Raritan.

Dominion SX

User Guide
3.1.7

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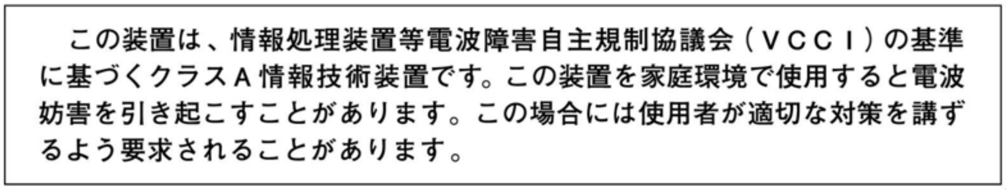
VCCI Information (Japan)



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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.

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I.T.E.

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.

In Raritan products that require rack mounting, follow these precautions:

Operation temperature in a closed rack environment may be greater than room temperature. Do not exceed the rated maximum ambient temperature of the appliances (see ***Specifications*** (on page 228)).

- Ensure sufficient airflow through the rack environment.
- Mount equipment in the rack carefully to avoid uneven mechanical loading.
- Connect equipment to the supply circuit carefully to avoid overloading circuits.
- Ground all equipment properly, especially supply connections, such as power strips (other than direct connections), to the branch circuit.

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How to - Dominion SX Essentials

This chapter includes 10 of the most common cases to help quickly familiarize users with practical operation on Dominion SX units. Note that data entered in the cases are created as examples, and could vary upon different situations.

Case 1. Upgrading SX Firmware via Web Browser

1. Purpose: To upgrade SX firmware version for enhanced features or service patches.
2. Check Raritan support website for availability of latest firmware version: (http://www.raritan.com/support/firmwareupgrades and look for SX under Dominion Family)
3. Download the new SX firmware stored as UpgradePack from Raritan support website to an FTP server (for example, a FileZilla server), assuming that FTP server has an IP address of 192.168.51.204. Extract the zip file to a folder under FTP root directory, for example: \home\downloads\firmware\UpgradePack_2.5.6_3.1.0.5.2\Pack1of1. Make sure the folder is accessible by an FTP user account that you have.
4. Log in to the SX through a web browser. Choose Maintenance > Firmware Upgrade. Enter FTP server IP address (for example, 192.168.51.204), FTP username and password, and the FTP folder path where the extracted files are stored (in this example: /UpgradePack_2.5.6_3.1.0.5.2\Pack1of1), and click Upgrade.
5. After firmware upgrade is completed, log in to SX and check the firmware version again from: Maintenance > Firmware Version. You can also check firmware upgrade history to make sure: Maintenance > Firmware Upgrade History.

See ***Upgrade the Firmware*** (on page 110) for details.

Case 2. Configuring and Using Direct Port Access via SSH

1. Purpose: To allow users to directly SSH into the serial target without using SX GUI.
2. You may determine an IP address or TCP port on Dominion SX IP to use for DPA or any port on Dominion SX. Since network the administrator has no spare IP address, we will reuse the Dominion SX IP address with different port.
3. Log back in to Dominion SX and select the port enabled for DPA in Setup > Port Configuration.

4. Edit the DPA SSH TCP Port to which SSH client will connect, and then click OK.
5. Log in to Dominion SX through a web browser. On the Setup > Services page, select TCP port on Direct Port Access Mode, and then click OK.
6. Launch the SSH client, such as Plink or PuTTY. Enter the IP address and change the default TCP Port to connect to the port enabled (for example, `plink -ssh -P 2203 192.168.51.9`).

See ***Direct Port Access*** (on page 47) for details.

Case 3. Using Exclusive Write Access via RSC

1. Purpose: To ensure that you are the only user who has write access to a serial target.
2. After logging in to SX via a web browser, "Port Access" tab is selected by default.
3. Connect to a Port 4 by clicking on the hyperlink labeled "Port 4".
4. The Raritan Serial Console (RSC) application window launches with Write Access enabled (icon indicated in green on status line at the bottom of the window), unless the port has been occupied by another user.
5. In the RSC window, choose Emulator > Get Write Lock (if some other user has previously obtained Write Access, perform "Get Write Access" first from the Emulator menu of RSC). The icon on the status line will display Write Access (Lock) now, meaning now all users can only view the port connection.
6. Log in to the device connected to the port and try interacting with the device using the RSC panel. See Get Write Access for details.
7. To relinquish write lock in the RSC window, choose Emulator > Write Unlock, and the icon on status line will display Write Access again, meaning any other privileged users will re-gain Write Access now.

Case 4. Configuring LDAP

1. Purpose: To configure SX to use LDAP/Active Directory server for login authentication.
2. After logging in to SX via a web browser, choose Setup > Remote Authentication.
3. If the LDAP server has a backup server, enter the same parameters (except the IP address) for the secondary LDAP server.
4. Click OK.

See ***Configuring LDAP*** (on page 39) for details.

Case 5. Creating Power Association Group

1. Purpose: To associate the target server with more than one power outlets physically connected to it.
2. After logging in to SX via a web browser, make sure a power strip has been configured previously (To add a power strip: choose Setup > Power Strip Configuration. See ***Power Strip Configuration*** (on page 208) for details). Choose Setup > Port Power Association List and click Add.
3. Select the SX port connected to the dual-powered server device with which you want to associate outlets from the drop-down menu of Port, and enter a description for it, such as "Internal Web Server Pronto" (see ***Port Power Associations*** (on page 206) for details).
4. Select the Power Strip and outlet from the drop-down menu to match how the device is connected to power. Click Add and the information will appear in the text box as "[Power Strip Name] \ [outlet 1]". Select the same power strip and another outlet, then click Add to add it. Another line will display in the text box as "[Power Strip Name] \ [outlet 2]". Click OK to commit the changes.
5. Choose Setup > Power Association Group List and click Add (see ***Power Association Groups*** (on page 208) for details).
6. Enter a group name and description, then the port ID from the "Available" box (multiple selection is permitted), and click Add to add to the "Selected" box.
7. Click OK to commit changes.

See ***Power Strip Configuration*** (on page 208) for details on how to add power strips to SX management first. If this wasn't already done, see Port Power Associations section to map power strip outlet to a target server connected to an SX serial port, and then see ***Power Association Groups*** (on page 208) for details on how to group multiple power outlets physically connected to that same target server.

Case 6. Performing Factory Reset on SX

1. Purpose: To set SX configuration back to factory defaults through the GUI.
2. Log in to SX via a web browser with your login username and password, such as (admin/raritan).

3. Choose Maintenance > Factory Reset. You will be prompted to confirm your decision.
4. Do not power off SX unit as it reboots with default configuration.
5. You will be re-directed to the login page after the unit is rebooted. If you try to log in for the first time after reset, you'll be advised that you are now in the factory default mode, and promoted for changing password after logging in with default username and password.

See ***Performing a Factory Reset on the SX*** (on page 112) for details.

Case 7. Managing User Profiles on SX

1. Purpose: To create, update, or delete an SX user.
2. Log in to SX via a web browser with your login username and password, such as (admin/raritan).
3. Choose User Management > User List and the page will display a list of user profiles created.
4. To create a user profile, click Add New User.
5. To modify an existing user profile, see ***Modify a User Profile*** (on page 32) for details.
6. To delete an existing user profile, see ***Delete a User Profile*** (on page 33) for details.

See ***Create a User Profile*** (on page 31) for details.

Case 8. Accessing Port Access on SX via RSC

1. Purpose: To access an SX serial target through Raritan Serial Client (RSC).
2. Log in to SX via a web browser with your login username and password, such as (admin/raritan).
3. Choose the Port Access Tab, and click the port name you wish to access, for example, Port 1.
4. Select YES to proceed through security warning(s).
5. The Raritan Serial Console (RSC) will be launched in a separate window - press the Enter key to "wake up" session.
6. Type in target system's native commands in the RSC window/console.
7. Choose Emulator > Exit. Click YES on the confirmation dialog to exit and the RSC window will close.

See ***Raritan Serial Console*** (on page 49) for details.

Case 9. Port Configuration

1. Purpose: To configure SX serial ports to set up correct serial communications parameters (for example, baud rate, data bits, stop bit, flow control) and terminal emulation mode to match the serial targets connected to the ports, and name the ports to more easily identify the targets.
2. Log in to SX via a web browser with your login username and password, such as (admin/raritan).
3. Choose Setup > Port Configuration, check the box associated with the port number you wish to configure, and click Edit.

See ***Port Configuration*** (on page 44) for details.

Case 10. CLI / SSH Connection to SX Port

1. Purpose: To access the SX unit and SX ports using text-based command lines.
2. SSH access from a Windows PC:
    a. Launch the SSH client software (such as Plink or PuTTY).
    b. Enter IP address of SX server (for example, 192.168.0.192) and the TCP port if applicable.
    c. Select SSH (using default configuration port 22), and click Open.
    d. Enter username and password when prompted: `login as: admin password: raritan (default value)`
    e. The console will display all the ports on the SX unit with port numbers.
    f. Enter a port number at the prompt, for example: `admin> 1`
    g. To return to the SX console, enter the escape sequence characters. For example, simultaneously press the control and closed bracket key (]).
    h. To exit the target serial console session, enter the letter "q" to quit. You will be re-directed to the SX console, and the port serial console session is now closed.
3. SSH access from a UNIX Workstation
    a. Enter the following command to log in: `ssh -l admin 192.168.0.192`

b. Enter the admin username and password: `login as: admin` The password prompt appears. Enter the default password: `raritan`

c. The console will display all the ports on SX unit with port numbers.

d. Enter a port number at the prompt, for example: `admin> 1`

e. To return to the SX console, enter the escape sequence characters. For example, simultaneously press the control and closed bracket key (]).

f. To exit the target serial console session, enter the letter "q" to quit. You will be re-directed to the SX console, and the port serial console session is now closed.

See SSH Connection to the Dominion SX for details.

Chapter 1 Preface

The Dominion SX User Guide provides the information needed to install, set up and configure, access devices such as routers, servers, switches, VPNs, and power strips, manage users and security, and maintain and diagnose the Dominion SX secure console server.

In This Chapter

Audience

The primary audiences for this guide are infrastructure administrators and installers who are responsible for installing and setting up devices such as secure console servers. Other interested audiences are operators and observers who use the Dominion SX to reach other devices.

Conventions

This guide uses the following conventions:

Example	Description
/usr/local/java	Monospaced text indicates file names, paths, directories, or screen text.
Enter	Menu items, Key words and Keyboard keys are bold.
<ip address>	Monospaced, italicized text indicate where the user would substitute a value in a command.

Acronyms

This guide uses the following acronyms:

Acronym	Meaning
AD	Active Directory
CC	Command Center
CLI	Command Line Interface

Acronym	Meaning
CSC	Common Socket Connection
DPA	Direct Port Access
HTTP	Hypertext Transfer Protocol
HTTPS	HTTP Secure (over SSL)
LAN	Local Area Network
LDAP	Lightweight Directory Access Protocol
LDAP/S	Lightweight Directory Access Protocol/Secure
NFS	Network File System
NTP	Network Time Protocol
PPP	Point to Point Protocol
RADIUS	Remote Authentication Dial In User Service
RSC	Raritan Serial Console
SMTP	Simple Mail Transfer Protocol
SSH	Secure Shell
SSL	Secure Sockets Layer
SNMP	Simple Network Management Protocol
TACACS+	Terminal Access Controller Access Control System (PLUS)
TLS	Transport Layer Security
UTC	Universal Time Coordinated
VLAN	Virtual Local Area Network
VPN	Virtual Private Network

Notices

Important: Cautionary information that warns of possible affects on the users, corruption risks, and actions that may affect warranty and service coverage.

Note: General information that is supplemental to the text.

Chapter 2 Introduction

In This Chapter

Dominion SX Overview

The Dominion SX Series of Serial over IP Console Servers offers convenient and secure remote access and control through LAN/WAN, Internet, or Dial-up modem to all networking devices.

The Dominion SX:

- Provides a non-intrusive solution for managing network elements and does not require any installation of software agents on the target device
- Connects to any networking device (server, firewall, load balancer, and so forth) through the serial port and provides the ability to remotely and securely manage the device using a Web browser

Dominion SX is a fully configured stand-alone product in a standard 1U high 19" rack mount chassis.

