



# Dominion SX II Administrators Guide

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# What's New in Dominion SX II v2.5.0

The following sections have changed or information has been added to the SX II User Guide based on enhancements and changes to the equipment and/or user documentation.

- TLS 1.3 support: [TLS Ciphers for Web Access](#) (on page 137)
- Advanced Routing: [Advanced Routing](#) (on page 89)
- NTP Security: [Configure Date and Time Settings from the Remote Console](#) (on page 94)

Please see the Release Notes for a more detailed explanation of the changes applied to this version of the SX II.

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### **FCC Information**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation. This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential environment may cause harmful interference.

### **VCCI Information (Japan)**

この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。 VCCI-A

Raritan is not responsible for damage to this product resulting from accident, disaster, misuse, abuse, non-Raritan modification of the product, or other events outside of Raritan's reasonable control or not arising under normal operating conditions.

If a power cable is included with this product, it must be used exclusively for this product.



To avoid potentially fatal shock hazard and possible damage to Raritan equipment:

- Do not use a 2-wire power cord in any product configuration.
- Test AC outlets at your computer and monitor for proper polarity and grounding.
- Use only with grounded outlets at both the computer and monitor.
- When using a backup UPS, power the computer, monitor and appliance off the supply.

## CS03 Certification - DSX2-16 and DSX2-48

NOTICE: This equipment meets the applicable Industry Canada Terminal Equipment Technical Specifications. This is confirmed by the registration number. The abbreviation IC, before the registration number, signifies that registration was performed based on a Declaration of Conformity, indicating that Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment.

NOTICE: The Ringer Equivalence Number (REN) for this terminal equipment is 01. The REN assigned to each terminal equipment provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed five.

AVIS : Le présent matériel est conforme aux spécifications techniques d'Industrie Canada applicables au matériel terminal. Cette conformité est confirmée par le numéro d'enregistrement. Le sigle IC, placé devant le numéro d'enregistrement, signifie que l'enregistrement s'est effectué conformément à une déclaration de conformité et indique que les spécifications techniques d'Industrie Canada ont été respectées. Il n'implique pas qu'Industrie Canada a approuvé le matériel.

AVIS : L'indice d'équivalence de la sonnerie (IES) du présent matériel est de 01. L'IES assigné à chaque dispositif terminal indique le nombre maximal de terminaux qui peuvent être raccordés à une interface téléphonique. La terminaison d'une interface peut consister en une combinaison quelconque de dispositifs, à la seule condition que la somme d'indices d'équivalence de la sonnerie de tous les dispositifs n'excède pas 5.

# Features and Benefits



## Next-Generation Console Server

### Raritan's Next-Generation Serial Console Server

The Dominion SX II is Raritan's next-generation Serial Console Server (also known as Terminal Server) that provides IT and network administrators secure IP access and control of serial devices, anytime, anywhere. The new SX II is the most powerful, secure, reliable, easy-to-use and manageable serial-over-IP console server on the market. SX II provides convenient and productive access to networking devices, servers, PDUs, telecommunications and other serial devices.

### Ten Years of Serial Console Experience

For over ten years, thousands of customers have relied on the first generation Dominion SX for access and control of hundreds of thousands of serial devices, representing over 500 million hours of total operation. The SX II builds upon that experience with a wide range of advancements and innovations.

### Dominion Platform, User Interface and Management

Starting with a powerful, Dominion hardware platform providing performance, reliability and security, the SX II includes virtually all the Serial-over-IP features of its predecessor, Dominion compatible user interfaces and management features, plus exciting new capabilities.

### Full CLI-based Configuration and Auto-Configuration

The SX II offers complete CLI access and management via SSH, Telnet and web-based user interface, with convenient direct port access. Two script-based automatic configuration methods are available for a fast installation and for subsequent configuration changes.

### Exciting New Features and Innovations

The SX II new features include: military grade security features with 256-bit AES encryption and FIPS encryption mode, automatic DTE/DCE serial port detection, innovative at-the-rack access options, wireless modem support, IPv6 networking, script based auto-configuration and Dominion compatible user interfaces and management.

### CommandCenter Management & Scalability

With Raritan's CommandCenter, organizations can manage hundreds or even thousands of serial devices, spread across multiple locations, including branch offices.

## Powerful Hardware Platform

### Powerful New Hardware Platform

Powerful new hardware platform with 1GHz CPU engine, with an 8-fold increase in RAM. Increased flash memory, up to 8 GB, for storage and logging. Front panel LED's show port connection status.

### Wide Variety of 1U Models

Rackable, 1U models available in 4, 8, 16, 32 and 48 ports. All have dual power supplies and dual Gigabit Ethernet LAN ports. Models are available with an optional built-in modem. At-the-rack access includes RJ-45/serial, USB and KVM console.

<b>Powerful Serial Processing Engine</b>	The Dominion SX II with its powerful hardware platform provides high-powered serial processing for the most extreme use cases. Up to 10 users can simultaneously connect to a serial device connected to a SX II port. Up to 200 simultaneous user sessions are supported by a given SX II console server. Port configuration time is up to 23 times faster than the original SX. Connection times are over 50 times faster.
<b>Dual AC Power Supplies</b>	All models have dual, 100-240 volt AC, auto-switching power supplies with automatic failover for increased reliability.
<b>Dual DC Powered Models</b>	Dual power and dual LAN, 8, 32 and 48 port DC powered models are available. These models provide the same features, serial access and performance as the AC powered models.
<b>Dual Gigabit Ethernet LAN on all Models</b>	Dual gigabit Ethernet LAN ports, which can be configured for simultaneous operation or automatic failover. Dual stack IPv4 and IPv6 networking.
<b>Five USB Ports</b>	The Dominion SX II has four USB 2.0 ports, three on the back panel and one on the front panel. These are available for local keyboard/mouse, 3G/4G cellular modem and for automatic configuration via USB drive. A USB 2.0 mini-B port is available for local laptop connection.
<b>Optional Telephone Modem</b>	All models have the option for an internal, 56K telephone modem with RJ11 connection for emergency access and disaster recovery.
<b>Innovative Local Console</b>	The Dominion SX II's local console provides multiple ways for at-the-rack access. The console includes a traditional RJ45 serial port, USB mini-B port, and even a DVI/USB KVM console.

## Productive Serial-over-IP Access

<b>Widest Variety of Serial-over-IP Access</b>	The Dominion SX II supports the widest variety of serial-over-IP connections via SSH/Telnet Clients, web-browser, CommandCenter, telephony modem, cellular modem and at-the-rack access. This includes CLI, GUI and multiple Direct Port Access methods.
<b>SSH/Telnet Client Access</b>	SSH/Telnet client access from a desktop, laptop, or handheld device. Direct Port Access via SSH Client using a username/port string syntax. Customer can upload, view and delete SSH keys for greater security.
<b>Web Browser Access</b>	Web browser access via Dominion SX II or CommandCenter user interfaces.
<b>Convenient Direct Port Access</b>	Convenient Direct Port Access methods via SSH, Telnet & HTTP. IP address and TCP port-based access for Telnet and SSHv2 clients. Independent IP addresses or TCP port numbers can be assigned to access each SX II port. HTTPS-based direct access via URL. Com Port Redirection can be supported for third-party software redirectors.
<b>Cellular and Telephone Modem Access</b>	Optional external Cellular (3G/4G) modem and internal Telephone modem access for emergency access, business continuity and disaster recovery.
<b>Innovative At-the-Rack Access</b>	With the Dominion SX II, you get multiple types of local access at-the-rack. This includes: (1) Traditional RJ45 serial port, (2) Mini-USB port for laptop connection, and (3) DVI & USB-based KVM console for connection to a rackmount keyboard tray or even a KVM switch.
<b>Port Keyword Monitoring and Alerting</b>	Users can define up to 14 keywords per port. The SX II will scan the data coming from the port, and if one of the keywords is detected, it will send an alert via SNMP or e-mail. Serial devices are monitored, even when no user is connected! This results in faster notification that reduces Mean Time to Repair (MTTR).

<b>Port Logging to Syslog, NFS and Local File</b>	Port activity to and from serial devices can be logged to a Syslog server, Network File System (NFS) server or locally to the SX II device with up to 8 Gb of storage.
<b>NFS Logging Features</b>	Allows logging of all user keystrokes and server/device responses to NFS server(s). Can even be stored on the NFS server with user-defined encryption keys for greater security. Keep-alive messages in the NFS log allow easy monitoring if the managed server/device goes down.
<b>SecureChat Instant Messaging</b>	Allows for secure, instant messaging among SX II users. Enables collaboration of distributed users to increase their productivity, troubleshoot, reduce the time to resolve problems and for training purposes.
<b>Automatic Serial Device Logoff</b>	Once a user is timed out for inactivity, a user defined "logoff" command can be sent to the target. Improved security of user sessions results as serial sessions are automatically closed upon time out and not left open for possible un-authorized access.

## Comprehensive Serial Device Access

<b>Over Ten Years of Serial Device Management</b>	The first generation Dominion SX has been serving customers for over ten years, with over 500,000 ports sold. This represents hundreds of millions of hours of operation across a wide variety of serial devices.
<b>Automatic DTE/DCE Serial Port Detection</b>	This feature allows for a straight Cat5 connections to Cisco equipment (and other compatible devices), without rollover cables. It also means that a SX II can replace the first generation SX with its existing serial device connections.
<b>Support for the Widest Variety of Serial Devices</b>	Supports the widest variety of serial equipment including: networking routers, Ethernet switches, firewalls, UNIX/LINUX servers, Windows Servers, virtual hosts, rack PDU's, UPS systems, telecom/wireless gear. Supports multiple operating systems including SUN® Solaris, HP-UX, AIX, Linux®, Windows® Server 2012, and UNIX®.
<b>Up to 230,400 Baud Serial Connections</b>	Supports operating speeds of 1,200 to 230,400 bits-per-second for serial connections.
<b>Flexible Serial Port Options</b>	Flexible per-port serial options, including BPS, emulation, encoding, parity, flow control, stop bits, character and line delays, always-active connections and more. Can define an exit command when the user times out, as well as enable an in-line menu for port commands and power control.
<b>VT100/220/320/ANSI support</b>	Increased choice of terminal emulation options, allows support of a broader range of devices. SX II supports the following code-sets: US-ASCII (ISO 646); ISO 8859-1 (Latin-1); ISO 8859-15 (Latin-9); UTF-8 and others.
<b>Remote Power Control of Raritan PDU's (With Power Control Menu)</b>	Raritan rack PDU's (PX, PX2, PX3, RPC) can be connected to the Dominion SX II for remote power control of the equipment connected to the PDU. Remote power control can be done via the SX II GUI, SSH/Telnet Client or CommandCenter. Outlet associations can be created for serial devices with multiple power supplies, such that these outlets can be controlled with a single power command. The SX II has "Control P" style menu commands for power control available during a serial session.

## Security - Encryption

<b>Strong 256 Bit AES Encryption</b>	The SX II utilizes the Advanced Encryption Standard (AES) encryption for added security. 128- and 256-bit AES encryption is available. AES is a U.S. government-approved cryptographic algorithm that is recommended by the National Institute of Standards and Technology (NIST) in the FIPS Standard 197.
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**Validated FIPS 140-2 Cryptographic Module** For government, military and other high security applications, the Dominion SX II utilizes a validated FIPS 140-2 Cryptographic Module for enhanced encryption. Modules tested and validated as conforming to FIPS 140-2 are accepted by federal agencies of the U.S. and Canada for the protection of sensitive information.

**Enhanced Encryption Options** Support more encryption options: web-browser security through 256 and 128-bit SSL encryption; for SSHv2 connections, AES and 3DES are supported (client-dependent).

## Security - Authentication

**External authentication with LDAP, Radius, TACACS & Active Directory** Dominion SX II integrates with industry-standard directory servers, such as Microsoft Active Directory, using the LDAP, RADIUS and TACACS protocols. This allows Dominion SX II to use pre-existing username/password databases for security and convenience. SecureID is supported via RADIUS for added security.

**Upload Customer-Provided SSL Certificates** Customers can upload to the Dominion SX II digital certificates (self-signed or certificate authority provided) for enhanced authentication and secure communication.

**Configurable Strong Password Checking** The Dominion SX II has administrator-configurable, strong password checking to ensure that user-created passwords meet corporate and/or government standards and are resistant to brute force hacking.

**Configurable Security Banner** For government, military and other security-conscious customers requiring a security message before user login, the SX II can display a user-configurable banner message and require acceptance before user login.

**SSH Client Certificate Authentication** In addition to authentication via login/password, on the SSH interface users can be authenticated via SSH certificates. Each local user can be assigned up to 500 SSH keys. The key authentication takes the place of the login/password

**Local Authentication with Users, Groups and Permissions** In addition to external authentication, the Dominion SX II supports local authentication. Administrators can define users and groups with customizable administration and port access permissions.

**Login and Password Security** The SX II includes multiple login and password security features including password aging, idle timeout, user blocking and login limitations. Failed login attempts can be result in lockouts and user deactivation.

**SHA-2 Certificate Support** Support for the more secure SHA-2 certificates.

## Security - Networking

**Dual Stack IP Networking – IPv4 and IPv6** The Dominion SX II provides dual-stack IP networking with simultaneous support of IPv4 and IPv6.

**IPTables Firewall support** Fully configurable "iptables" firewall support. User selectable and customizable system security levels catering to wide range of security needs.

**Selective Static Routing Support** Supports connections between modem and LAN 1, modem and LAN 2 or LAN 1 and LAN 2. This allows users to utilize two different networks (Public and Private) and modem access to KVM or Ethernet controlled devices. When used with the firewall function, secure access can be enabled.

<b>TCP/IP Port Management</b>	Can disable TELNET and SSH access if desired. Ability to change these ports in addition to HTTP, HTTPS and discovery ports
<b>Prevent Man In The Middle Attacks</b>	Enhanced security of communication channels by using client and server SSL certificates.
<b>Modem Dial-Back Security</b>	For enhanced security, Dominion SX supports modem dial-back.
<b>Rejects SSHv1 Requests</b>	Due to the many known security vulnerabilities of the SSHv1 protocol, the Dominion SX will automatically reject SSHv1 connections.

## End User Experience

<b>Multiple User Interfaces</b>	The SX II supports multiple user interfaces giving the user the freedom to use the interface best suited for the job at hand. This includes remote access via Raritan or third party serial client via CLI, Raritan graphical user interface (GUI), Admin-only GUI, at-the-rack access or via CommandCenter. Convenient direct port access methods available.
<b>Full Modern CLI – GUI Equivalence</b>	Full CLI management and configuration, thereby allowing scripting of any command.
<b>Broad Range of Supported Browsers</b>	Offers broad range of browsers: Firefox, Safari, Internet Explorer, Chrome, Edge.
<b>International Language Support</b>	The web-based user interface supports English, Japanese and Chinese languages. The Raritan Serial Console can support four languages: English, Japanese, Korean and Chinese
<b>PC Share Mode</b>	Up to ten users can connect and remotely access each connected serial device up to a maximum of 200 serial sessions. Sharing feature is very useful for collaboration, troubleshooting and training.

## Easy to Install and Manage

<b>Full CLI-based Configuration and Management</b>	The SX II offers complete CLI administration and management via SSH, Telnet and web-based user interface. Two script-based automatic configuration methods are available for a fast installation and for subsequent configuration changes.
<b>Automatic Configuration via USB Drive</b>	The SX II can be optionally configured via a CLI script on a USB drive connected to one of its USB ports. This can be used for initial configuration or subsequent updates.
<b>Automatic Configuration via TFTP Server</b>	The SX II can be optionally configured via a second method, i.e. via a CLI script contained in a TFTP server. This can be used for initial configuration or subsequent updates. The TFTP server address can be retrieved via DHCP or set by the administrator.
<b>Dominion-Compatible Management</b>	Dominion-compatible management features are available via a web-based user interface or CLI. This includes Dominion-style User Management, Device Settings, Security, Maintenance, Diagnostic and Help features. Firmware update via web browser without the use of an FTP server.
<b>Easy to Install</b>	Installation in minutes, with just a web browser, CLI or automatic configuration. Some competitive products require burdensome editing of multiple files to complete a basic installation.

**Configurable Event Management and Logging**

The SX II generates a large variety of device and user events including: device operation, device management changes, security, user activity and user administration. These can be selectively delivered to: SNMP, Syslog, email (SMTP) as well as stored on the SX II in the audit log. Support for SNMP v2 and v3,

**Raritan CommandCenter® Management and Scalability**

**Raritan’s CommandCenter Centralized Management**

Like the rest of the Dominion series, Dominion SX II features complete CommandCenter Secure Gateway integration, allowing users to consolidate all Dominion SX II and other Raritan devices into a single logical system, accessible from a single IP address, and under a single remote management interface.

**Manage Hundreds of Serial Devices**

When deployed with CommandCenter Secure Gateway, hundreds of Dominion SX II devices (and thousands of serial devices) can be centrally accessed and managed.

**Single IP Address for Administration and Device Connection**

Administrators and users can connect to a single IP address via CommandCenter Secure Gateway to manage the SX II or access the attached serial devices. This connection can be via web browser or through SSH. Option for SX II at-the-rack access while under CC-SG management.

**Bulk Firmware Upgrades**

Administrators can schedule firmware upgrades (and other operations) for multiple SX II devices from CommandCenter.

**Remote Power Control via CommandCenter Secure Gateway**

CommandCenter supports remote power control of Raritan PX rack PDU’s connected to serial ports on the Dominion SX II. For equipment with multiple power feeds, multiple power outlets can be associated together to switch equipment on or off with a single click of the mouse.

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**Package Contents**

Each SX II ships as a fully-configured stand-alone product in a standard 1U 19" rackmount chassis.

The SX II package includes -

- 1 - SX II appliance
- 1 - Rackmount kit
- 2 - AC power cords
- 1 - Set of 4 rubber feet (for desktop use)
- 1 - Warranty card
- 1 - SX II Quick Setup Guide

## SX II Models

The following SX II models are available.

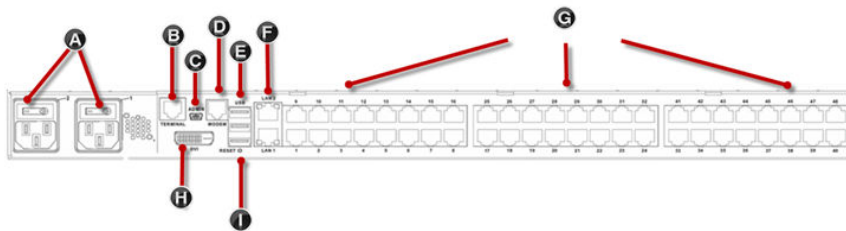
Models with an M include an internal modem in addition to the standard features that are provided on all SX II models. For a list of standard features, see [Features and Benefits](#) (on page 9).

- DSX2-4 and DSX2-4M - 4-port serial console server
- DSX2-8 and DSX2-8M - 8-port serial console server
- DSX2-16 and DSX2-16M - 16-port serial console server
- DSX2-32 and DSX2-32M - 32-port serial console server
- DSX2-48 and DSX2-48M - 48-port serial console server

Model size, weight, temperature and other specifications are found in [SX II Dimensions and Physical Specifications](#) (on page 200).

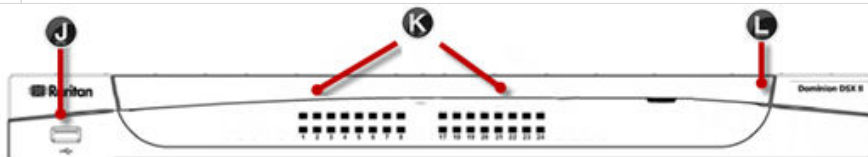
## SX II Appliance Diagram

Note the image shown here is an example, so it may be different from your model.



### Appliance diagram key

A	AC power outlet(s) 1 and 2 with independent power on/off switches
B	Terminal port/console port
C	Admin Mini-USB port
D	Modem port (based on model)
E	3 USB ports
F	LAN1 and LAN2 ports
G	Server ports
H	DVI-D port
I	Reset button



Appliance diagram key	
J	USB port
K	LED port indicators
L	Power status (Note SX II 48 port models have their power status located above the front-panel USB port.)

## Supported Serial Devices

- Routers
- LAN switches
- Rack PDUs
- Wireless modems
- Telecom modems
- Windows servers
- UNIX servers
- Linux servers
- Virtual hosts
- Firewalls

## SX II Access Clients

### HTML Serial Client (HSC)

HSC is the default client and will launch when you connect to a serial device. The HSC is an HTML-based, Java-free Serial Client.

See [HTML Serial Console \(HSC\) Help](#) (on page 41)

### Direct Port Access

Direct Port Access allows users to bypass having to use the SX II's Login dialog and Port Access page.

This feature also provides the ability to enter a username and password directly to proceed to the target, if the username and password is not contained in the URL.

### Command Line Interface (CLI)

Connect using CLI via SSH or Telnet.

See Command Line Interface Help for SX II

### Admin-Only Interface

Access the Admin Client at: `https://<SX2 IP/Hostname>/admin`.

The Admin Client does not allow target access. Use the Admin Client to perform administrator functions without using Java.

All admin functions available in the Remote Console are available in the Admin-Only Interface.

## iOS Support

SX II supports iOS SSH apps, both with and without VPN, to allow users access via iOS mobile devices.

See [Access SX II Using an iOS Device](#) (on page 29)

# Configure SX II for the First Time

SX II can be configured from the Remote Console or command line interface (CLI).

## In This Chapter

Default Login Information. . . . .	18
Initial SX II Configuration from the Remote Console. . . . .	18
Initial SX II Configuration Using Command Line Interface (Optional). . . . .	19

### Default Login Information

SX II appliances are shipped with the following defaults. Use the defaults when you initially access SX II.

- IP address - 192.168.0.192
- IP netmask - 255.255.255.0
- Username - admin (all lowercase)
- Password - raritan (all lowercase)

---

**Important: For backup and business continuity purposes, it is strongly recommended you create a backup administrator username and password. Keep the information in a secure location.**

---

### Initial SX II Configuration from the Remote Console

1. After you have installed the SX II at the rack, connect the power cord(s) between the power connector on the SX II and an external, AC or DC power source (depending on your model).
2. You can connect the second power connector to a backup power source.

Use the power cords that came with SX II.



3. Connect an external modem to a USB port on the SX2 (optional). See [Connect and Enable Global Access to an External USB-Connected Broadband Modem](#) (on page 108) Online Help
4. Connect your target devices or other serially managed devices to the server ports on the SX II.



Use a standard Cat5 cable to connect your target device to an available port on the back of SX II.

---

*Note: Check the pin definition of the RJ45 port on the target. It should match the pin definition on SX II.*

---

Or

If needed, connect a Raritan Nulling Serial Adapter to the serial port on your target, then plug a standard Cat5 cable into the adapter. Connect the other end of the cable to an available port on the back of SX II.

5. Flip the power switch(s) to turn SX II on.



Next, connect SX II to your network and configure your network settings for the first time.

See [Initial SX II Configuration Using Command Line Interface \(Optional\)](#) (on page 19) or Configure SX II Network Settings from the Remote Console.

## Connect a Laptop to SX II Using a Cross-Over Cable (Optional)

The first time you configure SX II, if you are connecting from the LAN port on laptop to the LAN1 port on SX II using a crossover cable, do the following -




1. Use cross-over cable to connect between SX II LAN1 and the laptop LAN port.
2. Set the Static IP of the LAN port that is connected to SX II to 192.168.0.191 and Network Mask to 255.255.255.0.
3. Launch your browser and access SX II via 192.168.0.192.

### Initial SX II Configuration Using Command Line Interface (Optional)

Ensure that the port settings (serial communication parameters) are configured as follows:

- Bits per Second (BPS) = 115200
- Data bits = 8
- Parity = None
- Stop bits =1
- Flow Control = None

#### ► To configure SX II for the first time using CLI:

1. Connect to SX II using any one of the following -
    - Connect a computer to the Terminal port for serial console access.  

    - Connect a keyboard tray or KVM console to the DVI-D and USB ports.  

    - Connect a laptop to the MiniUSB Admin port.  

  2. The emulator interface opens once you are connected to SX II. Press the Enter key on your keyboard.
  3. When the Login prompt appears, enter the default username `admin` and password `raritan`. Use all lowercase letters.
  4. You are prompted to change the default password. When creating a password via CLI, it cannot begin with a space or end with a space. This does not apply to creating passwords in using the Remote Console.
- By default, the network is configured for a static IP address.
5. At the `admin >` prompt, enter `config` and at the next prompt enter `network`.

6. At the `admin > config > network >` prompt, enter `interface if lan1 ipauto none ip <ip address> mask <mask> gw <gateway ip address>`

To use DHCP, enter `interface if lan1 ipauto dhcp`

7. Give the device a name to help identify it.

Enter `"name devicename <DSX2 name>"`.

Up to 32 characters are supported for the name. Spaces and special characters not supported.

8. At the `admin > config > network` prompt, enter `quit` to get into upper menu `admin > config`, then enter `time`.

9. At the `admin > config > time >` prompt, set the date and time on the SX II.

- Enter `timezonelist` and find the number code that corresponds to your time zone.
- Enter `clock tz <timezone code> date <date string> time <time string>` where `<timezone code>` is the time zone code, `<time string>` is the current time in "HH:MM:SS" format and `<date string>` is the current date in "YYYY-MM-DD" format (quotes included, uses 24-hour time).

Example: `clock tz 9 date "2015-08-15" time "09:22:33"`

10. Enter `top` to return to the top level prompt.

11. Next, enter `config` and then enter `ports` at the next prompt.

You can now configure each server port that has a target device connected to it.

12. Enter `config port` then hit `?` to see the port parameters.

For example:

```
config port 1 name cisco1700 bps 9600 parity odd flowcontrol none
emulation vt100
```

You can also use port ranges or the wildcard asterisk `*`, such as `config port * bps 115200`

This configures all ports for a communications speed of 115200 bps.

Or

```
config port 3-7 bps 115200
```

This configures ports 3 through 7 for 115200 bps.

Or

```
config port 1,2,7-9 bps 115200
```

This configures ports 1, 2, 7 through 9 for 115200 bps.

Repeat this step for each port with a device connected to it.

13. When done, enter `top` to return to the top level prompt.

## Set Terminal Emulation on a Target

The setting for terminal emulation on SX II is a property associated with the port settings for a particular target device.

Ensure that the settings for terminal emulation in the client application, such as Telnet or SSH, are capable of supporting the target device.

Ensure that the encoding in use on the host matches the encoding configured for the target device.

For example, if the character set on a Sun™ Solaris™ server is set to ISO8859-1, the target device should also be set to ISO8859-1.

Ensure that the terminal emulation on the target host connected to SX II serial port is set to VT100, VT220, VT320 or ANSI.

On most UNIX® systems, `export TERM=vt100 (or vt220|vt320|ansi)` sets the preferred terminal emulation type on the UNIX target device. So, if the terminal type setting on a HP-UX® server is set to VT100, the Access Client should also be set to VT100.

## Set the CLI Escape Sequence

The escape key sequence is user-configurable and can be configured per port.

The escape sequence is programmable per port because different target operating systems and host applications may trap different escape key sequences.

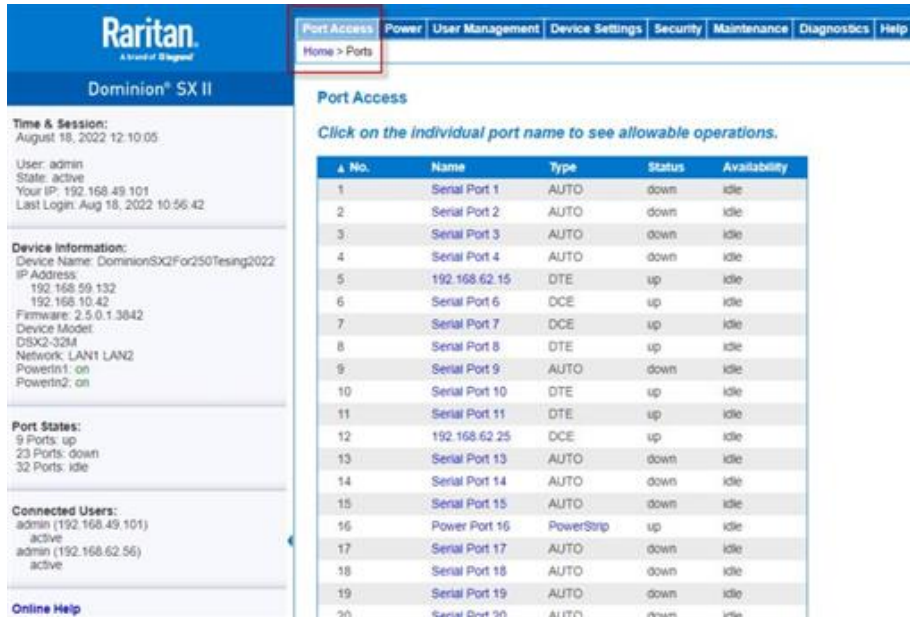
Ensure the default escape sequence set on the SX II server does not conflict with a key sequence required by either the access application or the host operating system.

The console sub-mode should be displayed when the default escape key sequence `^]` is pressed.

Raritan recommends that you *do not* use `[` or `Ctrl-[`. Either of these may cause unintended commands, such as invoking the Escape Command unintentionally. This key sequence is also triggered by the arrow keys on the keyboard.

# Access and Use Remote Console Features

The Remote Console is a browser-based interface accessed when you log in to SX II via a network connection. See. [Log In to SX II and HSC](#) (on page 27)



## Administrator Functions in the Remote Console

Administrators perform SX II configuration and maintenance functions from the Remote Console, such as configuring network access, adding and managing users, managing device IP addresses and so on.

Administrators can also use a version of the Remote Console that does not include any target access. See [Log In to SX II Admin-Only Interface](#) (on page 29).

## End User Functions in the Remote Console

From the Remote Console, end users access targets, change passwords and so on. End users can choose HTML Serial Client. See [HTML Serial Console \(HSC\) Help](#) (on page 41)

Note that these functions can also be performed via command line interface.

## In This Chapter

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## Allow Pop-Ups

Regardless of the browser you are using, you must allow pop-ups in order to launch the SX II Remote Console.

## Installing a Certificate

You may be prompted by the browser to accept and validate the SX II's SSL certificate.

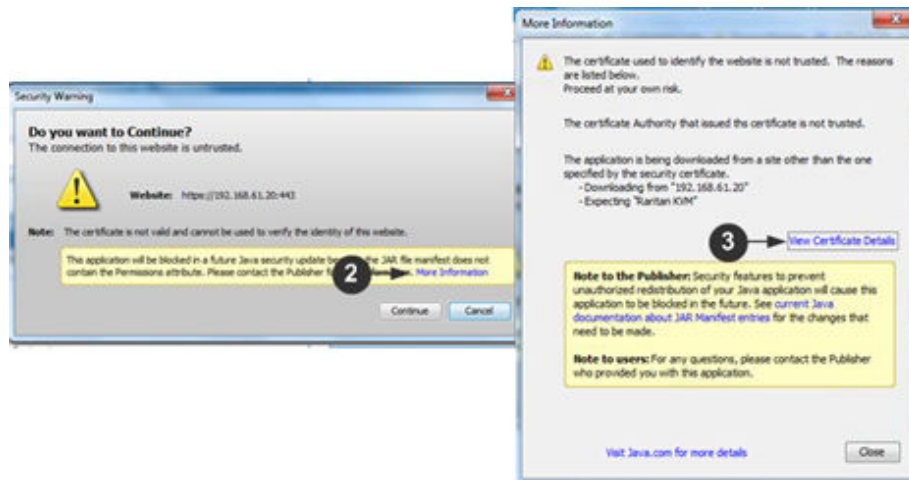
Depending on your browser and security settings, additional security warnings may be displayed when you log in to SX II.

It is necessary to accept these warnings to launch the SX II Remote Console. For more information, see Security Warnings and Validation Messages.

Two sample methods on how to install an SSL Certificate in the browser are provided here. Specific methods and steps depend on your browser and operating system. See your browser and operating system help for details.

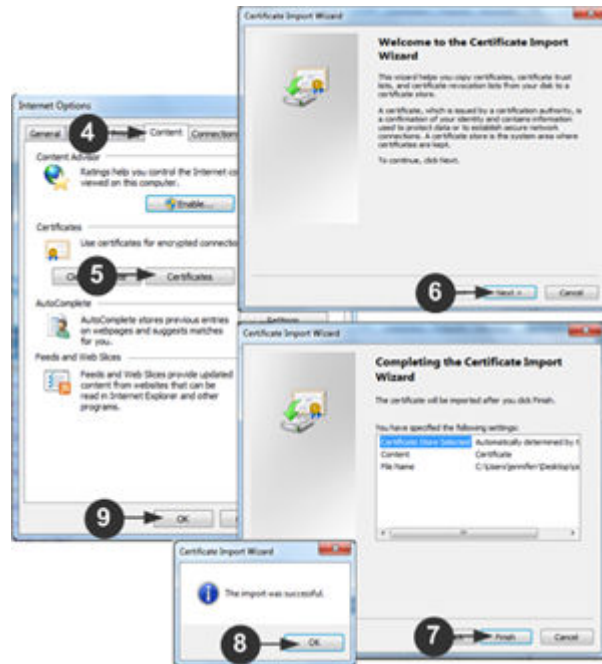
## Example 1: Import the Certificate into the Browser

In this example, you import the Certificate into the browser.



1. Open a browser, then log in to SX II.
2. Click More Information on the first warning.
3. Click View Certificate Details on the More Information dialog. You are prompted to install the certificate. Follow the wizard steps.

Note: If you are not prompted by the browser, manually select the Settings or Options for your browser, and import the certificate. The following example shows the IE > Tools > Internet Options method.



1. Click the Content tab.
2. Click Certificates.

The Certificate Import Wizard opens and walks you through each step.

- File to Import - Browse to locate the Certificate
- Certificate Store - Select the location to store the Certificate

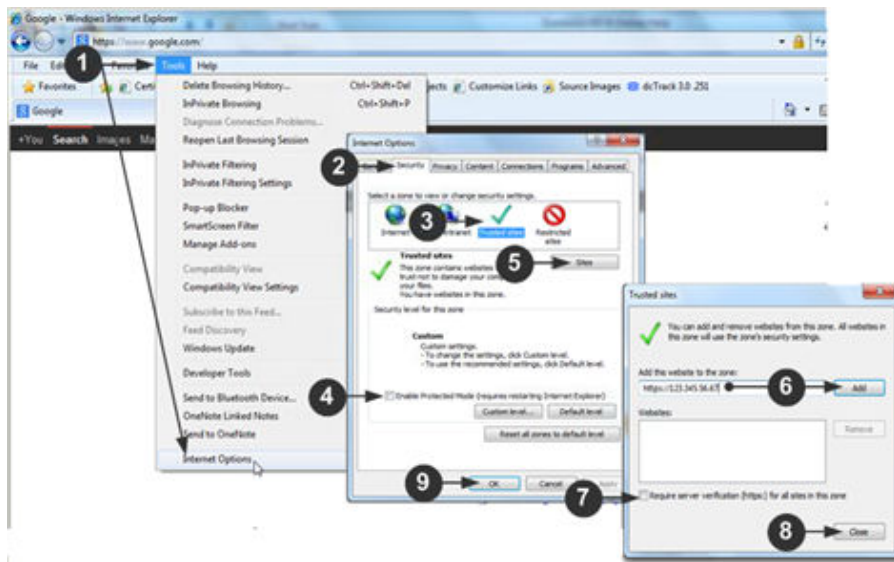
3. Click Finish on the last step of the Wizard.

The Certificate is imported. Close the success message.

4. Click OK on the Internet Options dialog to apply the changes, then close and reopen the browser.

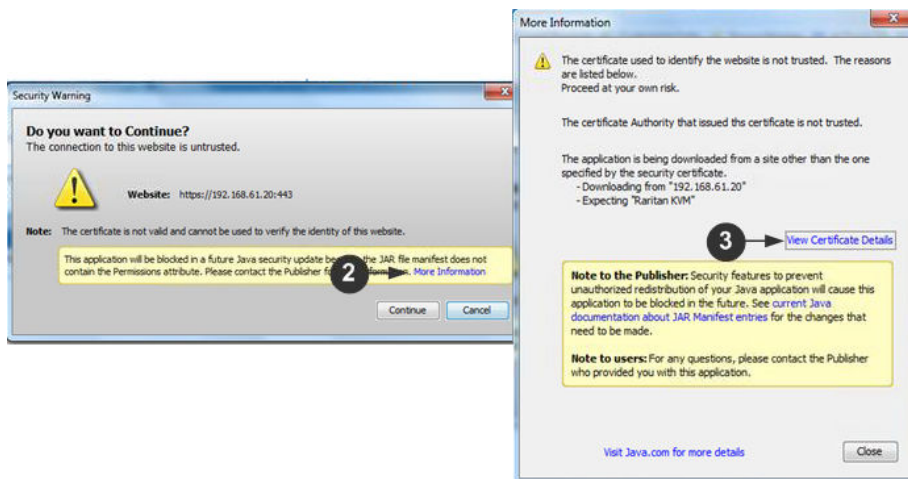
## Example 2: Add the SX II to Trusted Sites and Import the Certificate

In this example, the SX II's URL is added as a Trusted Site, and the Self Signed Certificate is added as part of the process.



1. Open an IE browser, then select Tools > Internet Options to open the Internet Options dialog
2. Click the Security tab.
3. Click on Trusted Sites.
4. Disable Protected Mode, and accept any warnings.
5. Click Sites to open the Trusted Sites dialog.
6. Enter the SX II URL, then click Add.
7. Deselect server verification for the zone (if applicable).
8. Click Close.
9. Click OK on the Internet Options dialog to apply the changes, then close and reopen the browser.

Next, import the Certificate.



1. Open an IE browser, then log in to SX II.
2. Click More Information on the first Java™ security warning.
3. Click View Certificate Details on the More Information dialog. You are prompted to install the certificate. Follow the wizard steps.

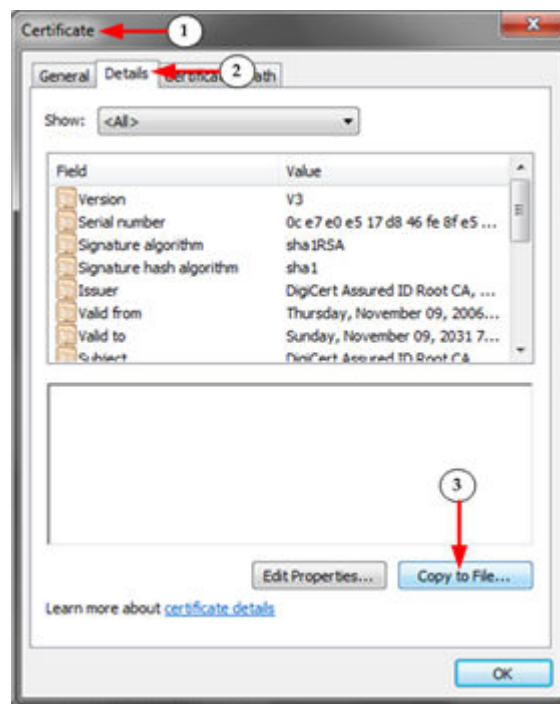
For details see, [Example 1: Import the Certificate into the Browser](#) (on page 23).

## Converting a Binary Certificate to a Base64-Encoded DER Certificate (Optional)

SX II requires an SSL certificate in either Base64-Encoded DER format or PEM format.

If you are using an SSL certificate in binary format, you cannot install it.

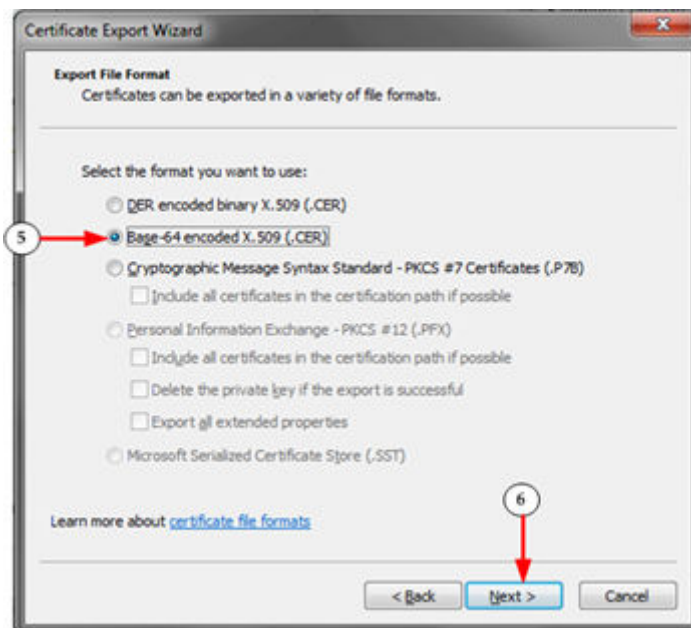
However, you can convert your binary SSL certificate.



1. Locate the DEGHKVM0001.cer binary file on your Windows machine. Double-click on the DEGHKVM0001.cer file to open its Certificate dialog.
2. Click the Detail tab.
3. Click "Copy to File...".



4. The Certificate Export Wizard opens. Click Next to start the Wizard.



5. Select "Base-64 encoded X.509" in the second Wizard dialog.
6. Click Next to save the file as a Base-64 encoded X.509.

You can now install the certificate on your SX II.

Log In to SX II and HSC

This login procedure gives you access to the default HTML Serial Client (HSC) for target connections.

1. Launch a supported web browser.
2. Enter the SX II HTTP, HTTPS or DNS address provided to you by your Administrator.

---

*Note: You are always redirected to the IP address from HTTP to HTTPS.*

---

3. Enter your username and password, then click Login.
4. Accept the user agreement (if applicable).
5. If security warnings appear, accept and/or allow access.

### Security Warnings and Validation Messages

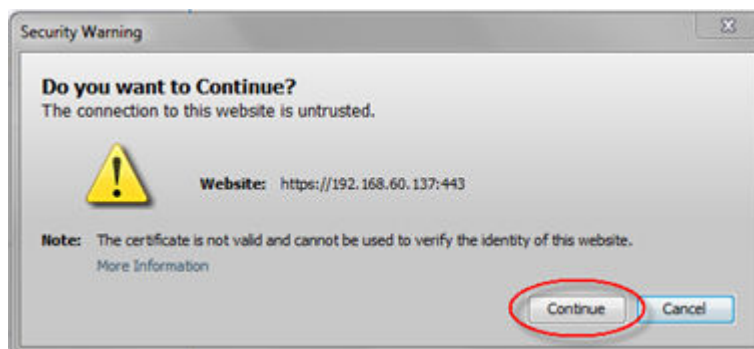
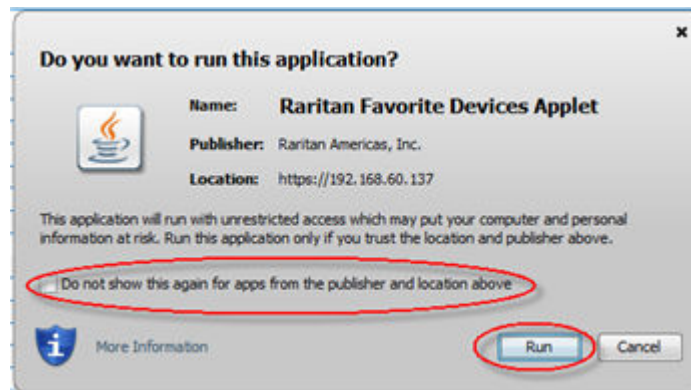
When logging in to SX II, security warnings and application validation messages may appear. It is based on your browser and security settings: See [Additional Security Warnings](#) (on page 29)

### Java Validation and Access Warning

When logging in to SX II using the Java-based client, Java prompts you to validate SX II, and to allow access to the application.

Installing an SSL certificate in each SX II device is recommended to reduce Java warnings, and enhance security.

See [SSL and TLS Certificates](#) (on page 134)



## Additional Security Warnings

Even after an SSL certificate is installed in the SX II, depending on your browser and security settings, additional security warnings may be displayed when you log in to SX II.

It is necessary to accept these warnings to launch the SX II Remote Console.

Reduce the number of warning messages during subsequent log ins by checking the following options on the security and certificate warning messages:

- In the future, do not show this warning
- Always trust content from this publisher

### Log In to SX II Admin-Only Interface

You cannot connect to targets using the admin-only interface.

1. Launch a supported web browser.
2. Enter the SX II HTTP, HTTPS or DNS address provided to you by your Administrator, followed by /admin. For example: IP Address/admin

---

*Note: You are always redirected to the IP address from HTTP to HTTPS.*

---

3. Enter your username and password, then click Login.
4. Accept the user agreement (if applicable).
5. If security warnings appear, accept and/or allow access.

### Access SX II Using an iOS Device

You can access SX II using your iOS device when certificates are properly installed on the device. iOS requires that the certificate and all certificates in the certificate chain be installed on the device to connect properly. This can be done by emailing the certificates to the iOS device. When all certificates are installed, the Profile will be listed as Verified. If the profile is "Not Verified" for any reason, or if the certificate is not signed with the IP or DNS entry used to connect to the SX II, the connection will fail.

The following procedure shows how to generate and install valid certificates with openssl.

► *To access SX II using an iOS device:*

1. Create a simple CA.

```
openssl genrsa -out localCA.key 2048
```

```
openssl req -x509 -sha256 -new -key localCA.key -out localCA.cer -days 356 -subj /CN="Local CA"
```

2. Generate key,CSR, and cer for SX II.

```
openssl genrsa -out sx2.key 2048
```

```
openssl req -new -out sx2.req -key sx2.key -subj /CN=<SX IP ADDRESS>
```

```
openssl x509 -req -sha256 -in sx2.req -out sx2.cer -CAkey localCA.key  
-CA localCA.cer -days 355 -CAcreateserial -CAserial serial
```

3. Email the localCA.cer and sx2.cer files created to an email account that can be opened on the iOS device.
4. Open the email through the iOS device mail app and click on the localCA.cer to install the certificate. Follow prompts and trust the certificate.
5. Repeat for the sx2.cer.
6. Install the sx2.key and then the sx2.cer onto the SX II.
7. Reboot the SX II.
8. Use any browser on the iOS device to connect to the SX II. If there is any error in the certificate or it is not trusted, the javascript client will immediately disconnect when attempting to connect.

## Change Your Password from the Remote Console

---

Note: You can also update passwords using command line interface. See [Change Your Password Using CLI](#) (on page 164).

---

- To change your password, open the Change Password page by selecting User Management > Change Password.

A confirmation that the password was successfully changed is displayed after you change it.

If strong passwords are in use, this page displays information about the format required for the passwords.

For more information, see Strong Passwords.

Port Access Power User Management Device Settings

Home > User Management > Change Password

Change Password

Old Password

New Password

Confirm New Password

OK Cancel

---

**Important: If the administrator password is forgotten, SX II must be reset to the factory default from the Reset button on the rear panel and the initial configuration tasks must be performed again.**

---

## SX II Port Access Page

After a successful login, the Port Access page opens listing all ports along with their status and availability.

Note that target access is not enabled in the Admin-Only Interface version of the Remote Console.

**Raritan**  
A brand of Legrand

Port Access | Power | User Management | Device Settings | Security | Maintenance | Diagnostics | Help

Home > Ports

**Port Access**

Click on the individual port name to see allowable operations.

No.	Name	Type	Status	Availability
1	Serial Port 1	AUTO	down	idle
2	Serial Port 2	AUTO	down	idle
3	Serial Port 3	AUTO	down	idle
4	Serial Port 4	AUTO	down	idle
5	192.168.62.15	DTE	up	idle
6	Serial Port 6	DCE	up	idle
7	Serial Port 7	DCE	up	idle
8	Serial Port 8	DTE	up	idle
9	Serial Port 9	AUTO	down	idle
10	Serial Port 10	DTE	up	idle
11	Serial Port 11	DTE	up	idle
12	192.168.62.25	DCE	up	idle
13	Serial Port 13	AUTO	down	idle
14	Serial Port 14	AUTO	down	idle
15	Serial Port 15	AUTO	down	idle
16	Power Port 16	PowerStrip	up	idle
17	Serial Port 17	AUTO	down	idle
18	Serial Port 18	AUTO	down	idle
19	Serial Port 19	AUTO	down	idle
20	Serial Port 20	AUTO	down	idle

Ports are numbered from 1 up to the total number of ports available for the SX II. For example, Port\_1 - Port\_48, Port\_1 - Port\_32.

"SerialPort"\_"Port #" are what make up the default name the physical port until a name is configured for the port. Once a name is designated for a port, the name stays with the port until the name is edited or SX II is factory reset.

Port type includes:

- Auto - No target connected
- DTE - DCE target is connected or this port is forced to be configured as DTE.
- DCE - DTE target is connected or this port is forced to be configured as DCE.

Sort by Port Number, Port Name, Status (Up and Down), and Availability (Idle, Connected, Busy, Unavailable, and Connecting) by clicking on the column heading.

Click on any port that listed and marked as Available to open its Port Action menu so you can then manage the target. For more information, see [Port Action Menu Options - Connect, Disconnect, Power On, Power Off and Power Cycle Targets](#) (on page 33).

Note that in the Remote Console, you can also quickly access a powerstrip's page from the Port Access page by clicking on the Powerstrip link in the Type column.



## SX II Left Panel

The left panel contains the following information.

Note that some information is conditional - meaning it is displayed based on your role, features being used and so on. Conditional information is noted here.

Information	Description	Displayed when?
Time & Session	The date and time the current session started	Always
User	Username	Always
State	The current state of the application, either idle or active. If idle, the application tracks and displays the amount time the session has been idle.	Always
Your IP	The IP address used to access SX II.	Always
Last Login	The last login date and time.	Always
Under CC-SG Management	The IP address of the CC-SG device managing the SX II.	When SX II is being managed by CC-SG.
Device Information	Information specific to the SX II you are using.	Always
Device Name	Name assigned to the SX II you are accessing.	Always
IP Address	The IP address of the SX II you are accessing.	Always
Firmware	Current version of firmware installing on the SX II.	Always
Device Model	The model of the SX II you are accessing.	Always
Network	LAN1, or LAN1 and LAN2 if you are in dual LAN mode.	Always
PowerIn1	Status of the power 1 outlet connection. Either on or off, or Auto-detect off	Always
PowerIn2	Status of the power 2 outlet connection. Either on or off, or Auto-detect off	Always
Port States	The statuses of the ports being used by SX II - up, down, idle.	Always
Connected Users	The users, identified by their username and IP address, who are currently connected to SX II.	Always
Online Help	Links to online help.	Always
FIPS Mode	FIPS Mode: EnabledSSL Certificate: FIPS Mode Compliant	When FIPS is enabled

## Port Action Menu Options - Connect, Disconnect, Power On, Power Off and Power Cycle Targets

Once you log in to SX II via a web browser, the SX II Port Access page displays. For more information on the Port page, see [SX II Port Access Page](#) (on page 31).

From the Port Access page, use the Port Action menu to connect, disconnect, or control power of targets and power strips that are connected to SX II.

Once connected, you can manage a target with Serial Client, HSC See: [HTML Serial Console \(HSC\) Help](#) (on page 41)

Note that you must have permissions to a target or power strip in order to access it.

► *To access the Port Action menu for a target or power strip:*

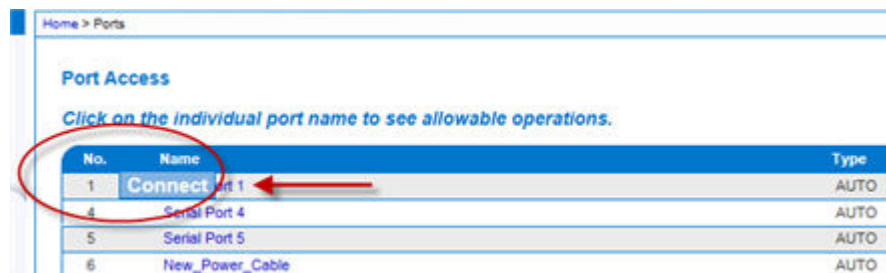
1. Hover your mouse over a target's port name in the list and click on your mouse.

The Port Action menu appears.

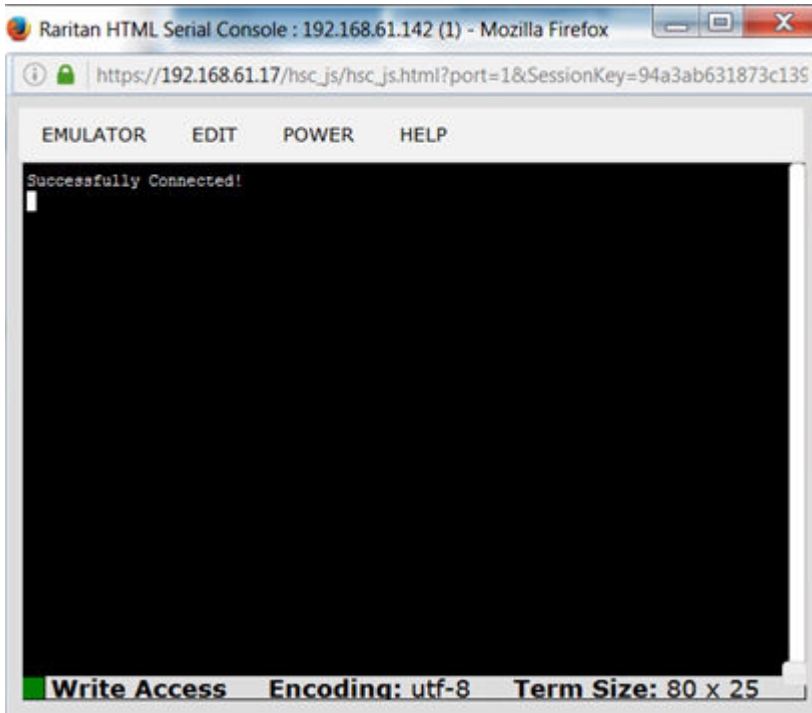
Note that only currently available options, depending on the port's status and availability, are listed in the Port Action menu.

2. Choose the desired menu option for that port to execute it.

- [Connect to a Target](#) (on page 34)
- [Disconnect from a Target](#) (on page 35)
- [Power On a Target](#) (on page 35)
- [Power Off a Target](#) (on page 36)
- [Power Cycle a Target](#) (on page 36)



You can then connect using the Serial Client. When you connect to a target, the serial client opens in a new window. This screenshot shows an HSC connection.



Alternatively, you can connect via Direct Port Access, if SX II is configured for Direct Port Access.

Note that you can also connect to targets via command line interface. See [Connect to Targets Using CLI - Connect, Disconnect, Power On, Power Off and Power Cycle Targets](#) (on page 37).

## Connect to a Target

Creates a new connection to the target device.

From the SX II Remote Console, HSC opens in a new window and you manage the target from there.

If you are connected to the SX II from the Local Console port, you access the target via command line interface. See [Connect to Targets Using CLI - Connect, Disconnect, Power On, Power Off and Power Cycle Targets](#) (on page 37).

### Port Access

*Click on the individual port name to see allowable operations.*

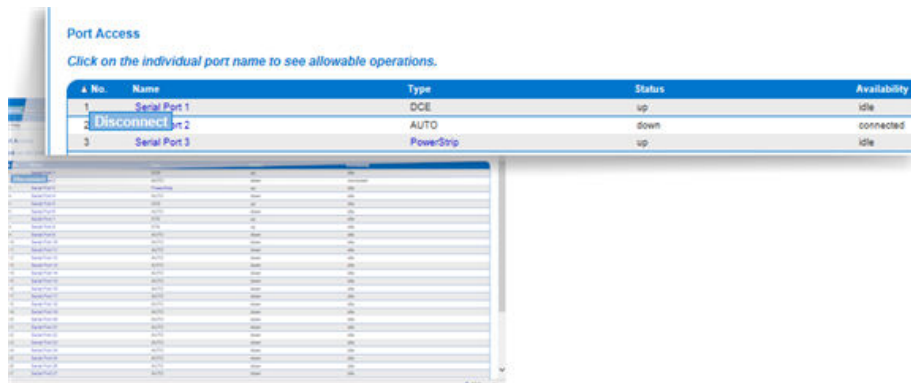
▲ No.	Name	Type	Status	Availability
1	<a href="#">Connect</a> Serial Port 1	AUTO	down	idle
2	Serial Port 2	DCE	up	idle
3	Serial Port 3	AUTO	down	idle
4	Serial Port 4	AUTO	down	idle
5	Serial Port 5	AUTO	down	idle
6	Serial Port 6	AUTO	down	idle

## Disconnect from a Target

Once connected to a target, the Disconnect menu option is available in the Port Action menu.

Clicking on the Disconnect option disconnects from a target, and closes the HSC window. You can also click the X icon on the window or use the Exit menu option.

See [Connect to Targets Using CLI - Connect, Disconnect, Power On, Power Off and Power Cycle Targets](#) (on page 37).

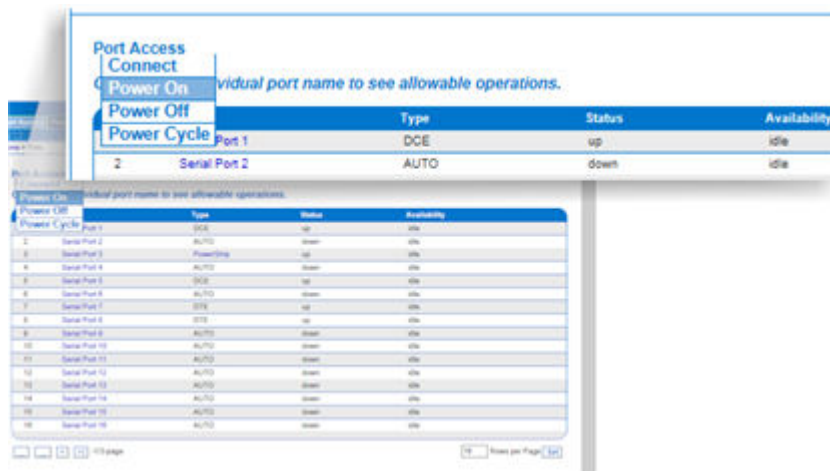


## Power On a Target

Power on the target from the Remote Console through the associated outlet.

