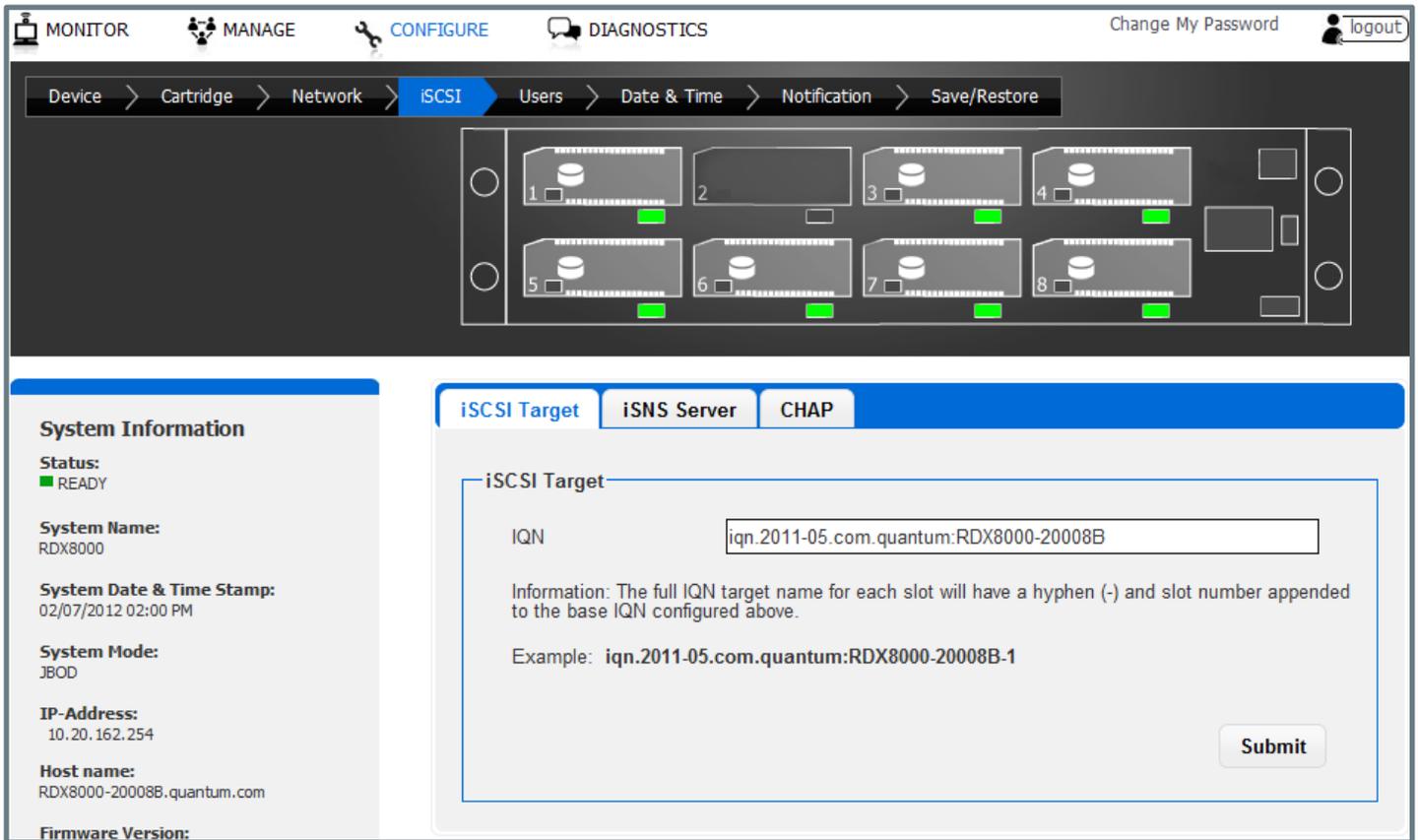


Figure 28 — RDX 8000 Configure iSCSI Target

IQN:

The user can assign a unique IQN name to the RDX 8000 unit, overwriting the default IQN value. An IQN may be up to 255 characters long. To apply a new IQN name to the device enters the desired IQN the IQN field. To save any changes on this page, click the “Submit” button.

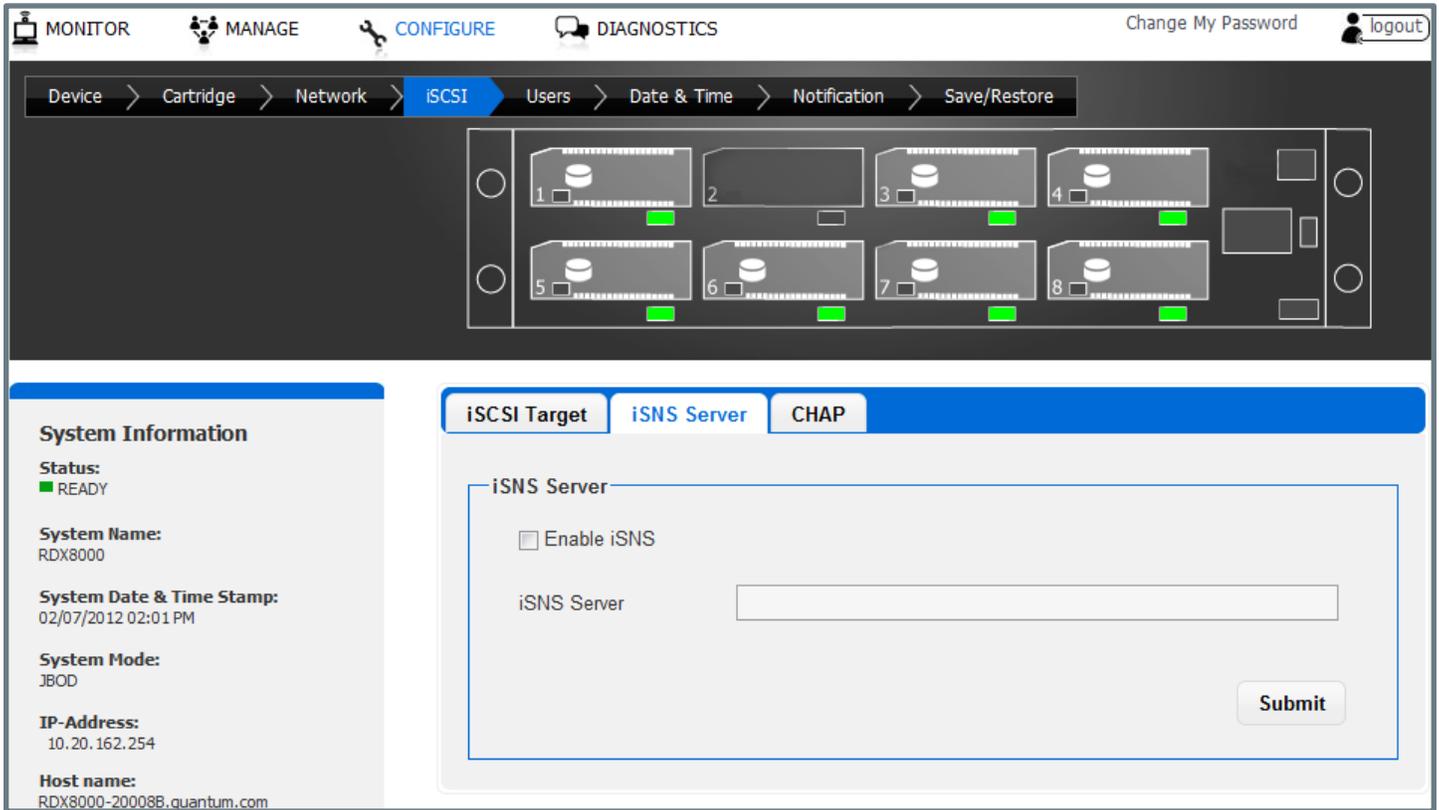


Figure 29 — RDX 8000 Configure iSNS Server

Internet Storage Name Service (iSNS)

This field allows for the automated discovery, management, and configuration of iSCSI devices from a central point. If this option is enabled the RDX 8000 will register its resources with a central iSNS-server. To enable iSNS on the RDX 8000, click the check box “Enable iSNS” and enter the IP address for the iSNS-Server in the “iSNS Server” field. To save changes to this page click the “Submit” button.

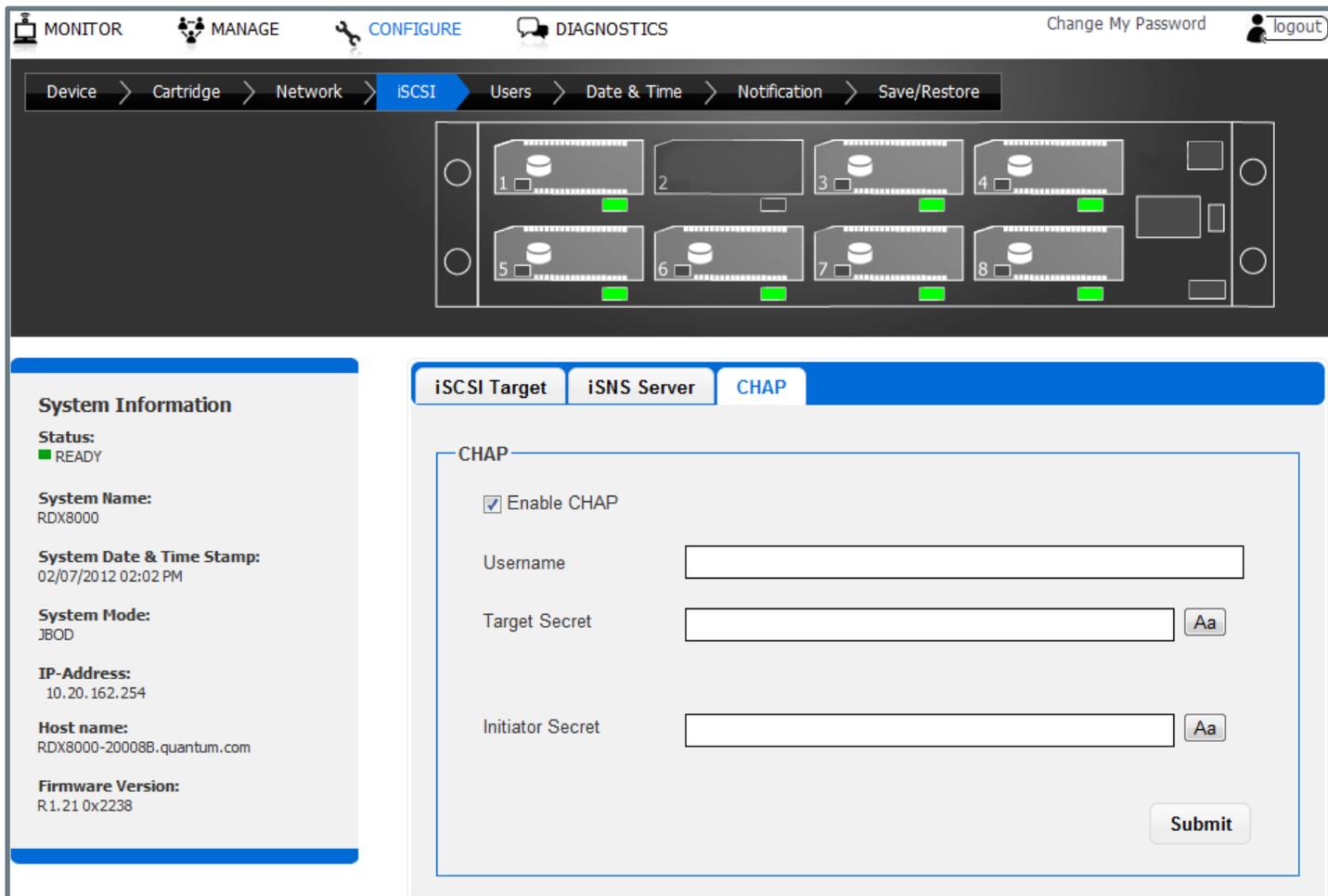


Figure 30 — RDX 8000 Configure CHAP

CHAP is an authentication scheme used by servers to validate the identity of clients and vice versa. When CHAP is enabled, the initiator must send the correct “Username” and “Target Secret” to gain access to the RDX 8000. The “Initiator Secret” field is provided to allow iSCSI mutual CHAP. If mutual CHAP is selected on the Initiator, the RDX 8000 will authenticate itself with the initiator using the supplied Initiator Secret.