Product Features

Comprehensive Console Management

- Remote Management: Access, monitor, administer, and troubleshoot up to 48 target devices (depending on the model) via Secure Socket Shell (SSH), Telnet, Local Port, or Web browser with only one IP address.
- Direct Port Access via TCP/IP address per port; or one IP address and TCP Port numbers.
- Notification: Create notification messages by email alerts.
- Collaborative Management and Training: Access ports simultaneously; up to 10 users per port at any time.
- SecureChat™: "Instant message" and other Secure Sockets Layer (SSL) users can securely collaborate on device management, troubleshooting, and training activities.
- Get History: Get up to 256 KB (64KB on units with 64MB SDRAM; 256KB on units with 128MB SDRAM) of recent console history to assist with debugging.
- Supports VT100, VT220, VT 320, and ANSI terminal emulation.
- Up to a 5,000 line copy-paste buffer.
- Local port access.
- SNMP traps.
- SYSLOG.
- Logging to Network File System (NFS) Server.
- Comprehensive SNMP traps.
- Port alerts with keyword triggers.
- Three Levels of User Access:
  - Administrator: Has read and write access to the console window; can modify the configuration of unit.
  - Operator: Has read and write access to the console window; cannot modify the configuration of unit (except own password).
  - Observer: Has read-only access to the console window; cannot modify the configuration of unit (except own password).

Strong Security and User-Authentication

- SSHv2 Support
- Encryption Security: 128-bit SSL handshake protocol and RC4 encryption.
- User Authentication Security: local database, remote authentication
- Supports RADIUS, TACACS+, LDAP, LDAP(S), Microsoft Active Directory, and NTP.
- Supports user-defined and installable security Certificates.

Reliable Connectivity

- Optional Modem Connectivity: For emergency remote access if the network has failed.
- Target Device Connectivity: Simplified RJ45-based CAT 5 cable scheme; serial port adapters are available from Raritan.
- Local Access for "crash-cart" applications.

See ***Connectivity*** (on page 233) for a list of necessary Dominion SX hardware (adapters and/or cables) for connecting the Dominion SX to common Vendor/Model combinations.

Simplified User Experience

- Telnet
- SSH
- Browser-based Interface: The new GUI provides intuitive access to target devices (click the appropriate button to select the desired target device).
- Upgrades: Built-in firmware upgrade capability through FTP or LPA and integrated with Command Center (CC) and SSH.

Package Contents

Each Dominion SX ships with the following:

- (1) Dominion SX unit with mounting kit (rack-mount kit is optional on some units)
- (1) Raritan Dominion SX User Guide CD-ROM, which contains the installation and operations information for the Dominion SX
- (1) Printed Dominion SX Quick Setup Guide
- (1) Power cord
- (1) Release Notes
- (1) Packing List page
- (1) RJ45 serial loop-back plug
- (1) DB9 Factory Reset Adapter for some units (Other units have a reset switch and do not require an adapter.)

Chapter 3 Installation

There are two ways of completing the initial network installation of the Dominion SX:

- Using a serial cable with a VT100/equivalent, such as a PC with HyperTerminal
- Using Ethernet (with an installation computer)

This section describes the steps necessary to configure Dominion SX for use on a local area network (LAN). The following table describes the factory default network settings that come with the Dominion SX. After units are connected to the network, these factory default settings allow you to configure the Dominion SX for normal use.

Default Network Settings	
Internet Address (IP)	192.168.0.192
Gateway Address	192.168.0.192
Subnet Mask	255.255.255.0
CSC Port Address	5000
Port Address for CC Discovery	5000
Username	admin (all lowercase)
Password	raritan (all lowercase)

Note: The settings listed in the table above are applicable only if no DHCP server is running on the network. If a DHCP server is running on a local network, the Dominion SX unit is assigned a different IP address than the default by the DHCP server.

In This Chapter

Pre-Installation

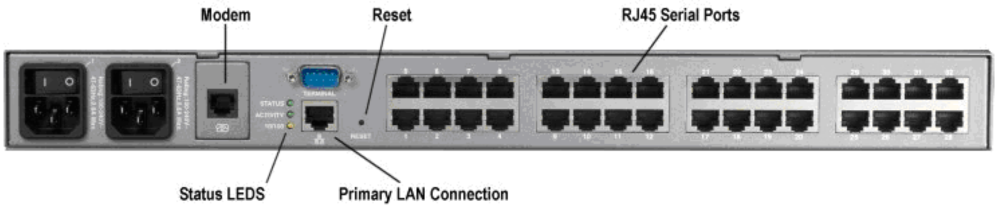
Ensure that you have the correct cabling ready to connect to the serial consoles of the target server(s) or other serially managed devices that provide a console port.

The following sections describe information that you must supply to complete the configuration of the Dominion SX. Obtain all required configuration information prior to performing the configuration steps. If you are uncertain of any information, contact your system administrator for assistance.

Client Configuration

1. Disable Proxies in the installation computer web browser.
   Use "no Proxies" or temporarily add 192.168.0.192 to the list of URLs for which no proxy is configured.
2. Enable Java Applet Execution in the installation computer web browser for the console client application (RSC).
3. Access the unit through your installation computer Web browser on the same subnet by typing the URL https://192.168.0.192 in the address bar.

Hardware Installation



Physical Installation of Dominion SX for Initial Configuration

1. Use a computer with a network card and crossover network cable. This computer will be referred to as the 'installation computer.'
2. Physically mount the unit in an ergonomically sound manner. The unit is designed to be easily rack-mounted, and rack mounting is recommended.
3. Connect the crossover network LAN cable to the primary LAN connection (LAN 1 on models with two Ethernet interfaces) on the back of the chassis.
4. Connect the other end of the network LAN cable to the network card in the installation computer.

5. Connect the female end of the external power cord to the back of the chassis.
6. Connect the male end of the external power cord to the power supply outlet.
7. Power ON the Dominion SX unit.

Note: The unit will perform a hardware and firmware self-test, then start the software boot sequence, which takes a short time. It is complete when the light turns on and remains on.

After completion of the hardware and firmware self-test and the software boot sequence, perform the initial configuration tasks using the Graphical User Interface (GUI) or the Command Line Interface (CLI) as described in the following sections.

LED State

On the front panel of the Dominion SX unit, there are LED indicators on each side of the device. The green LED will be lit at the same time the blue LED is lit. The blue LED indicator will blink blue in the following three cases:

1. Ethernet packets are received or transmitted.
2. Serial data are received or transmitted.
3. Watchdog timer is reset to 0. The LED blinks on a periodic basis as the watchdog timer reaches a certain value, and then is reset to 0.

Initial Configuration Using the Graphical User Interface (GUI)

To initially configure the Dominion SX unit from the GUI , follow these steps.

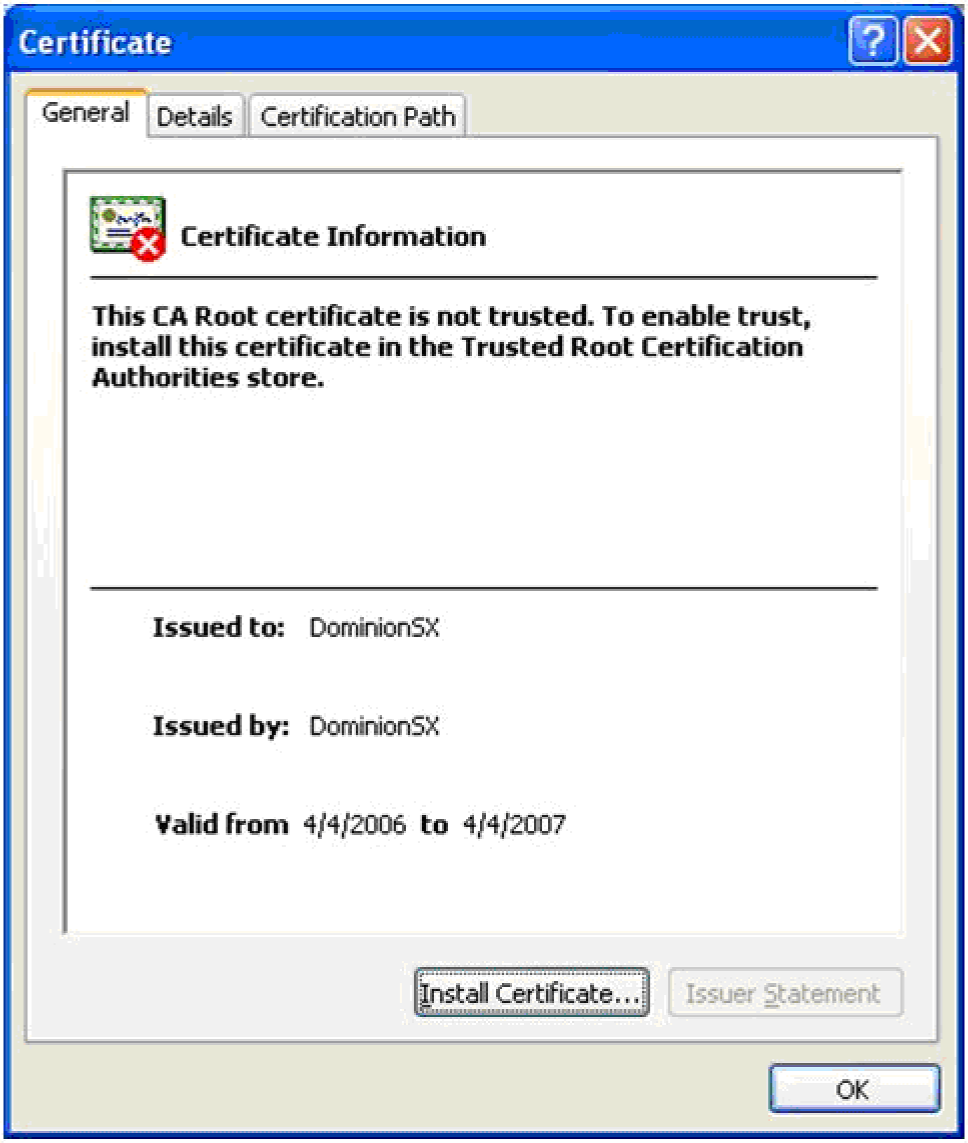
Network Access

1. Ensure that the installation computer has the route for 192.168.0.192 and that it can communicate with IP address 192.168.0.192.
2. To check the route table in Windows, type the command route print in a Command window on the installation computer. If 192.168.0.192 is on the gateway list, proceed to step 3. Otherwise, add 192.168.0.192 to the gateway list using the appropriate DOS or UNIX CLI command:
   - Windows 98/2000/NT system: `route add 192.168.0.192 <INSTALLATION COMPUTER IP ADDRESS>`.
     [Example: `route add 192.168.0.192 15.128.122.12`

- UNIX (including Sun Solaris) system:
  `route add 192.168.0.192 <CLIENT_HOST IP ADDRESS> -interface`.
  [Example: `route add 192.168.0.192 15.128.122.12 -interface`]

3. Type `ping 192.168.0.192`. Go to step 4 if you receive a successful reply from the Dominion SX unit. If an error occurs, verify that the default IP address is entered correctly and that a route to that IP address exists.
4. Use the installation computer to connect to the unit by launching a browser and typing the factory default IP address 192.168.0.192 in the Web browser's address bar.
5. The computer displays the security screens before you can log in.

6. If you click View Certificate on the Security Alert-Certificate page, a Certificate dialog appears.



This CA Root certificate is not trusted. To enable trust, install this certificate in the Trusted Root Certification Authorities store.

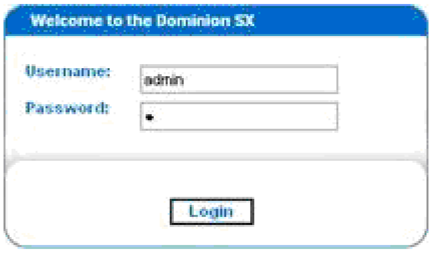
Issued to: DominionSX

Issued by: DominionSX

Valid from 4/4/2006 to 4/4/2007

See ***Security*** (on page 78) and ***Appendix C: Certificates*** (see "Certificates" on page 244) for information about installing certificates.

The login dialog appears after you finish viewing the security alerts and the Certification Information screen.



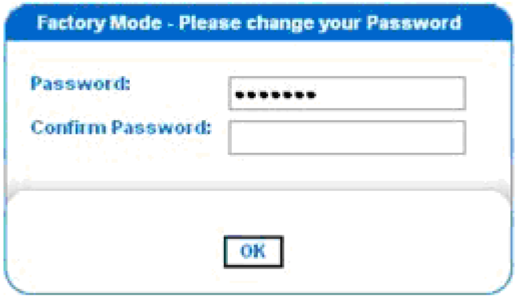
Welcome to the Dominion SX

Username: admin

Password: •

Log in with the default username admin and password raritan. Use all lowercase letters.

7. After login, the Dominion SX prompts you to change the default password:



Factory Mode - Please change your Password

Password: ••••••••

Confirm Password:

8. Type a new secure password then retype it (Remember the new password for next login.)
9. Click OK. The Dominion SX Port Access page opens. (See ***Initial Software Configuration*** (on page 16) for details.)

Initial Configuration Using the Command Line Interface

To initially configure the Dominion SX unit from the Command Line Interface, follow the steps below.