This option is visible only when there are one or more power associations to the target, and when you have permission to manage the target's power.

You can also perform these actions through HSC, and command line interface. See [HTML Serial Console \(HSC\) Help](#) (on page 41), and [Connect to Targets Using CLI - Connect, Disconnect, Power On, Power Off and Power Cycle Targets](#) (on page 37).



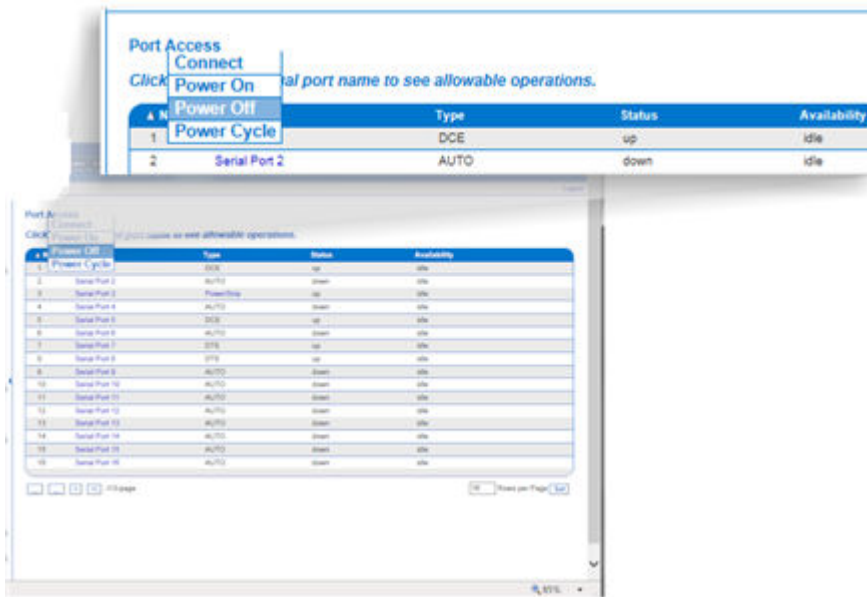
## Power Off a Target

Power off the target through the associated outlet.

This option is visible only when -

- there are one or more power associations to the target or power strip
- you have permission to manage the power

You can also perform these actions through HSC, and command line interface. See [HTML Serial Console \(HSC\) Help](#) (on page 41), and [Connect to Targets Using CLI - Connect, Disconnect, Power On, Power Off and Power Cycle Targets](#) (on page 37).



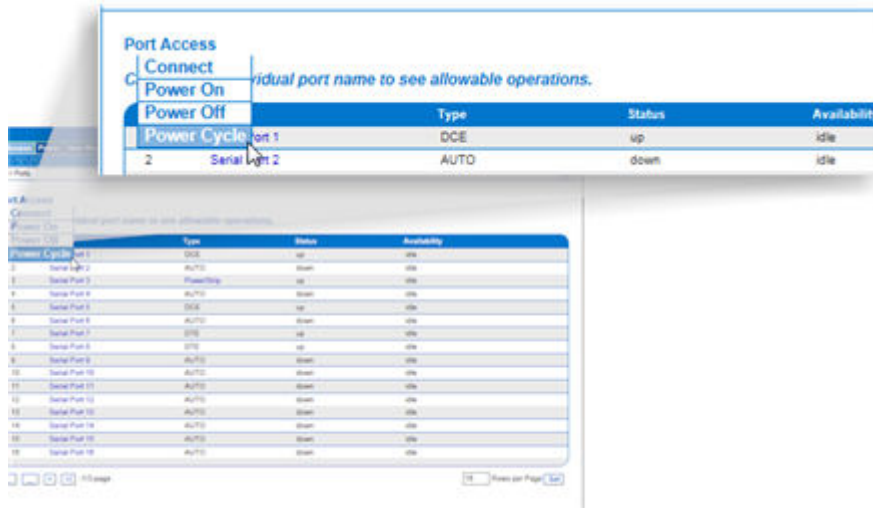
## Power Cycle a Target

Power cycling allows you to turn a target off and then back on through the outlet it is plugged into.

This option is visible only when -

- The power strip is connected to SX II and configured properly.
- There are one or more power associations to the target.
- You have permission to manage the power.

You can also perform these actions through HSC, and command line interface. See [HTML Serial Console \(HSC\) Help](#) (on page 41), and [Connect to Targets Using CLI - Connect, Disconnect, Power On, Power Off and Power Cycle Targets](#) (on page 37).



## Connect to Targets Using CLI - Connect, Disconnect, Power On, Power Off and Power Cycle Targets

Before connecting to a target, the terminal emulation and escape sequence must be configured. See [Set Terminal Emulation on a Target](#) (on page 20) and [Set the CLI Escape Sequence](#) (on page 21).

### Connect the SX II While at the Rack

While at the rack, do one of the following depending on your needs -

- Connect a computer to the Terminal port with a CAT-5 cable and Raritan Adapter ASCSDB9F.
- Connect a keyboard tray or KVM console to the DVI-D and USB ports.
- Connect a laptop to the Mini-USB Admin port.

Note that connecting to the SX II Local Console via the Local port is an independent access path to each connected target device.

### Video Resolution

The default, Local Console port video resolution is 1024x768@60.

By default, monitors are typically set to the highest resolution they support.

Once a monitor is connected to the SX II Local Port DVI, SX II retrieves EDID information from the monitor, including its native, preferred resolution. SX II uses the monitor's preferred, native resolution as long as it is a resolution that SX II supports. If it is not, SX II switches to a resolution it supports and that most closely matches the monitor's resolution.

For example, if a monitor with a native resolution of 2048x1600@60Hz is connected to SX II, SX II detects that it is not an SX II supported resolution and selects a resolution it does support, such as 1280x1024@60Hz.

Note that you can connect to targets using the Remote Console and manage them using HTML serial console. See [HTML Serial Console \(HSC\) Help](#) (on page 41) and [Port Action Menu Options - Connect, Disconnect, Power On, Power Off and Power Cycle Targets](#) (on page 33) .

#### Connect Commands

Connect to a port using port number or port name. Use double quotes around port names that contain space symbols. For example: "Serial Port 1".

```
admin > connect <port number>
```

OR

```
admin > connect <port name>
```

#### Port Sub-Menu Commands

The port sub-menu can be reached using the escape key sequence.

Clear history buffer for this port.

```
admin > [portname] > clearhistory
```

Close this target connection. When a target is disconnected, the appropriate disconnect message appears.

```
admin > [portname] > close, quit, q
```

Display the history buffer for this port.

```
admin > [portname] > gethistory
```

Get write access for the port.

```
admin > [portname] > getwrite
```

Return to the target session.

```
admin > [portname] > return
```

Send a break to the connected target.

```
admin > [portname] > sendbreak
```

Lock write access to this port.

```
admin > [portname] > writelock
```

Unlock write access to this port.

```
admin > [portname] > writeunlock
```

Query Power status of this port.

```
admin > [portname] > powerstatus
```

Toggle Power On/Off of this port.

```
admin > [portname] > powertoggle
```

Power on the target.

```
admin > [portname] > poweron
```

Power off the target.

```
admin > [portname] > poweroff
```

Power cycle the target.

```
admin > [portname] > powercycle
```

## Command Line Interface Protocols

- SSH (Secure Shell) via IP connection
- Telnet via IP connection
- Local Console via the Local Port and Mini-USB port
- Terminal port

If SX II has an internal modem and console mode is enabled, the modem interface can also be accessed from CLI.

Many SSH/TELNET applications are available such as PuTTY, SSH Client and OpenSSH Client. These can be located and downloaded from the Internet.

## Command Line Interface Partial Searches

Enter the first few characters of command and press the Tab key on your keyboard in order to locate a specific command.

The command line interface (CLI) completes the entry if the characters form an exact match.

For example entering

```
admin > Config > us
```

and then pressing the Tab key, returns the result `users`.

If an exact match is not found, all of the commands at the same level the CLI hierarchy that are potential matches are listed.

For example, entering

```
admin > Config > User > add
```

and then pressing the Tab key, returns results for `addgroup` and `adduser`.

If needed, enter additional text to make the entry unique and press the Tab key to complete the entry. Alternatively, use a command from the list.

## Command Line Interface Tips

- When commands are displayed as a list, they are in alphabetical order.
- Commands are not case sensitive.
- Commands without arguments default to show current settings for the command.
- A command's parameters are usually parameter-value pairs in which the parameter name is followed by a space and the value.
- Typing a question mark ( ? ) after a command displays help specific to the command.

## Command Line Interface Shortcuts

- Press the Up arrow key to display the last entry.
- Press Backspace to delete the last character typed.
- Press Ctrl + C to terminate a command or cancel a command if you typed the wrong parameters.
- Press Enter on your keyboard to execute the command.
- Press Tab on your keyboard to complete a command. Tab also completes parameters and values (if the value is part of an enumerated set).

## Command Line Interface High-Level Commands

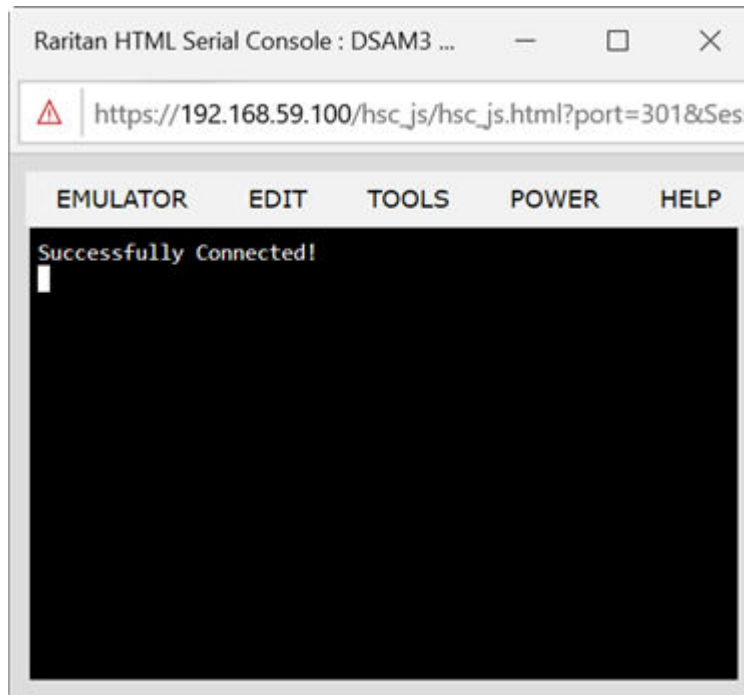
The CLI is menu based. Some commands move to a menu with a different command set.

The following common commands can be used at all levels of the command line interface (CLI):

- `top` - Return to the top level of the CLI hierarchy, or the `username` prompt.
- `history` - Displays the last 200 commands the user entered into the SX II CLI.
- `logout` - Logs the user out of the current session.
- `quit` - Moves the user back one level in the CLI hierarchy.
- `help` - Displays an overview of the CLI syntax.

### HTML Serial Console (HSC) Help

You can connect to serial targets using HSC. HSC is supported with several Raritan products that offer serial connections. Not all products support all HSC features. Differences are noted.



### Emulator

---

**IMPORTANT: HSC sessions are affected by the SX II Idle Timeout.**

---

**If you have not changed the SX II Idle Timeout setting from the default, your session could be closed automatically if it exceeds the Idle Timeout period.**

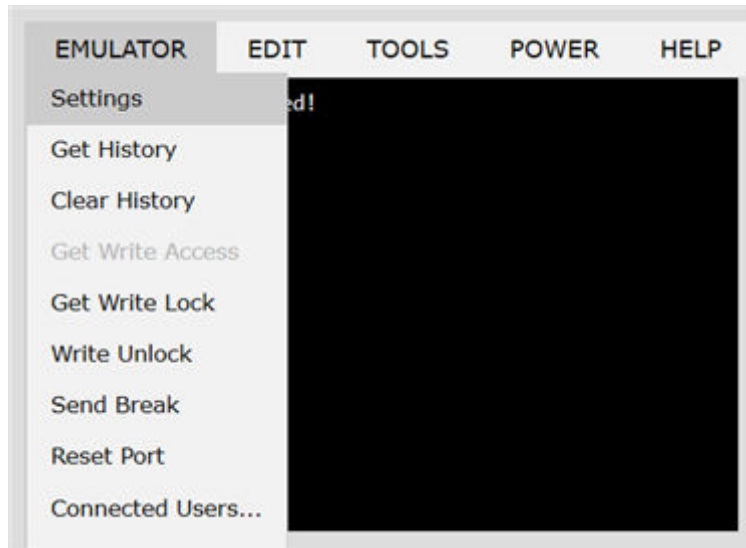
---

**Change the default Idle Timeout setting and then launch the HSC. See [Login Limitations](#) (on page 125) for details on changing the Idle Timeout setting.**

---

## Access Emulator Options

1. Select the Emulator drop-down menu to display a list of options.



## Settings

---

Note:

---

KX3 administrators can set Terminal emulation settings in Setup > Serial Port Configuration.

---

KX4-101 administrators can set terminal emulation settings in DSAM Serial Ports > Settings.

---

SX2 administrators can set terminal emulation settings in Device Settings > Port Configuration.

---

1. Choose Emulator > Settings. The Terminal Properties dialog displays the default settings.



2. Set the terminal size by selecting the number of Columns and Rows. Default is 80 by 25.
3. Set the Foreground and Background colors. Default is white on black.
4. Set the Font size. Default is 11.
5. Set the Scrollback number to indicate the number of lines available for scrolling.
6. Choose one of the following from the Encoding drop-down menu:
  - UTF-8
  - 8-bit ascii
  - ISO-8859-1
  - ISO-8859-15
  - Shift-JIS
  - EUC-JP
  - EUC-KR
7. Choose one of the following from the Language drop-down menu:
  - English
  - Japanese
  - Korean
  - Chinese
  - Bulgarian
8. The Backspace Sends default is ASCII DEL, or you can choose Control-H from the Backspace Sends drop-down menu.
9. Click OK to save. If you changed the Language setting, the HSC changes to that language when the Display Settings window is closed.

---

*The emulator settings are saved on a per port basis in the browser used for HSC, so make sure your browser is not set to delete history on exit.*

---

## Get History

History information can be useful when debugging, troubleshooting, or administering a target device. The Get History feature:

- Allows you to view the recent history of console sessions by displaying the console messages to and from the target device.
- Displays up to 512KB of recent console message history. This allows a user to see target device events over time.

When the size limit is reached, the text wraps, overwriting the oldest data with the newest.

---

Notes: History data is displayed only to the user who requested the history.

---

To view the Session History, choose Emulator > Get History.

### Clear History

- To clear the history, choose Emulator > Clear History.

### Get Write Access

Only users with permissions to the port get Write Access. The user with Write Access can send commands to the target device. Write Access can be transferred among users working in the HSC via the Get Write Access command.

To enable Write Access, choose Emulator > Click Get Write Access.

- You now have Write Access to the target device.
- When another user assumes Write Access from you:
  - The HSC displays a red block icon before Write Access in the status bar.
  - A message appears to the user who currently has Write Access, alerting that user that another user has taken over access to the console.

### Get Write Lock

Write lock prevents other users from taking the write access while you are using it.

1. To get write lock, choose Emulator > Get Write Lock.
2. If Get Write Lock is not available, a request rejected message appears.

### Write Unlock

To get Write Unlock, choose Emulator > Write Unlock.

### Send Break

Some target systems such as Sun Solaris servers require the transmission of a null character (Break) to generate the OK prompt. This is equivalent to issuing a STOP-A from the Sun keyboard.

Only users with Write Access privileges can send a break.

To send an intentional “break” to a Sun Solaris server:

1. Verify that you have Write Access. If not, follow the instructions in the previous section to obtain write access.
2. Choose Emulator > Send Break. A Send Break Ack (Acknowledgement) message appears.
3. Click OK.

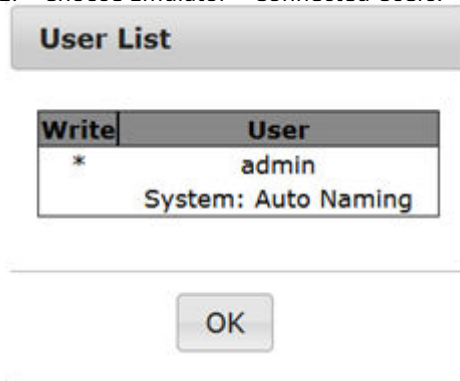
## Reset Port

Reset Port resets the physical serial port on the SX2 and re-initializes it to the configured values regarding bps/bits, and so on.

## Connected Users

The Connected Users command allows you to view a list of other users who are currently connected on the same port.

1. Choose Emulator > Connected Users.



2. A star appears in the Write column for the User who has Write Access to the console.

## Exit

1. Choose Emulator > Exit to close the HSC.

## Copy and Paste and Copy All

Data on the current visible page can be selected for copying. Copy and Paste are accessible in the HSC by right click in the terminal window. Select Copy or Paste in the context menu that appears.

To copy all text, use the Copy All option in the Edit menu.

If you need to paste a large amount of data, it is better to save the data in a file and use the Send a Text File function. Pasting a large amount of data in a browser windows can cause the browser to hang as it processes the data. See [Send Text File](#) (on page 46).

When pasting data to a port, the end of a line is sent as a carriage return.

The Cut option on the right-click menu is disabled.

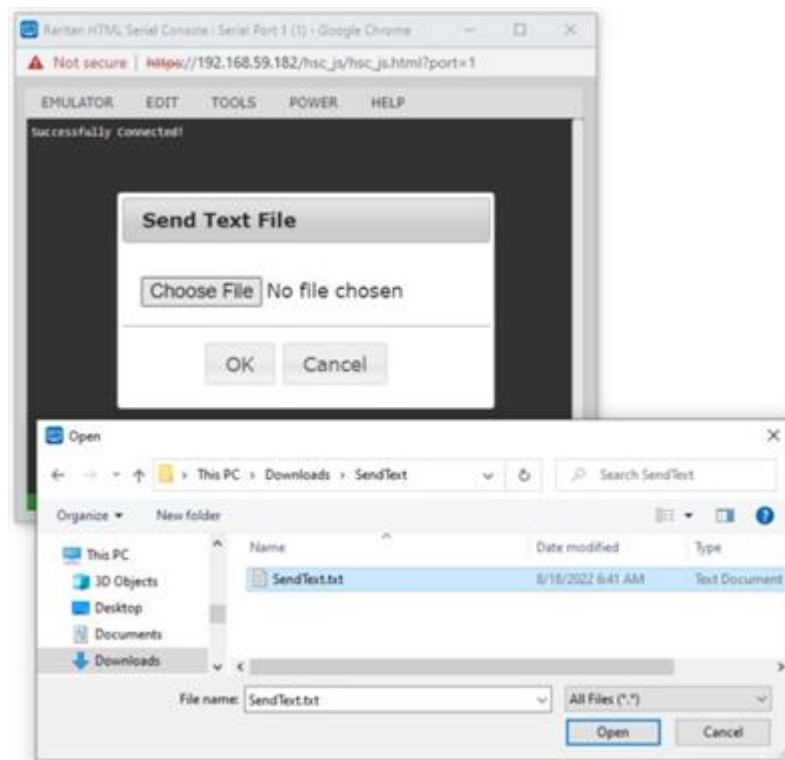
Do not use the Delete option that appears in the right-click menu of IE and some versions of Firefox. This Delete option will remove display lines entirely from the emulator window.

► *Browser-specific behaviors*

When copying from IE or Edge browsers, there are no end of line characters in the copied data. The pasted data appears to be all in one line and contains many spaces. When pasting back into a HSC window, the data may appear to be misaligned, but the data is complete.

## Send Text File

1. Select Edit> Send Text File.
2. In the Send Text File dialog, click Browse to find the text file.
3. Click OK.
  - When you click OK, the selected file sends directly to the port.
  - If there is currently no target connected, nothing is visible on the screen.



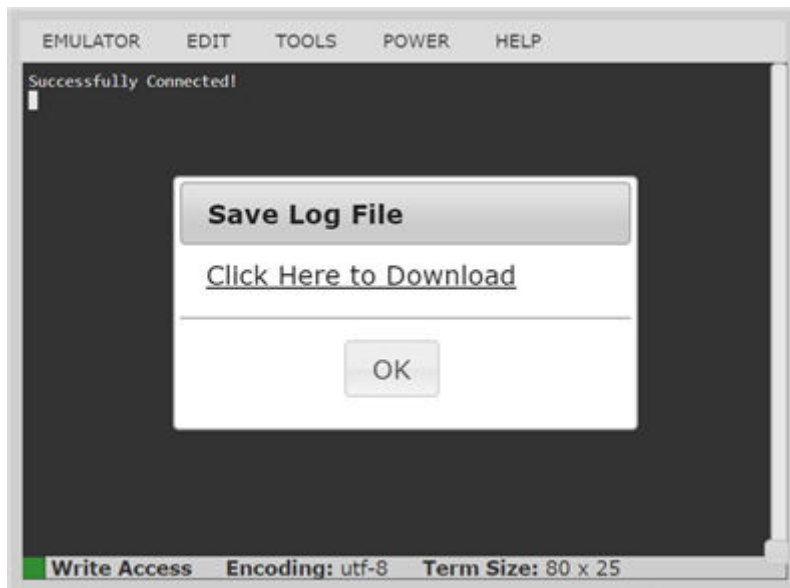
► *Note, if you are using a Mac® and/or Safari®, do the following in order to use this feature:*

1. In Safari, select Preferences.
2. Under the Security tab, select "Manage Website Settings"
3. Click on the SX II website.
4. Select "Run in unsafe mode" from the drop-down box.
5. Restart Safari.

## Tools: Start and Stop Logging

The Tools menu contains options for creating a data history file and downloading it.

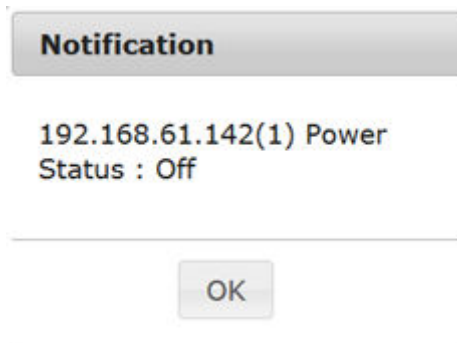
1. Choose Tools > Start Logging to start the storage of serial port data in memory.
2. Click Stop Logging to save the log file. A pop up message appears with a download link. Click to download the memory buffer into a text file.



## Power Status

Power Status in HSC shows the status of the outlet the target is plugged into.

1. Choose Power > Power Status.
2. The Notification dialog shows the status of the outlet as ON or OFF. Status may also show no associated outlet, or no power permission to the port.



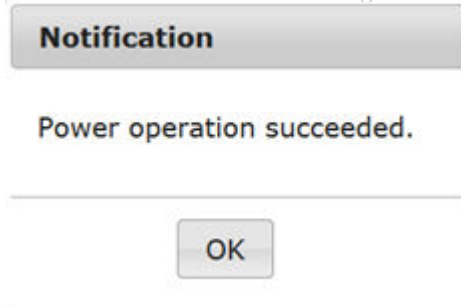


## Power on a Target

Use this option to power on a target from HSC.

This option is visible only when there are one or more power associations to the target, and when you have permission to manage the target's power.

1. Select Power> Power On.
2. Click OK in the success message.

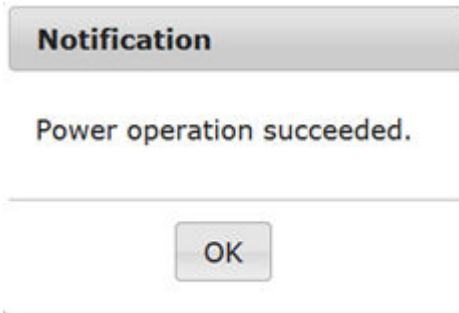


## Power Off a Target

Use this option to power off a target from HSC.

This option is visible only when there are one or more power associations to the target, and when you have permission to manage the target's power.

1. Select Power> Power Off.
2. Click OK in the success message.



## Power Cycle a Target

Power cycling allows you to turn a target off and then back on through the outlet it is plugged into.

This option is visible only when -

- there are one or more power associations to the target
- the target is already powered on (the port status is Up)
- you have permission to manage the target's power

1. Choose Power > Power Cycle.
2. Click OK in the success message.

## Browser Tips for HSC

Some browsers have limitations that affect HSC.

- In Chrome, disable the background throttling to prevent background tabs from disconnecting after a certain amount of time. Go to `chrome://flags`, then search for "throttle". Set "Throttle Javascript timers in background" and "Calculate window occlusion on Windows" to "Disabled". Restart chrome to apply settings.
- Browser option to select certificate for authentication displayed on Edge and Chrome after session is idle for about 5 minutes, due to internal browser SSL caching and timeouts. If certificate is selected promptly, reconnection is successful. With longer idle times, authentication is not successful, and the browser should be restarted to reconnect. Issue is not observed in Firefox or IE 11.
- Internet Explorer has an internal limitation on the number of websockets that are allowed to be created to a single server (6). This can be changed by modifying a registry variable as shown here : [https://msdn.microsoft.com/en-us/library/ee330736\(v=vs.85\).aspx#websocket\\_maxconn](https://msdn.microsoft.com/en-us/library/ee330736(v=vs.85).aspx#websocket_maxconn).
- Internet Explorer 11, and Safari have a limitation when connecting to IPv6 devices. Using the numerical URL will not work when it attempts to establish a websocket connection. In these browsers, use the device hostname or literal IPv6 as UNC to connect to the SX II. See [https://en.wikipedia.org/wiki/IPv6\\_address#Literal\\_IPv6\\_addresses\\_in\\_UNC\\_path\\_names](https://en.wikipedia.org/wiki/IPv6_address#Literal_IPv6_addresses_in_UNC_path_names)
- When using HSC in IOS Safari, the keyboard may not appear in some pages if the "request desktop website" setting is enabled. To change the setting, go to Settings > Safari > Request Desktop Website, then make sure All Websites is not selected, and the device address is not selected. You can also set this per address by clicking the "aA" in Safari's URL pane when connected to the HSC port, then select "Website Settings" and make sure that "Request Desktop Website" is not selected.

# SX II Administration

This help contains information on tasks typically performed by Administrators, such as managing user groups and users, managing authentication and security, configuring network settings and so on.

Note that the same tasks can be performed from the Remote Console, the Admin Client or command line interface (CLI), so this section is divided into a Remote Console and CLI section.

## In This Chapter

Administering SX II from the Remote Console and Admin-Only Interface. . . . . 50  
Administering SX II Using command line interface. . . . . 163

### Administering SX II from the Remote Console and Admin-Only Interface

This section is specific to tasks performed in the SX II Remote Console, including the Admin-Only Interface

For information on performing tasks using command line interface, see [Administering SX II Using command line interface](#) (on page 163).

## Configure Power Strips from the Remote Console

You can control Raritan PX rack PDU outlets (power strips) and Baytech rack PDU power strip outlets that are connected to SX II.

For details on how to connect a PX to SX II, see [Connect and Configure a Rack PDU \(Powerstrip\)](#) (on page 53).

Once connected to SX II, the rack PDU and its outlets can be configured.

Configure power strips from the Remote Console as shown here, or using command line interface. See [Configure Power Strips Using CLI](#) (on page 164).

Note that in the Remote Console, you can also quickly access a powerstrip's page from the Port Access page by clicking on the Powerstrip link in the Type column.



If no power strips are connected to SX II, a message stating "No power strips found" is displayed in the Powerstrip Device section of page.

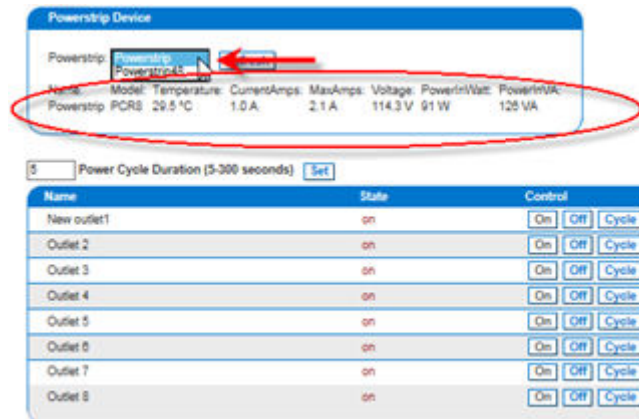
If power strips are down or cannot be reached, the message "Cannot communicate with power strip or outlet number not match, please check!" is displayed on the page in red.



All of the power strips you have permissions to access and that are connected to SX II are listed in the Powerstrip drop-down.

Information about the currently selected power strip is displayed under the Powerstrip drop-down -

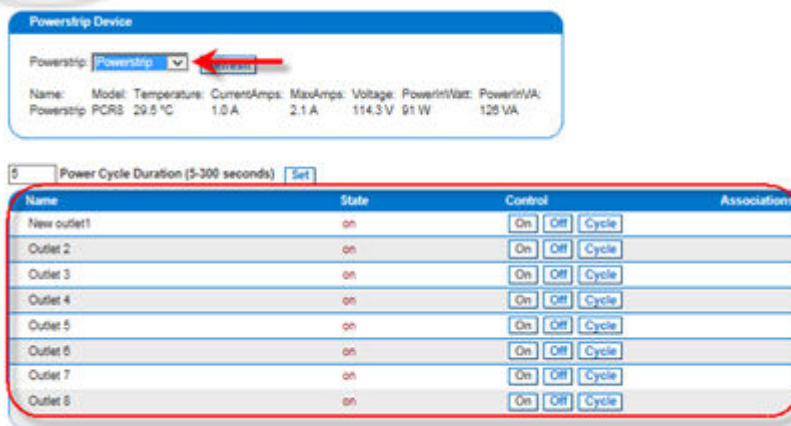
- Name
- Model
- Temperature
- Current Amps
- Maximum Amps
- Voltage
- Power in Watts
- Power in Volts Ampere



The currently selected powerstrip's outlet names, their current state, and their associated ports, if applicable, are displayed below the powerstrip information.

Use the On, Off and Cycle buttons on the page to control each of the powerstrip's outlets.

Select another powerstrip from the drop-down to view its information and control its outlets.



## Control Powerstrip Outlets

### ► To turn an outlet on:

1. From the Powerstrip drop-down, select the rack PDU (power strip) you want to turn on.
2. Click On next to the outlet you want to power on.
3. Click OK to close the Power On confirmation dialog. The outlet will be turned on and its state will be displayed as 'on'.

### ► To turn an outlet off:

1. Click Off next to the outlet you want to power off.
2. Click OK on the Power Off confirmation dialog. The outlet will be turned off and its state will be displayed as 'off'.

### ► To cycle the power of an outlet:

1. Click Cycle next to the outlet you want to cycle. The Power Cycle Port dialog opens.
2. Click OK. The outlet then cycles (note that this may take a few seconds).
3. Once the cycling is complete a dialog will open. Click OK to close the dialog.

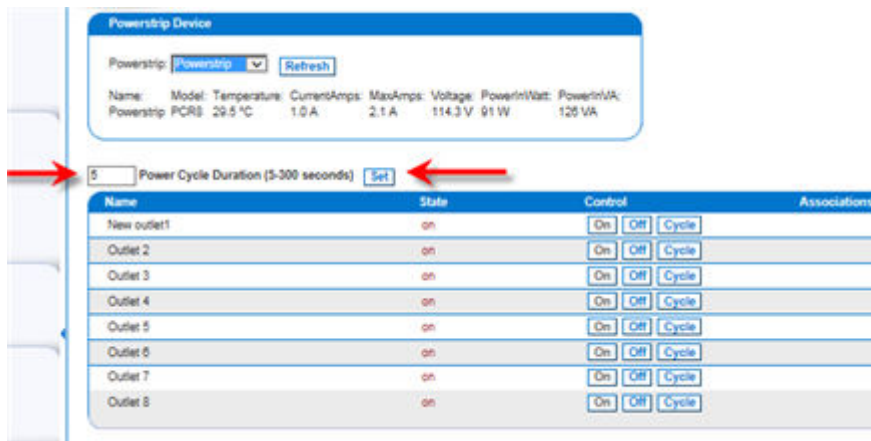
## Specify Power Cycle Duration

To specify the duration between powering an outlet off and on when the cycle command is given, enter it in the "Power Cycle Duration (5-300 seconds)" field and select Set.

---

Note: If you are connecting a PX to SX II, it is recommended you set the power cycle time to 5 seconds.

---



## Connect and Configure a Rack PDU (Powerstrip)

SX II allows you to connect rack PDUs (power strips) to SX II ports. You must configure these ports as power port via the SX II Port Configuration page.

A special Raritan cable or CSCSPCS -1 Rev.0C adapter is required to connect an SX II port to the Feature port of rack PDU.

---

Important: When configuring your PDU, make sure the Feature port setting is "Power CIM".

---

Only Raritan rack PDUs are supported.

1. Configure an SX II port as power port.
2. On the Port Configuration page, click the port connected to power strip to open its Port Edit page.
3. Change the port type from "Serial" to "Power Strip".
4. change the port name, if needed.
5. Click OK. SX II attempts to communicate with the power strip. If communication is successful, the port is configured as a power port.

---

*Note: If the power strip is in not in support mode, a communication failure occurs. Update the power strip to support mode from the power strip application, then configure the port in SX II again..*

---

6. Once a port is configured as power port, you can change outlet names on the Port Edit page, as well.



## Remove a Power Association

When disconnecting target servers and/or rack PDUs from the device, all power associations should first be deleted. When a target has been associated with a rack PDU and the target is removed from the device, the power association remains. When this occurs, you are not able to access the Port Configuration for that disconnected target server in Device Settings so that the power association can be properly remove.

► *To remove a rack PDU association:*

1. Select the appropriate rack PDU from the Power Strip Name drop-down list.
2. For that rack PDU, select the appropriate outlet from the Outlet Name drop-down list.
3. From the Outlet Name drop-down list, select None.
4. Click OK. That rack PDU/outlet association is removed and a confirmation message is displayed.

► *To remove a rack PDU association if the rack PDU has been removed from the target:*

1. Click Device Settings > Port Configuration and then click on the active target.
2. Associate the active target to the disconnected power port. This will break the disconnected target's power association.
3. Finally, associate the active target to the correct power port.

## Configure and Manage Users and Groups from the Remote Console

---

Note: These functions can also be performed using command line interface. See [Configure and Manage Users and User Groups Using CLI](#) (on page 165).

---

SX II stores an internal list of all user profiles and user groups.

User profiles and groups are used to determine access authorization and permissions. This information is stored internally. User passwords are stored in an encrypted format.

SX II allows the administrator to define groups with common permissions and attributes. They can then add users to the groups, and each user takes the attributes and permissions of that group.

Since the group permissions are applied to each individual in the group, permissions do not have to be applied to each user separately. This reduces the time to configure users.

For example, create a group called Modem Access that has permission to manage modems. Each user assigned to the Modem Access group can then manage the modem function; you do not have to assign each user a separate permission.

### View a List of Users

- Click User Management > User List.

The User List page shows every user profile created to date, and for each one, lists:

- Username
- Full name
- User group

User List

Username	Full Name	User Group
admin	Admin	Admin
<input type="checkbox"/> mbrodeur	Martin Brodeur	observer
<input type="checkbox"/> sgouta	Siddhartha Gautama	Admin
<input type="checkbox"/> pdorjee	Pema Dorjee	Admin
<input type="checkbox"/> newuser		newusergr

32 Rows per Page

Users belong to a group and groups have privileges. Organizing the various users of your SX II into groups saves time by allowing you to manage permissions for all users in a group at once, instead of managing permissions on a user-by-user basis.

You may also choose not to associate specific users with groups. In this case, you can classify the user as "Individual."

Upon successful authentication, the appliance uses group information to determine the user's permissions, such as which server ports are accessible, whether rebooting the appliance is allowed, and other features.

---

Note: These functions can also be managed using command line interface, see [Configure and Manage Users and User Groups Using CLI](#) (on page 165) .

---

## User Groups

Every SX II is delivered the default user groups. These groups are listed in the User Groups drop-down on the Add User page.

- Admin
 

Users that are members of this group have full administrative privileges to all functions. The original, factory-default user is a member of this group and has complete system privileges.

In addition, the Admin user must be a member of the Admin group.
- Unknown
 

Additionally, if the remote server does not identify a valid user group, the Unknown group is applied.

This is the default group for users who are authenticated remotely using LDAP/LDAPS, RADIUS or TACACS+.

Any newly created user is automatically put in this group until they are assigned to another group.
- Individual Group

An individual group is essentially a "group" of one. That is, the specific user is in its own group and not affiliated with other groups.

Use an individual group when you need a user account can have the same rights as a group.

Individual groups can be identified by @ in the Group Name.

The default user groups cannot be deleted but you can create additional user groups that meet your needs and assign users to them, if needed.

The screenshot shows a 'User' configuration window. It contains the following fields and options:

- Username \***: pdorjee
- Full Name**: Pema Dorjee
- Password \***: [masked]
- Confirm Password \***: A dropdown menu is open, showing the following options:
  - select --
  - observer
  - <Unknown> (default setting)A red arrow points to the '<Unknown> (default setting)' option.

At the bottom of the dialog are 'OK' and 'Cancel' buttons.

## User Profiles

User profiles serve two purposes:

- To provide users with a username and password to log in to SX II.
- To associate the user with a user group. The user group determines which functions and ports the user can access.

SX II is shipped with one user profile built in, the Admin user.

This user profile is associated with the Admin user group and has full system and port permissions. This profile cannot be modified or deleted.

Up to 254 user profiles per group are supported by SX II.

You can create a profile that is unique to each SX II user.

Alternatively, you can create a profile and assign multiple people to it. Each person assigned to the profile will then have the same privileges. This saves time but requires caution to ensure a user is not given inappropriate access to a function. Use this function to limit permissions as well. See [Create a Group with Limited Access to SX II \(IP Access Control List\)](#) (on page 59).

## Local and Remote Authentication

All users must be authenticated to access SX II.

SX II can be configured to authenticate users locally and/or remotely using LDAP/LDAPS, RADIUS or TACACS+. Remote user authentication is processed before local authentication if remote authentication is enabled. For details, see [Configure User Authentication from the Remote Console](#) (on page 65).

## Add a User Group

1. Select User Management > Add New User Group or click Add on the User Group List page.
2. Type a descriptive name for the new user group into the Group Name field.

Port Access Power **User Management** Device Settings Security

Home > User Management > Group

Group

Group Name \*

Broadband

▼ Permissions

- Device Access While Under CC-SG Management
- Device Settings
- Diagnostics
- Maintenance
- Modem Access
- PC-Share
- Security
- User Management

▶ Port Permissions

▶ IP ACL

OK Cancel

## Set Group Permissions

Group

Group Name \*

Admin

▼ Permissions

- Device Access While Under CC-SG Management
- Device Settings
- Diagnostics
- Maintenance
- Modem Access
- PC-Share
- Security
- User Management

▶ Port Permissions

▶ IP ACL

Cancel

3. Select the permissions to assign to the group.

- Device Access While Under CC-SG Management - Allows users and user groups with this permission to directly access the SX II while it is under CC-SG management.  
SX II is accessed using an IP address when Local Access is enabled for the device in CC-SG.

When a device is accessed directly while it is under CC-SG management, access and connection activity is logged on SX II.

User authentication is performed based on SX II authentication settings.

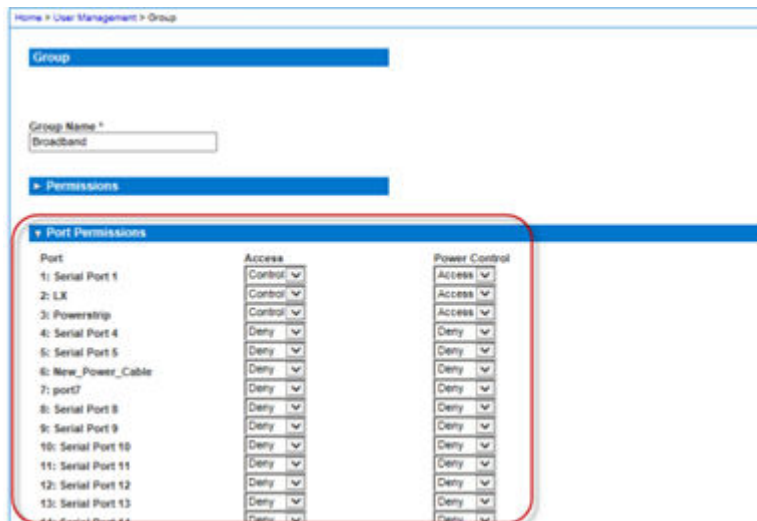
*Note: The Admin user group has this permission by default.*

- Device Settings - Network settings, date/time settings, port configuration, event management (SNMP, Syslog), and so on.
- Diagnostics - Network interface status, network statistics, ping host, trace route to host, SX II diagnostics.
- Maintenance - Backup and restore database, firmware upgrade, factory reset, reboot.
- PC-Share - Simultaneous access to the same target by multiple users.
- Security - SSL certificate, security settings, IP ACL.
- User Management - User and group management, remote, authentication, login settings.

*Important: Selecting User Management allows the members of the group to change the permissions of all users, including their own. Carefully consider granting these permissions.*

- Modem Access - Displayed on the page when an external modem is connected to SX II. Select this option if you want the group to have access to the external modem. If broadband access is enabled for a supported Sierra Wireless modem, this permission allows the group to access SX II via the wireless modem, as well. See [Connect and Enable Global Access to an External USB-Connected Broadband Modem](#) (on page 108).

#### Set Port Permissions



4. Select the access permissions the group has to server ports and power control. The default is Deny.

Select each port individually, or use the checkboxes at the bottom of the page to apply permissions to all ports.

- Set All to Deny
- Set All Power to Deny
- Set All to View
- Set All Power to Access
- Set All to Control

- Deny - Denied access completely.
- View - View but not interact with the connected target.
- Control - Control the connected target.

Control must be assigned to the group if power control access will also be granted.

5. Click OK to create the group and apply permissions.

For information on IP ACL, see [Create a Group with Limited Access to SX II \(IP Access Control List\)](#) (on page 59).

## Create a Group with Limited Access to SX II (IP Access Control List)

---

**Important: Exercise caution when using group-based IP access control. It is possible to be locked out of your SX II if your IP address is within a range that has been denied access.**

---

This feature limits a user's access to the SX II by allowing you to assign them to a group that can only access the device through specific IP addresses.

This feature applies only to users belonging to the specific group. This is unlike the IP Access Control List feature that applies to all access attempts to the device. IP access control takes priority over group-based IP ACL and is processed first.

Use the IP ACL section of the Group page to add, insert, replace, and delete IP access control rules on a group-level basis.

The screenshot shows the configuration page for a group. The 'Group Name' is 'SX2-North'. The 'IP ACL' section is expanded, showing a table with one rule. A red arrow points to the 'IP ACL' section header.

Rule #	Starting IP	Ending IP	Action
1	255.255.55.55	255.255.55.55	ACCEPT DROP

Buttons: Append, Insert, Replace, Delete, OK, Cancel

► *To add (append) rules:*

1. Type the starting IP address in the Starting IP field.
2. Type the ending IP address in the Ending IP field.
3. Choose the action from the available options:
  - Accept - IP addresses set to Accept are allowed access to the SX II device.
  - Drop - IP addresses set to Drop are denied access to the SX II device.
4. Click Append and then click OK. The rule is added to the bottom of the rules list. Repeat steps 1 through 4 for each rule you want to enter.

► *To insert a rule:*

1. Enter a rule number (#). A rule number is required when using the Insert command.
2. Enter the Starting IP and Ending IP fields.
3. Choose the action from the Action drop-down list.
4. Click Insert and then click OK. If the rule number you just typed equals an existing rule number, the new rule is placed ahead of the existing rule and all rules are moved down in the list.

► *To replace a rule:*

1. Specify the rule number you want to replace.
2. Type the Starting IP and Ending IP fields.
3. Choose the Action from the drop-down list.
4. Click Replace and then click OK. Your new rule replaces the original rule with the same rule number.

► *To delete a rule:*

1. Specify the rule number you want to delete.
2. Click Delete.
3. When prompted to confirm the deletion, click OK and then click OK on the page to save the changes.

## Create and Activate a User

1. Choose User Management > Add User.

## User

Username \*

Full Name

Password \*

Confirm Password \*

Dialback Number

User Group \*

--- select ---

Active

OK Cancel

2. Type a login name in the Username field. This is the name the user enters to log in to SX II. Required
3. Type the user's full name in the Full Name field.
4. Type a password in the Password field, and then type it again in the Confirm Password field. Required
  - The password is case sensitive.

---

*Note: If the strong password feature is enabled, there are other password requirements. See [Strong Passwords](#) for details.*

---

5. Associate the user with a user group by selecting from the User Group drop-down. Required  
If you do not want to associate this user with an existing User Group, select Individual Group from the drop-down list. For more information about permissions for an Individual Group, see [Setting Permissions for an Individual Group](#).
6. Enter a Dialback Number for modem usage.
7. Decide whether or not to activate this profile immediately. By default, the Active checkbox is selected.  
To deactivate this account, deselect this checkbox. You can return at any time and activate the user when necessary.
8. Click OK. The page closes.
9. The user profile is created and should appear in the User List page. Reopen the user's page and the SSH key section is enabled. If needed, assign an SSH key to the user profile. See [Add SSH Client Certificates for Users](#) (on page 62).

## Add SSH Client Certificates for Users

If needed, SSH (Secure Shell) Client Authentication keys can be added to a user. The user must first be created before the client certificate can be added. You can add more than one key if needed.

1. Select User Management > User List, then click on the name of the user you want to add a SSH client certificate to. The User's page opens.

Home > User Management > User

User SSH Keys

SSH Key

New SSH Key

72HppVdRD7McQIAXIsoIhSRp02FthFp1Fa6rz4md4U6Mtc7  
ypzuJ89a0tGBbdxQpw4yYX6Eq36fwjatn4p7tNGhX/2DEf9  
qXxrLCZZKkdKjNYXTuJK4oYzZwtJpfaL09KzI8/j4aBGGXn  
PisT9NYi7DdelVPm8jOg23L0kpu7HIdYcGB+tc7jiq

Add Delete

OK Delete Cancel

2. Enter the SSH key data in the SSH Key Data box. This data is the rsa\_id.pub key generated for your client.

Linux users should delete "name@local host" that appears at the end of the generated key when adding public keys.

3. Click Add.

The SSH key data is validated in several ways:

- a. Specified keytype is validated: [ssh-rsa|ssh-dsa|ecdsa-sha2-nistp256|ecdsa-sha2-nitsp384|ecdsa-sha2-nitsp512]
  - b. Keytype is followed by whitespace, followed by the base64 data.
  - c. Base64 data is validated.
  - d. Whitespace and any characters after the base64 are dropped from the key data.
4. The key data should be used for authentication and you should not have to enter a password.

### ► To delete an SSH key:

1. Click the checkbox next to the key you want to delete.
2. Click Delete.
3. Click OK when prompted to confirm.

## Edit or Deactivate a User

Note: This function can also be performed using command line interface. See [Configure and Manage Users and User Groups Using CLI](#) (on page 165).

1. Choose User Management > User List. The User List page opens.
2. Click the checkbox the user profile you want to edit or deactivate.
3. You can change any of the fields except the Username field.
4. For security reasons, the password is not displayed. To change the profile's password, type a new password in the Password and Confirm Password fields. If you leave these fields as is, the password is unchanged.
5. Click OK when finished. The user profile is modified.

## Delete a User

---

Note: This function can also be performed using command line interface. See Delete Users Using CLI.

---

1. Choose User Management > User List. The User List page opens.
2. Click the checkbox to the left of the user profile you want to delete. You can select more than one.
3. Click Delete. You are prompted to confirm the deletion.
4. Click OK. The selected user profiles are deleted.

## View Users by Port

The User By Ports page lists all authenticated local and remote users and ports they are being connected to.

- If the same user is logged on from more than one client, their username appears on the page for each connection they have made. For example, if a user has logged on from two (2) different clients, their name is listed twice.
- This page contains the following user and port information:
- Port Number - port number assigned to the port the user is connected to
- Port Name - port name assigned to the port the user is connected to
- Note: If user is not connected to a target, 'Local Console' or 'Remote Console' is displayed under the Port Name.
- Username - username for user logins and target connections
- Access From - IP address of client PC accessing the SX II
- Status - current Active or Idle status of the connection

To view users by port:

- Choose User Management > User by Port. The Users by Port page opens.

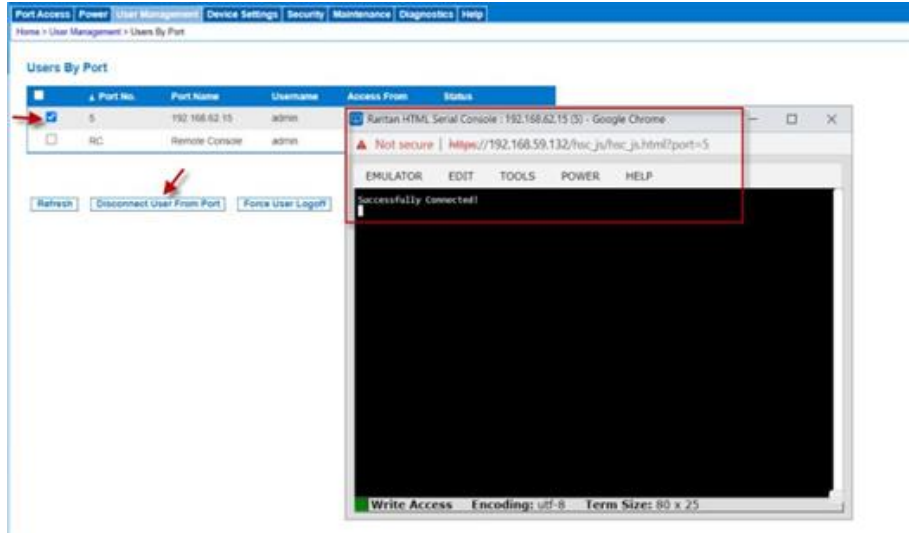
Port No.	Port Name	Username	Access From	Status	
<input checked="" type="checkbox"/>	HSC	Remote Console	admin	192.168.32.259	active 'This session'

52 Rows per Page [Set]

Refresh Disconnect User From Port Force User Logout

## Disconnect a User from a Port

You can disconnect a user from a specific port *without* logging them off of SX II. For example, if a user is connected to Serial Port 1 via HSC, you can disconnect them from the port.



This is unlike the force user logoff SX II function that disconnects users from the target port and logs them off of SX II. See Logging Users Off the SX II (Force Logoff) for information.

1. Choose User Management > Users by Port. The Users by Port page opens.
2. Select the checkbox next to the username of the person you want to disconnect from the target.
3. Click "Disconnect User from Port".
4. Click OK on the confirmation message to disconnect the user.
5. A confirmation message is displayed to indicate that the user was disconnected.

If the "Disconnect User from Port" is disabled, the user is not logged on to a port at the current time or you did not select the checkbox next to their name in the list above..

## Log a User Off of SX II (Force Logoff)

If you are an administrator or have user management permissions, you are able to log off any authenticated user who is logged on to SX II. Users can also be disconnected at the port level. See Disconnecting Users from Ports.



1. Choose User Management > Users by Port. The Users by Port page opens.
2. Select the checkbox next to the username of the person or persons you want to disconnect from the target.
3. Click "Force User Logoff".
4. Click OK on the Logoff User confirmation message.

If the "Force User Logoff" button is disabled (grayed out), the user is not logged on and/or connected to a port at the time or you have not selected the checkbox next to their name in the list above.

## Configure User Authentication from the Remote Console

SX II requires users be authenticated to access the appliance.

Authentication is the process of verifying that a user is who he says he is. Once a user is authenticated, the user's group is used to determine his system and port permissions. The user's assigned privileges determine what type of access is allowed. This is called authorization.

Users can be authenticated via SX II locally or remotely.

By default, users are authenticated locally; you must enable remote authentication. When remote authentication is enabled, there is an option to allow or deny local authentication as a fallback. See [Fallback to Local Authentication](#).

When the SX II is configured for remote authentication, the external authentication server is used primarily for the purposes of authentication, not authorization.

SX II provides several options to remotely authenticate users -

- LDAP/LDAPS
- RADIUS
- TACACS+

For information on configuring LDAP, RADIUS and TACACS+ servers, see [Configure LDAP, RADIUS and TACACS+ Servers](#).

For information on enabling Telnet and SSH in SX II, see [Enable Telnet \(Optional\)](#) (on page 83) and [Enable SSH Access \(Optional\)](#) (on page 82).

---

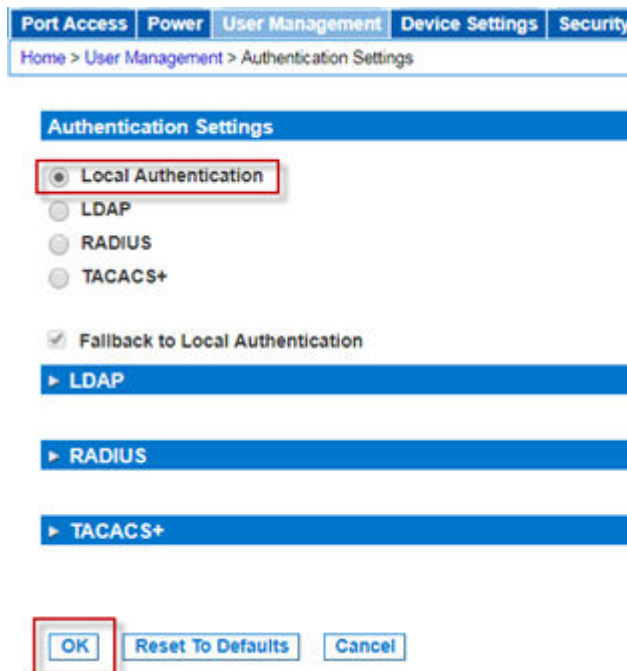
Note: You can also configure remote authentication via command line interface. See [Configure User Authorization and Authentication Services Using CLI](#) (on page 169).

---

## Enable Local User Authentication

Users are validated based on their username and password from a local database.

When Fallback to Local Authentication is enabled, local authentication will be used when remote authentication is enabled but the user is not found, or when remote servers are not available. See [Fallback to Local Authentication](#).



1. Choose User Management > Authentication Settings. The Authentication Settings page opens.
2. Select Local Authentication.
3. Click OK to save.

► *To return to factory defaults:*

- Click Reset to Defaults.

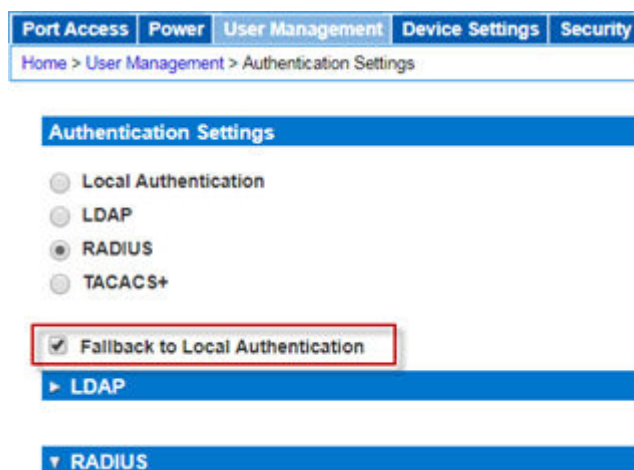
## Fallback to Local Authentication

Fallback to Local Authentication allows local authentication to be performed when remote authentication fails for any reason. A remote authentication server is considered available if the server can be pinged and ICMP communication is available between the SX II and the authentication server.

Fallback is enabled by default. Deselect the fallback option if you do not want local authentication to be used.

CC-SG users can always connect to SX II regardless of the fallback setting.

► *To configure fallback to local authentication:*



1. Choose User Management > Authentication Settings. The Authentication Settings page opens.
2. Select or deselect the Fallback to Local Authentication checkbox. This option works with remote authentication, so another remote authentication option must be selected when fallback is selected.
3. Click OK to save.

## Enable LDAP/LDAPS Authentication

---

Note: When configuring the LDAP server, the query string format on the server should contain the name of the group configured on SX II.

---

You can use the Lightweight Directory Access Protocol (LDAP) to authenticate SX II users instead of local authentication.

Lightweight Directory Access Protocol (LDAP/LDAPS) is a networking protocol for querying and modifying directory services running over TCP/IP.

A client starts an LDAP session by connecting to an LDAP/LDAPS server (the default TCP port is 389). The client then sends operation requests to the server, and the server sends responses in turn.

---

Reminder: Microsoft Active Directory functions natively as an LDAP/LDAPS authentication server.

---

1. Click User Management > Authentication Settings to open the Authentication Settings page.
2. Select the LDAP radio button to enable the LDAP section of the page.  
The LDAP section expands. If it does not, click on the LDAP section header.
3. Select Fallback to Local Authentication if you want local authentication to be performed if remote authentication fails. See [Fallback to Local Authentication](#) (on page 66).

Server Configuration

### Authentication Settings

- Local Authentication
  - LDAP
  - RADIUS
  - TACACS+
- Fallback to Local Authentication

### LDAP

**Server Configuration**

**Primary LDAP Server**

**Secondary LDAP Server (optional)**

**Type of External LDAP Server**  
Microsoft Active Directory ▼

**Active Directory Domain (optional)**

**User Search DN**

**DN of Administrative User (optional)**

**Secret Phrase of Administrative User**

**Confirm Secret Phrase**

**Dialback Query String**

4. In the Primary LDAP Server field, type the IP address or host name of your LDAP/LDAPS remote authentication server.
5. Optional In the Secondary LDAP Server field, type the IP address or host name of your backup LDAP/LDAPS server (up to 256 characters). When the Enable Secure LDAP option is selected, the DNS name must be used. Note that the remaining fields share the same settings with the Primary LDAP Server field.