To enable CHAP click the ‘Enable CHAP’ check box and enter the following details in the remaining fields:

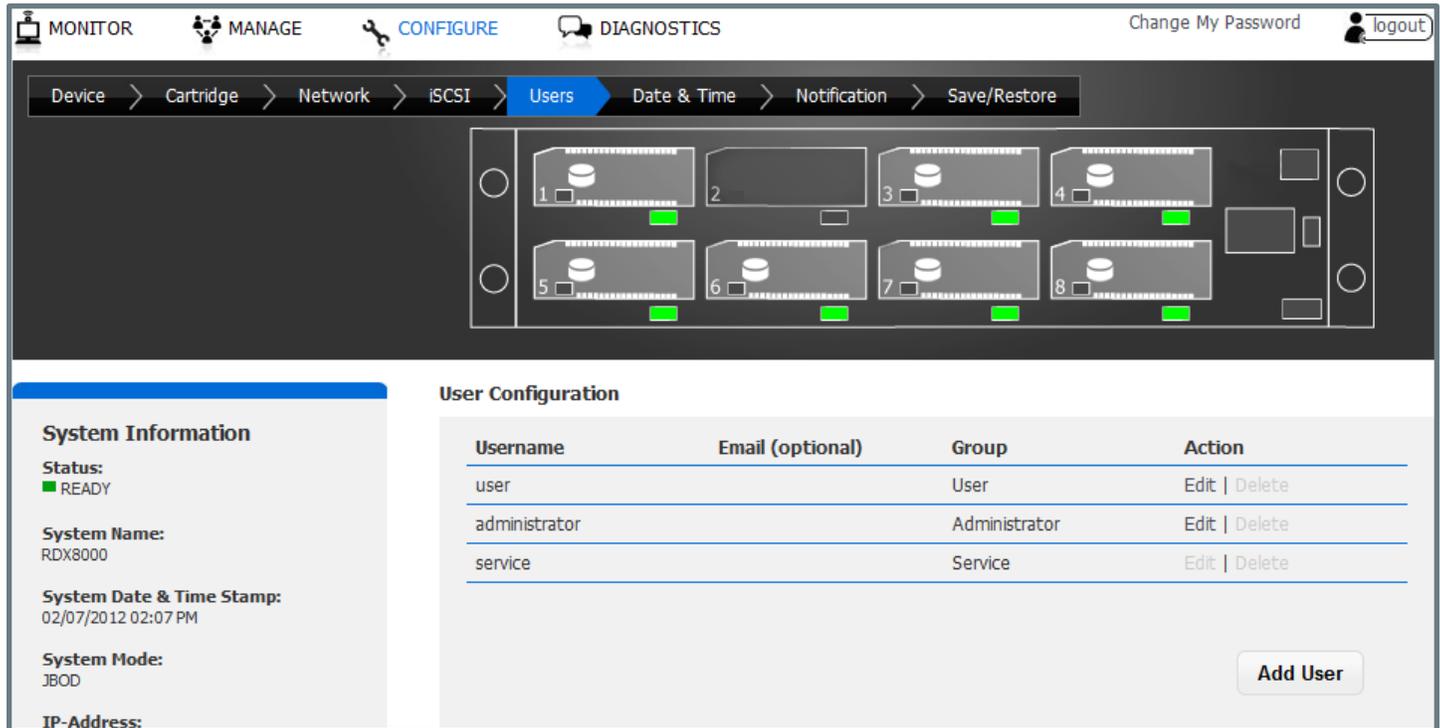
- Username – this is the username that the iSCSI Initiator must use to gain access to the iSCSI bridge
- Target Secret – This is the secret defined by the iSCSI bridge and will be sent from the iSCSI Initiator to authenticate the iSCSI Initiator. The “Target secret” field has a button located to the right of the field to toggle display of the actual text as it is entered or hide the text. If selected, the text will be shown for 10 seconds.
- Initiator Secret – this is the password that the iSCSI bridge will send to the iSCSI Initiator during mutual CHAP. The Initiator secret field has a button located to the right of the field to toggle display of the actual text as it is entered or hide the text. If selected, the text will be shown for 10 seconds.

The two CHAP secrets must be between 12 and 16 characters long and both Initiator and Target Secrets must be different.

To save changes to this page click the “Submit” button.

5.11.6 User settings

The Users tab allows the user to edit existing user accounts and to create new accounts. Administrator level users may edit Administrator and User level accounts. Service level users may edit all account levels.



System Information

Status: ■ READY

System Name: RDX8000

System Date & Time Stamp: 02/07/2012 02:07 PM

System Mode: JBOD

IP-Address:

User Configuration

Username	Email (optional)	Group	Action
user		User	Edit Delete
administrator		Administrator	Edit Delete
service		Service	Edit Delete

[Add User](#)

Figure 31 — RDX 8000 Configure Users

New user accounts may be created by selecting the “Add User” button. Existing user accounts may be edited by clicking “Edit” in the Action column for the appropriate user account. User accounts that have been created may be deleted by clicking “Delete” in the Action column for the appropriate user account. The default user accounts of Service, Administrator and User cannot be deleted.

The following fields are required for each user account:

Username:

The login name of the user account. Requirements are: must be 3 to 16 characters, no special characters, must begin with a letter, and must be all lower case.

E-mail:

This is the e-mail address associated with this user name. This optional field must be between 6-80 characters long, and be in valid e-mail address format.

Password/Confirm Password:

The password for the user account. Requirements are: must be 5 to 16 characters, no special characters, must begin with a letter, and must be all lower case.

Group:

Assign access rights to the account as follows.

User level:

User level access only allows access to the “MONITOR” functions of the RDX 8000.

Administrator Level:

Administrator level grants access to all functions within the unit including “MONITOR”, “CONFIGURE”, “MANAGE” and “DIAGNOSTICS”.

Service Level:

Service level grants access to all the same functions as Administrator and allows clearing the System Logs.

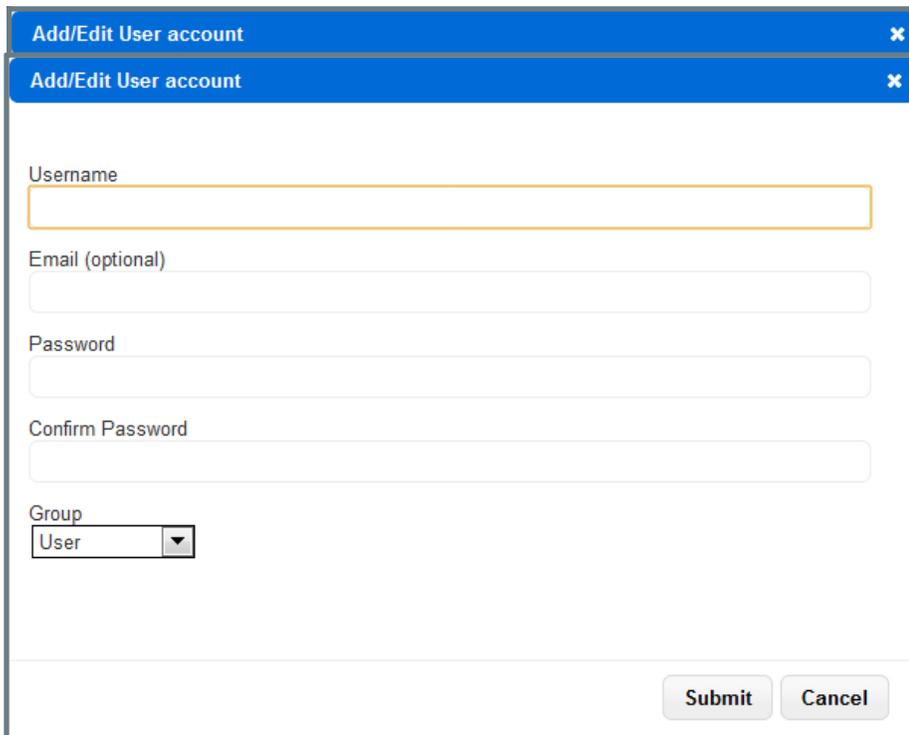
The image shows a web-based dialog box titled "Add/Edit User account". It has a blue header bar with the title and a close button (X). Below the header, there are four text input fields: "Username", "Email (optional)", "Password", and "Confirm Password". Below these is a "Group" dropdown menu with "User" selected. At the bottom right, there are two buttons: "Submit" and "Cancel".

Figure 32 — Add/Edit user account

5.11.7 Date and time settings

The Date and Time Settings page allows the user to set the system date and time. This time and date information is displayed in the system information block and also used for time stamping log entries and remote notification messages from the RDX 8000 unit to remote users. There are four tabs related to configuring the time on the RDX 8000 unit.

Time Zone:

The Time Zone tab allows the user to specifically adjust the time to their local time zone.

To use the tool the user selects the major region from the left hand list box by left clicking on it. This will bring up sub regions in the center box where the user may select the applicable entry. In some cases further setting options are provided in the right-most box.

For setting the time zones in the United States the left entry selection should be “US” which will present the standard time zones as well as some state unique options.

To save configuration click “Submit”.

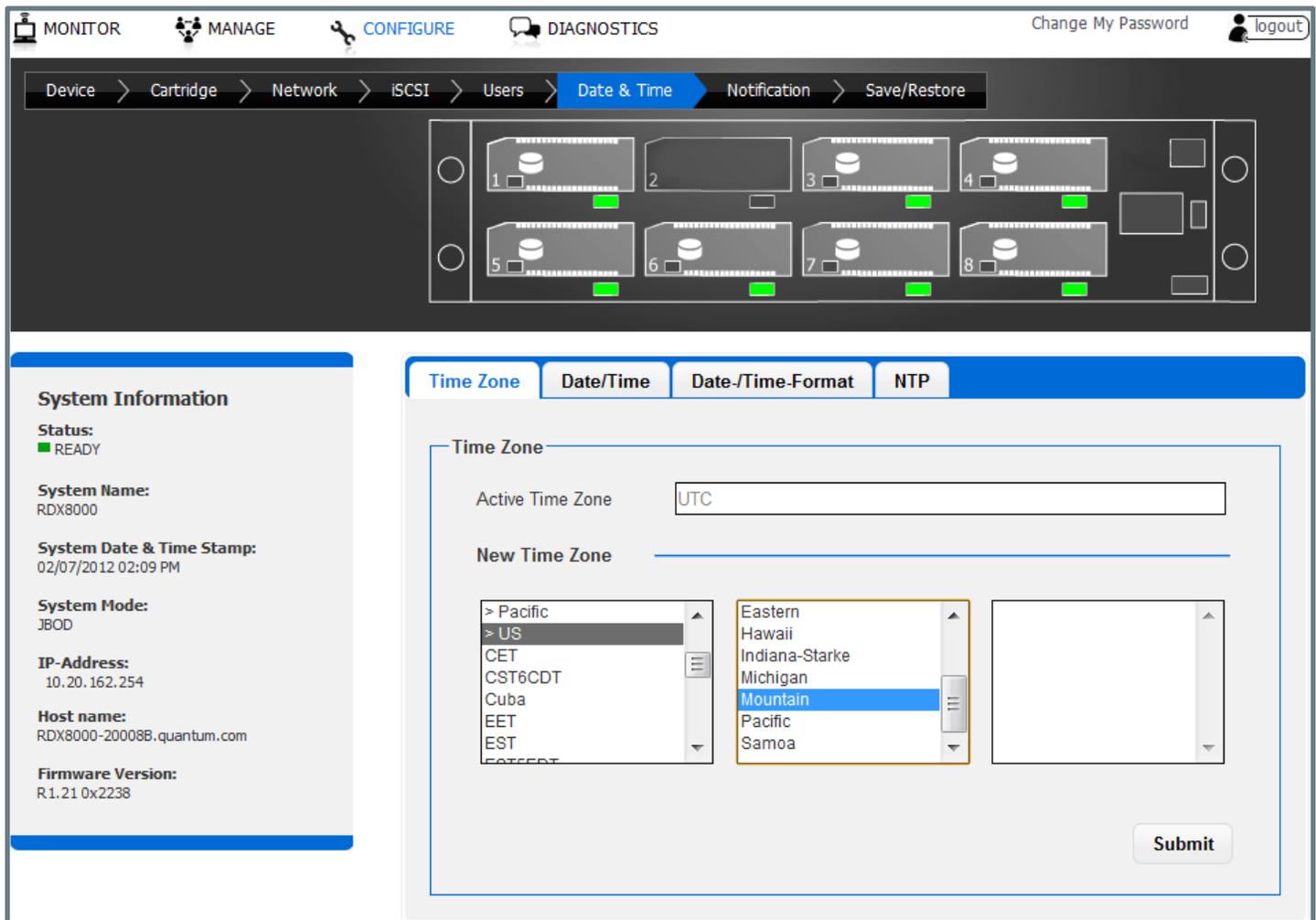


Figure 33 — RDX 8000 Configure Time Zone

Date/Time

The date may be set by clicking in the date field and entering the date in the appropriate format and click Done.

The time may be set by clicking in the time field and entering the time. Clicking the “Now” button will synchronize the RDX 8000 system time with the time of the computer accessing the RDX 8000. Save the changes to the date and time by clicking the “Submit” button.