1. Connect the serial port of your Installation Computer to the Terminal serial port on your Dominion SX. This port is a DB9-Male port on most models, except ALL dual-power dual-LAN models, including DSXA-48, which have an RJ45 connector for a terminal port.
2. Open a terminal emulation program, such as HyperTerminal, to connect to the Dominion SX unit. The serial communication parameters are 9600 bps, No parity, 8 data bits, 1 stop bit and None flow control.
3. Power ON the Dominion SX.
4. Log in using the default username admin and the default password raritan when prompted.
   Once logged in, a prompt to change the password appears.

5. Type a new password, and then retype it (Remember this password). A page opens, showing the Dominion SX unit's status and serial channel ports.

Note: If the password entered does not follow the password rules, an error message will appear as a warning. You will be logged out and must start over to set your password.

Network Access

1. Ensure that the installation computer has the route for 192.168.0.192 and that it can communicate with IP address 192.168.0.192.
2. To check the route table in Windows, type the command route print in a Command window on the installation computer. If 192.168.0.192 is on the gateway list, proceed to step 3. Otherwise, add 192.168.0.192 to the gateway list using the appropriate DOS or UNIX CLI command:
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     [Example: `route add 192.168.0.192 15.128.122.12`]
   - UNIX (including Sun Solaris) system:
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     [Example: `route add 192.168.0.192 15.128.122.12 -interface`]
3. Type `ping 192.168.0.192`. Go to step 4 if you receive a successful reply from the Dominion SX unit. If an error occurs, verify that the default IP address is entered correctly and that a route to that IP address exists.
4. Use the installation computer to connect to the unit by launching a browser and typing the factory default IP address 192.168.0.192 in the Web browser's address bar.

Set Date and Time

1. Type `Configuration` to change the unit's configuration.
2. Type `Time` to select the Date / Time configuration.
3. Type `Timezonelist` and find the numerical code that corresponds to your time zone.
4. Type `clock [tz timezone] [datetime datetime-string]`. For example:

   ```
   admin > Config > Time > clock tz 9 datetime "2007-02-05 09:22:33"
   ```

   In this example, 9 is the time zone code (Step 3) and "2007-02-05 09:22:33" the date/time string in the format "YYYY-MM-DD HH:MM:SS" (quotes required).

Network Configuration

1. Type `Configuration` to change the unit's configuration.
2. Type `Network` to select the network configuration.
3. Type:
   ```
   admin > Config > Network > interface enable true if
   lan1 ip 192.16.151.12 mask 255.255.255 gw
   192.168.51.12
   ```
   Upon successfully entering the data, a report will display the new network configuration and you will be prompted to reboot the unit.
4. Type `yes` to reboot the Dominion SX.
5. Remove the serial cable.
6. Reconnect from the installation computer browser to the Dominion SX using the new IP address and password.

User Configuration

1. Type `Configuration` to change the unit's configuration.
2. Type `Users` to select the user configuration.

To Add a User Group

Type `addgroup name <group name> class <class type> ports <n1,n2,n3...>` where <group name> is the name of the group and <class type> is

- Op for operator
- Ob for observer

<n1,n2,n3...> is a list of port numbers to which this group has access, separated by commas but no spaces. You can configure port ranges using the same parameters, or use the wildcard asterisk (*). For example:

- "config port 3-7 exitstring #0" (this disables exit strings for ports 3,4,5,6,7)
- config port * bps 115200 (this sets all ports to a communications speed of 115200 bps)

To Add a User

1. Type `adduser user <user name> fullname <full name> group <group name> password <password> info <information> dialback <dialback number> active <status>` where:
   - <user name> is user's login name

- <full name> is a user's descriptive name (no spaces)
- <group name> is the user's assigned group
- <password> is the user's password
- <information> is extra information (optional, no spaces)
- <dialback number> is the user's phone number (optional)
- <status> is true or false, allowing the user to login or not

2. Type `top` to return to the top level of the CLI menu.

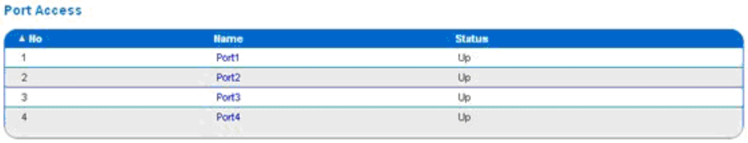
Chapter 4 Initial Software Configuration

After the hardware installation, perform the initial software configuration. Log in to the Dominion SX from either a browser or through a Command Line Interface (see ***Command Line Interface*** (on page 117) for CLI information).

In This Chapter

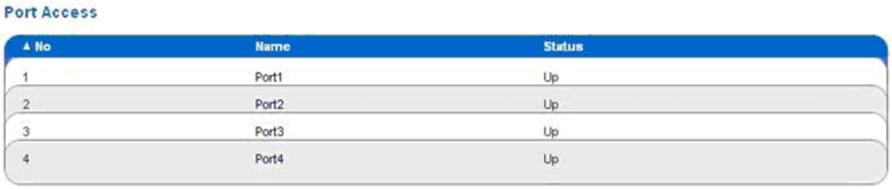
Dominion SX Initial Software Configuration

1. Log in to the Dominion SX using your new password. A Port Access page opens according to your user type:



Port Access

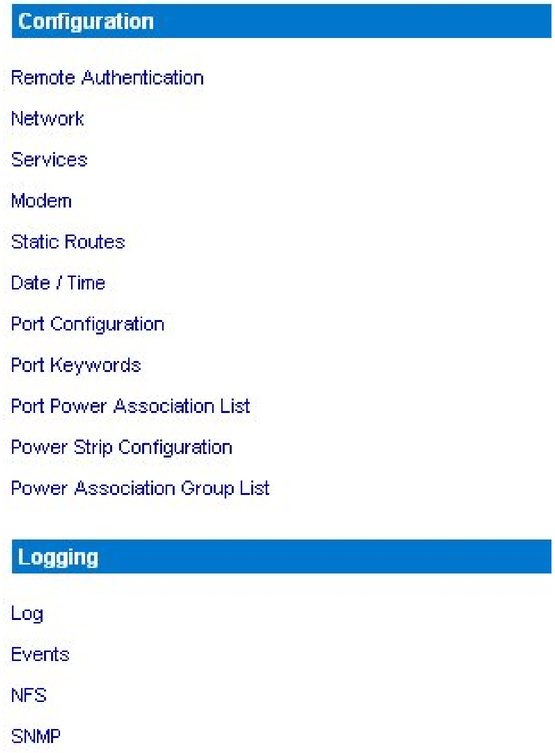
▲ No	Name	Status
1	Port1	Up
2	Port2	Up
3	Port3	Up
4	Port4	Up



Port Access

▲ No	Name	Status
1	Port1	Up
2	Port2	Up
3	Port3	Up
4	Port4	Up

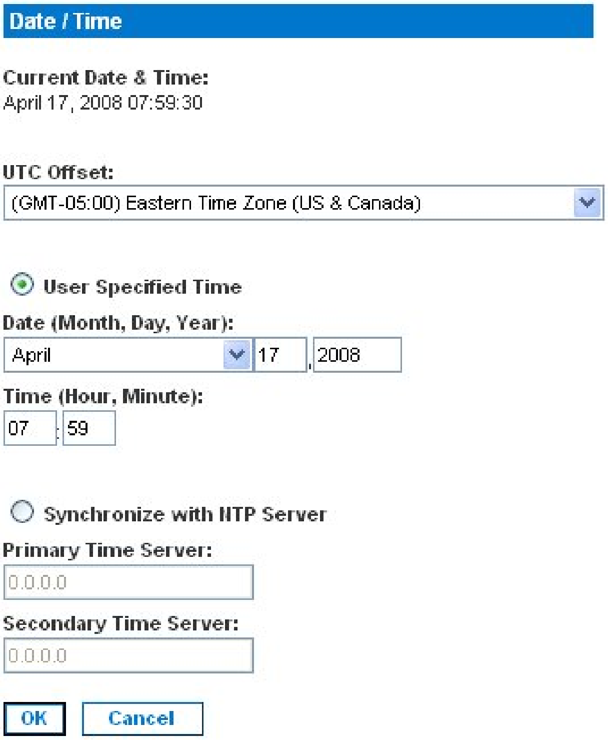
2. Click the Setup tab. The Setup page opens, containing links to the Configuration and Logging pages.



Important: After you complete each configuration task, you must return to the Setup tab to perform the next configuration task.

Date / Time Configuration

1. Choose Setup > Date / Time. The Date / Time Configuration page opens.



Date / Time

Current Date & Time:
April 17, 2008 07:59:30

UTC Offset:
(GMT-05:00) Eastern Time Zone (US & Canada)

● User Specified Time

Date (Month, Day, Year):
April 17 , 2008

Time (Hour, Minute):
07 : 59

○ Synchronize with NTP Server

Primary Time Server:
0.0.0.0

Secondary Time Server:
0.0.0.0

2. Select the correct time zone from the UTC Offset drop-down menu.
3. Select one of the following:
   - User Specified Time - Click this radio button and enter the date and time manually in the corresponding fields.
   - Synchronize with NTP Server - Click this radio button and enter the IP address of a Network Time Protocol (NTP) server in the Primary Time Server. If you have a backup NTP server, enter its IP address in the Secondary Time Server field.
4. Click OK.

Note: Features such as certificate generation depend on the correct Timestamp, used to check the validity period of the certificate. In addition, the Syslog and NFS logging features also use the system time for time-stamping log entries.

After you click OK, the system displays one of the following pages:

- A confirmation page, which contains the settings you chose and a confirmation message at the top of the page.

  Date / Time Settings successfully applied.

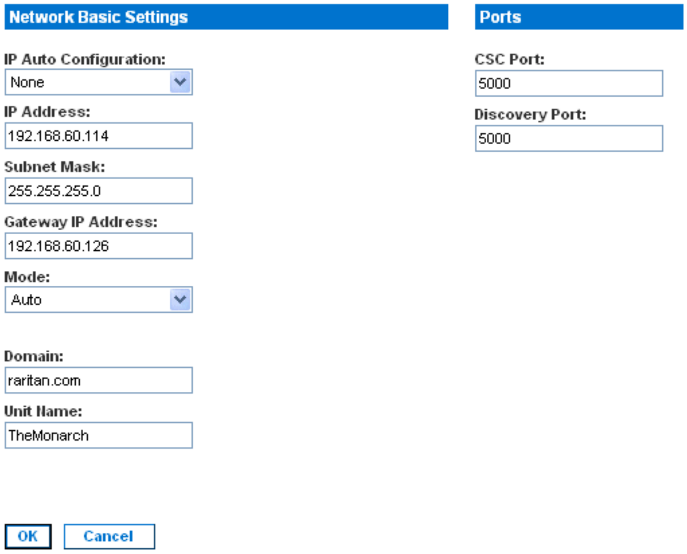
- An error page, which contains the original Date / Time page and the error message.

  ERROR: Date / Time Settings NOT successfully applied.

Network Configuration

1. Choose Setup > Network. The Network Configuration page opens.

   Note: If you have a dual LAN model, there is an Enable Ethernet Failover checkbox that is selected by default, but can be deselected. The page below represents a single LAN model and does not show this checkbox.



Network Basic Settings

IP Auto Configuration: None

IP Address: 192.168.60.114

Subnet Mask: 255.255.255.0

Gateway IP Address: 192.168.60.126

Mode: Auto

Domain: raritan.com

Unit Name: TheMonarch

Ports

CSC Port: 5000

Discovery Port: 5000

Note: Your network administrator usually assigns the values for the following parameters:

2. Type the data in the following fields:
   - IP Auto Configuration: In the drop-down menu, select either None or DHCP to be your network protocol. The default is DHCP. If DHCP is unavailable, the device will use the last IP entered, such as the default factory setting of 192.168.0.192.
   - IP Address: Network address for this unit.
   - Subnet Mask: Subnet mask for the network where this unit will reside.
   - Gateway IP Gateway: Default gateway for this unit.

3. Select the Mode from the Mode drop-down menu. Default is Auto.
4. Type the Domain Name in the Domain field.
5. Type the Unit Name in the Unit Name field.
6. In the Ports section:
   - Type 5000 or another port number in the CSC Port field.
   - Type 5000 or another port number in the Discovery Port field.
7. Click OK.

Dominion SX displays either a confirmation or error page.

1. Click OK when the confirmation window appears. After the confirmation page, Dominion SX automatically disconnects to update the configuration then restarts.
2. Remove the crossover cable between the SX unit and your computer.
3. Connect one end of a straight-through Cat 5 cable to the SX.
4. Connect the other end of the cable to the network.
5. Use the newly assigned IP Address to access your SX unit.