6. Select the type of External LDAP Server.
  - Generic LDAP Server.
  - Microsoft Active Directory. Active Directory is an implementation of LDAP/LDAPS directory services by Microsoft for use in Windows environments.
    - Type the name of the Active Directory Domain if you selected Microsoft Active Directory. For example, acme.com. Consult your Active Directory Administrator for a specific domain name. Optional
7. In the User Search DN field, enter the Distinguished Name of where in the LDAP database you want to begin searching for user information. An example base search value might be: `cn=Users,dc=raritan,dc=com`. Consult your authentication server administrator for the appropriate values to enter into these fields.
8. DN of Administrative User: Optional. Complete this field if your LDAP server only allows administrators to search user information using the Administrative User role.

Consult your authentication server administrator for the value. Example:  
`cn=Administrator,cn=Users,dc=testradius,dc=com`.

9. If you entered a Distinguished Name for the Administrative User, you must enter the password that will be used to authenticate the Administrative User's DN against the remote authentication server. Enter the password in the Secret Phrase field and again in the Confirm Secret Phrase field.
10. Dialback Query String: Enter the string. If you are using Microsoft Active Directory, enter the following string: `msRADIUSCallbackNumber`

#### LDAP/Secure LDAP

1. For an encrypted connection, select the Enable Secure LDAP checkbox to use SSL, or select the Enable StartTLS checkbox to use StartTLS. Both options enable the Enable LDAPS Server Certificate Validation checkbox.
  - For an unsecured connection, do not enable Secure LDAP or StartTLS. The default port for unsecured connections is 389. Use the standard LDAP TCP port or specify another port.
  - SSL is a cryptographic protocol that allows SX II to communicate securely with the LDAP/LDAPS server. The default Secure LDAP port is 636, or you may specify another port. This field is used only when Enable Secure LDAP is selected.
  - StartTLS is a command that upgrades an unsecured connection to a secure connection using SSL/TLS. StartTLS does not require a specific port. The standard LDAP port 389 is default.
2. Select the Enable LDAPS Server Certificate Validation checkbox to use the previously uploaded root CA certificate file to validate the certificate provided by the server. If you do not want to use the previously uploaded root CA certificate file, leave this checkbox deselected. Disabling this function is the equivalent of accepting a certificate that has been signed by an unknown certifying authority. This checkbox is only available when the Enable Secure LDAP checkbox has been enabled.

---

*Note: When the Enable LDAPS Server Certificate Validation option is selected, in addition to using the Root CA certificate for validation, the server hostname must match the common name provided in the server certificate.*

---

3. If needed, upload the Root CA Certificate File. This field is enabled for secured connections only. Consult your authentication server administrator to get the CA certificate file in Base64 encoded X-509 format for the LDAP/LDAPS server. Use Browse to navigate to the certificate file.

If the certificate has been uploaded to the Certificate Repository, select it in the Repository LDAP Certificate List (by Subject) list. See Certificate Repository for details.

---

Note: You must reboot the device after the certificate file is uploaded or when a different file is chosen from the repository.

---

LDAP / Secure LDAP

Enable Secure LDAP  Enable StartTLS

Port  
389

Secure LDAP Port  
636

Enable LDAPS Server Certificate Validation

Root CA Certificate File  
Choose File No file chosen

Upload

**Note: Reboot device after certificate file is uploaded or when a file is changed via the pulldown menu.**  
No LDAP Certificate has been uploaded.

Repository LDAP Certificate List (by Subject):  
None Available

#### Test LDAP Server Access

Test LDAP Server Access

Login for testing

Password for testing

Test

4. To test the LDAP configuration, enter the login name and password in the "Login for testing" field and the "Password for testing" field, respectively. Click Test.

This is the username and password you entered to access the SX II. It is also username and password the LDAP server uses to authenticate you.

The SX II then tests the LDAP configuration from the Authentication Settings page. This is helpful due to the complexity sometimes encountered when configuring the LDAP server and SX II for remote authentication.

Once the test is completed, a message is displayed that lets you know the test was successful or, if the test failed, a detailed error message is displayed. It also can display group information retrieved from remote LDAP server for the test user in case of success.

## Enable RADIUS Authentication

---

Note: When configuring the RADIUS server, the Filter-ID format for the users on the server should have the following format "Raritan:G{GroupOnSX}:D{DialbackNumber}".

---

You can use Remote Authentication Dial-In User Service (RADIUS) to authenticate SX II users instead of local authentication. RADIUS is an AAA (authentication, authorization, and accounting) protocol for network access applications.

The following authentication types are supported: PAP, CHAP, MS-CHAPv1, and MS-CHAPv2.

Port Access Power User Management Device Settings Security

Home > User Management > Authentication Settings

### Authentication Settings

Local Authentication  
 LDAP  
 RADIUS  
 TACACS+

Fallback to Local Authentication

#### LDAP

#### RADIUS

Primary RADIUS Server

Shared Secret

Authentication Port

Accounting Port

Timeout (in seconds)

Retries

1. Click User Management > Authentication Settings to open the Authentication Settings page.
2. Click the RADIUS radio button to enable the RADIUS section of the page. The section expands. If it does not, click the section header to expand it.
3. Select Fallback to Local Authentication if you want local authentication to be performed if remote authentication fails. See [Fallback to Local Authentication](#) (on page 66).
4. In the Primary Radius Server and Secondary Radius Server fields, type the IP address of your primary and optional secondary remote authentication servers, respectively.
5. In the Shared Secret fields, type the server secret used for authentication.  
The shared secret is a character string that must be known by both the SX II and the RADIUS server to allow them to communicate securely. It is essentially a password.
6. The Authentication Port default is port is 1812 but can be changed as required. Port range is 1-65535.
7. The Accounting Port default port is 1813 but can be changed as required. Port range is 1-65535.
8. The Timeout is recorded in seconds and default timeout is 1 second, but can be changed as required.
9. The timeout is the length of time the SX II waits for a response from the RADIUS server before sending another authentication request.
10. The default number of retries is 3 Retries.  
This is the number of times the SX II will send an authentication request to the RADIUS server.
11. Choose the Global Authentication Type from among the options in the drop-down list:

- PAP - With PAP, passwords are sent as plain text. PAP is not interactive. The user name and password are sent as one data package once a connection is established, rather than the server sending a login prompt and waiting for a response.
- CHAP - With CHAP, authentication can be requested by the server at any time. CHAP provides more security than PAP.
- MS-CHAPv2 - MS-CHAPv2 provides stronger security than the above two. Selecting this option will support both MS-CHAPv1 and MS-CHAPv2

#### Test RADIUS Server Access

To test the configuration, enter the login name and password in the "Login for testing" field and the "Password for testing" field, respectively. Click Test.

This is the username and password you entered to access the SX II. It is also username and password the RADIUS server uses to authenticate you.

The SX II then tests the configuration from the Authentication Settings page. This is helpful due to the complexity sometimes encountered when configuring the server and SX II for remote authentication.

Once the test is completed, a success message or a detailed error message is displayed. It also can display group information retrieved from remote server for the test user in case of success.

## Enable TACACS+ Authentication

---

Note: When configuring the TACACS+ server, a dominionsx service should be added. A user-group attribute under this service should contain the name of a group configured on the SX II . A user-dialback field under this service would contain the modem dialback number for this user.

---

You can use the Terminal Access Controller Access-Control System Plus (TACACS+) to authenticate SX II users instead of using local authentication.

[Port Access](#) | [Power](#) | [User Management](#) | [Device Settings](#) | [Security](#)  
[Home](#) > [User Management](#) > [Authentication Settings](#)

### Authentication Settings

Local Authentication  
 LDAP  
 RADIUS  
 TACACS+

Fallback to Local Authentication

▶ LDAP

▶ RADIUS

▼ TACACS+

Primary TACACS+ Server

Shared Secret

Port

Timeout (in seconds)

Retries

1. Click User Management > Authentication Settings to open the Authentication Settings page.
2. Click the TACACS+ radio button to enable the TACACS+ section of the page.  
The section expands. If it does not, click the section header to expand it.
3. Under Primary TACACS+, type the IP address of the TACACS+ server and the port on which it is listening (default is 49) in the IP Address and Port fields.
4. Fill in the Shared Secret field. Also known as a key, this field is necessary for encryption and mutual identification with the TACACS+ server.
5. The Timeout is recorded in seconds and default timeout is 1 second, but can be changed as required.
6. The timeout is the length of time the SX II waits for a response from the TACACS+ server before sending another authentication request.
7. The default number of retries is 3 Retries.  
This is the number of times the SX II will send an authentication request to the TACACS+ server.
8. If you have a backup TACACS+ server, enter the same information in the Secondary TACACS+ fields.
9. Click OK. TACACS+ authentication is enabled.

**Authentication Settings**

Local Authentication  
 LDAP  
 RADIUS  
 TACACS+

LDAP  
 RADIUS  
 TACACS+

**Primary TACACS+ Server**

Port:   
 Timeout (in seconds):   
 Retries:

**Secondary TACACS+ Server**

Port:   
 Timeout (in seconds):   
 Retries:

## Configure SX II Network Settings from the Remote Console

The configuration settings described in [Initial SX II Configuration from the Remote Console](#) (on page 18) are the same that apply when making any changes.

### Choose Failover or Isolation Mode

[Configure SX II for Dual LAN Failover Mode](#) (on page 74): In failover mode, LAN status is used to determine which LAN port is used in failover. LAN port #1 is switched as default. If the switched LAN port status is down, then the other LAN port will be switched to until a LAN port whose status is on is found.

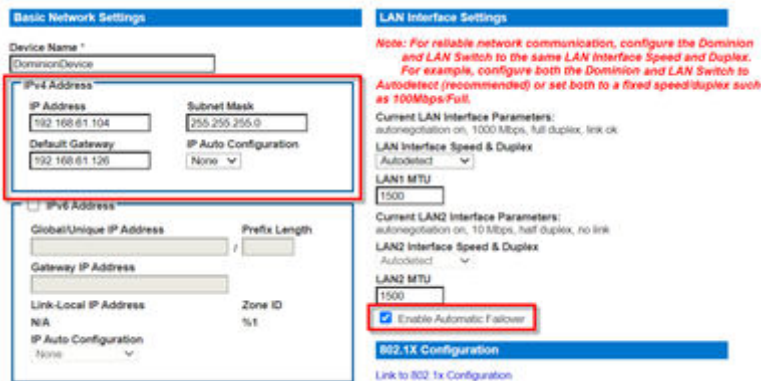
[Configure SX II for Dual LAN Isolation Mode](#) (on page 76)

### Configure SX II for Dual LAN Failover Mode

LAN1 and LAN2 share the same IP address to support automatic failover.

LAN1 is the primary port. If LAN1 fails, LAN2 is used to access SX II.

1. Select Device Settings > Network to open the Device Network Settings page.
2. Set the IP Auto Configuration to *None* in the IPv4 section.
3. Select the "Enable Automatic Failover" checkbox under LAN Interface Settings to enable failover.
4. Manually specify the network parameters by entering the Default Gateway.
5. Enter the IPv4 IP Address, if needed. The default IP address is 192.168.0.192.
6. Enter the IPv4 Subnet Mask. The default subnet mask is 255.255.255.0.
7. The LAN1 settings are applied to LAN2 if failover occurs.



8. Complete the IPv6 sections, if applicable.
9. Select the IP Auto Configuration.

If *None* is selected, you must manually specify -

- Global/Unique IP Address - this is the IP address assigned to SX II.
- Prefix Length - this is the number of bits used in the IPv6 address.
- Gateway IP Address.

Select *Router Discovery* to locate a Global or Unique IPv6 address instead of a Link-Local subnet. Once located, the address is automatically applied.

Note that the following additional, read-only information appears in this section -

- Link-Local IP Address - this address is automatically assigned to the device. It is used for neighbor discovery or when no routers are present.
- Zone ID - Identifies the device the address is associated with. Read-Only

10. Next, select "Use the Following DNS Server Addresses" and enter the Primary DNS Server IP Address and Secondary DNS Server IP Address. The secondary address is used if the primary DNS server connection is lost due to an outage.

---

*Note: "Obtain DNS Server Address Automatically" and "Preferred DHCP Host Name" are only enabled when SX II is configured in DHCP mode*

---

Preferred DHCP Host Name  
S 60-137

Obtain DNS Server Address Automatically

Use the Following DNS Server Addresses

Primary DNS Server IP Address

Secondary DNS Server IP Address

11. Set the LAN 1/LAN 2 Interface Speed and Duplex, and the LAN 1/LAN 2 MTU.
  - Valid range for MTU is 576 - 1500.
12. When finished, click OK. Your SX II device is now network accessible.

### Configure SX II for Dual LAN Isolation Mode

Isolation mode allows you to access each LAN port independently using different IP addresses.

Failover is not supported in this mode.

1. Select Device Settings > Network to open the Device Network Settings page.
2. Set the IP Auto Configuration to *None* in the IPv4 section.
3. Ensure the "Enable Automatic Failover" checkbox is not selected.

**Current LAN Interface Parameters:**  
autonegotiation on, 1000 Mbps, full duplex, link ok

**LAN Interface Speed & Duplex**  
Autodetect ▼

**LAN1 MTU**

**Current LAN2 Interface Parameters:**  
autonegotiation on, 10 Mbps, half duplex, no link

**LAN2 Interface Speed & Duplex**  
Autodetect ▼

**LAN2 MTU**

Enable Automatic Failover ←

4. If needed, manually specify the network parameters by entering the Default Gateway and then complete the steps that follow.
5. Enter the IP address you want to use to connect to the SX II LAN1. The default IP address is 192.168.0.192.
6. Enter the IPv4 Subnet Mask. The default subnet mask is 255.255.255.0.
7. In the LAN2 IPv4 section, set the IP Auto Configuration to *None*.
8. Enter the IP address you want to use to connect to the SX II LAN2.
9. Enter the LAN2 IPv4 Default Gateway and Subnet Mask.

**Basic Network Settings**

Device Name \*

**IPv4 Address**

IP Address:  Subnet Mask:

Default Gateway:  IP Auto Configuration:

IPv6 Address

Global/Unique IP Address:  / Prefix Length:

Gateway IP Address:

Link-Local IP Address: N/A Zone ID: %1

IP Auto Configuration:

**LAN2 IPv4 Address**

IP Address:  Subnet Mask:

Default Gateway:  IP Auto Configuration:

10. Complete the IPv6 sections, if applicable.

11. Select the IP Auto Configuration.

If *None* is selected, you must manually specify -

- Global/Unique IP Address - this is the IP address assigned to SX II.
- Prefix Length - this is the number of bits used in the IPv6 address.
- Gateway IP Address.

Select *Router Discovery* to locate a Global or Unique IPv6 address instead of a Link-Local subnet. Once located, the address is automatically applied.

Note that the following additional, read-only information appears in this section -

- Link-Local IP Address - this address is automatically assigned to the device. It is used for neighbor discovery or when no routers are present.
- Zone ID - Identifies the device the address is associated with. Read-Only

12. Select "Use the Following DNS Server Addresses" and enter the Primary DNS Server IP Address and Secondary DNS Server IP Address. The secondary address is used if the primary DNS server connection is lost due to an outage.

---

Note: "Obtain DNS Server Address Automatically" and "Preferred DHCP Host Name" are only enabled when SX II is configured in DHCP mode

---

Obtain DNS Server Address Automatically

Use the Following DNS Server Addresses

Primary DNS Server IP Address  
192.168.55.100

Secondary DNS Server IP Address  
192.168.55.101

13. Set the LAN 1/LAN 2 Interface Speed and Duplex, and the LAN 1/LAN 2 MTU.

- Valid range for MTU is 576 - 1500.

14. When finished, click OK.

Your SX II device is now accessible via the LAN1 IP address and the LAN2 IP address.

## Reset Network Settings to Factory Defaults

1. Select Device Management > Network to open the Network Settings page.
2. Click "Reset to Defaults" at the bottom of the page.

## Enable Auto Script from the Remote Console for Use with TFTP or a USB Stick

Use this feature to copy the same settings to each of your SX IIs.

To do this, a configuration script file with the SX II's settings is created.

### Example Script

```
config
localport
config enable false
```

### Script Result Example

```
config
Config > localport
Config > LocalPort > config enable false
Local port configuration successful.
Config > LocalPort >
```

Create the file and then do one or both of the following to distribute it to the appliances -

- Save the file to a TFTP server with the same name DSX2\_SERIAL.autoscript. The first time a new SX II boots up, it contacts the DHCP server and retrieves the IP address of the appliance, and the DHCP server sends the SX II the TFTP server IP address.

Once contacted, the configuration file is sent from the TFTP server, the configuration settings are applied to the appliance, and the appliance reboots.

No manual intervention is required with this method.

Note that SX II must receive the TFTP server address from one of these settings:

- DHCP next-server (siaddr)
  - TFTP server address (option 66). This option takes precedence if both are specified.
- Save the file to USB stick. The file can then be brought to each appliance and used to configure it.

**Auto Script Configuration**

Script File Name: DSX2\_QX94C00004.autoscript

Enable Automatic Script Configuration via USB Stick

Enable Automatic Script Configuration via TFTP

1. Access and configure the SX II you want to create a configuration file from.
2. Select Device Settings > Auto Configuration.
3. The name of the script is listed at the top of the Auto Script Configuration section. Read-only

► *Enable automatic script configuration via USB stick:*

1. Prepare your USB stick and then plug it in to a USB port on the front or back of SX II. See [Prepare a USB Stick for an Auto Configuration File](#) (on page 81).
2. Select the "Enable Automatic Script Configuration via USB Stick" checkbox.
3. Click OK to create the script. A success message is displayed on the page.

Home > Device Settings > Auto Script Configuration

---

**Auto Script Configuration**

Script File Name: DSX2\_QX55700001.autoscript

Enable Automatic Script Configuration via USB Stick

Enable Automatic Script Configuration via TFTP

---

**TFTP Auto Script Settings**

Last Time Script Executed:

Execute Script Only Once.

Execute Script On Every Bootup If Script Has Changed.

Retrieve TFTP IP Address via DHCP.

Set TFTP IP Address Manually

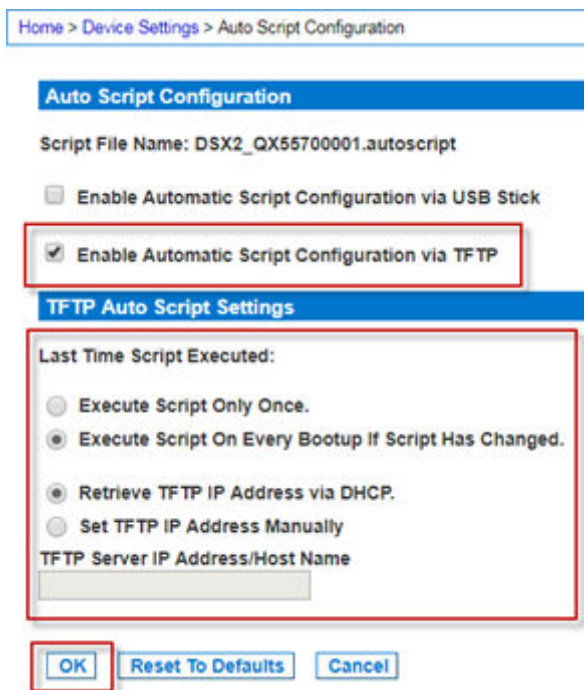
TFTP Server IP Address/Host Name

► *Enable automatic script configuration via TFTP server:*

1. Select the "Enable Automatic Script Configuration via TFTP Stick" checkbox.
2. The TFTP Auto Script Settings section is enabled.
3. Select when scripts are run on the appliances -
  - Execute Script Only Once - the script will only be executed on the appliance the first time it boots up and not again. Changes must be made manually afterward.
  - Execute Script On Every Bootup If Script Has Changed - updates are applied to the appliances upon bootup when the script changes.

Note that SX II only runs a script if it is different from the last script that was run. This applies regardless of the option selected here.

SX II remembers most recently executed script, including the time the script was run.
4. Select how the IP address is configured -
  - Retrieve TFTP IP Address via DHCP - Note that to do this, IP auto configuration must set to DHCP and enabled on the SX II. See Disable or Enable DHCP in SX II.
  - Set TFTP IP Address Manually - enter the IP address in the field provided.
5. Click OK.



## Prepare a USB Stick for an Auto Configuration File

Do the following in order to prepare your USB stick -

1. Plug the USB stick into a client machine.
2. Create an empty file named `!automatic_config`.
3. Create a file named `credential` that contains the SX II username and password. Use the following syntax -

```
username=<user name>
password=<password>
```

---

*Note: This is an Administrator user only. No other level user can use this function.*

---

4. Create a script file named `<Device_Type>_<Serial_Number_Of_Device>.autoscript` containing all of the scripts that need to be executed on the appliance to configure it.
5. Copy all above files to the top directory of the USB stick.
6. Remove any file named `<Device_Type>_<Serial_Number_Of_Device>_result.txt`.
7. Following are examples of the files you should have on your USB in the end.
 

```
!automatic_config
credential
DSX2_QVY4C00007.autoscript
```
8. Add other script files for other devices on the same USB stick, if needed.
9. Safely remove the USB stick from the client machine when done.

## Execute Auto Configurations with a USB Stick

Following are steps to configure SX IIs using an auto configuration from a USB stick.

Prepare the USB stick and put the auto configuration file on it. See and , if you have not already done so.

1. Make sure device is in working condition.
2. Plug the prepared USB stick in to a USB drive on either the front or back of the SX II you are configuring.
3. The script executes automatically after validating the username and password credentials.
4. Once the script finishes, SX II beeps twice and the `<Device_Type>_<Serial_Number_Of_Device>_result.txt` file is generated and saved at the top directory of the USB stick.
5. You can then unplug the USB stick.

---

Important - the script will stop executing if you unplug the USB stick prior to its completion.

---

## Configure Device Settings from the Remote Console

### Enable SSH Access (Optional)

SSH is enabled by default.

For information on required open ports and port protocols, see [Port Access Protocol Requirements](#) (on page 201).

Note that SSH can be disabled or enabled via Remote Console or command line interface (CLI). See [Configure Device Settings Using CLI](#) (on page 176).

1. Select Device > Device Settings to open the Device Services page.
2. Check the Enable SSH Access checkbox and complete the SSH Port.
3. If needed, select the Enable Legacy DSA checkbox.
4. Select the SSH Auth Method:
  - Password Only: Do not allow any configured certificate authentication
  - Certificate Only: Do not allow any password login to the SSH
  - Password and Certificate: Allow both authentication methods access to the deviceSee [Add SSH Client Certificates for Users](#) (on page 62) for help with certificates.
5. Click OK to save.

**Services**

Enable TELNET Access

TELNET Port  
233

Enable SSH Access

SSH Port  
22

Enable Legacy DSA

SSH Auth Method  
Password and Certificate ▾

HTTP Port \*  
80

HTTPS Port \*  
443

Discovery Port \*  
5000  Encrypted

## Enable Telnet (Optional)

Due to the lack of security, the username, password and all traffic is in clear-text on the wire.

Telnet must be enabled before it can be used; is disabled by default.

Note that Telnet can be disabled or enabled via Remote Console or command line interface (CLI). See [Configure Device Settings Using CLI](#) (on page 176).

For information on required open ports and port protocols, see [Port Access Protocol Requirements](#) (on page 201).

1. Select Device Settings > Device Services to open the Device Services page.
2. Change the default port, if needed.
3. Check the Enable Telnet Access checkbox and enter the Telnet Port. Click OK to save.

## Change HTTP and HTTPS Port Settings

If needed, change HTTP and/or HTTPS ports used by SX II. For example, if you are using the default HTTP port 80 for another purpose, changing the port ensures the appliance does not attempt to use it.

For information on required open ports and port protocols, see [Port Access Protocol Requirements](#) (on page 201).

Note that HTTP/HTTPS can be disabled or enabled via Remote Console or command line interface (CLI). See [Configure Device Settings Using CLI](#) (on page 176).

1. Choose Device Settings > Device Services. The Device Service Settings page opens.
2. Enter the new ports in the HTTP Port and/or HTTPS Port fields.
3. Click OK.

Home > Device Settings > Device Services

---

**Services**

Enable TELNET Access

TELNET Port

Enable SSH Access

SSH Port

Enable Legacy DSA

SSH Auth Method

**HTTP Port \***

**HTTPS Port \***

**Discovery Port \***  
  Encrypted

## Change the TCP Discovery Port

SX II discovery occurs over a single, configurable TCP Port.

The default is Port 5000, but you can change it to use any TCP port except 80 and 443.

To access SX II from beyond a firewall, your firewall settings must enable two-way communication through the default Port 5000 or a non-default port configured on this page.

The device will transmit information about itself (make,model,firmware version,encryption) in clear text unless the encryption option is selected.

For information on required open ports and port protocols, see [Port Access Protocol Requirements](#) (on page 201).

Note that TCP discovery port can be configured via Remote Console or command line interface (CLI). See [Configure Device Settings Using CLI](#) (on page 176).

1. Choose Device Settings > Device Services. The Device Service Settings page opens.
2. Enter the Discovery Port.
3. Select the Encrypted checkbox to encrypt the transmission of device information.
4. Click OK.

## Enable Direct Port Access

Direct Port Access allows users to bypass having to use the SX II's Login dialog and Port Access page.

There are three methods to access ports directly.

Note that Direct Port Access can be configured via Remote Console or command line interface (CLI). See [Configure Direct Port Access Using CLI](#) (on page 177).

### ► "Enable Direct Port Access" and "Enable Direct Port Access via URL":

- Direct Port Access via URL - This feature provides the ability to directly access a port via HTTP/HTTPS by using one of following syntax:
  - `https://IPAddress/dpa.asp?username=username&password=password&port=port number`
  - `https://IPAddress/dpa.asp?username=username&password=password&portname=port name`

This feature also provides the ability to enter a username and password if the username and password is not contained in the URL.

1. To enable this feature, select Device Settings > Device Services. The Device Service Settings page opens.
2. In the Direct Port Access section, select the "Enable Direct Port Access" checkbox and "Enable Direct Port Access via URL" checkbox.
3. Click OK to apply the settings.



### ► Enable Direct Port Access via SSH/Telnet Using a Unique TCP Port or Unique IP Address

To use this feature, you must configure a unique IP address or a unique TCP port for a server port that SSH/Telnet can use to access SX II. The address must be different from the SX II IP address and TCP port.

When an anonymous user attempts DPA via SSH/Telnet, username and password prompts will not appear. See [Login Limitations](#) (on page 125) for details about anonymous user access.

1. Select Device Settings > Device Services.
2. In the Direct Port Access section, select the "Enable Direct Port Access" checkbox.
3. Locate the port in the table below the checkboxes, then enter the IP address you want to assign to the port.
4. Click OK to apply the settings.

**Direct Port Access**

Enable Direct Port Access ←

Enable Direct Port Access via URL

Enable Direct Port Access via Username for SSH/Telnet

No.	Name	IP Address	SSH Port	Telnet Port
1	Serial Port 1	<input type="text"/>	<input type="text"/>	<input type="text"/>
2	Serial Port 2	<input type="text"/>	<input type="text"/>	<input type="text"/>

**Example:**

```
ssh -l [user] -p [SSH Port] [SX2 IP/Hostname]
```

```
ssh -l [user] [Serial Port IP]
```

```
telnet -l [user] [SX2 IP/Hostname] [Telnet Port]
```

```
telnet -l [user] [Serial Port IP]
```

► **Enable Direct Port Access via Username for SSH/Telnet**

This feature provides the ability to access DPA through a username and port combination without requiring a unique IP address or TCP port.

When an anonymous user attempts DPA via SSH/Telnet, no login prompt will be shown, and user is directly connected to the port. See [Login Limitations](#) (on page 125) for details about anonymous user access.

1. Choose Device Settings > Device Services. The Device Service Settings page opens.
2. In the Direct Port Access section, select the "Enable Direct Port Access" checkbox and "Enable Direct Port Access via Username for SSH/Telnet" checkbox.
3. Click OK to apply the settings.

**Direct Port Access**

Enable Direct Port Access

Enable Direct Port Access via URL

Enable Direct Port Access via Username for SSH/Telnet

**Example:**

```
ssh -l [user]:[Serial Port Name] [SX2 IP/Hostname]
```

```
ssh -l [user]:[Serial Port Number] [SX2 IP/Hostname]
```

```
telnet -l [user]:[Serial Port Name] [SX2 IP/Hostname]
```

```
telnet -l [user]:[Serial Port Number] [SX2 IP/Hostname]
```

### Example of access port-#1 as admin:

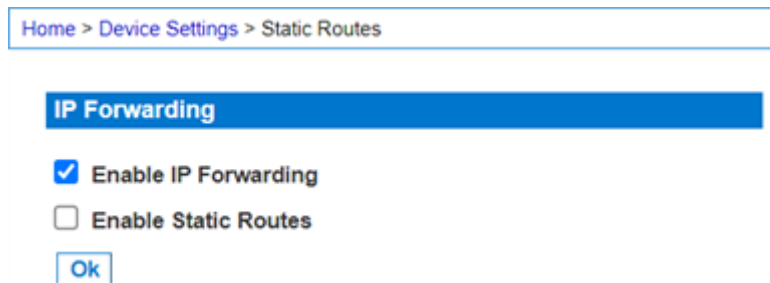
- `ssh -l admin:1 192.168.51.101`

## IP Forwarding and Static Routes

Enable IP forwarding, or create static routes if SX II has two LAN ports or is configured for modem access.

### ► To enable IP forwarding and static routes:

1. Select Device Settings > Static Routes. The Static Routes page opens.
2. Select the checkboxes to enable each feature, then click OK.



### ► To add a static route:

1. When Static Routes is enabled, click Add, then enter the Route details.

### Route

**Interface:**  
LAN 1 ▼

**Destination:**

**Mask:**

**Gateway:**

**MTU:**  
64

**Flags:**  
Host ▼

2. Select the LAN you want to configure from the drop-down menu in the Interface field.
  - LAN1 = eth0
  - LAN2 = eth1
3. Type the IP address, subnet mask, and gateway of the destination host in the Destination, Mask, and Gateway fields.
4. Enter the maximum transmission unit (MTU) in bytes in the MTU field.
5. Type the TCP windows size for connections over this route in bytes in the Window field.
6. Select your route type from the Flags drop-down menu.
  - Host means this route is for a host machine.
  - Net means this route is for a subnet.
7. Click OK.

► *To reset a static route:*

1. Select Device Settings > Static Routes. The Static Routes page opens.
2. Click Reset To Defaults to reset the route fields to the factory defaults.

► *To delete a static route:*

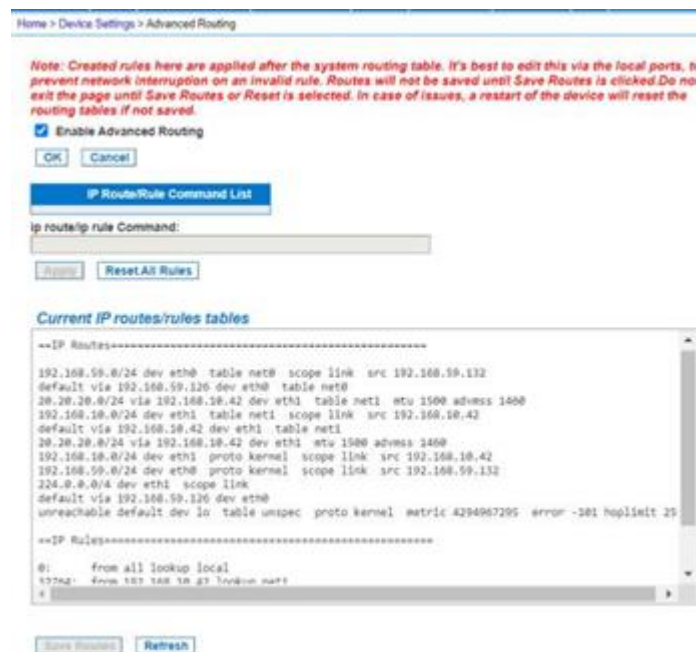
1. Select Device Settings > Static Routes. The Static Routes page opens.
2. Go to the Static Routes List and select the checkbox next to the route you want to delete.
3. Click Delete. You are prompted to confirm the deletion.
4. Click OK. The route is deleted.

## Advanced Routing

Advanced routing allows you to customize network routing settings. Similar to iptables support, individual 'ip' commands can be executed on the device and the runtime state of the device will be updated with each command. Once saved, the "route commands" should be executed on every bootup of the device and will be applied after the default system routes are brought up. You can backup/restore these settings.

► **To enable and configure Advanced Routing:**

1. Choose Home > Device Settings > Advanced Routing. The Advanced routing page opens.
2. Select the "Enable Advanced Routing" checkbox.
3. Click OK.



4. Enter 'ip route <data>' or 'ip rule <data>', followed by the Linux 'ip route' and 'ip rule' command format.
5. Click Apply. The IP Route/Rule Command List appears.



---

Note: Created rules are applied after the system routing table. It's best to edit this via the local ports, to prevent network interruption on an invalid rule. Routes will not be saved until Save Routes is clicked. Do not exit the page until Save Routes or Reset is selected. In case of issues, a restart of the device will reset the routing tables if not saved.

---

► *To reset Advanced Routing:*

- Click "Reset All Rules" to clear the custom settings.
- A factory reset of the device will delete all custom commands and disable advanced routing.

## Enable Syslog Forwarding

This feature logs all system activities and forwards them to remote Syslog servers. You can configure up to 8 different servers. All messages will be forwarded to all configured servers. If you need to focus on specific messages per server, you should apply message filters at the server level. Messages are sent even if some servers are experiencing errors.

1. Choose Device Settings > Event Management. The Event Management - Settings page opens.
2. Select Enable Syslog Forwarding to log the appliance's messages to remote Syslog servers.
3. Type the IP Address/Hostname of your Syslog servers in the IP Address/Hostname fields. IPv4 and IPv6 are supported.
4. Enter the port number for each server. Default is 514.
5. Click OK at the bottom of the page.

Home > Device Settings > Event Management - Settings

### SNMP Notifications Configuration

SNMP Logging Enabled  SNMP v2c Notifications Enabled  SNMP v3 Notifications Enabled

[Link to SNMP Agent Configuration](#)  
[Click here to view the Dominion SX2 SNMP MIB](#)

### SysLog Configuration

Enable Syslog Forwarding

Syslog Message Format  
rfc5424 ▼

IP Address/Host Name	Port #
192.168.62.56	514
	514
	514
	514
	514
	514
	514
	514

---

Note: IPv6 addresses cannot exceed 80 characters in length for the host name.

---

- Click Reset to Defaults at the bottom of the page to remove the setting.

## 802.1X Security

IEEE 802.1X authentication can be configured independently on each LAN port to give the SX II secure access to your wired LAN.

Supported authentication methods include:

- EAP\_TLS
- EAP\_TTLS
- EAP\_PEAP

If your network switch does not allow access to the network without 802.1X in effect, you will not be able to configure SX II remotely using a web browser. You can use the Local Port of the SX II or a crossover cable to the switch itself.

Before proceeding, upload your certificate in the Certificate Repository so that it can be accessed from the 802.1X configuration page. See [Certificate Repository](#) (on page 143).

---

Important: Do not delete certificates that are in use from the Certificate Repository.

---

### ► *To configure 802.1X security:*

1. Choose Device Settings > 802.1X Security. The settings page opens. Note that LAN and LAN2 settings are separate.
1. In the LAN or LAN2 sections, select the Enable 802.1X Security checkbox to begin.
2. In the CA Certificate section, select Enable Verification of TLS Server Certificate if your configuration requires a certificate.
  - If your certificate has been uploaded, select it in the Repository CA Certificate List (by Subject) field.
  - If your certificate doesn't appear, you must add it to the Certificate Repository. See [Certificate Repository](#) (on page 143).
  - Select the option for "Allow expired and not yet valid certificates" to enable if needed.
1. Select your Authentication Method to activate the necessary fields in the form:
  - EAP\_PEAP: Inner Authentication is set to MSCHAPv2. Enter the user name and password.
    - Username: Numerals: 0-9, Lower case letters: a-z, Upper case letters: A-Z, Printable special characters: ASCII codes 33-47, 123-126, Space (ASCII code 32) is not allowed. Up to 32 characters.
    - Password: Numerals: 0-9, Lower case letters: a-z, Upper case letters: A-Z, Printable special characters: ASCII codes 33-47, 123-126, Space (ASCII code 32) is allowed. Up to 64 characters.

**EAP\_PEAP**

Inner Authentication: MSCHAPv2

User Name:

Password:

- EAP\_TLS:
  - If your certificate has been uploaded, select it in the Repository Client Certificate List (by Subject) field.
  - If your certificate doesn't appear, you must add it to the Certificate Repository. See [Certificate Repository](#) (on page 143).

**EAP\_TLS**

Client Certificate

Repository Client Certificate List (by Subject): Not Set

None Available ▾

- If the certificate uploaded to the repository requires a password, the Key Requires Password and password fields will populate automatically.

Client Private Key

Client Private Key: File Not Set

No file selected

Key Requires Password

Password

- EAP\_TTLS: Select the Inner Authentication method from the list: MSCHAPv2, CHAP, or PAP. Enter the user name and password.

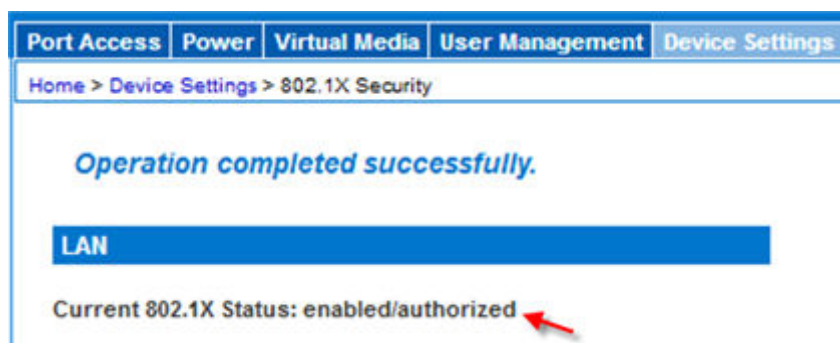
**EAP\_TTLS**

Inner Authentication: MSCHAPv2 ▾

User Name:

Password:

1. Click OK and wait for authentication. This may take several minutes. You can check the status at the top of the 802.1X settings page. After clicking OK the status will be "enabled/pending". If authentication is successful, the status changes to "enabled/authorized". If authentication fails, the status changes to "enabled/failed".



## 802.1X Status

Check the 802.1X status at the top of the settings page. Go to Device Settings > 802.1X Security.

Interface State	Authentication State	Status
Enabled	Pending	Wait
Enabled	Authorized	Success
Enabled	Failed	Failed/Troubleshoot
Disabled		802.1X Disabled

## Troubleshooting 802.1X Authentication Failure

The following tips may help you troubleshoot 802.1X authentication failure.

- Wait for the authentication to complete – it may take several minutes.
- Double-check that the SX II 802.1X settings you have entered match how 802.1X is configured on your network switch.
- Check the 802.1X Status under Device Settings>802.1X Security, in the Audit Log, and the status on the network switch
- On the network switch: Make sure Periodic Reauthentication is enabled. Set the Reauthentication Period to the lowest possible value. The switch will reauthenticate when the Reauthentication Period expires
- Switches may have a way to trigger reauthentication immediately, for example, a 'Reauthenticate Now' checkbox that can be selected to restart authentication immediately on the switch.
- Reboot the SX II.
- Make sure all certificates are uploaded and remain in the Certificate Repository. See [Certificate Repository](#) (on page 143).

## Configure Date and Time Settings from the Remote Console

Use the Date/Time Settings page to specify the date and time for the SX II. There are two ways to do this:

- Manually set the date and time.
- Synchronize the date and time with a Network Time Protocol (NTP) server.

---

Note: NTP security is added to the SX II, which allows it to request the date and time with or without authentication. If the NTP server is configured to use authentication, it will accept the request along with the authentication key, and send back the date and time along with a digital information of the authentication key. The SX II will verify the digital information and will use the date and time if the key matches; otherwise discard the received information.

---

► *To set the date and time:*

1. Choose Device Settings > Date/Time. The Date/Time Settings page opens.
2. Choose your time zone from the Time Zone drop-down list.
3. Adjust for daylight savings time by checking the "Adjust for daylight savings time" checkbox.
4. Choose the method to use to set the date and time:
  - User Specified Time - use this option to input the date and time manually. For the User Specified Time option, enter the date and time. For the time, use the hh:mm:ss format (using a 24-hour clock).
  - Synchronize with NTP Server - use this option to synchronize the date and time with the Network Time Protocol (NTP) Server.
5. For the Synchronize with NTP Server option:
  - a. Enter the IP address of the Primary Time server, Authentication Type, ID, key Format and key value.
  - b. Enter the IP address of the Secondary Time server, Authentication Type, ID, key Format and key value Optional

---

*Note: If DHCP is selected for the Network Settings on the Network page, the NTP server IP address is automatically retrieved from the DHCP server by default. Manually enter the NTP server IP address by selecting the Override DHCP checkbox.*

---

6. Click OK.

Home > Device Settings > Date/Time Settings

### Date/Time Settings

Time Zone  
 (GMT +00:00) England, Ireland, Portugal

Adjust for daylight savings time  
 User Specified Time

Date (Month, Day, Year)  
 July 04 2022

Time (Hour, Minute)  
 18 : 35 : 6 (hh:mm:ss)

Synchronize with NTP Server  
 Override DHCP

Primary Time Server

IP Address/Host Name  
 192.168.51.22

Type	ID	Format	Key
None	1	ASCII	what

Secondary Time Server

IP Address/Host Name  
 192.168.50.107

Type	ID	Format	Key
None	2	ASCII	if

OK Reset To Defaults Cancel

## Configure SNMP Agents from the Remote Console

See [Viewing the SX II MIB](#) (on page 99) for information on viewing the SX II MIB.

SX II supports SNMP logging for SNMP v2c and/or v3. SNMP v2c defines message formats and protocol operations when SNMP logging is enabled. SNMP v3 is a security extension of SNMP that provides user authentication, password management and encryption.

### SNMP Agent Configuration

Enable SNMP Daemon

System Name	System Contact	System Location
SX2	Admin	DC

Enable SNMP v1/v2c:

Community	Community Type
private	Read-Write

Enable SNMP v3  Use Auth Passphrase

Security Name	Auth Protocol	Auth Passphrase	Privacy Protocol	Privacy Passphrase
AuthUser	MD5	*****	None	

[Link to SNMP Trap Configuration](#)

1. Choose Device Settings > Device Services. The Device Service Settings page opens.
2. Select the Enable SNMP Daemon checkbox to activate to the SNMP section.
3. Provide the following SNMP agent identifier information for the MIB-II System Group objects:

- System Name - the SNMP agent's name/appliance name
  - System Contact - the contact name related to the appliance
  - System Location - the location of the appliance
4. Select either or both Enable SNMP v1/v2c and Enable SNMP v3. At least one option must be selected. Required
  5. Complete the following fields for SNMP v2c (if needed):
    - Community - the appliance's community string
    - Community Type - grant either Read-Only or Read-Write access to the community users

---

*Note: An SNMP community is the group to which appliances and management stations running SNMP belong. It helps define where information is sent. The community name is used to identify the group. The SNMP device or agent may belong to more than one SNMP community.*

---

6. Complete the following fields for SNMP v3 (if needed):
  - Select Use Auth Passphrase if one is needed. Select this option if you want to use the same pass phrase for the authorization pass phrase and privacy pass phrase without having to re-enter it.
  - Security Name - the username or service account name of the entity communicating with the SNMP agent (up to 32 characters).
  - Authentication Protocol - the MD5 or SHA authentication protocol used by the SNMP v3 agent. Note: When FIPS is enabled, SHA must be used for v3 traps for FIPS compliance.
  - Authentication Passphrase - the pass phrase required to access the SNMP v3 agent (up to 64 characters).
  - Privacy Protocol - if applicable, the AES or DES algorithm used to encrypt data.
  - Privacy Passphrase - if applicable, the pass phrase used to access the privacy protocol algorithm (up to 64 characters).

Next, configure SNMP traps. This is done on the Event Management - Settings page, which can be quickly accessed by clicking the SNMP Trap Configuration link at the bottom of the Device Services page. See [Configuring SNMP Notifications](#) (on page 96) for information on creating SNMP traps and List of SX II SNMP Traps for a list of available SX II SNMP traps.

The events that are captured once an SNMP trap or inform is configured are selected on the Event Management - Destination page. See [Configuring Event Management - Destinations](#).

## Configuring SNMP Notifications

Simple Network Management Protocol (SNMP) is a protocol governing network management and the monitoring of network devices and their functions.

SNMPv2 provides for both traps and informs to be sent out over a network to gather information. The basic difference between traps and informs is that when the remote application receives an inform it sends back an acknowledgment, while traps are not acknowledged. In SNMPv3, there are further capabilities and restrictions on how the messages are handled.

The traps and informs are configured on the Event Management - Settings page. See [List of SX II SNMP Traps](#) for a list of supported traps and informs.

SNMP agents are configured on the Device Services page. See Configuring SNMP Agents for information on configuring SNMP agents and [Viewing the SX II MIB](#) (on page 99) for information on viewing the SX II MIB.

1. Choose Device Settings > Event Management - Settings. The Event Management - Settings page opens.
2. Select the SNMP Logging Enabled checkbox to enable to remaining checkboxes in the section. Required
3. Select either or both SNMP v2c Notifications Enabled and SNMP v3 Notifications Enabled. At least one option must be selected.

Once selected, all related fields are enabled. Required

4. Complete the following fields for SNMP v2c (if needed):
  - Destination IP/Hostname - the IP or hostname of the SNMP manager. Up to five (5) SNMP managers can be created

---

*Note: IPv6 addresses cannot exceed 80 characters in length for the host name.*

---

- a. Port Number - the port number used by the SNMP manager
- b. Community String - the appliance's community string

---

*Note: An SNMP community is the group to which appliances and management stations running SNMP belong. It helps define where information is sent. The community name is used to identify the group. The SNMP device or agent may belong to more than one SNMP community.*

---

- c. Type - notification type, either Trap or Inform
- d. Retries and Timeout - for Informs, enter the number of retries to be attempted, and the timeout period in seconds.

---

*WARNING: Non-responding destinations may significantly slow system response if informs are configured with large values for retries and/or timeouts.*

---

5. If it is not already, select the SNMPv3 Notifications Enabled checkbox to enable the following fields. Complete the following fields for SNMP v3 (if needed):
  - Destination IP/Hostname - the IP or hostname of the SNMP manager. Up to five (5) SNMP managers can be created

---

*Note: IPv6 addresses cannot exceed 80 characters in length for the host name.*

---

- a. Port Number - the port number used by the SNMP manager
- Security Name - the username or service account name of the entity communicating with the SNMP agent (up to 32 characters).
- Authentication Protocol - the MD5 or SHA authentication protocol used by the SNMP v3 agent. Note: When FIPS is enabled, SHA must be used for v3 traps for FIPS compliance.
- Authentication Passphrase - the pass phrase required to access the SNMP v3 agent (up to 64 characters).
- Privacy Protocol - if applicable, the AES or DES algorithm used to encrypt data.

- a. Privacy Passphrase - if applicable, the pass phrase used to access the privacy protocol algorithm (up to 64 characters).

---

*Note: If you are accessing the Event Management - Settings page from the local console and are using a screen resolution lower than 1280x1024, the Privacy Passphrase column may not be displayed on the page. If this occurs, hide the SX II's left panel. See Left Panel*

---

- b. Type - notification type, either Trap or Inform.
  - c. Retries and Timeout - for Informs, enter the number of retries to be attempted, and the timeout period in seconds.
6. Click OK to create the notifications.

Use the Link to SNMP Agent Configuration link to quickly navigate to the Devices Services page from the Event Management - Settings page.

The events that are captured once an SNMP trap or inform is configured are selected on the Event Management - Destination page. See Configuring Event Management - Destinations.

---

SX II supports SNMP logging for SNMP v2c and/or v3. SNMP v2c defines message formats and protocol operations when SNMP logging is enabled. SNMP v3 is a security extension of SNMP that provides user authentication, password management and encryption.

---

► *To edit existing SNMP notifications:*

1. Choose Device Settings > Event Management - Settings. The Event Management - Settings page opens.
2. Make changes as needed and click OK to save the changes.

---

Note: If you disable SNMP settings at any time, the SNMP information is retained so you do not have to reenter if you re-enable the settings.

---

► *To delete SNMP notifications:*

- Clear all of the SNMP fields and save.
- Use the reset to factory defaults feature to remove the SNMP configuration and set the SX II to its original factory default.

► *To reset to factory defaults:*

- Click Reset To Defaults.

---

---

**WARNING:** When using SNMP notifications over UDP, it is possible for the SX II and the router that it is attached to fall out of synchronization when the SX II is rebooted, preventing the reboot completed SNMP notification from being logged.

---

---

## Viewing the SX II MIB

1. Choose Device Settings > Event Management - Settings. The Event Management - Settings page opens.
2. Click the 'Click here to view the 'SNMP MIB' link. The MIB file opens in a browser window.

## Performance Information in the MIB

The following Gets() have been added to the MIB.

### ▶ *CPU (processor)*

- systemUsageCPU: Current usage as percentage

### ▶ *Memory*

- systemUsageMemory: Current usage as percentage.

### ▶ *Power supply status*

- systemPowerSupplyTable: Table of up to two power supplies' on/off status.

### ▶ *Port utilization and Port status*

- portDataTable: Table of the portDataStatus for each port with the possible states below:
  - inactive - Target cannot be accessed. (UI Status:down, Availability:idle)
  - available - Target can be accessed. (UI Status:up, Availability:idle)
  - connected - A user is connected but capacity is available. (UI Status:up/down, Availability:connected)
  - busy - Reached maximum access capacity. (UI Status:up/down, Availability:busy)

## Configure Event Management - Destinations

If system events are enabled, SNMP notification events (traps and informs) are generated. The events can be logged to the syslog or audit log.

Events and where the event information is sent is configured on the Event Management - Destinations page.

---

Note: SNMP, Syslog, and SMTP logging only works when enabled in the Event Management - Settings page.

---

### ▶ *To select events and their destinations:*

1. Choose Device Settings > Event Management - Destinations. The Event Management - Destinations page opens.

System events are categorized by Device Operation, Device Management, Security, User Activity, and User Group Administration.

2. Select the checkboxes for those event line items you want to enable or disable, and where you want to send the information.

---

*Tip: Enable or disable entire categories by checking or clearing the Category checkboxes, respectively.*

---

3. Click OK.

► **To reset to factory defaults:**

- Click Reset To Defaults.

---

**WARNING:** When using SNMP notifications over UDP, it is possible for the SX II and the router that it is attached to fall out of synchronization when the SX II is rebooted, preventing the reboot completed SNMP notification from being logged.

---

Home > Device Settings > Event Management - Destinations

**Event Management - Destinations**

*Note: SNMP traps will only be generated if the "SNMP Logging Enabled" option is checked. Syslog events will only be generated if the "Enable Syslog Forwarding" option is checked. SMTP messages will only be generated if the "SMTP Logging Enabled" option is checked. Event destination settings can be found on the "Event Management - Settings" page on the Device Settings menu.*

Category	Event	SNMP	Syslog	SMTP	Audit Log
Device Operation		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	System Startup	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	System Shutdown	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Power Supply Status Changed	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Powerstrip Outlet Status Changed	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Network Parameter Changed	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Port Status Changed	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Network Failure	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Ethernet Failover	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	802.1x Authentication Failure				<input checked="" type="checkbox"/>
	Automatic Script Configuration	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

## Enable Email (SMTP) Notifications from the Remote Console

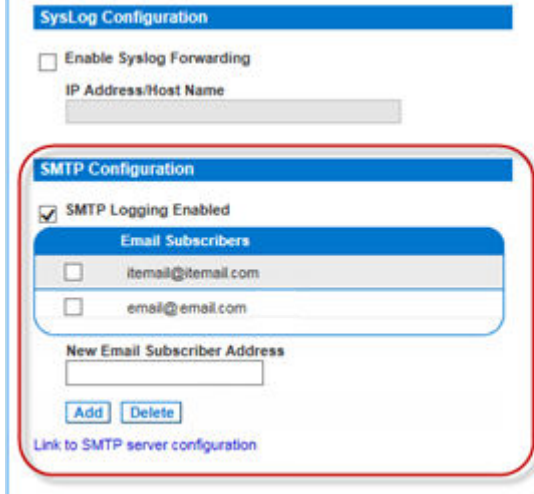
Enable email notifications for users on the Event Management - Settings page.

Each person for whom SMTP is enabled receives notification when an event is triggered. Up to ten (10) users can be added.

Configure SMTP server settings on the SMTP Settings page. Use the "Link to SMTP server configuration" quick link at the bottom of the Event Management - Settings page. See [Configure and Test SMTP Server Settings](#) (on page 101).

► *To enable SMTP Notifications:*

1. Select Device Settings > Event Management - Settings to open the Event Management - Settings page.
2. Go to the SMTP Settings panel and select the Enable SMTP Server checkbox.



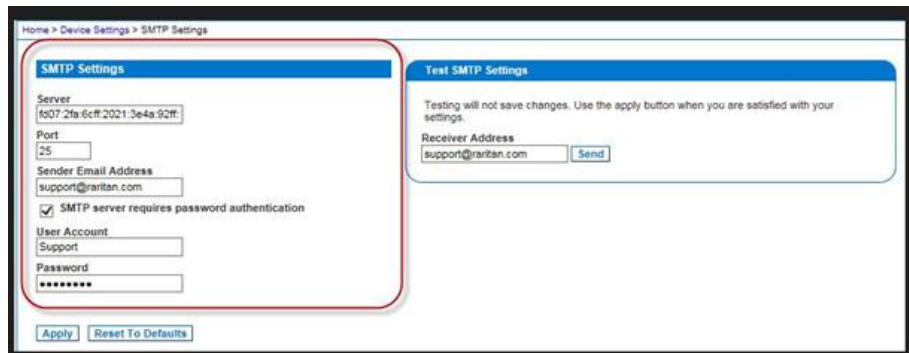
3. Type the email address of the SMTP subscriber in the New Email Subscriber Address field and then click Add.
4. Click OK.

## Configure and Test SMTP Server Settings

Enter the information required for a connection to your SMTP server on the SMTP Server Settings page.

Note that if the server requires STARTTLS, SX II automatically uses it.

1. Select Device Settings > SMTP Settings.
2. Provide the server address, port and the email address used to send SMTP notifications.
3. If the server requires a username and password authentication to send emails, provide them in the User Account and Password fields, respectively.
4. Click Apply.



It is important that the SMTP server information be accurate so that the SX II appliance can send messages using that SMTP server.

This test sends an email using the settings displayed on the page in the SMTP Settings pane. SX II saves the settings once you click Apply.

1. Send a test email by entering a destination email address to receive the test message

Note that the receiver email is not saved.

2. Verify the message was received by the intended email target. If there are problems, contact your SMTP administrator to make sure your SMTP server IP address and authorization information are correct.

The screenshot shows the 'SMTP Settings' page with a 'Test SMTP Settings' dialog box. The dialog box contains a 'Receiver Address' field with the value 'support@raritan.com' and a 'Send' button. The background page shows various configuration fields for the SMTP server, including 'Server', 'Port', 'Sender Email Address', 'SMTP server requires password authentication', 'User Account', and 'Password'.

## Configure Modem Settings from the Remote Console

Configure modem settings for SX II models with internal, analog modems on the Modem Settings page. You can also configure modem settings via command line interface. See [Configure a Modem Using CLI](#) (on page 171).

---

Note: SX II models without internal modems do not have access to the Modem Settings.

---

SX II models with internal modems are indicated by an M in the model, such as DSX2-4M. For a list of models, see [SX II Models](#) (on page 15). Your model number is in Device Information in the left panel of the Remote Console.

```
Device Information:
Device Name: DominionSX2For250Teting2022
IP Address:
  192.168.59.132
  192.168.10.42
Firmware: 2.5.0.1.3842
Device Model:
DSX2-32M
Network: LAN1 LAN2
PowerIn1: on
PowerIn2: on
```

► *Restrictions of PPP dialup:*

When accessing SX II over dialup, the Port Access tab in the web interface is disabled, but administrative features are available. Port access cannot load over slow dialup connections. When using PPP dialup, use SSH CLI for port access.

### Connect to the Internal Modem via the Modem Port

- Use a telephony cable to connect to the Modem port on the SX II.



### Configure the Internal Modem

1. Choose Device Settings > Modem Settings to open the Modem Settings page.

---

*Note: The Enable Broadband Modem feature is specific to use of an external, wireless modem. See [Connect and Enable Global Access to an External USB-Connected Broadband Modem](#) (on page 108).*

---

2. Select Enable Modem. Default is enabled.
3. Select the Modem Access Mode.
  - All - allows modem access through both PPP and console access.  
If a PPP signal is not detected, uses console access.
  - PPP\_Only - allows only PPP connections that will access the SX II through the configured PPP server IP address.
  - Console\_Only - allow only Local Console connections, meaning CLI access through a terminal emulation program such as Hyperterminal.
4. If you selected All or PPP\_Only as the modem access mode, enter the IP address information.
  - Enter the PPP server IP address.  
This is address assigned to SX II when a connection is established via dial-up. Required
  - Enter the PPP client IP address.  
This is the internet address SX II assigns to the Remote Client when a connection is established via dial-up. Required

---

*Note: The PPP server IP address and PPP Client IP address must be different and cannot conflict with the network addresses used by the server or the client.*

---

5. PPP\_Only mode supports dialback. Select the Enable Modem Dial Back checkbox to enable the dialback feature.

Only tone dial back is supported; pulse dial back is not supported.

