Coraid® EtherDrive® SRX

Administration Guide

CorOS™ v7.1.0

coraid

Contents

Revision History

The following table describes notable changes in each revision of this document.

Table 1: Document revision history

Publication Date	Changes
12/22/14	Initial release

Introduction

Thank you for purchasing the **Coraid® EtherDrive® SRX Storage Appliance**. The EtherDrive SRX products are block storage RAID appliances with hot-swappable hard disk drives. You can configure drives individually or in RAID sets. Both are presented to initiators as logical storage devices accessible using the ATA-over-Ethernet (AoE) protocol.
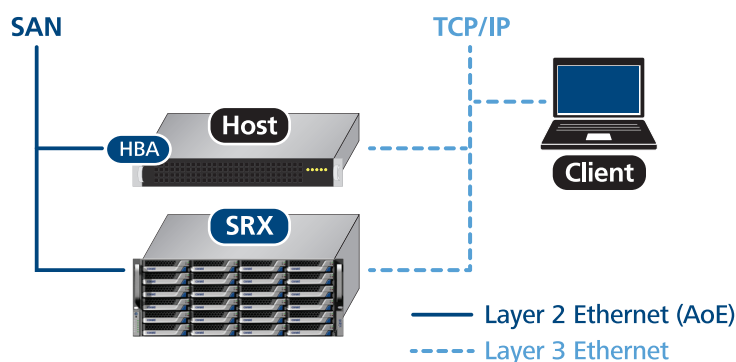
Figure 1: EtherDrive SRX connected to an AoE SAN

This document has information on how to install and configure an SRX storage appliance. In addition, it includes the commands to use when managing the storage appliance.

Reference documentation

The Coraid support web site (www.coraid.com/support) provides additional documentation on the SRX appliance, including the latest *EtherDrive SRX Release Notes*, *EtherDrive SRX QuickStart,* and *EtherDrive SRX CorOS Update Instructions*.

Requirements

The following section describes system requirements for the SRX appliance. For additional specifications and safety information, see Hardware Specifications and Precautions.

Operating software

CorOS™ is the native operating system installed on each SRX storage appliance. It is a distributed storage operating system. Typically, the SRX storage appliance is part of a Storage Area Network (SAN), which might include several additional EtherDrive SRX storage appliances. For optimal stability, ensure that all appliances on the SAN are running compatible versions of CorOS. For the latest version of CorOS, see the Customer Support Portal at www.coraid.com/support, or contact the Coraid Technical Assistance Center.

Hardware and network connectivity

The following subsection describes the hardware and network connectivity equipment that you should obtain before working with the SRX appliance.

- Power: Coraid storage appliances feature redundant power supplies. Each appliance requires two grounded outlets that must be on separate UPS (uninterruptible power supply) circuits furnishing 120V or 230V, 60 or 50Hz power. An alarm sounds if one of the power supplies is not plugged into an AC power outlet (see the note after step 8 on page 14). For detailed specifications, see Hardware Specifications and Precautions.

- Ethernet TCP/IP network port: The SRX6200 and SRX6300 appliances include one 1Gb Ethernet RJ45 port (Ether0) reserved for connecting the SRX to a TCP/IP network.

- Ethernet ESM management port: The SRX6200 and SRX6300 appliances include one 1Gb Ethernet RJ45 port (Ether1) reserved for management of the SRX by an EtherCloud Storage Manager (ESM).

- Ethernet SAN ports: The SRX2800, SRX3200, SRX3500, and SRX4200 appliances includes two 1Gb Ethernet SAN ports, and all SRX appliances include either two or four 10GbE Ethernet SAN ports, using either RJ45, SFP+, or CX4 twin axial copper connections, depending on the SRX model (see Figure 5).

- Ethernet cables: It is highly recommended that you use high-quality Ethernet cables when connecting the SRX appliance to the network. You should also label each cable at both ends. RJ45 Gb Ethernet SAN ports require Category 6 cables (not Cat. 5 or 5e).

- Network switch: Any Ethernet switch used for the SAN must support jumbo frames with an MTU size of 9K. It is recommended that the switch also support flow control (IEEE 802.3x).

- VGA: The SRX appliance includes monitor port connections for console support.

- Keyboard: The SRX6200 and SRX6300 appliances include four USB ports to connect a USB keyboard for console support. The SRX2800, SRX3200, SRX3500, and SRX4200 appliances includes a PS/2 keyboard port and two USB ports.

- RS-232 serial port: The SRX appliance includes an alternative console connection support. This connection requires a null modem cable. Default arguments on the serial port are 9600 bits/second, no parity, and 1 stop bit.

- EtherDrive Host Bus Adapter (HBA): The HBA must be installed in a host connected to the same Ethernet SAN where the SRX appliance is installed. An HBA translates drive requests to AoE requests and transmits them to the SAN.

Terminology and Conventions

Information in this guide assumes familiarity with common data storage and networking concepts, along with familiarity with data center operations in general. Terms specific to this product or to Coraid, Inc. are defined in this guide. Users unfamiliar with standard networking and storage terminology are encouraged to find definitions for unfamiliar terms by using Web resources and reference documents.

The following terms and conventions are used throughout this document:

Table 2: Terms and conventions

Term	Description
SRX	This generic product name is used throughout this document to refer to any of the Coraid SRX storage appliances.
`SRX shelf 7>`	This is a generic CLI prompt used throughout this document in command usage examples to indicate a particular SRX shelf.
Drive	This refers to a physical hard disk drive or SSD installed in the SRX appliance.
`shelf.slot`	This refers to a specific number assigned to a physical drive (slot) in a specific shelf. (AoE targets accessible on the SAN are presented to initiators in the form `shelf.lun`. See Target below.) Except where noted, command usage examples throughout this guide use the following `shelf.slot` address conventions: • 7.0 through 7.2: refers to a drive configured as a single-drive JBOD (Just a Bunch Of Drives). • 7.3 through 7.6: refers to a drive which is an element in a RAID 5 LUN and named LUN 8. • 7.7 through 7.12: refers to a drive which is an element in a RAID 10 LUN and named LUN 9. • 7.13 through 7.14: refers to a drive assigned to the spare pool. • 7.15: refers to an unassigned drive.
Command line examples	To manage the length of the command line output (and workflow examples), most command line examples that list the drives in the SRX depict no more than eight drives. Your SRX appliances might have a different number of drives.
Logical Unit Number (LUN)	A group of uniquely numbered blocks of storage comprising a logical storage device attached to a storage appliance by Ethernet SAN.
Initiator	An initiator is a host-system AoE driver used to perform I/O to the SRX target LUNs.
Target	A target is an SRX LUN accessed by a client system. Targets are presented to initiators in the form `shelf.lun`.

Front and Back Panel Overview

It is recommended that you familiarize yourself with the front and back panels of the SRX before installing the storage appliance. In addition to these graphics, review the following two sections: Front panel buttons and indicators and SRX6200 and SRX6300 Back panel ports.

Front panels

4U storage appliance

EtherDrive SRX4200 and EtherDrive SRX6300

36 drives
(3.5" SAS/SSD/SATA)
24 drives in front;
12 drives in back

EtherDrive SRX3200
24 disks
(3.5" SAS/SSD/SATA)
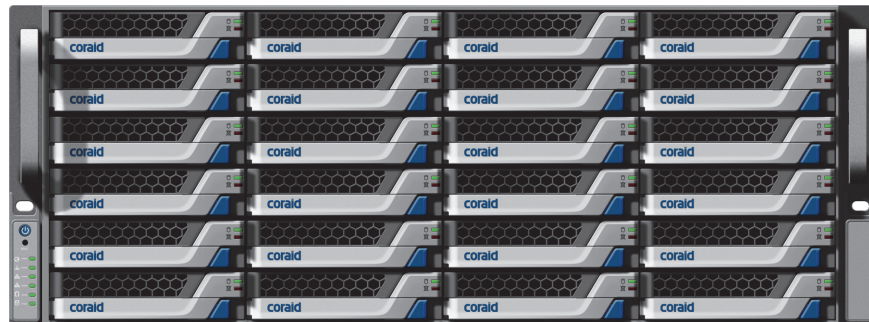
3U storage appliance
EtherDrive SRX2800
16 disks
(3.5" SAS/SSD/SATA)
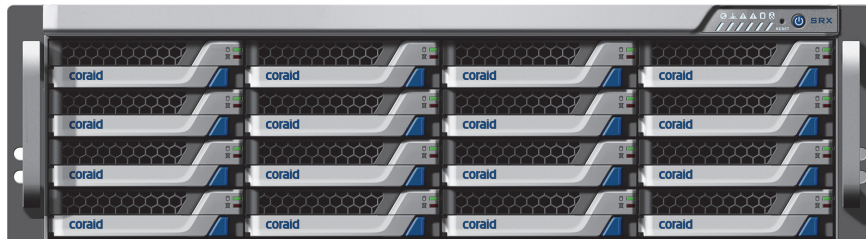
2U storage appliance

EtherDrive SRX3500 and EtherDrive SRX6200

24 drives
(2.5" SAS/SSD/SATA)

Figure 2: SRX front panels

Drive slot numbering in SRX appliances

CorOS numbers the drive slots in the SRX appliances from left-to-right, top-to-bottom.

0	1	2	3
4	5	…	…

Figure 3: Drive slot numbering

Note: The SRX 4200 and SRX6300 have 12 slots in the rear of the chassis. The rear slots use the same slot numbering pattern, starting with slot number 24.

Front panel buttons and indicators

The front panel buttons and indicators are summarized in the following table.

Table 3: Buttons and indicators

Button/indicator	Function
	Solid red indicates a power failure in the power supply.
	• Blinking: indicates a fan failure. • Solid, not blinking: indicates an overheat condition. This might be caused by cables obstructing the airflow in the system or an ambient room temperature that is too warm.
	Blinking indicates network activity on the SAN (AoE) if a network cable is connected to an SRX SAN port shown in Figure 5.
	Blinking indicates SATA DOM (internal SATA boot module) activity.
	Lit when the system's power supply unit is receiving power, including: • Solid green: on • Solid yellow: power supply is plugged in and turned off, or the system is off but in an abnormal state

Table 3: Buttons and indicators

Button/indicator	Function
	Press this button to reboot the system. You can press this button after issuing a `halt` command or as a last resort if the appliance is unresponsive. In addition, a consistency check runs whenever the system is rebooted.
	Press this button to apply or remove power to or from the system. It should be noted that this action removes the main power, but keeps standby power supplied to the system. Thus, you must unplug the power cord if the appliance needs servicing.

Drive carrier LEDs

LEDs on the drive carriers indicate drive activity:

• LED off or on (solid, unblinking) indicates no drive activity.

• LED blinking indicates drive activity.

SRX2800, SRX3200, SRX3500, and SRX4200 Back panel ports

The following figure shows the ports on the SRX2800, SRX3200, SRX3500, and SRX4200 appliances.
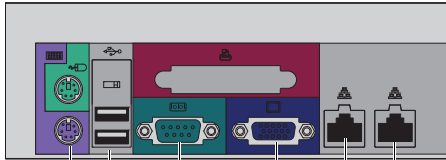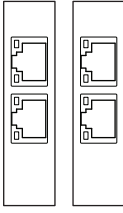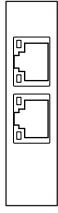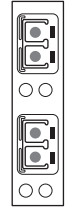
Standard SRX4200 ports	Additional Ethernet SAN port options available on SRX4200 appliances			
	C2 10GbE CX4 twin axial copper (x2)	**G6** 1GbE RJ45 (x4) (Cat. 6 required)	**R2** 10GbE RJ45 (x2) (Cat. 6 required)	**S2** 10GbE SFP+ (x2)
 PS/2 USB RS-232 Serial port VGA ether0 ether1				 Shown with Fiber Optic Transceivers
• PS/2 (keyboard) • Two USB ports (supports keyboard) • RS-232 Serial (null modem) • VGA (monitor) • Two onboard 1GbE RJ45 Ethernet SAN ports (ether0 and ether1). See the caution on the right about use with 10GbE ports.	**Note:** The SRX SAN port options above are in addition to the two onboard 1GbE RJ45 ports (ether0 and ether1). ⚠ **NOTICE** Administrators should evaluate their network architecture before using the onboard ether0 and ether1 1GbE ports for SAN traffic on an SRX that uses 10GbE SAN ports. Depending on the network configuration, mixing port speeds within an SRX can degrade performance. If the SRX uses ether0 and ether1 for CEC management (default configuration), it is recommended that CEC activity be separated from SAN traffic if the SRX features 10GbE SAN ports.			

Figure 4: SRX2800, SRX3200, SRX3500, and SRX4200 back panel ports

SRX6200 and SRX6300 Back panel ports

The following figure shows the ports on the SRX6200 and SRX6300 appliances.
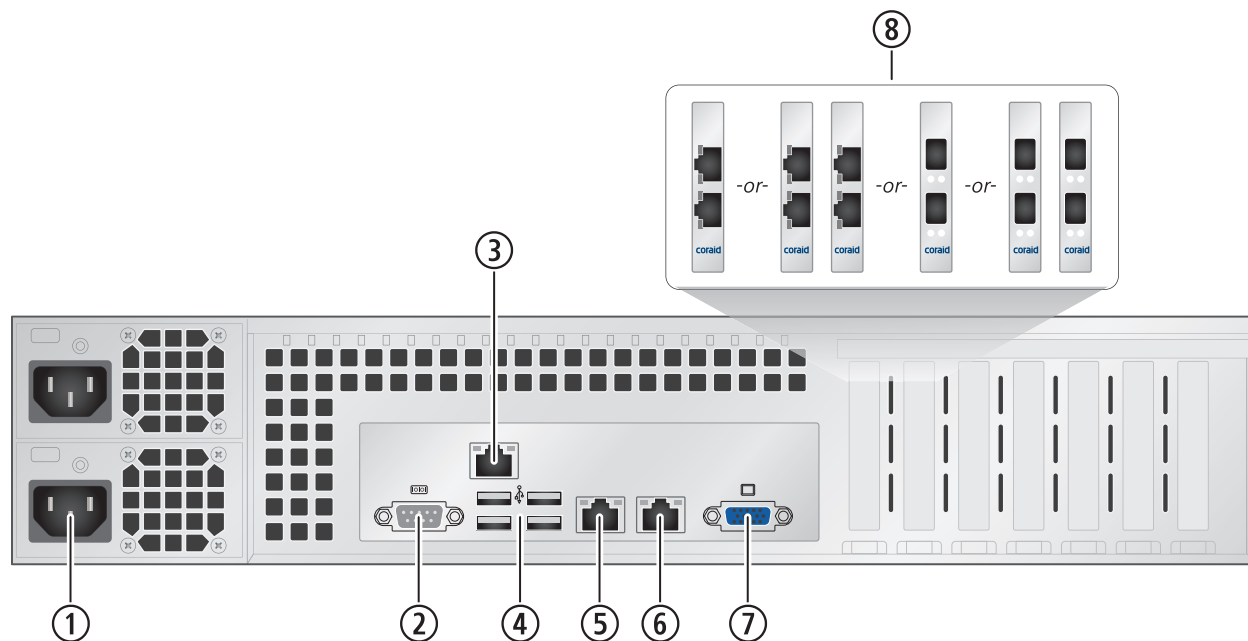
Legend

1	Power Supplies	There are two power supplies in the SRX. LEDs indicate their status. • Amber—Service required • Green—AC OK
2	RS-232 port	The RS-232 (null modem) port is for console connection. The RS-232 port uses the following parameters: • 9600 baud • 1 stop bit • no parity
3	Reserved for future use	This port is not currently active.
4	USB ports	Support for a keyboard for console connection
5	Ether0	1GbE RJ45 port reserved for IP networking
6	Ether1	1GbE RJ45 port reserved as an ESM management interface

Legend (Continued)

7	VGA port	VGA (monitor) port for console connection
8	SAN ports	The number and type of SAN ports depend on the SRX model. The following options are available: • R2: Two 10GbE RJ45 ports (Cat. 6 cable required) • R4: Four 10GbE RJ45 ports (Cat. 6 cable required) • S2: Two 10GbE SFP+ ports • S4: Four 10GbE SFP+ ports

Figure 5: SRX6200 and SRX 6300 back panel ports

Installing the SRX

The following procedure assumes that an AoE SAN is available.

Package Contents

Each SRX package includes the following:

- EtherDrive SRX storage appliance

- Two power cables, one for each power supply

- Rack mount hardware installation kit, including installation rails, screws, and square-to-round hole converter brackets

- Six screws to mount hard drives into drive carriers (if necessary).

CorOS, the system software used to set up, configure and manage the SRX storage appliance, is already installed on the storage appliance.

Note: Drives purchased from Coraid are installed in drive carriers and shipped in separate packages.

Required tool

- Standard Phillips-head screwdriver

To install the SRX in the AoE SAN

1 Attach the rails to both the SRX chassis and a standard rack.

2 Install the SRX into the rack as described in Installing the SRX in an Equipment Rack.

> ⚠️ **CAUTION**
>
> **To avoid injury, always use two people to install an SRX appliance in a rack.**

3 Connect one end of the power cable to the back of the SRX appliance and the other end to a separate UPS-protected outlet. Refer to Power supply precautions for more information on the power being supplied to the SRX appliance.

4 Install the drive carriers that contain the drives into the chassis.

   With the drive carrier handle in the open position, insert each drive carrier into an empty slot until it is fully seated in the chassis. Close the handle to lock the drive carrier into place.

5 Connect one end of the appropriate Ethernet cables to the SRX SAN ports and the other end to one or more Ethernet SAN switches. (See SRX2800, SRX3200, SRX3500, and SRX4200 Back panel ports or SRX6200 and SRX 6300 back panel ports.)

   Note: The Ethernet switch used must support jumbo frames with an MTU size of 9000. In addition, it is recommended that the switch support flow control (IEEE 802.3x).

6 Connect one end of the appropriate Ethernet cables to the SRX IP networking ports and the other end to one or more Ethernet switches connected to your TCP/IP network. (See SRX2800, SRX3200, SRX3500, and SRX4200 Back panel ports or SRX6200 and SRX 6300 back panel ports.)

7 Access the SRX console using one of the following methods:

   • Using a null modem cable, connect a serial terminal or a computer running an application such as minicom to the SRX RS-232 port. The default parameters on the serial port are 9600 bps, no parity, and 1 stop bit.