Deployment

1. You can remotely access the Dominion SX through a LAN connection or a modem connection (optional).
2. The Dominion SX can access target devices only through a serial connection.

LAN Connection

After the initial software configuration phase, configure the SX unit for operation on the LAN.

1. Ensure that you have an Ethernet cable connected to the network for use with the unit.
2. Physically mount the unit in an ergonomically sound manner.
3. Connect the LAN cable to the primary LAN connection (LAN 1) on the back of the chassis. If the unit has a failover module, connect the secondary network LAN connection (LAN 2).
4. Perform a quick connectivity check by connecting to the device using the Web browser.
5. Enter `https://<IPAddress>` in the address line, where `<IPAddress>` is the IP address of the unit as previously configured.

Note: The login display should appear verifying that the unit has been properly configured and can be accessed from the network.

6. Log in with username admin and the password you created earlier.
7. On the Home page, click the Setup tab and select the various configuration options for configuring the SX and each console port.

Modem Connection (Optional)

▶ **To configure the SX for a modem connection:**

1. Connect a phone line to the modem port.
2. Write down the phone number for this line because it will be needed when you configure a client for dialup networking.

See ***Appendix E: Modem Configuration*** (see "Modem Configuration" on page 266) for details.

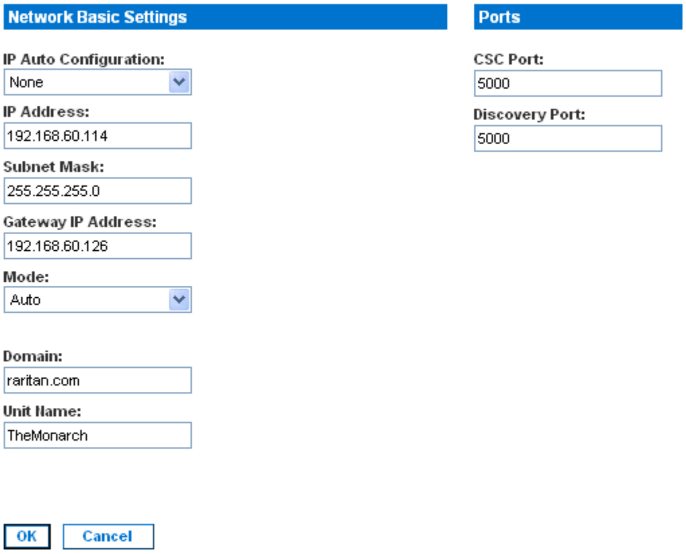
Chapter 5 Network Settings and Services

This chapter explains how to configure the basic network settings for the SX and how to configure the various access protocols (SSH, telnet, and so forth). It also explains how to configure the SX for modem access and how to enable IP forwarding and create static routes.

In This Chapter

Configuring the Basic Network Settings

To configure the basic network settings and discovery ports, choose Setup > Network. The Network Basic Settings and Ports page opens.



IP Auto Configuration: None

IP Address: 192.168.60.114

Subnet Mask: 255.255.255.0

Gateway IP Address: 192.168.60.126

Mode: Auto

Domain: raritan.com

Unit Name: TheMonarch

CSC Port: 5000

Discovery Port: 5000

Give the Dominion SX a Name

▶ **To give the SX unit a name to help identify it:**

1. Type a name in the Unit Name field.
2. Click OK.

Configure the Network Settings of Dominion SX

To configure the network settings:

1. Select either None or DHCP from the drop-down menu to determine a method for IP Auto Configuration. The default is DHCP.
2. Type an IP address for the Dominion SX in the IP Address field.
3. Type the subnet mask in the Subnet Mask field.
4. Type the IP address of the gateway router in the Gateway IP Address field.
5. Select the speed from the drop-down menu in the Mode field. Your choices are Auto (default) or 100 Mbps.
6. Type your domain name in the Domain field.
7. Click OK.

Change the Discovery Ports

The Dominion SX has two discovery ports:

- TCP 5000 Common Socket Connection (CSC) discovery
- UDP 5000 Command Center (CC) discovery

If either of these ports is used by another application, you can change the discovery port number in the Dominion SX in the appropriate field and click OK.

Note: The port range for internal port configuration (CSC, HTTP, HTTPS, SSH, Telnet, DPA SSH , DPA Telnet) is 1 ~ 64510, while the configurable port range for socket creation is limited to 1024 ~ 64510. External port configuration (LDAP,RADIUS,TACACS+,SNMP) is not affected by this port range limitation, but allowed with full range of configuration.

Configuring the Network Service Settings

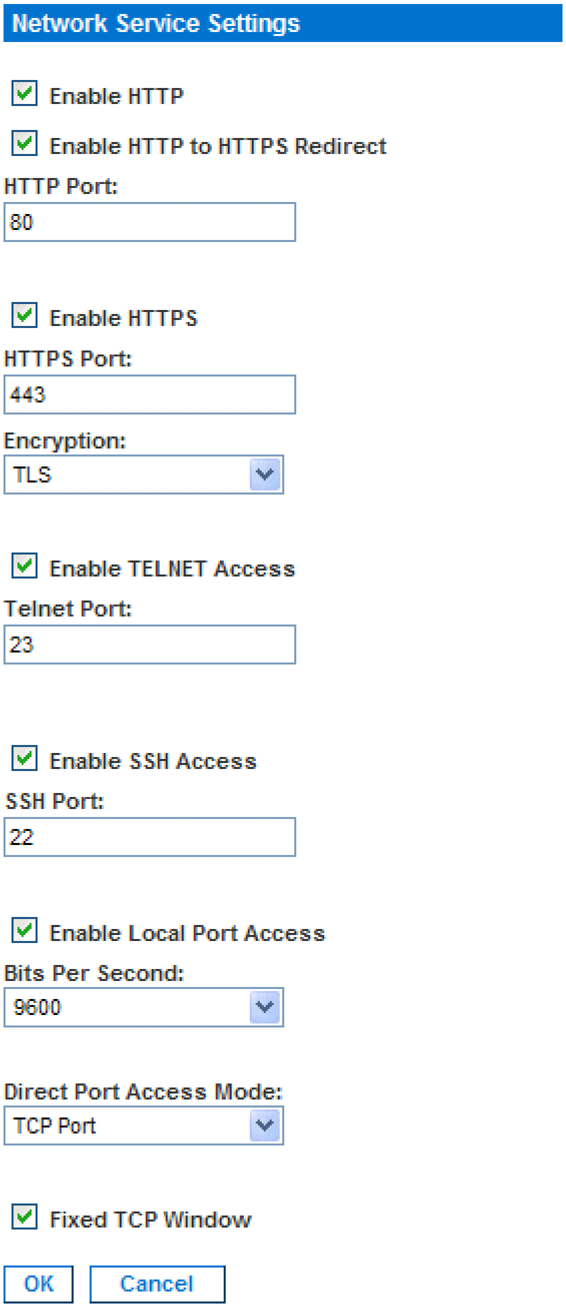
The table below indicates the default settings for the various network access services:

Service	Default Setting
HTTP	Enabled. The default port is 80. This can be changed. HTTPS redirect is enabled by default. If HTTPS is also enabled, all HTTP requests are automatically redirected to the HTTPS port (see below).

Service	Default Setting
HTTPS	Enabled. The default port is 443. This can be changed. Encryption is set to SSL, but this can be changed to TLS.
Telnet	Disabled for security reasons. This can be enabled and the port configured.
SSH	Disabled by default. This can be enabled and the port configured. The configurable option labeled Fixed TCP Window is enabled by default when SSH access is enabled, making SSH connection work under Windows Vista.
Local Port Access	Enabled. The baud rate is set to 9600 bps, but this can be changed.
Direct Port Access	Set to Normal by default, but this can be changed to IP or TCP port.

Change Network Service Settings

1. Choose Setup > Services. The Network Service Settings page opens.



Network Service Settings

☑ Enable HTTP

☑ Enable HTTP to HTTPS Redirect

HTTP Port: 80

☑ Enable HTTPS

HTTPS Port: 443

Encryption: TLS

☑ Enable TELNET Access

Telnet Port: 23

☑ Enable SSH Access

SSH Port: 22

☑ Enable Local Port Access

Bits Per Second: 9600

Direct Port Access Mode: TCP Port

☑ Fixed TCP Window

2. Make any necessary changes to the appropriate fields.

3. Fixed TCP Window is checked by default, enabling SSH connection to work under Windows Vista OS's.

   Note: Some Operating Systems may require TCP window scaling for successful SSH connections, in which case, the 'Fixed TCP Window' option needs to be disabled.

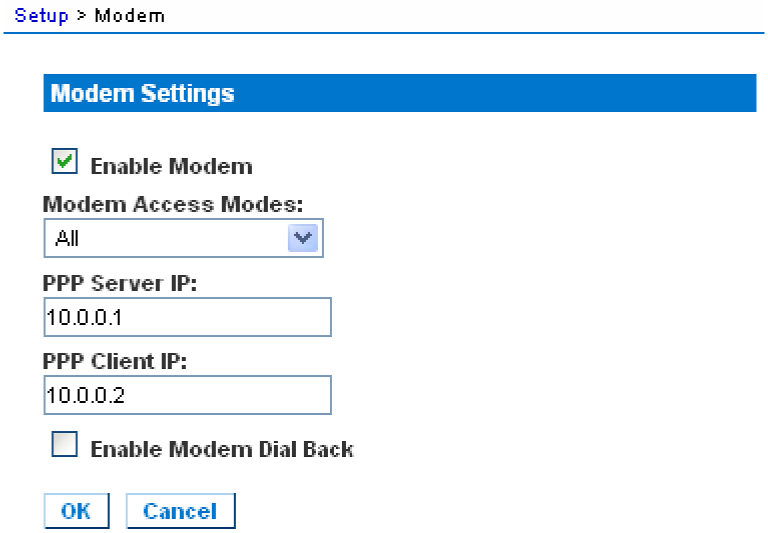
   Note: Customers experiencing slow SSH connectivity in Dominion SX 3.1.5 or select theDominion SX 3.1.6 after upgrading to Dominion SX 3.1.7 should enable the ssh enable true setting to avoid this issue in the future.

4. Click OK.

Configuring Modem Access

▶ To set up SX access via a modem:

1. Choose Setup > Modem. The Modem Settings page opens.



Setup > Modem

Modem Settings

☑ Enable Modem

Modem Access Modes: All

PPP Server IP: 10.0.0.1

PPP Client IP: 10.0.0.2

□ Enable Modem Dial Back

2. Select the Enable Modem check box to enable modem access.
3. For the Modem Access Mode, do one of the following:
   a. Select All to allow modem access to all modems. Looks for a PPP signal and falls back to allow console access if the PPP signal is not detected. In this mode, Modem Dial Back cannot be enabled.
   b. Select PPP Only to allow only PPP connections. Allows GUI, SSH and Telnet access (if enabled).

   c. Select Console Only to allow only console connections. Allows only CLI access through a terminal emulation programs such as Hypertreminal.

4. If you selected All or PPP Only as the modem access mode:

   a. Type the IP addresses of the Point-to-Point (PPP) server in the PPP Server IP field. The default is 10.0.0.1

   b. Type the IP address of the PPP client in the PPP Client IP field. The default is 10.0.0.2.

5. If you selected PPP Only as the modem access mode:

   a. If you want to enable modem dialback, select the Enable Modem Dial Back check box.

6. Click OK. Modem access is enabled. You will then receive a message indicating that the device will need to be rebooted for the modem changes to take effect.

Configuring IP Forwarding and Static Routes

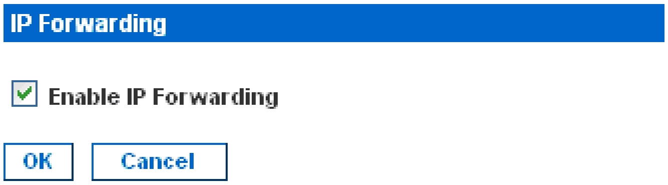
You can enable IP forwarding. You can also create static routes if your SX has two LAN ports or is configured for modem access.

Enable IP Forwarding

▶ **To enable IP forwarding:**

1. Choose Setup > Static Routes. The Static Routes page opens, containing an Enable IP Forwarding panel and a Static Routes List.