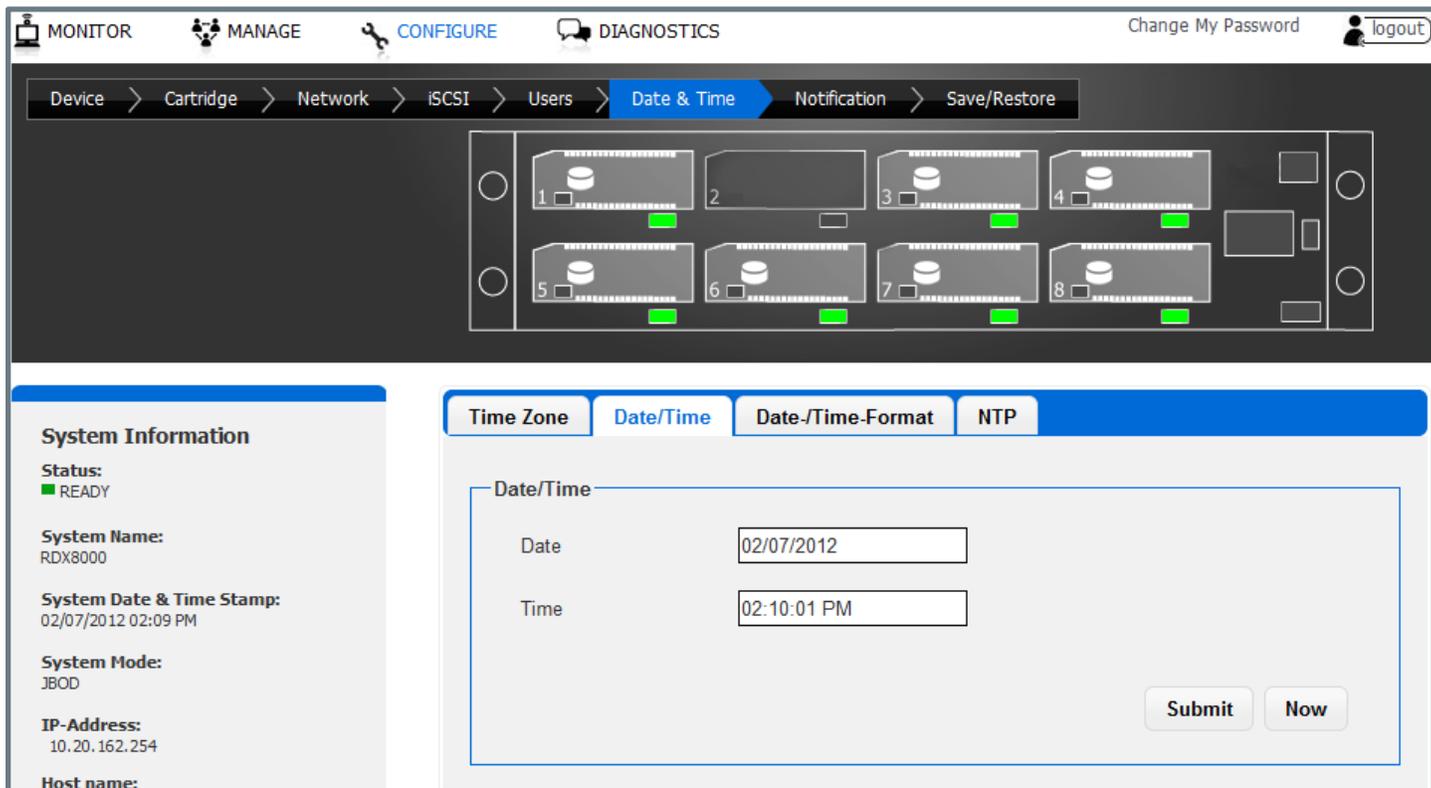


Figure 34 — RDX 8000 Configure Date/Time

Date/Time Format

The Date/Time Format tab allows the user to set the display format of the date and time zone independently. The date setting supports the following formats;

English (MM/DD/YYYY) European (DD/MM/YYYY) International (YYYY-MM-DD)

The time settings support display of either 12 hour or 24 hour time displayed in the following format;

12 hours (hh:mm:ss AM/PM)

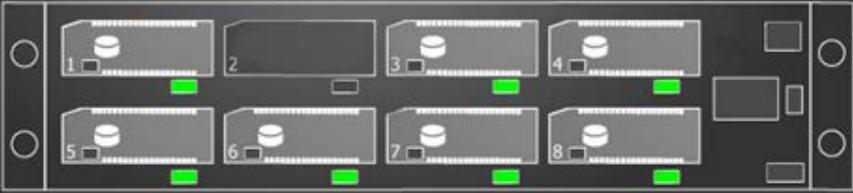
24 hours (hh:mm:ss)

Regardless of the date format setting all log entries will be time stamped with a English format date (MM/ DD/YYYY) and a 12 hour time format (hh:mm:ss AM/PM).

Changes must be updated to the unit by clicking the “Submit” button.

MONITOR MANAGE CONFIGURE DIAGNOSTICS Change My Password logout

Device > Cartridge > Network > iSCSI > Users > **Date & Time** > Notification > Save/Restore



System Information

Status: ■ READY

System Name: RDX8000

System Date & Time Stamp: 02/07/2012 02:09 PM

System Mode: JBOD

IP-Address: 10.20.162.254

Host name:

Time Zone **Date/Time** **Date-/Time-Format** **NTP**

Date/Time

Date:

Time:

Figure 35-RDX 8000 Configure Date/Time Format

NTP

The NTP tab allows the administrator to set a path to a Network Time Server (if an NTP server is configured on their particular network). The RDX 8000 will synchronize with the NTP time server every eight hours.

To use the NTP time synchronization, select Enable and enter the name or IP address of the desired time server. Click the Submit button for the settings to take effect. The first time synchronization will take place when "Submit" is clicked. If there is an issue, an error message will be displayed.

The screenshot displays the RDX 8000 configuration web interface. At the top, there are navigation tabs: MONITOR, MANAGE, CONFIGURE (highlighted), and DIAGNOSTICS. On the right, there are links for 'Change My Password' and 'logout'. Below the navigation is a breadcrumb trail: Device > Cartridge > Network > iSCSI > Users > Date & Time (highlighted) > Notification > Save/Restore. The main content area is divided into two sections. The top section shows a rack of eight drive bays, numbered 1 through 8, each with a status indicator (green or grey). The bottom section is titled 'System Information' and contains the following details: Status: READY (with a green square icon); System Name: RDX8000; System Date & Time Stamp: 02/07/2012 02:11 PM; System Mode: JBOD; IP-Address: 10.20.162.254; Host name: (blank). To the right of the system information is the 'NTP' configuration panel, which has tabs for 'Time Zone', 'Date/Time', 'Date-/Time-Format', and 'NTP' (highlighted). The NTP panel contains a checkbox labeled 'Enable NTP' which is checked. Below this is a text input field labeled 'NTP Server'. A 'Submit' button is located at the bottom right of the NTP configuration area.

Figure 36 — RDX 8000 Configure NTP

5.11.8 Notification settings

E-mail Notification allows the user to configure the RDX 8000 to send e-mail to a selected account upon an identified level of system event.

The Notification tab has the following fields:

Enable E-mail notification:

This check box will enable The E-mail Notification action, and will allow the user to configure the e-mail parameters.

System Information

Status:
■ READY

System Name:
RDX8000

System Date & Time Stamp:
02/07/2012 02:16 PM

System Mode:
JBOD

IP-Address:
10.20.162.254

Host name:
RDX8000-20008B.quantum.com

Firmware Version:
R.1.21 0x2238

Notification Configuration

Enable E-Mail Notification

Notification Filter: Error, Warning, Configuration and Informational Events

SMTP Server: [Text Input]

Security: None

Port: 0

E-Mail Address: [Text Input]

Authentication Required

Username: [Text Input]

Password: [Text Input]

Submit

Figure 37 — RDX 8000 Configure Notification

Notification Filter:

Select from four classes of notification as follows:

Critical Events:

Notified whenever severe errors requiring operator intervention to resolve occur, or when a hardware failure is detected.

Critical, Warning, Configuration Events:

Notified whenever any Critical or Warning or Configuration events occur which indicate changes in unit configuration, operating mode, addition of users, etc.

Critical, Warning, Configuration and Informational Events:

Notified whenever any Critical, Warning, Configuration Events or Information events occur which indicate monitoring normal operations.

SMTP Server:

Enter the address of the outgoing e-mail server to handle to e-mail notifications.

Security:

Select to enable either SSL/LS or STARTTLS security, if necessary.

Port:

Enter the send/receive port number for the e-mail traffic.

E-mail Address:

Enter the e-mail address of the individual you would like to receive the errors and/or warnings.

Authentication:

Check if sender authentication is required

Username:

Enter the authorized user account name for connecting to the selected SMTP server.

Password:

Enter the authorized user password for connecting to the selected SMTP server.

If you select SUBMIT a test mail will be send. If with your settings the system cannot contact the SMPT Server you will be informed about this in the System Information Field (i).

5.11.9 Save/Restore configuration

Save Configuration:

This tab allows a user to save the current user programmed configuration values/settings. This allows the backup of settings and also supports unit replacement/service. The Configuration file may be stored to a location on the RDX 8000 host computer via selecting the Save Configuration button and downloading the file.

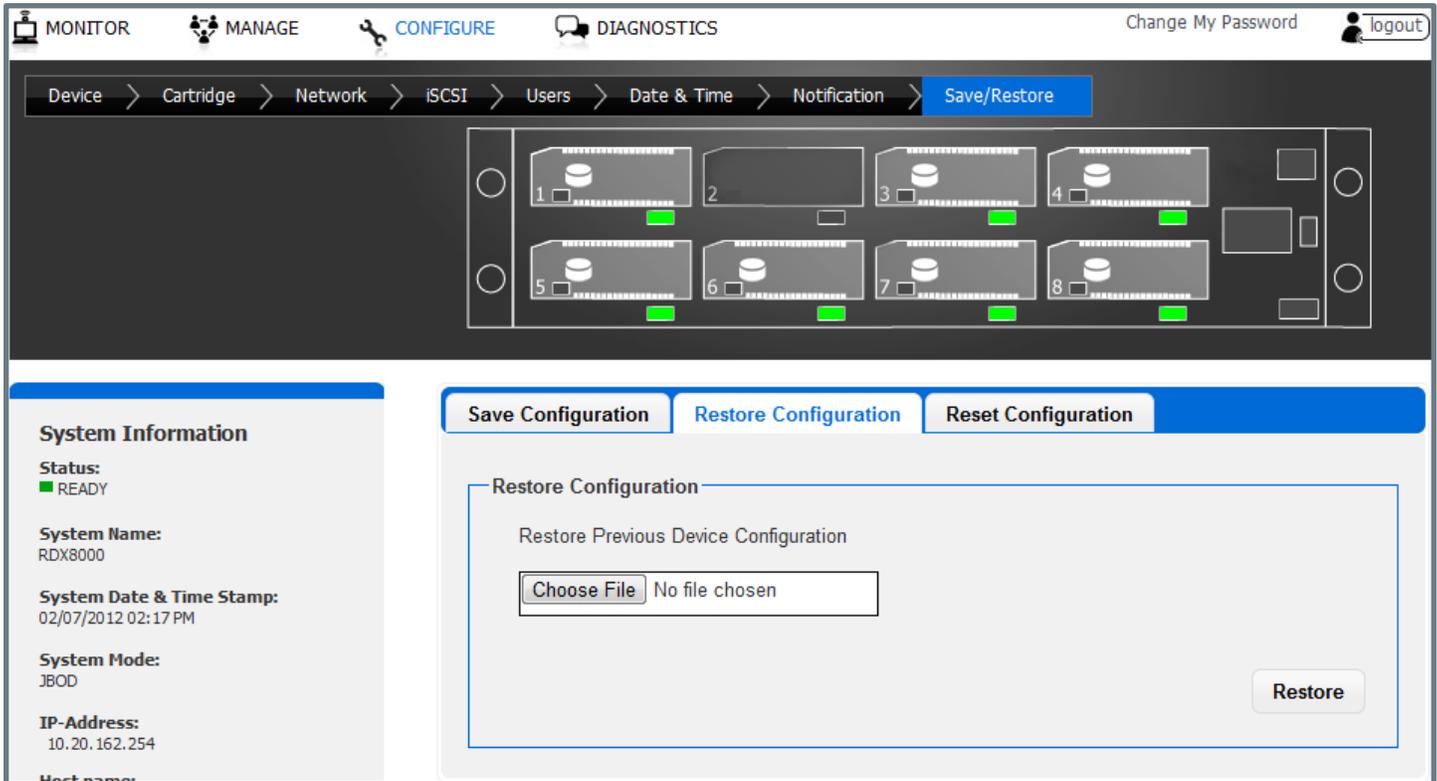


Figure 38 — RDX 8000 Configure Save/Restore

	<p>NOTICE</p>	<p>It is highly recommended that once the initial unit configuration is completed and the unit is operating properly the user use the save configuration function to back up their unique settings.</p> <p>A software or rear panel reset will clear all user added configuration data including user created user accounts and notification settings.</p>
--	----------------------	--

Restore Configuration:

This function allows a user to restore a previous user saved configuration. The file may be located by selecting the “Browse” button within the “Restore Configuration” tab.