     -or-

   • Connect a VGA monitor and a keyboard to the corresponding ports on the SRX.

8 Power on the SRX by pressing the button on the front of the appliance.

   Note: SRX will power up if only one power supply is plugged into an outlet. However, an alarm is signaled indicating that a power supply is not receiving power. The LED on the unpowered power supply is yellow. It should be noted that it is best practice always to use two power supplies.

To install a drive in a drive carrier

1 Remove the two screws and then remove the dummy drive from the drive carrier.

2 Install the drive in the drive carrier with the four screws provided.
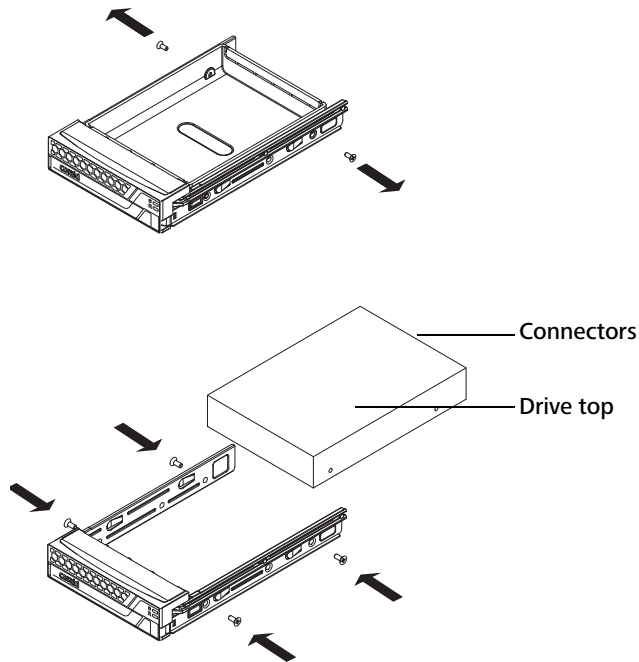
Figure 6: Installing a drive in a drive carrier

Setting Up the SRX Appliance

SRX setup includes the following tasks:

• Access the SRX command line interface.

• Assign the SRX a unique shelf address so that it can be identified on the SAN.

• Configure additional shelf parameters.

To set up an SRX2800, SRX3200, SRX3500, or SRX4200

1 Ensure that the SRX appliance is powered on. Access it by using one of the following methods:

• Serial terminal

• Monitor and keyboard

The default prompt should display immediately as `SRX shelf unset>.`

Note: When you probe the SAN from a CEC client, an uninitialized SRX appears as `-1`. Type `-1` at the `[#qp]` prompt to change the prompt to `SRX unset>`.

Press Enter a few times if the prompt does not display right away. You will replace the term `unset` with the shelf address, which will be assigned when you issue the `shelf` command.

2 Type `shelf` and assign a number for the SRX shelf address.

> ⚠️ **NOTICE**
>
> Choose a shelf address for the SRX that is not already in use. Duplicating shelf addresses could lead to data loss and corruption. The shelf address must be a number between 0 and 65534 inclusive and unique among all AoE storage devices attached to the SAN.

For example, do the following to set 7 as the shelf address:

```
SRX shelf unset>
SRX shelf unset> shelf -?
usage: shelf shelfno
SRX shelf unset> shelf 7
SRX shelf 7>
```

3 Configure additional shelf parameters as described in the SRX Command Reference section:

- Syslog source and destination IP addresses (see `syslog`)

- SRX appliance password (see `passwd`)

- CEC port configuration (see `cecenable` and `cecdisable`)

- Drive monitoring with Self-Monitoring, Analysis, and Reporting Technology (SMART) capability (see `smartenable`)

Note: Coraid strongly recommends that you create a password before using the SRX appliance on an Ethernet SAN.

To set up an SRX6200 or SRX6300

1 Ensure that the SRX appliance is powered on. Access it by using one of the following methods:

- Serial terminal

  -or-

- Monitor and keyboard

The default prompt should display immediately: `SRX shelf unset>`.

Note: When you probe the SAN from a CEC client, an uninitialized SRX appears as `-1`. Type `-1` at the `[#qp]` prompt to connect to the SRX. The prompt will change to `SRX unset>`.

Press Enter a few times if the prompt does not display right away. You will replace the term `unset` with the shelf address, which will be assigned when you issue the `shelf` command.

2 Enter the `ipaddress` and `ipgateway` commands to set the SRX IP address and default gateway.

```
SRX shelf unset>
SRX shelf unset> ipaddress -?
usage: ipaddress [ address mask ]
SRX shelf unset> ipaddress 10.10.10.132 255.255.0.0
SRX shelf unset> ipgateway -?
usage: ipgateway [ gateway ]
SRX shelf unset> ipgateway 10.10.10.1
```

3 Type shelf and assign a number for the SRX shelf address.

> ⚠️ **NOTICE**
>
> **Duplicating shelf addresses could lead to data loss and corruption.**

Choose a shelf address for the SRX that is not already in use. The shelf address must be a number between 0 and 65534 inclusive and unique among all AoE storage devices attached to the SAN. For example, do the following to set 7 as the shelf address:

```
SRX shelf unset>
SRX shelf unset> shelf -?
usage: shelf [shelfno]
SRX shelf unset> shelf 7
SRX shelf 7>
```

4 Connect to the SRX using `ssh` as user `admin`, with the default password `admin`, or continue to use the console. Change the default password and configure additional shelf parameters as described in the SRX Command Reference section:

- SRX appliance password (see `passwd`)

  Note: Coraid strongly recommends that you change the default password before using the SRX appliance on an Ethernet SAN.

  ```
  SRX shelf 7> passwd -?
  usage: passwd
  SRX shelf 7> passwd
        old password: *****
        new password: *****
     again to verify: *****
  ```

- Syslog destination IP address (see `syslog`)

  Note: If you have an ESM on your SAN, it automatically collects all syslog information from each managed shelf.

  ```
  SRX shelf 7> syslog -?
  usage: syslog [ Dest IP address ]
  SRX shelf 7> syslog 10.10.10.10
  ```

- `ntp` source IP address or local time and date (see `timesource` and `timezone`)

  ```
  SRX shelf 7> timesource -?
  usage: timesource [ ntp IPaddress | local yyyymmdd.hhmmss ]
  SRX shelf 7> timesource ntp 10.10.110.105
  SRX shelf 7> timezone -?
  usage: timezone [ -l ] [ timezone ]
  SRX shelf 7> timezone US_Pacific
  ```

Shutting Down the SRX

To cleanly reboot or shut down an SRX, either use the `reboot` or `halt` command. Both options flush out dirty buffers and mark all RAIDs as cleanly shut down.

Issue `halt` when you intend to completely remove power from the appliance (such as prior to moving or servicing the appliance). After issuing the `halt` command, you must physically power down the SRX.

Issue `reboot` to power-cycle an SRX after a CorOS update or to clear temporary conditions when directed to do so by the Coraid Technical Assistance Center.

If `halt` or `reboot` are not used to shut down an SRX, the appliance initializes parity on RAID 5 and RAID 6 LUNs (if any) the next time the SRX is turned on, which might be undesirable for the following reasons:

- Initialization can take 15–20 hours or longer (depending on the size of drives in the LUN).
- I/O performance is degraded during initialization.
- A LUN does not have full parity protection until initialization is complete.

To shut down or reboot the SRX

1 Quit all applications that are using the LUNs on the appliance.

2 Issue one of the following commands:

- `reboot`: This command cleanly shuts down all LUNs and their component RAIDs and then reboots the SRX.

  -or-

- `halt`: This command cleanly shuts down all LUNs and their component RAIDs, stops the SRX service, and displays the message, `System halted. Hit enter to reboot:`

To reboot the SRX appliance after a `halt` command, press the Reset button. To completely power down a halted SRX instead of rebooting the appliance, press and hold down the Power button for up to eight seconds.

Creating LUNs

After setting up the SRX appliance, you are ready to create LUNs and present them to initiators using the following workflow:

Table 4: Creating LUNs

Function	Command
Display a list of drives installed on the SRX	`drives`

Create a LUN initialized as a RAID set
-or-
Create a LUN initialized as a JBOD
	`mklun`
	-or-
	`mkjbod`

Display created LUNs	`luns`
Assign a descriptive label to a LUN or	lun.part.drive ──▶ ▲── shelf 7, slot (drive) 6
Allocate drives to a spare pool (optional)	`mkspare`
Place a LUN online, so that it is available to initiators	`online`

The SRX appliance presents LUNs to initiators using the assigned shelf address (`shelf.lun`). Each LUN consists of one RAID or one JBOD. From the host system on the Ethernet SAN, the SRX appliance looks like a shelf of LUNs.

Placing a LUN online without an initiator mask broadcasts the LUN to all servers on the Ethernet SAN. Newly created LUNs are offline by default to allow you to configure a MAC address mask to manage its visibility to initiators.

Creating RAID sets and JBODs

To create RAID sets via the SRX command line, issue the `mklun` command together with relevant command arguments. For a detailed procedure, see To create a LUN and make it available to initiators.

To create a single-drive JBOD from the SRX command line, issue either the `mkjbod` command or the `mklun` command. The `mkjbod` command automatically names LUNs the same number as the drive slot number(s) you specify with the `shelf.slot` argument. When you create a JBOD by issuing the `mklun` command, specify `jbod` as the RAID type and assign a unique LUN number. For a detailed procedure, see To create a LUN and make it available to initiators.

For more information, see Supported RAID types.

Supported RAID types

You can use the `mklun` or `mkjbod` commands to create the following SRX LUN RAID types:

JBOD

Just a Bunch of Disks

The SRX creates a JBOD by initializing a single drive as a LUN.

Drive required	Protection	Usable storage capacity
1	none	100%

RAID 0

Block-level data striping with no parity or mirroring
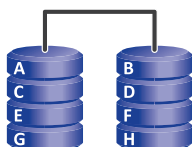
Highest performance. Provides fast access to temporary, non-critical data. No data protection. Single drive failure causes loss of all data.

Drives (minimum)	Protection	Usable storage capacity
2	none	100%

RAID 1

Drive mirroring with no parity or striping
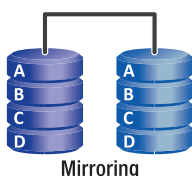
Very high performance and data protection for highly available, mission-critical data requirements. Very good write performance. High redundancy cost: storage capacity is 50% of the total capacity of drives in the LUN.

Drives (minimum)	Protection	Usable storage capacity
2	Single-drive failure	50% of total capacity

RAID 5

Block-level data striping with distributed parity
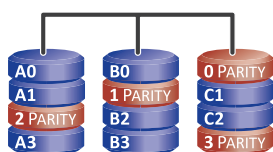
High performance and data protection. Ideal for sequentially accessed workloads. Distributed parity overhead somewhat degrades performance.

Drives (minimum)	Protection	Usable storage capacity
3	Single-drive failure	1 − 1/n 80% of 5-drive LUN

RAID 6rs

Block-level data striping with double distributed parity
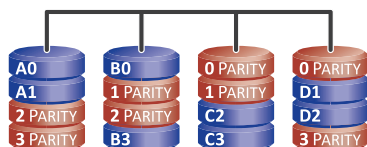
Performance similar to RAID 5 though slightly slower write performance and greater fault tolerance. Also ideal for sequentially accessed workloads.

Drives (minimum)	Protection	Usable storage capacity
4	Two-drive failure	1 − 2/n 80% of 10-drive LUN

RAID 10

Striped mirrors
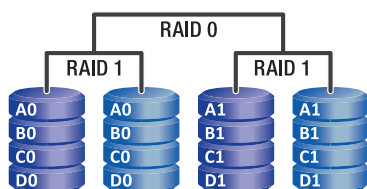
Highest performance and data protection for highly available, critical data requirements. Can tolerate multiple drive failures. High redundancy cost: storage capacity is 50% of total capacity of drives in the LUN.

Drives (minimum)	Protection	Usable storage capacity
4	Multiple-drive failure if in different mirrors	50% of total capacity

Figure 7: Supported RAID types

Understanding EtherDrive RAID notation

When there are several LUNs present in an SRX and when you issue a `drives`, `luns`, or `iostats` command, LUN RAID components display using a three-part numerical term. In the following example, the three-part term `8.0.1` describes the first RAID component (`0`) and the second logical drive (`1`) of LUN `8`. The correspondence of the logical components in a RAID and the physical drives backing them is shown in the output of the `luns` command:

```
SRX shelf 7> luns -a
LUN         LABEL   STATUS    TYPE    SIZE(GB)    ELEMENT    DRIVE       STATE
8                   online    raid5   6001.197                          normal
                                      2000.399    8.0.0      7.3         normal
                                      2000.399    8.0.1      7.4         normal
                                      2000.399    8.0.2      7.5         normal
                                      2000.399    8.0.3      7.6         normal
```

lun	part	drive
8.	0.	1
Logical Unit Number presented to initiators	This number is always `0`.	RAID logical drive component. Note the correspondence between the logical drives in a RAID set and the physical drives backing them (drive `7.3` through `7.6` in the example).

When LUNs are present, the three-part term appears in the output of the `drives` command as follows:

```
SRX shelf 7> drives
DRIVE         SIZE      ROLE                    MODEL      FIRMWARE         MODE
7.0     2000.398GB              WDC WD2003FYYS-02W0B0      01.01D01  sata 3.0Gb/s
7.1     2000.398GB              WDC WD2003FYYS-02W0B0      01.01D01  sata 3.0Gb/s
7.2     2000.398GB              WDC WD2003FYYS-02W0B0      01.01D01  sata 3.0Gb/s
7.3     2000.398GB   8.0.0      WDC WD2003FYYS-02W0B0      01.01D01  sata 3.0Gb/s
7.4     2000.398GB   8.0.1      WDC WD2003FYYS-02W0B0      01.01D01  sata 3.0Gb/s
7.5     2000.398GB   8.0.2      WDC WD2003FYYS-02W0B0      01.01D01  sata 3.0Gb/s
7.6     2000.398GB   8.0.3      WDC WD2003FYYS-02W0B0      01.01D01  sata 3.0Gb/s
7.7     2000.398GB              WDC WD2003FYYS-02W0B0      01.01D01  sata 3.0Gb/s
```

Note: The above example lists only eight drives. Your SRX appliance may have more drives.

The three-part term also appears in the `DRIVE` column in the output of the `iostats` command (when one or more LUNs are present).

To create a LUN and make it available to initiators

1 Access the SRX in one of the following ways:

- A direct connection to the SRX via the serial port or VGA and keyboard ports.

- Over the network via a host with CEC installed. See Coraid Ethernet Console (CEC).

- Over the network via an EtherCloud™ Storage Manager (ESM) appliance (if present).

2 At the SRX prompt, type `drives` to view a list of the drives in the SRX appliance.

Note: The following example lists only eight drives. Your SRX appliance might have a different number of drives.

```
SRX shelf 7> drives
DRIVE         SIZE    ROLE                       MODEL   FIRMWARE            MODE
7.0     2000.398GB           WDC WD2003FYYS-02W0B0   01.01D01   sata 3.0Gb/s
7.1     2000.398GB           WDC WD2003FYYS-02W0B0   01.01D01   sata 3.0Gb/s
7.2     2000.398GB           WDC WD2003FYYS-02W0B0   01.01D01   sata 3.0Gb/s
7.3     2000.398GB           WDC WD2003FYYS-02W0B0   01.01D01   sata 3.0Gb/s
7.4     2000.398GB           WDC WD2003FYYS-02W0B0   01.01D01   sata 3.0Gb/s
7.5     2000.398GB           WDC WD2003FYYS-02W0B0   01.01D01   sata 3.0Gb/s
7.6     2000.398GB           WDC WD2003FYYS-02W0B0   01.01D01   sata 3.0Gb/s
7.7     2000.398GB           WDC WD2003FYYS-02W0B0   01.01D01   sata 3.0Gb/s
```

Note: Do the following if no drives are displayed. Make sure that the drive carriers contain drives and that they are fully inserted into the chassis. In addition, make sure the SRX SAN ports are properly connected to the Ethernet SAN network and that jumbo frames are enabled on the network switch. Retype `drives`.

3 To create LUN(s):

- **Create JBOD(s) with a single command**: issue the `mkjbod` command.

  -or-

- **Create one or more RAID sets or manually create JBOD(s)**: Type `mklun` followed by the LUN name (a number), RAID type, and the drive(s) you want to comprise the LUN.

  For example, to create LUN 8 as a RAID 5 using drives 3, 4, 5, and 6:

  ```
  SRX shelf 7> mklun -?
  usage: mklun LUN raidtype [ shelf.slot ... ]
  SRX shelf 7> mklun 8 raid5 7.3-6
  ```

  - `LUN`: Specify a number between 0 and 254, inclusive. The number must be unique within the shelf.
  - `raidtype`: Specify a RAID type. (For a detailed description of valid RAID types, see the `mklun` command.)
  - `[ shelf.slot ... ]`: Specify the shelf and slot number(s) of the drive(s) to be used as the RAID components. To create a LUN consisting of multiple consecutive or nonconsecutive drives, you can use a hyphen (-) to specify a range. For details, see Range expansion.

  Note: RAID performance is suboptimal while parity on the LUN initializes. Attempting to use a LUN while parity initializes can cause I/O errors and degrade performance. For optimal performance, wait until parity has finished initializing on the LUN before using it.

4 Type `luns -a` to view detailed information about LUNs.

  For example:

```
SRX shelf 7> luns -a
LUN          LABEL   STATUS    TYPE    SIZE(GB)   ELEMENT   DRIVE     STATE
8                    offline   raid5   6001.197                      initing
                                       2000.399   8.0.0     7.3      normal
                                       2000.399   8.0.1     7.4      normal
                                       2000.399   8.0.2     7.5      normal
                                       2000.399   8.0.3     7.6      normal
```

Level 1

Level 2

Level 1 displays the LUN, the label assigned to the LUN, its status, RAID type, available storage capacity, and its state. The label column may be empty if no descriptive label is configured for the lun. See the `label` command for more information.

Level 2 displays the drive components of the RAID, one per line (see Understanding EtherDrive RAID notation). Each line also displays the drive's size, RAID component address, physical shelf.slot (drive) location, and state.

5   (Optional) Issue the `label` command to create a descriptive label for the LUN.