2. Go to the IP Forwarding panel and click the Enable IP Forwarding checkbox.



IP Forwarding

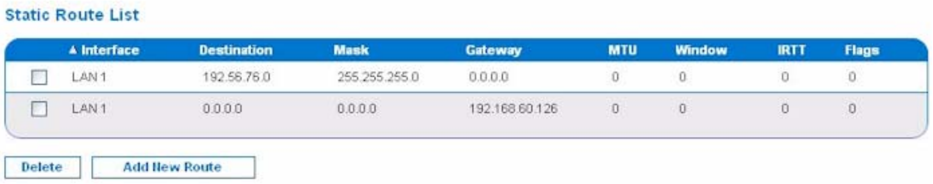
☑ Enable IP Forwarding

3. Click OK. IP forwarding is enabled.

Add a New Static Route

To add a new Static Route:

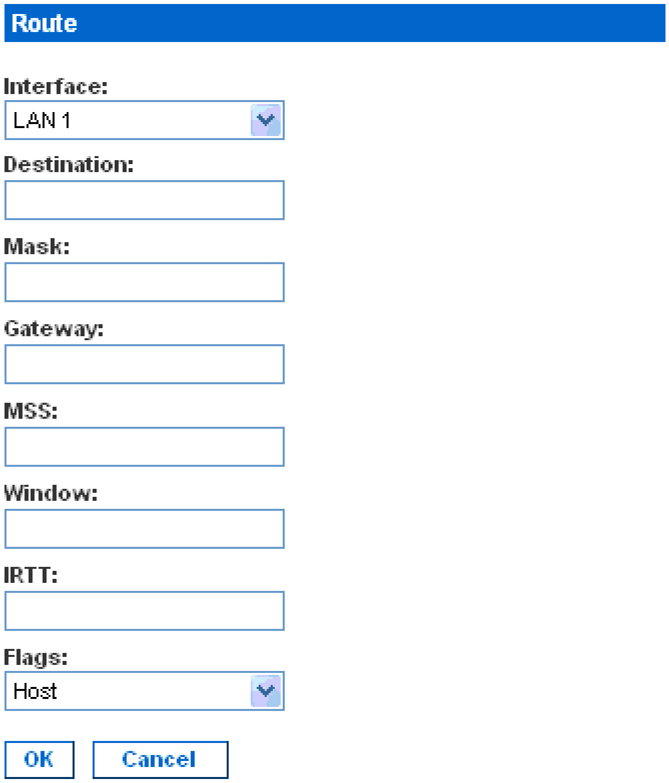
1. Choose Setup > Static Routes. The Static Routes page opens, containing an Enable IP Forwarding panel and a Static Routes List.



Static Route List

	▲ Interface	Destination	Mask	Gateway	MTU	Window	IRTT	Flags
□	LAN 1	192.56.76.0	255.255.255.0	0.0.0.0	0	0	0	0
□	LAN 1	0.0.0.0	0.0.0.0	192.168.60.126	0	0	0	0

2. Go to the Static Routes List and click Add New Route. The Static Route page opens.



Route

Interface: LAN 1

Destination:

Mask:

Gateway:

MSS:

Window:

IRTT:

Flags: Host

3. On an SX with one LAN interface, LAN appears automatically in the Interface field. On an SX with two LAN interfaces, select the one you want from the drop-down menu in the Interface field.
   - LAN1 = eth0
   - LAN2 = eth1

4. Type the IP address, subnet mask, and gateway of the destination host in the Destination, Mask, and Gateway fields.
5. Type the TCP maximum segment size (MSS) in bytes in the MSS field.
6. Type the TCP windows size for connections over this route in bytes in the Window field.
7. Type the initial round trip time (IRTT) for TCP connections over this route in milliseconds (1-12000) in the IRTT field.
8. 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.
9. Click OK.

Delete a Static Route

▶ **To delete a static route:**

1. Choose Setup > Static Routes. The Static Routes page opens, containing an Enable IP Forwarding panel and a Static Routes List.
2. Go 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.

Chapter 6 User Profiles and Groups

This chapter explains how to create and manage user profiles and user groups.

In This Chapter

Managing User Profiles

User profiles serve two purposes:

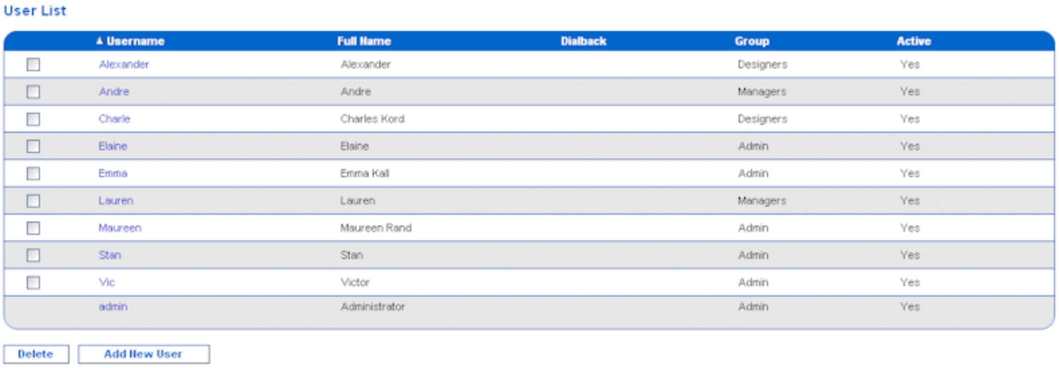
- To provide users with a username and password to log into the SX.
- To associate the user with a user group. The user group determines which system functions and ports the user can access.

The SX is shipped with one user profile built in: the admin user. This profile is associated with the Admin user group and has full system and port permissions. This profile cannot be modified or deleted.

You can create as many other user profiles as necessary. You can create individual user profiles for each person who will be logging into the SX, or you can create a limited number of profiles and allow more than one person to use each profile.

Display a List of User Profiles

1. To display a list of existing user profiles, choose User Management > User List. The User List page opens.



User List

	▲ Username	Full Name	Dialback	Group	Active
□	Alexander	Alexander		Designers	Yes
□	Andre	Andre		Managers	Yes
□	Charle	Charles Kord		Designers	Yes
□	Elaine	Elaine		Admin	Yes
□	Emma	Emma Kall		Admin	Yes
□	Lauren	Lauren		Managers	Yes
□	Maureen	Maureen Rand		Admin	Yes
□	Stan	Stan		Admin	Yes
□	Vic	Victor		Admin	Yes
	admin	Administrator		Admin	Yes

2. The User List page shows every user profile created to date, and for each one, lists:
   - Username
   - Full name

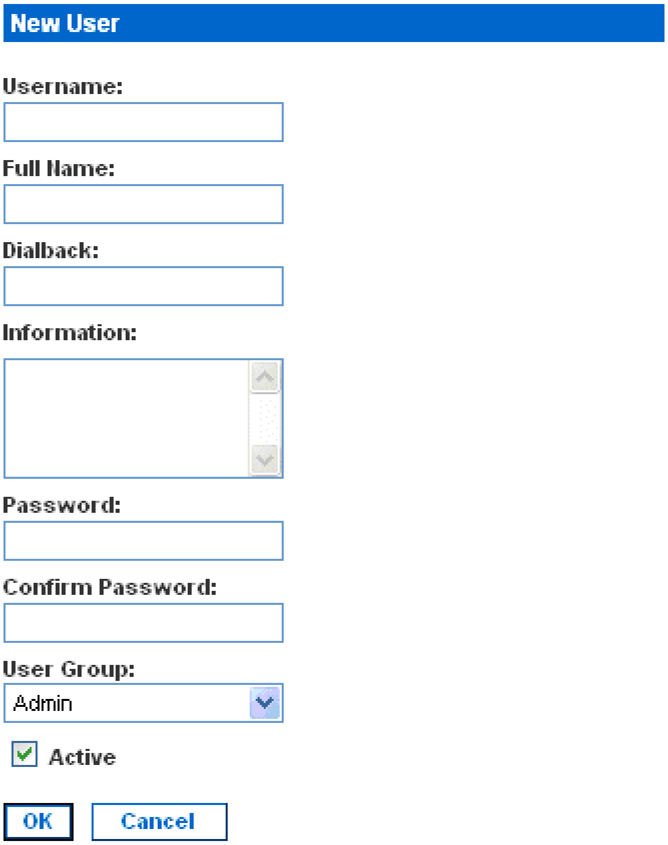
- Dialback number (if one has been defined)
- User group

3. The User List page also indicates whether the user profile is active or inactive.

Create a User Profile

▶ To create a new user profile:

1. Choose User Management > User List. The User List page opens (as shown in ***Display a List of User Profiles*** (on page 30)).
2. Click Add New User. The New User page opens.



New User

Username:

Full Name:

Dialback:

Information:

Password:

Confirm Password:

User Group:

Admin

☑ Active

3. Type a login name in the Username field. This is the name the user enters to log into the SX. This field is required.
   - You can enter any number of characters up to a maximum of 255.
   - You can enter any printable character except " > <
   - The user name is case sensitive.

4. Type the user's full name in the Full Name field. This field is required.
5. Type the user's telephone number in the Dialback field. This field is optional.
6. Type any comments about the user profile in the Information field. This field is to help you identify the profile and is optional.
7. Type the password in the Password field, and then type it again in the Confirm Password field. This field is required.
   - You can enter any number of characters up to a maximum of 64.
   - You can enter any printable character.
   - The password is case sensitive.

Note: If the strong password feature is enabled, there are other password requirements. See **Port Configuration and Port Access Application** *(on page 42) for details.*

8. Select a user group from the drop-down menu in the User Group field. By default, the Admin group is entered.

Tip: If the user group you want has not yet been created, you can create it and then return to the user profile and select it. For now, keep the default.

9. 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.
10. Click OK. The user profile is created and should appear in the User List page.

Modify a User Profile

▶ To modify an existing user profile:

1. Choose User Management > User List. The User List page opens (as shown in ***Display a List of User Profiles*** (on page 30)).
2. Click the Username of the profile you want to edit. The Edit User page opens. It looks exactly like the New User page (as shown in ***Create a User Profile*** (on page 31)).
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 Profile

► **To delete an existing user profile:**

1. Choose User Management > User List. The User List page opens (as shown in ***Display a List of User Profiles*** (on page 30)).
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.

Managing User Groups

User groups serve two purposes:

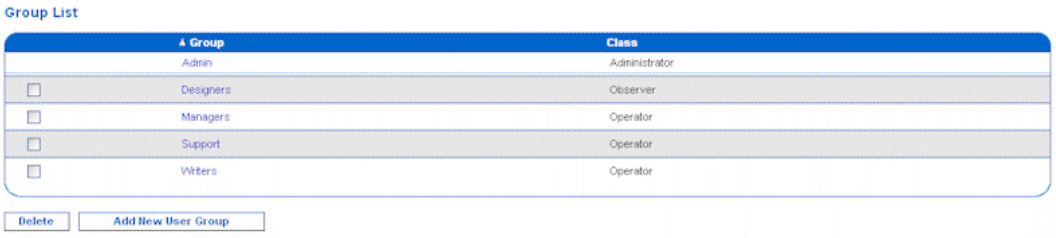
- To determine which system functions the users associated with a group are permitted to perform
- To determine which ports the users associated with a group are permitted to access

The SX is shipped with one user group built in: the Admin user group. Users associated with this group can perform all system functions and access all ports. This group cannot be modified or deleted.

You can create as many other user groups as necessary.

Display a List of User Groups

To display a list of existing user groups, choose User Management > User Group List. The Group List page opens.



Group List

	▲ Group	Class
	Admin	Administrator
□	Designers	Observer
□	Managers	Operator
□	Support	Operator
□	Writers	Operator

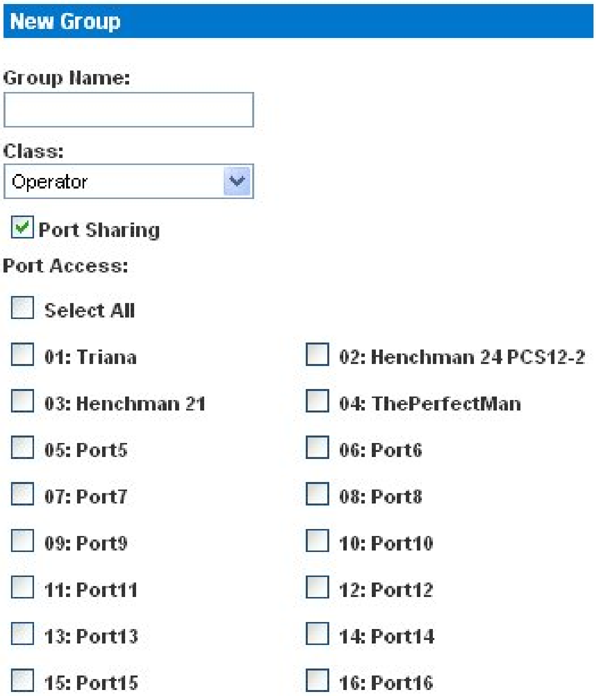
The Group List page shows every user group created to date, and for each one gives the group's name and class.

Create a User Group

► **To create a new user group:**

1. Choose User Management > User Group List. The Group List page opens (as shown in ***Display a List of User Groups*** (on page 33)).