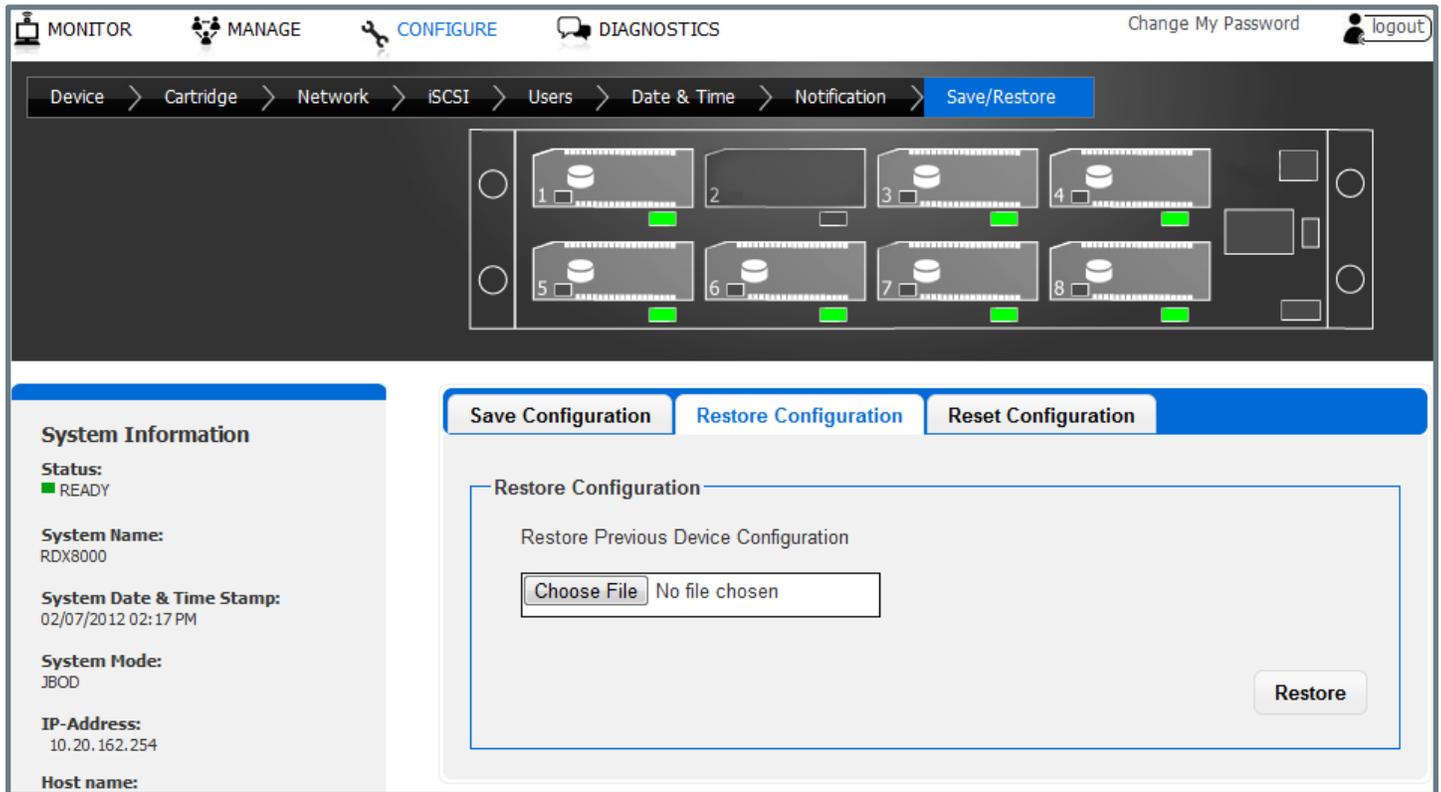


Figure 39 — RDX 8000 Restore Configuration

Reset Configuration:

This function restores all factory default settings, including resetting default passwords, IP addressing, and operating modes. Depending on network settings resetting defaults may cause loss of communication with the unit or require you to adjust network settings to regain access to the unit.

	NOTICE	Reset configuration may also be accomplished by using a paper clip and depressing the “Hard reset port” switch for 3 seconds then releasing.
--	---------------	--

5.12 Performing Diagnostic operations - The DIAGNOSTICS tab

5.12.1 Device Logs

The RDX 8000 unit supports a built in event logging feature designed to facilitate monitoring and trouble shooting of the device. The logs are available for viewing under the “DIAGNOSTICS/Device Logs” tab. Within the “Device Logs” tab the user has the option of filtering the log view as follows;

Errors:

Errors are critical events that indicate either a failure in hardware or a major software issue. If an error is logged the RDX 8000 unit is either non-functional or seriously degraded. Any reported errors need investigation and resolution on a high priority basis.

Warning:

Warnings are events related to potential use problems or command failures. Warnings typically relate to either incorrect configuration of the RDX 8000 device/cartridge format or attempts to perform operations which are logically/physically prevented within the current device state.

Configuration:

Configuration log messages deal with system mode changes such as operation mode settings.

Info:

Info events log normal events indicating unit status changes which are part of normal operations. For instance insertion and removal of RDX media from each slot is monitored and logged with info events.

Clear Logs:

The Device Logs tab has a button to clear the logs in the display view. This function is only available at the Service user level.

Save All Logs:

The “Save all Logs” button provides the capability to save the logs to a user selected location. The file is designed to be used by RDX 8000 support personal to aid in problem diagnosis.

5.12.2 Performing diagnostics

The RDX 8000 unit supports a number of interactive diagnostic tests designed to check specific areas of operation of the device. The tests are all designed to be executed with a local observer so the unit's behavior can be monitored for expected behavior.

OCP diagnostics

There is a simple display diagnostic which can be invoked from the front panel which allows quick verification of the front panel indicators. The test is started by holding down the OCP button for 10 seconds then releasing. The unit display will then change to the message "System Test Display" A description of the display diagnostic test follows:

The display will perform the following:

1. Display: System Test: Display test
 - a. Blank for two seconds
 - b. Red backlight for two seconds
 - c. Green backlight for two seconds
 - d. Blue backlight for two seconds
 - e. White backlight with no pixels on for two seconds
 - f. White backlight with all pixels on for two seconds
2. Display: System Test: LED test
 - a. Illuminate button LED's green in sequence 1-8
 - b. Illuminate button LED's amber in sequence 1-8
 - c. Extinguish button LED's
 - d. Turn power indicator amber for two seconds
3. Resume normal OCP operation

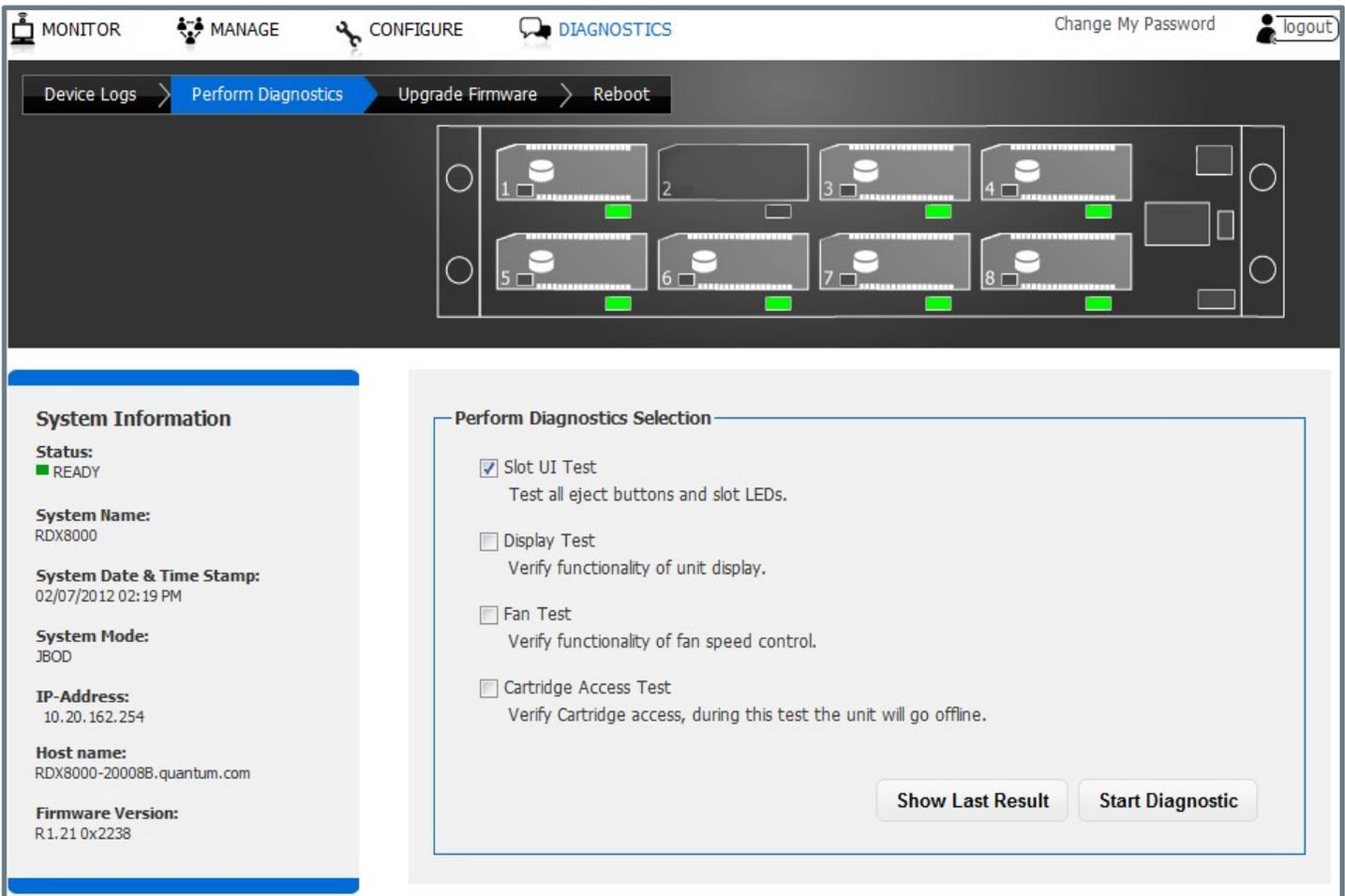


Figure 40 — RDX 8000 Perform Diagnostics

RDX 8000 Diagnostics

The RDX 8000 unit supports a number of interactive diagnostic tests designed to check specific areas of operation of the device. The tests are all designed to be executed locally so the unit's behavior can be observed. The tests are as follows:

Slot UI Test:

It tests each slot for eject button indication and sensing- requires a local operator to interact with the unit.

Display Test:

It tests the LCD display and backlight operation- requires a local operator to step the display with the OCP navigation button and observe the display through various states to confirm operation.

Fan Test:

It tests the operation of the RDX 8000 cooling fan, steps the fan speed through four RPM ranges while monitoring fan rpm.

Cartridge Access Test:

It tests the operation of each slot location by checking communication with a test cartridge. Execution of this test will force the unit offline and eject all inserted cartridges from the unit. This is a data safety feature to insure the test operator can use a scratch cartridge. This test requires a local operator to interact with the unit.

To start the diagnostic test sequence select each test by checking each test from the list that you would like to perform and push the "Start Diagnostic" button. You may select to run only one test or all four, upon completion of the selected test(s) a new diagnostic log status page will be created capturing the current test status.

Slot UI Test

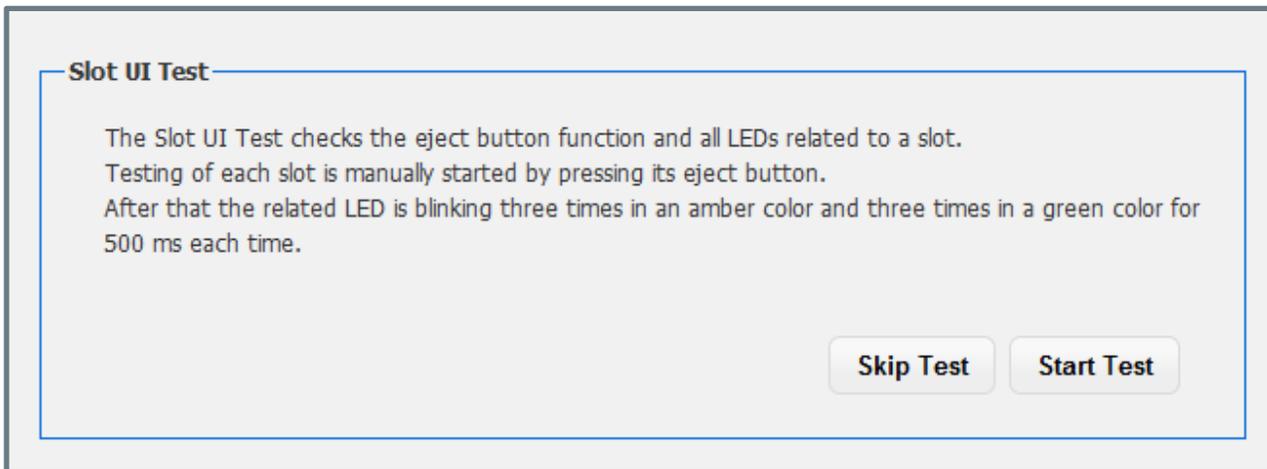


Figure 41 — Slot UI Test

To execute the "Slot UI Test" select the "Start Test" button. It will request the operator to push each individual slot eject button and observe the LED behavior. The LED will blink three times green then three times amber. Note that when the RDX 8000 is in the slot UI test mode any inserted cartridge will not be ejected by the associated button push during the test. Once all eight positions have been verified confirm completion of a successful test by selecting "Test Passed" button which will create a "Slot UI Test passed" status.