6   (Optional) Issue the `mkspare` command to allocate drives to a spare pool.

If a drive fails in a RAID 1, RAID 5, RAID 6, or RAID 10 LUN, drives in the spare pool are recruited as replacements automatically. Alternatively, you can manually replace failed drives in these RAID types by issuing the `replacedrive` command. A spare pool serves only the shelf where the designated spare drives reside.

7   Type `online LUN [ ... ]` to present the LUN to initiators.

For example:

```
SRX shelf 7> online 8
SRX shelf 7> luns -a
LUN          LABEL   STATUS    TYPE    SIZE(GB)   ELEMENT   DRIVE     STATE
8                    online    raid5   6001.197                      normal
                                       2000.399   8.0.0     7.3      normal
                                       2000.399   8.0.1     7.4      normal
                                       2000.399   8.0.2     7.5      normal
                                       2000.399   8.0.3     7.6      normal
```

Online LUNs are accessible to local hosts or clients in the `shelf.lun` form.

Note: To limit visibility of a LUN, use the `mask` command. Placing a LUN online without an initiator mask broadcasts the LUN to all servers on the Ethernet SAN.

8   To configure LUNs further, see Managing LUNs.

9   To view LUNs on the EtherDrive SAN from your host computer and present them to clients as locally attached drives, install a Coraid EtherDrive HBA in the host.

For details, see the appropriate Coraid EtherDrive HBA documentation.

Managing LUNs

After you have created LUNs, you can change their configuration using available commands. Some usage examples are provided in the table below. For additional details about each command, see the SRX Command Reference section.

Table 5: LUN commands

To:	Use commands:
Assign a label to a LUN	• `label name LUN ...` – To assign a label to a LUN or range of LUNs
Clear a label from a LUN	• `unlabel LUN ...` – To remove a label from a LUN or range of LUNs
Add or remove a MAC mask to or from a LUN	• `mask` – To view a list of LUNs and their MAC masks • `mask [ +mac ... ] [ -mac ... ] [ LUN ...]` – To add or subtract MAC addresses for a a LUN or range of LUNs
Change the I/O mode of a LUN (`sequential` or `random`) **Note:** RAID 5 and RAID 6 LUNs are `sequential` by default and cannot be changed.	• `iomode [ LUN ... ]` – To view the current I/O mode of a LUN or range of LUNs • `setiomode mode LUN [ ... ]` – To change the I/O mode of a LUN or range of LUNs
Place a LUN offline so it is no longer available on the Ethernet SAN	• `offline LUN [ ... ]` – To place a LUN or a range of LUNs offline
Remove a LUN	• `offline LUN [ ... ]` – To place a LUN or range of LUNs offline before removing them • `rmlun LUN [ ... ]` – To remove a LUN or range of LUNs. All drives used in the component RAID are released for reuse.

Updating CorOS

Detailed procedures for updating CorOS on an SRX appliance are provided in the *EtherDrive SRX CorOS Update Instructions*. This document describes how to install a CorOS update file on SRX appliances from an ESM1500 or from a computer host using `ssh` or `scp`. To obtain the instructions and the latest CorOS file for your system, see the Customer Support Portal at www.coraid.com/support, or contact the Coraid Technical Assistance Center (TAC).

Coraid Ethernet Console (CEC)

The Coraid Ethernet Console (CEC) is a utility that allows a host computer to establish a console connection to an SRX using standard Ethernet frames. Once you have connected to an SRX via CEC, you can execute commands as if you were directly connected to the local console. Type the `help` command at the prompt to display a list of available SRX commands.

By default, SRX2800, SRX3200, SRX3500, and SRX4200 appliances provide the CEC connection through onboard RJ45 ports ether0 and ether1 (see SRX2800, SRX3200, SRX3500, and SRX4200 Back panel ports). You can display and manage the SRX CEC port configuration issuing the commands `cecenable` and `cecdisable`. CEC configuration persists across reboot.

When you probe the SAN from a CEC client, an uninitialized SRX appears as `-1.` Type `-1` at the `[#qp]` prompt to connect to the SRX. The prompt will change to `SRX unset>`, then set a shelf address by issuing the `shelf` command.

Note: There is only one console per SRX shelf. Multiple users connected (via either serial or CEC) to the same shelf will share that console and see each other's commands and command responses. This increases the chance of conflicting commands and configuration errors. Always disconnect your CEC session when not using it.

⚠ NOTICE

CEC does not include any security or encryption mechanisms. In addition, depending on your network configuration, be aware that enabling CEC and failing to log out might leave your system vulnerable. As with AoE, the appliance is only as secure as your network.

Downloading CEC

To obtain the latest version of CEC, visit http://support.coraid.com/support/sr/. The UNIX CEC package includes a manpage that explains CEC and its usage (`man cec`).

CEC installation instructions

To install CEC on a Windows host

1 Ensure the following:

- You have downloaded the latest WindowsCECSetup.exe file.

- The host is connected to the SAN via an Ethernet interface and not via a port on a Coraid HBA. (Windows CEC probes for Coraid appliances using the host's NICs. It cannot utilize the ports of a Coraid HBA.)

- The following is installed on the host computer:

  – WinPcap (version 4.1.2 or higher), available from http://www.winpcap.org.
  – Microsoft .NET Framework 4.0 update (a reboot might be required).

2 From the Windows host, double-click the file WindowsCECSetup.exe.

3 Follow the onscreen prompts to complete installation.

To install CEC on a Linux host

Use the following example as a guide when installing the CEC client on a Linux host.

Note: CEC clients compile and run on Linux, Solaris, and BSD variants supporting BPF. The following example assumes that you have both a C compiler and the make utility installed.

```
user@workstation1:~$ tar -xzf cec-14.tgz
user@workstation1:~/cec-11$ cd cec-14
user@workstation1:~/cec-11$ make
cc -Wall -g -c cec.c
cc -Wall -g -c linux.c
cc -Wall -g -c utils.c
cc -o cec cec.o linux.o utils.o
user@workstation1:~/cec-14$ su
Password:
root@workstation1:/home/user/cec-14# make install
mkdir -p /usr/sbin
cp cec /usr/sbin
+ mkdir -p /usr/share/man/man8
+cp cec.8 /usr/share/man/man8/cec.8
```

Using CEC

The following procedures describe how to use CEC from either a Windows or a Linux host.

To use CEC from a Windows host

1 From the Windows host, launch Windows CEC.

   Start menu > **All Programs** > **Coraid** > **Windows CEC**.

   Windows CEC automatically searches for Coraid appliances on the SAN.

2 Select a shelf in the **Shelf Probe** window and click **Connect**.
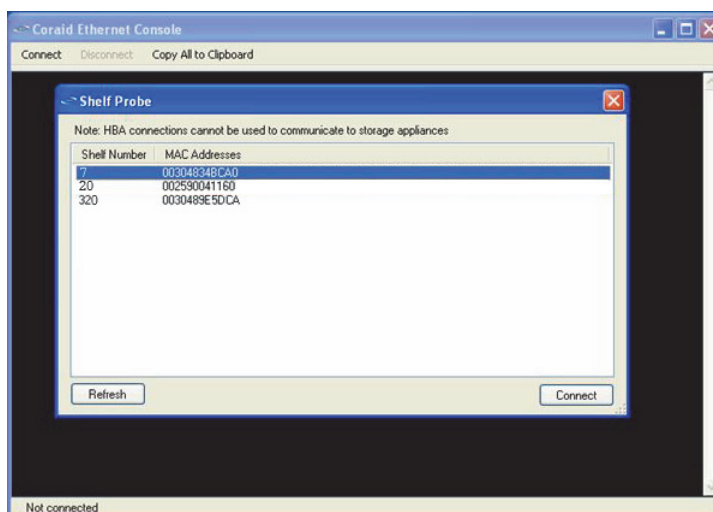
Figure 8: Shelf probe window

3 Press Enter a few times until the prompt displays.
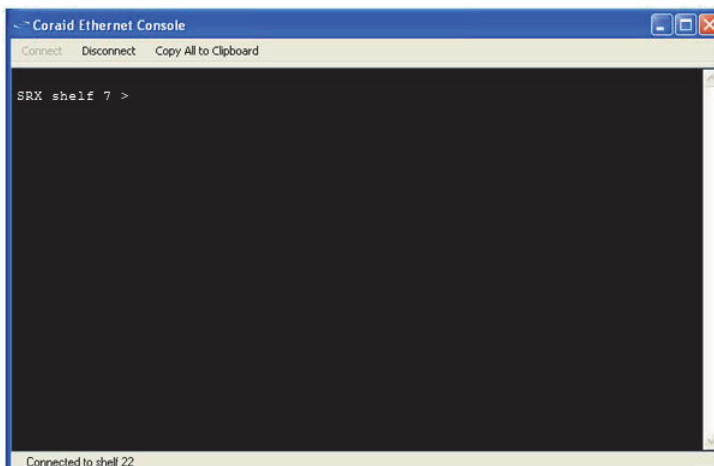
Figure 9: CEC terminal window

4 To exit the CEC terminal, click **Disconnect**.

To use CEC from a Linux host

Note: Linux CEC probes for Coraid appliances using the host's NICs. It cannot utilize the ports of a Coraid HBA.

1 Do the following to familiarize yourself with `cec` usage:

```
cec [-s shelf] [-m mac] interface
```

Arguments

`[-s shelf]`	Specifies the shelf you want connect to
`[-m mac]`	Specifies the MAC address of an SRX Ethernet port that is configured to accept CEC communication (see cecenable)
`interface`	Specifies a network interface on the SAN-connected host

2 Log in as root or root-equivalent and connect to an SRX.

To display a list of available SRX appliances on a host's network interface Ether0 and connect to a shelf (for example, shelf 7):

```
[root@workstation1 cec-11]# ./cec eth0
Probing for shelves ... done.
SHELF | EA
7      003048348CA0
20     002590041160
320    0030489E5DCA
[#qp]: 7
connecting ... done.
Escape is Ctrl-\
SRX shelf 7>
```

To search for a specific shelf and connect to it (again, shelf 7 in the following example), use the `-s` argument:

```
[root@workstation1 cec-11]# ./cec -s 7 eth0
Probing for shelves ... shelf 7 found.
connecting ... done.
Escape is Ctrl-\
SRX shelf 7>
```

3 To exit the CEC terminal, press CTRL + \ .

RAIDShield Protection

With the exception of JBOD and RAID 0, each RAID is protected by a mechanism called RAIDShield™. When a drive in a well-functioning RAID exhibits a block read error, RAIDShield calculates the block contents in question from the remaining drives in the array. RAIDShield then writes this block content to the drive and rereads it to permit the drive to internally remap any bad sector. You are notified of a failed or successful recovery attempt through a syslog message. As drives become larger, the likelihood of sector read errors increases.

Note: RAIDShield corrections do not necessarily indicate that a drive needs to be replaced.

RAIDShield uses a background scrubber process to read RAID arrays. It then detects and corrects read failures via the previously described scrubber mechanism. The RAIDShield scrubber operates in a loop, reading a predetermined amount of data and sleeping for one second. The amount of data read depends on the level of activity of the RAID array. In addition, data is calculated to avoid conflicting with user-access I/O. The scrubber's access pattern causes the drive access LEDs on scrubbed drives to blink every second.

The scrubber does not run if the array is initializing, degraded, or failed. Due to the scrubber process, drives in redundant arrays are rarely idle. This should not be a concern, since drive access does not shorten drive life.

RAIDShield also notifies you of spare drive latent failures. Every minute, RAIDShield reads each spare drive from the beginning to verify that it is accessible. If the check fails, a syslog message is sent to notify you of a possible faulty spare drive. Spares are not scrubbed like other RAID elements. Every block is written once spares are allocated, which allows a drive to remap any bad sector.

SMART Support

SMART (Self-Monitoring, Analysis, and Reporting Technology) reports the internal SMART status of a specified drive. When enabled, SMART continually monitors various internal counters on a drive. It determines when a threshold has been exceeded and if a replacement drive is necessary. You can issue a `drives -s` command to display the SMART status of a drive.

Note: SMART information is only available from SATA-connected drives (HDD and SSD).

When a threshold exceeded condition is encountered, a syslog message will be logged immediately, then once an hour until the drive is replaced. In addition the drive will be predictively failed following the same rules as the `faildrive` command.

SRX Command Reference

The following section describes the SRX v7.1.0 CLI commands.

Below is a list of commands in alphabetical order. Click on a command to obtain more information.

cecdisable	iomode	ping	slotled
cecenable	iostats	power	smartdisable
cecstat	ipaddress	reboot	smartenable
clripaddress	ipgateway	release	sos
clripgateway	label	replacedrive	spares
clrsyslog	logwatch	restorelun	ssdhealth
clrvlan	luns	rmlun	syslog
date	mask	rmspare	syslogtest
drives	mkjbod	scpwipe	temp
ejectlun	mklun	serial	timesource
exit	mkspare	series	timezone
factoryreset	model	service	unlabel
faildrive	motd	setiomode	update
fans	noseries	setmotd	uptime
halt	offline	setslotled	vlans
help	online	setvlan	when
ifstat	passwd	shelf	

Accessing the SRX CLI

You can access the SRX command line interface in the following ways:

- Connect directly to the SRX via the serial port or VGA and keyboard ports.

- On the SRX6200 and SRX6300, connect over the network via `ssh` using the SRX IP address.

- On the SRX2800, SRX3200, SRX3500, and SRX4200, connect over the network via a host with CEC installed. See Coraid Ethernet Console (CEC).

- Connect over the network via an EtherCloud Storage Manager appliance (if present).

Command help and usage

To display a description of a command and command usage information, type `help` followed by the command. For example:

```
SRX shelf 7> help ifstat

The ifstat command displays the status of all local interface ports.  The
display list can be restricted by providing one or more port arguments. The
-a flag displays additional port statistics often useful for Coraid
Technical Support.

usage: ifstat [ -a ] [ interface ... ]

SRX shelf 7>
```

To display only command usage information, type `-?` following the command. For example:

```
SRX shelf 7> ifstat -?
usage: ifstat [ -a ] [ interface ... ]
SRX shelf 7>
```

Command usage includes the following conventions:

- Brackets `[ ]` surrounding an item indicate an optional item. If no brackets surround the input string, the item is mandatory. The arguments make the command more specific; many commands issued without an argument display status or a general response.

- An ellipsis `[...]` indicates that more than one value could be entered as a range of sequential values. A hyphen (-) separates the ends of a sequence. See Range expansion for examples.

Some commands require confirmation before the command can be executed. Depending on the convention used in the prompt, type `yes` or `no` (full word) or `y` or `n` (initials, only) to complete or cancel a command.

Note: Entering a `#` character in a command string is interpreted as the beginning of a comment and should be avoided.

Range expansion

The ellipsis [...] in command usage indicates a range option (series ranging). A single range is entered with a hyphen (-) separating the first and last item in the sequence. For example, the range for shelf.slot 7.0-4 is interpreted as 7.0 7.1 7.2 7.3 7.4. The range for LUNs 0-8 is interpreted as 0 1 2 3 4 5 6 7 8.

You can also specify nonconsecutive ranges. For example, the range for shelf.slot 7.0-3 7.6-7 7.9 is interpreted as 7.0 7.1 7.2 7.3 7.6 7.7 7.9. The range for LUNs 0-3 6 8-10 is interpreted as 0 1 2 3 6 8 9 10.

Commands

The following section lists and describes all of the SRX commands in alphabetical order.

cecdisable

The cecdisable command disables the CEC listener on the specified SRX network interface port. See Coraid Ethernet Console (CEC) for more information.

Usage

```
SRX shelf 7> cecdisable -?
usage: cecdisable interface [ ... ]
```

Argument

interface [...]	Specify an SRX network interface port

Example

```
SRX shelf 7> cecstat
NAME              CEC

ether0            enabled

ether1            enabled


SRX shelf 7> cecdisable ether1
SRX shelf 7> cecstat
NAME              CEC

ether0            enabled

ether1            disabled


SRX shelf 7>
```

cecenable

The `cecenable` command enables CEC on the specified SRX network interface port. By default, SRX2800, SRX3200, SRX3500, and SRX4200 appliances provide the CEC connection through onboard ports ether0 and ether1. See Coraid Ethernet Console (CEC) for more information.

Usage

```
SRX shelf 7> cecenable -?
usage: cecenable interface [ ... ]
```

Argument

`interface [ ... ]`	Specify a SRX network interface port. By default, CEC is enabled on ports ether0 and ether1.

Example

```
SRX shelf 7> cecstat
NAME                 CEC
ether0             enabled
ether1            disabled

SRX shelf 7> cecenable ether1
SRX shelf 7> cecstat
NAME                 CEC
ether0             enabled
ether1             enabled

SRX shelf 7>
```

cecstat

The `cestat` command displays the CEC status on all SRX network interface ports. The status is either `enabled` or `disabled`.

Usage

```
SRX shelf 7> help cestat
usage: cestat
```

Arguments

None

Example

```
SRX shelf 7> cestat
NAME                   CEC

ether0            enabled

ether1            enabled

ether2         disabled

SRX shelf 7>
```

clripaddress

The `clripaddress` command removes the SRX IP address and subnet mask settings.

Usage

```
SRX shelf 7> clripaddress -?
usage: clripaddress
```

Arguments

None

Example

```
SRX shelf 7> clripaddress
SRX shelf 7>
```

clripgateway

The `clripgateway` command removes the SRX default route setting.

Usage

```
SRX shelf 7> clripgateway -?
usage: clripgateway
```

Arguments

None

Example

```
SRX shelf 7> clripgateway
SRX shelf 7>
```

clrsyslog

The `clrsyslog` command removes the syslog IP address setting.

Usage

```
SRX shelf 7> clrsyslog -?
usage: clrsyslog
```

Arguments

None

Example

```
SRX shelf 7> clrsyslog
SRX shelf 7>
```

clrvlan

The `clrvlan` command removes the IEEE 802.1Q VLAN ID from the specified LUN.

Usage

```
SRX shelf 7> clrvlan -?
usage: clrvlan LUN [ ... ]
```

Argument

LUN [...]	Specify a LUN or a series of sequentially numbered LUNs as a range indicated by a hyphen (-) to remove the VLAN ID associated with those LUNs.