Both Dial-in and Dialback must be enabled on the modem, and the dialback numbers for a user must be configured in the authentication service (local, RADIUS, LDAP, or TACACS+). See [Create and Activate a User](#) (on page 60).

Users who belong to a user group with Modem Access permission but who do not have a dial-in number cannot establish a connection.

Each user accessing the SX II via modem must have a call-back number defined in their profile. A Comma (,) character is supported to enable a pause, such as in dialing a 9 before a phone number. Add up to 8 dialback numbers per user. See [Configure Multiple Dialback Numbers and Caller ID Verification](#) (on page 105).

6. Select the Caller ID Verification for Dialback checkbox to enable. When enabled, numbers used to access the modem will be verified against the dialback numbers listed for a user. See [Configure Multiple Dialback Numbers and Caller ID Verification](#) (on page 105) for more details.
7. Select Enable Modem Dialout to allow outbound modem connections. When enabled, an access point called "Internal Modem" is added to the end of the port list that will launch an HSC interfaces directly with the modem. AT commands can then be given to initialize and dial out from the modem.
8. Click OK to commit your changes or click Reset to Defaults to return the settings to their defaults.

**Modem Settings**

Enable Modem

Modem Access Mode  
Console\_Only ▾

Enable Modem Dialback

Caller ID Verification for Dialback

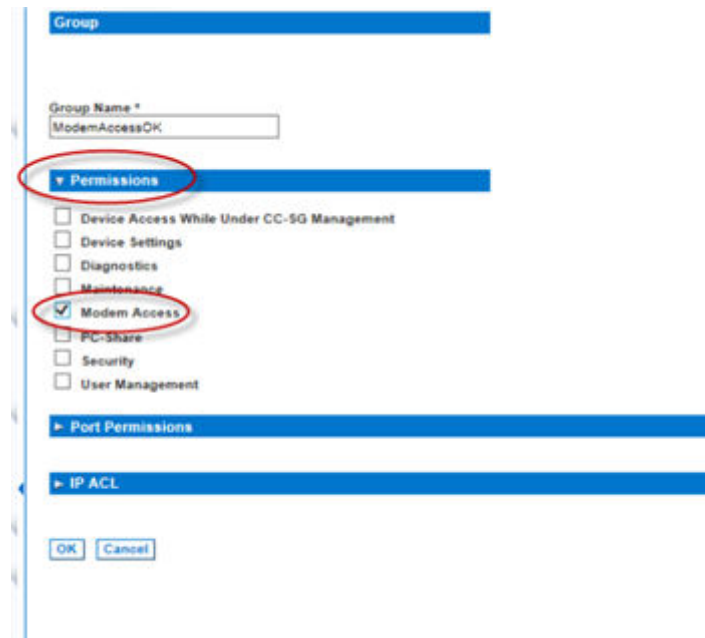
PPP Server IP Address  
10.0.0.1

PPP Client IP Address  
10.0.0.2

OK   Reset To Defaults   Cancel

### Assign User Groups Modem Access Permissions

- If needed, assign users to a group with Modem Access permissions. Modem Access permission is assigned to a user group on the Group page, and the user is then assigned to the group on the User page. For more information, see [Configure and Manage Users and Groups from the Remote Console](#) (on page 54).



## Configure Multiple Dialback Numbers and Caller ID Verification

You can associate multiple phone numbers with a user for dialback from the modem. Caller ID verification can be enable to validate and dial back to the proper number in the list.

When a user logs in via the modem, and Caller ID Verification is enabled, the system will check the phone number used to log into the device. If the Caller ID number is found in the user's configured dialback numbers, dialback will be allowed to continue and dial back to the number in the CallerID. When Caller ID Verification is disabled, and the user has multiple numbers configured, the system will always dial back the first number that is in the list of numbers in the dialback field.

Multiple dialback numbers and caller ID verification work the same way with both PPP dialback and console dialback implementations.

### ► To configure dialback numbers:

1. Choose User Management, then select a user or create a user. See [Create and Activate a User](#) (on page 60). When your SX II model has an internal modem, the user profile contains modem-specific fields.

**User**

Username \*

Full Name

Password

Confirm Password

Dialback Number

User Group \*

Active

2. In the Dialback Number field enter the list of phone numbers for this user. Use a space between each complete phone number. Up to 128 characters total.
3. Click OK.

► *To configure caller ID verification:*

1. Choose Device Settings > Modem Settings to open the Modem Settings page.
2. Verify PPP\_Only is selected for Modem Access Mode.
3. Verify Enable Modem and Enable Modem Dialback checkboxes are selected.
4. Select the Caller ID Verification for Dialback checkbox.
5. Click OK.

**Modem Settings**

Enable Modem

Modem Access Mode

Enable Modem Dialback

Caller ID Verification for Dialback

PPP Server IP Address

PPP Client IP Address

## Configure Caller ID Verification for Dialin Numbers

Caller ID verification for dialin numbers allows you to configure a list of 8 approved dialin numbers from which analog phone calls will be accepted.

When enabled, if a call is received from a number that is not present in the dialin list, the phone does not answer the line.

If the phone number is present in the dialin list, the connection will take place after the third ring of the phone.

Home > Device Settings > Modem Settings

**Broadband Modem Settings**

Enable Broadband Modem

Enable Broadband Modem Failover

**Modem Settings**

Enable Modem

Modem Access Mode  
All

Enable Modem Dialback

Caller ID Verification for Dialback

PPP Server IP Address  
10.0.0.1

PPP Client IP Address  
10.0.0.2

Caller ID Verification for Dialin

Modem Dialin List

Phone Number
123

OK Reset To Defaults Cancel

► *To configure caller ID verification for dialin numbers:*

1. In Device Settings > Modem Settings, make sure a modem is enabled.
2. Select the Caller ID Verification for Dialin checkbox.
3. Enter the approved dialin numbers in the Modem Dialin List.
4. Click OK.

## External Modem Support

There are two supported options for external broadband modems. One option may be better for your configuration.

► *USB-connected modem:*

- All SX II models support an external, 3G/4G wireless modem connection with USB using a Sierra Wireless AirLink® GX440, GX450, or ES450 gateway modem.
- With this modem configuration, you can set permissions on SX II that control who can access using this modem. See [Connect and Enable Global Access to an External USB-Connected Broadband Modem](#) (on page 108)

► *LAN-connected modem:*

- All SX II models support an external 4G modem connection via Ethernet using a Cradlepoint AER1600 or Cradlepoint IBR200 modem. See [Connect to a LAN Connected External Modem](#) (on page 110).
- With this modem configuration, the modem is unknown to SX II because it is Ethernet-connected. You cannot control the modem using SX II permissions.
- The "Failover to Modem" feature does not apply to this modem configuration.
- This configuration can be used with VPN access.

### Connect and Enable Global Access to an External USB-Connected Broadband Modem

Users who need access to SX II via the Sierra Wireless modem must be assigned to a user group with Modem Access permissions. This is a security measure that helps control who can access SX II via the modem. For example, create a user group called Sierra Wireless Users and give the group Modem Access permissions, then assign only users who need access to the modem to that group.

The Enable Broadband Modem feature must be enabled in SX II in order for users to access SX II via the Sierra Wireless modem. This is a global-level feature, so it is disabled by default in order to prevent all users from being able to access SX II via the modem.

### Broadband Modem Settings

- Enable Broadband Modem**
  - Enable Broadband Modem Failover**

### Sierra Wireless Software and Firmware Versions

Sierra Wireless must have at least ALEOS Software Version 4.4.1.014

This configuration has been tested with the Verizon Wireless MC7750 Radio Module using firmware version 3.05.10.13.

### Connect the External, Wireless Modem

USB Connection

Use either a Micro A or Micro B to USB Type A cable to connect the Sierra Wireless to the SX II.

- Connect the Sierra Wireless USB port to any of the USB ports on back of the SX II or to the USB port on the front of the SX II.



---

Note: Only USB connections are supported for this modem.

---

### Configure the Sierra Wireless Modem

Configure the Sierra Wireless modem for use with SX II using these connections. These settings are configured on the Sierra Wireless modem, not SX II.

Configure the Sierra Wireless Modem for a Cellular Connection

- A SIM card must be purchased from your service provider and installed in the Sierra Wireless modem.
- Get a static IP address from your service provider, then assign it to the Sierra Wireless modem.
- Sierra Wireless must be configured for Public mode.
- Host Connection Mode must be set to "USB Uses Public IP".
- USB Device Mode must be set to "USBNET".

### Change Default Username

For security reasons, change the default Admin account username to a new name before using the Sierra Wireless .

### Assign User Groups Modem Access Permissions

Following are settings applied in SX II.

- Modem Access permission is assigned to a user group on the Group page, and the user is then assigned to the group on the User page. For more information, see [Configure and Manage Users and Groups from the Remote Console](#) (on page 54).

### Enable Global Access and Failover Settings to External USB-Connected Broadband Modem

Use this feature to enable or disable access to an external Sierra Wireless modem.

---

Note: These settings do not apply to the Cradlepoint LAN-connected modem option.

---

Cellular (broadband) access is disabled by default. Since this is a global-level feature, it is disabled for all users.

Once it is enabled, only users who belong to a user group with Modem Access permissions can access SX II via the Sierra Wireless modem.

Broadband can be enabled from the Remote Client and via CLI.

► *To enable broadband from the Remote Client:*

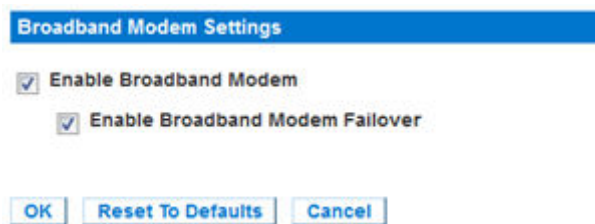
1. Enable broadband by selecting Device Settings > Modem Settings and selecting the Enable Broadband Modem checkbox.
2. Click OK to apply the change.

SX II is now accessible using the Sierra Wireless modem.

3. If you want your modem automatically enabled only when both LAN ports go down, also select the Enable Broadband Modem Failover checkbox.

Once either LAN port comes back up, the model will be automatically disabled. All active sessions will be dropped.

4. Click OK to apply the change.



## External Modem Connection Status and Checks

The connection event is logged in the SX II audit log.

Once the devices are on and the connection is active, the gateway IP address is displayed in the Remote Console in the left panel under the Network section.

Additionally, the gateway IP address is displayed on the Network Settings page in the IPv4 section's Default Gateway field.

As with other targets connected to SX II, you can perform diagnostics, ping and perform a trace of the Sierra Wireless modem using the SX II Diagnostics tools.

## Connect to a LAN Connected External Modem

Cradlepoint AER1600 or IBR200 are supported for LAN-connected external modem access.

► *To connect Cradlepoint modems to SX II:*

- Connect the AER1600's or IBR200's LAN port to the SX II LAN1 or LAN2 port.
- The SX II LAN port must be configured for DHCP so that the AER1600 DHCP server can provide it with the IP address. It is possible to reserve an IP address on the AER1600 so that the user can configure the SX II LAN port with a static IP address.
- In the SX II network settings, Enable Automatic Failover should be disabled. Choose Device Settings > Network, then deselect the Enable Automatic Failover checkbox.

► *To configure VPN access:*

OpenVPN client on Windows 7 works with the AER1600 when configured according to the instructions provided by Cradlepoint. A Cradlepoint prime license is required:

<http://knowledgebase.cradlepoint.com/articles/Support/OpenVPN-Bridged-Client-Server-Configuration>

- Note: If VPN is not in use, port forwarding must be configured in the AER1600 to forward the IP packets to the SX II.

## Power Supply Setup

SX II provides dual power supplies, and can automatically detect and provide notification regarding the status of these power supplies.

When both power supplies are used, SX II automatically detects them and notifies you of their status. Additionally, both the PowerIn1 and PowerIn2 Auto Detect checkboxes are automatically selected on the Power Supply Setup page.

If you are using only one power supply, you can enable automatic detection for only the power supply in use.

Proper configuration of power supplies ensures SX II sends the appropriate notifications should a power supply fail. For example, if power supply number one fails, the power LED at the front of the unit will turn red.

The Power LED on the front of the SX II appliance is red when the checkbox is selected for an unconnected power supply. The LED is blue when the checkbox is not selected for an unconnected power supply.

► *To enable automatic detection for the power supplies in use:*

1. Choose Device Settings > Power Supply Setup. The Power Supply Setup page opens.



2. If you are plugging power input into power supply number one (left-most power supply at the back of the unit), then select the PowerIn1 Auto Detect option.
3. If you are plugging power input into power supply number two (right-most power supply at the back of the unit), then select the PowerIn2 Auto Detect option.
4. Click OK.

► *To turn off the automatic detection:*

- Deselect the checkbox for the appropriate power supply.

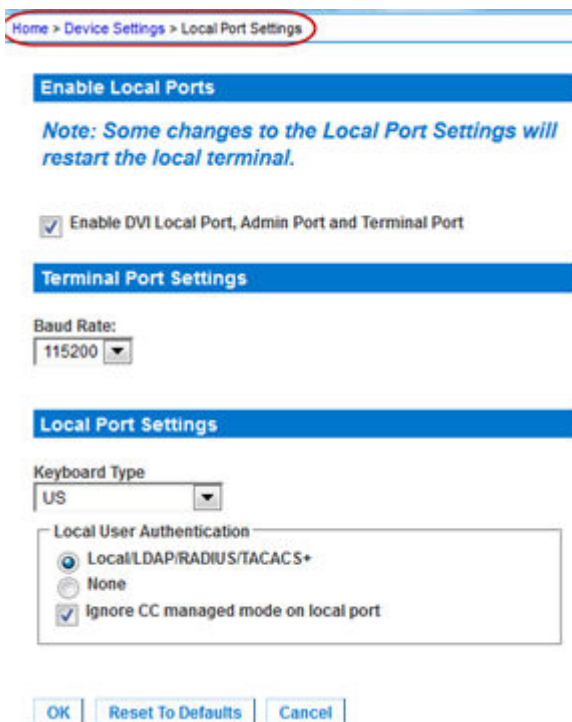
► *To reset to factory defaults:*

- Click Reset To Defaults.

## Configure Local Port Settings from the Remote Console

Configure Local Console port settings on this page.

Some changes you make to the settings on the Local Port Settings page restart the local terminals. If a local terminal restart occurs when a setting is changed, it is noted here.



1. The "Enable DVI-D Local Port, Admin Port and Terminal Port" checkbox is selected and the ports are enabled by default. Deselecting the checkbox disables the ports.

The local terminal is restarted when this change is made.

2. In the Terminal Port Settings, choose the terminal port's Baud Rate.
3. Choose the appropriate keyboard type from among the options in the drop-down list. These keyboard options apply only to the Remote Console; they do not apply to the Local Console.

The local terminal is restarted when this change is made.

- US
- US/International
- United Kingdom
- French (France)
- German (Germany)
- German (Switzerland)
- Simplified Chinese
- Traditional Chinese
- Dubeolsik Hangul (Korean)
- JIS (Japanese Industry Standard)
- Portuguese (Portugal)
- Norwegian (Norway)
- Swedish (Sweden)
- Danish (Denmark)
- Belgian (Belgium)
- Hungarian
- Spanish
- Italian
- Slovenian

---

*Note: Keyboard use for Chinese, Japanese, and Korean is for display only. Local language input is not supported at this time for SX II Local Console functions.*

---

1. Choose the type of Local Console authentication.
  - Local/LDAP/RADIUS/TACACS+ - This is the recommended option.
  - None - There is no authentication for Local Console access.

Important - If local port authentication is set to None, users only need to hit a character key on their keyboard and are automatically logged in as admin user.

This option is recommended for secure environments only. For default settings, users are required to login to the local port via username and password.
2. Select the "Ignore CC managed mode on local port" checkbox if you would like local user access to the SX II even when the appliance is under CC-SG management. Alternatively, use the direct device access while under CC-SG management feature.

If you do not ignore CC manage mode on the local port now and decide at a later time to remove the appliance from CC-SG management, you must remove the device from within CC-SG and then return to this page to deselect this checkbox.

## Changing the Default GUI Language Setting from the Remote Console

The SX II web-based interface defaults to English, but also supports the following localized languages. These languages are not applied to the Local Console.

- Japanese
- Simplified Chinese
- Traditional Chinese

### ► *To change the GUI language:*

1. Select Device Settings > Language. The Language Settings page opens.
2. From the Language drop-down, select the language you want to apply to the GUI.
3. Click Apply. Click Reset Defaults to change back to English.

---

Note: Once you apply a new language, the online help is also localized to match your language selection.

---

## Configure Port Logging Settings from the Remote Console

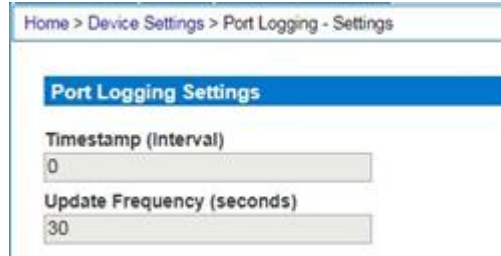
- Select Device Services > Port Logging Settings to access the Port Logging - Settings page and configure the local log settings.

### **Timestamp and Update Frequency**

SX II logs the port status at regular intervals as defined by the Timestamp value. Enter a time in seconds between 0 – 99999. Note that entering 0 disables timestamps for port logging. Changes to the timestamp interval will go into effect after the current interval has passed and that port status timestamp has been logged. The default value is 0 seconds, so port status logging is disabled by default.

The update frequency is the interval between each data push to the port log file, port syslog and NFS port logging, if they are enabled. The default value is 30 seconds.

Data is buffered in SX II during the time between the intervals or until the appliance buffer is full. This feature manages the logging traffic so it is not pushed continuously.



Home > Device Settings > Port Logging - Settings

**Port Logging Settings**

Timestamp (Interval)  
0

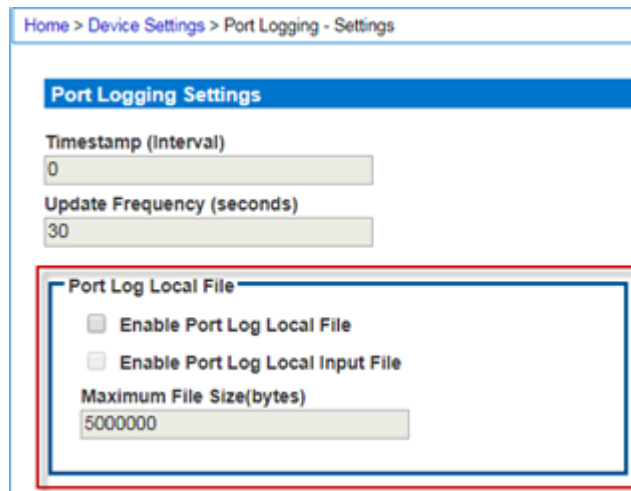
Update Frequency (seconds)  
30

### Port Log Local File and Port Log Local Input File

Enable the Port Log Local File to capture data for each port locally on SX II. To capture inputs for each port, enable the Port Log Local Input File.

Log files are stored on SX II's internal flash drive. 8 and 16 port models have a 2GB internal flash drive. All other models have an 8GB flash drive.

If needed, enter a maximum file size. When files reach the maximum size, the oldest data is overwritten to maintain size. To retrieve the files, see [Manage Port Logging - Local Files from the Remote Console](#) (on page 117).



Home > Device Settings > Port Logging - Settings

**Port Logging Settings**

Timestamp (Interval)  
0

Update Frequency (seconds)  
30

**Port Log Local File**

- Enable Port Log Local File
- Enable Port Log Local Input File

Maximum File Size(bytes)  
5000000

### Port SysLog

This feature sends port log data to a remote Syslog server. The messages from the SX II appliance are sent to the LOCAL5 category of the Syslog server for more efficient parsing.

Note: Local5 is the default category, but it is configurable to other local categories.

Since all messages are sent from the same category on the syslog server, all port output resides in the same file. Use NFS Port Logging if you prefer separate files for each port's data.

1. Go to the System Logging panel and select the Enable Port Syslog checkbox.

Port Access Power User Management Device Settings Security Maintenance Diagnostics Help

Home > Device Settings > Port Logging - Settings

**Port Logging Settings**

Timestamp (Interval)  
0

Update Frequency (seconds)  
30

**Port Log Local File**

Enable Port Log Local File

Enable Port Log Local Input File

Maximum File Size(bytes)  
5000000

**Port Syslog**

Enable Port Syslog

Syslog Category  
local5

Syslog Message Format  
legacy

Syslog Primary IP / Hostname Port #  
514

Syslog Secondary IP / Hostname Port #  
514

2. Type the IP address of the remote Syslog server in the Primary IP Address field.
3. If you have a backup Syslog server, type its IP address in the Secondary IP Address field.
4. You can use the default port of 514 for primary and secondary syslog servers or define your own.

## Network File System (NFS) Logging

Network File System (NFS) logging allows you to log all port activity to an NFS shared directory. All user activity and user port logins and logouts are logged. There are two log files:

- Input: Records all input (keystrokes) from users.
- Output: Contains all the messages that come from the server into the console server. This includes all user input that is echoed back from the managed device/server.

You must also enable port logging. For more information on port logging, see Enable Port Logging.

---

Note: The NFS server must have the exported directory with write permission for the port logging to work.

---

1. Select the Enable NFS checkbox to enable NFS logging.
2. Type the IP address or hostname of the NFS server in the Primary IP/Hostname field, and then enter the path to the log file in the NFS Primary Directory field.
3. If you have a backup NFS server, enter the IP/hostname in the Secondary IP/Hostname field and NFS Secondary Directory fields. If the primary server fails, port logging is redirected to the secondary server.
4. Enter a File Prefix to be added to all filenames. Use " " for a blank prefix.
5. Enter a maximum File Size in megabytes.
6. Specify the directory for output of log files in the Out Directory field.
7. If needed, activate the Enable Input Port Logging feature and type a directory for input in the In Directory field. To turn this feature off, deselect this checkbox.
8. Use Port Name in Filename: select to customize log file names with the port name.
9. Select the Encryption checkbox to enable encryption of log files.
  - Enter the RC4 key in the NFS Encryption Key (RC4) field.

**NFS Port Logging**

Enable NFS Port Logging

NFS Primary IP / Hostname:

NFS Primary Directory:

NFS Secondary IP / Hostname:

NFS Secondary Directory:

File Prefix:

File Size (megabytes):

Out Directory:

Enable Input Port Logging

Use Port Name in Filename  
(Port name should be unique)

Encryption

In Directory:

NFS Encryption Key (RC4):

## Manage Port Logging - Local Files from the Remote Console

### ► To delete log files:

1. Select checkbox for log files.
2. Click Delete Log File.

### ► To retrieve a log file:

- Click the Download link for a log file's "OutputFile" or "InputFile".

Note that power string data is not saved in port log files.

For information on configuring local log files for ports, see [Configure Port Logging Settings from the Remote Console](#) (on page 114).

Port Logging - Local File

No.	Port Name	Outlet No.	Outlet Type	Outlet No.	Outlet Type	Status
1	Serial Port 1	700	OutletNo	100	OutletNo	Enabled
2	LI	700	OutletNo	100	OutletNo	Enabled
3	Powerstrip	700	OutletNo	7	OutletNo	Enabled
4	Serial Port 4	700	OutletNo	7	OutletNo	Enabled
5	Serial Port 5	2000	OutletNo	87	OutletNo	Enabled
6	New_Power_Cable	4270	OutletNo	85	OutletNo	Enabled
7	port1	2000	OutletNo	700	OutletNo	Enabled
8	Serial Port 8	2000	OutletNo	100	OutletNo	Enabled
9	Serial Port 9	2000	OutletNo	100	OutletNo	Enabled
10	Serial Port 10	2000	OutletNo	8	OutletNo	Enabled
11	Serial Port 11	2000	OutletNo	8	OutletNo	Enabled

## Configure Ports from the Remote Console

The Port Configuration page displays a list of the SX II ports.

### Port Access

*Click on the individual port name to see allowable operations.*

No.	Name	Type	Status	Availability
1	<a href="#">Serial Port 1</a>	AUTO	down	idle
2	<a href="#">Serial Port 2</a>	AUTO	down	idle
3	<a href="#">Serial Port 3</a>	AUTO	down	idle
4	<a href="#">Serial Port 4</a>	AUTO	down	idle
5	<a href="#">Serial Port 5</a>	AUTO	down	idle

- To access the Port Configuration page, choose Device Settings > Port Configuration. This page is initially displayed in port number order, but can be sorted by Name or Type by clicking on the column heading.
- To access a port's page to configure it, click the Port Name for the port you want to configure.
- Select the Type of target, either Serial or Powerstrip.
- Provide a meaningful name for the serial target or power strip. Or, click Auto Name Search to use the configured autaname search settings to retrieve the System Name. Auto Name does not work for power ports. See [Port Auto Name](#) (on page 123).

---

*Note: CommandCenter Secure Gateway does not recognize rack PDU names containing spaces.*

---

### Configure Powerstrips

- If you selected Power Strip, change the Power Strip Name and click OK. If a power strip is detected, you are returned to the Port Configuration page.
- Select the port again to edit it and its outlet names, if desired. Outlet names default to the outlet number.

---

*Note: When a rack PDU is associated with a target device (port), the outlet name is replaced by the target device name, even if you assigned another name to the outlet.*

---

- Click OK to save, or Reset to Defaults to start over.

### Configure Target Devices

If you selected a target device, there are various settings you can configure.

---

Note: When a rack PDU is associated to a target device (port), the outlet name is replaced by the target device name (even if you assigned another name to the outlet).

---

1. Enter or update the Target Name.
2. If an outlet is connected to the same server that the port is connected to, a power association can be made with the target device.

A port can have up to four associated outlets, and you can associate a different rack PDU (power strip) with each. From this page, you can define those associations so that you can power on, power off, and power cycle the server from the Port Access page.

To use this feature, you need Raritan remote rack PDU(s).

3. Select the Power Strip Name and associate an name with each of the power strip's outlets by selecting from the Outlet Name drop-down.
4. Click OK. A confirmation message is displayed.

5. To allow direct port access to the target's port, enter the port's IP address, and the SSH port and Telnet port.

### Configure Port Settings

Configure the remaining port settings, as needed or required.

1. Select the terminal emulation type from the drop-down menu in the Emulation field. This is the terminal emulation mode used to match the serial targets connected to the ports. The choices are:
  - VT100
  - VT220
  - VT320
  - ANSI

2. Set Encoding to always use a specific character encoding for this port.

Encoding overrides the global setting for the port to whatever value you set.

The choices are: DEFAULT,US-ASCII,ISO8859-1, ISO8859-15,UTF-8, Shift-JIS, EUC-JP, EUC-CN, EdUC-KR.

3. In the Equipment Type field, indicate whether you want the SX II to automatically detect a physical connection to the target. The default is Auto Detection.
  - Auto Detection
  - Force DTE: SX II acts as a piece of data terminal detection equipment to detect targets connected to it.
  - Force DCE: SX II acts as a piece of data communications equipment to detect equipment connected to it.

---

*Note: If the target has the ability to autodetect either DTE or DCE, you must select either Force DTE or Force DCE for the port. SX II does not support autodetection of both DCE and DTE on the same port.*

---

4. Select the value of Bits Per Second from the Bits Per Second drop-down menu.
5. Select the Parity Bits from the Parity Bits drop-down menu.
6. Select the Flow Control from the Flow Control drop-down menu.
7. If you need to configure the delay between when individual characters are sent via the port, enter the time in milliseconds in the Char Delay field.
8. To configure the delay between when lines of text are sent via the port, enter it in the Line Delay field.
9. Configure the sendbreak duration by entering the send break time in the Send Break Duration field. The send break is configurable from 0ms - 1000ms.
10. The Always Active setting affects port data logs. Select Always Active if you want to log activities coming into a port even if no user is connected.

The default option is to not maintain port access without a connected user, which means ignore data coming into a port when no user is connected.

11. Port Detection: When disabled, the port will always be shown as "UP", bypassing port detection. This can be useful for targets that show issues conflicting with the Port/DTE/DCE detection.
12. Select from the Multiple Writers drop-down if you want multiple clients to be able to write to the port at the same time. The default behavior is that only one user may have write access to the port at a single time.
13. Select Suppress Messages to prevent messages from being displayed to anonymous users connecting to SX II via Direct Port Access.
14. Select the Escape Mode: Control or None.

The escape sequence affects only the CLI. When entering escape mode, the user is given a menu of commands that can be performed (for example, `gethistory`, `power` commands, and so forth), a command to return to the port session, and a command to exit the port connection. The default is None.

15. Type the character in the Escape Character field. The default for the SX II is ] (closed bracket).

Raritan recommends that you *do not* use [ or Ctrl-[. Either of these may cause unintended commands, such as invoking the Escape Command unintentionally. This key sequence is also triggered by the arrow keys on the keyboard.

16. Type a command in the Exit Command field, such as `logout`.

This is the command that is sent to your system when a user with write permission disconnects from the port.

The main function of this command is to ensure that the user's session on the target machine is closed; however, it is not imperative to have an Exit command configured on a port.

---

*Note: See Configure Discovery Port Using CLI for details on port configuration commands.*

---

17. Click OK to save, or click Reset to Defaults to start over.

**Serial Port Settings**

Emulation: VT100 ▾ Encoding: Default ▾ Equipment Type: Auto Detection ▾

BPS: 9600 ▾ Parity/Bits: None/8 ▾ Flow Control: None ▾

Stop Bits: 1 ▾

Char Delay (ms): 0 Line Delay (ms): 0 Send Break Duration (ms): 300

Multiple Writers: Single writer allowed on a port at a time. ▾

Suppress Messages  Always Active

Port Detection

Escape Mode: Control ▾ Escape Character: ]

Exit Command:

### Apply Settings to Other Ports

Once finished, you can apply the same port settings to other ports.

1. Select the ports from the Apply Serial Port Settings To Other Ports section of the page by selecting them individually or using the selection buttons at the bottom of the page.

▼ Apply Serial Port Settings To Other Ports		
Apply	▲ Port Number	Port Name
<input type="checkbox"/>	2	Serial Port 2
<input type="checkbox"/>	3	Serial Port 3
<input type="checkbox"/>	4	Serial Port 4

2. Click OK to apply the port configuration settings.

## Port Keyword List

Port keywords work as a filter. You can create port keywords and associate them with Event Management Destinations, such as Audit Log, SNMP, Syslog, SMTP for "Serial Alert" under User Activity.

If a keyword is detected -

- A corresponding event is sent via SMTP (if configured).
- A corresponding trap is sent via SNMP (if configured).

This feature is useful for notifying administrators if a particular event occurs on a port. For keywords to trigger when no users are connected to a port, "Always Active" must be selected on the port's Port Configuration page. A list of existing port keywords is displayed on the Port Configuration page, at the bottom of the page, near Exit Command.

Exit Command:

Port Keywords:  
key1

Port Auto Naming:

► Apply Serial Port Settings To Other Ports

OK Cancel Reset To Defaults

The Serial Alert event is selected from the Event Management - Destinations page.

1. Choose Device Settings > Port Keywords. The Port Keyword List page opens.
2. Click Add at the bottom of list on the page. The Keyword page opens.

### Add Keyword

Keyword: \*

**Ports**

Available:		Selected:
1: Serial Port 1	<input type="button" value="Add &gt;"/> <input type="button" value=" &lt; Remove"/>	2: Serial Port 2
3: Serial Port 3		
4: Serial Port 4		
5: Serial Port 5		
6: Serial Port 6		
7: Serial Port 7		
8: Serial Port 8		
9: Serial Port 9		

3. Type a keyword in the Keyword field.
4. Select the Port(s) you want to associate with that keyword.
5. Click Add to add them to the Selected box.
6. Click OK.

## Port Auto Name

Port Auto Name automatically detects a port's System Name from the target output. You can configure when you want auto naming to run, and select the trigger and matching string pattern pairs to assign to each port. These pairs form the basis of the search. When the auto name process begins, the trigger string is sent to a target and the time limit begins. As data is returned, ANSI color codes are filtered out and the pattern match strings are applied against the data to seek a match. When a matching name is found, the port's name field is updated and saved. Names are not unique in SX II. If a name is too long, it is rejected. If a name is not found for a port, the name is set to default: Serial Port #

### ► To configure Port Auto Name:

1. Choose Device Settings > Port Auto Name.
2. Select when Auto Name will run:

## Port Auto Name Settings

Search on Port Down to Up Status

Minimum Down Time

10

Search at Boot Time

Once

Search Time Limit Per Port

20

Ok

- Search on Port Down to Up Status: Port name search will start when a port changes from Down to Up status, if the port has been down for the specified Minimum Down Time.
    - Minimum Down Time: Enter the time in seconds.
  - Search at Boot Time: Port name search will start for all configured ports as soon as the system starts.
    - Select Once to allow the Port Auto Name search process to happen once, and then the setting will be turned off when search completes.
3. Search Time Limit Per Port: Enter the time in seconds to allow for each port name search. If the search times out, the default port name is saved.
  4. Click OK to save.
  5. Select the triggers and patterns you want to use in the search. Triggers prompt a response from the target. Patterns are the strings to match in a found name:
    - Available Triggers and Patterns: Select the checkbox of any trigger or pattern you want to exclude and click Delete. Optional.

### Available Triggers and Patterns

▲ Trigger	▲ Pattern
<input type="checkbox"/> \n	<input type="checkbox"/> (HOST)
<input type="checkbox"/> \r	<input type="checkbox"/> (HOST) [L]login:
<input type="checkbox"/> ^C	<input type="checkbox"/> @(HOST) [~].* \S
<input type="checkbox"/> hostname\r	

Delete

- Port Pairs: Click Add to open the Add Auto Name Pair dialog. Select a common Trigger and Pattern, or type directly in the text fields below the lists, then click Add. Select the ports to assign these search terms, then Add to the Selected list. Click OK to save.

- Supported special characters: \n, \r, ^C, \xXX (an octet in hexadecimal)
- \ and ^ may be escaped as \\ and \\^ to negate their special operation.
- (HOST) indicates the expected location of the host name.

Home > Device Settings > Port Auto Name List > Auto Name

Add Auto Name Pair

Trigger:  Pattern:

Add

Trigger	Pattern
1	\r (HOST) [L]login:

**Ports**

**Available:**

- 5: Serial Port 5
- 6: Serial Port 6
- 7: Serial Port 7
- 8: Serial Port 8
- 9: Serial Port 9
- 10: Serial Port 10
- 11: Serial Port 11
- 12: Serial Port 12

Add >

< Remove

**Selected:**

- 1: Serial Port 1
- 2: Serial Port 2
- 3: Serial Port 3
- 4: Serial Port 4

OK Cancel

- Your assigned Port Pairs display in the main page.

## Configure Security Settings from the Remote Console

### Login Limitations

Using login limitations, you can specify restrictions for single login, password aging, and the logging out idle users.

Login limitations are configured on the Security Settings page.

- Select Security > Security Settings.

### Login Limitations

Enable Single Login Limitation

Enable Password Aging

Password Aging Interval (days)

60

Log Out Idle Users

Idle Timeout (minutes)

1

Anonymous Port Access

- **Enable Single Login Limitation**  
When selected, only one login per user name is allowed at any time. When deselected, a given user name/password combination can be connected into the appliance from several client workstations simultaneously.
- **Enable Password Aging**  
When selected, all users are required to change their passwords periodically based on the number of days specified in Password Aging Interval field.  
This field is enabled and required when the Enable Password Aging checkbox is selected. Enter the number of days after which a password change is required. The default is 60 days.
- **Log Out Idle Users and Idle Timeout**  
When selected, users are automatically disconnected after the amount of time you specify in the Idle Timeout (minutes) field. If there is no activity from the user, all sessions and all resources are logged out. Range is 1-365 minutes.
- **Anonymous Port Access**  
When selected, users can access ports via SSH and Telnet using username anonymous only, so long as Direct Port Access is enabled for the port. When the setting is enabled, a user group called "@anonymous" is added. The permissions of this group determine which DPA ports the anonymous user can access.

## User Blocking

The User Blocking options specify the criteria by which users are blocked from accessing the system after the specified number of unsuccessful login attempts.

- Select Security > Security Settings.

The three options are mutually exclusive:

- Disabled  
The default option. Users are not blocked regardless of the number of times they fail authentication.
- Timer Lockout  
Users are denied access to the system for the specified amount of time after exceeding the specified number of unsuccessful login attempts. When selected, the following fields are enabled:
  - Attempts - The number of unsuccessful login attempts after which the user will be locked out. The valid range is 1 - 10 and the default is 3 attempts.
  - Lockout Time - The amount of time for which the user will be locked out. The valid range is 1 - 1440 minutes and the default is 5 minutes.

---

*Note: Users in the role of Administrator are exempt from the timer lockout settings.*

---

- Deactivate User-ID  
When selected, this option specifies that the user will be locked out of the system after the number of failed login attempts specified in the Failed Attempts field:  
Failed Attempts - The number of unsuccessful login attempts after which the user's User-ID will be deactivated. This field is enabled when the Deactivate User-ID option is selected. The valid range is 1 - 10.  
When a user-ID is deactivated after the specified number of failed attempts, the administrator must change the user password and activate the user account by selecting the Active checkbox on the User page.

## Strong Passwords

Enable and configure strong passwords on the Security Settings page.

- Select Security > Security Settings to configure strong passwords.

Strong passwords provide more secure local authentication for the system. Using strong passwords, you can specify the format of valid SX II local passwords such as minimum and maximum length, required characters, and password history retention.

Users with passwords not meeting strong password criteria are automatically required to change their password on their next login.

When not enabled, only the standard format validation is enforced.

The minimum, general requirements when strong passwords are enabled are that -

- Passwords must be at least 8 characters long
  - Have at least one alphabetical character
  - Have at least one nonalphabetical character such as a punctuation character or number
  - The first four characters of the password and the user's username cannot match
- A password cannot begin with a space or end with a space

To enforce this use of a special character, select "Enforce at least one printable special character".

"Number of restricted passwords based on history" enforces the number of prior passwords that cannot be repeated. The range is 1-12 and the default is 5.

**Strong Passwords**

Enable Strong Passwords

Minimum length of strong password  
8

Maximum length of strong password  
16

Enforce at least one lower case character

Enforce at least one upper case character

Enforce at least one numeric character

Enforce at least one printable special character

Number of restricted passwords based on history  
5

## Configure Encryption & Share

Using the Encryption & Share settings you can specify the type of encryption used, PC share modes, and the type of reset performed when the SX II Reset button is pressed.

---

---

**WARNING:** If you select an encryption mode that is not supported by your browser, you will not be able to access the SX II from your browser.

---

---

1. Choose one of the options from the Encryption Mode drop-down list. When you select a mode, the associated cipher displays in the Cipher Configuration box.

When an encryption mode is selected, ensure that your browser supports it, or you will not be able to connect to the SX II.

- Auto: This is the recommended option. The SX II autonegotiates to the highest level of encryption possible.

You must select Auto in order for the device and client to successfully negotiate the use of FIPS compliant algorithms.

- AES - 128: 128 is the key length. See [Checking Your Browser for AES Encryption](#) (on page 130) for more information.
  - AES - 256: 256 is the key length. See [Checking Your Browser for AES Encryption](#) (on page 130) for more information.
  - Custom: Enter your own custom cipher. Openssl v1.0.2 ciphers are accepted as values.
2. For government and other high security environments, enable FIPS 140-2 Mode by selecting the Enable FIPS 140-2 checkbox. See [FIPS 140-2 Support Requirements](#) (on page 130).
  3. PC Share Mode - Determines global concurrent remote access, enabling up to 10 remote users to simultaneously log into one SX II and concurrently view and control the same target server through the device. Click the drop-down list to select one of the following options:
    - Private - No PC share. This is the default mode. Each target device can be accessed exclusively by only one user at a time.
    - PC-Share - targets can be accessed by up to ten users (administrator or non-administrator) at one time. One user will have write permission to the port and others will have read only, unless this port is configured in multi-write mode.
  4. If needed, select Local Device Reset Mode. This option specifies which actions are taken when the hardware Reset button at the back of the device is depressed. For more information, see [Reset the SX II Using the Reset Button on the Appliance](#) (on page 157). Choose one of the following options:
    - Enable Local Factory Reset (default) - Returns the SX II device to the factory defaults.
    - Enable Local Admin Password Reset - Resets the local administrator password only. The password is reset to *raritan*.
    - Disable All Local Resets - No reset action is taken.
  5. Select the checkboxes of each TLS protocol version you want to enable. TLS v1.3 is the most secure protocol option. Select the most secure version that your environment supports. All versions are enabled by default. Unchecked protocols are not used. You should uncheck the lesser options to ensure they are not used. At least one protocol must be enabled.

---

*Note for Users with CC-SG: CommandCenter Secure Gateway v6.2 and below only supports TLS v1.0. If you are using CC-SG v6.2 or below, TLS v1.0 will be used to connect with SX II even if it is disabled here. If you are using CC-SG 7.0 and higher, CC-SG and SX II use the most secure protocol.*

---

6. Click OK to apply the settings.



## Checking Your Browser for AES Encryption

If you do not know if your browser uses AES, check with the browser manufacturer or navigate to the website using the browser with the encryption method you want to check. This website detects your browser's encryption method and displays a report.

AES 256-bit encryption is supported on the following web browsers:

- Edge
- Firefox
- Internet Explorer
- Chrome
- Safari

Jurisdiction files for various JREs™ are available at the “other downloads” section the Java download website.

## FIPS 140-2 Support Requirements

The SX II supports the use of FIPS 140-2 approved encryption algorithms. This allows an SSL server and client to successfully negotiate the cipher suite used for the encrypted session when a client is configured for FIPS 140-2 only mode.

Following are the recommendations for using FIPS 140-2 with the SX II.

## SX II

Set the Encryption & Share to Auto on the Security Settings page. See [Configure Encryption & Share](#) (on page 128).

### Microsoft Client

FIPS 140-2 should be enabled on the client computer.

To enable FIPS 140-2 on a Windows® client:

1. Select Control Panel > Administrative Tools > Local Security Policy to open the Local Security Settings dialog.
2. From the navigation tree, select Select Local Policies > Security Options.
3. Enable "System Cryptography: Use FIPS compliant algorithms for encryption, hashing and signing".
4. Reboot the client computer.

### Enable FIPS 140-2

For government and other high security environments, enabling FIPS 140-2 mode may be required.

The SX II uses an embedded FIPS 140-2-validated cryptographic module running on a Linux® platform per FIPS 140-2 Implementation Guidance section G.5 guidelines.

Once this mode is enabled, the private key used to generate the SSL certificates must be internally generated; it cannot be downloaded or exported.

Note that performance may be impacted once FIPS 140-2 mode is enabled.

#### ► *To enable FIPS 140-2:*

1. Access the Security Settings page.
2. Enable FIPS 140-2 Mode by selecting the Enable FIPS 140-2 checkbox in the Encryption & Share section of the Security Settings page.

You will utilize FIPS 140-2 approved algorithms for external communications once in FIPS 140-2 mode.

The FIPS cryptographic module is used for encryption of session traffic.

3. Reboot the SX II. Required

Once FIPS mode is activated, 'FIPS Mode: Enabled' will be displayed in the Device Information section in the left panel of the screen.

For additional security, you can also create a new Certificate Signing Request once FIPS mode is activated. This will be created using the required key ciphers. Upload the certificate after it is signed or create a self-signed certificate. The SSL Certificate status will update from 'Not FIPS Mode Compliant' to 'FIPS Mode Compliant'.

When FIPS mode is activated, key files cannot be downloaded or uploaded. The most recently created CSR will be associated internally with the key file. Further, the SSL Certificate from the CA and its private key are not included in the full restore of the backed-up file. The key cannot be exported from SX II.

## Enabling Force HTTPS for Web Access

Force HTTPS for web access is disabled by default. When enabled, SX II forces HSC to launch using HTTPS, and SX II will perform validation of server certificate for downloads. Make sure that the Device CA or self-signed certificate is added to the Trusted Root CA store of the browser.

► *To enable or disable Force HTTPS for web access:*

1. Choose Security > Security Settings.
2. In the Encryption and Share section, select the Force HTTPS for Web Access checkbox to enable, or clear the checkbox to disable.
3. Click OK to save.
  - When disabling the feature, restart your browser after saving. Switching between enabled/disabled may require a refresh of the browser cache.

## Host Allowlist

The Host Allowlist feature helps prevent host header attacks by limiting what a web client can send in the HOST header of an HTTP request. When enabled, the HOST header is checked and only addresses or hostnames that are in the allowlist are permitted. If the HOST header contains a domain or IP that is not in the list, then the client HOST specified will be removed and replaced with the device IP address. Redirection to non-allowed domains is prevented.

You must have the Security and Device Settings permission to manage this feature.

Home > Security > Host Allowlist

**Host Allowlist**

Host Allowlist Enabled

Host Allowlist	
<input type="checkbox"/>	raritan.com
<input type="checkbox"/>	legrand.us

New Allowlist Host Address

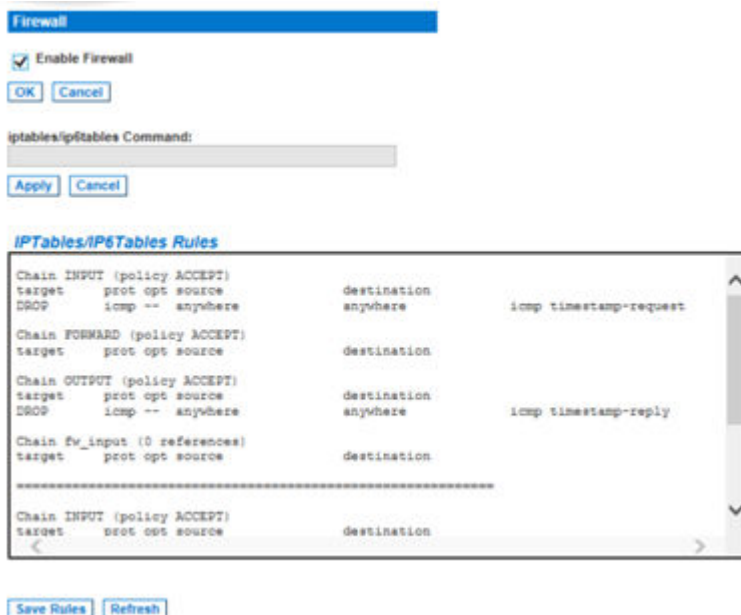
► *To configure the host allowlist:*

1. Click Security > Host Allowlist.
2. To enable or disable the feature:
  - Select the Host Allowlist Enabled checkbox to enable the feature. Clear the checkbox to disable.
3. To add or delete host addresses:
  - Enter an approved domain in the New Allowlist Host Address field, then click Add to add it to the list.
  - Select a host address checkbox in the Host Allowlist, then click Delete to remove it.
4. Click OK to save.

## Firewall

The SX II has a firewall function to provide protection for the IP network and to control access between the internal router and LAN 1, LAN 2, and the modem interfaces.

Disabling the firewall deletes your configured rules, but default rules will return when the firewall is enabled again.



1. Choose Security > Firewall. The Firewall page opens, displaying the existing IPTables rules.
2. Select the Enable Firewall checkbox.
3. Click OK.

---

*Note: When you enable IP forwarding for Dual LAN units, use IPTables rules to create policies for traffic being forwarded between LAN interfaces*

---

Add IPTable rules as needed. When you enable IP forwarding for Dual LAN units, use IPTables rules to create policies for traffic being forwarded between LAN interfaces.

These rules take effect immediately but persist permanently only after clicking the Save button. If there is a mistake in the rules and as a result, the appliance becomes inaccessible, this allows you to recover from the mistake. Reboot the system. If you do not Save the rules, you lose them in the reboot.

Rules are added using the IPTables command to the kernel.

4. Enter a rule in the IPTables Rule field the click Apply. Add as many rules as are needed.
5. Click Save. The rule is displayed on the screen.
6. You can delete some or all of the default rules if you choose to.

## SSL and TLS Certificates

SX II uses the Transport Layer Security (TLS) for any encrypted network traffic between itself and a connected client.

When establishing a connection, SX II has to identify itself to a client using a cryptographic certificate.

SX II can generate a Certificate Signing Request (CSR) or a self-signed certificate using SHA-2.

The CA verifies the identity of the originator of the CSR.

The CA then returns a certificate containing its signature to the originator. The certificate, bearing the signature of the well-known CA, is used to vouch for the identity of the presenter of the certificate.

---

**Important: Make sure your SX II date/time is set correctly.**

---

When a self-signed certificate is created, the SX II date and time are used to calculate the validity period. If the date and time are not accurate, the certificate's valid date range may be incorrect, causing certificate validation to fail. See Configuring Date/Time Settings.

---

Note: When upgrading firmware, the active certificate and CSR are not replaced.

---

► *To create and install a SSL certificate:*

1. Select Security > Certificate.
2. Complete the following fields:
  - a. Common name - The network name of the SX II once it is installed on your network (usually the fully qualified domain name). The common name is identical to the name used to access the SX II with a web browser, but without the prefix "http://". In case the name given here and the actual network name differ, the browser displays a security warning when the SX II is accessed using HTTPS.
  - b. Organizational unit - This field is used for specifying to which department within an organization the SX II belongs.
  - c. Organization - The name of the organization to which the SX II belongs.
  - d. Locality/City - The city where the organization is located.
  - e. State/Province - The state or province where the organization is located.
  - f. Country (ISO code) - The country where the organization is located. This is the two-letter ISO code, e.g. DE for Germany, or US for the U.S.
  - g. Email - The email address of a contact person that is responsible for the SX II and its security.
  - h. Subject Alternative Name (SAN) - Optional. Add up to ten SANs, which may include alternate hostnames. Maximum of 64 characters. This allows devices that are reachable under different names to pass the TLS hostname validation for each name registered in the TLS certificate. Enter the SAN in the Enter Hostname/IP address field, then click Add to create the list of SANs. Select a SAN and click Remove to delete.

- i. Challenge Password - Some certification authorities require a challenge password to authorize later changes on the certificate (e.g. revocation of the certificate). Applicable when generating a CSR for CA Certification.
  - j. Confirm Challenge Password - Confirmation of the Challenge Password. Applicable when generating a CSR for CA Certification.
  - k. Key length - The length of the generated key in bits. 1024 is the default. Up to 4096 is supported.
3. To generate, do one of the following:
- To generate self-signed certificate, do the following:
    - a. Select the Create a Self-Signed Certificate checkbox if you need to generate a self-signed certificate. When you select this option, the SX II generates the certificate based on your entries, and acts as the signing certificate authority. The CSR does not need to be exported and used to generate a signed certificate.
    - b. Specify the number of days for the validity range. Ensure the SX II date and time are correct. If the date and time are not correct, the certificate's valid date range may not be calculated correctly.
    - c. Click Create.
    - d. A confirmation dialog is displayed. Click OK to close it.
    - e. Reboot the SX II to activate the self-signed certificate.
  - To generate a CSR to send to the CA for certification:
    - a. Click Create.
    - b. A message containing all of the information you entered appears.
    - c. The CSR and the file containing the private key used when generating it can be downloaded by clicking Download CSR.
    - d. Send the saved CSR to a CA for certification. You will get the new certificate from the CA.

---

*Note: The CSR and the private key file are a matched set and should be treated accordingly. If the signed certificate is not matched with the private key used to generate the original CSR, the certificate will not be useful. This applies to uploading and downloading the CSR and private key files.*

---

- Once you get the certificate from the CA, upload it to the SX II by clicking Upload.
- Reboot the SX II to activate the certificate.

After completing these steps the SX II has its own certificate that is used for identifying itself to its clients.

---

**Important: If you destroy the CSR on the SX II there is no way to get it back! In case you deleted it by mistake, you have to repeat the three steps as described above. To avoid this, use the download function so you will have a copy of the CSR and its private key.**

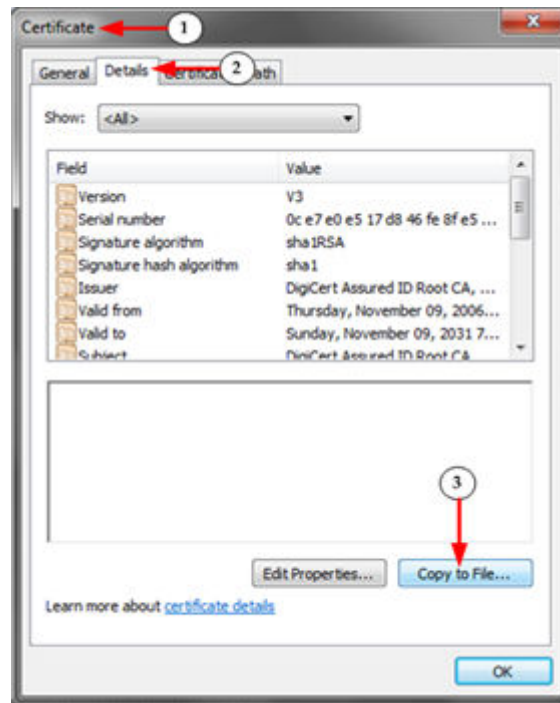
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Converting a Binary Certificate to a Base64-Encoded DER Certificate (Optional)

SX II requires an SSL certificate in either Base64-Encoded DER format or PEM format.

If you are using an SSL certificate in binary format, you cannot install it.

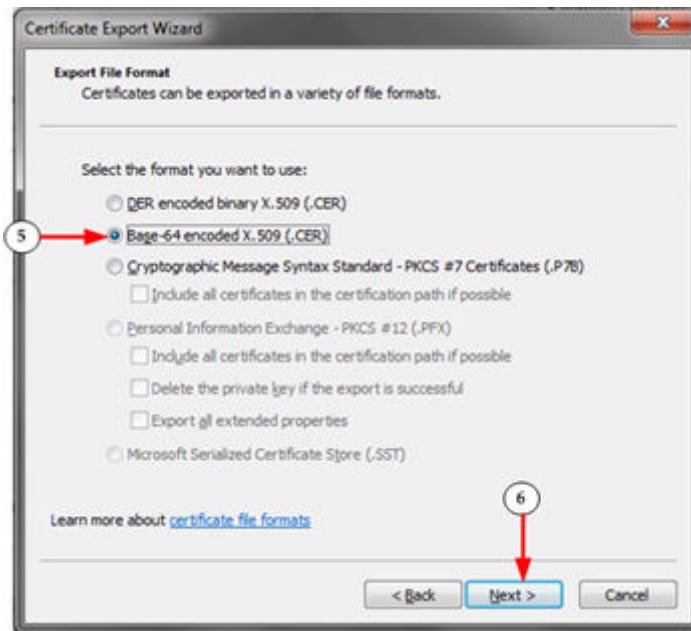
However, you can convert your binary SSL certificate.



1. Locate the DEGHKVM0001.cer binary file on your Windows machine. Double-click on the DEGHKVM0001.cer file to open its Certificate dialog.
2. Click the Detail tab.
3. Click "Copy to File...".



4. The Certificate Export Wizard opens. Click Next to start the Wizard.



5. Select "Base-64 encoded X.509" in the second Wizard dialog.
6. Click Next to save the file as a Base-64 encoded X.509.

You can now install the certificate on your SX II.

## TLS Ciphers for Web Access

When set to AUTO, the following TLS ciphers are used on the web port.

### TLS v1.0

- | TLS\_ECDHE\_RSA\_WITH\_AES\_256\_CBC\_SHA (secp256r1) - A
- | TLS\_RSA\_WITH\_AES\_256\_CBC\_SHA (rsa 2048) - A
- | TLS\_ECDHE\_RSA\_WITH\_AES\_128\_CBC\_SHA (secp256r1) - A
- | TLS\_RSA\_WITH\_AES\_128\_CBC\_SHA (rsa 2048) - A

### TLS v1.1

- | TLS\_ECDHE\_RSA\_WITH\_AES\_256\_CBC\_SHA (secp256r1) - A
- | TLS\_RSA\_WITH\_AES\_256\_CBC\_SHA (rsa 2048) - A
- | TLS\_ECDHE\_RSA\_WITH\_AES\_128\_CBC\_SHA (secp256r1) - A
- | TLS\_RSA\_WITH\_AES\_128\_CBC\_SHA (rsa 2048) - A

### TLS v1.2

- | TLS\_ECDHE\_RSA\_WITH\_AES\_256\_GCM\_SHA384 (secp256r1) - A
- | TLS\_ECDHE\_RSA\_WITH\_AES\_256\_CBC\_SHA384 (secp256r1) - A
- | TLS\_ECDHE\_RSA\_WITH\_AES\_256\_CBC\_SHA (secp256r1) - A
- | TLS\_RSA\_WITH\_AES\_256\_GCM\_SHA384 (rsa 2048) - A

- | TLS\_RSA\_WITH\_AES\_256\_CBC\_SHA256 (rsa 2048) - A
- | TLS\_RSA\_WITH\_AES\_256\_CBC\_SHA (rsa 2048) - A
- | TLS\_ECDHE\_RSA\_WITH\_AES\_128\_GCM\_SHA256 (secp256r1) - A
- | TLS\_ECDHE\_RSA\_WITH\_AES\_128\_CBC\_SHA256 (secp256r1) - A
- | TLS\_ECDHE\_RSA\_WITH\_AES\_128\_CBC\_SHA (secp256r1) - A
- | TLS\_RSA\_WITH\_AES\_128\_GCM\_SHA256 (rsa 2048) - A
- | TLS\_RSA\_WITH\_AES\_128\_CBC\_SHA256 (rsa 2048) - A
- | TLS\_RSA\_WITH\_AES\_128\_CBC\_SHA (rsa 2048) - A

TLS-v1.3

- | TLS\_AKE\_WITH\_AES\_256\_GCM\_SHA384 (secp256r1) - A
- | TLS\_AKE\_WITH\_AES\_128\_GCM\_SHA256 (secp256r1) - A

## Certificate and Smart Card Authentication

### Remote Smart Card Authentication Overview

Remote Smart Card Authentication enables users to login to SX II using a smart card reader connected to their client computer. Users can be verified through local or LDAP authentication. Radius and TACACS+ authentication is not supported. This process works exactly like PKI Certificate Authentication, except the client certificates are stored in the smart card instead of in the browser.