Display Test

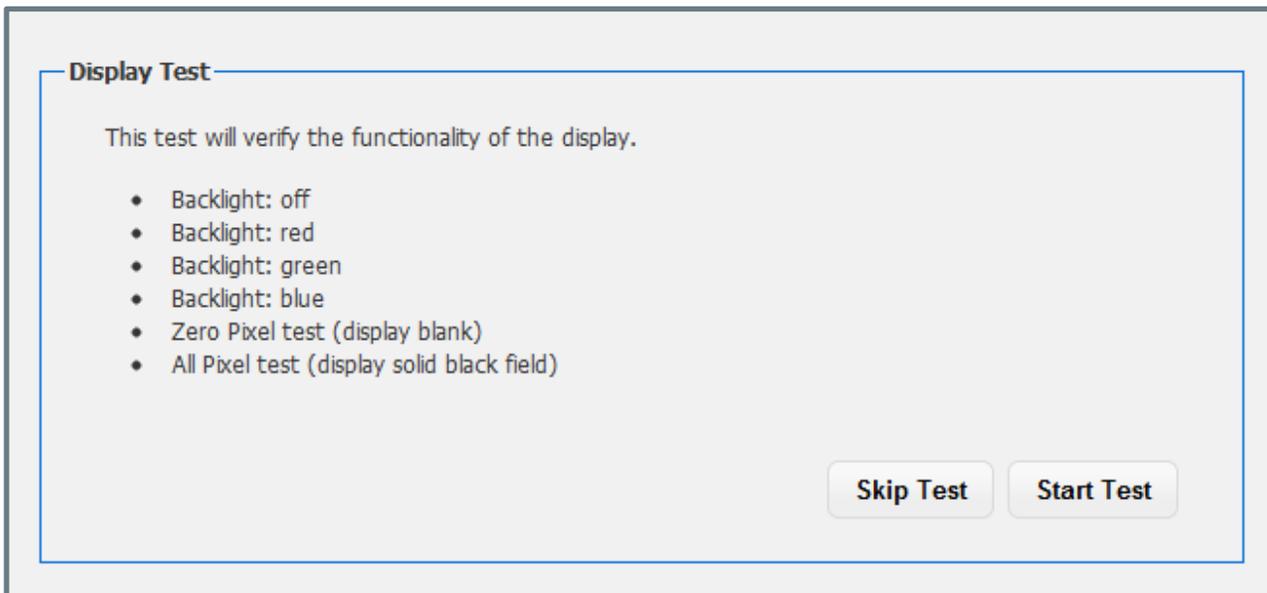


Figure 42 — Display Test

To execute the "Display Test" select the "Start Test" button. The local operator will then be asked to push the OCP navigation button and observe the display. Each navigation button push will step the unit through a different display action. The first four steps will change the display backlight from white, to red, to green, to blue verifying proper operation of the RGB backlight. The next two steps will first clear all display pixels (the observer should see no dots) then set all pixels black (the observer should see no missing black dots in the field).

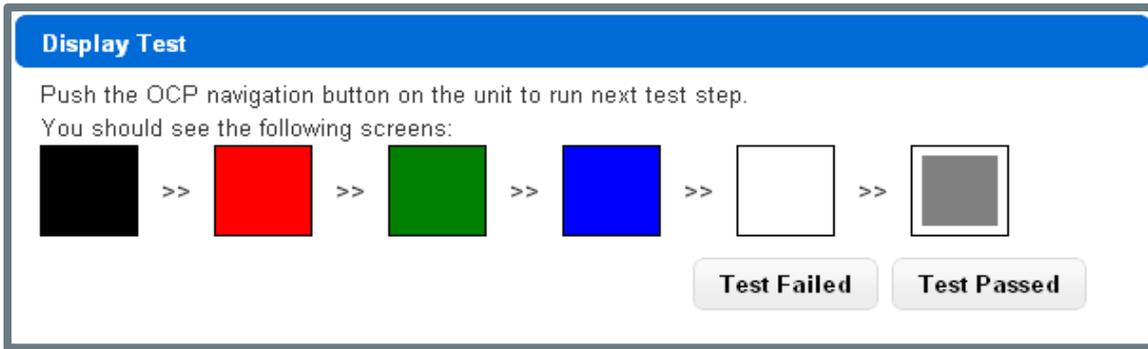


Figure 43 — Display Test Results

Once all six display conditions have been verified confirm completion of a successful test by selecting “Test Passed” button which will create a “Display Test passed” status.

Fan Test

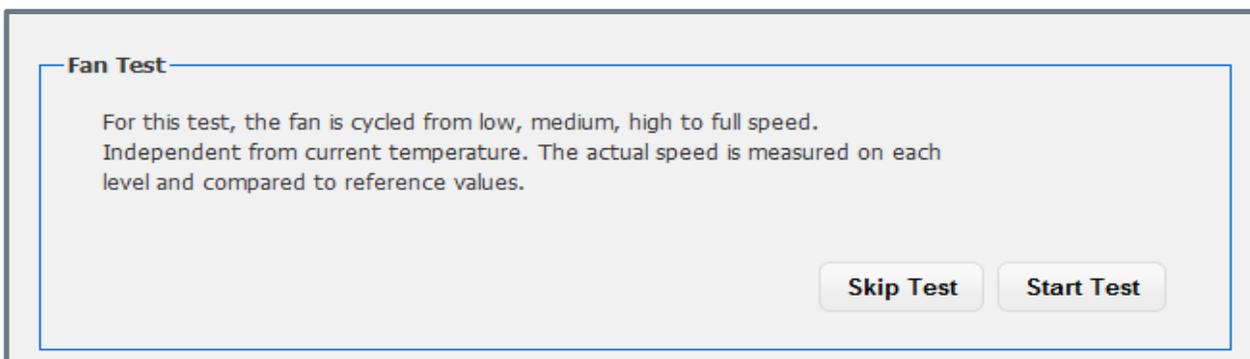


Figure 44 — Fan Test

To execute the Fan Test select the “Start Test” button. The fan will cycle through four operation speeds while monitoring the fan RPM for the correct reference value.

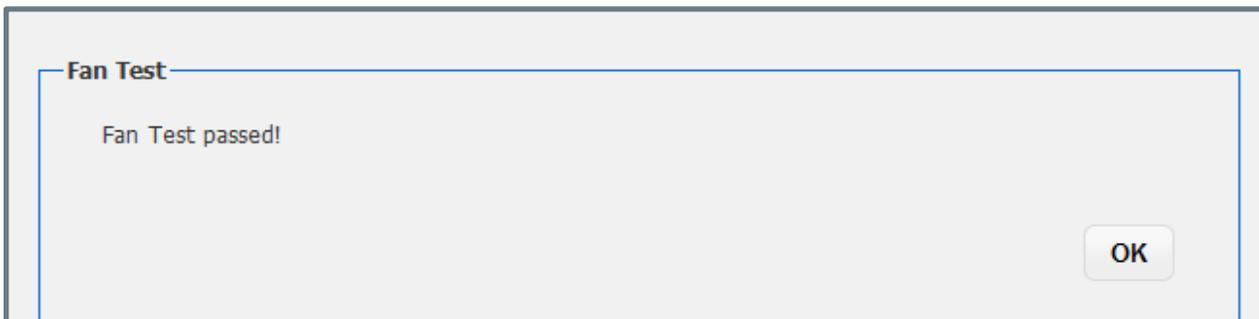


Figure 45 — Fan Test Results

Once the fan test has completed the RDX 8000 will report a pass/fail status and the user may click the “OK” button to log the result.

Cartridge Access Test

The Cartridge Access Test checks the ability of each slot to properly insert/load, identify/communicate with RDX media, and unload/eject RDX media. The unit will be taken offline from the iSCSI connection to prevent concurrent data access attempts from the host system. Also at the start of the test all currently inserted RDX media will be bulk ejected from the unit. It is suggested the test operator use a known good cartridge which can be used to test each slot.

To execute the Cartridge Access Test select the “Start Test” button, the RDX 8000 unit will then bulk eject all currently inserted cartridges and ask the user to remove them from the unit.

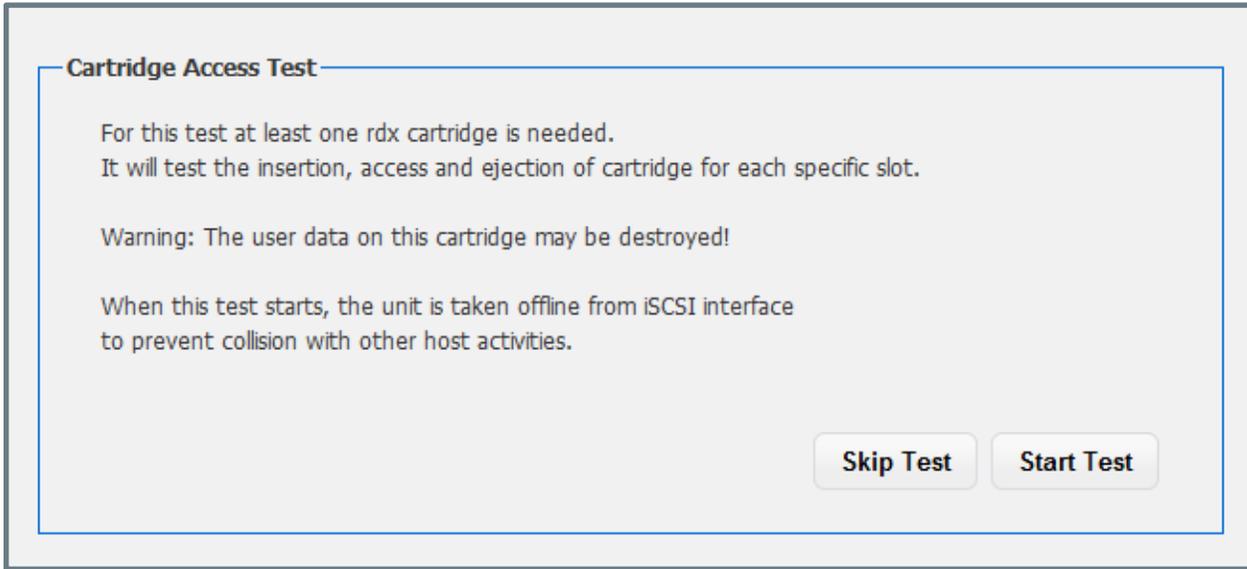


Figure 46 — Cartridge Access Test

The operator will then be asked to insert a cartridge in each of the eight slots in sequence. The RDX 8000 unit will then perform the slot access test and eject the cartridge and provide a pass/fail status.

Upon completion of testing of all eight locations the operator can confirm “OK” which will log the results to the diagnostic test log. The operator will be instructed to place the user data cartridges back into the unit, and the unit will reconnect to the iSCSI network.

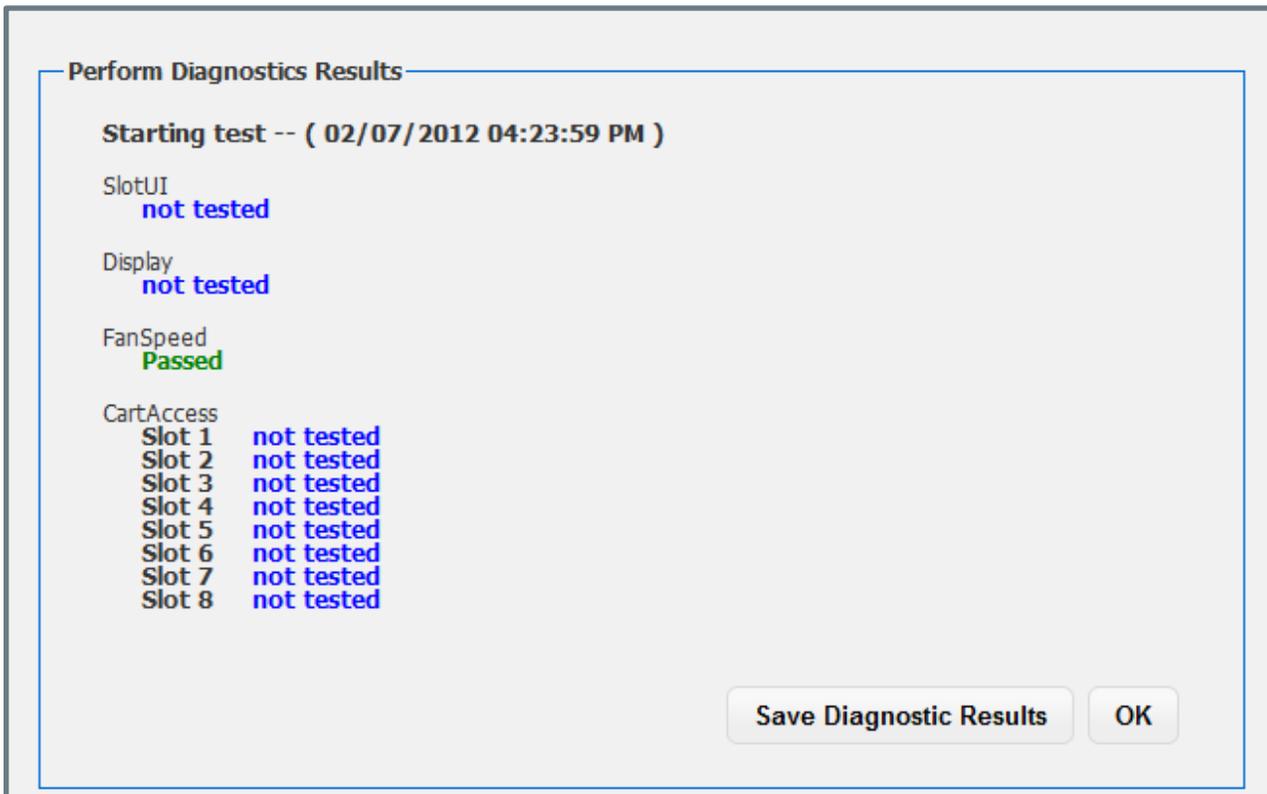


Figure 47 — RDX 8000 Diagnostics Results

5.12.3 Upgrade Firmware

The user can upgrade the unit operating firmware via the “DIAGNOSTICS/Upgrade Firmware” tab. Released firmware images are available via the RDX 8000 support team. RDX 8000 firmware images have an “.fbi” file extension and are approximately ~22MB in size.

Click the “Browse” button to set a path to the RDX 8000 firmware file located on the computer system connect via RDX 8000, then select the “Upgrade” button. The unit will proceed with the upgrade and reboot after the new code is installed. It will be necessary to log back into the RDX 8000 to regain access to the management interface.