Example

```
SRX shelf 7> vlans
LUN     VLAN
8        100
9        200
SRX shelf 7> clrvlan 9
SRX shelf 7> vlans
LUN     VLAN
8        100
```

date

The `date` command displays the current date and time. If an NTP server is configured, time is maintained from the NTP source. Otherwise, time is maintained from the hardware clock set in the BIOS. Time zone defaults to GMT and may be configured using the `timezone` command.

Usage

```
SRX shelf 7> date -?
usage: date
```

Arguments

None

Example

```
SRX shelf 7> date
Wed Apr 17 02:15:49 GMT 2013
SRX shelf 7>
```

drives

The `drives` command displays information about the drives in the SRX. This command includes optional arguments that display additional information, including state of the drives in the appliance, configuration strings associated with all drives in the appliance, and the SMART status.

The following table lists the column headings for the output of this command when issued without any of the optional arguments, or with the optional `-p` argument.

Heading	Description
DRIVE	Drive in the form of `shelf.slot`
SIZE	Total capacity of a drive in gigabytes
ROLE	Role of a drive, including one of the following: • Component of a LUN expressed as a three-part term, which indicates the correspondence between a physical drive(s) in an appliance and its role (if any) as a logical drive(s) within a RAID set. For details about the three-part term, see Understanding EtherDrive RAID notation. • Spare, if the drive is configured to be a spare. • Nothing, if the drive is not a component of a LUN and is not a spare.
MODEL	Drive manufacturer and model
FIRMWARE	Firmware version
MODE	Displays the connection mode. Modes are determined by drive capabilities and are not controllable.

The following table lists the column headings for the output of this command when issued with the optional `-s` argument, which displays the SMART status.

Heading	Description
DRIVE	Drive in the form of `shelf.slot`
STATUS	Current status of a drive

The following table lists the column headings for the output of this command when issued with the optional `-c` argument.

Heading	Description
`DRIVE`	Drive in the form of `shelf.slot`
`VERSION`	Version of the drive
`CONFIG`	Configuration of the drive

Usage

```
SRX shelf 7> drives -?
usage: drives [ -pcs ] [ shelf.slot ... ]
```

Arguments

`[ -p ]`	Displays information about drives present in the appliance. This information is identical to information displayed by issuing the `drives` command without arguments, except that slots with missing drives are not displayed.
`[ -c ]`	Displays the configuration strings associated with all drives in the appliance. Drive status can be one of the following: • `normal`: Drive is in a healthy state. • `clean`: Drive is in a healthy state; the last update event was a shelf restart or a LUN ejection. • `failed`: Drive failed. • `defunct`: Drive failed, but its role in the LUN was fulfilled by a replacement drive. • `replaced`: Drive is in the process of replacing a failed drive.
`[ -s ]`	Reports the SMART status. Valid SMART states are `normal`, `threshold exceeded`, `disabled`, and `unknown`. The `unknown` state is displayed when communication with a drive fails or if there is no drive.
`[ shelf.slot ]`	Shelf and slot number of the drive you want information about

Example

The following example lists only twelve drives. Your SRX appliance might have more drives.

```
SRX shelf 7> drives
DRIVE       SIZE (GB)     ROLE              MODEL     FIRMWARE          MODE
7.0         4000.787             WD WD4001FYYG-01SL3     VR02        sas 6.0Gb/s
7.1         4000.787             WD WD4001FYYG-01SL3     VR02        sas 6.0Gb/s
7.2         4000.787             WD WD4001FYYG-01SL3     VR02        sas 6.0Gb/s
7.3         1000.204     8.0.0         ST1000NM0011     SN03       sata 6.0Gb/s
7.4         1000.204     8.0.1         ST1000NM0011     SN03       sata 6.0Gb/s
7.5         1000.204     8.0.2         ST1000NM0011     SN03       sata 6.0Gb/s
7.6         1000.204     8.0.3         ST1000NM0011     SN03       sata 6.0Gb/s
7.7         1000.204     9.0.0         ST1000NM0011     SN03       sata 6.0Gb/s
```

```
SRX shelf 7>

SRX shelf 7> drives -c
DRIVE        VERSIONCONFIG
7.0              17 0.0.0 4 jbod clean 0 1377260771
7.1              17 0.0.0 4 jbod clean 0 1377260771
7.2              17 0.0.0 4 jbod clean 0 1377260771
7.3              17 8.0.0 4 raid5 clean 0 1377260771
7.4              17 8.0.1 1 raid5 normal 0 1377260771
7.5              17 8.0.2 3 raid5 clean 0 1377260771
7.6              17 8.0.3 3 raid5 clean 0 1377260771 0
7.7              17 9.0.0 3 raid10 clean 0 1377260771
                  0010040120dd 0010040120dc 00100401110f
                  00100401110e

SRX shelf 7>

SRX shelf 7> drives -s
DRIVE  STATUS
7.0    unknown (smart not available for scsi)
7.1    unknown (smart not available for scsi)
7.2    unknown (smart not available for scsi)
7.3    unknown (smart not available for scsi)
7.4    normal
7.5    normal
7.6    normal
7.7    normal

SRX shelf 7>
```

If drive information cannot be obtained, the drive state is displayed. Drive states include up, missing, initing, or connectfail. The connectfail state indicates that the SRX has given up trying to initialize a drive. The connectfail state is entered only when a drive is functioning unpredictably and the SRX has stopped communicating with the drive in order to conserve system resources.

ejectlun

The ejectlun command ejects one or more LUNs. It is similar to the replacedrive command, except ejectlun does not clear the RAID configuration on the component drives of a LUN. The ejectlun command is useful when you want to physically move all of the drives of a LUN from one shelf to another without shutting down the SRX appliance.

Note: You must place a LUN offline before it can be ejected (see offline).

Usage
```
SRX shelf 7> ejectlun -?
usage: ejectlun LUN [ ... ]
```

Argument

LUN [...]	Specify the LUN you want to eject. You can eject multiple LUNs simultaneously using a hyphen (-) to indicate a range or by listing nonconsecutive LUNs (1 2 32 88).

Example

```
SRX shelf 7> luns -a
LUN          STATUS     TYPE    SIZE(GB)    ELEMENT     DRIVE         STATE
8            online     raid5   6001.197                              normal
                                2000.399    8.0.0       7.3           normal
                                2000.399    8.0.1       7.4           normal
                                2000.399    8.0.2       7.5           normal
                                2000.399    8.0.3       7.6           normal

SRX shelf 7> offline 8
SRX shelf 7> ejectlun 8
Request to ejectlun lun(s): 8
'n' to cancel, 'a' for all, or 'y' to ejectlun 8 [N]: y
Ejecting lun(s): 8
SRX shelf 7>
```

exit

The `exit` command terminates an active SRX CLI session.

Usage

```
SRX shelf 7> exit -?
usage: exit
```

Arguments

None

Example

```
SRX shelf 7> exit
SRX shelf 7>
```

factoryreset

The `factoryreset` command resets the SRX to factory defaults, erasing all local configuration and destroying any data configuration. After issuing this command, a reboot is required.

Usage

```
SRX shelf 7> factoryreset -?
usage: factoryreset
```

faildrive

The `faildrive` command changes the state of a RAID component to `failed`. This state helps test to see how an SRX behaves in a failure condition. For an explanation of the `lun.part.drive` argument, see Understanding EtherDrive RAID notation.

Usage

```
SRX shelf 7> faildrive -?
usage: faildrive LUN.part.drive
```

Argument

LUN.part.drive	Specify the RAID component you want to put into a failed state.

Example

```
SRX shelf 7> luns -a
LUN         LABEL   STATUS    TYPE    SIZE(GB)    ELEMENT    DRIVE       STATE
8                   online    raid5   6001.197                          normal
                                      2000.399    8.0.0      7.3         normal
                                      2000.399    8.0.1      7.4         normal
                                      2000.399    8.0.2      7.5         normal
                                      2000.399    8.0.3      7.6         normal

SRX shelf 7> faildrive 8.0.1
SRX shelf 7> luns -a
LUN         LABEL   STATUS    TYPE    SIZE(GB)    ELEMENT    DRIVE       STATE
8                   online    raid5   6001.197                          degraded
                                      2000.399    8.0.0      7.3         normal
                                      2000.399    8.0.1      7.4         failed
                                      2000.399    8.0.2      7.5         normal
                                      2000.399    8.0.3      7.6         normal

SRX shelf 7>
```

fans

The `fans` command reports the RPM (revolutions per minute) of each fan on the motherboard. A warning displays if one or more fans were removed or have failed.

Usage

```
SRX shelf 7> fans -?
usage: fans
```

Arguments

None

Example

```
SRX shelf 7> fans
FAN    RPM
1     4500
2     4575
3     4575
4     4650
SRX shelf 7>
```

halt

The `halt` command stops SRX services and halts the SRX. Once halted, you must press the power or reset button on the SRX to restart the system. See Shutting Down the SRX.

⚠️ **NOTICE**

Use the reboot or `halt` command to cleanly shut down the SRX.

Both commands flush out "dirty" buffers, mark all RAIDs as cleanly shut down, and bring the system to a halt state. The reboot command reboots the system, while the `halt` command waits for users to power down the appliance. At startup, the SRX validates all RAID 5 and RAID 6rs RAIDs that are not marked as "clean." This ensures that parity is correct.

Usage

```
SRX shelf 7> halt -?
usage: halt
```

Arguments

None

Example

```
SRX shelf 7> halt
System halting...
```

help

The `help` command without an argument displays a list of all commands in alphabetical order. The `help` command with the `cmd` argument displays a description and usage options for a particular command.

Usage

```
SRX shelf 7> help -?
usage: help [ -s ][ cmd... ]
```

Arguments

`[ -s ]`	Displays an abbreviated description of the specified command
`[ cmd ...]`	Specify the command that you want to display help usage for.

Example

```
SRX shelf 7> help ifstat

The ifstat command displays the status of all local interface ports.  The
display list can be restricted by providing one or more port arguments. The
-a flag displays additional port statistics often useful for Coraid
Technical Support.

usage: ifstat [ -a ] [ interface ... ]

SRX shelf 7>
```

ifstat

The `ifstat` command displays the status of SRX local Ethernet interface ports. The interface port, MAC address, and link speed are displayed. Without an argument, `ifstat` lists all local Ethernet interface ports.

Usage

```
SRX shelf 7> ifstat -?
usage: ifstat [ -a ] [ interface ... ]
```

Arguments

`[ -a ]`	Displays additional statistics about the interface(s)
`[ interface ... ]`	Displays the MAC address and link speed for a specified port

Example

```
SRX shelf 7> ifstat
NAME                    ADDR         LINK (Mbps)
ether0            003048dd004c          0/ 1000
ether1            003048dd004d          0/ 1000
ether2            002590340132       1000/ 1000
ether3            002590340133          0/ 1000
ether4            00259003676e          0/ 1000
ether5            00259003676f          0/ 1000

SRX shelf 7>
```

```
SRX shelf 7> ifstat -a
NAME                ADDR                              LINK (Mbps)
ether0              003048dd004c                      0/ 1000
                    lintr: 0 1
                    rintr: 0 1
                    tintr: 0 0
                    ixcs: 0 0 0
                    rdtr: 25
                    radv: 500
                    ctrl: 00100248
                    ctrlext: 00580000
                    status: 00080780
                    txcw: 00000000
                    txdctl: 00040004
                    pba: 00140014
                    nobufs: 0
                    rdfree: 1023
                    anreset: 0
                    type: i82574

SRX shelf 7>


SRX shelf 7> ifstat ether0
NAME                        ADDR        LINK (Mbps)
ether0              003048dd004c            0/ 1000

SRX shelf 7>
```

iomode

The `iomode` command displays the current access pattern optimization setting for LUNs in a shelf. (For the default I/O mode of supported LUN types, see the `mklun` command.) You can change the I/O mode of JBOD, RAID 0, RAID 1, and RAID 10 LUNs to `sequential` or `random` by issuing the `setiomode` command. RAID 5 and RAID 6 LUNs do not currently support `random` I/O mode. Issuing `iomode` without arguments displays the I/O mode of all LUNs on the shelf.

When set to `sequential`, a LUN is optimized for sequential reads using a prefetch mechanism. When set to `random` a LUN is optimized for random read workloads by disabling prefetch.

The default I/O mode for supported RAID types differs whether the LUN is comprised of all SSD drives or all spinning drives, as follows:

RAID type	Spinning drive default	SSD default
JBOD	sequential	random
RAID 0	sequential	random
RAID 1	random	random
RAID 5	sequential	sequential

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RAID type	Spinning drive default	SSD default
RAID 6	sequential	sequential
RAID 10	random	random

Usage

```
SRX shelf 7> iomode -?
usage: iomode [ LUN ...]
```

Argument

[LUN ...]	Specify the LUN or range of LUNs that you want to display the access pattern optimization settings for

Example

```
SRX shelf 7> iomode
LUN        MODE
3     sequential
9     sequential
10    sequential
11    sequential
12    sequential
252      random
253      random
SRX shelf 7>


SRX shelf 7> iomode 3
LUN              MODE

3              random

SRX shelf 7>
```

iostats

The `iostats` command displays throughput and latency information for configured LUNs and the drives backing them. This command displays the following statistics for all LUNs on the shelf:

Heading	Description
LUN	The LUN presented to initiators
DRIVE	Three-part term indicating the correspondence between a physical drive(s) in an appliance and its role (if any) as a logical drive(s) within a RAID set. For details about the three-part term, see Understanding EtherDrive RAID notation.
READ	The calculated average amount of data (in MB/s) read from a RAID drive component within the specified period
WRITE	The calculated average amount of data (in MB/s) written to a RAID drive component within the specified period
AVG	Displays average latency statistics (in milliseconds) for individual I/O commands issued to the LUN/drive. By default, statistics displayed are an average over the last 4 seconds.
MAX	Displays maximum latency statistics (in milliseconds) for individual I/O commands issued to the LUN/drive

Usage

```
SRX shelf 7> iostats -?
usage: iostats [ -dl ] [ -s secs ] [ LUN ... ]
```

Arguments

[-d]	Displays only RAID drive component statistics
[-l]	Displays only LUN statistics
[-s secs]	Specifies the prior period (from 1 to 32 seconds) over which to calculate the average (the default is 4 seconds)
[LUN ...]	Displays statistics only for the specified LUN

Examples

```
SRX shelf 7> iostats -d
LUN      DRIVE       READ    AVG    MAX     WRITE    AVG    MAX

         3.0.0    0.000MB    0ms    0ms   0.000MB    0ms    0ms

         5.0.0   20.469MB    2ms   37ms  10.267MB    1ms   16ms

         5.0.1   20.534MB    2ms   26ms  10.201MB    0ms    1ms

         5.0.2   20.556MB    2ms   36ms  10.223MB    0ms   16ms

        10.0.0  103.306MB    0ms    8ms   0.000MB    0ms    0ms

        10.0.1    0.000MB    0ms    0ms 103.328MB    0ms    1ms


SRX shelf 7>

SRX shelf 7> iostats -l
LUN      DRIVE       READ    AVG    MAX     WRITE    AVG    MAX

9                  0.000MB    0ms    0ms   0.000MB    0ms    0ms

10                 0.000MB    0ms    0ms   0.000MB    0ms    0ms

11                 0.000MB    0ms    0ms   0.000MB    0ms    0ms

12                 0.000MB    0ms    0ms   0.000MB    0ms    0ms

253                0.000MB    0ms    0ms   0.000MB    0ms    0ms


SRX shelf 7>

SRX shelf 7> iostats -s 20
LUN      DRIVE       READ    AVG    MAX     WRITE    AVG    MAX

3                  0.000MB    0ms    0ms   0.000MB    0ms    0ms

         3.0.0    0.000MB    0ms    0ms   0.000MB    0ms    0ms

5                  0.000MB    0ms    0ms   0.000MB    0ms    0ms

         5.0.0   21.189MB    2ms   42ms  10.485MB    0ms    1ms

         5.0.1   21.342MB    2ms   45ms  10.594MB    1ms   18ms

         5.0.2   21.233MB    2ms   36ms  10.616MB    0ms   17ms

10                 0.000MB    0ms    0ms   0.000MB    0ms    0ms

        10.0.0  113.770MB    0ms    1ms   0.000MB    0ms    0ms

        10.0.1    0.000MB    0ms    0ms 108.549MB    0ms    8ms


SRX shelf 7>

SRX shelf 7> iostats 253
LUN        DRIVE       READ    AVG    MAX     WRITE    AVG    MAX

253                  0.000MB    0ms    0ms   0.000MB    0ms    0ms

         253.0.0    5.636MB    0ms    9ms   0.000MB    0ms    0ms

         253.0.1    5.636MB    0ms    9ms   0.000MB    0ms    0ms
```

```
SRX shelf 7>

SRX shelf 7> iostats
LUN      DRIVE        READ      AVG     MAX      WRITE      AVG     MAX

3                   0.000MB     0ms     0ms    0.000MB      0ms     0ms

         3.0.0      0.000MB     0ms     0ms    0.000MB      0ms     0ms

5                   0.000MB     0ms     0ms    0.000MB      0ms     0ms

         5.0.0     19.857MB     2ms    27ms    9.721MB      0ms     1ms

         5.0.1     19.726MB     2ms    26ms    9.961MB      0ms     9ms

         5.0.2     19.857MB     2ms    40ms    9.743MB      1ms    18ms

10                  0.000MB     0ms     0ms    0.000MB      0ms     0ms

        10.0.0    102.869MB     0ms     8ms    0.000MB      0ms     0ms

        10.0.1      0.000MB     0ms     0ms  102.869MB      0ms    13ms

SRX shelf 7>
```

ipaddress

The `ipaddress` command configures the IP address and subnet mask for the SRX appliance. Note that a single IP address is assigned to multiple Ethernet interfaces to provide failover support should the primary Ethernet interface fail.