#### ► *Steps to Configure Remote Smart Card Authentication:*

Step 1: Use a CA to generate client certificates to be used in authentication.

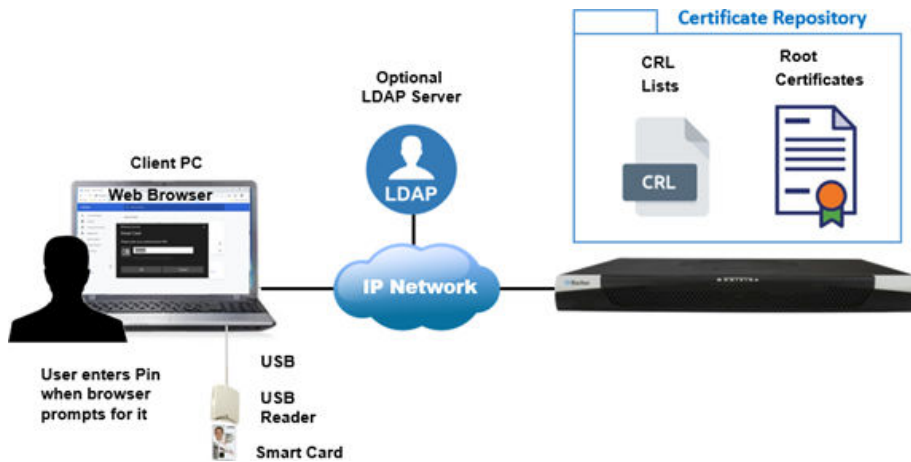
Step 2: Add the CA certificate to the repository: [Certificate Repository](#) (on page 143)

Step 3: Add Client certificates to cards and connect a Smart Card reader to the client computer: [Supported Smart Card Readers and Cards](#) (on page 142)

Step 4: Enable and configure Client Certificate Authentication: [Client Certificate Authentication Settings](#) (on page 140)

Step 5: Configure users on LDAP or locally on the SX II: User Management

Step 6: Use a Smart Card for Remote Login: [Using a Smart Card at the Client Computer](#) (on page 149)



## PKI Certificate Authentication Overview

PKI Certificate Authentication enables users to login to SX II using a certificate installed in the browser on their client computer. Users can be verified through local or LDAP authentication. Radius and TACACS+ authentication is not supported. This process works exactly like Remote Smart Card Authentication, except the client certificates are stored in the browser instead of in the smart card.

### ► Steps to Configure PKI Certificate Authentication:

Step 1: Use a CA to generate client certificates to be used in authentication.

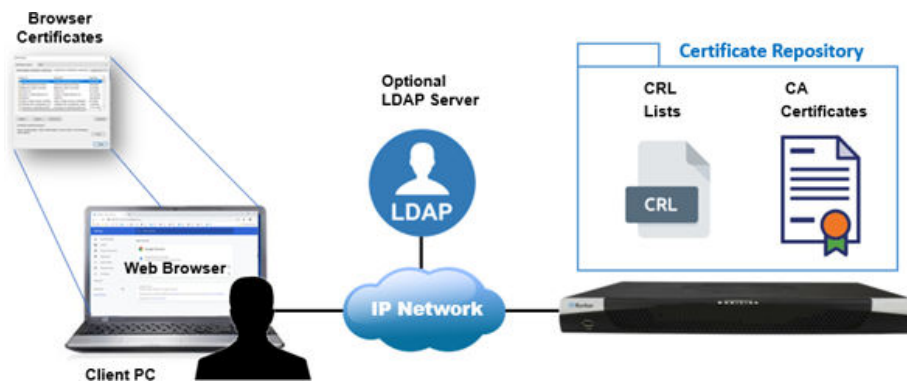
Step 2: Add the CA certificate to the repository: [Certificate Repository](#) (on page 143)

Step 3: Add Client certificates to the browsers of each client computer: Tips for Smart Card and PKI Certificate Authentication

Step 4: Enable and configure Client Certificate Authentication: [Client Certificate Authentication Settings](#) (on page 140)

Step 5: Configure users on LDAP or locally on the SX II: User Management

Step 6: Login with a PKI Certificate in the Browser: [Login with a PKI Certificate in the Browser](#) (on page 149)



## Client Certificate Authentication Settings

When enabled, Client Certificate Authentication applies to smart card and certificate authentication.

All Client Certificate Authentication settings are disabled by default.

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**IMPORTANT:** Selecting "Require Client Authentication" will lock out standard username/password access to the web interface. Do not enable this setting until you have tested all other settings to verify successful authentication. Another option for ensuring continued access would be to make sure you have access to the SX II Local Port while configuring and testing these settings.

---

---

Both OCSP and CRLs are supported as methods to validate certificates against a certificate authority. To use CRLs, you must add them to the repository. See [Adding CRL \(Client Revocation Lists\) to the Repository](#) (on page 147).

- ▶ *To configure client certificate authentication settings:*

Home > Security > Client Certificate Authentication

**Note: Client Certificate Authentication must use either LDAP or Local Authentication.**

Client Certificate Authentication

Enabling/Disabling

Enable Client Certificate Authentication  
 Require Client Certificate Authentication  
**All HTTPS connections will require the clients to submit Certificates.**

Client Certificate

Require Client Extended Key Usage

Certificate Attribute Mapped to Username

SAN Email

OCSP

Enable OCSP  
Default Responder URL  
  
 Override URL with Default  
OCSP Checking Scope: Leaf  
 Allow Unknown Revocation Status  
 Enable Nonce Extension Support  
 Enable Verification of OCSP Responder Certificate

CRL

Enable CRL Checking  
 Allow Certificate if no CRL  
CRL Checking Scope: Full

OK Reset To Defaults Cancel

1. Click Security > Client Certificate Authentication.
  - You can also access this page via hyperlink at Security > Remote Smart Card Authentication.
2. Enabling/Disabling:
  - Enable Client Certificate Authentication: Select this checkbox to enable client certificates for authentication. When enabled, client certificate authentication will be in effect for smart card authentication and PKI certificate authentication.
  - Require Client Certificate Authentication: IMPORTANT-Test and verify all other client certificate settings before using this setting. Removes the ability to authenticate on HTTPS connections via username/password. All access must be authenticated using client certificates, whether by smart card or certificates in the browser.
3. Require Extended Key Usage: Extended Key Usage enforces that the certificate's public key is being used for its intended purpose of authentication. When this setting is selected, login will be unsuccessful for certificates without extended key usage or those determined to be intended for purposes other than authentication.
4. Certificate Attribute Mapped to Username: Select the certificate attributes that should be used as the SX II user's login name. The login determines which group the user is in.

- Common Name
  - emailAddress
  - Other Name
  - DNS Name
  - SAN Email
  - URI
  - UID
5. OCSP: Enable OCSP to use this method to validate certificates against a certificate authority.
    - Default Responder URL: Enter a default responder URL to be used if the certificate does not contain an OCSP server.
    - Override URL with Default: Restricts all OCSP communications to the URL entered in Default Responder URL.
    - OCSP Checking Scope: Leaf will check only the final client certificate for revocation. Full will check the entire chain.
    - Allow Unknown Revocation Status: Possible certificate statuses are Good, Revoked, or Unknown. When selected, SX II will still allow access for certificates with an Unknown status. When not selected, access will only be allowed for certificates with a Good status.
    - Enable Nonce Extension Support: Sends a nonce with the OCSP protocol to help prevent timing attacks. This requires support on the OCSP server side. Make sure that date/time is synced between SX II and the OCSP server.
    - Enable Verification of OCSP Responder Certificate: Ensure that the OCSP response is signed with a trusted CA key. This requires either that the OCSP server send the CA certificate it uses in the OCSP response data, or that the CA certificate for the OCSP server is added into the Certificate Repository.
  6. Enable CRL Checking: Enables checking of CRLs to see if a certificate is revoked. CRLs must be added to the Certificate Repository.
    - Allow Certificate if no CRL: Allows access to the device if there is no CRL uploaded.
    - CRL Checking Scope: Leaf will check only the client certificate. Full requires that the entire certificate chain's CAs and their CRLs are added to the repository.
  7. Make sure you haven't selected Require Client Certificate Authentication unless you have already verified your access with these settings, or you have access to the SX II local port.
  8. Click OK to save.

## Supported Smart Card Readers and Cards

### ► *Supported Smart Card Readers*

A card reader must be USB-based and CCID compliant.

A complete list of card readers supported by CCID driver version 1.4.30 is available at:

<https://ccid.apdu.fr/#readers>

The following readers were tested with the SX II:

- SCR331 – firmware 0518 or later
- SCM Microsystems SCR3310
- HID Global 3121
- Dell Smarcard Reader Keyboard

► *Supported Smart Cards*

- DOD Common Access Card (CAC)
- Personal Identity Verification (PIV) Card

The following card was tested with the SX II:

- PIVKey C910 – The client authentication certificate must be mapped to 9A.

### Certificate Repository

The Certificate Repository enables a central location and management point for all X509 certificates and Certificate Revocation Lists except for the SX II's own server authentication certificate.

Upon upgrade to Release 2.4.0, all previously loaded certificates shall be automatically populated in the repository, with the exception of the SX II device certificate.

The Certificate Repository enables you to store the necessary security certificates for several purposes:

- CA Certificates:
  - LDAP over TLS/SSL
  - 802.1X Security
  - Client Certificate Authentication
- Client Certificates for 802.1X
- Certificate Revocation Lists for Client Certificate Authentication

Once you load certificates into the repository, they are available for selection in the appropriate feature configuration page.

---

Important: Do not delete certificates that are in use from the Certificate Repository. The associated feature will fail.

---

► *To access the Certificate Repository:*

- Click Security > Certificate Repository.

Home > Security > SSL Certificate Repository

Certificate Repository

CA Certificate Client Certificate CRL

Subject (Issued to)	Not Valid After	Intended Use	Serial Number
CN = TESTAD-CA DN-CN = COM	Oct 18 19:47:49 2024 GMT	LDAP over TLS/SSL	70b51cd23a8a48b44cfd3043077aca4a
CN = OCSPtestCA DN-CN = US NJ OCSPtestCA OCSPtestCA	Feb 7 20:58:29 2030 GMT	Client Certificate Authentication	b0467adcc631f701
CN = TESTAD-CA DN-CN = COM	Oct 18 19:47:49 2024 GMT	Client Certificate Authentication	70b51cd23a8a48b44cfd3043077aca4a
CN = OCSPSigner DN-CN = US NJ OCSPSigner	Feb 7 20:58:30 2030 GMT	Client Certificate Authentication	04

Add Certificate Show Certificate Remove Certificate Download Certificate

- Click the category you want to view a list of all stored certificates in that category. In the screenshot above CA Certificate is selected.
- In any category, click a certificate to select it, then click Show Certificate to view it, or Download Certificate to download a copy.
- To remove a certificate, select it, then click Remove Certificate. You should only remove certificates that are not in use by any feature.
- To add a certificate, first click the category button (CA Certificate, Client Certificate, or CRL), then click Add Certificate to open the addition form.
  - [Adding CA Certificates to the Repository](#) (on page 144)
  - [Adding Client Certificates to the Repository](#) (on page 146)
  - [Adding CRL \(Client Revocation Lists\) to the Repository](#) (on page 147)

### Adding CA Certificates to the Repository

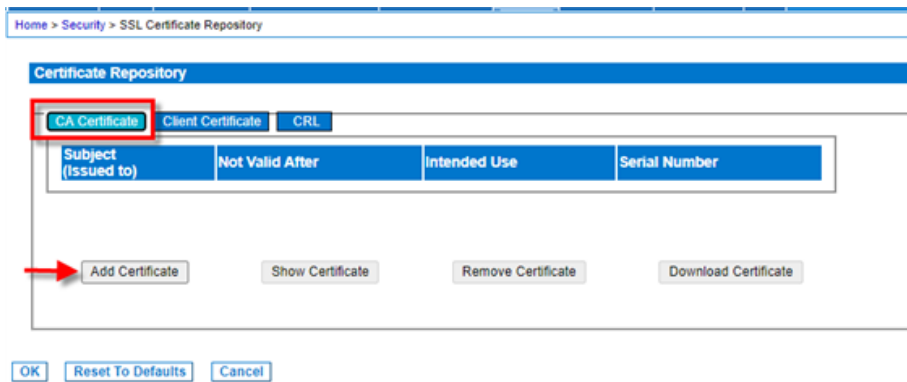
When adding CA Certificates, you must select an "Intended Use" to make the certificate available to the selected function. The same CA Certificate can be added multiple times with different intended uses. For example, a CA certificate added with Intended Use: Client Certificate Authentication may be added again with Intended Use: LDAP over TLS/SSL.

CA certificates added to the repository must be in PEM (Privacy Enhanced Mail) format.

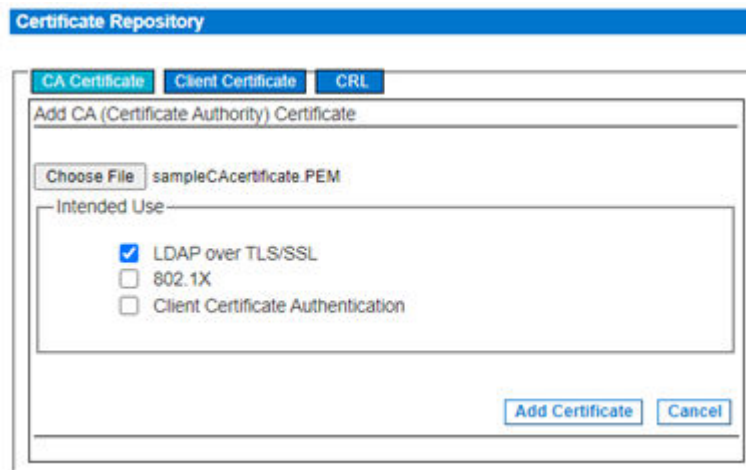
A maximum of 10 CA Certificates can be stored in the repository.

► *To add CA certificates to the repository:*

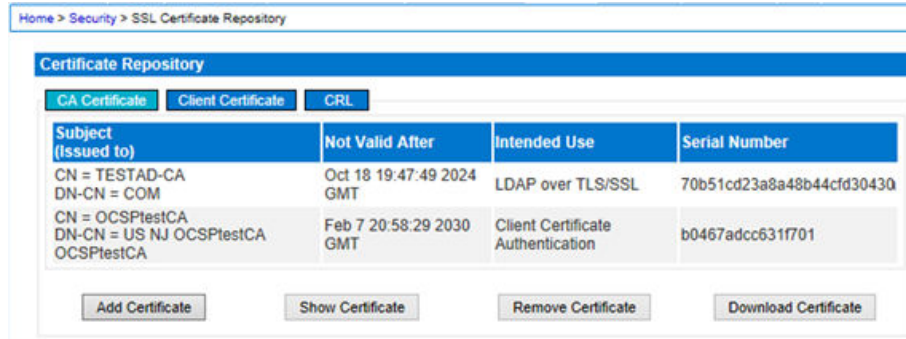
1. Click Security > Certificate Repository.
2. Click the CA Certificate button, then click Add Certificate.



3. The Add CA (Certificate Authority) Certificate tool opens. Click Choose File and select the certificate file.
4. Select the checkbox for the certificate's Intended Use.
  - LDAP over TLS/SSL
  - 802.1X
  - Client Certificate Authentication



5. Click Add Certificate.
6. The newly added certificate appears in the list on the main Certificate Repository page, in the CA Certificate category.



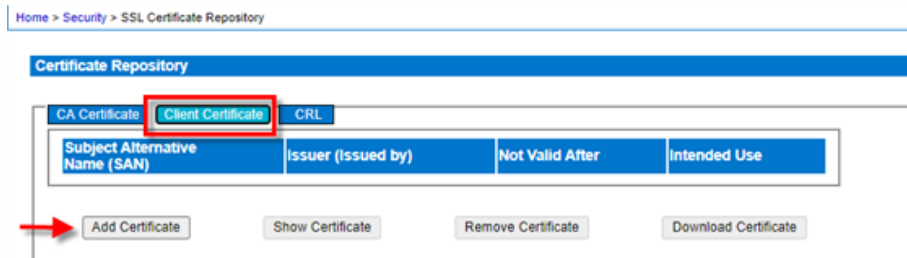
### Adding Client Certificates to the Repository

Client Certificates in the repository can be used for 802.1X security. See [802.1X Security](#) (on page 91).

Client certificates must be in PEM (Privacy Enhanced Mail) format. A maximum of 2 Client Certificates can be stored in the repository.

► *To add client certificates to the repository:*

1. Click Security > Certificate Repository.
2. Click the Client Certificate button, then click Add Certificate.



3. The Add Client Certificate tool opens. In the Certificate section, click Choose File and select the certificate file to add it.
4. In the Private Key section, click Choose File and select the private key file to add it.
5. If needed, select Enable Password Protection checkbox, then enter and confirm the password.
6. Select the checkbox for the certificate's Intended Use.
  - 802.1X/LAN
  - 802.1X/LAN2

7. Click Add Certificate and Private Key.
8. The newly added certificate appears in the list on the main Certificate Repository page, in the Client Certificate category.

#### Adding CRL (Client Revocation Lists) to the Repository

A Certificate Revocation List (CRL) contains certificates that were revoked before they expired. A certificate authority might revoke a certificate if it has been compromised. For more information on CRLs, see RFC 5280.

The CRL has a limited validity period, and updated versions of the CRL are published when the previous CRL's validity period expires. Certificate revocation lists are considered valid until they expire. The URL of the CRL can usually be found in the CRL Distribution Points extension of an X.509 Certificate.

CRLs must be in DER (Distinguished Encoding Rules) format. A maximum of 10 CRLs can be stored in the repository.

A limited amount of internal memory is provided to store CRL files, with an option to use USB storage. CRL files can be large, so additional storage space may be required. An error message will appear if external storage is needed. Inserting a USB stick into the SX II USB port will automatically cause the repository to store CRL files there instead. Any existing CRL's will be copied to the USB stick when it is inserted. You must pre-format the USB stick with a fat32 file system and a /crl directory for this purpose.

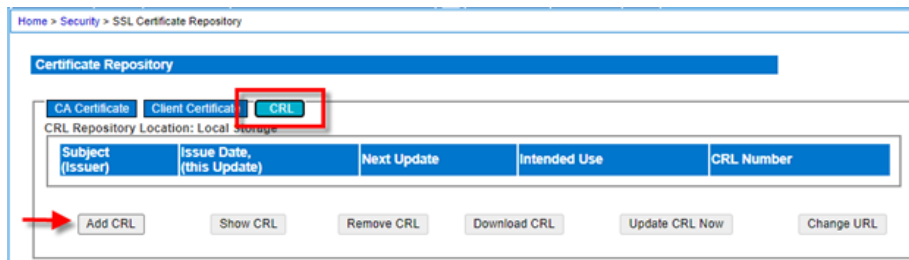
---

Note: To add a CRL, the repository must already contain the corresponding CA certificate of the CA that issued and signed the CRL.

---

► *To add CRL to the repository:*

1. Click Security > Certificate Repository.
2. Click the CRL button, then click Add CRL.



3. The Add CRL (Certificate Revocation List) tool opens. Click Choose File and select the CRL file to add it.
4. The Intended Use is pre-selected as Client Certificate Authentication.
5. Specify the URL for updates to the CRL.
6. Click Add CRL to save.

### Reset Certificate Repository to Default

The Certificate Repository can be reset to default, which will delete all existing certificates, CRLs and supporting data from the repository. Using the Reset to Defaults option will leave the SX II with no certificates or CRLs except for the SX II's own device certificate.

#### ► *To reset the certificate repository:*

---

**IMPORTANT:** Using reset to defaults will delete all certificates that have been added, for all intended uses.

---

1. Click Security > Certificate Repository.
2. Click the Reset to Defaults button.
3. Click OK to confirm.

### Tips for Smart Card and PKI Certificate Authentication

Various client and browser combinations may behave differently depending on your chosen access client. Check these tips for recommendations.

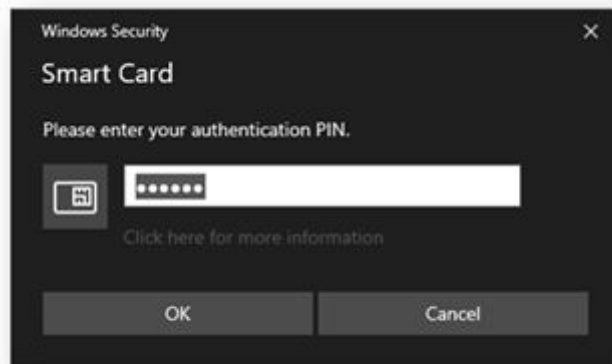
- Browser option to select certificate for authentication displayed on Edge and Chrome logins after session is idle for about 5 minutes, due to internal browser SSL caching and timeouts. If certificate is selected promptly, reconnection is successful. With longer idle times, authentication is not successful, and the browser should be restarted to reconnect. Issue is not observed in Firefox or IE 11.
- Unable to perform Smart Card login on Linux and Apple Mac OS. The login menu is displayed instead. Users are recommended to use HKC. The JRE does not have the capabilities to interface directly with smart card devices as it cannot access the certificate in the browser
- Smart card login fails in Safari. Apple keychain does not see the reader.
- Clicking Cancel at the smart card PIN login will not cause the local username/password login page to display. Instead, either a blank page or "Application Error - Unable to launch the Application" displays. If a local login with username and password is needed, remove the smart card and reload the client.

## Using a Smart Card at the Client Computer

When Client Certificate Authentication is enabled and configured, you can access SX II with a smart card at the card reader connected to your client computer.

► *To use a smart card at the at the client computer:*

1. Insert the smart card into the reader.
  2. Launch a browser and go to the SX II URL.
  3. When prompted by the browser, enter the smart card PIN. If approved, you will be logged in.
- If login fails, check the Audit log for failure information.

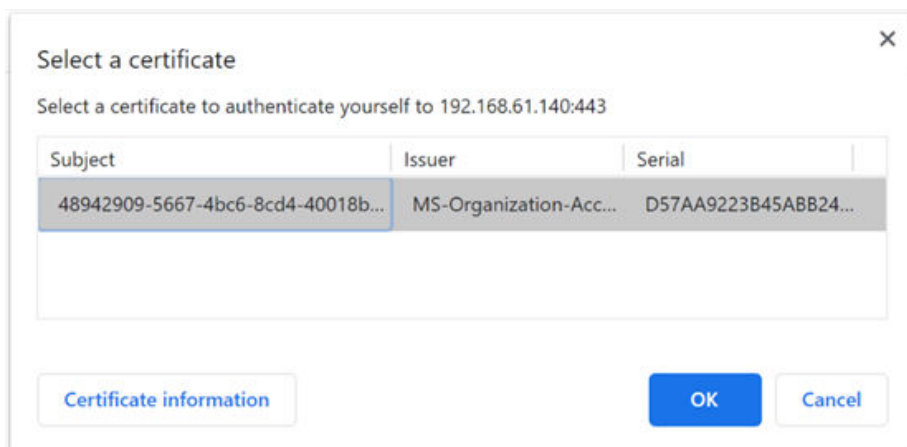


## Login with a PKI Certificate in the Browser

When Client Certificate Authentication is enabled and configured, you can access SX II with a client certificate installed in your browser.

► *To login with a PKI certificate in the browser:*

1. Launch a browser and go to the SX II.
2. The browser presents a dialog to select the certificate for authentication. Select the correct certificate, then click OK. If approved, you will be logged in.



## Security Banner

SX II provides you with the ability to add a security banner to the SX II login process. This feature requires users to either accept or decline a security agreement before they can access the SX II. The information provided in a security banner will be displayed in a Restricted Service Agreement dialog after users access SX II using their login credentials.

The security banner heading and wording can be customized, or the default text can be used. Additionally, the security banner can be configured to require that a user accepts the security agreement before they are able to access the SX II or it can just be displayed following the login process. If the accept or decline feature is enabled, the user's selection is logged in the audit log.

### ► To configure a security banner:

1. Click Security > Banner to open the Banner page.
2. Select Display Restricted Service Banner to enable the feature.
3. If you want to require users to acknowledge the banner prior to continuing the login process, select Require Acceptance of Restricted Service Banner. In order to acknowledge the banner, users will select a checkbox. If you do not enable this setting, the security banner will only be displayed after the user logs in and will not require users acknowledge it.
4. If needed, change the banner title. This information will be displayed to users as part of the banner. Up to 64 characters can be used.
5. Edit the information in the Restricted Services Banner Message text box. Up to 6000 characters can be entered or uploaded from a text file. To do this, do one of the following:
  - a. Edit the text by manually typing in the text box. Click OK.
  - b. Upload the information from .txt file by selecting the Restricted Services Banner File radio button and using the Browse feature to locate and upload the file. Click OK. Once the file is uploaded, the text from the file will appear in the Restricted Services Banner Message text box.

Home > Security > Banner

---

**Banner**

Display Restricted Service Banner  
 Require Acceptance of Restricted Service Banner

Banner Title

Restricted Service Banner Message:

```

Unauthorized access prohibited, all
access and activities not explicitly
authorized by management are
unauthorized. All activities are
monitored and logged. There is no
privacy on this system. Unauthorized
access and activities or any criminal
activity will be reported to
appropriate authorities.

```

Restricted Service Banner File:

## Configure Maintenance Settings from the Remote Console

### Audit Log

A log is created of SX II system events.

The audit log can contain up to approximately 2000 lines worth of data before it starts overwriting the oldest entries.

To avoid losing audit log data, export the data to a syslog server or SNMP manager. Configure the syslog server or SNMP manager from the Device Settings > Event Management page.

1. Choose Maintenance > Audit Log. The Audit Log page opens.  
 The Audit Log page displays events by date and time (most recent events listed first). The Audit Log provides the following information:
  - Date - The date and time that the event occurred based on a 24-hour clock.
  - Event - The event name as listed in the Event Management page.
  - Description - Detailed description of the event.
2. Click Save to File. A Save File dialog appears.
3. Choose the desired file name and location and click Save. The audit log is saved locally on your client machine with the name and location specified.
4. Click Refresh to refresh the list. Click Older to view older log entries.
5. To page through the audit log, use the [Older] and [Newer] links.

Home > Maintenance > Audit Log

**Audit Log**

[ Refresh ] [ Older ]

Date	Event	Description
08/29/2017 17:27:02	Access Login	User 'admin' from host '192.168.32.172' logged in.
08/24/2017 20:56:46	Network Failure	Ethernet failure on LAN port 2.
08/24/2017 20:56:46	Power Supply Status Changed	Power supply outlet 1 status 'ON'.
08/24/2017 20:56:46	Power Supply Status Changed	Power supply outlet 2 status 'ON'.
08/24/2017 20:56:46	System Startup	Device started.
08/24/2017 20:56:45	Port Status Changed	Status of port 'Serial Port 3' changed to 'available'.
08/24/2017 20:56:45	Port Status Changed	Status of port 'Outlet 8' changed to 'off'.
08/24/2017 20:56:45	Port Status Changed	Status of port 'Outlet 7' changed to 'off'.
08/24/2017 20:56:45	Port Status Changed	Status of port 'Outlet 6' changed to 'off'.
08/24/2017 20:56:45	Port Status Changed	Status of port 'Outlet 5' changed to 'off'.
08/24/2017 20:56:45	Port Status Changed	Status of port 'Outlet 4' changed to 'off'.
08/24/2017 20:56:45	Port Status Changed	Status of port 'Outlet 3' changed to 'off'.
08/24/2017 20:56:45	Port Status Changed	Status of port 'Outlet 2' changed to 'off'.
08/24/2017 20:56:45	Port Status Changed	Status of port 'Outlet 1' changed to 'off'.
08/24/2017 20:56:45	Port Status Changed	Status of port 'Serial Port 4' changed to 'inactive'.
08/24/2017 20:55:41	Access Logout	User 'admin' from host '192.168.61.125' logged out.
08/24/2017 20:55:41	System Shutdown	Device reset performed by user 'admin' from host '192.168.61.125'.
08/24/2017 20:55:39	Device Update Completed	Device update to version '2.2.0.5.1825' by user 'admin' from host '192.168.61.125' completed.
08/24/2017 20:52:56	Access Logout	User 'admin' from host '192.168.55.128' logged out.
08/24/2017 20:52:55	Device Update Started	Device update to version '2.2.0.5.1825' by user 'admin' from host '192.168.61.125' started.

Save To File

## Device Information

Selection Maintenance > Device Information to view information specific to your SX II. This is useful for support.

Device Information	
<b>Model:</b>	DSX2-32M
<b>Hardware Revision:</b>	0xC8
<b>Firmware Version:</b>	2.5.0.1.3842
<b>Serial Number:</b>	QX72500002
<b>MAC Address:</b>	00:0d:5d:24:b9:12
	00:0d:5d:24:b9:13

## Backup and Restore

From the Backup/Restore page, you can backup and restore the settings and configuration for your SX II.

In addition to using backup and restore for business continuity purposes, you can use this feature as a time-saving mechanism.

For instance, you can quickly provide access to your team from another SX II by backing up the user configuration settings from the SX II in use and restoring those configurations to the new SX II.

You can also set up one SX II and copy its configuration to multiple SX II devices.

---

**Note:** Backups are always complete system backups. Restores can be complete or partial depending on your selection.

---

► *To create a backup file:*

1. Choose Maintenance > Backup/Restore.
2. To password protect the backup file, enter a password in the Password Protection field. Optional.
3. Click Backup. The backup file is created and displays as a downloaded file in your browser. Download location varies based on browser.

► *To restore your SX II:*

---

---

WARNING: Exercise caution when restoring your SX II to an earlier version. Usernames and password in place at the time of the backup will be restored. If you do not remember the old administrative usernames and passwords, you will be locked out of the SX II.

---

---

---

---

In addition, if you used a different IP address at the time of the backup, that IP address will be restored as well. If the configuration uses DHCP, you may want to perform this operation only when you have access to the local port to check the IP address after the update.

---

---

1. Choose the type of restore you want to run:
  - Full Restore - A complete restore of the entire system. Generally used for traditional backup and restore purposes.
  - Protected Restore - Everything is restored except appliance-specific information such as IP address, name, and so forth. With this option, you can setup one SX II and copy the configuration to multiple SX II appliances.
  - Custom Restore - With this option, you can select User and Group Restore, Device Settings Restore, or both:
    - User and Group Restore - This option includes only user and group information. This option *does not* restore the certificate and the private key files. Use this option to quickly set up users on a different SX II.
    - Device Settings Restore - This option includes only device settings such as power associations and Port Group assignments. Use this option to quickly copy the device information.
2. Click Browse. A Choose File dialog appears.
3. Navigate to and select the appropriate backup file and click Open. The selected file is listed in the Restore File field.
4. If the backup is password-protected, enter the password.
5. Click Restore. The configuration (based on the type of restore selected) is restored.

## CLI Script

The CLI Script function generates a CLI script file that can be used to configure a different SX II device with the settings of the current SX II. The script follows the model of the SX II CLI.

Scripts created on CC-SG managed SX II devices can be used only for other SX II devices under CC-SG management. Scripts created on SX II models with internal modem include commands that will cause the script to fail on non-modem models. If two devices have a different number of ports, errors will be reported, but the script can continue to run successfully.

Upload the file to another SX II to configure it. Or, you can incorporate the script into your own CLI files.

You must be logged in as admin, or a member of the default ADMIN group to use this function.

► *To generate the CLI script:*

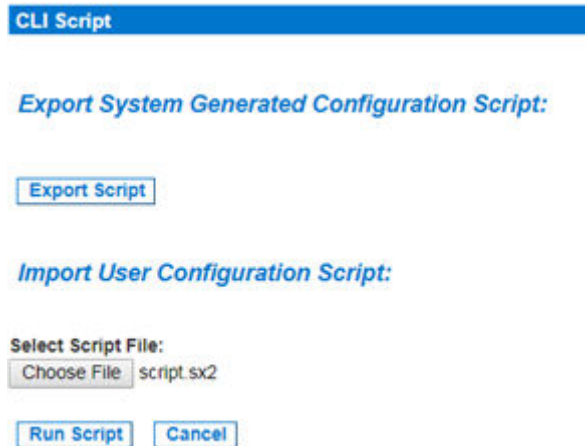
1. Log into the SX II whose configuration you want to use as a script.
2. Choose Maintenance > CLI Script.
3. Click Export Script. The script.sx2 file generates into your browser's download location.
4. Examine the script for any unneeded parameters and delete them, such as extra ports.
5. For security, passwords are not exported. Instead, you will see the password parameter name, such as "secret", "privpass", "authpass", and so on, with a placeholder for the password, for example: "secret\_Enter\_password\_here". To add passwords before importing:

Search the script for the text "\_Enter\_password\_here", and replace "\_Enter\_password\_here" with the required password. For example, if the parameter name is "secret" and the password is "password":

`secret_Enter_password_here` should be replaced by: `secret password`

► *To import and run the CLI script:*

1. Log into the SX II you want to configure with the script.
2. Choose Maintenance > CLI Script.
3. Click Choose File to select the script.sx2 file you generated and click OK. The file name displays next to the Choose File button.



4. Click Run Script. A status message box appears in the same page. As each setting is processed, the results appear in this status box.

```
Script > # SX2 Generated Settings Script
Script > # Model: DSK2-48H
Script > # Hardware Revision: 8A
Script > # Firmware Version: 2.5.0.1.3861
Script > # Serial Number: QVY9400009
Script > # Mac Address: 00:0d:5d:16:e1:3d
Script > # 00:0d:5d:16:e1:3e
Script > # Time: Mon Aug 29 14:37:06 2022
Script > config
Script > Config > authentication
Script > Config > Authentication > authmode mode local fallback true
Authentication Mode configuration successful.

Script > Config > Authentication > top
Script > config
Script > Config > autoconfig enable false run once source dhcp
Automatic Script Configuration configuration successful.
Script > Config > autoconfigusb enable true
Auto config via USB configuration successful.

Script > Config > language set en
Language configuration successful.
```

5. When your script completes successfully, you will see a Status: Successful. If your script cannot complete due to an error, see [CLI Script Errors](#) (on page 155).

### CLI Script Errors

Errors are presented just as they are in the interactive CLI. A caret below the command indicates the position of a syntactic error. Syntactic errors, such as malformed commands, will halt the script. Semantic errors, such as settings that are not possible given the SX II model, will display an error without interrupting processing. Examples of semantic errors are number of ports or overriding settings.

If you encounter errors, you can correct the script and run it again. Some commands will emit an error if run again without a factory reset or otherwise undoing the settings. For example, adding a user or group that already exists. Depending on your goals for your script, you could fix errors and run again, remove the successful commands and run again with corrected failed commands, run the failed commands individually on the interactive CLI, or factory reset the machine and run a completely fixed script again.

### Firmware Upgrade

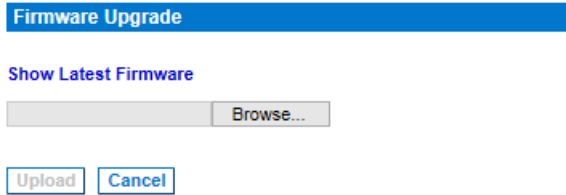
Use the Firmware Upgrade page to upgrade the firmware for your SX II, as well as upgrade from CC-SG if SX II is under CC-SG management.

---

**Important: Do not turn off your SX II appliance or disconnect targets while the upgrade is in progress - doing so will likely result in damage to the appliance.**

---

1. Choose Maintenance > Firmware Upgrade. The Firmware Upgrade page opens.



2. Click the Show Latest Firmware link to locate the appropriate Raritan firmware distribution file (\*.RFP) on the Raritan website on the Firmware Upgrades web page.
3. Unzip the file. Please read all instructions included in the firmware ZIP files carefully before upgrading.

---

*Note: Copy the firmware update file to a local PC before uploading. Do not load the file from a network drive.*

---

4. Click Browse to navigate to the directory where you unzipped the upgrade file.
5. Click Upload from the Firmware Upgrade page.
6. Information about the upgrade and version numbers is displayed for your confirmation (if you opted to review target information, that information is displayed as well).

---

*Note: At this point, connected users are logged out, and new login attempts are blocked.*

---

7. Click Upgrade.

Please wait for the upgrade to complete. Status information and progress bars are displayed during the upgrade. Upon completion of the upgrade, the appliance reboots (1 beep sounds to signal that the reboot has completed).

8. As prompted, close the browser and wait approximately 5 minutes before logging in to SX II again.

## Upgrade History

The SX II provides information about upgrades performed on the SX II and attached devices.

- Choose Maintenance > Upgrade History to view the upgrade history.

Information is provided about the SX II upgrade(s) that have been run, the final status of the upgrade, the start and end times, and the previous and current firmware versions. Information is also provided about the targets, which can be obtained by clicking the show link for an upgrade. The target information provided is:

- Type - The type of target
- User - The user who performed the upgrade
- IP - IP address firmware location
- Start Time - Start time of the upgrade
- End Time - end time of the upgrade

- Previous Version - Previous firmware version
- Upgrade Version - Current firmware version
- Result - The result of the upgrade (success or fail)

Task	User	ID	Start Time	End Time	Process Version	Upgrade Version	Result
Full Firmware Upgrade	admin	102.103.00.40	May 14, 2015 12:12:22	May 14, 2015 12:12:38	2.0.0.1776	2.0.0.1780	Successful
Full Firmware Upgrade	admin	102.103.00.40	May 11, 2015 11:00:45	May 11, 2015 11:02:21	2.0.0.1776	2.0.0.1776	Successful
Full Firmware Upgrade	admin	102.103.00.40	May 08, 2015 14:50:40	May 08, 2015 15:02:32	2.0.0.1777	2.0.0.1776	Successful
Full Firmware Upgrade	admin	102.103.00.40	May 07, 2015 17:20:15	May 07, 2015 17:22:10	2.0.0.1776	2.0.0.1777	Successful
Full Firmware Upgrade	admin	102.103.00.40	May 05, 2015 12:32:20	May 05, 2015 12:35:36	2.0.0.1776	2.0.0.1776	Successful
Full Firmware Upgrade	admin	102.103.00.40	May 05, 2015 11:57:50	May 05, 2015 12:00:50	2.0.0.1776	2.0.0.1776	Successful
Full Firmware Upgrade	admin	102.103.00.40	May 04, 2015 13:17:31	May 04, 2015 13:18:47	2.0.0.1770	2.0.0.1776	Successful
Full Firmware Upgrade	admin	102.103.00.40	May 04, 2015 12:30:14		2.0.0.1770	2.0.0.1776	Failed
Full Firmware Upgrade	admin	102.103.00.40	April 29, 2015 11:02:32	April 29, 2015 11:05:24	2.0.0.1760	2.0.0.1770	Successful
Full Firmware Upgrade	admin	102.103.00.40	April 27, 2015 10:40:11	April 27, 2015 10:47:50	2.0.0.1760	2.0.0.1760	Successful
Full Firmware Upgrade	admin	102.103.01.32	April 24, 2015 17:24:45	April 24, 2015 17:27:00	2.0.0.1762	2.0.0.1760	Successful
Full Firmware Upgrade	admin	102.103.00.40	April 17, 2015 10:00:17	April 17, 2015 10:02:08	2.0.0.1761	2.0.0.1762	Successful
Full Firmware Upgrade	admin	102.103.00.40	April 16, 2015 10:25:42	April 16, 2015 10:28:01	2.0.0.1760	2.0.0.1761	Successful
Full Firmware Upgrade	admin	102.103.00.40	April 15, 2015 10:21:10	April 15, 2015 10:24:01	2.0.0.1760	2.0.0.1762	Successful
Full Firmware Upgrade	admin	102.103.00.40	April 14, 2015 10:01:30	April 14, 2015 10:02:04	2.0.0.1760	2.0.0.1760	Successful
Full Firmware Upgrade	admin	102.103.00.40	April 13, 2015 10:00:04	April 13, 2015 10:02:27	2.0.0.1764	2.0.0.1760	Successful
Full Firmware Upgrade	admin	102.103.00.40	April 13, 2015 10:40:10	April 13, 2015 10:42:08	2.0.0.1760	2.0.0.1760	Successful
Full Firmware Upgrade	admin	102.103.00.40	April 10, 2015 10:10:26	April 10, 2015 10:12:28	2.0.0.1760	2.0.0.1760	Successful
Full Firmware Upgrade	admin	102.103.00.40	April 08, 2015 17:52:30	April 08, 2015 17:55:27	2.0.0.1764	2.0.0.1762	Successful
Full Firmware Upgrade	admin	102.103.00.111	April 07, 2015 09:40:10	April 07, 2015 09:46:11	2.0.0.1760	2.0.0.1761	Successful
Full Firmware Upgrade	admin	102.103.01.118	April 07, 2015 07:50:40		2.0.0.1760	2.0.0.1761	Failed
Full Firmware Upgrade	admin	102.103.00.40	April 05, 2015 11:50:01	April 05, 2015 11:48:56	2.0.0.1740	2.0.0.1762	Successful
Full Firmware Upgrade	admin	102.103.00.2	April 03, 2015 10:57:50	April 03, 2015 10:57:01	2.0.0.1740	2.0.0.1740	Successful
Full Firmware Upgrade	admin	102.103.00.2	April 03, 2015 09:50:50	April 03, 2015 09:49:56	2.0.0.1740	2.0.0.1742	Successful

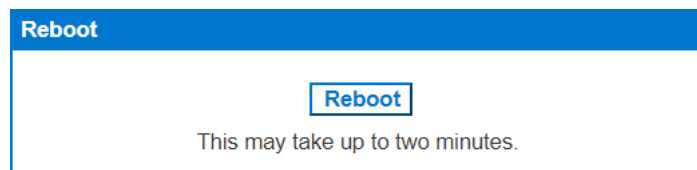
## Rebooting the SX II

The Reboot page provides a safe and controlled way to reboot your SX II. This is the recommended method for rebooting.

**Important: All connections will be closed and all users will be logged off.**

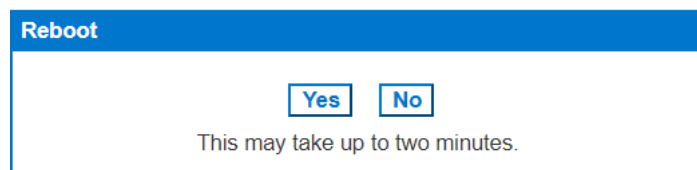
► To reboot your SX II:

1. Choose Maintenance > Reboot. The Reboot page opens.



2. Click Reboot. You are prompted to confirm the action. Click Yes to proceed with the reboot.

*Rebooting the system will logoff all users.  
Do you want to proceed with the reboot?*



## Reset the SX II Using the Reset Button on the Appliance

On the back panel of the appliance, there is a Reset button. It is recessed to prevent accidental resets, so you need a pointed object to press this button.

The actions that are performed when the Reset button is pressed are defined on the Encryption & Share page. See [Configure Encryption & Share](#) (on page 128).

---

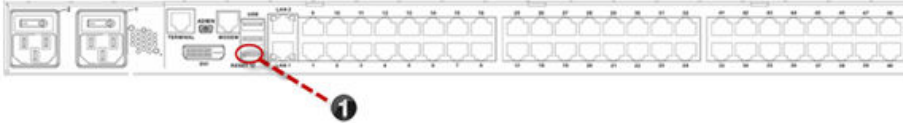
Note: It is recommended that you save the audit log prior to performing a factory reset.

---

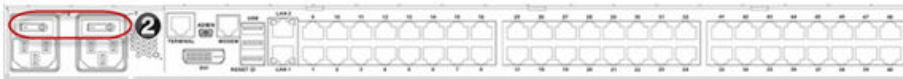
The audit log is deleted when a factory reset is performed and the reset event is not logged in the audit log. For more information about saving the audit log, see [Audit Log](#) (on page 151).

---

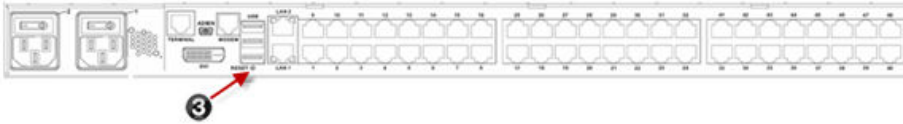
1. To ensure you are able to properly access and press in the Reset button, remove the bottom USB cable that is closest to the Reset button.



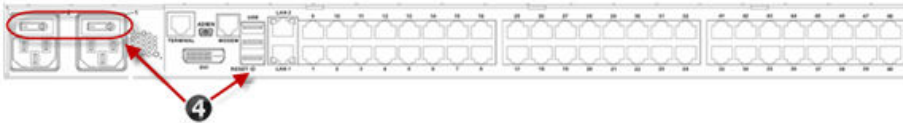
2. Power off SX II.



3. Use a pointed object such as a paperclip to press and hold the Reset button.



4. While continuing to hold the Reset button, power the SX II device back on. Continue holding the Reset button until you hear a beep that is about one second long.



Once the device is successfully reset, two (2) beeps are emitted from the appliance.

## Configure Diagnostic Options from the Remote Console

### Ping Host Page

Ping is a network tool used to test whether a particular host or IP address is reachable across an IP network. Using the Ping Host page, you can determine if a target server or another SX II is accessible.

1. Choose Diagnostics > Ping Host. The Ping Host page appears.
2. Type either the hostname or IP address into the IP Address/Host Name field.

---

*Note: The host name cannot exceed 232 characters in length.*

---

3. Click Ping. The results of the ping are displayed in the Result field.
4. If necessary, select the interface in the Network Interface drop-down box. Optional

Home > Diagnostics > Ping Host

**Ping Host**

IP Address/Host Name:  
192.168.80.137

Network Interface:  
AUTO

Ping

Result:

```
PING 192.168.80.137 (192.168.80.137): 56 data bytes
64 bytes from 192.168.80.137: seq=0 ttl=64 time=0.300 ms
64 bytes from 192.168.80.137: seq=1 ttl=64 time=0.139 ms
64 bytes from 192.168.80.137: seq=2 ttl=64 time=0.130 ms
64 bytes from 192.168.80.137: seq=3 ttl=64 time=0.150 ms

--- 192.168.80.137 ping statistics ---
4 packets transmitted, 4 packets received, 0% packet loss
round-trip min/avg/max = 0.130/0.179/0.300 ms
```

## Trace Route to Host Page

Trace route is a network tool used to determine the route taken to the provided hostname or IP address.

► *To trace the route to the host:*

1. Choose Diagnostics > Trace Route to Host. The Trace Route to Host page opens.
2. Type either the IP address or host name into the IP Address/Host Name field.

---

*Note: The host name cannot exceed 232 characters in length.*

---

3. Choose the maximum hops from the drop-down list (5 to 50 in increments of 5).
4. Click Trace Route. The trace route command is executed for the given hostname or IP address and the maximum hops. The output of trace route is displayed in the Result field.
5. If, necessary, select the interface in the Network Interface drop-down box. Optional

### Trace Route to Host

IP Address/Host Name:

Network Interface:

Maximum Hops:

Result:

```
tracert started wait for 2mins...
tracert to 192.168.61.11 (192.168.61.11), 10 hops max, 38 byte packets
 1 192.168.60.5 (192.168.60.5) 2.222 ms 1.292 ms 2.289 ms
 2 192.168.60.5 (192.168.60.5) 2.149 ms !H * *
 3 192.168.60.5 (192.168.60.5) 2.949 ms !H * 1.506 ms !H
```

## Execute a Diagnostics Script and Create a Diagnostics File

Note: This page is for use by Raritan Field Engineers or when you are directed by Raritan Technical Support.

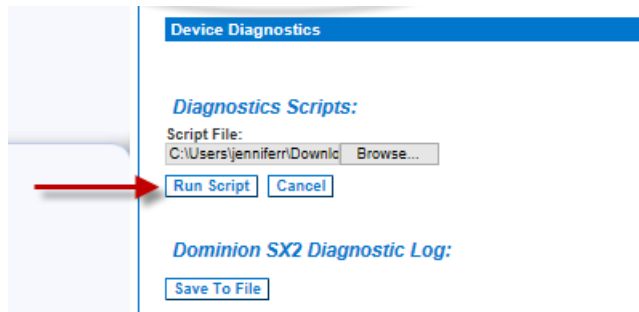
Use this feature to download diagnostic information from the SX II to the client machine.

Three operations can be performed on this page:

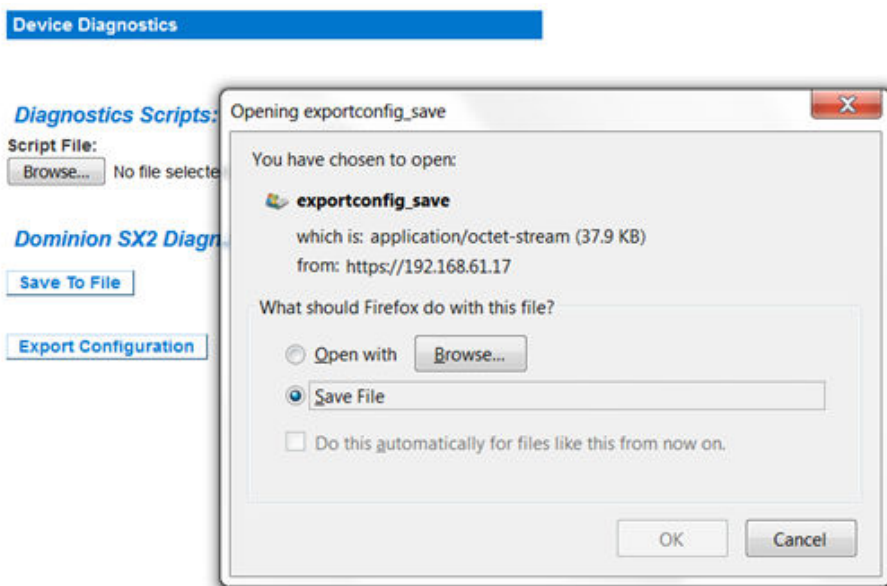
- Execute a special diagnostics script provided by Raritan Technical Support during a critical error debugging session. The script is uploaded to the appliance and executed. Once this script has been executed, you can download the diagnostics messages using the Save to File function.
- Download the device diagnostic log for a snapshot of diagnostics messages from the SX II appliance to the client. This encrypted file is then sent to Raritan Technical Support. Only Raritan can interpret this file.
- Export the configuration database in a readable text file. No passwords are exported.

Note: This page is accessible only by users with administrative privileges.

1. Choose Diagnostics > SX II Diagnostics. The SX II Diagnostics page opens.
2. To execute a diagnostics script file emailed to you from Raritan Technical Support, retrieve the diagnostics file supplied by Raritan using the browse function.
3. Click Run Script. Send this file to Raritan Technical Support.



4. To create a diagnostics file to send to Raritan Technical Support, click Save to File and save the file locally from the Save As dialog.
5. Email this file as directed by Raritan Technical Support.
6. To export the configuration file, click Export Configuration, then save the file.



## Network Interface Page

The SX II provides information about the status of your network interface.

► *To view information about your network interface:*

- Choose Diagnostics > Network Interface. The Network Interface page opens.

The following information is displayed:

- Whether the Ethernet interface is up or down.
- Whether the gateway is pingable or not.
- The LAN port that is currently active.

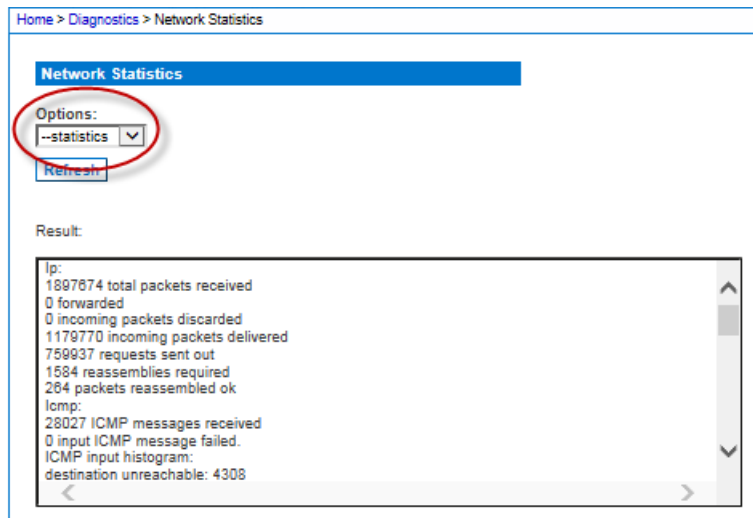
► To refresh this information:

- Click Refresh.

## Network Statistics Page

The SX II provides statistics about your network interface.

1. Choose Diagnostics > Network Statistics. The Network Statistics page opens.
  2. Choose the appropriate option from the Options drop-down list.
  3. Click Refresh. The relevant information is displayed in the Result field. See examples.
- Statistics



Home > Diagnostics > Network Statistics

**Network Statistics**

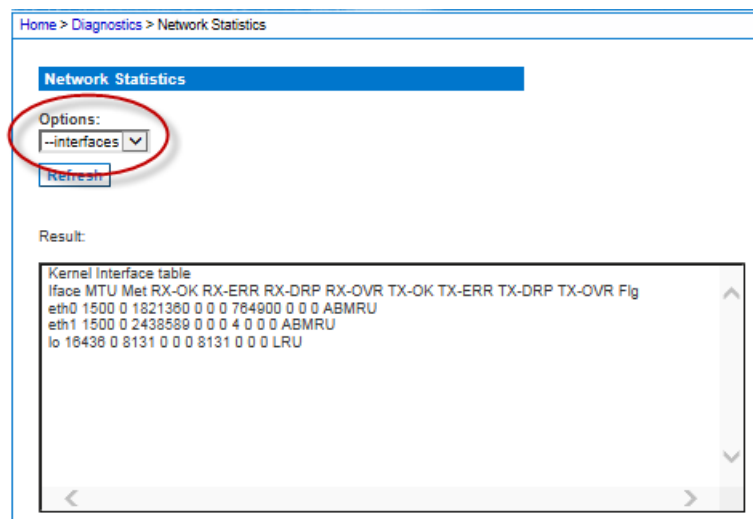
Options:  
--statistics ▼

Refresh

Result:

```
Ip:
1897674 total packets received
0 forwarded
0 incoming packets discarded
1179770 incoming packets delivered
759937 requests sent out
1584 reassemblies required
264 packets reassembled ok
Icmp:
28027 ICMP messages received
0 input ICMP message failed.
ICMP input histogram:
destination unreachable: 4308
```

- Interfaces:



Home > Diagnostics > Network Statistics

**Network Statistics**

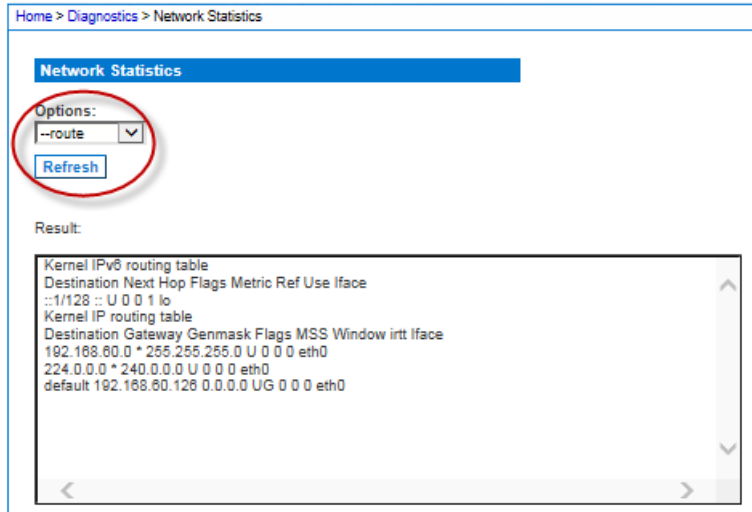
Options:  
--interfaces ▼

Refresh

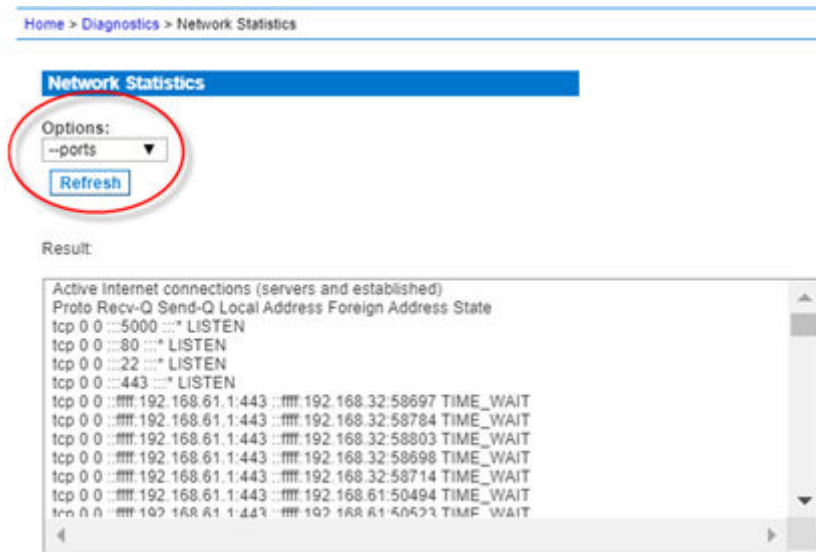
Result:

```
Kernel Interface table
Iface MTU Met RX-OK RX-ERR RX-DRP RX-OVR TX-OK TX-ERR TX-DRP TX-OVR Flg
eth0 1500 0 1821380 0 0 0 764900 0 0 0 ABMRU
eth1 1500 0 2438589 0 0 4 0 0 0 0 ABMRU
lo 16436 0 8131 0 0 0 8131 0 0 0 LRU
```

- Route:



- Ports:



## Administering SX II Using command line interface

This section is specific to tasks performed using command line interface.

For information on performing tasks in the SX II Remote Console, see [Administering SX II from the Remote Console and Admin-Only Interface](#) (on page 50).