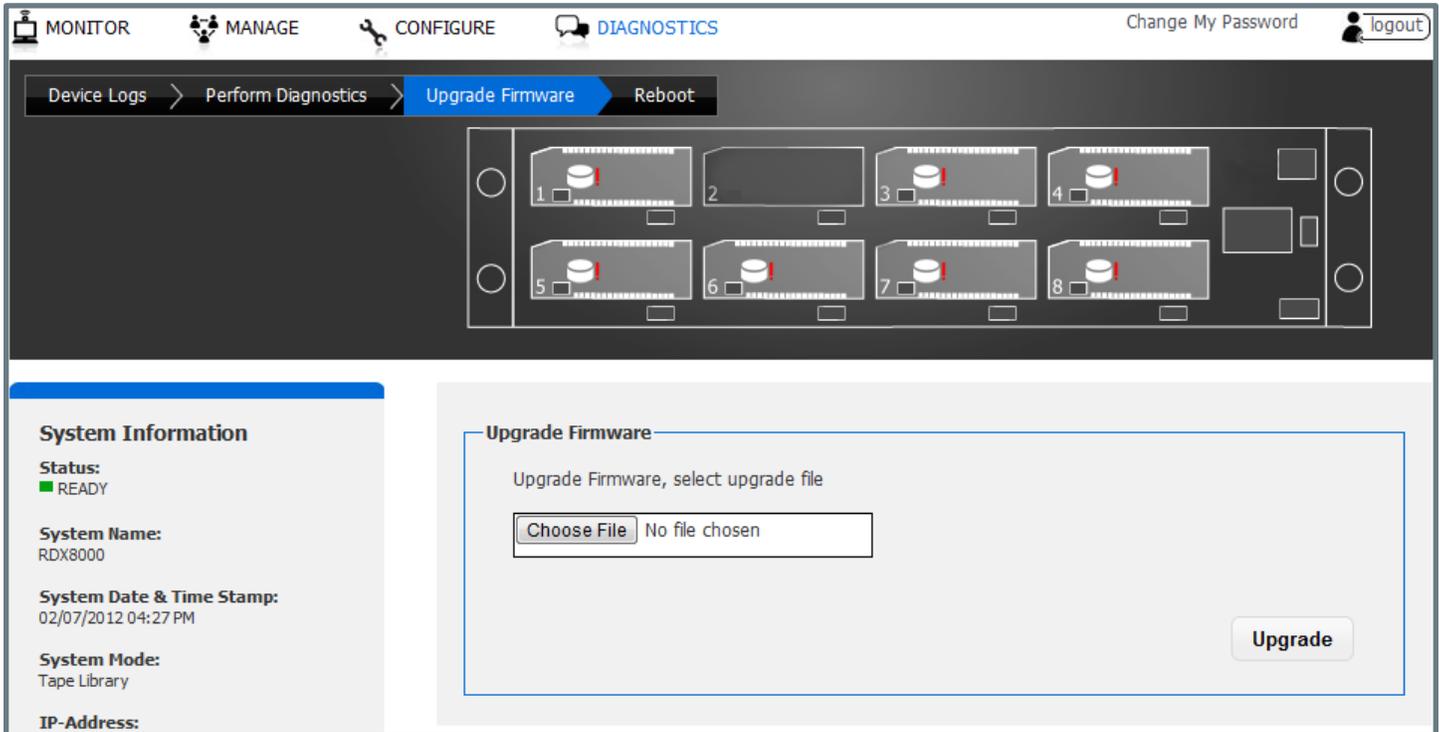


Figure 48 — RDX 8000 Upgrade Firmware

5.12.4 Reboot

The RDX 8000 may be rebooted remotely via the “DIAGNOSTICS/Reboot” tab selecting the “Reboot” tab and clicking the “Reboot” button. Rebooting the unit takes approximately 3.5 minutes and will require the user to log in to the RDX 8000 again after the reboot process is complete.

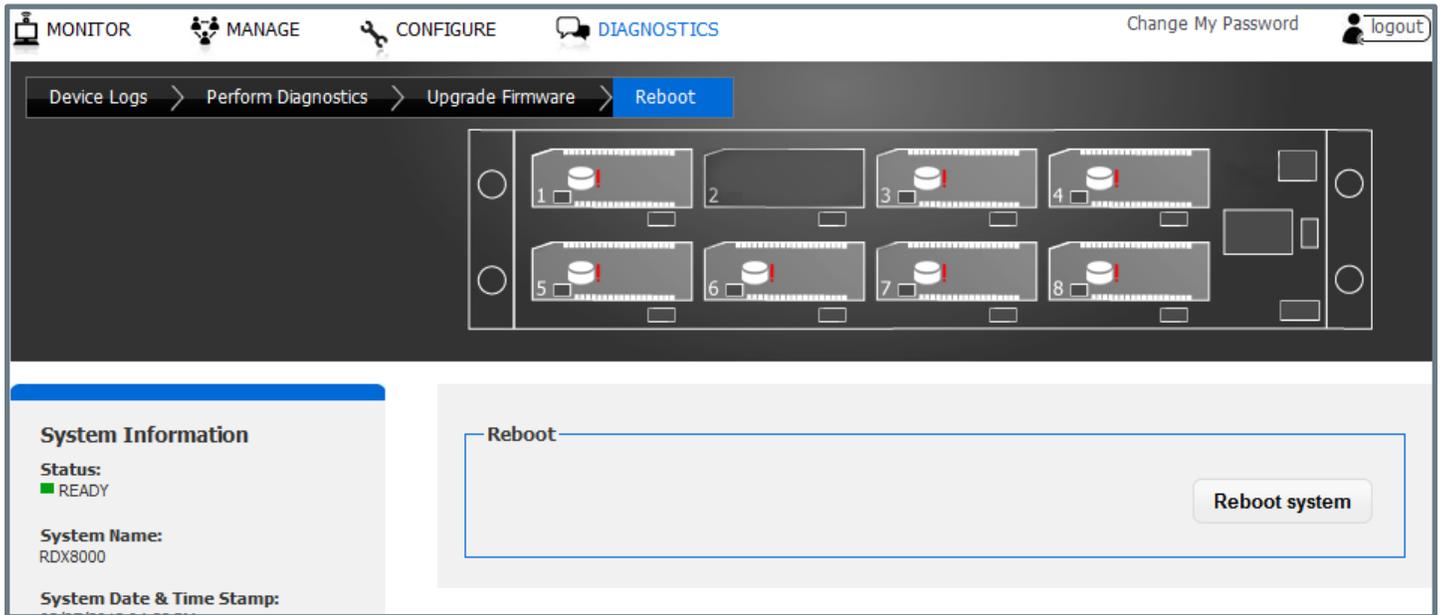


Figure 49 — RDX 8000 Reboot System

6. RDX cartridges

This section describes the use of the RDX cartridge in the RDX 8000. The RDX cartridge utilizes a removable 2.5" mobileHDD to offer the reliability and performance of disk technology along with the manageability of removable media. For physical and functional specifications, please see section ["1. Product specification" on page 75](#).

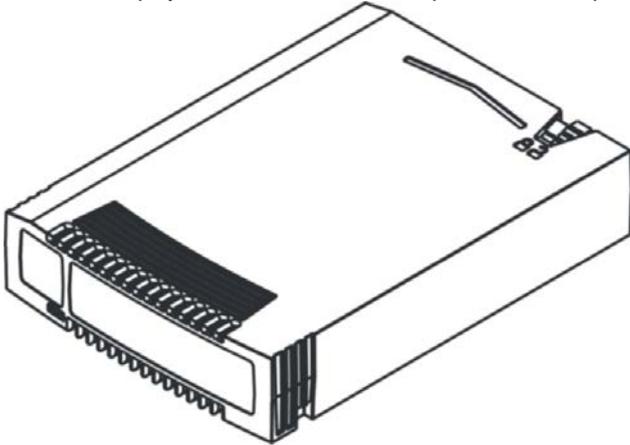


Figure 50 — Cartridge overview

RDX cartridges contain HDDs with SATA I or SATA II interfaces capable of transferring data at either 1.5 GB/s or 3.0 GB/s.

6.1 Write-protecting cartridges

The write protect slider is located on the top right rear of the cartridge. With the slider and in the right most position, the cartridge is shown to be writable (unlocked) and in the left most position the cartridge is shown to be write-protected (locked).

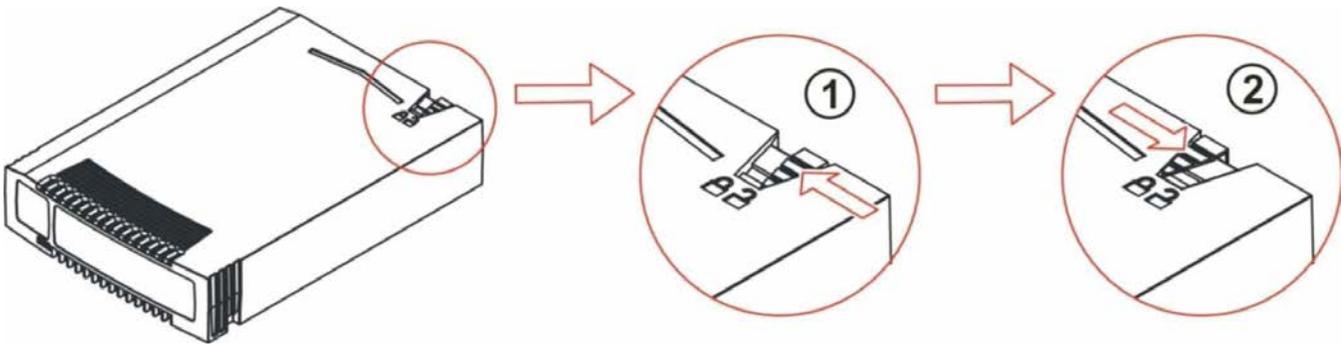


Figure 51 — Write-protecting cartridges

Number	Description
1	Cartridge is writable.
2	Cartridge is write-protected.

6.2 Inserting cartridges

1. Find an empty RDX cartridge slot (8 places) in the unit to be inserted.
2. Push the RDX cartridge gently into the cartridge slot until it seats itself against the back of the unit.
3. Verify that the cartridge is properly inserted. When the cartridge indicator LED is steady green the cartridge is ready.

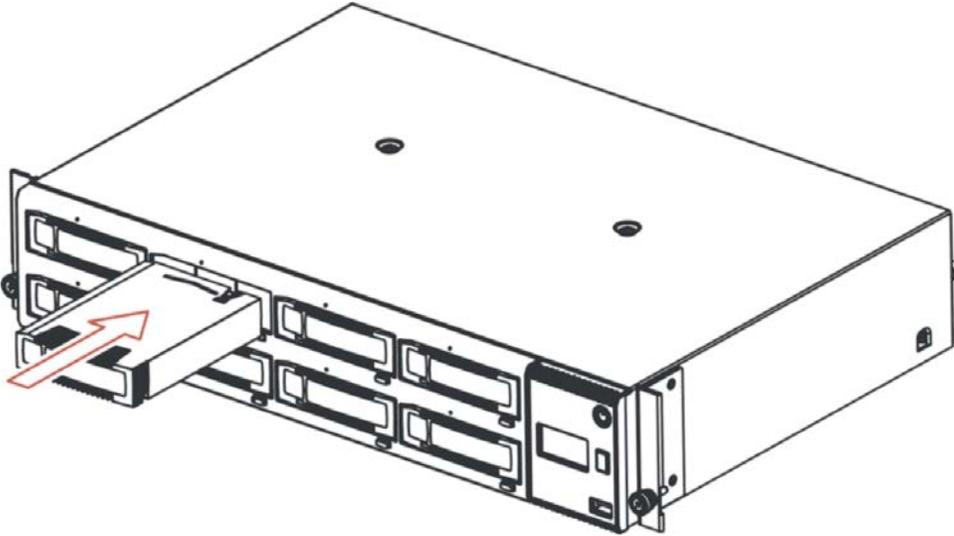


Figure 52 — Inserting cartridges

6.3 Ejecting cartridges

The RDX 8000 unit has three methods to eject cartridges:

- Front Panel Cartridge Eject button
- Eject via RDX 8000 Web interface
- Manually eject cartridge via Emergency Eject Port

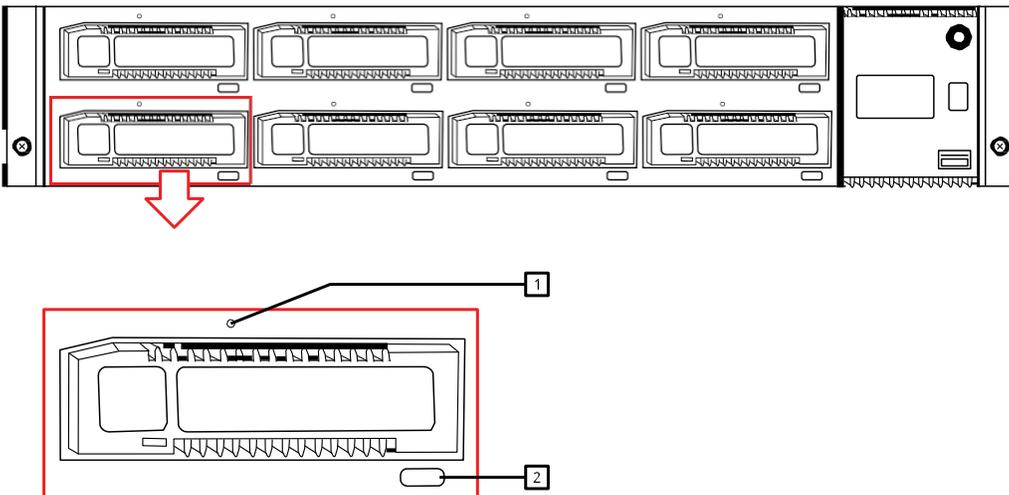


Figure 53 — Ejecting cartridges

Front Panel Cartridge Eject button

When allowed by the application in Tape Library mode, or when not Ejection Protected in JBOD mode, cartridges may be ejected via the Cartridge Eject button. Cartridges are ejected by pressing the Cartridge Eject button for the appropriate slot for approximately 2 seconds. If ejection is allowed, the eject button will flash green and the cartridge will eject shortly. If ejection is not allowed, the eject button will flash amber and cartridge will not be ejected.