Without arguments, the `ipaddress` command displays the following IP configuration information:

Heading	Description
PORT	The Ethernet port number
IP ADDRESS	The IP address assigned to the Ethernet port

Heading	Description
MASK	The subnet mask assigned to the Ethernet port
MULTIPATH	The Ethernet port status. The status can be one of the following: • `Monitors_OK/Active`:The interface is currently providing IP network connectivity and all monitoring of the interface is successful. • `Monitors_OK/Standby`: The interface is not the active interface, but is available to take over for the active interface should the active interface fail any monitoring. • `No_Probes/Active`: Indicates that no other interface is successful with probe monitoring and this interface is attempting to provide IP network connectivity. All other interfaces will have either `No_Probes/Standby` or `No_Link/Standby` status. When the probe monitoring succeeds for an interface, that interface status will become `Monitors_OK/Active`. • `No_Probes/Standby`: Indicates that the interface may be available to take over for the active interface should all other interfaces fail their probe monitoring and the active interface fail its link state monitoring. • `No_Link/Active`: Indicates that no interface is providing IP network connectivity and that this interface was the most recent active interface. All other interfaces will have `No_Link/Standby` status. When monitoring succeeds for an interface, that interface will become the active interface with either `No_Probes/Active` or `Monitors_OK/Active` status. • `No_Link/Standby`: The interface is not available to take over for the active interface because it has failed its link state monitoring.

Usage

```
SRX shelf 7> ipaddress -?
usage: ipaddress [ address mask ]
```

Argument

[address mask]	Specify the IP address and network mask you want to assign to the network interfaces

Example

```
SRX shelf 7> ipaddress
PORT           IP ADDRESS          MASK                MULTIPATH

ether0    10.10.10.132  255.255.0.0    Monitors_OK/Active

ether1    10.10.10.132  255.255.0.0   Monitors_OK/Standby

SRX shelf 7>
```

ipgateway

The `ipgateway` command sets the default IP route. Without arguments the `ipgateway` command displays the IP gateway address.

Usage

```
SRX shelf 7> ipgateway -?
usage: ipgateway [ gateway ]
```

Argument

gateway	Specify the IP address and network mask of the default IP route

Example

```
SRX shelf 7> ipgateway
IP GATEWAY
10.10.10.1
SRX shelf 7>
```

label

The `label` command assigns a descriptive text label to an existing LUN or series of LUNs (you can display the label by issuing the `luns` command). The length of the label cannot exceed 16 characters. A label that contains spaces must be enclosed in single quotes (').

Usage

```
SRX shelf 7> label -?
usage: label name LUN ...
```

Arguments

name	Type a descriptive label for the LUN.
LUN ...	Specify a LUN or a series of sequentially numbered LUNs as a range indicated by a hyphen (-). This allows you to apply the same label to multiple LUNs at once.

Example

```
SRX shelf 7> luns -a
LUN         LABEL   STATUS    TYPE    SIZE(GB)   ELEMENT   DRIVE      STATE
9                   online    raid10  6001.197                       normal
                                      2000.399   9.0.0     7.7        normal
                                      2000.399   9.0.1     7.8        normal
                                      2000.399   9.0.2     7.9        normal
                                      2000.399   9.0.3     7.10       normal
                                      2000.399   9.0.4     7.11       normal
```

```
                                                    2000.399      9.0.5      7.12        normal

SRX shelf 7>label datalun 9
SRX shelf 7> luns -a
LUN          LABEL    STATUS     TYPE    SIZE(GB)    ELEMENT    DRIVE       STATE
9          datalun   online   raid10    6001.197                           normal
                                                    2000.399      9.0.0       7.7        normal
                                                    2000.399      9.0.1       7.8        normal
                                                    2000.399      9.0.2       7.9        normal
                                                    2000.399      9.0.3      7.10        normal
                                                    2000.399      9.0.4      7.11        normal
                                                    2000.399      9.0.5      7.12        normal

SRX shelf 7>
```

logwatch

The `logwatch` command controls display of syslog messages to the CLI session. When enabled, all syslog messages are displayed as they occur.

Without arguments the `logwatch` command displays the current logwatch state. By default, the logwatch state is disabled.

Usage
```
SRX shelf 7> logwatch -?
usage: logwatch [ enable | disable ]
```

Argument

[enable	disable]	Specify whether to enable to disable log watch

Example
```
SRX shelf 7> logwatch enable
SRX shelf 7>
```

luns

The `luns` command displays the LUNs and the LUN drive components (see Understanding EtherDrive RAID notation) currently presented to initiators by the SRX. If a LUN argument is not specified, all LUNs on the shelf are displayed. If the -a argument is not specified, only LUN information is displayed. If the -a argument is specified, both LUN and drive component information is displayed. The information displayed for each LUN includes:

Column	Description
LUN	Displays the LUN

Column	Description
LABEL	Displays the label assigned to the LUN, if one has been configured. For more information, see the `label` command.
STATUS	Displays whether the LUN is `online` or `offline`
TYPE	Displays the RAID type
SIZE(GB)	Displays capacity of the LUN in gigabytes
STATE	Displays the state of the LUN. The state of a LUN is one of the following: • `initing`: RAID is initializing parity. • `recovering`: RAID is rebuilding a replaced component. • `degraded`: RAID is operating with failed or missing components. • `needinit`: RAID parity requires initialization. • `failed`: RAID has sustained too many component failures and is unusable. • `normal`: Drive is operating normally.

The information displayed for each drive component includes:

Column	Description
SIZE(GB)	Displays capacity of the drive component in gigabytes
ELEMENT	Displays the component address of the drive component
DRIVE	Displays the physical `shelf.slot` location
STATE	Displays the state of the drive component. The state of a drive component is one of the following: • `failed`: Drive has failed. • `replaced`: Drive is being used as a replacement for a failed drive. • `missing`: Drive is placeholder for a missing drive. This is possible if all components are unavailable at startup time. • `normal`: RAID is operating normally.

Usage
```
SRX shelf 7> luns -?
usage: luns [ -a ] [ LUN ... ]
```

Arguments

[-a]	Displays both LUN and component drive states
[LUN ...]	Specify the LUN you want to evaluate.

Examples

```
SRX shelf 7> luns
LUN       LABEL   STATUS     TYPE   SIZE(GB)   ELEMENT    DRIVE        STATE
0                 online    raid5   3000.000                          normal
1                 online     jbod   1000.000                          normal
2                 online     jbod   1000.000                          normal
3                 online   raid10   2000.000                          normal

SRX shelf 7> luns -a
LUN       LABEL   STATUS     TYPE   SIZE(GB)   ELEMENT    DRIVE        STATE
0                 online    raid5   3000.000                          normal
                                    1000.000    0.0.0      7.0        normal
                                    1000.000    0.0.1      7.1        normal
                                    1000.000    0.0.2      7.10       normal
                                    1000.000    0.0.3      7.3        normal
1                 online     jbod   1000.000                          normal
                                    1000.000    1.0.0      7.4        normal
2                 online     jbod   1000.000                          normal
                                    1000.000    2.0.0      7.5        normal
3                 online   raid10   2000.000                          normal
                                    1000.000    3.0.0      7.6        normal
                                    1000.000    3.0.1      7.7        normal
                                    1000.000    3.0.2      7.8        normal
                                    1000.000    3.0.3      7.9        normal

SRX shelf 7>
SRX shelf 7> luns -a 0
LUN       LABEL   STATUS     TYPE   SIZE(GB)   ELEMENT    DRIVE        STATE
0                 online    raid5   3000.000                          normal
                                    1000.000    0.0.0      7.0        normal
                                    1000.000    0.0.1      7.1        normal
                                    1000.000    0.0.2      7.10       normal
                                    1000.000    0.0.3      7.3        normal

SRX shelf 7>
```

mask

The `mask` command manages client access to online LUNs. Without arguments, `mask` displays all LUNs and their mask lists. When given only LUN arguments, `mask` displays the MAC mask list for specified LUNs. MAC addresses use the 0123456789ab format.

Providing the **+mac** and **-mac** arguments prior to LUN specification modifies the MAC mask on the LUN. To add a MAC address, prefix the MAC address with a plus (+). To remove a MAC address, prefix the MAC address with a minus (-). A LUN with no MAC mask list configured will be accessible to all initiators on the SAN. A LUN with a MAC mask list configured will be accessible only to the initiators included in the mask list.

Usage
```
SRX shelf 7> mask -?
usage: mask [{+|-} mac ... ] [LUN ... ]
```

Arguments

[+mac ...]	Prefix the MAC address with a plus (+) to add a MAC mask.
[-mac ...]	Prefix the MAC address with a minus (-) to remove a MAC mask.
[LUN ...]	Specify the name of the LUN or a series of LUNs for which you want to set/remove a MAC mask or whose MAC mask list you want to evaluate.

Example
```
SRX shelf 7>mask
LUN    MASK(S)
0
1      00259033d7d5 00259033d7d4 0025903c426d 0025903c426c
2
SRX shelf 7> mask +00259033d7d5 2
SRX shelf 7> mask
LUN    MASK(S)
0
1      00259033d7d5 00259033d7d4 0025903c426d 0025903c426c
2      00259033d7d5
SRX shelf 7>
```

mkjbod

The mkjbod command initializes a LUN over a single device and assigns it the same number as the slot number you specify with the **shelf.slot** argument. To create a JBOD with a number other than the slot number, manually create the JBOD issuing the mklun command and specify a LUN number.

The following two command strings have an identical result:

```
SRX shelf 7> mkjbod 7.2
```

and

```
SRX shelf 7> mklun 2 jbod 7.2
```

Usage

```
SRX shelf 7> mkjbod -?
usage: mkjbod shelf.slot [ ... ]
```

Argument

shelf.slot ...	Specify the shelf and device slot number you want to associate with a single-drive LUN to be created with the mkjbod command. You can create multiple JBODs simultaneously using a hyphen (-) to indicate a range.

Note: Using the mklun command to create a multi-drive JBOD is not supported. For example, the following is not a valid command:

```
SRX shelf 7> mklun 0 jbod 7.0-2
```

Example

```
SRX shelf 7> drives
DRIVE         SIZE     ROLE                         MODEL     FIRMWARE         MODE

7.0     2000.398GB              WDC WD2003FYYS-02W0B0      01.01D01 sata 3.0Gb/s

7.1     2000.398GB              WDC WD2003FYYS-02W0B0      01.01D01 sata 3.0Gb/s

7.2     2000.398GB              WDC WD2003FYYS-02W0B0      01.01D01 sata 3.0Gb/s

7.3     2000.398GB              WDC WD2003FYYS-02W0B0      01.01D01 sata 3.0Gb/s

SRX shelf 7> mkjbod 7.0-2
SRX shelf 7> drives
SRX shelf 7>
DRIVE         SIZE     ROLE                         MODEL     FIRMWARE         MODE

7.0     2000.398GB     jbod     WDC WD2003FYYS-02W0B0      01.01D01 sata 3.0Gb/s

7.1     2000.398GB     jbod     WDC WD2003FYYS-02W0B0      01.01D01 sata 3.0Gb/s

7.2     2000.398GB     jbod     WDC WD2003FYYS-02W0B0      01.01D01 sata 3.0Gb/s

7.3     2000.398GB              WDC WD2003FYYS-02W0B0      01.01D01 sata 3.0Gb/s
```

mklun

The `mklun` command creates a LUN. Each LUN contains one RAID. From the host system on the Ethernet SAN, the SRX looks like a shelf of LUNs. Placing a LUN online without an initiator mask broadcasts the LUN to all servers on the SAN. Newly created LUNs are offline by default. This allows you to configure a MAC mask list to manage its visibility to initiators. The SRX configures LUN RAID component devices using the three-part naming scheme described in Understanding EtherDrive RAID notation. For example, the term `8.0.1` describes the second drive component (`1`) of `LUN 8`.

For more information on supported RAID types, see Supported RAID types.

Usage

```
SRX shelf 7> mklun -?
usage: mklun LUN raidtype [ shelf.slot ... ]
```

Arguments

LUN	Specify a number between 0 and 254, inclusive. The number must be unique within each shelf.
raidtype	The `raidtype` can be any one of the following: • `jbod`: A single-drive LUN. Default I/O mode is sequential. • `raid0`: Block-level data striping with no parity or mirroring. Default I/O mode is sequential. • `raid1`: Drive mirroring with no parity or striping. Default I/O mode is random. • `raid5`: Block-level data striping with distributed parity. I/O mode is sequential (cannot be changed). • `raid6rs`: Block-level data striping with double distributed parity using Reed-Solomon syndromes. I/O mode is sequential (cannot be changed). • `raid10`: A stripe of RAID mirrors. Default I/O mode is random. Drive list must contain an even number of elements and split into two equal ordered sets. Mirrors are constructed across the pairs of drives in the same position in each set. Once the mirrors are chosen, a stripe is placed across all mirrored elements. (See the following example.) • `raw`: A raw block-for-block presentation of a single underlying drive. Since no portion of the drive is used for RAID configuration storage, the LUN does not persist across reboot. • `update`: A raw-based device for appliance update; a pseudo-type for a raw device over a RAM-based drive. Do not specify component drives when declaring the update LUN. An update LUN does not persist across reboot. See Updating CorOS for more information. In addition, refer to the *EtherDrive SRX CorOS Update Instructions* for more information on updating an SRX appliance.
[shelf.slot ...]	Type the shelf and slot number(s) of the drive or drives to be used as the component of the RAID.

Example

In the following `raid10` example, the mirrored elements of LUN 9 are {7.7, 7.10}, {7.8, 7.11}, and {7.9, 7.12}.

```
SRX shelf 7> mklun 9 raid10 7.7-12
SRX shelf 7> luns -a
```

LUN	LABEL	STATUS	TYPE	SIZE(GB)	ELEMENT	DRIVE	STATE
9		offline	raid10	6001.197			normal
				2000.399	9.0.0	7.7	normal
				2000.399	9.0.1	7.8	normal
				2000.399	9.0.2	7.9	normal
				2000.399	9.0.3	7.10	normal
				2000.399	9.0.4	7.11	normal
				2000.399	9.0.5	7.12	normal

```
SRX shelf 7> online 9
SRX shelf 7> luns -a
```

LUN	LABEL	STATUS	TYPE	SIZE(GB)	ELEMENT	DRIVE	STATE
9		online	raid10	6001.197			normal
				2000.399	9.0.0	7.7	normal
				2000.399	9.0.1	7.8	normal
				2000.399	9.0.2	7.9	normal
				2000.399	9.0.3	7.10	normal
				2000.399	9.0.4	7.11	normal
				2000.399	9.0.5	7.12	normal

mkspare

The `mkspare` command displays and manages the drive(s) in the spare pool. If a drive fails in a RAID 1, RAID 5, RAID 6, or RAID 10 LUN, the SRX attempts to recruit a drive from the spare pool to replace it. If the given spare drive is already in use, an error occurs.

Drives are recruited from the spare pool according to a best-fit algorithm. When a drive fails in any of the RAID types, the spare pool is checked for the smallest drive able to satisfy the RAID's need. For example, if the spare pool contains 3TB and 2TB drives and a failure occurs on a RAID needing a 1TB drive, a 2TB drive is recruited as the replacement.

A spare pool only serves the shelf in which it was created.

Usage

```
SRX shelf 7> mkspare -?
usage: mkspare shelf.slot [ ... ]
```

Argument

`shelf.slot [ ... ]`	Specify the drive(s) you want to assign to the spare pool.
	You can assign multiple drives to the pool simultaneously using a hyphen (-) to indicate a range.

Example

```
SRX shelf 7> mkspare 7.13-14
SRX shelf 7> spares
7.13 2000.399GB
7.14 2000.399GB
SRX shelf 7>
```

model

The `model` command displays the SRX appliance model number. It also displays the NIC interface-type designator.

Usage

```
SRX shelf 7> model -?
usage: model
```

Arguments

None

Example

```
SRX shelf 7> model
MODEL
SRX6300-R2
SRX shelf 7>
```

motd

The `motd` command displays the message of the day banner for `ssh` sessions. Use the setmotd command to configure the message of the day banner.

Usage

```
SRX shelf 7> motd -?
usage: motd
```

noseries

The SRX CLI interprets a hyphen as an indication of a range (see Range expansion). The `noseries` command is a prefix for other commands that will disable range expansion for that command, letting you include a hyphen in the argument for that command without indicating a range. This is useful, for example, if you want to add a label to a LUN that includes a hyphen in the label.

Usage

```
SRX shelf 7> noseries -?
usage: noseries cmd
```

Argument

cmd	Enter a command to run with expansion functionality disabled.

Example

```
SRX shelf 7> noseries label detp1-3 4
SRX shelf 7> luns
LUN    LABEL    STATUS      TYPE    SIZE(GB)      STATE
4    detp1-3  offline     jbod    200.050     normal
SRX shelf 7>
```

offline

The offline command places one or more LUNs into the offline state. While offline, LUNs are not accessible on the Ethernet SAN.

Usage

```
SRX shelf 7> offline -?
usage: offline LUN [ ... ]
```

Argument

LUN [...]	Specify a LUN or a series of sequentially numbered LUNs as a range indicated by a hyphen (-). This allows you to place more than one LUN offline simultaneously.

Note: Place all LUNs offline before you change the shelf address.

Example

```
SRX shelf 7> luns -a
LUN        LABEL   STATUS     TYPE   SIZE(GB)   ELEMENT    DRIVE      STATE
9                  online     raid5  3000.000                         normal
                                     1000.000    9.0.0      7.0       normal
                                     1000.000    9.0.1      7.1       normal
                                     1000.000    9.0.2      7.10      normal
                                     1000.000    9.0.3      7.3       normal
10                 online     jbod   1000.000                         normal
                                     1000.000   10.0.0      7.4       normal
11                 online     jbod   1000.000                         normal
                                     1000.000   11.0.0      7.5       normal
12                 online     raid10 2000.000                         normal
                                     1000.000   12.0.0      7.6       normal
                                     1000.000   12.0.1      7.7       normal
                                     1000.000   12.0.2      7.8       normal
                                     1000.000   12.0.3      7.9       normal

SRX shelf 7> offline 9
SRX shelf 7> luns -a
LUN        LABEL   STATUS     TYPE   SIZE(GB)   ELEMENT    DRIVE      STATE
9                  offline    raid5  3000.000                         normal
                                     1000.000    9.0.0      7.0       normal
                                     1000.000    9.0.1      7.1       normal
                                     1000.000    9.0.2      7.10      normal
                                     1000.000    9.0.3      7.3       normal
10                 online     jbod   1000.000                         normal
                                     1000.000   10.0.0      7.4       normal
11                 online     jbod   1000.000                         normal
                                     1000.000   11.0.0      7.5       normal
12                 online     raid10 2000.000                         normal
                                     1000.000   12.0.0      7.6       normal
                                     1000.000   12.0.1      7.7       normal
                                     1000.000   12.0.2      7.8       normal
                                     1000.000   12.0.3      7.9       normal

SRX shelf 7>
```

online

The `online` command places one or more LUNs online, making them accessible to initiators on the Ethernet SAN. Placing a LUN online without an initiator mask broadcasts the LUN to all servers on the SAN. Newly created LUNs are offline by default. This allows you to configure a MAC mask list to manage its visibility to initiators before placing the LUN online.