2. Click Add New User Group. The New Group page opens.



New Group

Group Name:

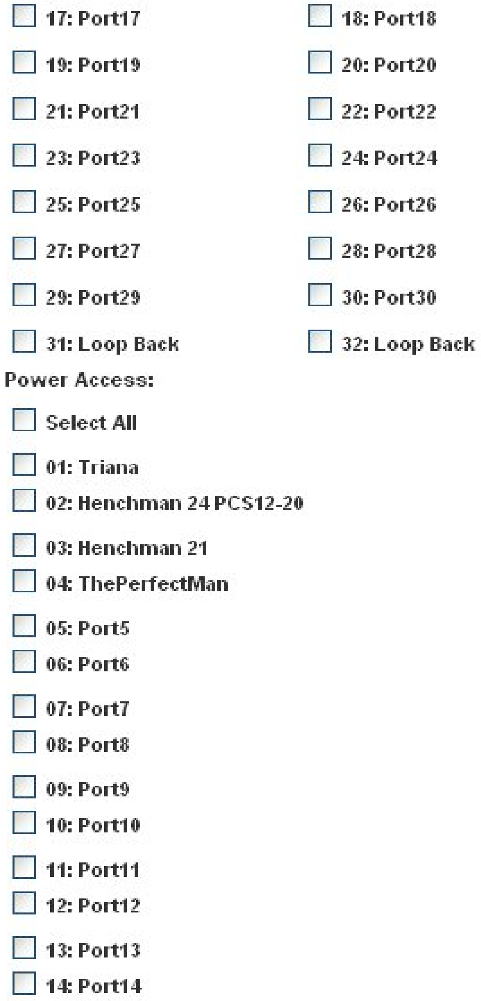
Class: Operator

☑ Port Sharing

Port Access:

□ Select All

□ 01: Triana
□ 02: Henchman 24 PCS12-2
□ 03: Henchman 21
□ 04: ThePerfectMan
□ 05: Port5
□ 06: Port6
□ 07: Port7
□ 08: Port8
□ 09: Port9
□ 10: Port10
□ 11: Port11
□ 12: Port12
□ 13: Port13
□ 14: Port14
□ 15: Port15
□ 16: Port16



□ 17: Port17 □ 18: Port18

□ 19: Port19 □ 20: Port20

□ 21: Port21 □ 22: Port22

□ 23: Port23 □ 24: Port24

□ 25: Port25 □ 26: Port26

□ 27: Port27 □ 28: Port28

□ 29: Port29 □ 30: Port30

□ 31: Loop Back □ 32: Loop Back

Power Access:

□ Select All

□ 01: Triana

□ 02: Henchman 24 PCS12-20

□ 03: Henchman 21

□ 04: ThePerfectMan

□ 05: Port5

□ 06: Port6

□ 07: Port7

□ 08: Port8

□ 09: Port9

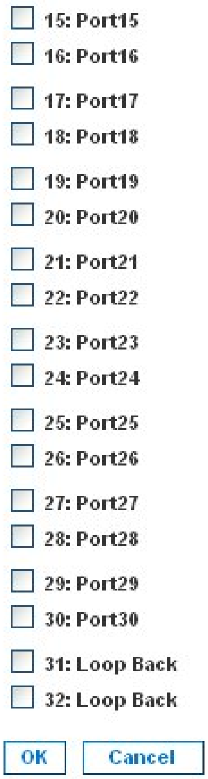
□ 10: Port10

□ 11: Port11

□ 12: Port12

□ 13: Port13

□ 14: Port14



□ 15: Port15
□ 16: Port16
□ 17: Port17
□ 18: Port18
□ 19: Port19
□ 20: Port20
□ 21: Port21
□ 22: Port22
□ 23: Port23
□ 24: Port24
□ 25: Port25
□ 26: Port26
□ 27: Port27
□ 28: Port28
□ 29: Port29
□ 30: Port30
□ 31: Loop Back
□ 32: Loop Back

3. Type a group name in the Group Name field.
   - You can enter any number of characters up to a maximum of 255.
   - You can enter all letters and numbers, as well as the underscore character (_).
   - The user name is case sensitive.
4. Select the class from the drop-down menu in the Class field. Your choices are:
   - Operator - This is the default. Users associated with the Operator class have read/write access to the console window, and cannot change any system configuration parameters except their own password.
   - Observer - Users associated with the Observer class have read-only access to the console window, and cannot change any system configuration parameters except their own password.
5. Port Sharing: By checking this option, 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. (See ***Login Settings*** (see "Login Handling" on page 81) for information about port access mode.)

6. Select the ports that the users associated with this group are permitted to access. You can select all ports or you can select any combination of individual ports.
7. Select the ports for which users associated with the group are allowed to access the power commands. Only administrators can access the power strips via CLI directly.
8. Click OK. The user group is created and should appear in the User List page.

Modify a User Group

▶ To modify an existing user group:

1. Choose User Management > User Group List. The Group List page opens (as shown in ***Display a List of User Groups*** (on page 33)).
2. Click the Group Name of the group you want to edit. The Edit Group page opens. It looks exactly like the New Group page (as shown in ***Create a User Group*** (on page 33)).
3. You can change any of the fields except the Group Name field.
4. Click OK when finished. The user group is modified.

Delete a User Group

▶ To delete an existing User Group:

1. Choose User Management > User Group List. The Group List page opens (as shown in ***Display a List of User Groups*** (on page 33) section).
2. Select the checkbox to the left of the user group you want to delete. You can select more than one.
3. Select Delete. You are prompted to confirm the deletion. Click OK. The selected user group is deleted.

Chapter 7 Remote Authentication

This chapter explains how to configure RADIUS, LDAP, and TACACS+ authentication.

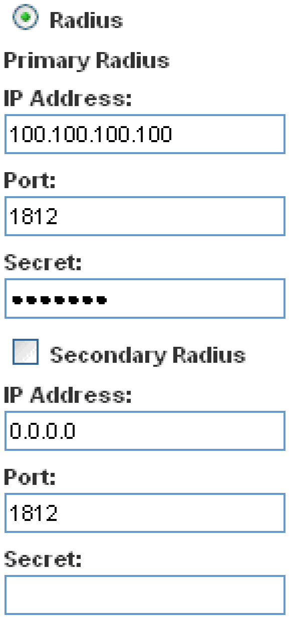
Tip: If you are setting up remote authentication, it is a good idea to keep local authentication enabled. When an authentication request reaches the SX, it looks to authenticate the user remotely first, and then looks to authenticate the user locally. Keeping local authentication enabled ensures that if remote authentication is misconfigured or otherwise unavailable, you are not locked out or the SX because you can always be authenticated locally.

In This Chapter

Configuring RADIUS

You can use Remote Dial-In User Service (RADIUS) to authenticate SX users instead of local authentication. To configure RADIUS:

1. Choose Setup > Remote Authentication. The Remote Authentication page opens, displaying a RADIUS panel.



● Radius

Primary Radius

IP Address: 100.100.100.100

Port: 1812

Secret: ••••••••

☐ Secondary Radius

IP Address: 0.0.0.0

Port: 1812

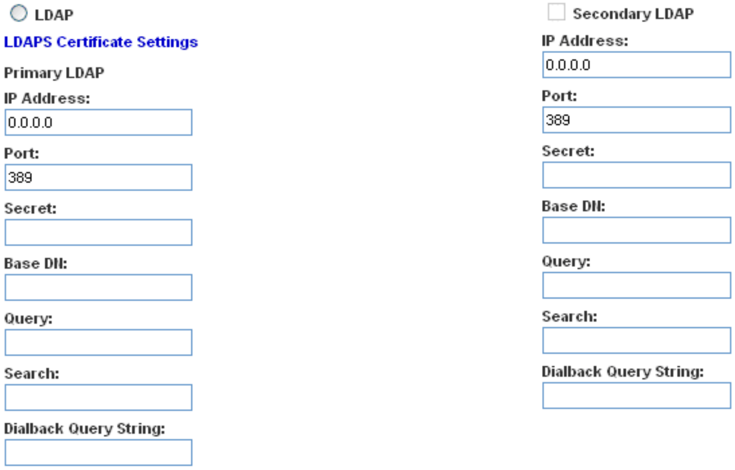
Secret:

2. In the RADIUS panel, click the RADIUS button to enable RADIUS authentication.
3. Under Primary Radius, type the following information:
   - IP address of the RADIUS server
   - Port on which the RADIUS server is listening (default is 1812)
   - Shared secret
4. If you have a backup RADIUS server, enter the same information in the Secondary Radius fields.
5. Click OK. RADIUS authentication is enabled.

Configuring LDAP

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

1. Choose Setup > Remote Authentication. The Remote Authentication page opens, displaying an LDAP panel.



○ LDAP

LDAPS Certificate Settings

Primary LDAP

IP Address: 0.0.0.0

Port: 389

Secret:

Base DN:

Query:

Search:

Dialback Query String:

□ Secondary LDAP

IP Address: 0.0.0.0

Port: 389

Secret:

Base DN:

Query:

Search:

Dialback Query String:

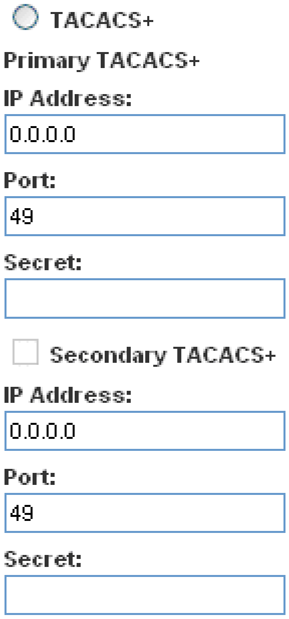
2. In the LDAP panel, click the LDAP button to enable LDAP authentication.
3. Under Primary LDAP, type the IP address of the LDAP server and the port it is listening on (default is 389) in the IP Address and Port fields.
4. Type the root password to access the directory server/manager in the Secret field. The name for this field depends on the Directory Server. For example, Microsoft Windows Active Directory refers to the field as Password, while the SUN iPlanet directory server uses Secret.

5. Type the 'root' point to bind to the server in the Base DN field. This is the same as Directory Manager DN (for example, BaseDn: cn=Directory Manager).
6. Type a string in the Query field. Make sure the same string is added as an attribute in the Search field. For example, if the authorization query string is DominionSX, an attribute named DominionSX must be added under the given domain specified by the Search field. On top of that, a user group must have been created in SX to map with the one in Windows Active Directory for these configurations to work correctly.
7. Type the domain name where the search starts in the Search field. The Search field is the sub-tree of the Base DN to direct the search to the path of the user information such as UID and speed up search time. In other words, it is the domain name. This is where the search starts for the user name. The user name is created in this domain (for example, Search: dc=raritan, dc=com) to process LDAP authentication queries from Dominion SX.
8. If you are using a modem to connect to the LDAP server, type a dialback string in the Dialback Query String field.
9. If you have a backup LDAP server, enter the same information in the Secondary LDAP fields.
10. Click OK. LDAP authentication is enabled.

Configuring TACACS+

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

1. Choose Setup > Remote Authentication. The Remote Authentication page opens, displaying a TACACS+ panel.



○ TACACS+

Primary TACACS+

IP Address: 0.0.0.0

Port: 49

Secret:

□ Secondary TACACS+

IP Address: 0.0.0.0

Port: 49

Secret:

2. In the TACACS+ panel, click the TACACS+ button to enable TACACS+ authentication.
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. Type the root password to access the directory server/manager in the Secret field. The name for this field depends on the Directory Server. For example, Microsoft Windows Active Directory refers to the field as Password, while the SUN iPlanet directory server refers to it as Secret.
5. If you have a backup TACACS+ server, enter the same information in the Secondary TACACS+ fields.
6. Click OK. TACACS+ authentication is enabled.

Chapter 8 Port Configuration and Port Access Application

Port configuration allows Administrators to define the serial/console port settings in order to communicate with remote target devices.

Note: You can access the Raritan Serial Console (RSC) from the Port page. See **Raritan Serial Console** *(on page 49) in this chapter for RSC information.*

In This Chapter

Port Keywords

You can create port keywords and associate them with:

- Events
- Local/remote syslog messages
- SNMP traps

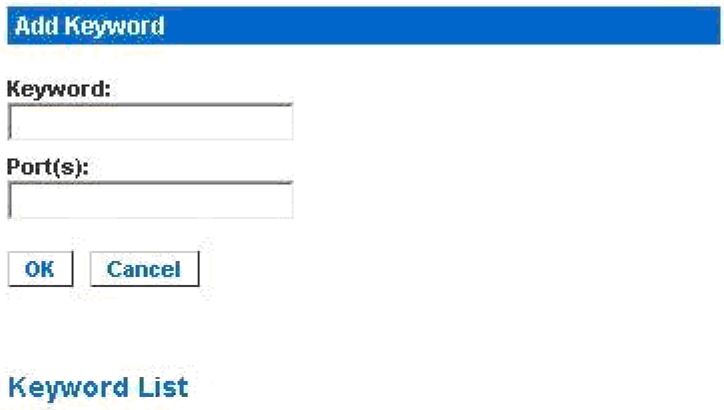
Port keywords work as a filter. If a keyword is detected, only then will a corresponding message be logged in a local/NFS port log. A corresponding event will be sent via SMTP (if configured) and corresponding trap will be sent via SNMP (if configured).