RDX 8000

Please refer to the section MANAGE/Eject Cartridge for information on this method.

Emergency cartridge ejects:

Cartridges may be ejected at any time, including when the unit is powered off or in error conditions, via the Emergency Eject port. Cartridges are ejected by inserting a straightened paperclip, or similar device, into the Emergency Eject Port until resistance is felt. Then provide a firm push to eject the cartridge.

	NOTICE	When using the emergency eject feature the force should be applied to the paper clip in a straight line (paper clip held square (90 degrees) in both the horizontal and vertical planes) pushing in toward the front bezel. Avoid applying force to the emergency eject port in any other direction or damage may occur.
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7. Troubleshooting

7.1 Error Messages

7.1.1 Network related errors

Text shown to user interfaces	Description	Possible solution
Set network configuration failed	Error while writing "network configuration" values to database or Error while executing "network	Check if the network settings are correct.
No link detected	There is no link detected for the network port that is being configured. One possible cause for this error is that no network	Check if network cable is plugged in. Check if there are any other problems with the network cable.
Could not contact DHCP server	There was no answer from a DHCP server within a 60 seconds timeout while trying to configure the network port.	Make sure that there is a DHCP server available in the network that is connected to the Ethernet port that is being configured.

7.1.2 Cartridge handling related errors

Text shown to user interfaces	Description	Possible solution
LOAD tape failed, not formatted as RDX 8000 tape	The device is configured in Tape mode but inserted cartridge is not configured as a Tape cartridge.	Cartridge is writable. Make sure the cartridge you are trying to load is formatted as Tape. Formatting as Tape can be done
Mismatch between cartridge format and system mode	Format of disk doesn't match system mode, e.g. disk with tape format in JBOD mode.	Error can be ignored. To ensure this error is not reported again, insert only cartridges that match the current
Common failure during eject sequence	Ejecting the cartridge failed; either the cartridge is mechanically blocked or the command cannot be sent over	Make sure that there is nothing that nothing is blocking ejection of the cartridge.

7.1.3 Remote notification handling related errors

Text shown to user interfaces	Description	Possible solution
Failed to send e-mail notification	Reported in case on e-mail notification enabled but failed to send mail.	Make sure that configuration of "E-mail notification" is correct (valid SMTP server and port, existing e-mail address, ...)

7.1.4 System related errors

Text shown to user interfaces	Description	Possible solution
Fan speed out of range	Fan speed out of range, speed too slow.	Fan is not fully installed. Fan is obstructed.
Voltage out of range	At least one voltage is out of	Defective power supply.
Temperature on local sensor under low limit	Temperature on CPU board exceeds lower alarm level.	Fan and/or system airflow is obstructed.
Temperature on local sensor over high limit	Temperature on CPU board exceeds higher alarm level.	Fan and/or system airflow is obstructed.
Critical temperature on local sensor	Critical temperature on CPU board exceeds maximum (this message should occur because of hardware shutdown).	Fan and/or system airflow is obstructed.
Shutdown triggered because of high temperature	Software shutdown initiated because of high temperature.	Fan and/or system airflow is obstructed.

C. Appendix

1. Product specification

1.1 Physical specification

Mechanical dimension and unit height

1. Unit Height: 2U with clearance for units above and below
2. Unit Depth: Less than 12" (excluding connectors)
3. Unit Width: Fits standard 19" computer racks
4. Standalone Unit Weight, (without a disk): 6.0 kg
5. Packaged Unit Weight, (with accessory kit, without disks): 8.0 kg
6. Single Disk Weight (without plastic box): 0.170 kg
7. Single Packaged Disk Weight (with plastic box): 0.240 kg

1.2 Functional specification

Operating Temperature: +10° – +35° C Operating Temperature Gradient: 10°C/hour

Storage Temperature: - 30° – +60° C

Non-operating Temperature Gradient: 20° C/hour

Relative Humidity Operating: 20 – 80 % non-condensing

Relative Humidity Non-operating: 20 – 90 % non-condensing

Operating humidity Gradient: 10% r.h./hour

Non-operating Humidity Gradient 10% r.h./hour

Altitude Operating: 0 to 10,000 feet (3000 m) at 25° C ambient

Altitude Storage: -22 – 30,000 feet

Input voltage: 100-240 VAC, 50-60 Hz

Input power, Unit standby: 0.7 W Input power, Unit ready: 17 W

Input power, Unit read/write 1 Cartridge: 20 W Input power, Unit read/write 8 Cartridge: 32 W

Power Supply key parameters:

- Total Output Power: 100W (with fan cooling, 80W with convection cooling)
- Output Voltage: 15 VDC
- Efficiency: >85% (Certification 80 PLUS Bronze)
- Input power <1.0 W with 10mA output load
- Hold up time >15 msec
- EMI class A
- MTBF > 250 k hours

1.3 Regulatory Requirements

Product Safety:

- CB Report and Certification with all national deviations, according:
- IEC 60950-1:2005
- EN 60950-1:2006 + A11:2009
- UL 60950-1 Issued 2007/03/27 Ed. 2
- CSA-C22.2 No. 60950 Issued 2007/03/01 Ed. 2

Emission:

- IEC CISPR 22:2008-09 Ed. 6.0 Limit: Class A
- EN 55022:2006 + A1:2007 Limit: Class A
- FCC: 47CFR Part 15B:2008-07 Limit: Class A (Test acc. to CISPR 22)
- ICES-003, Issue 4 2004-03 Limit: Class A (Test acc. to CISPR 22)
- AS/NZS 3548:1995 + A1/A2:1997 Limit: Class A
- VCCI V-3 2009-04 in parts (Japan) Limit: Class A
- VCCI V-4 2009-04 in parts (Japan) Limit: Class A
- EN 61000-3-2:2006
- EN 61000-3-3:1995 + A1:2001 + A2:2005

Immunity:

- EN 55024:1998 + A1:2001 + A2:2003 (Requires tests according to the actual versions of:
 - » IEC 61000 -4 -2
 - » IEC 61000 -4 -3
 - » IEC 61000 -4 -4
 - » IEC 61000 -4 -5
 - » IEC 61000 -4 -6
 - » IEC 61000 -4 -8
 - » IEC 61000 -4 -11 (Limits acc. to EN 55024:1998)

2. CRU replacement

2.1 Power supply

The power supply is a CRU (Customer Replaceable Unit). The power supply is located on the rear side of the unit and is fixed with two thumb screws. The power supply is capable to power up to 8 cartridges simultaneously while supporting other unit electronics (controller, LED's, OCP, motors).

For technical specification, see section [“1. Product specification” on page 75.](#)

2.1.1 Removing a power supply

1. Power down the unit by pressing the power button on the front panel.
2. Locate the power supply on left side on the rear panel of the RDX 8000 unit, shown in section [“3.1 Rear panel layout”](#) on page 10.
3. Remove the power cord on the rear panel of the unit.
4. Loosen the two thumbscrews located on the rear of the power supply using a #3 Phillips screwdriver or your fingers.
5. Pull the power supply straight out of the unit.
6. To store or ship the removed power supply, repackage it in the original or replacement device packaging materials.

2.1.2 Installing a power supply

1. Locate the power supply bay on left side on the rear panel of the RDX 8000 unit, shown in section [“3.1 Rear panel layout”](#) on page 10.
2. Before installing the power supply, inspect the connectors on the power supply. Ensure that the connectors are intact, free of any foreign objects, and have no cracks or deformed or bent contacts.
3. Insert the power supply on the alignment rails and push the power supply into the power supply bay until it seats itself against the back of the unit.

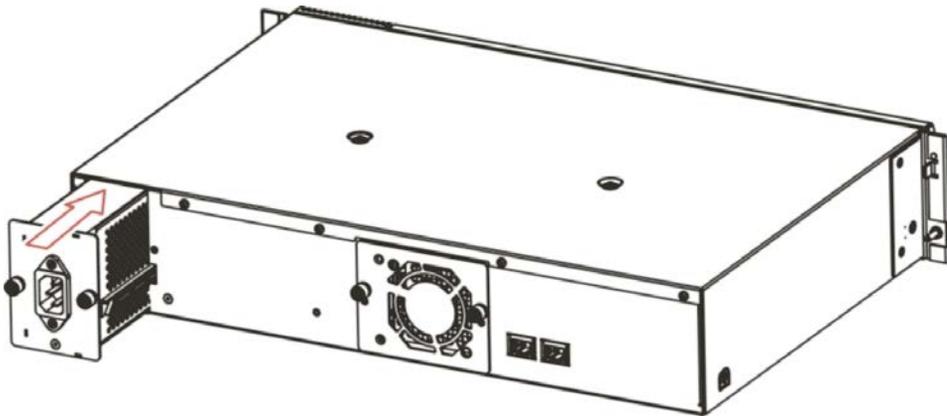


Figure 54 — Installing a power supply

- 1.
- 2.
- 3.
4. Tighten the two thumbscrews using a #3 Phillips screwdriver or your fingers to secure the power supply to the unit.

2.2 Cooling fan

The cooling fan is a CRU (Customer Replaceable Unit). The fan is located on the rear side of the unit and is fixed with 2 thumb screws. The fan is speed controlled. The speed varies in 4 steps (low, medium, high and max) and is controlled by a micro controller and thermal sensors.

For technical specification, see section ["1. Product specification" on page 75](#).

2.2.1 Removing a cooling fan

1. Power down the unit by pressing the power button on the front panel.
2. Locate the cooling fan on the middle of the rear panel of the unit, shown in section ["3.1 Rear panel layout" on page 10](#).
3. Remove the power cord on the rear panel of the unit.
4. Loosen the two thumbscrews located on the rear of the cooling fan using a #3 Phillips screwdriver or your fingers.
5. Pull the cooling fan straight out from the rear of the unit.
6. To store or ship the removed cooling fan, repackage it in the original or replacement device packaging materials.

2.2.2 Installing a cooling fan

1. Locate the cooling fan bay on the middle of the rear panel of the RDX 8000 unit, shown in section ["3.1 Rear panel layout" on page 10](#).
2. Before installing the cooling fan, inspect the connectors on the cooling fan CRU and the mating connector in the RDX 8000 unit. Ensure that the connectors are intact, free of any foreign objects, and have no cracks or deformed or bent contacts.
3. Push the cooling fan straight into the cooling fan bay until it seats itself against the back of the unit.

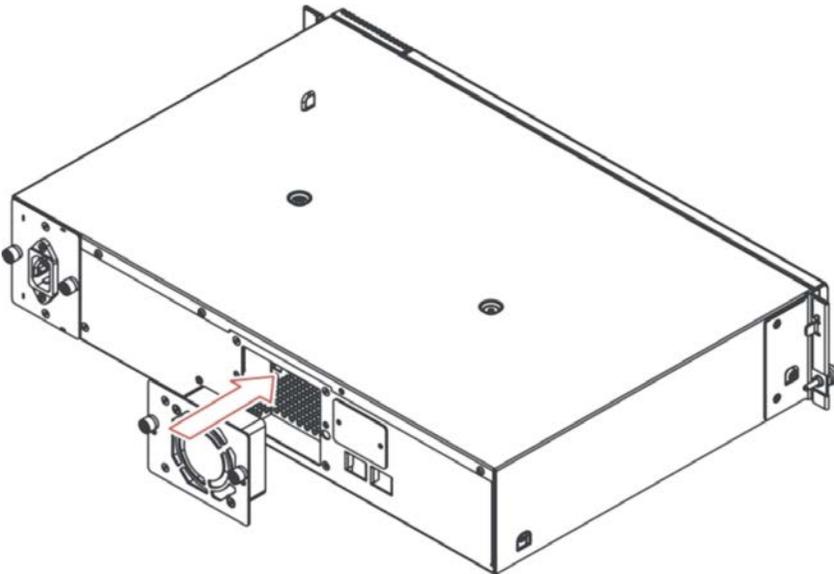


Figure 55 — Installing a cooling fan

4. Tighten the two thumbscrews using a #3 Phillips screwdriver or your fingers to secure the cooling fan to the unit.

3. RDX 8000 Jumbo Frames configuration

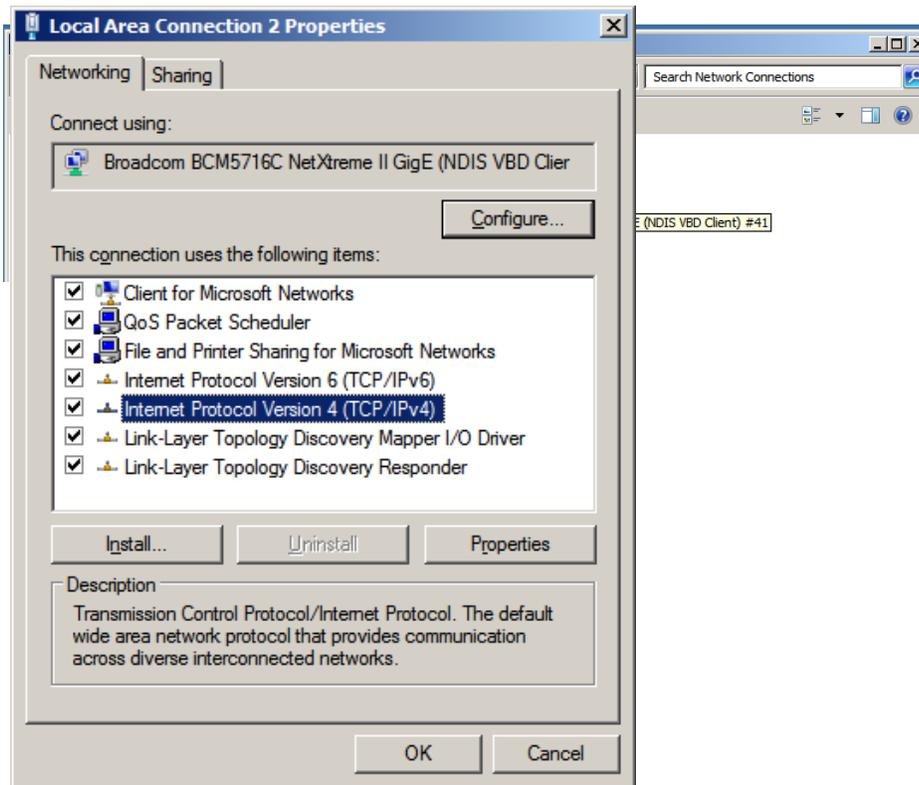
Optimum RDX 8000 performance can be achieved in all operating Modes (JBOD and Tape Library) through a Jumbo Frames configuration. As all network data devices need to be configured for Jumbo Frames for proper operation and performance, the recommended configuration is using a second network port on server configured for a static IP and