Usage

```
SRX shelf 7> online -?
usage: online LUN [ ... ]
```

Argument

LUN ...	Specify a LUN or a series of sequentially numbered LUNs as a range indicated by a hyphen (-). This allows you to place more than one LUN online simultaneously.

Example

```
SRX shelf 7> luns -a
LUN         LABEL   STATUS    TYPE    SIZE(GB)    ELEMENT    DRIVE      STATE
9                   offline   raid5   3000.000                         normal
                                      1000.000    9.0.0      7.0        normal
                                      1000.000    9.0.1      7.1        normal
                                      1000.000    9.0.2      7.10       normal
                                      1000.000    9.0.3      7.3        normal
10                  online    jbod    1000.000                         normal
                                      1000.000    10.0.0     7.4        normal
11                  online    jbod    1000.000                         normal
                                      1000.000    11.0.0     7.5        normal
12                  online    raid10  2000.000                         normal
                                      1000.000    12.0.0     7.6        normal
                                      1000.000    12.0.1     7.7        normal
                                      1000.000    12.0.2     7.8        normal
                                      1000.000    12.0.3     7.9        normal

SRX shelf 7> online 9
SRX shelf 7> luns -a
LUN         LABEL   STATUS    TYPE    SIZE(GB)    ELEMENT    DRIVE      STATE
9                   online    raid5   3000.000                         normal
                                      1000.000    9.0.0      7.0        normal
                                      1000.000    9.0.1      7.1        normal
                                      1000.000    9.0.2      7.10       normal
                                      1000.000    9.0.3      7.3        normal
```

LUN	LABEL	STATUS	TYPE	SIZE(GB)	ELEMENT	DRIVE	STATE
10		online	jbod	1000.000			normal
				1000.000	10.0.0	7.4	normal
11		online	jbod	1000.000			normal
				1000.000	11.0.0	7.5	normal
12		online	raid10	2000.000			normal
				1000.000	12.0.0	7.6	normal
				1000.000	12.0.1	7.7	normal
				1000.000	12.0.2	7.8	normal
				1000.000	12.0.3	7.9	normal

```
SRX shelf 7>
```

passwd

The `passwd` command sets the administrator login password. The SRX is shipped using the default password `admin`. The password you set cannot be longer than 27 characters. If you can access the SRX, you can clear an existing administrator password by typing nothing when prompted to enter a new password (see `empty to clear` in the example above). The phrase `Password successfully cleared` is returned.

Usage
```
SRX shelf 7> passwd -?
usage: passwd
```

Arguments

None

Example
```
SRX shelf 7> passwd
      old password: *****
      new password: *****
   again to verify: *****
SRX shelf 7>
```

Password Recovery

If you lose the SRX password, you can begin the process of resetting it by entering the reserved keyword `ivelostit` at the local **console** login and starting a challenge/response dialogue. Contact the Coraid Technical Assistance Center at support@coraid.com for the response required by the challenge. When the challenge/response is successfully completed, the password is cleared.

Example

```
password:
Please supply Coraid support with the following challenge to receive
response.
challenge: #####
response:
SRX shelf 7>
```

ping

The `ping` command sends ICMP echo request messages to a destination IP address. It determines the network delay and whether or not the destination is available. By default, the `ping` command sends three requests, and displays a line for each request and reply. If a reply is received, the line contains the request ID (starting at 0 and incrementing), the request round-trip time (rtt), the average round-trip time, and the reply packet time to live (ttl). If no reply is received, the line contains the request ID, the word `lost`, and the reason this request failed.

Usage

```
SRX shelf 7> ping -?
usage: ping IPaddress
```

Argument

`IPaddress`	Specify the IP address of the host to which you want to send ICMP echo requests

Example

```
SRX shelf 7> ping 10.10.10.63
sending 3 64 byte messages 1000 ms apart to icmp!10.10.10.63!1
0: rtt 3792 Âµs, avg rtt 3792 Âµs, ttl = 126
1: rtt 4639 Âµs, avg rtt 4215 Âµs, ttl = 126
2: rtt 4768 Âµs, avg rtt 4399 Âµs, ttl = 126
SRX shelf 7>
```

power

The `power` command displays the status, temperature, and fan RPM for all power supplies in the appliance. If a particular power supply is not found, it is reported as missing.

Usage

```
SRX shelf 7> power -?
usage: power
```

Arguments

None

Example

```
SRX shelf 7> power
PSU            STATUS       TEMP       FAN1RPM       FAN2RPM

0              up           41C           7500         10300

1              up           43C           8900          1190

SRX shelf 7>
```

reboot

The reboot command cleanly shuts down LUNs and their component RAIDs. After shutdown of components completes, it then reboots the SRX. See Shutting Down the SRX.

Usage

```
SRX shelf 7> reboot -?
usage: reboot
```

Arguments

None

Example

```
SRX shelf 7> reboot
SRX shelf 7>
```

release

The release command displays the current version of CorOS.

Usage

```
SRX shelf 7> release -?
usage: release
```

Arguments

None

Example

```
SRX shelf 7> release
RELEASE
SRX-7.0.0-R10
SRX shelf 7>
```

replacedrive

The `replacedrive` command replaces a failed component in RAID 1, RAID 5, RAID 6, and RAID 10 LUNs with an unused drive. After the failed drive has been replaced, the RAID is reconstructed. The specified replacement drive must be listed when you issue the `drives` command. In addition, it must not be in a failed state and not designated as a spare or RAID component. However, it is permissible to replace a RAID component with itself to force recovery of the existing component drive.

Usage

```
SRX shelf 7> replacedrive -?
usage: replacedrive LUN.part.drive shelf.slot
```

Arguments

`LUN.part.drive`	Specify the RAID component that you want to replace. (For details, see Understanding EtherDrive RAID notation).
`shelf.slot`	Specify the replacement drive

Example

```
SRX shelf 7> luns -a
LUN         LABEL   STATUS    TYPE    SIZE(GB)   ELEMENT   DRIVE        STATE
8                   online    raid5   6001.197                      degraded
                                      2000.399   8.0.0     7.3       normal
                                      2000.399   8.0.1     7.4       failed
                                      2000.399   8.0.2     7.5       normal
                                      2000.399   8.0.3     7.6       normal

SRX shelf 7> replacedrive 8.0.1 7.15
SRX shelf 7> luns -a
LUN         LABEL   STATUS    TYPE    SIZE(GB)   ELEMENT   DRIVE        STATE
8                   online    raid5   6001.197                    recovering
                                                                    degraded
                                      2000.399   8.0.0     7.3       normal
                                      2000.399   8.0.1     7.15      replaced
                                      2000.399   8.0.2     7.5       normal
                                      2000.399   8.0.3     7.6       normal

SRX shelf 7>
```

restorelun

The `restorelun` command reads the configuration from all devices in the SRX and assembles LUNs and spares. When issued without an argument, the `restorelun` command ignores any device that does not belong to the configured shelf address of the SRX (such as a drive removed from an SRX appliance and installed in another SRX). You must use arguments to restore LUNs that once resided on another appliance (see below). The `restorelun` command runs without arguments when the appliance is booting.

Usage

```
SRX shelf 7> restorelun -?
usage: restorelun [ -l ] [ oldshelfno [ oldlun [ newlun ] ] ]
SRX shelf 7>
```

Arguments

`[ -l ]`	Reads the configuration from the drives in the SRX and displays the actions that the `restorelun` command would perform, but does not execute those actions.
`[ oldshelfno ]`	Imports LUNs and spares that once resided on another shelf.
`[ oldlun ]`	Imports only a specified LUN. The resulting LUN will be identical to `oldlun`.
`[ newlun ]`	If the action of `oldlun` is not desired, use the `newlun` argument to specify a new LUN.

Examples

```
SRX shelf 7> restorelun
SRX shelf 7>
```

rmlun

The `rmlun` command removes one or more LUNs. Issuing the `rmlun` command clears the RAID configuration on all of the LUN's component drives and releases them for reuse. A LUN must be placed offline before it can be removed (see `offline`).

> ⚠️ **NOTICE**
>
> All data on a LUN is lost when it is removed.

Usage

```
SRX shelf 7> rmlun -?
usage: rmlun LUN [ ... ]
```

Argument

LUN [...]	Specify a LUN or a series of sequentially numbered LUNs as a range indicated by a hyphen (-). You can also list non-sequential LUNs (for example, `1 2 5 66`). This allows you to simultaneously remove more than one LUN.

Example

```
SRX shelf 7> luns -a
LUN          LABEL   STATUS    TYPE   SIZE(GB)   ELEMENT   DRIVE      STATE
8                    online    raid5  6001.197                       normal
                                      2000.399   8.0.0     7.3        normal
                                      2000.399   8.0.1     7.4        normal
                                      2000.399   8.0.2     7.5        normal
                                      2000.399   8.0.3     7.6        normal

SRX shelf 7> offline 8
SRX shelf 7> rmlun 8
Request to rmlun lun(s): 8
'n' to cancel, 'a' for all, or 'y' to rmlun 0 [N]: y
SRX shelf 7>
```

rmspare

The `rmspare` command removes drives from the spare pool.

Usage

```
SRX shelf 7> rmspare -?
usage: rmspare shelf.slot [ ... ]
```

Argument

shelf.slot [...]	Specify the drive(s) you want to remove from the spare pool. You can remove multiple drives from the pool simultaneously using a hyphen (-) to indicate a range.

Example

```
SRX shelf 7> spares
DRIVE        SIZE
7.13    2000.399GB
7.14    2000.399GB
SRX shelf 7> rmspare 7.13
SRX shelf 7> spares
DRIVE        SIZE
7.14    2000.399GB
SRX shelf 7>
```

scpwipe

The `scpwipe` command deletes all files from the scp/ftp holding area in SRX memory. Use this command when you need to create more space to upload CorOS update files.

Usage

```
SRX shelf 7> scpwipe -?
usage: scpwipe
```

serial

The `serial` command displays the serial number of the SRX appliance. The serial number is set by Coraid in the factory.

Usage

```
SRX shelf 7> serial -?
usage: serial
```

Arguments

None

Example

```
SRX shelf 7> serial
SERIAL
SRX6300G8A000000000XXX
SRX shelf 7>
```

series

The SRX CLI interprets a hyphen as indicating a range of values (see Range expansion). The `series` command permits you to test how a range will be expanded in a command that supports ranges [...] before executing that command. The `series` command displays the system's interpretation of any range you specify.

Any two sets of numbers separated by a hyphen are expanded, and characters adjacent to the numbers are retained.

Usage

```
SRX shelf 7> series -?
usage: series target-range
```

Argument

`target-range`	Specify a range of numbers separated by a hyphen. The `target-range` can be a combination of numbers and characters. Multiple and nested ranges may be expanded with a single command.

Example

```
SRX shelf 7> series test0-10
test0 test1 test2 test3 test4 test5 test6 test7 test8 test9 test10
SRX shelf 7> series 7.6-9
7.6 7.7 7.8 7.9
SRX shelf 7> series 7.6-9
```

For longer series, the first number in the range may be filled with zeros to indicate padding for the entire range. This is recommended to ensure proper lexical sorting of large numbers of objects. For example:

```
SRX shelf 7> series test000-10
test000 test001 test002 test003 test004 test005 test006 test007 test008
test009 test010
```

A single range expression can be expanded into multiple ranges:

```
SRX shelf 7> series acct0-2pool1-3
acct0pool1 acct0pool2 acct0pool3 acct1pool1 acct1pool2 acct1pool3 acct2pool1
acct2pool2 acct2pool3
SRX shelf 7> series 0-2.1-3
0.1 0.2 0.3 1.1 1.2 1.3 2.1 2.2 2.3
```

service

The `service` command enables or disables available protocol services for the SRX appliance. Without arguments, this command lists all services and their current state. Service state configuration persists after a reboot.

By default, the `ftp` and `ssh` services are enabled and the `ntp` service is disabled.

Usage

```
SRX shelf 7> service -?
usage: service [ protocol  { enable | disable } ]
```

Arguments

`protocol`	Specify the protocol name (`ftp`, `ssh`, or `ntp`).
`enable	disable`	Specify whether to enable or disable the protocol.

Example

```
SRX shelf 7> service
SERVICE     STATUS
ftp        enabled
ntp        disabled
ssh        enabled
SRX shelf 7>
SRX shelf 7> service ntp enable
SRX shelf 7> service
SERVICE     STATUS
ftp        enabled
ntp        enabled
ssh        enabled
SRX shelf 7>
```

setiomode

The `setiomode` command sets the access pattern optimization setting of the specified LUN to `sequential` or `random`. For the default I/O mode of supported LUN types, see the `mklun` command.

Note: RAID 5 and RAID 6 are configured to `sequential` mode and their I/O mode cannot be changed.

Usage

```
SRX shelf 7> setiomode -?
usage: setiomode mode LUN [ ... ]
```

Arguments

`mode`	• `sequential`: Optimizes the LUN access pattern for sequential I/O. This is the default I/O mode for the following LUN types: – JBOD – RAID 0 – RAID 5 (cannot be changed) – RAID 6 (cannot be changed) • `random`: Optimizes the LUN access pattern for random I/O. This is the default I/O mode for the following LUN types: – RAID 1 – RAID 10
`LUN [ ... ]`	Specify a LUN or a series of sequentially numbered LUNs as a range indicated by a hyphen (-). You can also list non-sequential LUNs (for example, `1 2 5 66`). This allows you to set the I/O mode of more than one LUN simultaneously.

Example

```
SRX shelf 7> iomode
LUN          MODE
8       sequential
9       random
SRX shelf 7>
SRX shelf 7> setiomode sequential 9
SRX shelf 7> iomode
LUN          MODE
8       sequential
9       sequential
SRX shelf 7>
```

setmotd

The `setmotd` command sets the message of the day banner for `ssh` sessions. Without arguments, the `setmotd` command enters an MOTD editing session. To exit and save the session, press CTRL+D on the final empty line. The `setmotd` can optionally take a single argument, an uploaded filename, as the message of the day banner.

To remove the message, press Enter while in editing mode.

Usage
```
SRX shelf 7> setmotd -?
usage: setmotd [ uploaded file ]
```

Argument

`[ uploaded file ]`	Specify the filename of the file to upload.

setslotled

The `setslotled` command controls the red LED for each drive slot. You can control the red LED for multiple slots simultaneously by using a hyphen (-) to indicate a range, or by listing nonconsecutive slots. Being able to control the red LED lets you easily identify particular drives as viewed at the SRX front and rear panels. Use the `slotled` command to display the current LED states.

To stop the red LED from blinking, use the `reset` argument. Physically ejecting or inserting a drive also resets the red LED state. The audible alarm is active if any LED is in the `fault` state. The SRX automatically sets each drive's LED state in accordance with the RAID configuration.

Usage
```
SRX shelf 7> setslotled -?
usage: setslotled state slot [ ... ]
SRX shelf 7>
```

Arguments

`state`	Specify a state to indicate the blink pattern of the drive LED. Possible states are: • `locate`: Red LED blinks rapidly • `fault`: Red LED light remains on (solid) • `reset`: Red LED is off • `rebuild`: Red LED is off • `spare`: Red LED remains on (solid) or blinks
`slot [ ... ]`	Specify the drive(s) for which you want to set the LED blink pattern. You can specify multiple drives using a hyphen (-) to indicate a range.

Example

```
SRX shelf 7>slotled
SLOT     STATE
0        reset
1        reset
2        reset
3        reset
4        reset
SRX shelf 7>setslotled locate 4
SRX shelf 7>slotled
SLOT     STATE
0        reset
1        reset
2        reset
3        reset
4        locate
SRX shelf 7>
```

setvlan

The `setvlan` command associates a lun with an IEEE 802.1Q VLAN ID. The association limits the LUN to communication with a single VLAN ID. Multiple LUNs could be associated with a single VLAN ID. A valid VLAN ID is a number between 1 and 4094, inclusive.

> ⚠️ **NOTICE**
>
> If you use the `setvlan` command to associate a VLAN ID with a LUN, ensure that the Ethernet switch ports that connect to the SAN are configured as trunk ports.

The ports on many Ethernet switches can be configured as either trunk ports or access ports. Trunk ports are intended to connect to other switches and have access to all VLANs on a network. Trunk ports pass VLAN information in the Ethernet frames. Access ports connect to a single VLAN and do not pass VLAN information in the Ethernet frames. Ethernet ports are usually configured as access ports by default.

If an SRX LUN is associated with a specific VLAN, the SRX requires the VLAN information in the Ethernet frames to allow access to that LUN. If the ports on the Ethernet switch that connect to the SAN are not configured as trunk ports, the VLAN information will not be included with the Ethernet frames. This can cause initiators on the SAN to lose access to a LUN that has a VLAN associated with it.

Usage

```
SRX shelf 7> setvlan -?
usage: setvlan vlanid LUN [ ... ]
```

Arguments

`vlanid`	Type a number between 1 and 4094 (inclusive).
`LUN [ ... ]`	Type a number to specify the `lun` you want to evaluate, associate, or dissociate. Issuing `vlan` with a single `lun` displays a table with a single entry indicating a LUN-VLAN association.

Example
```
SRX shelf 7> vlans
LUN     VLAN
8
9
SRX shelf 7> setvlan 8 100
SRX shelf 7> setvlan 9 200
SRX shelf 7> vlans 8
LUN     VLAN
8        100

SRX shelf 7> vlans
LUN     VLAN
8        100
9        200
SRX shelf 7> clrvlan 9
SRX shelf 7> vlans
LUN     VLAN
8        100
9
SRX shelf 7>
```

shelf

The `shelf` command assigns the SRX a shelf address. Choose a number between 0 and 65534 (inclusive) that is unique among all AoE storage devices attached to the network. The SRX base shelf address must not conflict with other shelf addresses on the SAN. Before the SRX base shelf address is set, `unset` appears in the SRX prompt. After you set the shelf address, `unset` is replaced by the shelf address that you specified.

⚠️ **NOTICE**

Shelf address conflicts might result in significant data corruption. Carefully plan shelf addresses to avoid conflicts.