Port keywords are useful for notifying administrators if a particular event occurs on a port, but they do not affect NFS log sizes.

Note: The SMTP notification (event.amp.keyword) is selected from the Event configuration page.

Note: For keywords to trigger when no users are connected to the port, "Always Active" in port configuration should be set to True. See **Port Configuration** *(on page 44) for details.*

1. Choose Setup > Port Keywords. The Port Keywords page opens.

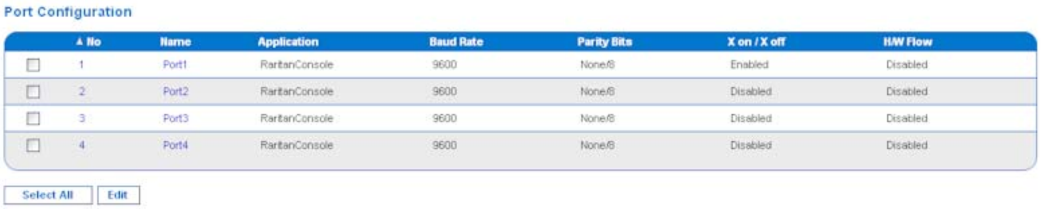


2. Type a keyword in the Keyword field.
3. Type the Port(s) you want to associate with that keyword.
4. Click OK.

Port Configuration

▶ To configure one or more ports:

1. Choose Setup > Port Configuration. The Port Configuration page opens.



Port Configuration

	▲ No	Name	Application	Baud Rate	Parity Bits	X on / X off	H/W Flow
□	1	Port1	RaritanConsole	9600	None/8	Enabled	Disabled
□	2	Port2	RaritanConsole	9600	None/8	Disabled	Disabled
□	3	Port3	RaritanConsole	9600	None/8	Disabled	Disabled
□	4	Port4	RaritanConsole	9600	None/8	Disabled	Disabled

2. Select the port(s) you want to configure. You can select one port or several ports, providing that all selected port configurations are identical.

   - To select specific ports, click the checkboxes to the left of the port numbers and then click Edit.
   - To select all ports, click Select All.

   The Edit Port page opens.

3. Make sure the port values match the target system's serial port configuration for the first three values.

   - Select the value of Bits Per Second from the Bits Per Second drop-down menu.
   - Select the Parity Bits from the Parity Bits drop-down menu.
   - Select the Flow Control from the Flow Control drop-down menu.

4. In the Detect field, indicate whether you want the Dominion SX to detect or not detect the physical connection to the target. The default is Do Not Detect. Change this by selecting Detect Physical Connection to the Target from the drop-down menu in the Detect field.

5. Type a command in the Exit Command field, for example, logout. This is the command that will be 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.

6. Select the Escape Mode. The default is None. The escape sequence affects only the CLI . When entering the 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.

Change as follows:

- Select control from the drop-down menu in the Escape Mode field.
- Type the character in the Escape Character field. The default for the Dominion SX is] (closed bracket).

Note: See **Configuring Ports** *(on page 154) for details on port configuration commands.*

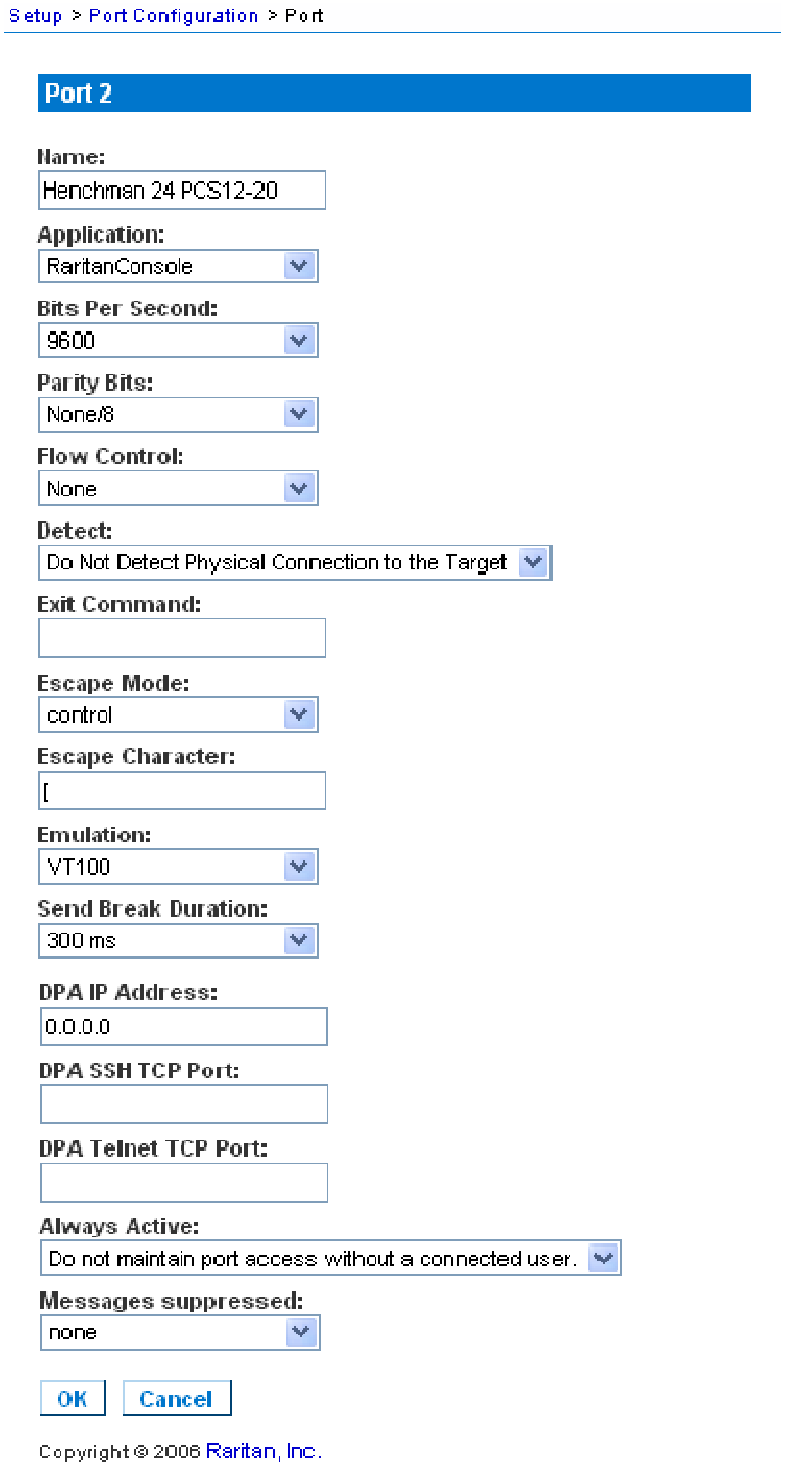
7. Select the terminal emulation type from the drop-down menu in the Emulation field. The choices are:
   - VT100
   - VT220
   - VT320
   - ANSI
8. If you need to configure the length of the send break signal for targets that require a short or longer sendbreak duration, enter the send break time in the Send Break Duration field. The send break is configurable from 100ms - 1000ms in 100ms increments.
9. If you plan to use Direct Port Access (DPA), you must enter either an IP address or one/both of the following TCP ports, depending on your choice of the DPA service mode:
   - The port number, such as 7700, in the DPA SSH TCP Port field
   - The port number, such as 8800, in the DPA Telnet TCP Port field.
10. In the Always Active field, indicate if you want to log activities coming into a port even if no user is connected. The default option is Do not maintain port access without a connected user, which means: ignore data coming into a port when no user is connected. Change by selecting Maintain port access continuously from the drop-down menu in the Always Active field. This option is for NFS port data logs.

Note: When no users are logged into a port session, port traffic, by default, will be discarded .

11. Select none or all from the drop-down menu of Messages suppressed field to indicate if any message should be displayed during a DPA connection, such as "Authentication successful." Otherwise, it will go directly to the port without displaying any message. The default is none.

Note: Anonymous access should be enabled for DPA to succeed.

12. Click OK.



Port 2

Name:
Henchman 24 PCS12-20

Application:
RaritanConsole

Bits Per Second:
9600

Parity Bits:
None/8

Flow Control:
None

Detect:
Do Not Detect Physical Connection to the Target

Exit Command:

Escape Mode:
control

Escape Character:
[

Emulation:
VT100

Send Break Duration:
300 ms

DPA IP Address:
0.0.0.0

DPA SSH TCP Port:

DPA Telnet TCP Port:

Always Active:
Do not maintain port access without a connected user.

Messages suppressed:
none

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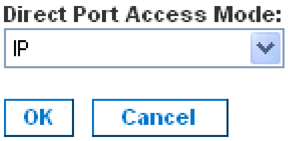
Direct Port Access

To configure direct port access:

1. Choose Setup > Services. The Network Service Settings page opens. The Direct Port Access Mode field is at the bottom of the page.



Direct Port Access Mode: IP

2. In the Direct Port Access Mode field, the default is Normal, which means CLI DPA access is disabled. To enable DPA, select either IP or TCP Port from the drop-down menu.
3. Click OK to save this information. The page displays the following message:
   The system will need to be rebooted for changes to take effect.
4. You may reboot now if you have already set up the ports for DPA or are otherwise prepared for the DPA mode to become effective.
5. Choose Setup > Port Configuration. The Port Configuration page opens (as shown in ***Port Configuration*** (on page 44)).
6. Select the ports to configure for direct port access:
   - To select specific ports, click the checkboxes to the left of the port number. You can select more than one. When you have finished, click Edit.
   - To select all the ports, click Select All.

   The Edit Port Configuration page opens (as shown in ***Port Configuration*** (on page 44)). The DPA fields are at the bottom of the page.
7. Type the DPA IP address of the SX and the DPA ports used for SSH and Telnet in the appropriate fields.
8. Click OK.
9. Reboot the SX unit. This is necessary for the direct port access settings to take effect.

Direct Port Access via HTTP

You can connect directly to a port on the Dominion SX without having to log in to a GUI interface by using HTTP.

▶ **To access the a Dominion SX port using HTTP:**

- Use the following address: http://<sxIPAddress>/dpa.php?username=<SXUserName>?password=<SXPassword>?port=<PortNumber>

Anonymous Port Access

Anonymous port access allows users to access DPA configured ports without entering a password. To enable the feature:

1. Choose Security > Login Settings. The Login Settings page opens (as shown in ***Login Settings*** (on page 80)).
2. Make sure the Anonymous Port Access checkbox at the bottom of the page is selected.
3. Click the User Management tab, and the click User Group List. The Group List appears (as shown in ***Display a List of User Groups*** (on page 33)).

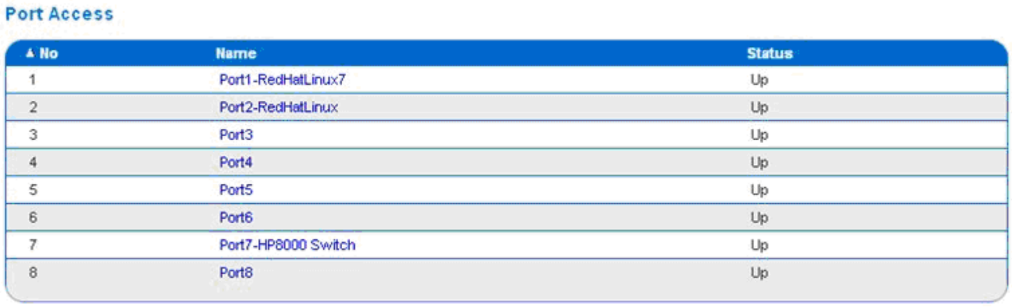
Note: See **User Profiles and Groups** *(on page 30) for additional information about user groups.*

4. The Anonymous Group automatically appears in the User Group List.
5. The default group belongs to Operator class and has no port permission assigned.
6. Select the ports for which you want anonymous port access in the Port Access field.
7. Click OK.

Raritan Serial Console

Use the following steps to launch the Raritan Serial Console (RSC).