## USB Local Admin Port

The USB local admin port is used to add the SX II as a com port on an external PC to allow this PC direct access to the SX II's CLI.

► *Requirements:*

- USB to mini-USB cable to connect
- Serial communication program such as putty, tera term, or minicom

► *To use the USB local admin port:*

1. Connect the mini-USB cable to the SX II and USB to the laptop. The laptop should attempt to install a serial driver.
  - If the driver does not install: In Windows, open the Device manager. Look for Gadget Serial v2.4 under "Other Devices". Click to select Gadget Serial v2.4, then click Update Driver Software. Search the Microsoft network for the driver, and it should install properly.
2. Note the COM port that is associated with this newly added USB serial device.
3. Launch a serial communication program and open up the COM port with bps 115200.
4. The SX II's CLI will appear for login and administration of the device.

## Change Your Password Using CLI

---

Note: This feature can also be configured from the Remote Console. See [Change Your Password from the Remote Console](#) (on page 30).

---

**Important: If the administrator password is forgotten, SX II must be reset to the factory default from the Reset button on the rear panel and the initial configuration tasks must be performed again.**

---

Enter `admin > password` to access the menu.

When creating a password via CLI, it cannot begin with a space or end with a space. This does not apply to creating passwords in using the Remote Console.

Command	Description	Parameters
<code>password</code>	Create a new password, if needed.	<ul style="list-style-type: none"><li>• new password</li></ul>

## Configure Power Strips Using CLI

---

Note: These functions can also be managed from the Remote Console. See [Configure Power Strips from the Remote Console](#) (on page 50).

---

The following power commands allow you to manage power strips attached to SX II.

Enter `admin > power` to access the menu.

Command	Description	Parameters
associate	Associate a power strip outlet to a SX II port.	<ul style="list-style-type: none"> <li>&lt;port number&gt; - SX port number to associate</li> <li>&lt;powerstrip name&gt; - Name of power strip to access</li> <li>&lt;outlet number&gt; - Outlet number on power strip to associate</li> </ul>
cycle	Power cycle specified power strip. <hr/> <b>Note:</b> If you are connecting a PX to SX II, it is recommended you set the power cycle time to 5 seconds. <hr/>	<ul style="list-style-type: none"> <li>&lt;port number&gt; - SX port number to cycle</li> <li>&lt;powerstrip name&gt; - Name of power strip to access</li> <li>&lt;outlet number&gt; - Outlet number on power strip to cycle</li> </ul>
off	Power off a specified power strip.	<ul style="list-style-type: none"> <li>&lt;port number&gt; - SX port number to turn off</li> <li>&lt;powerstrip name&gt; - Name of power strip to access</li> <li>&lt;outlet number&gt; - Outlet number on power strip to turn off</li> </ul>
on	Power on a specified power strip.	<ul style="list-style-type: none"> <li>&lt;port number&gt; - SX port number to turn on</li> <li>&lt;powerstrip name&gt; - Name of power strip to access</li> <li>&lt;outlet number&gt; - Outlet number on power strip to turn on</li> </ul>
powerdelay	Configure global power strip delays.	<ul style="list-style-type: none"> <li>&lt;cycle value&gt; - Delay between power off/on</li> </ul>
powerstatus	Get the status of a specified power strip.	<ul style="list-style-type: none"> <li>&lt;powerstrip name&gt; - Name of power strip to access</li> </ul>
powerstrip	Get power strip information.	<ul style="list-style-type: none"> <li>&lt;powerstrip name&gt; - Name of power strip to access</li> </ul>
setpowerport	Configure an SX II Port to contain a power strip.	<ul style="list-style-type: none"> <li>&lt;port number&gt; - SX port number</li> </ul>
unassociate	Remove a power outlet association from a SX II port.	<ul style="list-style-type: none"> <li>&lt;port number&gt; - SX port number to unassociate</li> <li>&lt;powerstrip name&gt; - Name of power strip to access</li> <li>&lt;outlet number&gt; - Outlet number on power strip to unassociate</li> </ul>
unsetpowerport	Configure an SX II Port to remove a power strip.	<ul style="list-style-type: none"> <li>&lt;port number&gt; - SX port number</li> </ul>

## Configure and Manage Users and User Groups Using CLI

Note: These functions can also be performed from the Remote Client. See [Configure and Manage Users and Groups from the Remote Console](#) (on page 54).

SX II stores an internal list of all user profiles and user groups.

User profiles and groups are used to determine access authorization and permissions. This information is stored internally. User passwords are stored in an encrypted format.

SX II allows the administrator to define groups with common permissions and attributes. They can then add users to the groups, and each user takes the attributes and permissions of that group.

Since the group permissions are applied to each individual in the group, permissions do not have to be applied to each user separately. This reduces the time to configure users.

For example, create a group called Modem Access that has permission to manage modems. Each user assigned to the Modem Access group can then manage the modem function; you do not have to assign each user a separate permission.

Enter `admin > Config > Users` to access the menu.

Command	Description	Parameters
addgroup	Creates a group with common permissions.	<p>group &lt;groupname&gt; - Group name</p> <ul style="list-style-type: none"> <li>control &lt;number   range   *&gt; - Port(s) the user group has full control permissions to (users assigned to this group have read and write access to the listed ports). Control must be assigned to the group if power control access will also be granted. Applies to a single port or range of ports (1-n or 1,3,4 or * for all ports).</li> <li>power &lt;number   range   *&gt; - Port(s) the user group has full power control permission to. Permitted (true), denied (false).</li> <li>pcshare &lt;true   false&gt; PC-Share Access - Indicate whether users in the group are allowed to access a port that already has users connected to it if the port access mode is set to Share. Permitted (true), denied (false).</li> <li>settings &lt;true   false&gt; Permission to change device settings.</li> <li>viewonly settings &lt;number range *&gt; &lt;true or false&gt;&lt;true   false&gt; - User group has view only permissions to the port. Permitted (true), denied (false).</li> <li>cc &lt;true   false&gt; - Allow access under CC-SG management commands. Permitted (true), denied (false).</li> <li>diagnostics &lt;true   false&gt; - Permission to access diagnostics commands. Permitted (true), denied (false).</li> <li>maintenance &lt;true   false&gt; - Permission to access maintenance commands, backup and restore the database, firmware upgrade, factory reset, and reboot. Permitted (true), denied (false).</li> <li>security &lt;true   false&gt; - Permission to access security commands. SSL certificate, security settings, IP ACL. Permitted (true), denied (false).</li> <li>manage user &lt;true   false&gt; - Permission to access user management commands. User and group management, remote, authentication, login settings. Permitted (true), denied (false).</li> </ul>

Command	Description	Parameters
		<p>Important: manage user allows the members of the group to change the permissions of all users, including their own. Carefully consider granting these permissions.</p> <ul style="list-style-type: none"> <li>• modem &lt;true   false&gt; - Permission to access the modem. Displayed on the page when a built-in modem is connected to SX II. Select this option if you want the group to have access to the external modem. If broadband access is enabled for a modem, this permission allows the group to access SX II via the wireless modem, as well. Permitted (true), denied (false).</li> </ul>
editgroup	Command to edit an existing user group.	<ul style="list-style-type: none"> <li>• deny &lt;number   range   *&gt; - Deny permissions to listed ports.</li> <li>• powerdeny &lt;number   range   *&gt; - Deny power permissions to listed ports.</li> <li>• All commands listed under addgroup can be used to editgroup.</li> </ul>
showgroup	Shows the details of existing user groups.  If there is no group specified, the command displays all groups in the system.	<ul style="list-style-type: none"> <li>• &lt;group name&gt; - Group to display.</li> </ul>
deletegroup	Deletes an existing user group.	<ul style="list-style-type: none"> <li>• &lt;group name&gt; - Group to delete.</li> </ul>
adduser	Add an individual user to SX II.	<ul style="list-style-type: none"> <li>• user &lt;loginname&gt; - User's login name</li> <li>• full name &lt;user's fullname&gt; - User's full name</li> <li>• group &lt;groupname &gt; - The group the user is associated with</li> <li>• password &lt;password&gt; - User's password. When creating a password via CLI, it cannot begin with a space or end with a space. This does not apply to creating passwords in using the Remote Console.</li> <li>• active &lt;true   false&gt; - Activate (true) or deactivate (false) the user account</li> <li>• &lt;dialback&gt; - User's dialback phone number</li> </ul>

Command	Description	Parameters
addsshkey	<p>The <code>addsshkey</code> command adds SSH key data for the user. This data is the <code>rsa_id.pub</code> key generated for your client. The user must exist in SX II before you can add an SSH key for them.</p> <p>The key data should be used for authentication and users should not have to enter a password.</p> <p>Linux users should delete "name@local host" that appears at the end of the key when adding non-default public keys. This is not necessary if using the corresponding private key.</p> <p>The SSH key data is validated in several ways. Specified <code>keytype</code> is validated: [ssh-rsa ssh-dsa ecdsa-sha2-nistp256 ecdsa-sha2-nistp384 ecdsa-sha2-nistp512]. <code>Keytype</code> is followed by whitespace, followed by the base64 data. Base64 data is validated. Whitespace and any characters after the base64 are dropped from the key data.</p>	<ul style="list-style-type: none"> <li>• user &lt;loginname&gt; - User's login name</li> <li>• key &lt;value&gt; - User's SSH key</li> </ul>
viewsshkey	Displays the SSH key data for the specified user.	<ul style="list-style-type: none"> <li>• user &lt;loginname&gt; - User's login name</li> <li>• index &lt;index&gt; - View the index of the SSH key</li> </ul>
deletesshkey	Delete the SSH key for a specified user.	<ul style="list-style-type: none"> <li>• user &lt;loginname&gt; - User's login name</li> <li>• index &lt;index&gt; - Delete the SSH key index</li> </ul>
edituser	Update information for a specified user.	<ul style="list-style-type: none"> <li>• See <code>addgroup</code> parameters.</li> </ul>
deleteuser	Delete a specified user.	<ul style="list-style-type: none"> <li>• user &lt;loginname&gt; - User to delete</li> </ul>
showuser	Displays the details for an existing user.	<ul style="list-style-type: none"> <li>• user &lt;loginname&gt; - User to display</li> </ul>
insertgroupacl	Insert Group ACL Rule	<ul style="list-style-type: none"> <li>• group: Affected group name</li> <li>• id: id number</li> <li>• start: Beginning IP address of range &lt;ipaddress&gt;</li> <li>• stop: Ending IP address of range &lt;ipaddress&gt;</li> <li>• policy: &lt;ACCEPT/DROP&gt;</li> </ul>

Command	Description	Parameters
replacegroupacl	Replace Group ACL Rule	<ul style="list-style-type: none"> <li>group: Affected group name</li> <li>id: id number</li> <li>start: Beginning IP address of range &lt;ipaddress&gt;</li> <li>stop: Ending IP address of range &lt;ipaddress&gt;</li> <li>policy: &lt;ACCEPT/DROP&gt;</li> </ul>
deletegroupacl	Delete Group ACL Rule	<ul style="list-style-type: none"> <li>group: Affected group name</li> <li>id: id number or &lt;all&gt;</li> </ul>
showgroupacl	Display Group ACL Rules	<ul style="list-style-type: none"> <li>group: Group name</li> </ul>
addgroupacl	Add Group ACL Rule	<ul style="list-style-type: none"> <li>group: Group name</li> <li>start: Beginning IP address of range &lt;ipaddress&gt;</li> <li>stop: Ending IP address of range &lt;ipaddress&gt;</li> <li>policy: &lt;ACCEPT/DROP&gt;</li> </ul>

## Configure User Authorization and Authentication Services Using CLI

---

Note: These functions can also be performed from the Remote Console. See [Configure User Authentication from the Remote Console](#) (on page 65).

---

SX II requires users be authenticated to access the appliance.

Authentication is the process of verifying that a user is who he says he is. Once a user is authenticated, the user's group is used to determine his system and port permissions. The user's assigned privileges determine what type of access is allowed. This is called authorization.

Users can be authenticated via SX II locally or remotely.

By default, users are authenticated locally; you must enable remote authentication. When remote authentication is enabled, there is an option to allow or deny local authentication as a fallback. See [Fallback to Local Authentication](#).

When the SX II is configured for remote authentication, the external authentication server is used primarily for the purposes of authentication, not authorization.

SX II provides several options to remotely authenticate users -

- LDAP/LDAPS
- RADIUS
- TACACS+

Enter `admin > Config > Authentication` to access the menu.

### Authentication Method

Command	Description	Parameters
authmode	Set the authentication mode and fallback.	<ul style="list-style-type: none"> <li>mode &lt;local ldap radius tacacs&gt;</li> <li>fallback &lt;true   false&gt; Enable or disable fallback to local authentication if remote is unreachable</li> </ul>

## LDAP Configuration

The LDAP configuration menu offers commands to set up LDAP and LDAPS.

Enter `admin > Config > Authentication > ldap` to access the menu.

Command	Description	Parameters
ldap	Configure secure LDAP authentication mode.	<ul style="list-style-type: none"> <li>primip &lt;ipaddress   hostname&gt; - Primary server IP address</li> <li>secip &lt;ipaddress   hostname&gt; - Secondary server IP address</li> <li>port &lt;value&gt; - LDAP port</li> <li>basedn &lt;Base DN&gt; - Admin user DN</li> <li>secret &lt;value&gt; - Admin user authentication secret</li> <li>search &lt;value&gt; - User search DN</li> <li>dialback &lt;value&gt; - Dialback search query</li> <li>domain &lt;Active Directory Domain&gt; - Active Directory domain</li> <li>server &lt;generic   ads&gt; - Server type, Active Directory or Generic</li> </ul>
ldaps	Set/Get secure LDAP authentication mode.	<ul style="list-style-type: none"> <li>port &lt;value&gt; - Secure LDAP port</li> <li>enable &lt;true   false&gt; - Secure LDAP enable (true), disable (false)</li> <li>verify &lt;true   false&gt; - LDAPS certificate validation enable (true), disable (false)</li> </ul>
testldap	Used to test LDAP settings.	<ul style="list-style-type: none"> <li>login &lt;LDAP user&gt; - LDAP login to test</li> <li>password &lt;LDAP users password&gt;</li> </ul>

## RADIUS Configuration

The RADIUS menu provides access to commands used to configure access to a RADIUS server.

Enter `admin > Config > Authentication > RADIUS` to access the menu

Command	Description	Parameters
primaryradius	Access to configure the primary RADIUS settings.	<ul style="list-style-type: none"> <li>ip &lt;ipaddress   hostname&gt; - IP Address</li> <li>secret &lt;value&gt; - RADIUS authentication secret</li> <li>authport &lt;value&gt; - RADIUS authentication port</li> <li>acctport &lt;value&gt; - RADIUS accounting port</li> <li>timeout &lt;value&gt; - RADIUS timeout (in seconds)</li> <li>retries &lt;value&gt; - RADIUS retries</li> <li>chap &lt;true   false&gt; - CHAP enable/disable (true/false)</li> </ul>

Command	Description	Parameters
secondaryradius	Access to configure the secondary RADIUS settings.	<ul style="list-style-type: none"> <li>ip &lt;ipaddress   hostname&gt; - IP Address</li> <li>secret &lt;value&gt; - RADIUS authentication secret</li> <li>authport &lt;value&gt; - RADIUS authentication port</li> <li>acctport &lt;value&gt; - RADIUS accounting port</li> <li>timeout &lt;value&gt; - RADIUS timeout (in seconds)</li> <li>retries &lt;value&gt; - RADIUS retries</li> <li>chap &lt;true   false&gt; - CHAP enable (true), disable (false)</li> </ul>

## TACACS+ Configuration

The TACACS+ menu offers commands used to configure access to a TACACS+.

Enter `admin > Config > Authentication > TACACS+` to access the menu.

Command	Description	Parameters
primarytacacs	Used to configure the primary TACACS+ settings.	<ul style="list-style-type: none"> <li>ip &lt;ipaddress   hostname&gt; - IP Address</li> <li>secret &lt;value&gt; - TACACS+ authentication secret</li> <li>port &lt;value&gt; - TACACS+ port</li> <li>timeout &lt;value&gt; - TACACS+ timeout (in seconds)</li> <li>retries &lt;value&gt; - TACACS+ retries</li> </ul>
secondarytacacs	Used to configure the secondary TACACS+ settings.	<ul style="list-style-type: none"> <li>ip &lt;ipaddress   hostname&gt; - IP Address</li> <li>secret &lt;value&gt; - TACACS+ authentication secret</li> <li>port &lt;value&gt; - TACACS+ port</li> <li>timeout &lt;value&gt; - TACACS+ timeout (in seconds)</li> <li>retries &lt;value&gt; - TACACS+ retries</li> </ul>

## Configure a Modem Using CLI

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Note: You can also configure modems from the Remote Console. See [Configure Date and Time Settings from the Remote Console](#) (on page 94).

---

Enter `admin > Config > Modem` to access the menu.

Command	Description	Parameters
dialback	Enable dialback and caller ID verification	<ul style="list-style-type: none"> <li>enable &lt;true   false&gt; - enable or disable dialback, enable (true), disable (false)</li> <li>callerid &lt;true   false&gt; - enable or disable caller id verification of dialback</li> </ul>

Command	Description	Parameters
dialin	Configure dialin settings.	<ul style="list-style-type: none"> <li>enable &lt;true   false&gt; - Enable or disable modem, enable (true), disable (false)</li> <li>mode &lt;All/PPP_Only/Console_Only&gt; Modem access mode</li> <li>serverip PPP &lt;IPv4 address&gt; - PPP server IP address</li> <li>clientip PPP &lt;IPv4 address&gt; - PPP client IP address</li> <li>callerid &lt;true   false&gt; - enable or disable caller id for dialin numbers</li> </ul>
dialinadd	Add phone number to dialin.	<ul style="list-style-type: none"> <li>[number phonenumber] - add a phone number to the approved list of dialin numbers</li> </ul>
dialindel	Delete phone number from dialin.	<ul style="list-style-type: none"> <li>[number phonenumber] - delete a phone number from the approved list of dialin numbers</li> </ul>
dialout	Enable internal modem dialout feature.	<ul style="list-style-type: none"> <li>enable &lt;true/false&gt;</li> </ul>
bmodem	Enable/Disable broadband modem.	<ul style="list-style-type: none"> <li>enable &lt;true   false&gt; - enable or disable broadband modem access, enable (true), disable (false)</li> </ul>
bmodemfailover	Enable/Disable broadband modem failover <ul style="list-style-type: none"> <li>The command is available if bmodem is enabled.</li> </ul>	<ul style="list-style-type: none"> <li>enable &lt;true   false&gt; - enable or disable broadband modem failover, enable (true), disable (false)</li> </ul>

## Assign User Groups Modem Access Permissions

If needed, assign users to a group with Modem Access permissions.

Modem Access permission is assigned to a user group on the Group page, and the user is then assigned to the group on the User page.

For more information, see [Configure and Manage Users and User Groups Using CLI](#) (on page 165) or [Configure and Manage Users and Groups from the Remote Console](#) (on page 54).

## Server Settings to Support Modems

Primary (or/and Secondary) RADIUS Server Settings should be configured correctly and enabled on SX II.

- On the Remote RADIUS Server, the user's configuration should contain the following line.

```
Filter-Id = "Raritan:G{<local user group>}:D{<number for dialback>}"
```

The LDAP server user's configuration should contain the dialback number in the attribute that is configured as the 'dialback search string' on SX II.

Dialback with remote LDAP user (OpenLdap v.2 & v.3)

- Dialback with remote TACACS+ user (TACACS++ v.4.0.3a)

Dial-in and Dialback should be enabled on SX II used for modem communication. Primary (or/and Secondary) TACACS+ Server Settings should be configured correctly and enabled on SX IIs.

On the Remote TACACS+Server user's configuration should own the following line .

```
user-dialback='129'
```

## Run an Autoconfiguration Script Using CLI

Note: These functions can also be configured from the Remote Console. See [Enable Auto Script from the Remote Console for Use with TFTP or a USB Stick](#) (on page 78).

Enter `admin > config >` to access the menu.

Command	Description	Parameters
<code>autoconfig</code>	Set and get Automatic Script Configuration.	<ul style="list-style-type: none"> <li><code>enable &lt;true/false&gt;</code> - enable (true), disable (false)</li> <li><code>run &lt;once/every&gt;</code> - Run script once or at every boot</li> <li><code>source &lt;manual/dhcp&gt;</code> - Use TFTP address provided by DHCP or manually set</li> <li><code>tftp address &lt;ipaddress   hostname&gt;</code> - TFTP server address</li> </ul>
<code>autoconfigusb</code>	Set/Get Automatic Script via USB Configuration.	<ul style="list-style-type: none"> <li><code>enable &lt;true/false&gt;</code> - enable (true), disable (false)</li> </ul>

Enter `admin >` to access the menu.

Command	Description	Parameters
<code>scriptget</code>	Retrieves the remote configuration script.	<ul style="list-style-type: none"> <li><code>address &lt;ipaddress   hostname&gt;</code> - Address of FTP server</li> <li><code>port &lt;FTP port&gt;</code> - Port of FTP server (1..65535)</li> <li><code>path &lt;path to file&gt;</code> - FTP server path for config file. e.g. /ftphome/config.txt</li> <li><code>user &lt;FTP username&gt;</code> - Optional FTP server user name</li> <li><code>password &lt;FTP password&gt;</code> - Optional FTP server password. Will prompt if missing and user name given.</li> </ul>
<code>scriptrun</code>	Runs the autoconfiguration script.	NA

## Configure Network Settings Using CLI

Note: This feature can also be managed from the SX II Remote Console. See [Configure SX II Network Settings from the Remote Console](#).

The `network` menu commands allow you to configure SX II network settings.

Enter `admin > config > network` to access the menu.

Command	Description	Parameters
802.1x with commands	Enable and configure 802.1x security	<ul style="list-style-type: none"> <li>enable8021x &lt;true/false&gt;</li> <li>auth: 802.1x authentication type: &lt;eap_peap/eap_tls/eap_ttls&gt;</li> <li>tlsServerCert: CA certificate settings for 802.1x server certificate</li> </ul>
advancedrouting	Change to Advanced Routing sub menu	<ul style="list-style-type: none"> <li>advancerrouting enable &lt;true/false&gt;</li> <li>ip &lt;ipaddress&gt; - ip rule/route command</li> <li>resetroutes Reset route/rule table to system default</li> <li>saveroutes Save advanced route rules</li> <li>viewroutes View routing/rule tables</li> </ul>
dns	Get and configure the DNS parameters for the network.	<ul style="list-style-type: none"> <li>mode &lt;auto/manual&gt; - DNS server IP mode</li> <li>primary &lt;ipaddress&gt; - Primary DNS server IP address</li> <li>secondary &lt;ipaddress&gt; - Secondary DNS server IP address</li> </ul>
eth	Get/set ethernet parameters	<ul style="list-style-type: none"> <li>if &lt;lan1/lan1&gt; Interface</li> <li>mtu &lt;576 - 65536&gt; - Maximum Transmission Unit</li> </ul>
ethernetfailover	Used to enable and disable the ability to failover from one LAN to another.	<ul style="list-style-type: none"> <li>enable &lt;true/false&gt; - Ethernet failover enable (true), disable (false)</li> </ul>
interface	Configure network settings for dual-LAN failover.  By default, dual LAN failover mode is disabled.	<ul style="list-style-type: none"> <li>ipauto &lt;none   dhcp&gt; - Enable DHCP as ip configuration</li> <li>&lt;lan1   lan2&gt; - Select LAN interface you are configuring.</li> <li>ip &lt;IPv4 address&gt; - IP Address of SX II assigned for access from the IP network</li> <li>mask &lt;subnetmask&gt; - Subnet Mask obtained from the IP administrator</li> <li>gw ipaddress &lt;IPv4 address&gt; - Gateway IP Address obtained from the IP administrator</li> <li>mode &lt;auto   10hdx   10fdx   100hdx   100fdx   1000fdx&gt; - Set Ethernet Mode to auto detect or force a specified mode.</li> </ul>
ipforwarding	IP forwarding configuration.	<ul style="list-style-type: none"> <li>enable &lt;true/false&gt;</li> </ul>
IPv6_interface	Set IPv6 network parameters and retrieve existing IPv6 parameters.	<ul style="list-style-type: none"> <li>ipauto &lt;none   routerdisc&gt; - Enable IPV6 auto configuration</li> <li>if &lt;lan1   lan2&gt; - Select LAN interface you are configuring.</li> <li>ip ipaddress &lt;ipaddress&gt; - IPv6 address of SX II assigned for access from the IP network.</li> <li>prefixlen &lt;prefix length&gt; - IPV6 Address prefix length (is the number of bits in the prefix, in range of 0-128 (decimal))</li> <li>gw ipaddress &lt;IPv6 address&gt; - Gateway IP Address obtained from the IP administrator.</li> <li>mode &lt;enable or disable&gt; - IPV6 network operational mode, enable (true), disable (false)</li> <li>ipforwarding: Enable &lt;true/false&gt;</li> </ul>

Command	Description	Parameters
name	Name the appliance.	<ul style="list-style-type: none"> <li>devicename &lt;value&gt; - name assigned to SX II</li> <li>hostname &lt;value&gt; - Preferred host name (DHCP only)</li> </ul>
staticroute	Configure static routes.	<ul style="list-style-type: none"> <li>enable &lt;enable&gt; - enable (true), disable (false)</li> </ul>
staticrouteadd	Add a static route.	<ul style="list-style-type: none"> <li>dest &lt;dest&gt; - Destination</li> <li>if &lt;lan1   lan2&gt; - Interface (lan1/lan2)</li> <li>prefix &lt;prefix&gt; - IPv6 prefix length</li> <li>mask &lt;mask&gt; - IPv4 mask</li> <li>gateway &lt;gateway&gt; - Gateway</li> <li>mtu &lt;mtu&gt; - MTU (64..65536)</li> <li>flags &lt;host net&gt; - Flags (host/net)</li> </ul>
staticrouteshow	Show a list of static routes.	NA
staticroutedelete	Used to remove a route from the kernel routing table.	<ul style="list-style-type: none"> <li>id &lt;id&gt; - id number or all</li> </ul>

## Configure 802.1X Security Settings Using CLI

Note: This feature can also be managed from the SX II Remote Console. See [802.1X Security](#) (on page 91).

The `network>802.1X` sub-menu commands allow you to configure SX II 802.1X security settings.

Enter `admin > config > network > 802.1X` to access the menu.

Command	Description	Parameters
enable8021X	Enable or disable 802.1x security	<ul style="list-style-type: none"> <li>Interface: &lt;lan1/lan2&gt;</li> <li>Enable: Enable feature &lt;true/false&gt;</li> </ul>
auth	802.1x authentication type	<ul style="list-style-type: none"> <li>Interface: &lt;lan1/lan2&gt;</li> <li>type: Authentication type &lt;eap_peap/eap_tls/eap_ttls&gt;</li> </ul>
eap_peap	EAP-PEAP configuration	<ul style="list-style-type: none"> <li>Interface &lt;lan1 /lan2&gt;</li> <li>user &lt;username for EAP-PEAP&gt;</li> <li>password &lt;password for EAP-PEAP&gt;</li> </ul>
eap_tls	Display EAP-TLS settings. Configuration cannot be done with CLI.	<ul style="list-style-type: none"> <li>Interface &lt;lan1/lan2&gt;</li> <li>Use Key Password: &lt;true/false&gt;</li> <li>Key Password: &lt;password for EAP-TLS&gt;</li> </ul>

Command	Description	Parameters
eap_tls	EAP-TTLS configuration	<ul style="list-style-type: none"> <li>Interface &lt;lan1/lan2&gt;</li> <li>Inner Authentication: &lt;MSCHAPv2/CHAP/PAP&gt;</li> <li>Username: &lt;username for EAP-TTLS&gt;</li> <li>Password: &lt;password for EAP-TTLS&gt;</li> </ul>
tlsServerCert	802.1x CA Certificate settings	<ul style="list-style-type: none"> <li>Interface: &lt;lan1/lan2&gt;</li> <li>CA Certificate Validation: Enable or disable CA certificate validation. &lt;true/false&gt; .</li> <li>Disable Certificate Date Check: Allow expired or not yet valid certificates. &lt;true/false&gt;</li> </ul>

## Configure Advanced Routing Using CLI

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Note: This feature can also be managed from the web interface. See [Advanced Routing](#) (on page 89).

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The `network>advanced routing` commands allow you to configure SX II advanced routing settings.

Enter `admin > Config > Network > Advanced Routing >` to access the menu.

Command	Description	Parameters
advancedrouting	Enable/Disable Advanced Routing Feature	enable <(true/false)>
ip	ip rule/route command	ip <ipaddress> - ip rule/route command
resetroutes	Reset route/rule table to system default	
saveroutes	Save advanced route rules	
viewroutes	View routing/rule tables	

## Configure Device Settings Using CLI

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Note: These functions can also be configured from the Remote Console. See [Configure Device Settings from the Remote Console](#) (on page 82).

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These commands provide the ability to configure SX II server services.

Enter `admin > config > services` to access the menu.

Command	Description	Parameters
discovery	Configure the discovery port.	<ul style="list-style-type: none"> <li>port &lt;value&gt; - Discovery TCP listen port</li> <li>encryption &lt;true/false&gt; - Discovery port encrypted</li> </ul>

Command	Description	Parameters
dpa	Direct Port Access Configuration	<ul style="list-style-type: none"> <li>enable &lt;true/false&gt; - Enable/Disable DPA access</li> <li>url &lt;true/false&gt; - Enable/Disable DPA via URL</li> <li>loginstring &lt;true/false&gt; - Allow specifying DPA port in username when logging in</li> </ul>
dpaport	Set/Get Port Configuration	<ul style="list-style-type: none"> <li>port - Port(s) to view/modify</li> <li>dpaip - IP Address assigned for direct port access</li> <li>telnet - TCP Port assigned for direct port access via Telnet.</li> <li>ssh - TCP Port assigned for direct port access via SSH</li> </ul>
http	Used to control http access and define the port.	<ul style="list-style-type: none"> <li>port &lt;value&gt; - HTTP server default listen port (tcp)</li> </ul>
https	Used to control https access and define the port.	<ul style="list-style-type: none"> <li>port &lt;value&gt; - HTTPS server default listen port (tcp)</li> </ul>
ssh	Enable or disable SSH access and configure settings.	<ul style="list-style-type: none"> <li>enable &lt;true   false&gt; - Enable or disable SSH access, enable (true), disable (false)</li> <li>port &lt;value&gt; - SSH server tcp listen port</li> <li>dsa &lt;true/false&gt; - Use Legacy DSA</li> <li>authmethod &lt;pass/cert/passcert&gt; - Password, Certificate, or both</li> </ul>
telnet	<p>Enable or disable Telnet access.</p> <p>Due to the lack of security, the username, password and all traffic is in clear-text on the wire.</p> <p>Telnet must be enabled before it can be used; it is disabled by default.</p> <p>By default, the telnet port is set to 23 but can be changed by issuing the following command.</p>	<ul style="list-style-type: none"> <li>enable &lt;true   false&gt; - Enable or disable Telnet access, enable (true), disable (false)</li> <li>port &lt;value&gt; - Telnet server tcp listen port</li> </ul>

## Configure Direct Port Access Using CLI

The permitted TCP Port Range is 1024-64510. When run without the mode parameter, the system displays the current dpa type.

Enter `admin > Config > Services >` to access this menu.

Command	Description	Parameters
dpa	Enable direct port access	<ul style="list-style-type: none"> <li>enable &lt;true   false&gt; - DPA access, enable (true), disable (false)</li> <li>url &lt;true   false&gt; - DPA via URL, enable (true), disable (false)</li> <li>loginstring &lt;true   false&gt; - Allow specifying DPA port in username when logging in, enable (true), disable (false)</li> </ul>

Command	Description	Parameters
dpaport	Configure the IP/SSH/telnet DPA ports for specified serial ports.	<ul style="list-style-type: none"> <li>port &lt;number   range   *&gt; - Port(s) to view/modify (Single port or range of ports (1-n or 1,3,4 or * for all ports))</li> <li>dpaip &lt;ipaddress&gt; - IP Address assigned for direct port access. 0.0.0.0 clears the setting.</li> <li>telnet &lt;port number&gt; - TCP Port assigned for direct port access via Telnet. 0 clears the setting.</li> <li>ssh &lt;port number&gt; - TCP Port assigned for direct port access via SSH. 0 clears the setting.</li> </ul>

## Anonymous Connections

You can establish an anonymous Direct Port Access connection via Telnet by typing `anonymous`, or pressing Enter at the username prompt. The anonymous connection is established without prompting for a password.

When establishing a Direct Port Access connection via SSH, entering the username `anonymous` is required. The anonymous connection is established without prompting for a password.

Use the `suppress` parameter to configure the following messages to display or not display the first time SX II is accessed via anonymous Direct Port Access -

```
Escape Sequence is : <escape string> <true\false>
"You have read-only access to this port." OR "You are now master for the port."
```

If `suppress` is true, the above messages are not displayed and connected directly to the target prompt.

If `suppress` is false, the above messages are displayed.

## Configure SNMP Traps and Alerts Using CLI

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Note: SNMP traps can also be configured from the Remote Console. See [Configure SNMP Notifications from the Remote Console](#).

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SX II supports sending SNMP alerts to a predefined SNMP server. The Raritan SNMP MIB can be found in [Viewing the SX II MIB](#) (on page 99).

Enter `admin > config > snmp` to access the menu.

Command	Description	Parameters
add	<p>Add SNMPv2c trap or inform.</p> <p>A recipient is an IP address with an optional space-separated port number.</p> <p>Traps may be sent to multiple ports with the same IP address.</p>	<ul style="list-style-type: none"> <li>dest &lt;ipaddress   hostname&gt; - Destination IP/hostname</li> <li>port &lt;port number&gt; - Destination port</li> <li>community &lt;community&gt; - SNMP community</li> <li>type: SNMP Notification Type (Trap/Inform)</li> <li>retries: (Number of Inform retries before quitting) &lt;0-10&gt;</li> <li>timeout: Number of seconds to wait for an Inform response &lt;1-20&gt;</li> </ul>

Command	Description	Parameters
	WARNING: NON-RESPONDING DESTINATIONS MAY SIGNIFICANTLY SLOW SYSTEM RESPONSE IF INFORMS ARE CONFIGURED WITH LARGE VALUES FOR RETRIES AND/OR TIMEOUTS.	
addv3	<p>Add SNMP V3 Trap or Inform.</p> <p>WARNING: NON-RESPONDING DESTINATIONS MAY SIGNIFICANTLY SLOW SYSTEM RESPONSE IF INFORMS ARE CONFIGURED WITH LARGE VALUES FOR RETRIES AND/OR TIMEOUTS</p> <p>A recipient is an IP address with an optional space-separated port number.</p> <p>Traps may be sent to multiple ports with the same IP address.</p>	<ul style="list-style-type: none"> <li>• dest &lt;ipaddress   hostname&gt;- Destination IP/hostname</li> <li>• port &lt;port number&gt; - Destination port</li> <li>• name &lt;name&gt; - Security name</li> <li>• authproto &lt;MD5   SHA&gt; - SNMP auth protocol</li> <li>• authpass &lt;authpass&gt; - SNMP auth passphrase</li> <li>• privproto &lt;None   DES   AES&gt; - SNMP privacy protocol</li> <li>• privpass &lt;privacy password&gt; - SNMP privacy passphrase</li> <li>• type: SNMP Notification Type (Trap/Inform)</li> <li>• retries: (Number of Inform retries before quitting) &lt;0-10&gt;</li> <li>• timeout: Number of seconds to wait for an Inform response &lt;1-20&gt;</li> </ul>
viewtraps	Display existing SNMP traps.	NA
del	Delete SNMP traps.	<ul style="list-style-type: none"> <li>• dest &lt;ipaddress   hostname&gt;- Destination IP/hostname</li> <li>• port &lt;port number&gt; - Destination port</li> </ul>
delv3	Delete SNMPv3 traps.	<ul style="list-style-type: none"> <li>• dest &lt;ipaddress   hostname&gt;- Destination IP/hostname</li> <li>• port &lt;port number&gt; - Destination port</li> </ul>
snmpagent	Configure SNMP daemon.	<ul style="list-style-type: none"> <li>• enable &lt;true false&gt; - SNMP Daemon, enable (true), disable (false)</li> <li>• contact Contact Sunbird Professional Services and Support via the Support site at <a href="http://support.sunbirdcim.com">http://support.sunbirdcim.com</a> or via email (tech@sunbirdcim.com ) - SNMP contact</li> <li>• location &lt;location&gt; - SNMP location</li> <li>• community &lt;community&gt; - SNMP community</li> <li>• type &lt;read_only   read_write&gt; - SNMP community type</li> <li>• v2cenable &lt;true   false&gt; - SNMP v1/2 agent, enable (true), disable (false)</li> </ul>
snmptrap	Enable or disable an SNMP trap.	<ul style="list-style-type: none"> <li>• enable &lt;true   false&gt; - SNMP traps, enable (true), disable (false)</li> <li>• v2cenable &lt;true   false&gt; - SNMP v1/v2c traps, enable (true), disable (false)</li> <li>• v3enable &lt;true   false&gt; - SNMP v3 traps, enable (true), disable (false)</li> </ul>

Command	Description	Parameters
snmpv3agent	Configure an SNMPv3 agent.	<ul style="list-style-type: none"> <li>enable &lt;true false&gt; - SNMP V3 Agent, enable (true), disable (false)</li> <li>name &lt;security name&gt; - Security name</li> <li>authproto &lt;MD5   SHA&gt; - SNMP auth protocol</li> <li>authpass &lt;auth password&gt; - SNMP auth passphrase</li> <li>privproto &lt;None   DES   AES&gt; - SNMP privacy protocol</li> <li>privpass &lt;privacy password&gt; - SNMP privacy passphrase</li> <li>useauthforpriv &lt;true   false&gt; - Use auth passphrase for privacy, enable (true), disable (false)</li> </ul>

## Configure Date and Time Settings Using CLI

Note: These settings can also be configured from the Remote Console. See [Configure Date and Time Settings from the Remote Console](#) (on page 94)

Enter `admin > config > time` to access the menu.

Command	Description	Parameters
clock	It is important to set the date and time correctly to ensure that log entries and events contain the correct timestamp. Use this to set the time and date on the server.	<ul style="list-style-type: none"> <li>tz timezone - Timezone index is a number corresponding to the desired time zone.</li> <li>dst &lt;true   false&gt; - Apply DST settings, enable (true), disable (false)</li> <li>time - Time String &lt;HH:MM:SS&gt;</li> <li>date - Date String &lt;YYYY-MM-DD&gt;</li> </ul>
timezonelist	Used to find the number code that corresponds to your time zone.	NA
ntp	Use this command if you are synchronizing SX II with an NTP server.	<ul style="list-style-type: none"> <li>enable &lt;true   false&gt; - enable or disable the use of NTP, enable (true), disable (false)</li> <li>primip &lt;primaryIP&gt; - Primary NTP server to use first.</li> <li>primkeytype &lt;none   MD5   SHA-1&gt; - Authentication Key Type.</li> <li>primkeyid &lt;numeric value&gt;</li> <li>primkeyform &lt;ASCII   HEX&gt; - Authentication Format.</li> <li>primkey &lt;Primary server key&gt; - Key value.</li> <li>secip &lt;secondaryip&gt; - Secondary NTP server if the first is not available.</li> <li>seckeytype &lt;none   MD5   SHA-1&gt; - Authentication Key Type.</li> <li>seckeyid &lt;numeric value&gt;</li> <li>seckeyform &lt;ASCII   HEX&gt; - Authentication Format.</li> <li>seckey &lt;Secondary server key&gt; - Key value.</li> <li>override &lt;true/false&gt; - Override DHCP settings for NTP server (true/false)</li> </ul>

## Change the Default GUI Language Setting Using CLI

Note: This setting can also be configured from the Remote Console. See [Changing the Default GUI Language Setting from the Remote Console](#) (on page 114).

Enter `admin > config > language` to access the menu.

Command	Description	Parameters
<code>language</code>	<p>Language settings only apply to the Remote Console web interface; they do not apply to the Local Console interface.</p> <p>The SX II GUI defaults to English, but also supports the following localized languages:</p> <ul style="list-style-type: none"><li>• English (default)</li><li>• Japanese</li><li>• Simplified Chinese</li><li>• Traditional Chinese</li></ul>	<ul style="list-style-type: none"><li>• <code>set &lt;en   ja   zhs   zht&gt;</code> - GUI language code</li></ul>

## Configure SMTP Events and Notifications Using CLI

Note: This setting can also be configured from the Remote Console. See [Enable Email \(SMTP\) Notifications from the Remote Console](#) (on page 100).

Use the `log > smtp` menu to access to the options that can be used to configure the SMTP server and destination email addresses.

Enter `admin config > log > smtp` to access the menu.

Command	Description	Parameters
<code>smtp</code>	Configure the SMTP server.	<ul style="list-style-type: none"><li>• <code>enable &lt;true false&gt;</code> - SMTP server, enable (true), disable (false)</li><li>• <code>ip &lt;ipaddress   hostname&gt;</code> - SMTP server IP address</li><li>• <code>port &lt;port number&gt;</code> - SMTP server port (1..65535)</li><li>• <code>auth &lt;true   false&gt;</code> - SMTP auth required, enable (true), disable (false)</li><li>• <code>user &lt;username&gt;</code> - SMTP user account</li><li>• <code>pass &lt;password&gt;</code> - SMTP user password</li><li>• <code>source &lt;source&gt;</code> - SMTP source address</li></ul>
<code>addemailsub</code>	Add a mail subscriber. Up to ten subscribers can be added.	<ul style="list-style-type: none"><li>• <code>email Info@Acme.com</code> - Email address to add</li></ul>
<code>delemailsub</code>	Delete an email subscriber.	<ul style="list-style-type: none"><li>• <code>email Info@Acme.com</code> - Email address to delete</li></ul>

Command	Description	Parameters
testsmtp	Test email notification settings.	<ul style="list-style-type: none"> <li>dest &lt;destination email&gt; - Destination email address</li> </ul>
viewemailsub	View a list of email subscribers.	NA

## Configure Port Logging Settings Using CLI

Note: These settings can also be configured from the Remote Console. See [Configure Port Logging Settings from the Remote Console](#) (on page 114).

As part of its security capabilities, SX II logs data and to provide alerts based on activities between the users, SX II, and the target device.

Audit trail that allows authorities to review what has happened in the system, determine who implemented what action and when is captured as part of this function.

Event logging and SNMP traps are also available. Events can be logged locally using Syslog. Local events are maintained in a 512K per port buffer and can be stored, reviewed, cleared, or sent periodically to an FTP server.

Configuration log commands allow you to manage the logging features of the SX II server.

Enter `admin > config > Log` to access the menu.

Command	Description	Parameters
eventlogfile	Use this command to control and configure the logging of events to the local log.	<ul style="list-style-type: none"> <li>size &lt;value&gt; - Maximum size of local log file (in bytes). If the event log file size exceeds the available flash memory on your SX II model, the event is not saved. To avoid this, set the file size to greater than 1024 but less than 10000000.</li> </ul> <hr/> <p>Note: SX II model's flash memory varies.</p> <hr/> <ul style="list-style-type: none"> <li>style &lt;wrap or flat&gt; - Specifies what action to take when the maximum size is reached: wrap will cause the log to circle around when end is reached. flat will cause logging to stop when the end is reached.</li> </ul>
eventdest	Event configuration.	<ul style="list-style-type: none"> <li>event &lt;index of event&gt; - Event Index, use 'eventlist' to see index and current configurations</li> <li>audit &lt;true   false&gt; - Audit Logging, enable (true), disable (false)</li> <li>snmp &lt;true   false&gt; - SNMP Logging, enable (true), disable (false)</li> <li>syslog &lt;true   false&gt; - Syslog Logging, enable (true), disable (false)</li> <li>smtp &lt;true   false&gt; - SMTP Logging, enable (true), disable (false)</li> </ul>

Command	Description	Parameters
eventlist	Display an indexed list of all configurable events.	NA
syslog	Displays the list of configured syslog servers. Configure the syslog servers. Up to 8 servers can be added. Each syslog server is added and identified by a number: ip1, ip2, ip3, and so on. Configure the UDP port on the syslog server to which the syslog messages are sent. Default is 514.	<ul style="list-style-type: none"> <li>enable &lt;true   false&gt; - System event log logging, enable (true), disable (false)</li> <li>ip1 &lt;ip address   hostname   delete&gt; - syslog server address. port1 &lt;port1number&gt; - UDP port number for ip1.</li> <li>ip2 &lt;ip address   hostname   delete&gt; - syslog server address. port2 &lt;port1number&gt; - UDP port number for ip2.</li> <li>ip3 &lt;ip address   hostname   delete&gt; - syslog server address. port3 &lt;port1number&gt; - UDP port number for ip3.</li> <li>ip4 &lt;ip address   hostname   delete&gt; - syslog server address. port4 &lt;port1number&gt; - UDP port number for ip4.</li> <li>ip5 &lt;ip address   hostname   delete&gt; - syslog server address. port5 &lt;port1number&gt; - UDP port number for ip5.</li> <li>ip6 &lt;ip address   hostname   delete&gt; - syslog server address. port6 &lt;port1number&gt; - UDP port number for ip6.</li> <li>ip7 &lt;ip address   hostname   delete&gt; - syslog server address. port7 &lt;port1number&gt; - UDP port number for ip7.</li> <li>ip8 &lt;ip address   hostname   delete&gt; - syslog server address. port8 &lt;port1number&gt; - UDP port number for ip8.</li> </ul>
portsyslog	Configure portsyslog server.	<ul style="list-style-type: none"> <li>enable &lt;true   false&gt; - Port logging data to a remote NFS server and also to the Syslog server, enable (true), disable (false)</li> <li>primaryip &lt;primaryip&gt; - Primary Portlog Syslog server address</li> <li>secondaryip &lt;secondip&gt; - Secondary Portlog Syslog server address</li> <li>category - Syslog Category local &lt;0 - 7&gt;</li> </ul>
nfsportlog	Configure the logging of port data.	<ul style="list-style-type: none"> <li>enable &lt;true false&gt; - Logging of port data to remote NFS server, enable (true), disable (false)</li> <li>primaryip &lt;primaryip&gt; - Primary Portlog Syslog Server</li> <li>secondaryip &lt;secondip&gt; - Secondary Portlog Syslog Server</li> <li>primarydir &lt;mountpath&gt; - Primary NFS Server's mount directory. Eg., /nfslog</li> <li>secondarydir &lt;mountpath&gt; - Secondary NFS Server's mount directory. Eg., /nfslog</li> <li>prefix &lt;name&gt; - Prefix for log file name. Use " " for a blank prefix</li> <li>size &lt;value&gt; - Maximum Size (in bytes) for the log file</li> <li>inputlogging &lt;true false&gt; - Enable/Disable logging of user input data on the port. This refers to input via keystroke from the user.</li> <li>indir &lt;name&gt; - Directory name for storing input log</li> <li>outdir &lt;name&gt; - Directory name for storing output log. Output implies data sent from target to the SX port.</li> </ul>
nfsencrypt	Set the encryption key to be used for encrypting port log.	<ul style="list-style-type: none"> <li>enable &lt;true false&gt; - SMTP Server, enable (true), disable (false)</li> <li>key &lt;string&gt; - Provide RC4 key string to be used for encryption</li> </ul>

Command	Description	Parameters
portlogtime	Use to configure the Port Log Time. Changes to the timestamp interval will go into effect after the current interval has passed and that port status timestamp has been logged."	<ul style="list-style-type: none"> <li>timestamp - Time interval (in seconds) between two timestamps in the log file. A value of 0 will disable timestamp logging. The default value is 20. The max value is 99999.</li> <li>update &lt;update&gt; - Update frequency (in seconds) between two updates to the remote log file. Default interval value is 30. Update Frequency range is 1 and 65535.</li> </ul>

Enter `admin > config > log > local` to access the menu.

Command	Description	Parameters
serialportlog	Configure serial port log file.	<ul style="list-style-type: none"> <li>size &lt;value&gt; - Maximum File Size (bytes)</li> <li>enable &lt;true false&gt; - Serial Port Log File, enable (true), disable (false)</li> <li>input &lt;true false&gt; - Enable logging of all input keystrokes to file.</li> </ul>
serialportlogdel	Delete serial port log file.	<ul style="list-style-type: none"> <li>port &lt;number&gt; - Ports to delete log of</li> </ul>
serialportlogview	View serial port log file.	<ul style="list-style-type: none"> <li>port Ports to view log. (Single port or range of ports (1-n or 1,3,4 or * for all ports))</li> <li>type Log type &lt;input/output&gt;</li> <li>start Position in log file to start viewing &lt;Number&gt;</li> <li>length: Length of port data to read &lt;number&gt;</li> </ul>
serialportlogftp	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>port: Port number to retrieve log &lt;Number&gt;</li> <li>type: Log type &lt;input/output&gt;</li> <li>address: FTP server address &lt;ipaddress&gt;</li> <li>ftpport: FTP server port (default 21), TCP/UDP Port, &lt;1..65535&gt;</li> <li>path: FTP server path for serial log file &lt;String&gt;.</li> <li>file: Optional destination file name. Default: portlog_[portnum]</li> <li>user: Optional FTP user name. &lt;String&gt;</li> <li>password Optional FTP password. Will prompt if missing and user name given. &lt;String&gt;</li> </ul>

## Decrypt Encrypted Log on Linux-based NFS Server

To decrypt nfs encryption on Linux® platform, follow these steps:

1. Retrieve the current nfs encryption key

```
admin > Config > Log > nfsencrypt
```

2. Cut and paste the key printed after the Key: in the command response into a file.
3. Retrieve decryption application and either place it on the Linux machine or compile its source.
4. Save the encryption key file (dsx-encrypt.key) in the same directory where the decryption application is stored.

5. Copy the encrypted portlog file to the same directory.
6. Decrypt the file using the command:

```
./decrypt -f <portlogfile> -e <keyfilename> -o <outputfile>
```

7. The decrypted file should be saved in <outputfile>.

## Configure Ports Using CLI

Note: These settings can also be configured from the Remote Console. See [Configure Ports from the Remote Console](#) (on page 118).

Enter `admin >` to access the menu.

Command	Description	Parameters
<code>listports</code>	List accessible ports	NA

Enter `admin > config > port` to access the menu.

Command	Description	Parameters
<code>keywordlist</code>	Display all configured keywords.	NA
<code>keywordadd</code>	Add a keyword to the port.	<ul style="list-style-type: none"> <li>• <code>port &lt;number   range   *&gt;</code> - Single port or range of ports (1-n or 1,3,4 or * for all ports)</li> <li>• <code>keyword &lt;value&gt;</code> - When keyword is detected on target, notification is sent.</li> </ul>
<code>keyworddelete</code>	Delete an existing keyword from the port.	<ul style="list-style-type: none"> <li>• <code>port &lt;number   range   *&gt;</code> - Single port or range of ports (1-n or 1,3,4 or * for all ports)</li> <li>• <code>keyword &lt;value&gt;</code> - When keyword is detected on target, notification is sent.</li> </ul>
<code>config</code>		<ul style="list-style-type: none"> <li>• <code>port &lt;number   range   *&gt;</code> - Single port or range of ports (1-n or 1,3,4 or * for all ports)</li> <li>• <code>name &lt;port name&gt;</code> - Port name</li> <li>• <code>bps &lt;1200   1800   2400   4800   9600   19200   38400   57600   115200   230400&gt;</code> - Port speed in bits-per-second</li> <li>• <code>parity &lt;none even odd&gt;</code> - Port parity type</li> <li>• <code>flowcontrol &lt;none hw sw&gt;</code> - Port flowcontrol type hw = hardware flow control sw =X on/X off)</li> <li>• <code>eqtype &lt;auto dte dce&gt;</code> - Equipment type (auto=&gt;AUTO Detection, dte=&gt;Force DTE, dce=&gt;Force DCE)</li> </ul> <p>Note: If the target has the ability to autodetect either DTE or DCE, you must select either Force DTE or Force DCE for the port. SX II does not support autodetection of both DCE and DTE on the same port.</p>

Command	Description	Parameters
		<ul style="list-style-type: none"> <li>escapemode &lt;none control&gt; - Use Ctrl-key (escapemode=control) or single key (escapemode=none) as escape sequence; for example, Ctrl- =&gt; escapemode=control</li> <li>escapechar= escapechar char-Escape character Raritan recommends that you do not use or Ctrl- as the Escape command. Either of these may cause unintended commands, such as opening a menu, instead of invoking the Escape Command.</li> <li>emulation &lt;vt100   vt220   vt320   ansi&gt; - Target Emulation type</li> <li>sendbreak &lt;duration&gt; - Duration of the sendbreak signal in milliseconds.</li> <li>exitstring &lt;cmd #delay; &gt; - Execute exit string when port session closes, for example, config port 1 exitstring logout (execute logout on exit) config port 1 exitstring #0 (disable exit string for the port). The delay is the amount of time to wait after writing the command to the target. Number in seconds up to 60.</li> <li>dpaip &lt;ipaddress&gt; - IP Address assigned for direct port access</li> <li>ssh &lt;tcp port&gt; - TCP Port assigned for direct port access via ssh</li> <li>alwaysactive &lt;true   false&gt; - Determine whether data coming into a port is logged, for example, config port 1 alwaysactive true (always log activities coming into a port even if no user is connected) config port 1 alwaysactive false (ignore data coming into a port when no user is connected)</li> <li>encoding - Target Encoding type (DEFAULT US-ASCII ISO-8859-1 ISO-8859-15 UTF-8 Shift-JIS EUC-JP EUC-CN EUC-KR)</li> <li>chardelay delay - Delay inserted between writing characters (0-9999ms)</li> <li>linedelay delay - Delay inserted between writing lines (0-9999ms)</li> <li>stopbits - Number of bits used to signal the end of a character (usually 1) (1/2)</li> <li>telnet - TCP Port assigned for direct port access via Telnet. 0 clears the setting. (TCP/UDP Port) (0..65535)</li> <li>ssh - TCP Port assigned for direct port access via SSH. 0 clears the setting. (TCP/UDP Port) (0..65535)</li> <li>multiwrite &lt;true/false&gt; - Port set in multiple writer mode</li> <li>suppress &lt;true/false&gt; - Suppress SX messages when connecting to this target(true/false)</li> <li>portdetect &lt;true/false&gt; - Enable port up/down detection.</li> </ul>

### DPA Mode Port Config Command Example

The following example configures Direct Port Access. The following port command sets an IP address for DPA access to the port which is not the same as DPA by URL. The DPA IP address is just an address that goes directly to the port.

```
admin > Config > Port > config port 1 dpaip 10.0.13.1
admin > Config > Services > dpa enable true
```

- `dpa enable true` - enables IP and port DPA methods for configured ports

After entering the password, you have direct access to port 1, using the newly assigned IP specifically for port 1.

```
admin@10.0.13.1's password:  
Escape Sequence is: Control-  
You are now master for the port.
```

The following example configures DPA port settings for DPAIP for range of ports.

```
admin > Config > Port > config port 1-32 dpaip 10.0.13.200
```

or

```
admin > Config > Port > config port * dpaip 10.0.13.200
```

In both cases above, port 1 will have an IP assigned as 10.0.13.200, while port 2 will have 10.0.13.201, port 3 10.0.13.203, and so on.

The following example configures DPA port settings for SSH and Telnet by TCP port.

```
admin > Config > Port > config port 1 ssh 7000 telnet 8000
```

DPA Telnet and SSH port changes are available immediately without rebooting.

```
ssh -l sx_user -p 7000 10.0.13.13 or telnet -l sx_user 10.0.13.13 8000  
admin@10.0.13.13's password:  
Escape Sequence is: Control-  
You are now master for the port.
```

After entering the password, you have direct access to port 1, using the newly assigned TCP Ports(either ssh or telnet), specifically for port 1.

The following example configures DPA port settings for a group of ports (make sure no TCP Ports have been assigned, and a free range of TCP Ports are available for dpa TCP Port mode usage).

```
admin > Config > Port > config port 1-32 ssh 7000 telnet 8000
```

or

```
admin > Config > Port > config port * ssh 7000 telnet 8000
```

In both cases above, port 1 will have ssh port 7000 and telnet port 8000 assigned for direct port access, port 2 will have ssh port 7001 and telnet port 8001, and so on.

To configure all ports using a block of contiguous port numbers, use the <port \*> command. If port\_range is specified, a block of contiguous port numbers are used. The given value of base\_tcpport is used as starting value. For individual port configuration, the <port number> command can be used.

## Configure the Local Port Using CLI

Note: These settings can also be configured from the Remote Console. See [Configure Local Port Settings from the Remote Console](#) (on page 112).

Enter `admin > config > localport` to access the menu.

Command	Description	Parameters
<code>config</code>	Configure local ports.	<ul style="list-style-type: none"><li>• <code>enable &lt;true/false&gt;</code> - Standard Local Port, enable (true), disable (false)</li><li>• <code>auth &lt;common none&gt;</code> - Local User Authentication: common-(Local/LDAP/RADIUS/TACACS+); none-(No authentication) (common/none)</li><li>• <code>ignorecc &lt;true/false&gt;</code> - Ignore CC managed mode on local port, enable (true), disable (false)</li><li>• <code>kbd</code> - Keyboard Type</li><li>• <code>config baud &lt;9600 19200 38400 57600 115200&gt;</code></li></ul>

## Configure Security Settings Using CLI

Note: These settings can also be configured from the Remote Console. See [Configure Security Settings from the Remote Console](#) (on page 125).

There are various settings configured from the `security` menu.

Enter `admin > Security` to access the menu.