Note: When you probe the SAN from a CEC client, an uninitialized SRX appears as `-1.` Type `-1` at the `[#qp]` prompt to change the prompt to `SRX unset>`, then issue the `shelf` command.

Usage
```
SRX shelf unset> shelf -?
usage: shelf [shelfno]
SRX shelf unset> shelf 7
```

Argument

`[shelfno]`	Choose a number between 0 and 65534 (inclusive) that is unique among all AoE storage devices attached to the network.

Note: If you attempt to change the SRX base shelf address of a shelf containing LUNs, you are prompted to place the LUNs offline before changing the shelf address (see offline).

Example

```
SRX shelf 7> shelf 25
8 2000.431GB online
Cannot change shelf address with online LUNs
SRX shelf 7>
SRX shelf 7> offline 8
SRX shelf 7> shelf 25
Changing the shelf address will migrate all defined LUNs to the
new shelf address. LUNs used by other appliances
may not function correctly after re-addressing.
'n' to cancel, or 'y' to change shelf address[N]: y
SRX shelf 25>
```

The SRX also sends a message about the shelf address change to the syslog server.

slotled

The `slotled` command displays the state of the red LED for each drive slot. You can display the state of the red LED for multiple slots by using a hyphen (-) to indicate a range, or by listing nonconsecutive slots. Use the setslotled command to set the red LED for each drive slot.

Usage

```
SRX shelf 7> slotled -?
usage: slotled [ slot ... ]
```

Argument

`slot ...`	Type a single slot ID or a range.

Example

```
SRX shelf 7>
SRX shelf 135> slotled 23
SLOT            STATUS
23               reset
SRX shelf 7>

SRX shelf 7> slotled 5-10
SLOT            STATUS
5                reset
6                reset
7                reset
8                reset
9                reset
10               reset
```

```
SRX shelf 7>

SRX shelf 7> slotled 5 14 22
SLOT            STATUS
5                 reset
14                reset
22                reset
SRX shelf 7>
```

Status column

locate	Red LED blinks rapidly (4Hz)
fault	Red LED light remains on (solid) and an audible alarm sounds
reset	Red LED is off. Physically ejecting or inserting a drive has the same effect as the `reset` command.
rebuild	Red LED is off
spare	Red LED remains on (solid) or blinks

smartdisable

The `smartdisable` command disables the SMART command features on a drive. This is useful when an administrator no longer wants to be notified about a drive exceeding an error threshold. Coraid recommends always enabling SMART on drives in the SRX.

Note: SMART is only available on SATA-connected drives (HDD and SSD).

Usage
```
SRX shelf 7> smartdisable -?
usage: smartdisable shelf.slot [ ... ]
```

Argument

shelf.slot [...]	Enter the shelf address and slot number of the drive whose SMART features you want to disable.

Example
```
SRX shelf 7> smartdisable 7.13
SRX shelf 7>
```

smartenable

The `smartenable` command enables the SMART command features on a drive. SMART status is displayed when the `drives -s` command is issued. Enabling SMART is maintained by the drive and persists across power cycles. For more information, see RAIDShield Protection.

SMART is only available on SATA-connected drives (HDD and SSD).

Usage

```
SRX shelf 7> smartenable -?
usage: smartenable shelf.slot [ ... ]
```

Argument

`shelf.slot [ ... ]`	Enter the shelf address and slot number of the drive whose SMART features you want to enable.

Example

```
SRX shelf 7> smartenable 7.13
SRX shelf 7>
```

sos

The `sos` command captures Coraid Technical Support diagnostic information and stores it in the local file holding area for download by scp/ftp. To display diagnostic information on-screen, use the -t argument.

The `sos` command only reports appliance configuration and status information. It does NOT include any information about the data stored through the appliance.

Usage

```
SRX shelf 7> sos -?
usage: sos [ -t ]
```

Argument

`-t`	Specifies that diagnostic information will output to the screen, rather than to the local file

spares

The `spares` command displays a list of all drives in the spare pool.

Usage

```
SRX shelf 7> spares -?
usage: spares
```

Arguments

None

Example

```
SRX shelf 7> spares
DRIVE         SIZE
7.13    2000.399GB
7.14    2000.399GB
SRX shelf 7>
```

ssdhealth

The `ssdhealth` command displays the health information on SSDs obtained from SMART (Self-Monitoring, Analysis and Reporting Tool). The health information represents the percentage remaining of the drive calculated lifespan.

Usage

```
SRX shelf 7> ssdhealth -?
usage: ssdhealth
```

Arguments

None

Example

```
SRX shelf 6301> ssdhealth
DRIVESSD       Health
7.0            100%
7.1            100%
7.2            100%
7.3            100%
SRX shelf 7>
```

syslog

The `syslog` command configures the destination server IP for syslog UDP messages. Without arguments, syslog displays the destination server address and the source address. All syslog messages are sent to the configured IP address at UDP port 514.

Syslog test messages may be generated using the `syslogtest` command.

Usage

```
SRX shelf 7> syslog -?
usage: syslog [ Dest IP address ]
```

Argument

[Dest IP address]	Specify the destination IP address of the syslog server. Messages display to the console.

Example
```
SRX shelf 7> syslog
SOURCE              SERVER

10.10.10.132     10.10.10.1

SRX shelf 7> syslog 10.10.10.10
SRX shelf 7> syslog
SOURCE              SERVER

10.10.10.132     10.10.10.10
```

syslogtest

The `syslogtest` command sends a test message to the IP address of the syslog server configured with the `syslog` command. The message is comprised of all arguments concatenated into a single string.

Usage
```
SRX shelf 7> syslogtest -?
usage: syslog msg
```

Argument

msg	Specify the message to be sent to the syslog IP address.

temp

The `temp` command displays power supply and CPU temperatures.

Usage
```
SRX shelf 7> help temp
usage: temp
```

Arguments

None

Example

```
SRX shelf 7> temp
LOCATION    TEMP
cpu1        46C
cpu2        48C
sys         38C
ps0         34C
ps1         33C
SRX shelf 7>
```

timesource

The `timesource` command configures the system time to be maintained from either a Network Time Protocol (NTP) server or the local clock. Without an argument, `timesource` displays the selected time source.

A properly configured IP gateway (see the `ipgateway` command) is necessary to communicate with NTP servers outside the IP broadcast domain of the configured IP address.

If no NTP server or local time is configured, the SRX maintains system time according to the hardware clock set in the BIOS.

Usage

```
SRX shelf 7> timesource -?
usage: timesource [ ntp IPaddress | local yyyymmdd.hhmmss ]
```

Argument

`[ ntp IPaddress ]`
or
`[ local yyyymmdd.hhmmss ]`
	Specify the NTP server IP address or specify the local clock by entering the local date and time in the format **yyyymmdd.hhmmss**, as follows:
	• **yyyy**: year (1970–2100)
	• **mm**: month (01–12)
	• **dd**: day (01–31)
	• **hh**: hour (00–23)
	• **mm**: minute (00–59)
	• **ss**: second (00–59)

Example

```
SRX shelf 7> timesource
TIMESOURCE                 IP

ntp                 10.10.0.1

SRX shelf 7> timesource ntp 10.10.110.105
SRX shelf 7> timesource
TIMESOURCE                 IP

ntp            10.10.110.105

SRX shelf 7>
```

timezone

The `timezone` command sets the local time zone. Without arguments, the `timezone` command displays the current time zone. The `-l` argument lists available time zones.

Usage

```
SRX shelf 7> timezone -?
usage: timezone [ -l ] [ timezone ]
```

Arguments

[-l]	Lists available timezones
[timezone]	Specify the local timezone.

Example

```
SRX shelf 7> timezone
TIMEZONE
GMT
SRX shelf 7> timezone US_Pacific
SRX shelf 7> timezone
TIMEZONE
US_Pacific
SRX shelf 7>
```

unlabel

The `unlabel` command removes the label (if any) from a LUN or range of LUNs. (To set a label, issue the `label` command.)

Usage

```
SRX shelf 7> unlabel -?
usage: unlabel LUN ...
```

Argument

LUN	Specify a LUN or a series of sequentially numbered LUNs as a range indicated by a hyphen (-). You can also list non-sequential LUNs (for example, `1 2 5 66`). This allows you to remove a label from more than one LUN simultaneously.

Example

```
SRX shelf 7> luns -a
LUN         LABEL   STATUS    TYPE    SIZE(GB)    ELEMENT    DRIVE      STATE
9           datalun online    raid10   6001.197                         normal
                                       2000.399     9.0.0      7.7      normal
                                       2000.399     9.0.1      7.8      normal
                                       2000.399     9.0.2      7.9      normal
                                       2000.399     9.0.3      7.10     normal
                                       2000.399     9.0.4      7.11     normal
                                       2000.399     9.0.5      7.12     normal

SRX shelf 7>unlabel 9
SRX shelf 7> luns -a
LUN         LABEL   STATUS    TYPE    SIZE(GB)    ELEMENT    DRIVE      STATE
9                   online    raid10   6001.197                         normal
                                       2000.399     9.0.0      7.7      normal
                                       2000.399     9.0.1      7.8      normal
                                       2000.399     9.0.2      7.9      normal
                                       2000.399     9.0.3      7.10     normal
                                       2000.399     9.0.4      7.11     normal
                                       2000.399     9.0.5      7.12     normal

SRX shelf 7>
```

update

The `update` command installs the CorOS file from either the update LUN or the specified file. If no arguments are given, the `update` command attempts to install the CorOS file found on the update LUN. If the update LUN does not exist, the `update` command displays options and instructions for performing an update. A reboot is recommended after the update completes. If the SRX is not rebooted after an update, the new CorOS file will not be loaded until a reboot occurs. For a detailed explanation of the software update procedure, see the *EtherDrive SRX CorOS Update Instructions*.

Usage

```
SRX shelf 7> update -?
usage: update [ name.tarc ]
```

Argument

[name.tarc]	Specify the CorOS update file name.

Example

```
SRX shelf 7> update
Do not reboot or power cycle.  Update in progress...
Update successful. An immediate reboot is recommended to run
the new release. Enter yes to confirm and reboot:
```

uptime

The `uptime` command displays the length of time (in days, hours, minutes, and seconds) that the SRX has been powered on.

Usage

```
SRX shelf 7> help uptime
usage: uptime
```

Arguments

None

Example

```
SRX shelf 7> uptime
 up 0 days, 02:07:55
SRX shelf 7>
```

vlans

The `vlans` command displays a list of LUNs that have IEEE 802.1Q VLAN ID associated with them.

Usage

```
SRX shelf 7> vlans -?
usage: vlans [ LUN ... ]
```

Argument

[LUN ...]	Specify a LUN, or a series of sequentially numbered LUNs as a range indicated by a hyphen (-) to list the VLAN IDs associated with only the specified LUNs.

Example

```
SRX shelf 7> vlans
LUN     VLAN
8        100
9        200
SRX shelf 7>
```

when

The when command lists RAID devices in either an initializing or recovering state, displaying their percentage complete, I/O rate, and estimated time to completion. Time is formatted as hours:minutes:seconds.

Usage

```
SRX shelf 7> when -?
usage: when
```

Arguments

None

Example

```
SRX shelf 7> when
LUN/ELEMENT        COMPLETE(%)     I/O RATE(KBPS)    ESTIMATED TIME(h:m:s)

1                          89          183060.5                  7:31:15

2.0.0                   45.23           75298.6                  0:00:36

2.0.2                   10.93          77933.23                  0:00:57

SRX shelf 7>
```

Workflow Examples

Example: Creating JBOD LUNs

The following example configures all drives in an SRX appliance as JBODs.

Note: This example lists only eight drives. Your SRX appliance might have more drives.

```
SRX shelf 7> drives
DRIVE        SIZE      ROLE                      MODEL    FIRMWARE         MODE
7.0    2000.398GB               WDC WD2003FYYS-02W0B0   01.01D01   sata 3.0Gb/s
7.1    2000.398GB               WDC WD2003FYYS-02W0B0   01.01D01   sata 3.0Gb/s
7.2    2000.398GB               WDC WD2003FYYS-02W0B0   01.01D01   sata 3.0Gb/s
7.3    2000.398GB               WDC WD2003FYYS-02W0B0   01.01D01   sata 3.0Gb/s
7.4    2000.398GB               WDC WD2003FYYS-02W0B0   01.01D01   sata 3.0Gb/s
7.5    2000.398GB               WDC WD2003FYYS-02W0B0   01.01D01   sata 3.0Gb/s
7.6    2000.398GB               WDC WD2003FYYS-02W0B0   01.01D01   sata 3.0Gb/s
7.7    2000.398GB               WDC WD2003FYYS-02W0B0   01.01D01   sata 3.0Gb/s

SRX shelf 7> mkjbod 7.0-7
SRX shelf 7> online 0-7
SRX shelf 7> luns -a
LUN        LABEL    STATUS    TYPE    SIZE(GB)    ELEMENT    DRIVE      STATE
0                   online    jbod    2000.399                         normal
                                      2000.399      0.0.0      7.0      normal
1                   online    jbod    2000.399                         normal
                                      2000.399      1.0.0      7.1      normal
2                   online    jbod    2000.399                         normal
                                      2000.399      2.0.0      7.2      normal
3                   online    jbod    2000.399                         normal
                                      2000.399      3.0.0      7.3      normal
4                   online    jbod    2000.399                         normal
                                      2000.399      4.0.0      7.4      normal
5                   online    jbod    2000.399                         normal
                                      2000.399      5.0.0      7.5      normal
6                   online    jbod    2000.399                         normal
                                      2000.399      6.0.0      7.6      normal
7                   online    jbod    2000.399                         normal
                                      2000.399      7.0.0      7.7      normal

SRX shelf 7>
```

Example: Creating RAID LUNs

The following example configures the first eight drives in an SRX appliance as two RAID 5 LUNs, consisting of four drives each.

Note: This example lists only eight drives. Your SRX appliance might have more drives.

```
SRX shelf 7> drives
DRIVE        SIZE      ROLE                        MODEL    FIRMWARE          MODE
7.0     2000.398GB              WDC WD2003FYYS-02W0B0   01.01D01   sata 3.0Gb/s
7.1     2000.398GB              WDC WD2003FYYS-02W0B0   01.01D01   sata 3.0Gb/s
7.2     2000.398GB              WDC WD2003FYYS-02W0B0   01.01D01   sata 3.0Gb/s
7.3     2000.398GB              WDC WD2003FYYS-02W0B0   01.01D01   sata 3.0Gb/s
7.4     2000.398GB              WDC WD2003FYYS-02W0B0   01.01D01   sata 3.0Gb/s
7.5     2000.398GB              WDC WD2003FYYS-02W0B0   01.01D01   sata 3.0Gb/s
7.6     2000.398GB              WDC WD2003FYYS-02W0B0   01.01D01   sata 3.0Gb/s
7.7     2000.398GB              WDC WD2003FYYS-02W0B0   01.01D01   sata 3.0Gb/s

SRX shelf 7> mklun 0 raid5 7.0-3
SRX shelf 7> mklun 1 raid5 7.4-7
SRX shelf 7> online 0-1
SRX shelf 7> luns -a
LUN       LABEL   STATUS   TYPE   SIZE(GB)   ELEMENT   DRIVE      STATE
0                 online   raid5  2000.399                        normal
                                  2000.399    0.0.0     7.0       normal
                                  2000.399    0.0.1     7.1       normal
                                  2000.399    0.0.2     7.2       normal
                                  2000.399    0.0.3     7.3       normal
1                 online   raid5  2000.399                        normal
                                  2000.399    1.0.0     7.4       normal
                                  2000.399    1.0.1     7.5       normal
                                  2000.399    1.0.2     7.6       normal
                                  2000.399    1.0.3     7.7       normal

SRX shelf 7>
```

Installing the SRX in an Equipment Rack

There are a variety of rack units on the market, so the rack assembly procedure that came with your unit might differ slightly from the instructions in this section. If necessary, refer to both instructions.

⚠️ **CAUTION**

SRX appliances can weigh up to 100 pounds (45.4 kilograms). To avoid injury, always use two people to install an SRX appliance in a rack.

Rail assembly components

The shipping box includes left and right rail pairs. Each pair consists of an inner and an outer segment that you must separate prior to assembly.

• **Inner rails**: The inner rails attach to the left and right sides of the chassis and are secured on each side by a locking mechanism and a single screw. Left and right inner rails are identified by initials stamped into the metal (LH and RH, respectively).

• **Outer rails**: The toolless outer rails attach to the equipment rack without screws.

⚠️ **NOTICE**

Use the inner and outer rail sections that shipped with the SRX. Mixing rail sections from different sets can cause the SRX to be unstable in the rack.
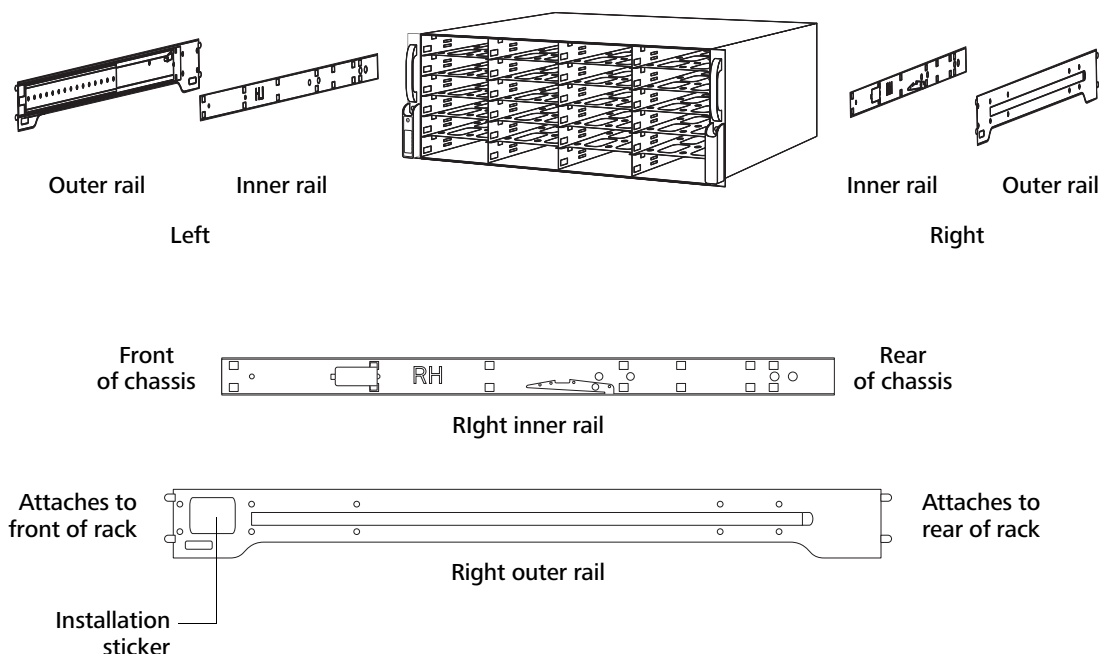
Figure 10: Rack rail components

Attaching the rails to the chassis and the rack

The following subsection describes how to attach the rails to the chassis and rack.