Jumbo Frames (MTU9000) and connecting the RDX 8000 to the server using a cross-over cable or a jumbo-frames capable gigabit network switch.

Procedure:

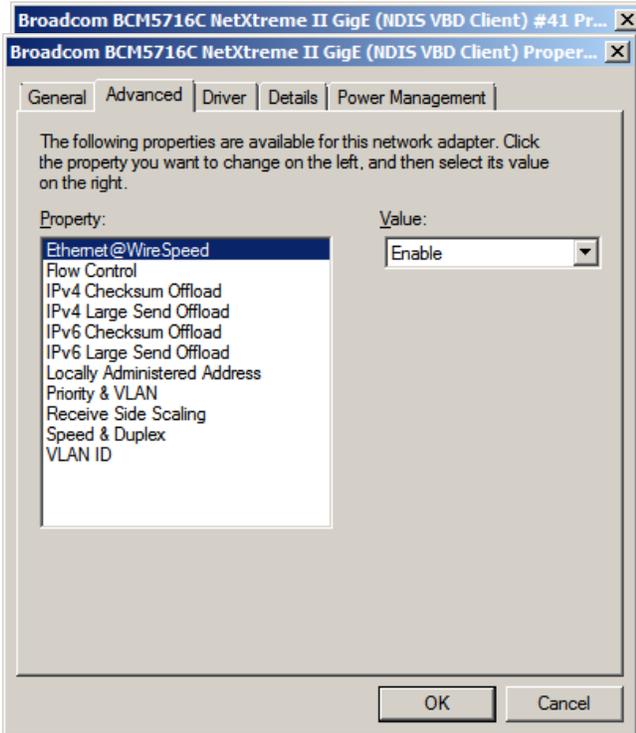
Please note: This procedure assumes an available 2nd network port on the server, and an available temporary connection to the primary network with DHCP service. This example procedure is using Windows Server 2008 R2, but can be configured on other operations systems.

1. On the server, go to Control Panel – Network and Internet – Network Connections. You should see two network connections, one active and one not connected.
2. Right-click on the unconnected network port. Select Properties.

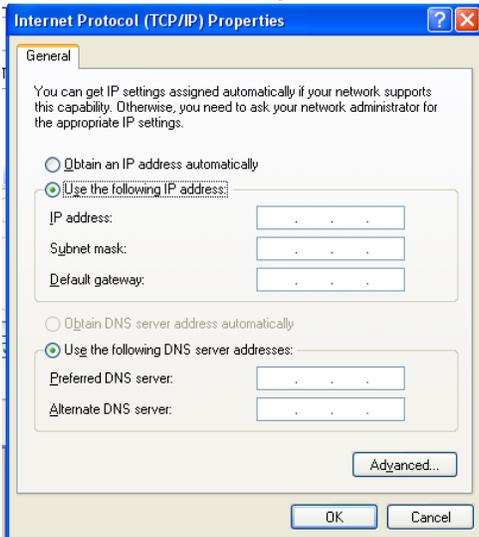


3. Click on Configure.
4. Select the Advanced tab.

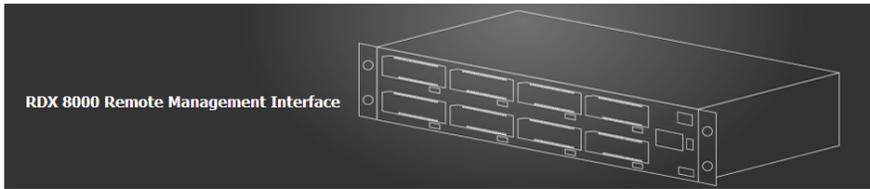
5. Select Jumbo Packet (or Jumbo Frame) in the Property List. Set the value to 9000. Click OK.



6. If your Property List does not include Jumbo Packets/Frames (as in the example below), you will need to update the driver for the network card. Check the network card manufacturer website for the latest drivers.
7. On the Connection Properties Box for the network port, select the Internet Protocol 4 (IPv4) and click Properties.



8. Click "Use the following IP Address" and enter an IP address for the port. Make sure at least one of the first 3 sets of numbers of the IP address is different from the IP address of the primary port. For example, if the primary IP address is 192.168.32.10, the second port could be configured to 192.168.64.10. In this example, do not configure the second port to 192.168.32.12. Configure network mask and gateway. Click Ok.
9. Connect RDX 8000 to primary network that the server's primary network port is connected to and power up. After boot-up the DHCP assigned IP address will be displayed in OCP.
10. Log into RDX 8000 using the browser on the server. Use username administrator and password adm001



System Name: RDX8000
Date & Time: 07/05/2012 01:05 PM

User:

Password:

secure SSL encryption

login

11. Go to Configure – Network.

User: administrator
User Level: Administrator

RDX 8000 Remote Management Interface Quantum.

MONITOR MANAGE CONFIGURE DIAGNOSTICS Change My Password logout

Device > Cartridge > **Network** > iSCSI > Users > Date & Time > Notification > Save/Restore

System Information

Status:
■ READY

System Name:
RDX8000

System Date & Time Stamp:
07/05/2012 01:56 PM

System Mode:
JBOD

IP-Address:
10.20.161.5

Host name:
RDX8000-2000AF.quantum.com

Firmware Version:
R1.33 0x39b6

Ethernet Host Name

Ethernet

MTU Size:

Stack:

Bonding Mode:

IPv4 Configuration

Method:

IP Address:

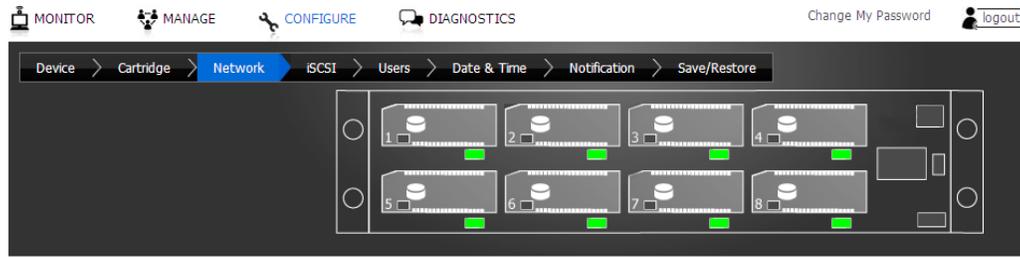
Netmask:

Gateway:

12. Click on MTU box and select 9000

13. Click on Manual in the Set IP address.

14. Set IP appropriate for address configured on 2nd network port. For example: if 192.168.64.10, then set ip to 192.168.64.11, mask as 255.255.255.0 and gateway as 192.168.64.10



System Information

Status:
■ READY

System Name:
RDX8000

System Date & Time Stamp:
07/05/2012 12:26 PM

System Mode:
JBOD

IP-Address:
10.20.161.5

Host name:
RDX8000-2000AF.quantum.com

Firmware Version:
R1.33 0x39b6

Ethernet | **Host Name**

Ethernet

MTU Size:

Stack:

Bonding Mode:

IPv4 Configuration

Method:

IP Address:

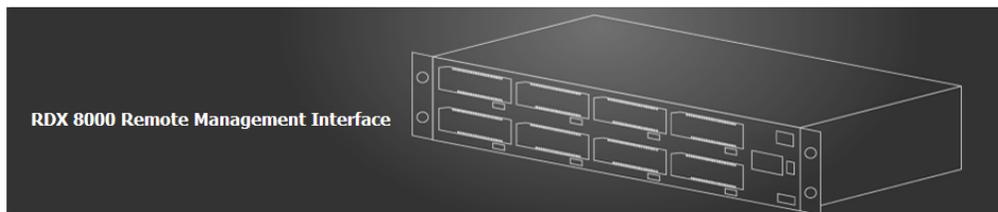
Netmask:

Gateway:

DNS 1:

DNS 2:

15. Click Submit. After 30-60 seconds new IP address will show in OCP.
16. Disconnect RDX 8000 from primary network.
17. Connect RDX 8000 to 2nd network port using cross-over cable if direct connect. Or use gigabit jumbo frames capable network switch, and connect both 2nd network port and RDX 8000 to it.
18. Using the browser on the server, go to the ip address configured on the RDX 8000. The log-in page should appear.



System Name: RDX8000
Date & Time: 07/05/2012 01:05 PM

User:

Password:

secure SSL encryption

login

D. Glossary

Term	Description
CRU	Customer Replaceable Unit is easily replaceable module designed to enable customer serviceability of the RDX 8000 unit. CRU's can be exchanged by the end use customer without tools to support field renew/repair of either the cooling fan or power supply system.
DHCP	The Dynamic Host Configuration Protocol is an automatic configuration protocol used on IP networks. Computers that are connected to IP networks must be configured before they can communicate with other computers on the network. DHCP allows a computer to be configured automatically.
DNS	The Domain Name System is a hierarchical naming system built on a distributed database for computers, services, or any resource connected to the Internet or a private network. Most importantly, it translates domain names meaningful to humans into the numerical identifiers associated with networking equipment for the purpose of locating and addressing these devices worldwide.
Disk	Refers either to a HDD unit or the direct block addressing scheme used to store and retrieve digital data on the HDD. When the RDX 8000 unit is in disk mode direct block addressing is used to access the contained RDX media.
ESD	Electro Static Discharge is the sudden and momentary electric current that flows between two objects at different electrical potentials. The term is usually used in the electronics and other industries to describe momentary unwanted currents that may cause damage to electronic equipment.
HDD	Hard Disk Drive refers to the core storage device using rotating magnetic media to store digital information. RDX cartridges make use of embedded HDD's to store data.
iSCSI	Internet Small Computer System Interface, an Internet Protocol (IP)-based storage networking standard for linking data storage facilities. By carrying SCSI commands over IP networks.
iSNS	Internet Storage Name Service, protocol that allows automated discovery, management and configuration of iSCSI devices on a TCP/IP network.
LED	Light Emitting Diode is a semiconductor light source. The RDX 8000 uses LED's to provide power switch, eject button, and cartridge status indication. LED technology is also used to provide the backlighting for the LCD display used in the OCP.
MTU	In computer networking, the Maximum Transmission Unit of a communications protocol of a layer is the size (in bytes) of the largest protocol data unit that the layer can pass onwards. MTU parameters usually appear in association with a communications interface (NIC, serial port, etc.).
OCP	Operator Control Panel includes display, buttons and LED's and enables the user to operate the unit from the front
RDX	Is a removable disk technology originally developed by ProStor.
RDX 8000 RMI	Remote Management Interface provides the capability to operate the unit through a Web based remote management interface.

Term	Description
SCSI	Small Computer System Interface is a set of standards for physically connecting and transferring data between computers and peripheral devices. The RDX 8000 uses the SCSI protocol transmitted via iSCSI packets over the user's computer network.
SMI-S	SMI-S, or the Storage Management Initiative Specification, is a storage standard developed and maintained by the Storage Networking Industry Association (SNIA). It has also been ratified as an ISO standard. SMI-S is based upon the Common Information Model (CIM) and the Web-Based Enterprise Management (WBEM) standards defined by the Distributed Management Task Force (DMTF), which define management functionality via HTTP. The most recent approved version of SMI-S is available at the SNIA.
SNMP	Simple Network Management Protocol is an Internet-standard protocol for managing devices on IP networks. Devices that typically support SNMP include routers, switches, servers, workstations, printers, modem racks, and more. It is used mostly in network management systems to monitor network-attached devices for conditions that warrant administrative
USB	Universal Serial Bus is an interface designed to provide high speed connection of various device types in a hot pluggable manner. The RDX 8000 system has one USB 2.0 port located on the front panel for various operations (firmware version dependent)