Command	Description	Parameters
<code>banner</code>	<p>SX II optionally supports a customizable welcome banner that is displayed after login. Up to 6000 characters can be entered.</p> <p>When you log in to SX II via a GUI, a banner with a fixed width typeface and a common dimension, such as 80x25, appears. If the banner is very large, that is, over 9000 lines, the banner displayed on the GUI does not increase the overall page size because it is contained within a scrollable text area.</p> <p>The banner identifies the location to which the user has logged in. You can also add a consent banner that forces the user to accept stated conditions prior to advancing into operation of the console server.</p> <p>The <code>banner</code> command controls the display of a security banner immediately after login.</p>	<ul style="list-style-type: none"><li>• <code>enable &lt;true   false&gt;</code> - Banner display, enable (true), disable (false)</li><li>• <code>audit &lt;true   false&gt;</code> - Audit for the banner, enable (true), disable (false)</li><li>• <code>title &lt;value&gt;</code> - Title of the security banner</li></ul>

Command	Description	Parameters
bannerget	Directs SX II to go to this site to retrieve the welcome banner. The welcome banner and the audit statement can be configured using the above command maintained on an external FTP site.	<ul style="list-style-type: none"> <li>• address &lt;ipaddress   hostname&gt; - FTP Server Address</li> <li>• port &lt;FTP port&gt; - FTP Server Port (default 21)</li> <li>• path &lt;path to file&gt; - Path to Banner file to retrieve</li> <li>• user &lt;FTP username&gt; - FTP Username</li> <li>• password &lt;FTP password&gt; - FTP Password (prompted if missing)</li> </ul>
pcshare	Simultaneous access to the same target by multiple users.	mode <shared/private> - Set PC-Share mode to shared or private (shared/private)
resetmode	Configure Local Factory Reset Mode	<ul style="list-style-type: none"> <li>• mode full &lt;full   password   disabled&gt; - full factory reset   password - only admin password reset   disabled - disable factory reset (full/password/disabled)</li> </ul>
encryption	Sets the encryption type and FIPS mode of SX II.	<ul style="list-style-type: none"> <li>• mode &lt;auto   aes128   aes256   custom&gt; - Set the encryption mode of the device</li> <li>• fips &lt;true   false&gt; - Enable/disable FIPS 140-2 mode, enable (true), disable (false). This option requires a reboot of the device to take effect.</li> <li>• https &lt;true/false&gt; - Force HTTPS for web access.</li> <li>• customciphers &lt;string&gt; - Custom ciphers for HTTPS.</li> </ul>
hostallowlist	Helps prevent host header attacks by limiting what a web client can send in the HOST header of an HTTP request.	<ul style="list-style-type: none"> <li>• enable &lt;true/false&gt; - Enable/Disable the Host Allowlist feature.</li> </ul>
addhostallow	Add a Hostname/IP to the Host Allowlist.	<ul style="list-style-type: none"> <li>• host &lt;Hostname/IP&gt; - to add to the allowlist</li> </ul>
delhostallow	Delete a Hostname/IP from the Host Allowlist.	<ul style="list-style-type: none"> <li>• host &lt;Hostname/IP&gt; to delete from the allowlist.</li> </ul>
clientcertauth	Client certificate settings.	<ul style="list-style-type: none"> <li>• clientcert: Client certificate global settings.</li> <li>• clientcertauth: Client certificate authentication map settings.</li> <li>• clientcertcrl: Client certificate CRL settings.</li> <li>• clientcertocsp: Client certificate OCSP settings.</li> </ul>

Enter `admin > Security > firewall` to access the menu and menu options.

Command	Description	Parameters and examples
firewall	Enable the firewall. Rules are deleted upon disable.	enable <true   false> - Enable/Disable firewall
viewtables	View current iptables/ip6tables. Some rules exist by default and cannot be deleted.	NA

Command	Description	Parameters and examples
iptables	Administration tool for IPv4 packet filtering and NAT. SX II supports most modules. Firewall must be enabled.	Example - to block icmp packets <pre>iptables -A INPUT -p icmp -j DROP</pre> <pre>iptables -A OUTPUT -p icmp -j DROP</pre>
ip6tables	Administration tool for IPv6 packet filtering and NAT. Firewall must be enabled.	Example - <pre>A INPUT -p icmpv6 --icmpv6-type 128 -j DROP</pre> <pre>ip6tables -A OUTPUT -p icmpv6 --icmpv6-type 128 -j DROP</pre>
iptables-save	Save IP Tables (v4 and v6) to make firewall rules persistent.	NA

Enter `admin > Security > loginsettings` to access the menu and menu options.

Command	Description	Parameters
idletimeout	Specify the amount of idle time allowed before the system disconnects the user.	enable <true   false> - Enable/Disable password aging time - Idle Timeout Period in Minutes
passwordaging	Control when a password expires.	enable <true   false> days <value> - Number of days in Password Aging Interval
singleloginperuser	Restrict to a single login session per user.	enable <true/false> - Enable/Disable system wide single login session per user
Strongpassword	Configure strong password rules. When creating a password via CLI, it cannot begin with a space or end with a space. This does not apply to creating passwords in using the Remote Console.	enable <true false> - Enable/Disable strong password rules for local users minlength <value> - Minimum password length maxlength <value> - Maximum password length history <value> - Number of passwords to store in password history uppercase <true false> - true => force uppercase characters in password lowercase <true false> - true => force lowercase characters in password numeric <true false> - true => force numeric characters in password other <true false> - true => force special characters in password
Unauthorizedportaccess	Enable/Disable unauthorized access to a set of ports assigned to 'Anonymous' group.	enable <true/false> - Enable/Disable anonymous access to a set of ports assigned to the 'Anonymous' group

Command	Description	Parameters
userblocking	Configure user lockout parameters.	mode - <disabled/timer_lockout/deactivate_userid> Set User Blocking mode (disabled/timer_lockout/deactivate_userid) timerattempts <timerattempts> - Timer Lockout Attempts lockouttime <lockouttime> - Timer Lockout Time deactivateattempts <value> - Deactivate UserID Attempts

Enter `admin > security > certificate` to access the menu and menu options.

SSL Security certificates are used in browser access to ensure that you are connecting to an authorized appliance.

---

Note: If SX II is not used to generate the certificate signing request and an external certificate is used instead, encryption needs to be removed from the private key before installing it on SX II. If this is the case, to remove the encryption from the key, a command such as `openssl rsa -in server.key -out server2.key` and `server2.key` should be used. Encrypted private keys are used to prevent the web server from being started by unauthorized users. Since SX II does not allow users to access the web server directly, encrypted private keys are not required and does not compromise security.

---



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Note: When SX II is used to generate the certificate signing request, the private key is not required since SX II keeps the private key exclusive.

---

Command	Description	Parameters
generatecsr	Generate certificate signing request.	bits <1024   2048   4096> - Bit Strength of Certificate Key name <name> - Common Name (CN) country <code> - 2 Character ISO Country Code (C) state <state> - State/Province (ST) locality <locality> - Locality/City (L) org <organization> - Organization (O) unit <unit> - Organizational Unit (OU) email Info@Acme.com - Email challenge <challenge> - Challenge Password selfsign <true   false> - Create a Self Signed Certificate (true/false) days <days> - Days certificate will be valid
getcert	Get the certificate from a specific location.	address <ipaddress   hostname> - FTP Server Address port <FTP port> - FTP Server Port (default 21) path <path to file> - Path to Certificate file to retrieve user <FTP username> - FTP Username password <FTP password> - FTP Password (prompted if missing)

Command	Description	Parameters
getkey	Get certificate key.	address <ipaddress   hostname> - FTP Server Address port <FTP port> - FTP Server Port (default 21) path <path to file> - Path to Certificate Key file to retrieve user <FTP username> - FTP Username password <FTP password> - FTP Password (prompted if missing)
viewcert	View the current certificate.	NA
viewcsr	View the certificate signing request.	NA
viewcsrkey	View the certificate signing request key.	NA
deletecsr	Delete the current certificate signing request.	NA

Enter `admin > Security > tls` to access the menu and menu options.

Command	Description	Parameters
tls	Configure TLS settings. At least one protocol must be enabled.	TLSv1.0 <Enabled/Disabled>: <true   false> TLSv1.1 <Enabled/Disabled>: <true   false> TLSv1.2 <Enabled/Disabled>: <false   false> TLSv1.3 <Enabled/Disabled>: <true   false>

## Addressing Security Issues

Consider doing the following in order to enhance security for console servers.

SX II supports each of these, but they must be configured prior to general use.

- Encrypt the data traffic sent between the operator console and SX II appliance.
- Provide authentication and authorization for users.
- Log data relevant to the operation for later viewing and auditing purposes. In some cases, this data is required for compliance with governmental or company regulations.
- Create a security profile.

## Security Notes

Encryption of traffic between the operator console and SX II appliance is determined by the access methodology being used.

SSH and encrypted browser access (HTTPS) are enabled by default.

To accept unencrypted connections, you must manually enable the Telnet services. HTTP automatically redirects users to HTTPS, if applicable.

## Configure Maintenance Settings Using CLI

Note: These settings can also be configured from the Remote Console. See [Configure Maintenance Settings from the Remote Console](#) (on page 151).

The `maintenance` commands allow you to perform maintenance-related tasks on the SX II firmware.

Enter `admin > maintenance` to access the menu.

Command	Description	Parameters
<code>deviceinfo</code>	Provides information about the SX II appliance such as build and so on.	NA
<code>userlist</code>	Displays a list of all users who are logged in, as well as their source IP addresses and any ports to which they are connected.  Also found under the command root menu.	NA
<code>upgrade</code>	Upgrade device from file on FTP server.	<ul style="list-style-type: none"> <li>• <code>address &lt;ipaddress   hostname&gt;</code> - Address of FTP Server</li> <li>• <code>port &lt;FTP port&gt;</code> - Port of FTP server (1..65535)</li> <li>• <code>path &lt;path name&gt;</code> - FTP server path for upgrade file.</li> <li>• <code>user &lt;FTP username&gt;</code> - Optional FTP server user name</li> <li>• <code>password &lt;FTP password&gt;</code> - Optional FTP server password. Will prompt if missing and user name given.</li> </ul>
<code>upgradehistory</code>	Get information about the last time you upgraded the system.	NA
<code>backup</code>	Back up appliance settings and store on the FTP server.	<ul style="list-style-type: none"> <li>• <code>address &lt;ipaddress   hostname&gt;</code> - Address of FTP Server</li> <li>• <code>port &lt;FTP port&gt;</code> Port of FTP server (1..65535)</li> <li>• <code>path &lt;path name&gt;</code> - FTP server path for backup file.</li> <li>• <code>file &lt;file name&gt;</code> - Optional destination file name. Default: <code>backup.rfp</code></li> <li>• <code>user &lt;FTP username&gt;</code> - Optional FTP server user name</li> <li>• <code>password &lt;FTP password&gt;</code> - Optional FTP server password. Will prompt if missing and user name given.</li> <li>• <code>keypass &lt;Encryption password&gt;</code> - Optional encryption password.</li> </ul>
<code>auditlog</code>	View the appliance audit log.	NA

Command	Description	Parameters
auditlogftp	Get the audit log and store on FTP server.	<ul style="list-style-type: none"> <li>• address &lt;ipaddress   hostname&gt; - Address of FTP Server</li> <li>• port &lt;FTP port&gt; - Port of FTP server (1..65535)</li> <li>• path &lt;path name&gt; - FTP server path for audit log file.</li> <li>• file &lt;file name&gt; - Optional destination file name. Default: audit.log</li> <li>• user &lt;FTP username&gt; - Optional FTP server user name</li> <li>• password &lt;FTP password&gt; - Optional FTP server password. Will prompt if missing and user name given.</li> </ul>
factoryreset	<p>Returns the SX II console server to its default factory settings.</p> <p>Important: If you choose to revert to the factory settings, you will erase all your custom settings and will lose your connection to SX II because, upon rebooting, the IP address of the appliance is reset to the factory default IP address of 192.168.0.192.</p>	<ul style="list-style-type: none"> <li>• mode &lt;full   network&gt; - Type of factory reset to perform</li> </ul>
reboot	Reboots SX II from the CLI interface.	NA
restore	Restore device settings from backup file on FTP server.	<ul style="list-style-type: none"> <li>• mode &lt;full   protected   user   device   userdevice&gt; - Type of restore to perform.</li> <li>• address &lt;ipaddress   hostname&gt; - Address of FTP Server</li> <li>• port &lt;FTP port&gt; - Port of FTP server (1..65535)</li> <li>• path &lt;path name&gt; - FTP server path for backup file.</li> <li>• user &lt;FTP username&gt; - Optional FTP server user name</li> <li>• password &lt;FTP password&gt; - Optional FTP server password. Will prompt if missing and user name given.</li> <li>• keypass &lt;Encryption password&gt; - Optional encryption password.</li> </ul>
logout	Log a user off SX II (terminate their session).	<ul style="list-style-type: none"> <li>• user &lt;loginname&gt; - Close all sessions for the specified user by name.</li> <li>• session &lt;id   all&gt; - Close the session by identifier number or all sessions (ID/all)</li> <li>• port &lt;port name   port number&gt; - Close sessions on the specified port by name or number.</li> <li>• address &lt;ipaddress&gt; - Close all sessions from the specified remote address.</li> </ul>

Command	Description	Parameters
scriptconfigcat	List (cat) the system generated configuration script. Start line and end line are user configurable. The default values shall be as shown below. start line: "BEGIN CONFIG. SCRIPT" end line: "END CONFIG. SCRIPT"	scriptconfigcat {start startline} {end endline}
scriptget		<ul style="list-style-type: none"> <li>• address: FTP server address &lt;IP address&gt;</li> <li>• port: FTP server port (default 21), &lt;1..65535</li> <li>• path: FTP server path for config file.</li> <li>• user Optional FTP user name</li> <li>• password Optional FTP password. Will prompt if missing and user name given.</li> </ul>
scriptput	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• address: FTP server address &lt;IP address&gt;</li> <li>• port: FTP server port (default 21), &lt;1..65535</li> <li>• path: FTP server path for config file.</li> <li>• file: Optional destination file name. Default: script.sx2</li> <li>• user Optional FTP user name</li> <li>• password Optional FTP password. Will prompt if missing and user name given.</li> </ul>

## Configure Diagnostic Settings Using CLI

Note: These settings can also be configured from the Remote Console. See [Configure Diagnostic Options from the Remote Console](#) (on page 158).

The `diagnostic` commands allow you to gather information for troubleshooting.

Enter `admin > Diagnostics` to access the menu.

Command	Description	Parameters
netif	Network Interface Info	NA
netstat	Get Network Statistics	<ul style="list-style-type: none"> <li>• type &lt;stats   interfaces   route   ports&gt; - stats interfaces route</li> </ul>

Command	Description	Parameters
ping	Ping a remote system to ensure it is reachable.	<ul style="list-style-type: none"> <li>ip &lt;ipaddress   hostname&gt; - IP Address/Hostname to Ping</li> <li>if &lt;auto   lan1   lan2   usb0&gt; - Network interface (default: auto)</li> </ul>
tracert	Trace the network route to a host.	<ul style="list-style-type: none"> <li>ip &lt;ipaddress   hostname&gt; - IP Address/Hostname to trace to</li> <li>maxhops &lt;5   10   15   20   25   30   35   40   45   50&gt; - Maximum hop limit (default: 10)</li> <li>if &lt;auto   lan1   lan2   usb0&gt; - Network interface (default: auto)</li> </ul>
diagscript	Get and execute diagnostic script from a FTP server.	<ul style="list-style-type: none"> <li>address &lt;ipaddress   hostname&gt; - Address of FTP Server</li> <li>port &lt;FTP port&gt; - Port of FTP server (1..65535)</li> <li>path &lt;path name&gt; - FTP server path for diagnostic script file.</li> <li>user &lt;FTP username&gt; - Optional FTP server user name</li> <li>password &lt;FTP password&gt; - Optional FTP server password.</li> </ul>
diaglogput	Take diagnostic snapshot and store on FTP server.	<ul style="list-style-type: none"> <li>address &lt;ipaddress   hostname&gt; - Address of FTP Server</li> <li>port &lt;FTP port&gt; - Port of FTP server (1..65535)</li> <li>path &lt;path name&gt; - FTP server path for diagnostic script file.</li> <li>file Optional destination file name. Default: diagnostic_save</li> <li>user &lt;FTP username&gt; - Optional FTP server user name</li> <li>password &lt;FTP password&gt; - Optional FTP server password.</li> </ul>
exportconfig	Export a configuration file.	<ul style="list-style-type: none"> <li>address: FTP server address &lt;ipaddress&gt;</li> <li>port: FTP server port (default 21) &lt;1..65535&gt;</li> <li>path: FTP server path for configuration file.</li> <li>file: Optional destination file name. Default: exportconfig_save</li> <li>user: Optional FTP user name</li> <li>password: Optional FTP password. Will prompt if missing and user name given.</li> </ul>
uptime	view system uptime	NA

Enter `admin > diagnostics > debug` to access the menu.

Command	Description	Parameters
setlog	Set/get diagnostics log.	<ul style="list-style-type: none"> <li>module &lt;module&gt; - Module name</li> <li>level &lt;level&gt; - Diagnostics log level (err/warn/info/debug/trace)</li> <li>vflag &lt;vflag&gt; - Verbose flag (timestamp/module/thread/fileline)</li> <li>verbose &lt;on off&gt; - Verbose control (on/off)</li> </ul>

# Connect a Rack PDU to SX II and Configure Power Control Options

SX II provides the following options when connecting a Raritan PX PDU to a SX II:

- Connect SX II to the PX PDU Serial port.  
In this configuration, access to the PX PDU is done through the PX PDU command line interface (CLI).
- Connect the SX II to the Feature port on the PX PDU.  
In this configuration, the PX PDU is managed from the SX II interface like any other power strip.

Go to <https://www.raritan.com/support/product/px> for support on PX PDUs.

## In This Chapter

Connecting the SX II to the PX PDU Serial Port. . . . .	197
Connecting the SX II to the PX PDU FEATURE Port. . . . .	198

### Connecting the SX II to the PX PDU Serial Port

In this configuration, after the PX is connected to the SX II, *access the PX using the PX CLI.*

Note that the appliances used in the diagram may not match your specific models. However, the connections and ports used are the same across models.

► *To connect the SX II to the PX:*

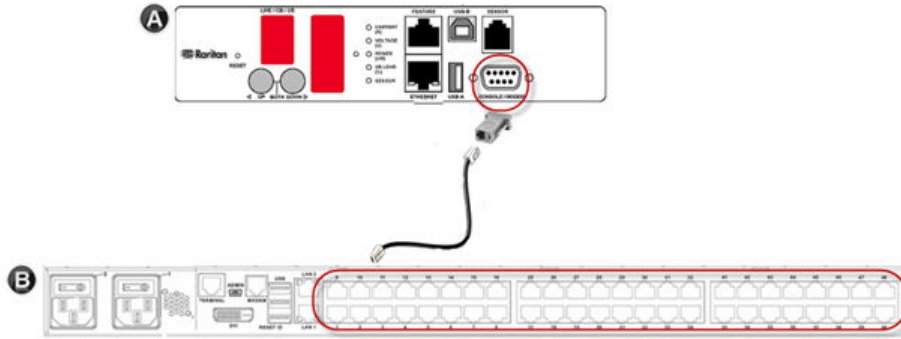
1. Connect an ASCSDB9F adapter to the PX2 DB9 console/modem port.

---

*Note: The adapter is purchased from Raritan. It does not come with PX or SX II appliances.*

---

2. Plug a Cat5 cable into the ASCSDB9F adapter, then plug the other end of the cable in to the port on the SX II.
3. Power on the PX (if it is not already). The command line interface (CLI) interface appears.



<b>A</b>	PX appliance
<b>B</b>	SX II

### Connecting the SX II to the PX PDU FEATURE Port

In this configuration, the PX is managed from the SX II interface like any other powerstrip. See Power Control.

---

Note: Make sure that the PX PDU's Feature Port is configured to the PowerCIM setting.

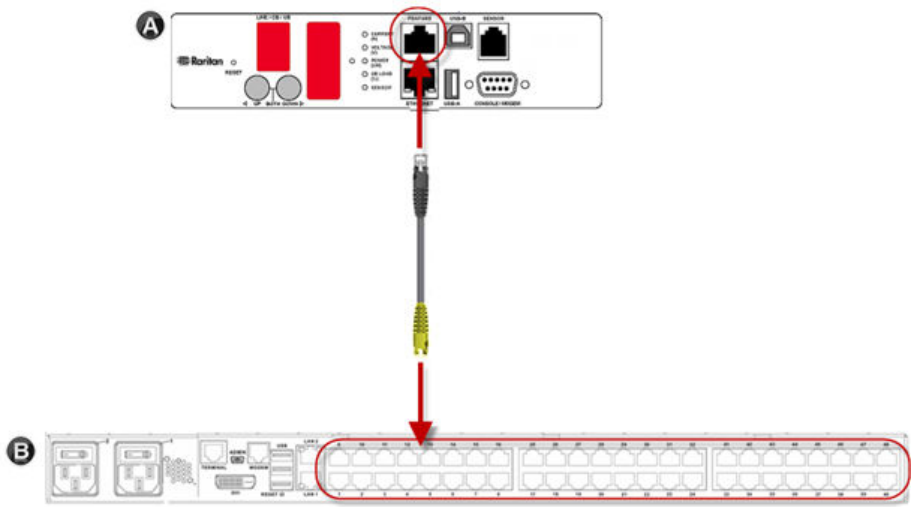
---

Note that the appliances used in the diagram may not match your specific models. However, the connections and ports used are the same across models.

► *To connect the SX II to the Feature port on the PX:*

1. Connect the gray end of the CSCSPCS crossover Cat5 cable into the Feature port on the PX.
2. Connect the yellow end of the CSCSPCS crossover Cat5 cable into a port on the SX II.
3. Power on the PX (if it is not already).

You can now add the PX as a managed power strip to the SX II. See [Configure Power Strips from the Remote Console](#) (on page 50) or [Configure Power Strips Using CLI](#) (on page 164)..



<b>A</b>	PX appliance
<b>B</b>	SX II

# Appendix A Specifications

## In This Chapter

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## SX II Dimensions and Physical Specifications

<b>Form factor</b>	1U, rack mountable
<b>Dimensions</b>	17.3" W x 13.15" D x 1.73'H'; (440mm x 334mm x 44mm)
<b>Weight</b>	9.08 lbs; (4.12 kg)
<b>Power</b>	100/240VAC auto-switching: 50-60 Hz, .35A, 36-72VDC auto-switching
<b>Max power consumption</b>	4-Port SX: 21W   8-port SX: 21W   16-port SX: 22W   32-port SX: 23W   48-port SX: 25W
<b>Temperatures</b>	Operating: 0°C – 50°C. Non-Operating: 0°C – 55°C
<b>Humidity</b>	Operating: 20% – 85%. Non-Operating: 10% – 90%
<b>Altitude</b>	Operates properly at any altitude from 0 to 2,000 meters

## Supported Remote Connections

### Network

- 10BASE-T
  - 100BASE-T
  - 1000BASE-T (Gigabit) Ethernet
- Protocols
- TCP/IP
  - HTTP

- HTTPS
- RADIUS
- LDAP/LDAPS
- SSH
- Telnet
- TACACS+
- UDP
- SNTP

### Supported Number of Ports and Remote Users per SX II Model

Model	Number of ports
SX2-04 and SX2-04M	4
SX2-08 and SX2-08M	8
SX2-16 and SX2-16M	16
SX2-32 and SX2-32M	32
SX2-48 and SX2-48M	48

### Maximum Number of Users Session

A maximum of 200 users can access a single SX II at the same time.

This applies to the Remote Console access, Direct Port Access and command line interface access via SSH/Telnet.

### Maximum Number of Support Users Per Port

A maximum of 10 users can access the same port and the same time.

This applies to the Remote Console access, Direct Port Access and command line interface access via SSH/Telnet.

### Port Access Protocol Requirements

Protocol	Port	Communication direction
HTTP	<p>Ports 80, 443 and 5000 must be open in the firewall for the appliance to operate.</p> <p>Port 80</p> <p>This port can be configured as needed. See HTTP and HTTPS Port Settings.</p> <p>By default, all requests received by the SX II via HTTP (port 80) are automatically forwarded to HTTPS for complete security.</p> <p>The SX II responds to Port 80 for user convenience, relieving users from having to explicitly type in the URL field to access the SX II, while still preserving complete security.</p>	Both

Protocol	Port	Communication direction
	<p>Port 443</p> <p>This port can be configured as needed. See HTTP and HTTPS Port Settings.</p> <p>By default, this port is used for multiple purposes, including the web server for the HTML client, the download of client software onto the client's host, and the transfer of data streams to the client.</p> <p>Port 5000</p> <p>This port is used to discover other Dominion devices and for communication between Raritan devices and systems, including CC-SG for devices that CC-SG management is available.</p> <p>By default, this is set to Port 5000, but you may configure it to use any TCP port not currently in use. For details on how to configure this setting, see Network Settings.</p>	
HTTPS SSL only	<p>Port 443</p> <p>TCP port 443 must be open.</p> <p>Port 80 can be closed.</p>	Both
SSH	<p>Port 22</p> <p>TCP port 22 must be open.</p> <p>Port 22 is used for the SX II command line interface (CLI).</p>	Both
Telnet	<p>Port 23</p> <p>TCP port 23 must be open.</p>	Both
TACACS+	<p>Port 49</p> <p>Port 49 must be open.</p>	Outgoing
RADIUS	<p>Port 1812</p> <p>If SX II is configured to remotely authenticate user logins via the RADIUS protocol, port 1812 is used and must be open.</p> <p>However, but the system can also be configured to use any port of your designation. Optional</p> <p>Port 1813</p> <p>If the SX II is configured to remotely authenticate user logins via the RADIUS protocol, and it also employs RADIUS accounting for event logging, port 1813 or an additional port of your designation is used to transfer log notifications.</p>	Outgoing
LDAP	<p>Ports 389 and 636</p> <p>Port 389 or 636 must be open.</p> <p>If the SX II is configured to remotely authenticate user logins via the LDAP/LDAPS protocol, ports 389 or 636 will be used, but the system can also be configured to use any port of your designation. Optional</p>	Outgoing
SNMP	<p>Ports 161 and 162</p> <p>Port 161 is used for inbound/outbound read/write SNMP access.</p> <p>Port 162 must be open. Port 162 is used for outbound traffic for SNMP traps.</p>	Both (Port 161) Outgoing (Port 162)

Protocol	Port	Communication direction
For FTP upgrades	Port 21 Port 21 must be open.	Outgoing
SYSLOG on Configurable UDP Port	Port 514 By default UDP port 514 is used. Configurable to a port of your choice.	Outgoing
SNTP (Time Server) on Configurable UDP	Port 123 The SX II offers the optional capability to synchronize its internal clock to a central time server. This function requires the use of UDP Port 123 (the standard for SNTP), but can also be configured to use any port of your designation. Optional	Both

You may have to open additional ports when NFS logging, using LDAP servers, and so forth.

These ports may vary from installation-to-installation depending on network topologies, virtual Local Area Networks (VLANs), and firewall configurations.

Contact your network administrator for site-specific information and settings.

## SX II Port Pins

Local Terminal Port		
pin	Definition	Direction
pin 1	RTS	Output
pin 2	N/A	
pin 3	TXD	Output
pin 4	Ground	
pin 5	Ground	
pin 6	RXD	Input
pin 7	N/A	
pin 8	CTS	Input

DTE Mode on Server Port		
pin	Definition	Direction
pin 1	RTS	Output
pin 2	DTR	Output
pin 3	TXD	Output

DTE Mode on Server Port		
pin 4	Ground	
pin 5	Ground	
pin 6	RXD	Input
pin 7	DSR	Input
pin 8	CTS	Input

DCE Mode on Server Port		
pin	Definition	Direction
pin 1	CTS	Input
pin 2	DSR	Input
pin 3	RXD	Input
pin 4	Ground	
pin 5	Ground	
pin 6	TXD	Output
pin 7	DTR	Output
pin 8	RTS	Output

## Port Ranges


The port range for internal port configuration - CSC, HTTP, HTTPS, SSH, Telnet, DPA SSH , DPA Telnet - is 1 to 64510. The configurable port range for socket creation is limited to 1024 to 64510.


External port configuration - LDAP, RADIUS, TACACS+ and SNMP - is not affected by a port range limitation.


## Network Speed Settings


SX II network speed setting						
Network switch port setting	Auto	1000/Full	100/Full	100/Half	10/Full	10/Half
Auto	Highest Available Speed	1000/Full	SX II: 100/Full Switch: 100/Half	100/Half	SX II: 10/Full Switch: 10/Half	10/Half
1000/Full	1000/Full	1000/Full	No Communication	No Communication	No Communication	No Communication
100/Full	SX II: 100/Half Switch: 100/Full	SX II: 100/Half Switch: 100/Full	100/Full	SX II: 100/Half Switch: 100/Full	No Communication	No Communication
100/Half	100/Half	100/Half	SX II: 100/Full Switch: 100/Half	100/Half	No Communication	No Communication
10/Full	SX II: 10/Half Switch: 10/Full	No Communication	No Communication	No Communication	10/Full	SX II: 10/Half Switch: 10/Full
10/Half	10/Half	No Communication	No Communication	No Communication	SX II: 10/Full Switch: 10/Half	10/Half


Legend:

 Does not function as expected

 Supported

 Functions; not recommended

 NOT supported by Ethernet specification; product will communicate, but collisions will occur

 Per Ethernet specification, these should be “no communication,” however, note that the SX II behavior deviates from expected behavior

---

Note: For reliable network communication, configure the SX II and the LAN switch to the same LAN Interface Speed and Duplex. For example, configure the SX II and LAN Switch to Autodetect (recommended), or set both to a fixed speed/duplex such as 100MB/s/Full.

---

### Default User Session Timeouts

- SX II interface - 5 minutes (to change this, select Security > Settings and update the "Idle Timeout (minutes)" field)
- SSH - 16 minutes
- Telnet - 2 hours

### SX II Supported Local Port DVI Resolutions

Following are the resolutions supported when connecting to a DVI monitor from the SX II local port.

- 1920x1080@60Hz
- 1280x720@60Hz
- 1024x768@60Hz (default)
- 1024x768@75Hz
- 1280x1024@60Hz
- 1280x1024@75Hz
- 1600x1200@60Hz
- 800x480@60Hz
- 1280x768@60Hz
- 1366x768@60Hz
- 1360x768@60Hz
- 1680x1050@60Hz
- 1440x900@60Hz

### SX II Appliance LED Status Indicators

LEDs are used to indicate power status, appliance status and target connection status.

#### **There are LEDs located on the front panel and rear panel of the SX II. Front Panel LED Status Indicators**

- When SX II boots up, only the Power LED turns on. The power LED turns both red and blue.
- Port Channel LEDs are off the whole time SX II boots up.
- Once SX II is fully powered on, the Power LED remains on.
  - If a single power supply is plugged in, the Power LED is Red.
  - If both power supplies are plugged in, the Power LED is Blue.
- When you physically connect a powered-on target to a port on SX II via a CAT5 cable, the Port channel's LED turns on.

The LED remains on until the target is disconnected.

---

Note: The target must be powered on in order for the SX II Port channel LED to turn on and the SX II to detect the target.

---

- When you physically disconnect a target from a port on an SX II, the port channel's LED turns off.
- When you log in to SX II and connect to a target via either HSC, SSH or the Local Console, the port channel's LED blinks.

The LED blinks until you end the your connection to the target.

If you are connected to more than one target at the same time, all LEDs blink in unison.

- When you press the SX II's Reset button to reset the appliance or when you perform a reboot from the SX II GUI, the Power LED(s) blinks as the appliance powers down and turns off.

While the appliance powers back up, the Power LED(s) continue to blink.

Once the appliance is powered on, the Power LED(s) stop blinking and the LED remains on.

### Target Cable Connection Distances and Rates

SX II supports the following connection distances using a CAT5 cable between its Serial port and a target.

Distance	Bits per second
300ft/91m	1,200
300ft/91m	1,800
300ft/91m	2,400
200ft/60m	4,800
100ft/30m	9,600
50ft/15m	19,200
25ft/7.5m	38,400
16ft/5m	57,600
8ft/2.5m	115,200
4ft/1.2m	230,400

# Appendix A Updating the LDAP Schema

## In This Chapter

Returning User Group Information. . . . .	208
Setting the Registry to Permit Write Operations to the Schema. . . . .	208
Creating a New Attribute. . . . .	209
Adding Attributes to the Class. . . . .	210
Updating the Schema Cache. . . . .	212
Editing rcusergroup Attributes for User Members. . . . .	212

### Returning User Group Information

Use the information in this section to return User Group information (and assist with authorization) once authentication is successful.

### From LDAP/LDAPS

When an LDAP/LDAPS authentication is successful, the SX II determines the permissions for a given user based on the permissions of the user's . Your remote LDAP server can provide these user names by returning an attribute named as follows:

rcusergroup                      attribute type: string

This may require a schema extension on your LDAP/LDAPS server. Consult your authentication server administrator to enable this attribute.

In addition, for Microsoft® Active Directory®, the standard LDAP memberOf is used.

### From Microsoft Active Directory

---

Note: This should be attempted only by an experienced Active Directory® administrator.

---

Returning user information from Microsoft's® Active Directory for Windows 2000® operating system server requires updating the LDAP/LDAPS schema. See your Microsoft documentation for details.

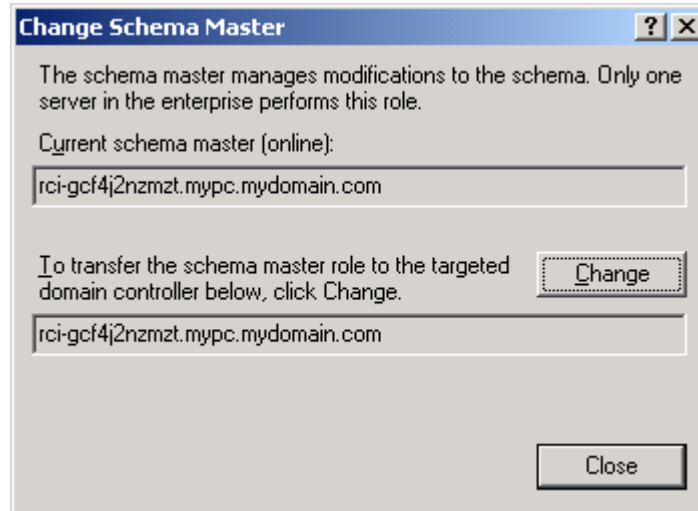
1. Install the schema plug-in for Active Directory. See Microsoft Active Directory documentation for instructions.
2. Run Active Directory Console and select Active Directory Schema.

### Setting the Registry to Permit Write Operations to the Schema

To allow a domain controller to write to the schema, you must set a registry entry that permits schema updates.

► *To permit write operations to the schema:*

1. Right-click the Active Directory® Schema root node in the left pane of the window and then click Operations Master. The Change Schema Master dialog appears.



2. Select the "Schema can be modified on this Domain Controller" checkbox. Optional
3. Click OK.

### Creating a New Attribute

► *To create new attributes for the rcigroup class:*

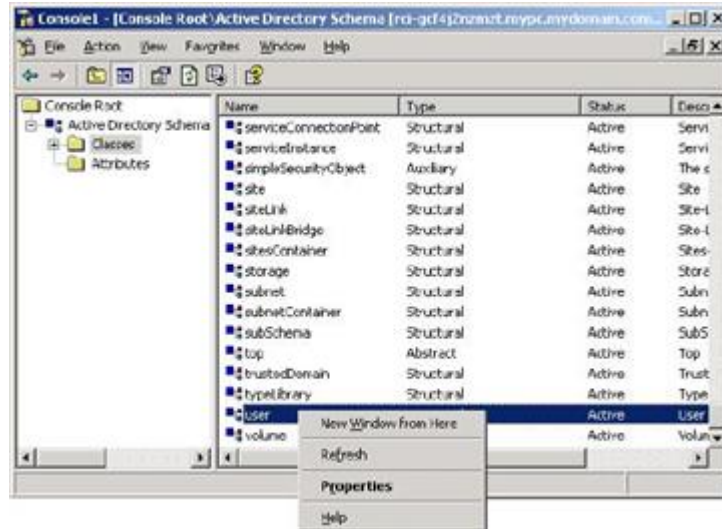
1. Click the + symbol before Active Directory® Schema in the left pane of the window.
2. Right-click Attributes in the left pane.
3. Click New and then choose Attribute. When the warning message appears, click Continue and the Create New Attribute dialog appears.

4. Type *rciusergroup* in the Common Name field.
5. Type *rciusergroup* in the LDAP Display Name field.
6. Type *1.3.6.1.4.1.13742.50* in the Unique x5000 Object ID field.
7. Type a meaningful description in the Description field.
8. Click the Syntax drop-down arrow and choose Case Insensitive String from the list.
9. Type *1* in the Minimum field.
10. Type *24* in the Maximum field.
11. Click OK to create the new attribute.

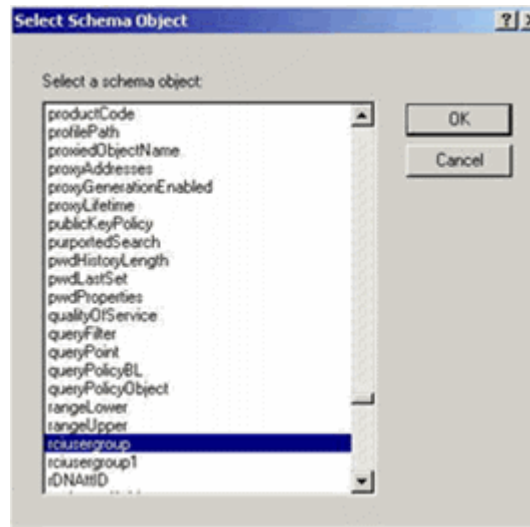
### Adding Attributes to the Class

► *To add attributes to the class:*

1. Click Classes in the left pane of the window.
2. Scroll to the user class in the right pane and right-click it.



3. Choose Properties from the menu. The user Properties dialog appears.
4. Click the Attributes tab to open it.
5. Click Add.
6. Choose rcusergroup from the Select Schema Object list.



7. Click OK in the Select Schema Object dialog.
8. Click OK in the User Properties dialog.

## Updating the Schema Cache

► *To update the schema cache:*

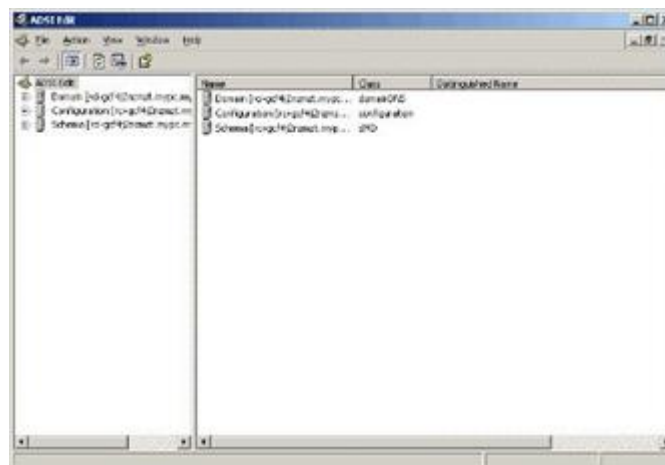
1. Right-click Active Directory® Schema in the left pane of the window and select Reload the Schema.
2. Minimize the Active Directory Schema MMC (Microsoft® Management Console) console.

## Editing rcusergroup Attributes for User Members

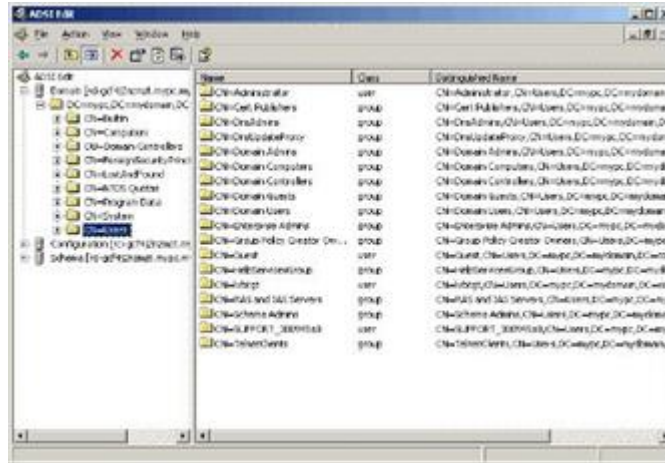
To run the Active Directory® script on a Windows 2003® server, use the script provided by Microsoft® (available on the Windows 2003 server installation CD). These scripts are loaded onto your system with a Microsoft® Windows 2003 installation. ADSI (Active Directory Service Interface) acts as a low-level editor for Active Directory, allowing you to perform common administrative tasks such as adding, deleting, and moving objects with a directory service.

► *To edit the individual user attributes within the group rcusergroup:*

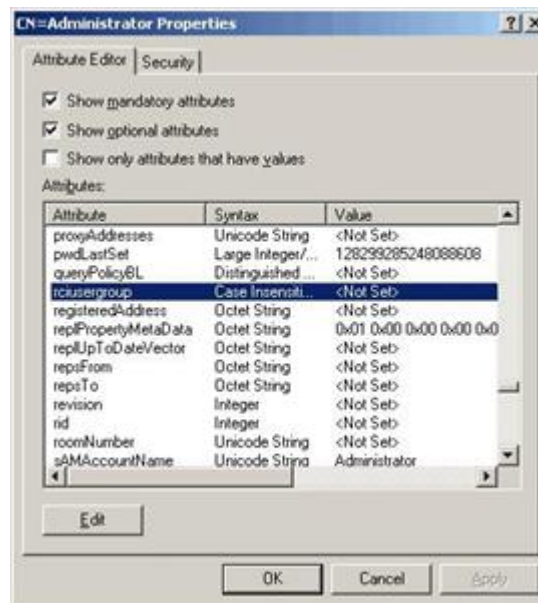
1. From the installation CD, choose Support > Tools.
2. Double-click SUPTOOLS.MSI to install the support tools.
3. Go to the directory where the support tools were installed. Run adsiedit.msc. The ADSI Edit window opens.



4. Open the Domain.
5. In the left pane of the window, select the CN=Users folder.



6. Locate the user name whose properties you want to adjust in the right pane. Right-click the user name and select Properties.
7. Click the Attribute Editor tab if it is not already open. Choose rcusergroup from the Attributes list.



8. Click Edit. The String Attribute Editor dialog appears.
9. Type the user (created in the SX II) in the Edit Attribute field. Click OK.



# Appendix A RADIUS Configuration Examples

This appendix contains instructions and examples to help configure various RADIUS implementations.

## In This Chapter

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### Cisco ISE 2.1.x Configurations

SX II performs authorization by means of user's membership to local User Groups. When using remote authentication, there is no user account locally on SX II, therefore there must be a way of returning user group information from the remote authentication server that SX II will then match and perform appropriate authorization. To achieve this, you must create the appropriate local group on SX II, and configure the remote authentication server to return appropriate matching group (case sensitive).

The following examples demonstrate an authorization profile called "Raritan Dominion KXIII\_SXII Profile".

- See [Cisco ISE 2.1.x for RADIUS](#) (on page 214)
- See [Cisco ISE 2.1.x for TACACS](#) (on page 224)

### Cisco ISE 2.1.x for RADIUS

► *Configure SX II for RADIUS settings:*

1. Login to SX II with administrative account.
2. Access User Management>Authentication>RADIUS



3. Configure RADIUS section to point to Cisco ISE 2.1.x running Radius server.

Home > User Management > Authentication Settings

### Authentication Settings

Local Authentication  
 LDAP  
 RADIUS

▶ LDAP

▼ RADIUS

Primary RADIUS Server

Shared Secret

Authentication Port

Accounting Port

Timeout (in seconds)

Retries

4. Create user group with appropriate permission and port permission by accessing User Management>User Group List.

Port Access	Power	Virtual Media	User Management	De
Home > Ports			Add New User	
			Add New User Group	
			Authentication Settings	
			Change Password	
			<b>User Group List</b>	
			User List	
			Users By Port	

**Port Access**

*Click on the individual port  
0 / 4 Remote KVM channels*

Group Name \*  
KVM\_Admin

▼ Permissions

- Device Access While Under CC-SG Management
- Device Settings
- Diagnostics
- Maintenance
- Modem Access
- PC-Share
- Security
- User Management

▼ Port Permissions

Port	Access	VM Access	Power Control
1: CCSG from BMO	Control ▼	Read-Write ▼	Access ▼
2: ESXI	Control ▼	Read-Write ▼	Access ▼
3: Dominion_KX3_Port3	Control ▼	Read-Write ▼	Access ▼
4: Dominion_KX3_Port4	Control ▼	Read-Write ▼	Access ▼
5: Dominion_KX3_Port5	Control ▼	Read-Write ▼	Access ▼
6: Fedora	Control ▼	Read-Write ▼	Access ▼
7: Dominion_KX3_Port7	Control ▼	Read-Write ▼	Access ▼
8: Dominion-KX2_Port46	Control ▼	Read-Write ▼	Access ▼
9: Dominion_KX3_Port9	Control ▼	Read-Write ▼	Access ▼

Group Name \*  
KVM\_Admin

▼ Permissions

- Device Access While Under CC-SG Management
- Device Settings
- Diagnostics
- Maintenance
- Modem Access
- PC-Share
- Security
- User Management


▼ Port Permissions

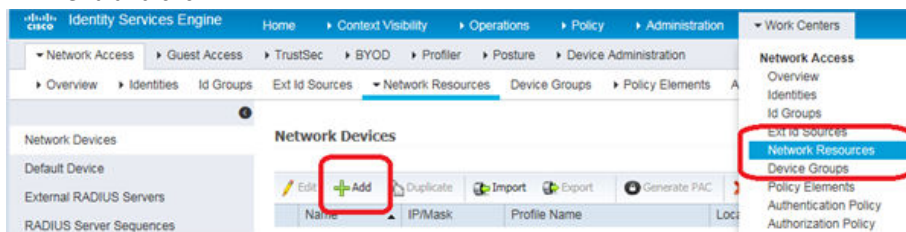
Port	Access	Power Control
1: DPX2-Console	Control ▼	Access ▼
2: DPX3-Console	Control ▼	Access ▼
3: Serial Port 3	Control ▼	Access ▼
4: DPX3-5041-Console-86	Control ▼	Access ▼
5: DPX3-5041-Console2-83	Control ▼	Access ▼
6: DPX3-5041-Console3-85	Control ▼	Access ▼
7: Cisco Cat3560x	Control ▼	Access ▼
8: Serial Port 8	Control ▼	Access ▼
9: Serial Port 9	Control ▼	Access ▼

► *Configure Cisco ISE:*

- Step 1: Add SX II Network Device
- Step 2: Add/Edit Users (Skip for external user database such as AD/LDAP)
- Step 3: Configure/Verify Allowed Authentication Protocol Service (PAP/CHAP/MS-CHAP)
- Step 4: Create Authorization Profile
- Step 5: Configure/Create Authorization Policy

► *Step 1: Add SX II Network Devices:*

1. Access Cisco ISE Web URL <https://x.x.x/admin> and login with administrative credentials.
2. Access Work Centers > Network Resources under Network Access section to load Network Device menu and click 



3. Configure Name, Description and IP Address/Range as well as enable Radius Authentication Settings option and set Shared secret, then click Submit to save changes. If appropriate and applicable, assign Device Type and Location.

### Network Devices

\* Name

Description

---

\* IP Address:  /

\* Device Profile

Model Name

Software Version

\* Network Device Group

Device Type

Location

**RADIUS Authentication Settings**

Enable Authentication Settings

Protocol **RADIUS**

\* Shared Secret

Enable KeyWrap

\* Key Encryption Key


\* Message Authenticator Code Key

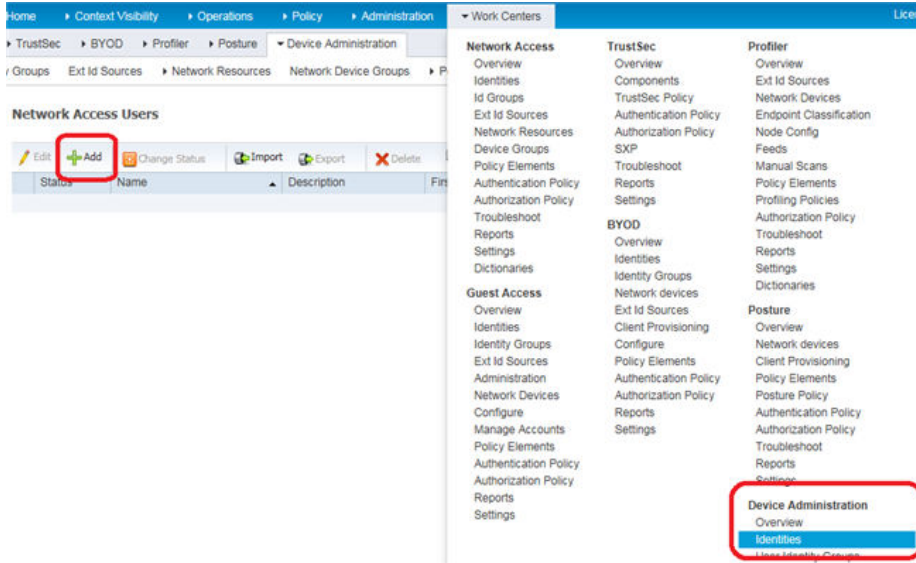
► **Step 2: Create/Edit User**

---

Note: Skip this step in production environments where user accounts are already created, or there is a configured external identity source (AD/LDAP).

---

1. Access Work Centers>Device Administration>Identities> and click  to add a user



2. Configure required fields and click Submit to add user

Network Access Users List > [New Network Access User](#)

---

**▼ Network Access User**

\* Name

Status  Enabled ▼

Email

---

**▼ Passwords**

Password Type:  ▼

Password                      Re-Enter Password

\* Login Password    ⓘ

Enable Password    ⓘ

---

**▼ User Information**

First Name

Last Name  x

---

**▼ Account Options**

Description

Change password on next login

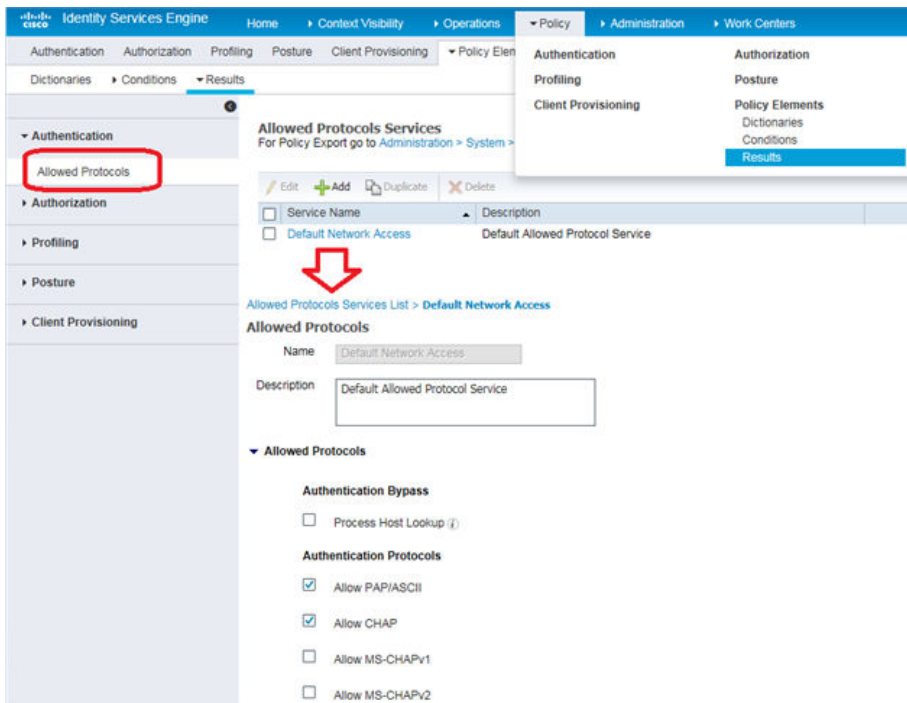
---

**▼ Account Disable Policy**

Disable account if date exceeds  (yyyy-mm-dd)

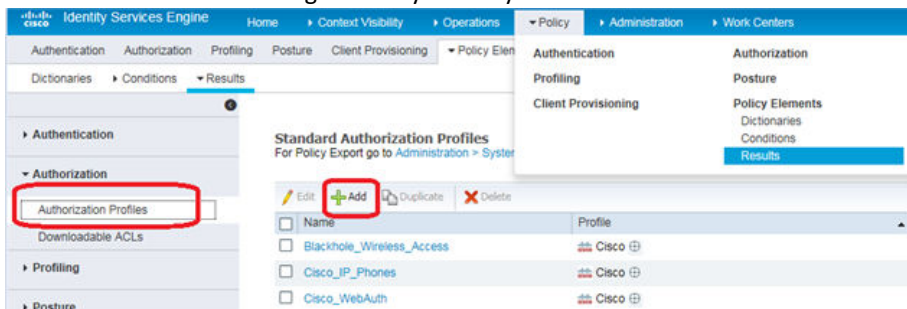
► **Step 3: Configure/Verify Allowed Authentication Protocol Service (PAP/CHAP/MS-CHAP)**

1. Access Policy>Results under Policy Elements section. Select Allowed Protocols under Authentication Dropdown from left pane. Click to Edit Default Network Access and select CHAP. SX II supports both PAP and CHAP authentication types. If CHAP authentication type is desired, verify Global Authentication Type setting on SX II RADIUS configuration is set to CHAP, and verify this step is completed on Cisco ISE 2.1.x server.

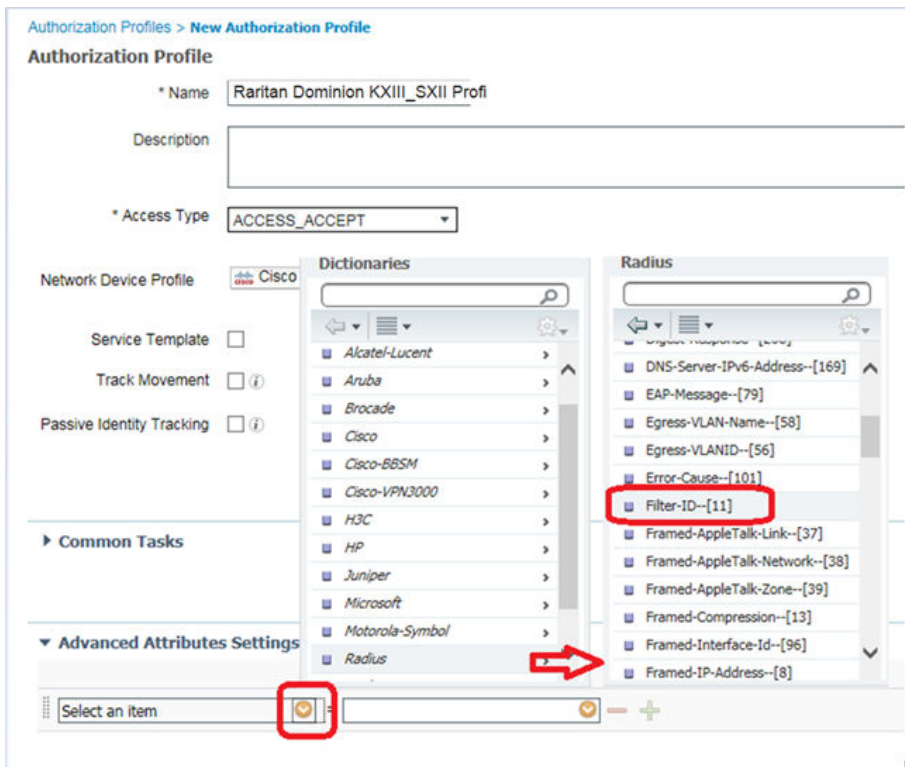


► **Step 4: Create Authorization Profile**

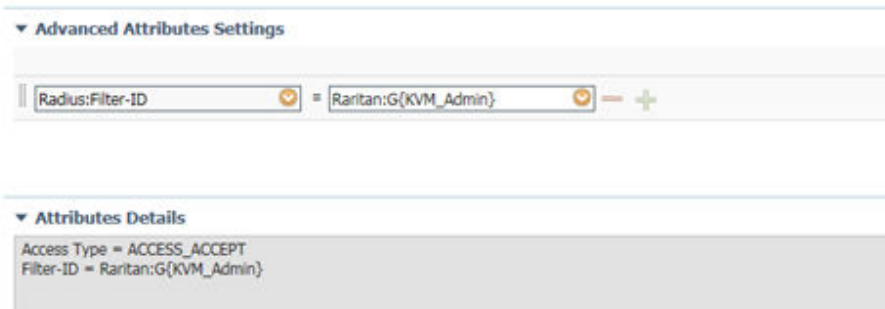
1. In the Policy Elements tab, choose Policy > Results. In the left panel that displays, choose Authorization > Authorization Profiles, then Click Add
2. Under General Tab configure Policy Friendly Name




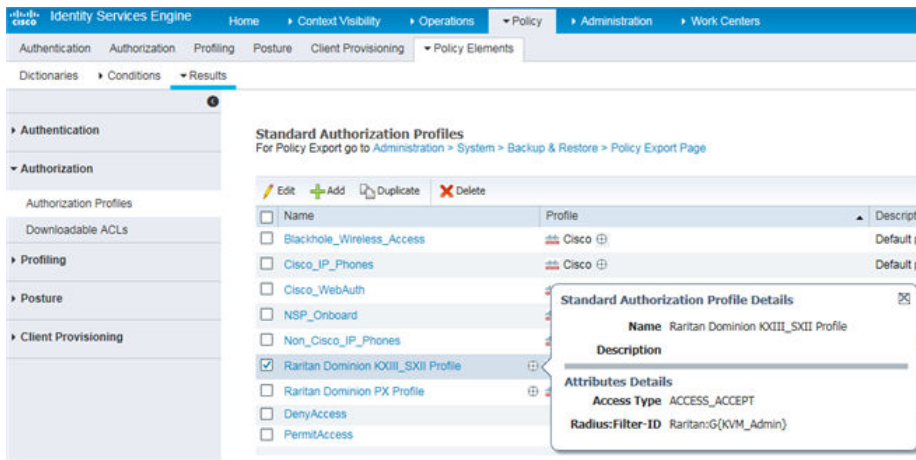
3. Specify appropriate Profile name. Scroll down to Advanced Attributes Settings section and click on drop down next to Select and Item text field. Select Radius and from Submenu select Filter-ID--[11] option.