To attach the inner rails to the chassis

1 Separate the inner and outer rail segments.

Fully extend the rails, and then press down on the latch on the inner rail to separate the pair.
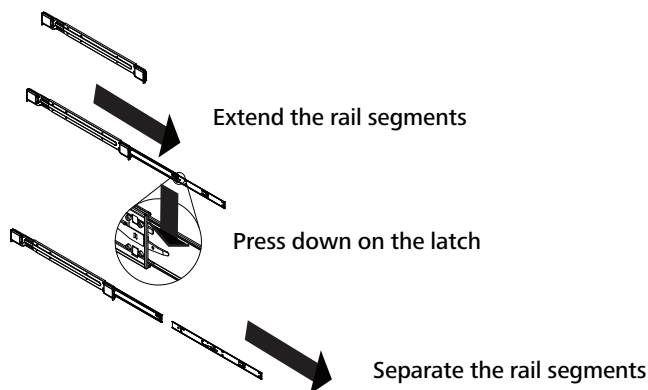

Extend the rail segments

Press down on the latch

Separate the rail segments

Figure 11: Separating the rail segments

2 Identify the left and right inner rails by locating the LH and RH stamped into the metal.

3 Align the hooks on one side of the chassis with the corresponding holes in the appropriate inner rail, place the rail against the chassis, and slide it toward the front of the chassis until it locks in place.

4 Secure the rail with the screw (included with your shipment).
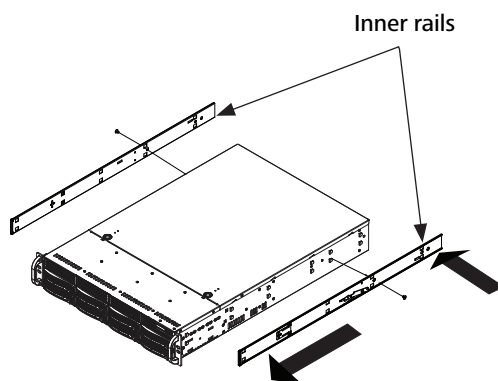
Inner rails

Figure 12: Attaching the inner rails

5 Repeat the previous steps to secure the other inner rail to the other side of the chassis.

Proceed to To attach the outer rails to the rack.

To attach the outer rails to the rack

1 Adjust the outer rail as necessary to fit the rack.

Press upward on the locking-tab to release the ball-bearing shuttle portion of the outer rail.

2 Determine exactly where in the rack you will install the ends of each outer rail.

The rails attach to the rack via spring-loaded pegs and metal hooks at both ends of the rail. (See the installation label on each outer rail.)

3 Insert the hooks and spring-loaded tabs on both ends of the outer rail into the target holes in the rack.

4 If necessary, secure the ends of the rails with screws.
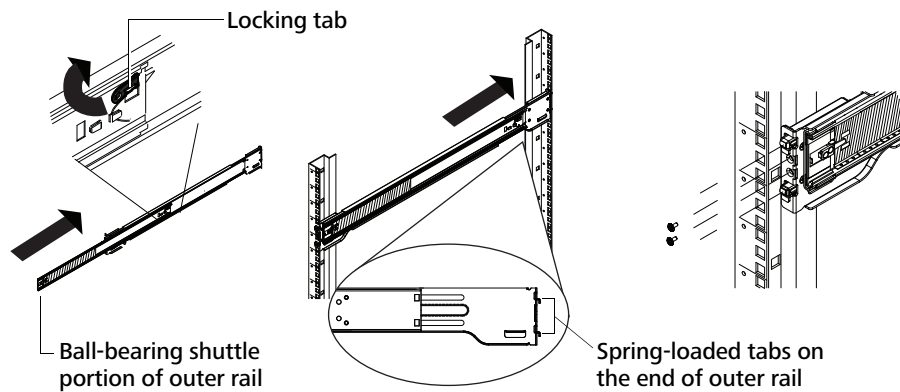
Figure 13: Attaching an outer rail to the rack
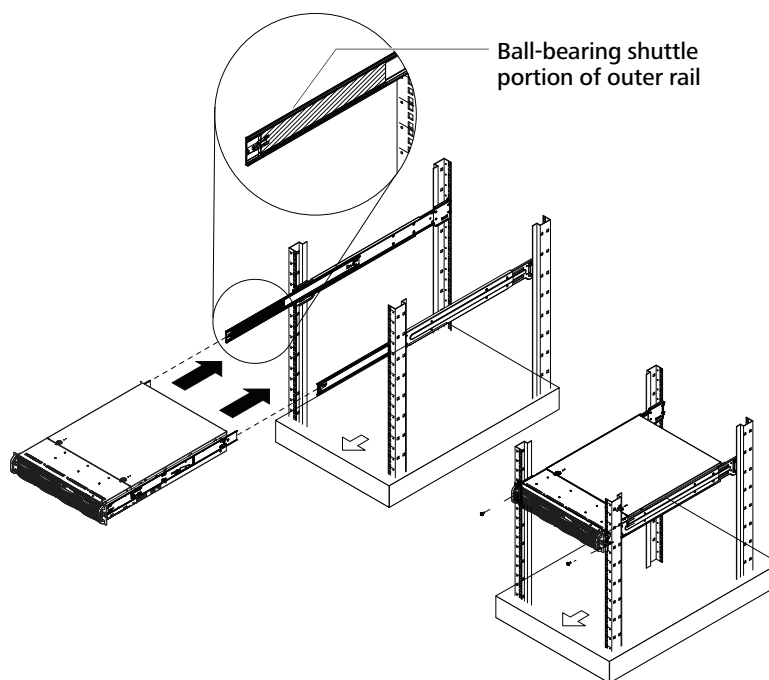
Installing the chassis in the rack

Figure 14: Sliding the chassis into the rack

To install the chassis into the rack

> ⚠️ **CAUTION**
>
> **With drives installed, an SRX appliance can weigh up to 100 pounds (45.4 kilograms). To avoid injury, always use two people to install an SRX appliance in a rack.**

1 Make sure that the inner rails are securely attached on the chassis and the outer rails are securely installed in the rack.

2 Extend the ball-bearing shuttle portions of both outer rails to their front locking positions.

3 Align the inner rails (on the chassis) with the outer rails (on the rack) and install the SRX in the rack.

   • Slide the inner rails into the outer rails, keeping even pressure on both sides.

   • When it becomes necessary to do so, press to unlock the locking-tabs on the outer rails and fully install the appliance into the rack.

4 Insert and tighten the screws that hold the front of the appliance to the rack.

Hardware Specifications and Precautions

Table 6: Physical and environmental specifications

Form Factor	SRX3500 and SRX6200: 2U
	SRX2800: 3U
	SRX3200, SRX4200 and SRX6300: 4U
Dimensions	SRX3500 and SRX6200: 3.5" high x 17.2" wide x 24.8" deep (89mm x 437mm x 630mm)
	SRX2800: 5.2" high x 17.2" wide x 25.5" deep (132mm x 437mm x 648mm)
	SRX3200: 7" high x 17.2" wide x 26" deep (178mm x 437mm x 660mm)
	SRX4200 and SRX6300: 7" high x 17.2" wide x 27.5" deep (178mm x 437mm x 699mm)
Weight (populated)	SRX3500 and SRX6200: 53 pounds (24 kg)
	SRX2800: 72 pounds (32.7kg)
	SRX3200: 75 pounds (34.7kg)
	SRX4200 and SRX6300: 80 pounds (36.3 kg)
Operating Environment	Operating Temperature Range: 50-95°F(10-35°C) Non-Operating Temperature Range: -40 to 140°F (-40 to +60°C) Operating Relative Humidity Range: 8-90% non-condensing Non-Operating Relative Humidity Range: 5-95% non-condensing
Fans	SRX3500 and SRX6200: 3x 80mm 6300 RPM PWM fans
	SRX2800: 3x 80mm Hot-swap PWM fans; 2x 80mm rear-exhaust fans
	SRX3200: 3x 5000 RPM Hot-swap PWM cooling fans; 2x 5000 RPM Hot-swap Rear Exhaust PWM cooling fans
	SRX4200 and SRX6300: 7x 80mm Hot-swap cooling fans
Regulatory (Power Supply)	USA: UL listed, FCC Canada: CUL listed Germany: TUV Certified EN 60950/IEC 60950-Compliant CB report
Power	**SRX2800** 800W (1+1) Redundant AC-DC high-efficiency power supply with PFC AC Voltage 100-240V, 50-60 Hz, 10- 4 Amp DC Output +12V 66 Amp, +5V standby 4 Amp With Power Distributor: +5V 30 Amp, +3.3V 24 Amp, -12V 0.6 Amp
	SRX3200, SRX3500 and SRX6200 900W (1+1) Redundant AC-DC power supply with PFC AC Voltage 100-240V, 60-50 Hz, 11 - 4.5 Amp DC Output +12V 75 Amp, +5V standby 4 Amp With Power Distributor: +5V 45 Amp, +3.3V 24 Amp, -12V 0.6 Amp

Table 6: Physical and environmental specifications (Continued)

	SRX4200 and SRX6300 1400W (1+1) high-efficiency power supply with PMBus. AC input: 1100W: 100-140V, 50-60 Hz, 9.5 - 13.5 Amp 1400W: 180-240V, 50-60 Hz, 7.0 - 9.5 Amp DC Output (1100W): +12V/92A; +5Vsb/4A DC Output (1400W): +12V/116A; +5Vsb/4A With Power Distributor: +5V 30 Amp, +3.3V 24 Amp, -12V 0.6 Amp
Front panel buttons	Buttons: Power On/Off, System Reset LEDs: Power supply failure, system overheat, 2x network activity, hard drive activity, power supply
Back panel ports	SRX2800, SRX3200, SRX3500, and SRX4200 provide the following ports: PS/2 (keyboard) Two USB (keyboard) One RS-232 Serial (console) One VGA (monitor) Two 1GbE RJ45 ports on the motherboard (ether0 and ether1) SRX2800, SRX3200, SRX3500, and SRX4200 are available with the following interface configurations: Two 10GbE CX4 ports Four 1GbE RJ45 ports via NIC(s) plus two onboard 1GbE RJ45 ports (ether0 and ether1) Two 10GbE RJ45 ports Two 10GbE SFP+ ports Four 10GbE SFP+ ports SRX6200 and SRX6300 provide the following ports: Four USB (keyboard) One RS-232 Serial (console) One VGA (monitor) Two 1GbE RJ45 ports on the motherboard (ether0 and ether1). SRX6200 and SRX6300 are available with the following interface configurations: Two 10GbE RJ45 ports Four 10GbE RJ45 ports Two 10GbE SFP+ ports Four 10GbE SFP+ ports

Precautions

Inspect the box

You should inspect the box the chassis was shipped in and note if it was damaged in any way. If the chassis itself shows damage, file a damage claim with the carrier who delivered your system.

Decide on a suitable location for the rack unit that will hold that chassis. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise, and electromagnetic fields are generated.

You will also need it placed near at least one grounded power outlet. The SRX chassis includes two power supplies.

Electrical precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SRX from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch, or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.

- Do not work alone when working with high-voltage components.

- Power should always be disconnected from the system when removing or installing main system components. When disconnecting power, you should first power down the system with the operating system and then unplug the power cords from all the power supply modules in the system.

- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power, if necessary.

- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.

- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

Power supply precautions

Remember the following best practices and precautions when installing or hot swapping power supplies. Failure to follow best practices might result in software errors or harm to yourself or the SRX. Refer to the power supply manufacturer's documentation for additional detail.

- When removing a power supply, remove the power supply's power cord and wait at least ten seconds before removing the power supply from the chassis.

- When installing a power supply, install the power supply into the chassis before connecting the power supply power cord.

- The power supply power cord must include a grounding plug and must be plugged into grounded electrical outlets.

General safety precautions

• Keep the area around the chassis clean and free of clutter.

⚠️ **CAUTION**

When loaded with hard disk drives, the SRX appliance can weigh up to 100 pounds (45.4 kilograms). To avoid injury, always use two people to lift the appliance.

• Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.

• While working on the system, do not wear loose clothing such as neckties or unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.

• Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

• After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

Contacting Coraid Technical Support

Technical support

Do you have more questions? See the Coraid Support web site:

http://www.coraid.com/support/

Contact the Coraid Technical Assistance Center at:

support@coraid.com

To help the Technical Assistance Center diagnose your problem, send diagnostic output along with a description of your problem. To obtain diagnostic output, issue any available `sos` commands.

Additional Safety Information

Warning: Read the installation instructions before connecting the system to the power source.

Attention: Avant de brancher le système sur la source d'alimentation, consulter les directives d'installation.

Warnung: Vor dem Anschließen des Systems an die Stromquelle die Installationsanweisungen lesen.

Lithium battery notice for service personnel

This product contains a lithium battery. Although the battery is not field-serviceable, observe the following warning:

⚠️ **CAUTION**

Danger of explosion if battery is replaced with incorrect type. Replace only with the same type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Attention: Il y a danger d'explosion s'il a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un type equivalent recommande par le constructeur. Mettre au rebut les batteries usagees conformement aux instructions du fabricant.

Warnung: Bei Einsetzen einer falschen Batterie besteht Explosionsgefahr. Ersetzen Sie die Batterie nur durch den gleichen oder vom Hersteller empfohlenen Batterietyp. Entsorgen Sie die benutzten Batterien nach den Anweisungen des Herstellers.

Dual power supply notice

⚠️ **CAUTION**

This unit has more than one power supply connection; all connections must be removed to remove all power from the unit.

Warnung: Diese Einheit verfügt über mehr als einen Stromanschluß; um Strom gänzlich von der Einheit fernzuhalten, müssen alle Stromzufuhren abgetrennt sein.

Attention: Cette unité est équipée de plusieurs raccordements d'alimentation. Pour supprimer tout courant électrique de l'unité, tous les cordons d'alimentation doivent être débranchés.

⚠️ **CAUTION**

This product relies on the building's installation for shortcircuit (over current) protection. Ensure that a fuse or circuit breaker no larger than 120 VAC, 15 A U.S. (240 VAC, 10 A international) is used on the phase conductors (all current carrying conductors).

Attention: Pour ce qui est de la protection contre les courts-circuits (surtension), ce produit dépend de l'installation électrique du local. Vérifier qu'un fusible ou qu'un disjoncteur de 120 V alt., 15 A U.S. maximum (240 V alt., 10 A international) est utilisé sur les conducteurs de phase (conducteurs de charge).

Warnung: Dieses Produkt ist darauf angewiesen, daß im Gebäude ein Kurzschluß- bzw. Überstromschutz installiert ist. Stellen Sie sicher, daß eine Sicherung oder ein Unterbrecher von nicht mehr als 240 V Wechselstrom, 10 A (bzw. in den USA 120 V Wechselstrom, 15 A) an den Phasenleitern (allen stromführenden Leitern) verwendet wird.

Laser warning

⚠️ **CAUTION**

Class 1 Laser product.

Attention: Produit laser de classe 1

Warnung: Laserprodukt der Klasse 1

EtherDrive equipment is intended for installation in restricted access areas.

Mounting the unit

⚠️ **CAUTION**

To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. These guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

Attention: Pour éviter toute blessure corporelle pendant les opérations de montage ou de réparation de cette unité en casier, il convient de prendre des précautions spéciales afin de maintenir la stabilité du système. Les directives ci-dessous sont destinées à assurer la protection du personnel.

- Si cette unité constitue la seule unité montée en casier, elle doit être placée dans le bas.
- Si cette unité est montée dans un casier partiellement rempli, charger le casier de bas en haut en plaçant l'élément le plus lourd dans le bas.
- Si le casier est équipé de dispositifs stabilisateurs, installer les stabilisateurs avant de monter ou de réparer l'unité en casier.

Warnung: Zur Vermeidung von Körperverletzung beim Anbringen oder Warten dieser Einheit in einem

Gestell müssen Sie besondere Vorkehrungen treffen, um sicherzustellen, daß das System stabil bleibt. Die folgenden Richtlinien sollen zur Gewährleistung Ihrer Sicherheit dienen:

- Wenn diese Einheit die einzige im Gestell ist, sollte sie unten im Gestell angebracht werden.

- Bei Anbringung dieser Einheit in einem zum Teil gefüllten Gestell ist das Gestell von unten nach oben zu laden, wobei das schwerste Bauteil unten im Gestell anzubringen ist.

- Wird das Gestell mit Stabilisierungszubehör geliefert, sind zuerst die Stabilisatoren zu installieren, bevor Sie die Einheit im Gestell anbringen oder sie warten.

Regulatory compliance

United States FCC statement

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.

Canada compliance statement (Industry Canada)

This Class [A] digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe [A] respecte toutes les exigences du Réglement sur le matériel brouilleur du Canada.

European Union (CE) Statement

This product is in conformity with the essential requirements of the following EU directives:

- 2004/108/EC—Electromagnetic Compatibility Directive (EMC)
- 2006/95/EC—Low Voltage Directive (LVD)

Safety standards

This product is compliant with the following safety standards:

- UL 60950-1
- CAN/CSA-C22.2 No. 60950-1
- IEC/EN 60950-1

EMC standards

This product is compliant with the following Electromagnetic Compatibility (EMC) standards:

- FCC Part 15 (CFR 47) Class A
- ICES-003 Class A
- AS/NZS CISPR 22 Class A
- VCCI Class A
- EN 55022 Class A
- EN 55024
- EN 61000-3-2
- EN 61000-3-3

Compliance marks

- cULus
- CE
- FCC
- C-Tick
- VCCI-A

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