4. Verify your selection in the text box. It must correctly display attribute name Radius:Filter-ID. In the next test field, type attribute value Raritan:G{KVM\_Admin} and click anywhere on the page to set it. Confirm Attribute Details display as shown below.

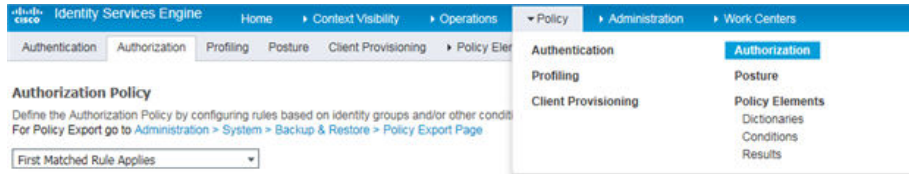



5. Click Submit to create new Authorization profile and return to the profile list summary page. Verify profile name and mouse over  icon for preview of summary.

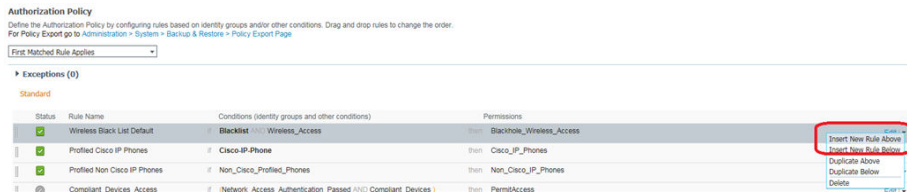


► **Step 5: Configure/Create Authorization Policy**

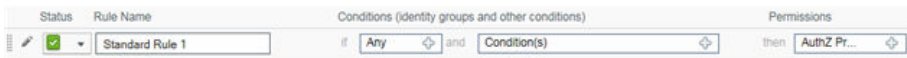
1. Access Policy>Authorization to see policy listing.




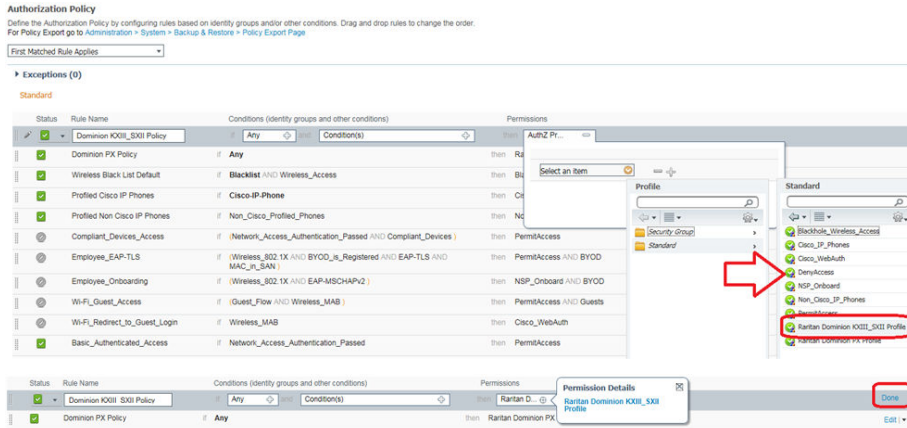
Click the Edit  dropdown in the first row and select Insert New Rule Above.



New first row is added.



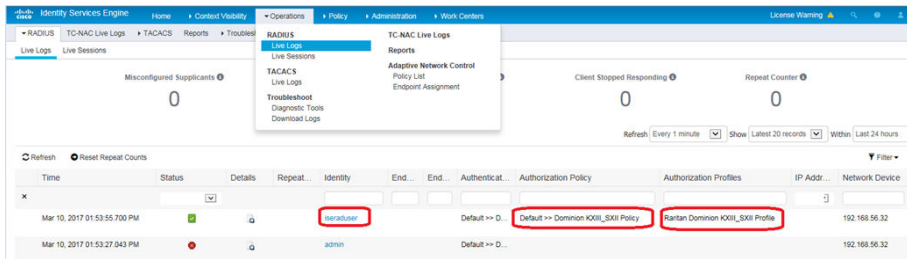
1. Specify appropriate Policy name and Click Add (  ) in the Permission text box. Select Standard to view a submenu with a list of available profiles. Select Raritan Dominion KXIII\_SXII Profile and click Done complete selection.



2. Click Save to create policy.

► **Troubleshooting Tips:**

1. Verify from Live Logs under Operations> TACACS that correct Authorization Policy is being applied. Click Details icon to see more information



2. User authorization may fail on SX II if incorrect policy is applied. If this occurs, consider the following options:

- Moving policy higher up in the order (in case of multiple policy sets).
- More appropriate conditions in policy coupled with device type and location when adding SX II as a network device in Cisco ISE.

## Cisco ISE 2.1.x for TACACS

► **Configure SX II for TACACS+ settings:**

1. Login to SX II with administrative account.
2. Access User Management>Authentication Settings and Configure it to point to Cisco ISE 2.1.x running TACACS server

Authentication Settings

- Local Authentication
  - LDAP
  - RADIUS
  - TACACS+
- Fallback to Local Authentication

▶ LDAP

▶ RADIUS

▼ TACACS+

Primary TACACS+ Server

Shared Secret

Port

Timeout (in seconds)

Retries

3. Create user group with appropriate permissions and port permissions by accessing User Management>User Group List>Add New User Group

[Port Access](#) | [Power](#) | [User Management](#) | [Device Settings](#) | [Security](#) | [Maintenance](#) | [Diagnostics](#) | [Help](#)

Home > User Management > Group

### Group

Group Name \*

**Permissions**

- Device Access While Under CC-SG Management
- Device Settings
- Diagnostics
- Maintenance
- Modem Access
- PC-Share
- Security
- User Management

**Port Permissions**

Port	Access	Power Control
1: DPX2-Console	Control	Access
2: DPX3-Console	Control	Access
3: Serial Port 3	Control	Access
4: DPX3-5041-Console-86	Control	Access
5: DPX3-5041-Console2-83	Control	Access
6: DPX3-5041-Console3-85	Control	Access
7: Cisco Cat3560x	Control	Access

► *Configure Cisco Identity Service Engine (ISE):*

Step 1: Add SX II Network Device

Step 2: Add/Edit Users (Skip if using external user database such as AD/LDAP)

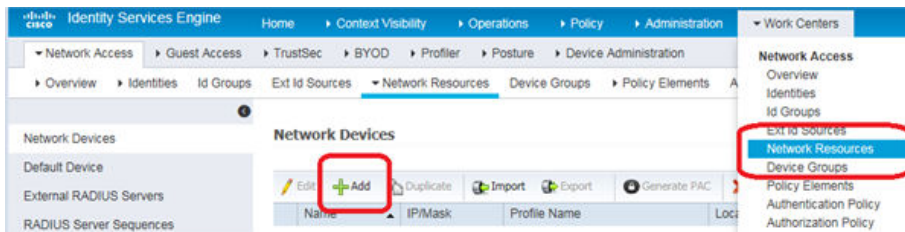
Step 3: Create TACACS profile policy element

Step 4: Configure/Create Device Admin Policy Set

► *Step 1: Add SX II Network Devices:*

1. Access Cisco ISE Web URL <https://x.x.x/admin> and login with administrative credentials.
2. Access Work Centers>Network Access>Network Resources> to load Network Device menu and click





3. Configure Name, Description, IP Address/Range as well as enable TACACS Authentication Settings option. Set Shared secret, then click Submit to save changes. If appropriate and applicable, assign Device Type and Location.

Network Devices List > **New Network Device**

### Network Devices

\* Name:

Description:

\* IP Address:  /

\* Device Profile:

Model Name:

Software Version:

\* Network Device Group

Device Type:

Location:

RADIUS Authentication Settings

TACACS Authentication Settings

Shared Secret:

Enable Single Connect Mode

Legacy Cisco Device


TACACS Draft Compliance Single Connect Support

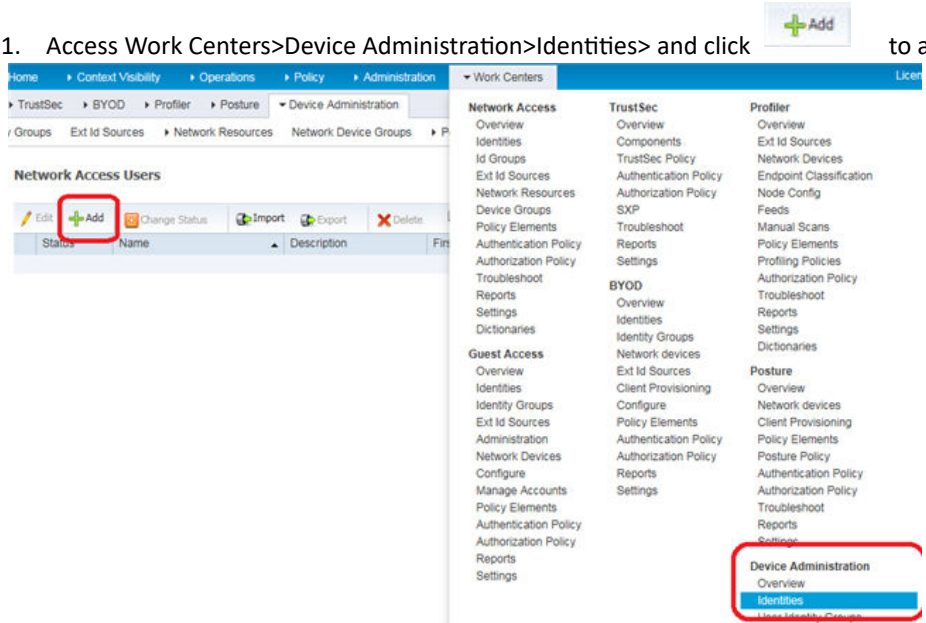
SNMP Settings

Advanced TrustSec Settings


► Step 2: Create/Edit User

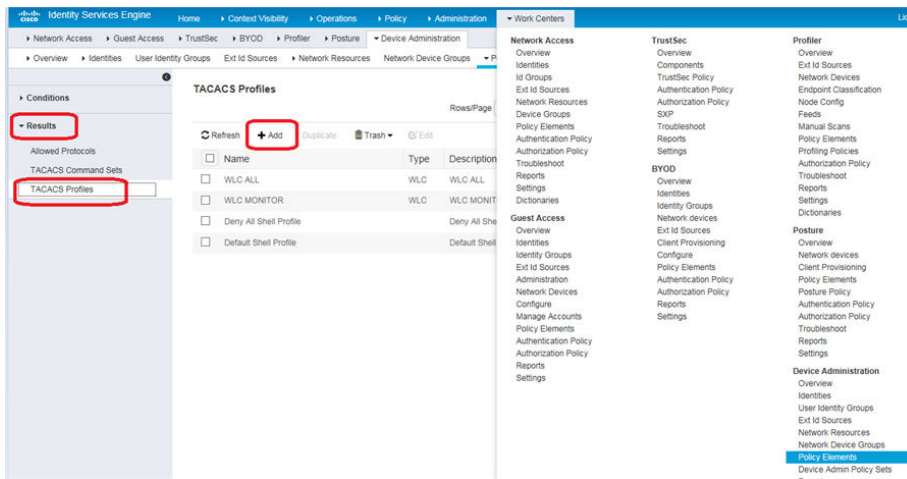
Note: Skip this step in production environments where user accounts are already created, or there is a configured external identity source (AD/LDAP).

1. Access Work Centers>Device Administration>Identities> and click  to add a user





► **Step 3: Create TACACS Profile Policy Element:**

1. Access Work Centers>Policy Elements>Results >TACACS Profiles and click  to add a profile.



+ Add

2. Configure Policy Name and click  under Custom Attributes section. From Type drop down, select Mandatory, Attribute Name as user-group and value KVM\_Admin where KVM\_Admin is the group name created locally on Dominion SXII (Case sensitive) then Click on  to add attribute then select Submit to save changes.

TACACS Profiles > New

**TACACS Profile**

Name:

Description:

Task Attribute View | Raw View

**Common Tasks**

Common Task Type:

Default Privilege:  (Select 0 to 15)

Maximum Privilege:  (Select 0 to 15)

Access Control List:

Auto Command:

No Escape:  (Select true or false)

Timeout:  Minutes (0-9999)


Idle Time:  Minutes (0-9999)

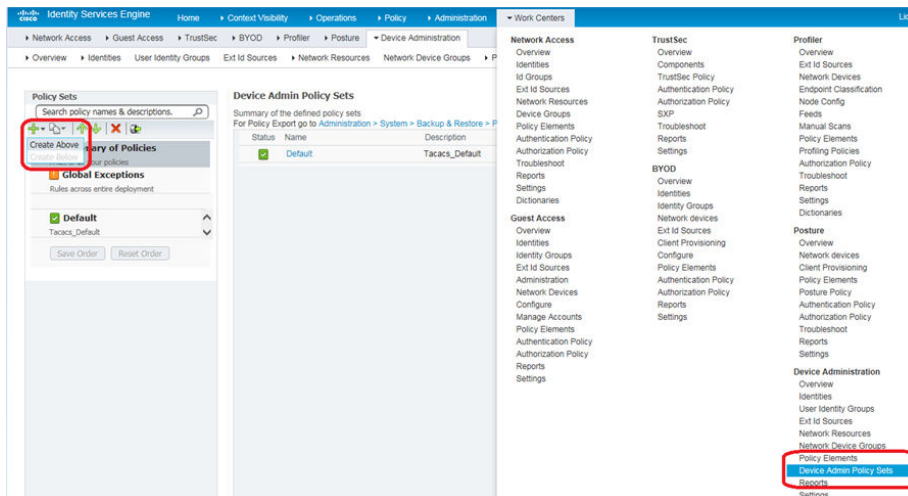
**Custom Attributes**

+ Add  Trash  Edit

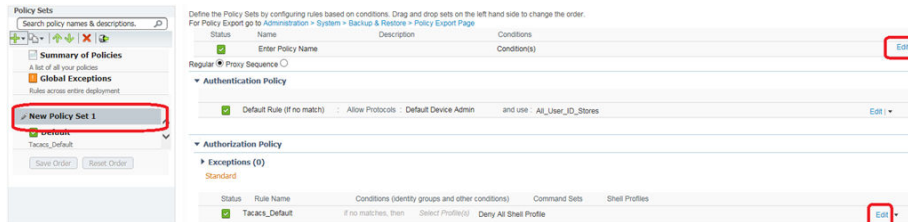
Type	Name	Value
Mandatory	user-group	KVM_Admin

► **Step 4: Configure/Create Device Admin Policy Set**

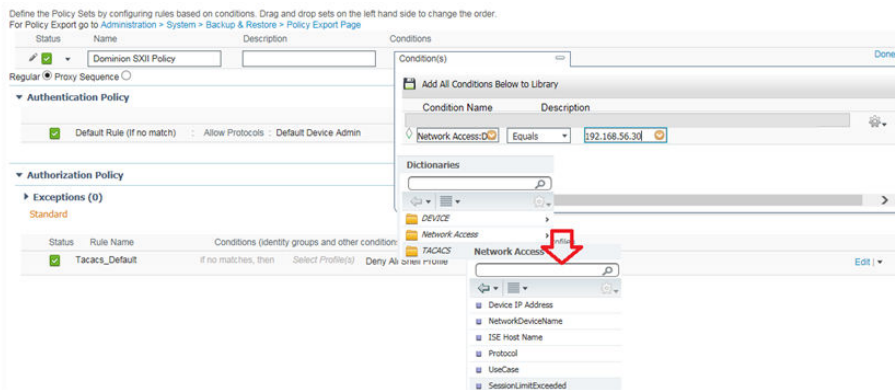
1. Go to Work Centers > Device Administration > Device Admin Policy Sets.
2. In the left pane, click  and Create Above to create a new policy set.




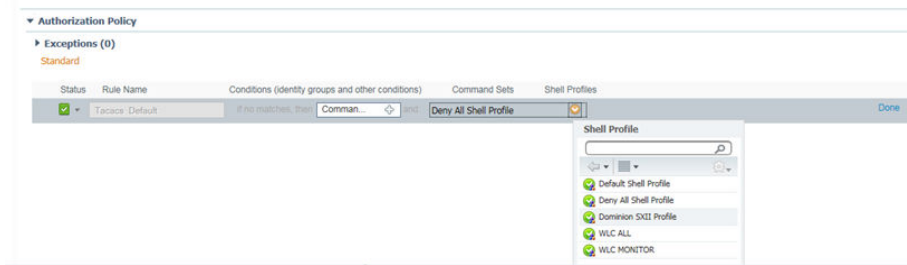
3. Above step will create New Policy Set 1




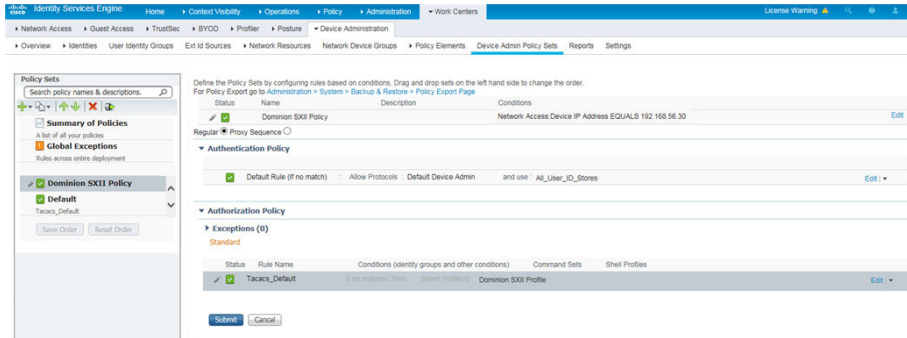
4. Click Edit and enter the Name, Description, and Condition (optional) and click Done. Authentication Policy is optional unless it is explicitly required for security guidelines and user store specific needs of your organization.




5. Create the required Authorization Policy. Click Edit and specify select drop down  under Command Sets and select profile created earlier in step 5 then click Done to save changes.

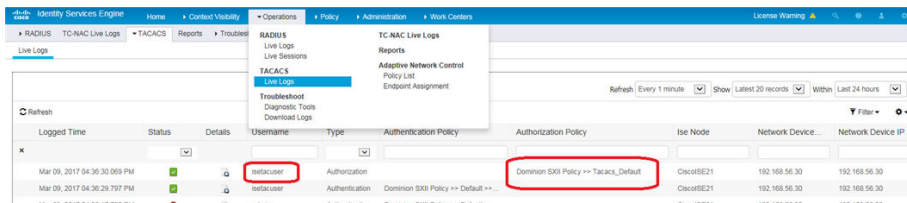


- Click  to save changes. This concludes configuration on Cisco ISE pertaining to Dominion SXII TACACS authentication and authorization.

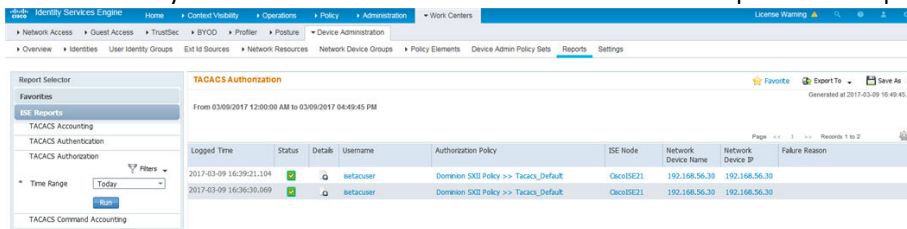


► **Troubleshooting Tips:**

1. Verify from Live Logs under Operations> TACACS that correct Authorization Policy is being applied. Click Details icon  to see more information.



2. Alternatively Choose Work Centers > Device Administration > Reports > ISE Reports



3. User authorization may fail on SX II if incorrect policy is applied. If this occurs, consider:
  - Moving policy higher up in the order (in case of multiple policy sets)
  - More appropriate conditions in policy coupled with device type and location when adding SX II as a network device in Cisco ISE

## Cisco ACS 5.x for RADIUS Authentication

The Cisco Access Control Server (ACS) is another authentication solution supported by the SX II.

For the SX II to support RADIUS, both the SX II and the user information must be added into the RADIUS configuration.

If you are using a Cisco ACS 5.x server, after you have configured the SX II for RADIUS authentication, complete the following steps on the Cisco ACS 5.x server.

---

Note: The following steps include the Cisco menus and menu items used to access each page. Please refer to your Cisco documentation for the most up to date information on each step and more details on performing them.

---

- Add the SX II as a AAA Client (Required) - Network Resources > Network Device Group > Network Device and AAA Clients
- Add/edit users (Required) - Network Resources > Users and Identity Stores > Internal Identity Stores > Users
- Configure Default Network access to enable CHAP Protocol (Optional) - Policies > Access Services > Default Network Access
- Create authorization policy rules to control access (Required) - Policy Elements > Authorization and Permissions > Network Access > Authorization Profiles
  - Dictionary Type: RADIUS-IETF
  - RADIUS Attribute: Filter-ID
  - Attribute Type: String
  - Attribute Value: Raritan:G{Serial\_Admin} (where Serial\_Admin is group name created locally on SX II). Case sensitive.
- Configure Session Conditions (Date and Time) (Required) - Policy Elements > Session Conditions > Date and Time
- Configure/create the Network Access Authorization Policy (Required) - Access Policies > Access Services > Default Network Access>Authorization

### Configure Microsoft Network Policy Server for Dominion RADIUS Integration

The following steps show how to configure a Microsoft Network Policy Server as a RADIUS Server for integration with any Raritan Dominion product. These steps cover Windows 2012 server configurations.

► *Prerequisites:*

Before you begin, ensure that Network Policy Access and Services as well as Active Directory are configured and available on Windows 2012 server.

This can be verified in the Server Manager snap-in Role Summary available under Administrative tools.

► *3 Step Process:*

- Step 1 – Configure Raritan Dominion switch to use Windows 2012 NPS Radius server
- Step 2 – Add Raritan Dominion switch as Radius client on Windows 2012 NPS Radius server.
- Step 3 – Add Connection Request Policy on Windows 2012 NPS Radius server.

► *Step 1 – Configure Raritan Dominion switch to use Windows 2012 NPS Radius server*

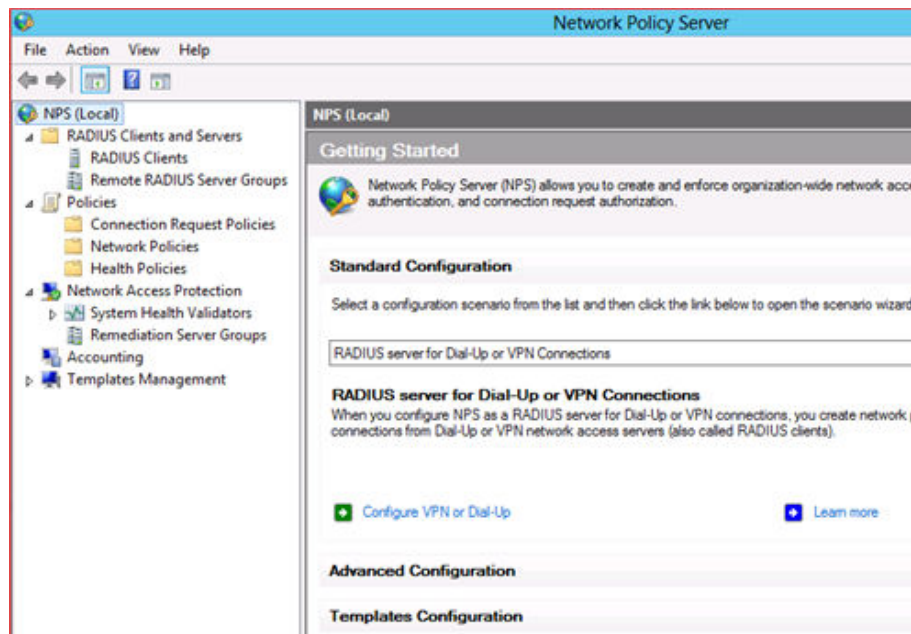
1. Login to Dominion switch and access Remote Authentication setting option and configure Radius server IP, port, secret and authentication type (CHAP/PAP) and save changes.
2. Create a user group locally on Raritan Dominion Switch with port and permission restrictions as desired.

► *Step 2 – Add Raritan Dominion switch as Radius client on Windows 2012 NPS Radius server.*

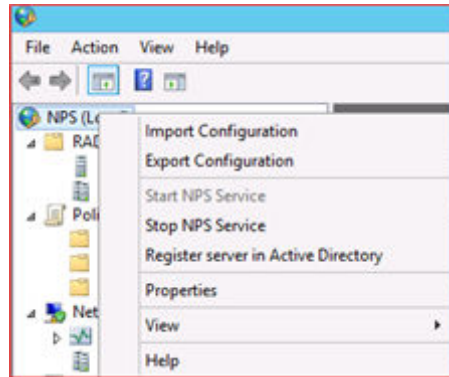
The Dominion switch is added as a client on Radius server as per Radius protocol requirements. Since Raritan Radius implementation uses Use Standard IETF Radius spec, select Radius Standard as Vendor Name.

Follow steps below in order to add Dominion as Radius client on Windows 2012 NPS Radius server.

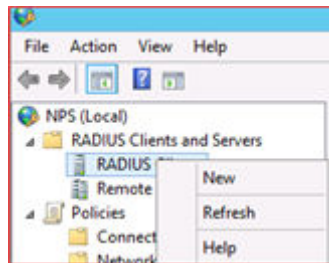
1. Launch Network Policy Server snap-in via Start>Administrative Tools>Network Policy Server.



2. Right Click NPS (Local) server and select properties as show below. This step is included in order to verify Radius port number as below and confirm it Dominion switch Radius configuration port matches with this number.



3. Right Click RADIUS Client and select New option as show below.



4. Configure Friendly name (for identification purpose), IP address of Radius client (Domain switch IP address). Specify shared secret that will need to match with secret field of Radius configuration on domain switch. Click on Advanced Tab to select RADIUS Vendor (Select Radius Standard)

**New RADIUS Client**

Settings **Advanced**

Enable this RADIUS client

Select an existing template:

Name and Address

Friendly name:  
192.168.56.42

Address (IP or DNS):  
192.168.56.42

Shared Secret

Select an existing Shared Secrets template:  
None

To manually type a shared secret, click Manual. To automatically generate a shared secret, click Generate. You must configure the RADIUS client with the same shared secret entered here. Shared secrets are case-sensitive.

Manual  Generate

Shared secret:  
\*\*\*\*\*

Confirm shared secret:  
\*\*\*\*\*

**New RADIUS Client**

Settings **Advanced**

Vendor

Specify RADIUS Standard for most RADIUS clients, or select the RADIUS client vendor from the list.

Vendor name:  
RADIUS Standard

Additional Options

Access-Request messages must contain the Message-Authenticator attribute

RADIUS client is NAP-capable

**New RADIUS Client**

Settings **Advanced**

Vendor

Specify RADIUS Standard for most RADIUS clients, or select the RADIUS client vendor from the list.

Vendor name:  
RADIUS Standard

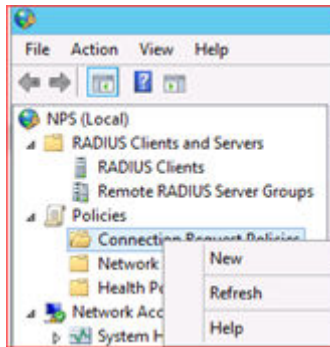
Additional Options

Access-Request messages must contain the Message-Authenticator attribute

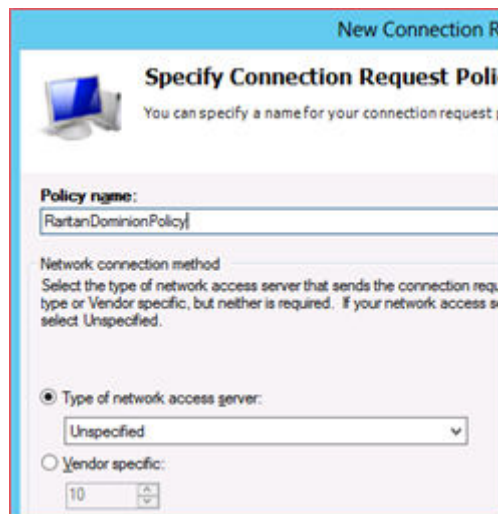
RADIUS client is NAP-capable

► *Step 3 – Add Connection Request Policy on Windows 2012 NPS Radius server.*

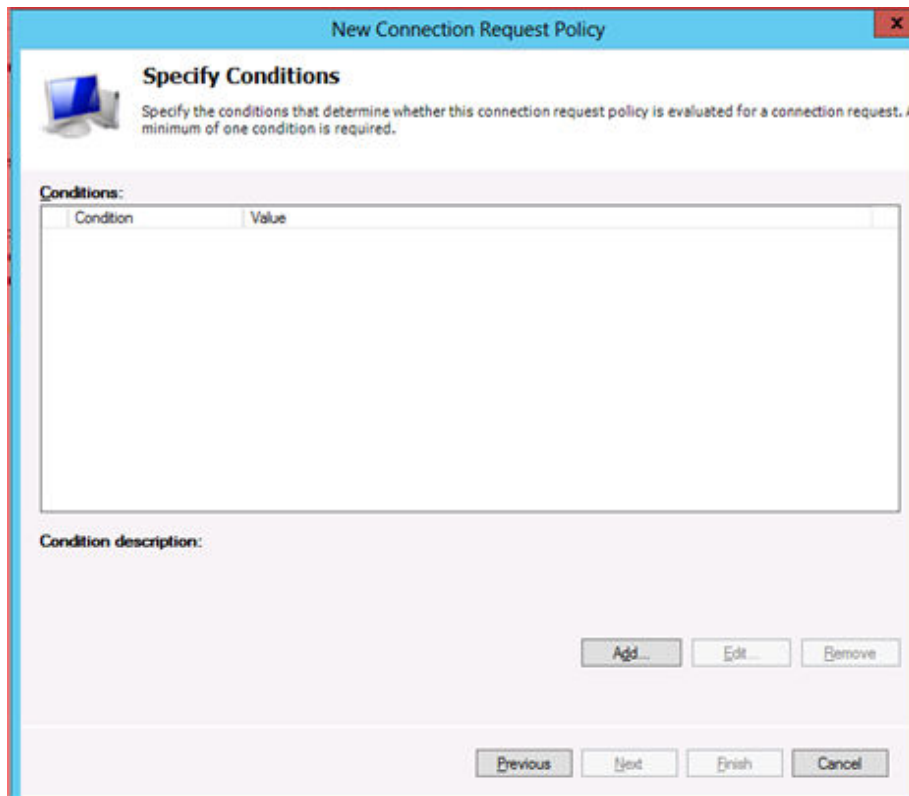
1. Expand Policies option, right click Connection Request Policies and select New to create policy.



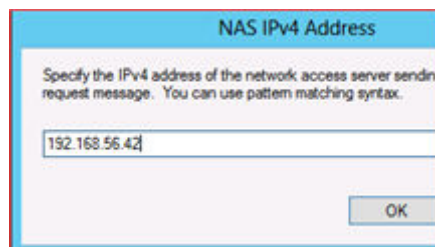
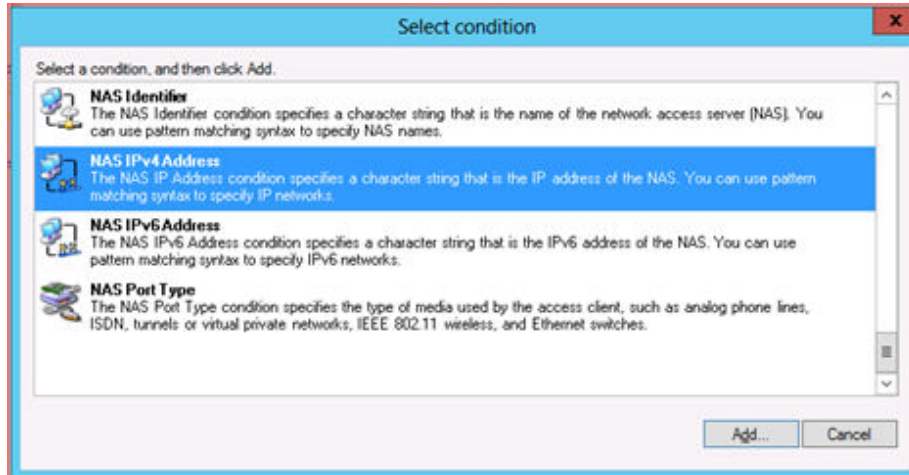
2. Specify Policy Name. Type of network access server value can be left default as Unspecified. Click Next.



3. Depending on how many policies are configured on Radius server, how many users and groups as well as number of domain switches in the environment, configure Specify conditions to match option in order to apply correct policy to a user request coming from Domain switch into Radius server. Click on Add button to select list of condition before proceeding to next step.



4. NAS IPv4 Address option can select and click Add to specify Dominion switch IP address.



**NAS IPv4 Address**

Specify the IPv4 address of the network access server sending request message. You can use pattern matching syntax.

192.168.56.42

OK

**New Connection Request Policy**

**Specify Conditions**

Specify the conditions that determine whether this connection request p  
minimum of one condition is required.

**Conditions:**

Condition	Value
NAS IPv4 Address	192.168.56.42

- Click Next to specify Connection Request Forwarding option. Select appropriate option based on your environment. If you have local NPS server, select Authenticate requests on this server radius button (default) and click next to proceed further.

**New Connection Request Policy**

**Specify Connection Request Forwarding**

The connection request can be authenticated by the local server or it can be forwarded to RADIUS servers in a remote RADIUS server group.

If the policy conditions match the connection request, these settings are applied.

**Settings:**

- Forwarding Connection Request
  - Authentication
  - Accounting

Specify whether connection requests are processed locally, are forwarded to remote RADIUS servers for authentication, or are accepted without authentication.

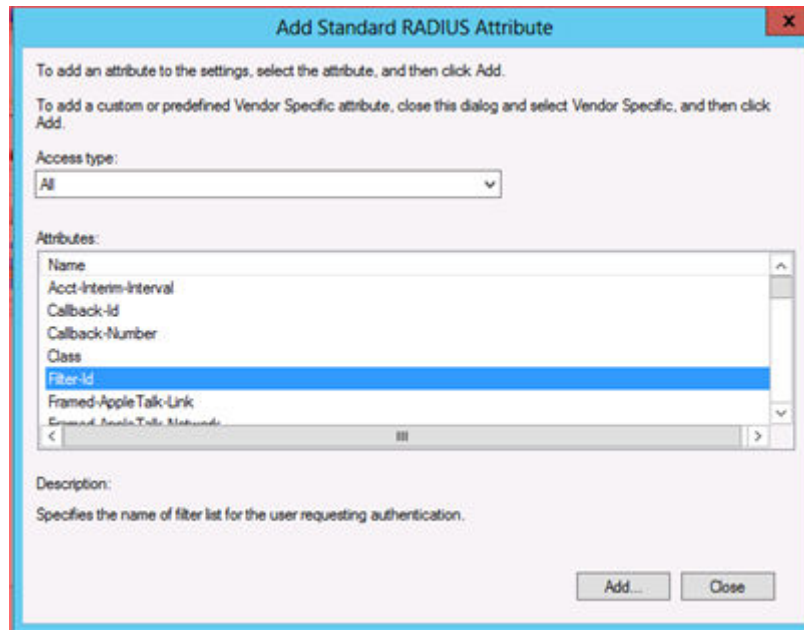
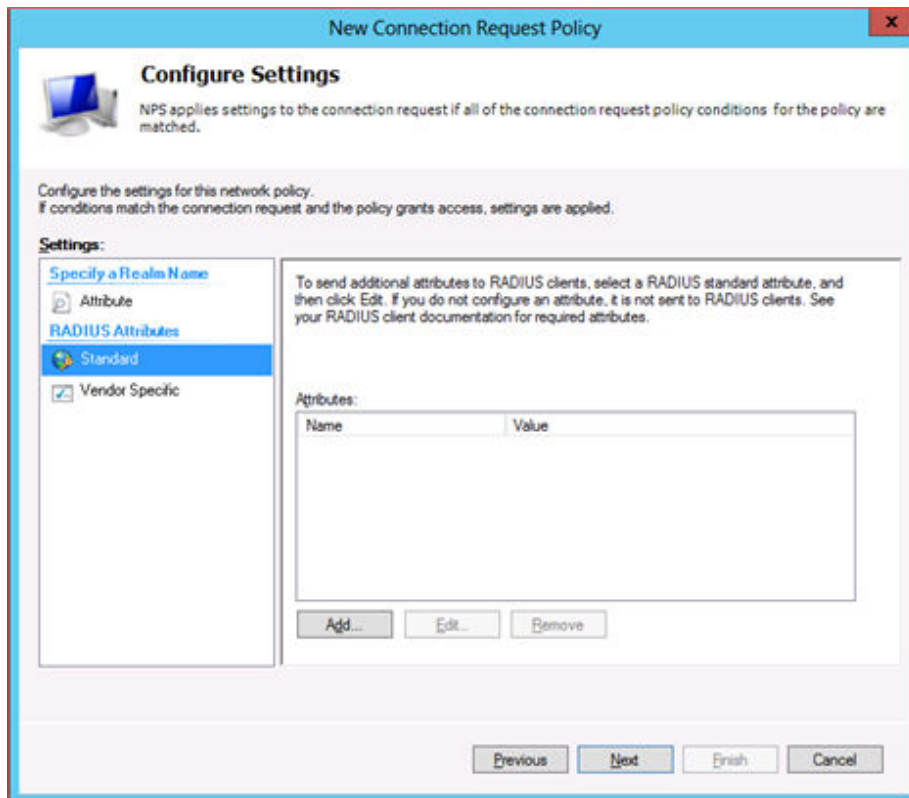
Authenticate requests on this server  
 Forward requests to the following remote RADIUS server group for authentication:  
   
 Accept users without validating credentials

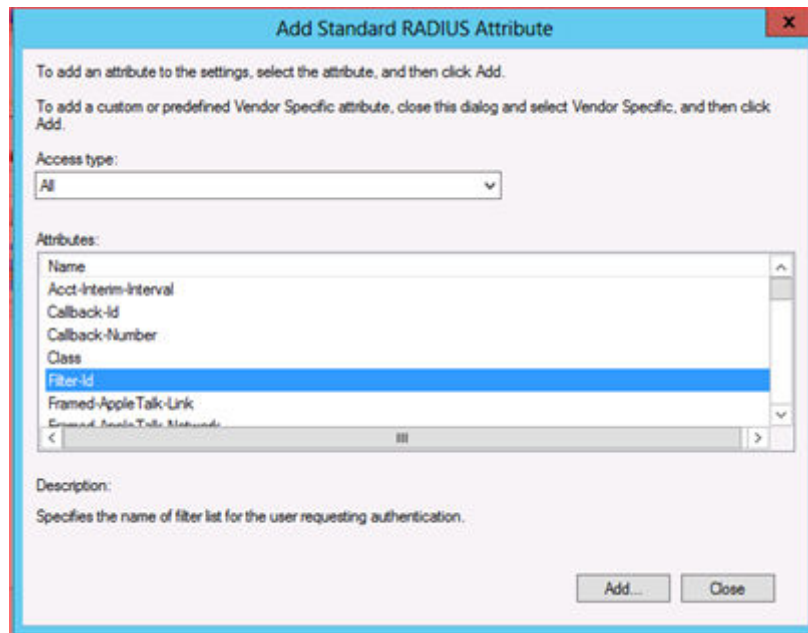
Previous Next Finish Cancel

6. On Authentication Method configuration menu, enable Override network policy authentication settings option and select CHAP/PAP as applicable to match with Dominion RADIUS configuration option. Click next to proceed further.

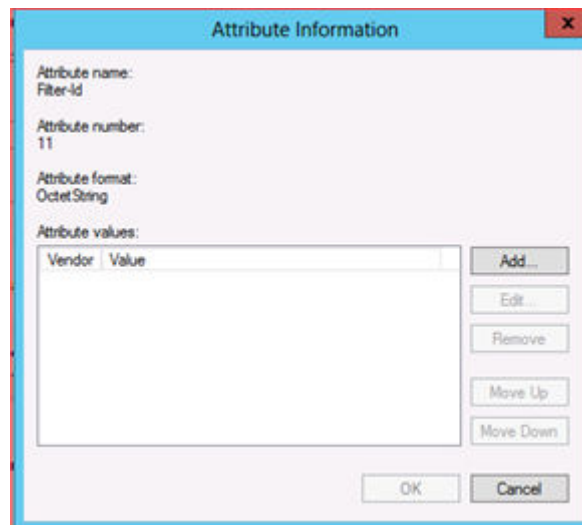
The screenshot shows the 'New Connection Request Policy' configuration window. The title bar reads 'New Connection Request Policy'. Below the title bar, there is a section titled 'Specify Authentication Methods' with a computer icon. The text below the title says: 'Configure one or more authentication methods required for the connection. For authentication, you must configure an EAP type. If you deploy NAP with Protected EAP.' Below this, there is a checkbox labeled 'Override network policy authentication settings' which is checked. Underneath, it says: 'These authentication settings are used rather than the constraints and authentication settings for connections with NAP. If you use Protected EAP authentication, you must configure PEAP authentication here.' Below that, it says: 'EAP types are negotiated between NPS and the client in the order in which they are listed.' There is a section titled 'EAP Types:' with an empty list box. Below the list box are three buttons: 'Add...', 'Edit...', and 'Remove'. Below these buttons is a section titled 'Less secure authentication methods:' with several options: 'Microsoft Encrypted Authentication version 2 (MS-CHAP\_v2)' (unchecked), 'User can change password after it has expired' (unchecked), 'Microsoft Encrypted Authentication (MS-CHAP)' (unchecked), 'User can change password after it has expired' (unchecked), 'Encrypted authentication (CHAP)' (checked), 'Unencrypted authentication (PAP, SPAP)' (unchecked), and 'Allow clients to connect without negotiating an authentication method.' (unchecked).

7. Select Standard under RADIUS Attributes located in settings section on next screen show below and click on Add button to see list of available attributes. As documented in Dominion switch user guide, Raritan uses Filter-Id attribute and its value for authorization. Select Filter-Id attribute from the list and click on Add.





8. On Attribute Information dialogue box, click Add and configure value as string as show below. In example below value Raritan:G{Admin} is used where Admin is the group name that matches with local group (case sensitive) on Dominion switch. For configuration test purpose use of default Admin group in value is best recommended. Click OK on all dialogue boxes to close and come back to main screen.



**Attribute Information** [X]

Attribute name:  
Filter-Id

Attribute number:  
11

Attribute format:  
Octet String

Enter the attribute value in:

String  
 Hexadecimal

Raritan.G(Admin)

OK Cancel

**Attribute Information** [X]

Attribute name:  
Filter-Id

Attribute number:  
11

Attribute format:  
Octet String

Enter the attribute value in:

String  
 Hexadecimal

Raritan.G(Admin)

OK Cancel

**Attribute Information** [X]

Attribute name:  
Filter-Id

Attribute number:  
11

Attribute format:  
Octet String

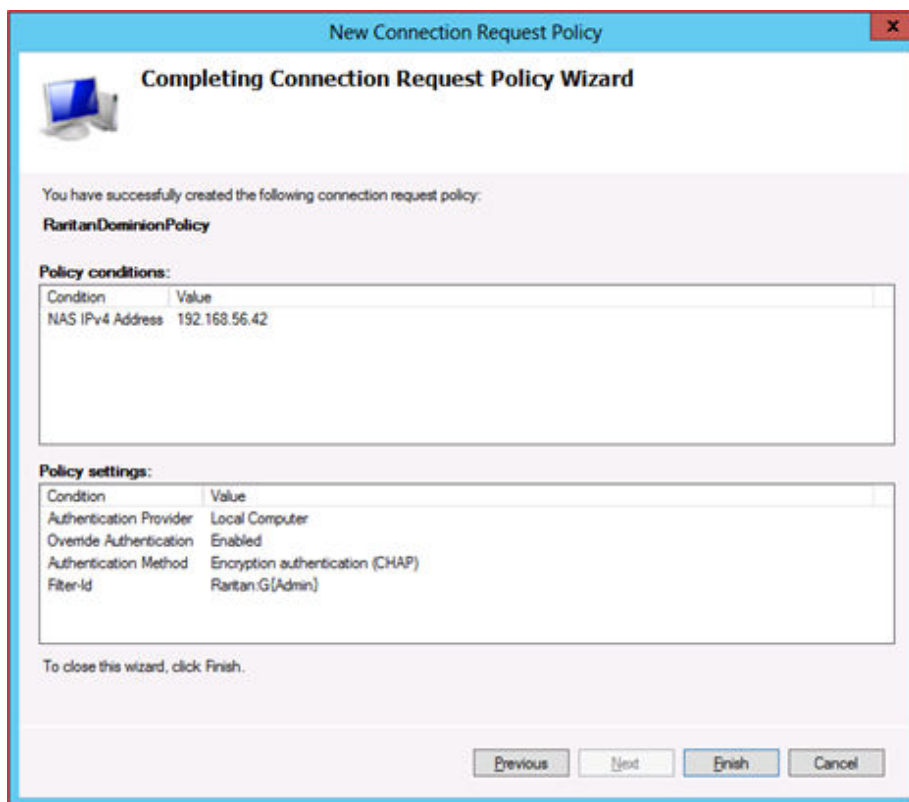
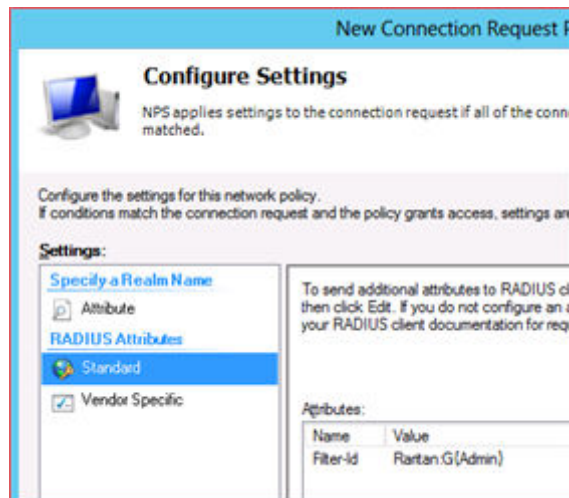
Attribute values:

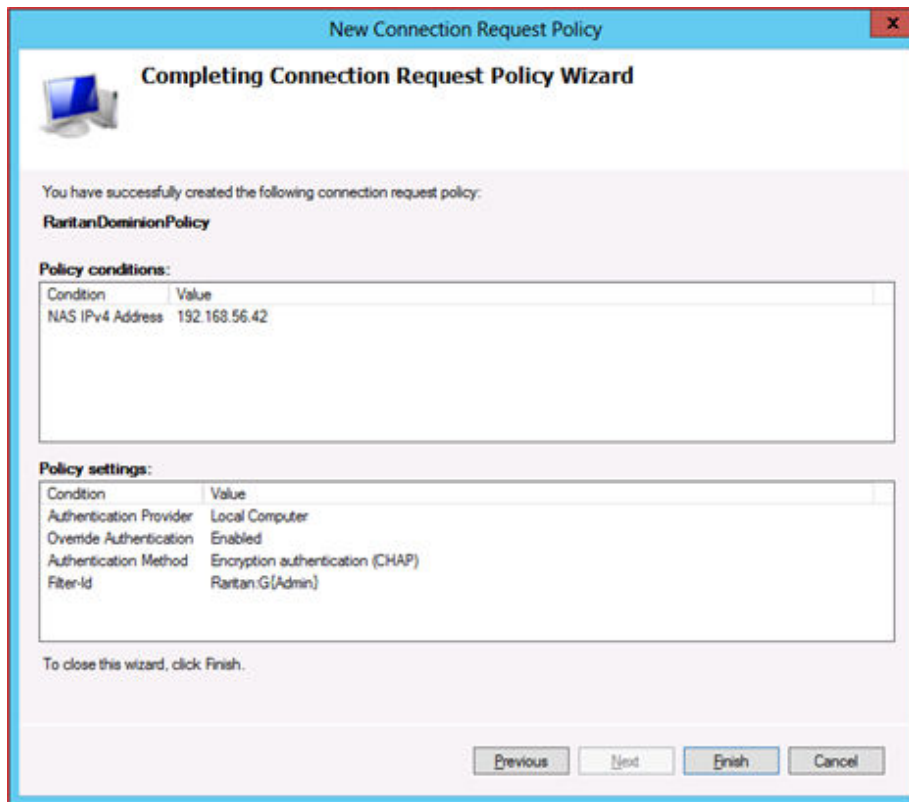
Vendor	Value
RADIUS Standard	Raritan.G(Admin)

Add...  
Edit...  
Remove  
Move Up  
Move Down

OK Cancel

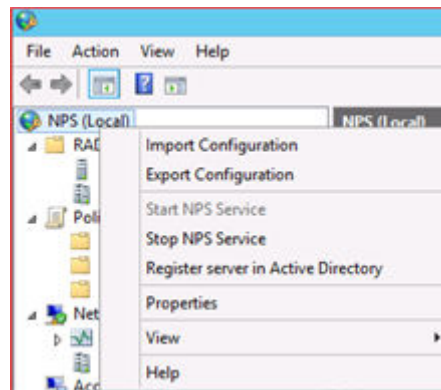
9. Click Next to view summary and Finish to complete configuration.

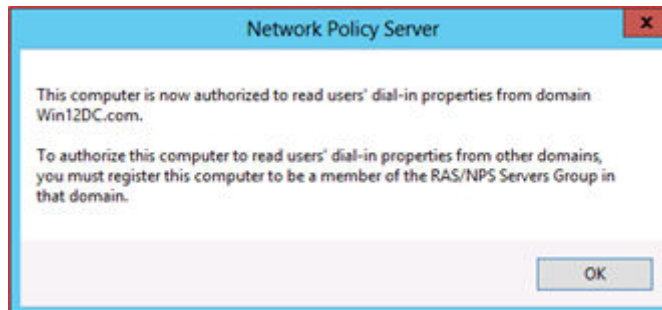
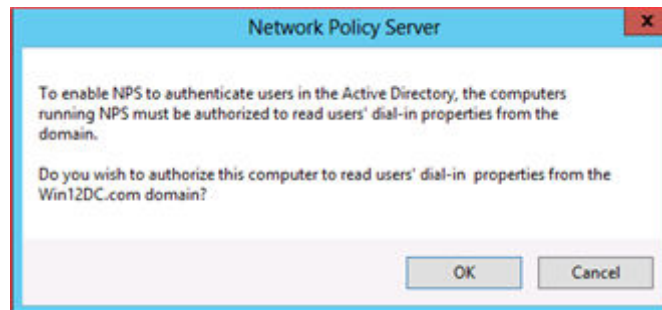




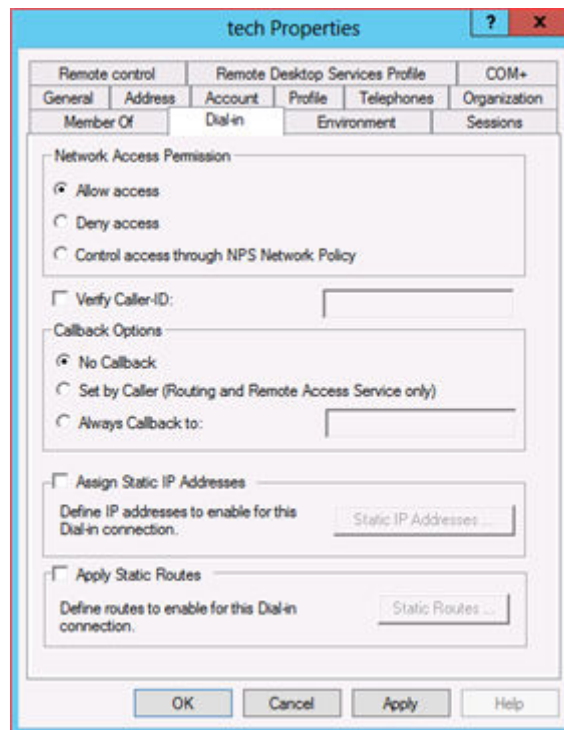
► *Additional Notes:*

1. If this is the first time NPS/RADIUS server is being configured and user accounts are located on Active Directory, it will be required to Register NPS/RADIUS Server in Active Directory so that it can look up users in AD for password validation and return attribute values pairs back to Dominion switch.

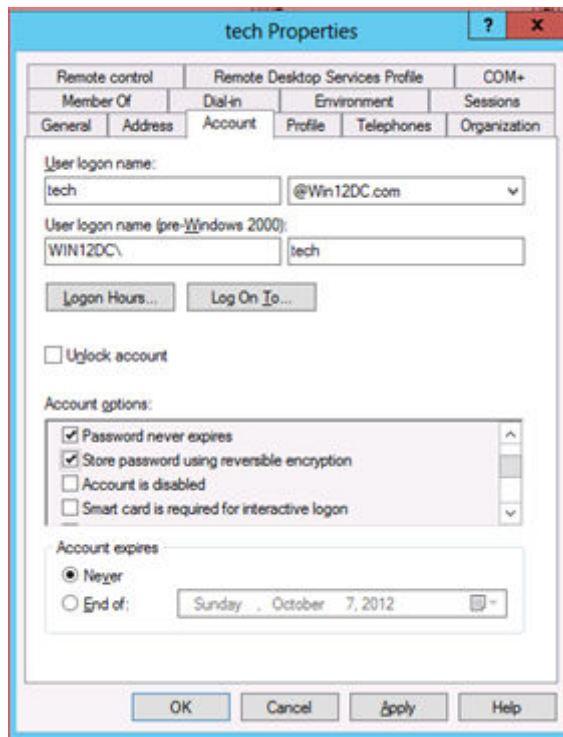




2. Ensure user on Active Directory has Dial-in Permission set to Allow access option.



3. When using CHAP, ensure that Store password using reversible encryption is enabled. User password should be reset if it is being enabled after user password is set.



## RADIUS Communication Exchange Specifications

The SX II sends the following RADIUS attributes to your RADIUS server:

Attribute	Data
<b>Log in</b>	
Access-Request (1)	
NAS-Port-Type (61)	VIRTUAL (5) for network connections.
NAS-IP-Address (4)	The IP address for the SX II.
User-Name (1)	The user name entered at the login screen.
Acct-Session-ID (44)	Session ID for accounting.
User-Password(2)	The encrypted password.
<b>Accounting-Request(4)</b>	
Acct-Status (40)	Start(1) - Starts the accounting.
NAS-Port-Type (61)	VIRTUAL (5) for network connections.
NAS-Port (5)	Always 0.
NAS-IP-Address (4)	The IP address for the SX II.
User-Name (1)	The user name entered at the login screen.

Attribute	Data
Acct-Session-ID (44)	Session ID for accounting.
<b>Log out</b>	
Accounting-Request(4)	
Acct-Status (40)	Stop(2) - Stops the accounting
NAS-Port-Type (61)	VIRTUAL (5) for network connections.
NAS-Port (5)	Always 0.
NAS-IP-Address (4)	The IP address for the SX II.
User-Name (1)	The user name entered at the login screen.
Acct-Session-ID (44)	Session ID for accounting.

## RADIUS Using RSA SecurID Hardware Tokens

SX II supports RSA SecurID Hardware Tokens used with a RADIUS server for two factor authentication

Users will specify their RADIUS password followed by the token ID without a delimiter between.

► *For example:*

- password = apple
- token = 1234
- User enters: apple1234

Or, configure the RADIUS server to use only hardware token and no passwords. Users will specify the token ID only.

## Returning User Group Information from Active Directory Server

The SX II supports user authentication to Active Directory® (AD) without requiring that users be defined locally on the SX II. This allows Active Directory user accounts and passwords to be maintained exclusively on the AD server. Authorization and AD user privileges are controlled and administered through the standard SX II policies and user group privileges that are applied locally to AD user groups.

---

**IMPORTANT: If you are an existing Raritan, Inc. customer, and have already configured the Active Directory server by changing the AD schema, the SX II still supports this configuration and you do not need to perform the following operations. See Updating the LDAP Schema for information about updating the AD LDAP/LDAPS schema.**

---

► *To enable your AD server on SX II:*

1. In SX II, create special groups and assign proper permissions and privileges to these groups.

For example, create groups such as AD\_Admin and AD\_Operator.

2. On your Active Directory server, create new groups with the same group names as in the previous step.
3. On your AD server, assign the SX II users to the groups created in step 2.
4. From the SX II, enable and configure your AD server properly. See Implementing LDAP/LDAPS Remote Authentication.

#### Important Notes

- Group Name is case sensitive.
- The SX II provides the following default groups that cannot be changed or deleted: Admin and <Unknown>. Verify that your Active Directory server does not use the same group names.
- If the group information returned from the Active Directory server does not match the SX II group configuration, the SX II automatically assigns the group of <Unknown> to users who authenticate successfully.
- If you use a dialback number, you must enter the following case-sensitive string: msRADIUSCallbackNumber in field "Dialback Query String".
- Based on recommendations from Microsoft, Global Groups with user accounts should be used, not Domain Local Groups.

## Returning User Group Information via RADIUS

When a RADIUS authentication attempt succeeds, the SX II determines the permissions for a given user based on the permissions of the user's group.

Your remote RADIUS server can provide these user group names by returning an attribute, implemented as a RADIUS FILTER-ID. The FILTER-ID should be formatted as follows: Raritan:G{GROUP\_NAME} where GROUP\_NAME is a string denoting the name of the group to which the user belongs.

```
Raritan:G{GROUP_NAME}
```

where GROUP\_NAME is a string denoting the name of the group to which the user belongs.

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