1. Click the Port Access tab.



Port Access

▲ No	Name	Status
1	Port1-RedHatLinux7	Up
2	Port2-RedHatLinux	Up
3	Port3	Up
4	Port4	Up
5	Port5	Up
6	Port6	Up
7	Port7-HP8000 Switch	Up
8	Port8	Up

2. Click the Name of the port you want to access for the RSC, for example, Port1 or Port2.

Note: A Security message appears only if you used https to connect to the RSC.

3. Click Yes. A Warning - Security pop up appears.
4. Click Yes to access the Raritan Serial Client from the Port page.

Note: If you click Always, you will not receive the security pop up during future access.

The Raritan Serial Console window appears. See ***Raritan Serial Client Interface*** (see "Raritan Serial Console Interface" on page 52).

Raritan Serial Console Requirements for Java

The Raritan Serial Console (RSC) requires a PC of minimum 1.0 GHz CPU speed with 512 MB RAM. Java must be installed to access targets (managed devices) before you can use the RSC.

Java Runtime Environment (JRE)

The RSC will function with JRE version 1.4.2_05 or later (except for JRE version 1.5.0_02). However, for optimum performance, Raritan recommends using JRE 1.5.0 (except for version 1.5.0_02).

Depending on your operating system and browser, it is possible that you must adjust JRE configurations to prevent problems with the system's memory.

Note: Raritan does not support JRE version 1.5.0_02 for use with the RSC.

JRE provides configuration instructions with the JRE download. Determine the JRE version on your system by going to the Java Web page at: ***http://www.java.com/en/download/help/testvm.xml*** (http://www.java.com/en/download/help/testvm.xml \o http://www.java.com/en/download/help/testvm.xml)

IMPORTANT: When launching RSC from a browser, Raritan highly recommends that Java Applet Caching be disabled and that you perform the following steps to make sure that Java does not create problems for the system's memory.

Java Applets and Memory Considerations

Usually, a browse- based RSC does not need to make any changes to the Runtime parameters for Java Applets. Following these steps if you notice any "Out of Memory" errors happening when executing RSC via a web browser:

- Change the Runtime settings for Java Applets.
- Use the following links to find out how to use Runtime settings in the Java Control Panel.

  http://java.sun.com/j2se/1.5.0/docs/guide/deployment/deployment-guide/jcp.html (http://java.sun.com/j2se/1.5.0/docs/guide/deployment/deployment-guide/jcp.html)

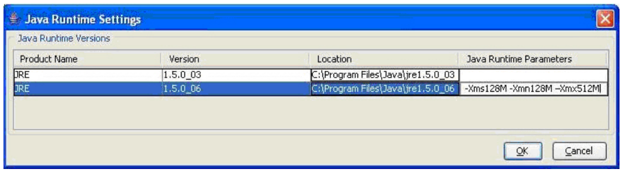
  http://java.sun.com/j2se/1.4.2/docs/guide/plugin/developer_guide/control_panel.html (http://java.sun.com/j2se/1.4.2/docs/guide/plugin/developer_guide/control_panel.html)

To increase the heap settings so that more RSC applets can be launched to access multiple Dominion SX targets:

1. Launch the Java Control Panel, located in the:
   - Advanced Tab in JRE 1.4.x

- Java Tab in JRE 1.5

2. Locate Java Runtime Settings.



Product Name	Version	Location	Java Runtime Parameters
JRE	1.5.0_03	C:\Program Files\Java\jre1.5.0_03	
JRE	1.5.0_06	C:\Program Files\Java\jre1.5.0_06	-Xms128M -Xmn128M –Xmx512M

3. Insert the values of the Java Runtime Parameters using the syntax in the following table, which contains the non-standard options.

Values - Syntax	Description	Default/Comments
-Xms<Size> in bytes	Sets the initial size of the Java heap	2097152 (2MB) ▪ The -server flag increases the default size to 32M. ▪ The values must be a multiple of, and greater than, 1024 bytes (1KB). ▪ Append the letter “m” or “M” to indicate megabytes and “k” or “K” to indicate kilobytes.
-Xmn<Size> in bytes	Sets the initial Java heap size for the Eden generation	640K ▪ The -server flag increases the default size to 2M. ▪ Append the letter “m” or “M” to indicate megabytes and “k” or “K” to indicate kilobytes.
-Xmx<Size> in bytes	Sets the maximum size to which the Java heap can grow	64M ▪ The -server flag increases the default size to 128M. ▪ The maximum heap limit is approximately 2 GB (2048MB). ▪ Append the letter “m” or “M” to indicate megabytes and “k” or “K” to indicate kilobytes..

Command Example:

```
-Xms128M -Xmn128M -Xmx512M
```

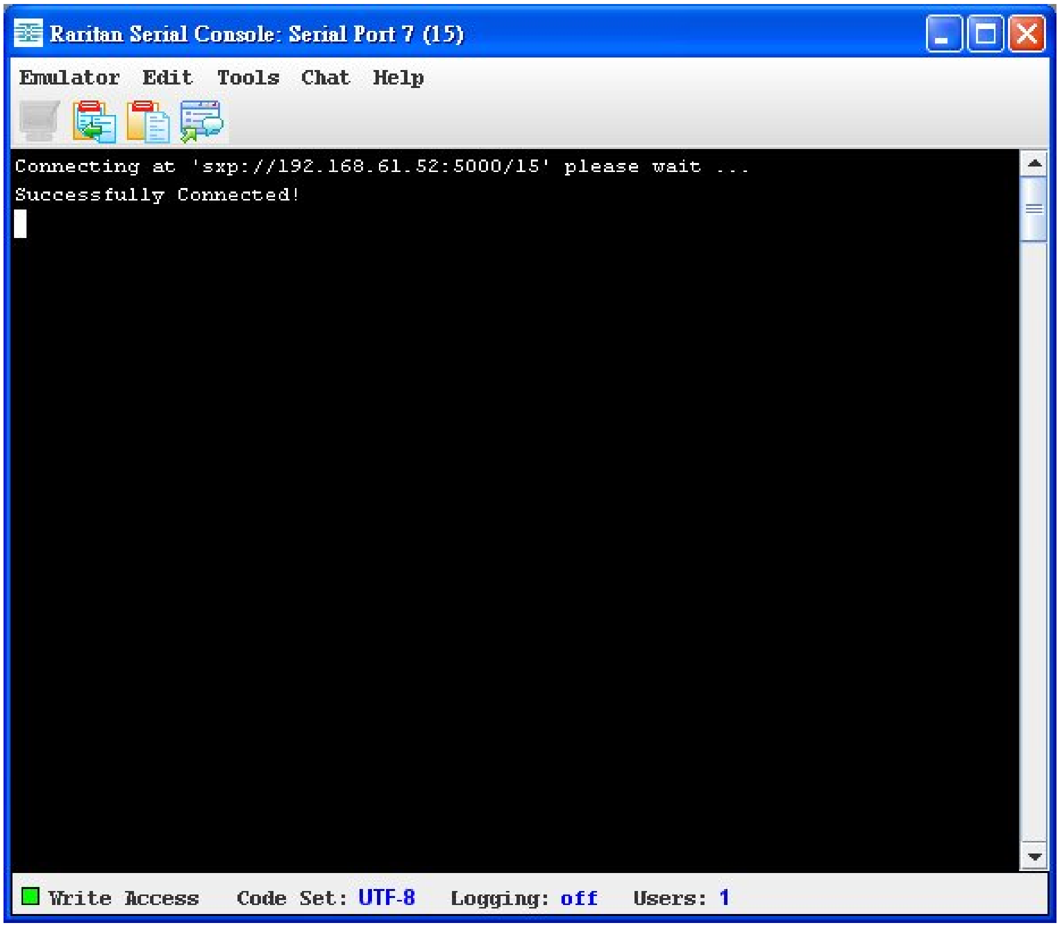
See the following links for additional information and for all the non-standard options:

http://java.sun.com/j2se/1.4.2/docs/tooldocs/windows/java.html (http://java.sun.com/j2se/1.4.2/docs/tooldocs/windows/java.html)

http://java.sun.com/docs/hotspot/VMOptions.html (http://java.sun.com/docs/hotspot/vmoptions.html)

Raritan Serial Console Interface

Important: The Raritan Serial Console page usually opens in a separate window behind the Port page. With some versions of Java on Windows, the page opens in front of the Port page.

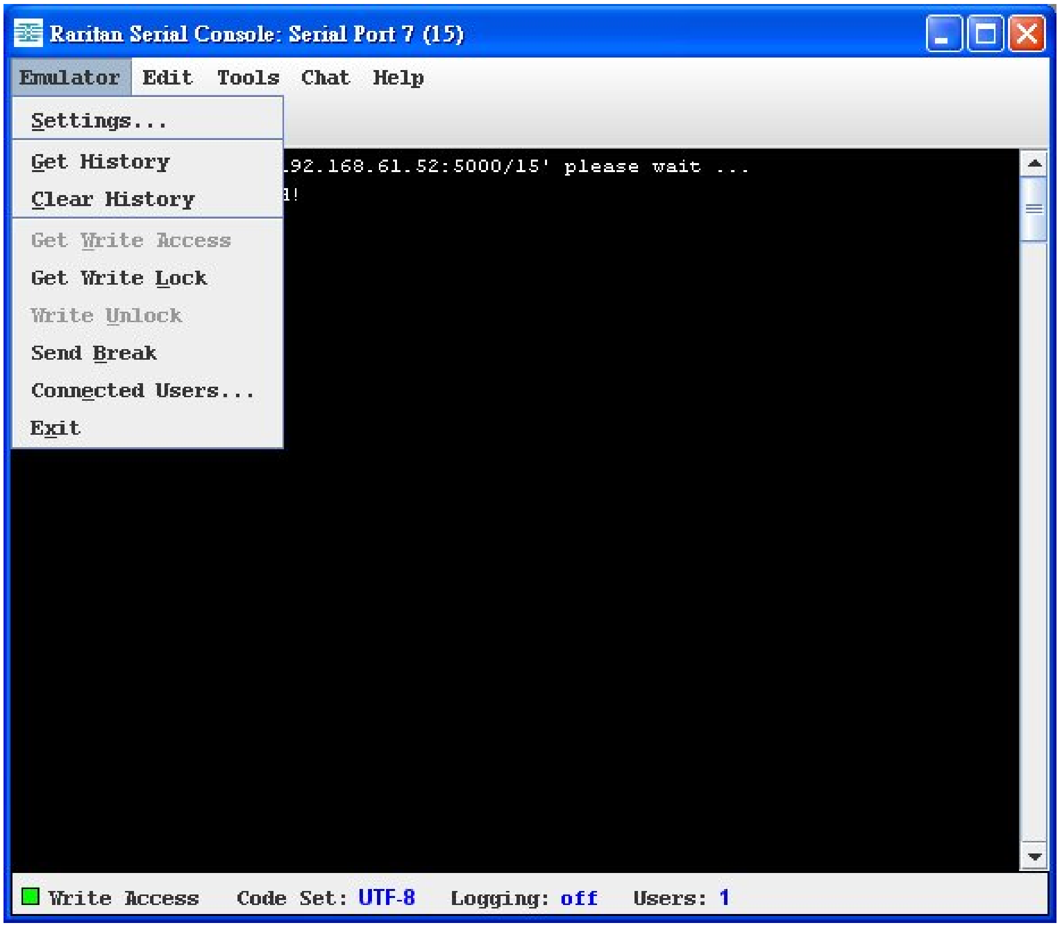


```
Connecting at 'sxp://192.168.61.52:5000/15' please wait ...
Successfully Connected!
```

🟩 Write Access   Code Set: UTF-8   Logging: off   Users: 1

Emulator

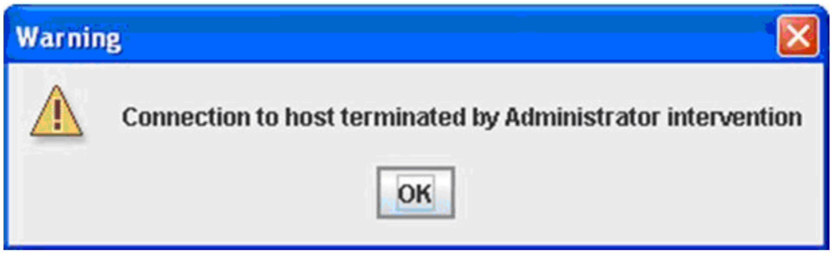
1. Click the Emulator drop-down menu to display a list of topics.



```
.92.168.61.52:5000/15' please wait ...
d!
```

🟩 Write Access   Code Set: UTF-8   Logging: off   Users: 1

IMPORTANT: RSC sessions are affected by the Idle Timeout which is set, by default, to 10 minutes for security purposes. If you have not changed the Idle Timeout setting from the default, your RSC session could be closed automatically if your RSC configuration time exceeds the Idle Timeout period. See *Security* (on page 78) for details on changing the Idle Timeout setting.



Connection to host terminated by Administrator intervention

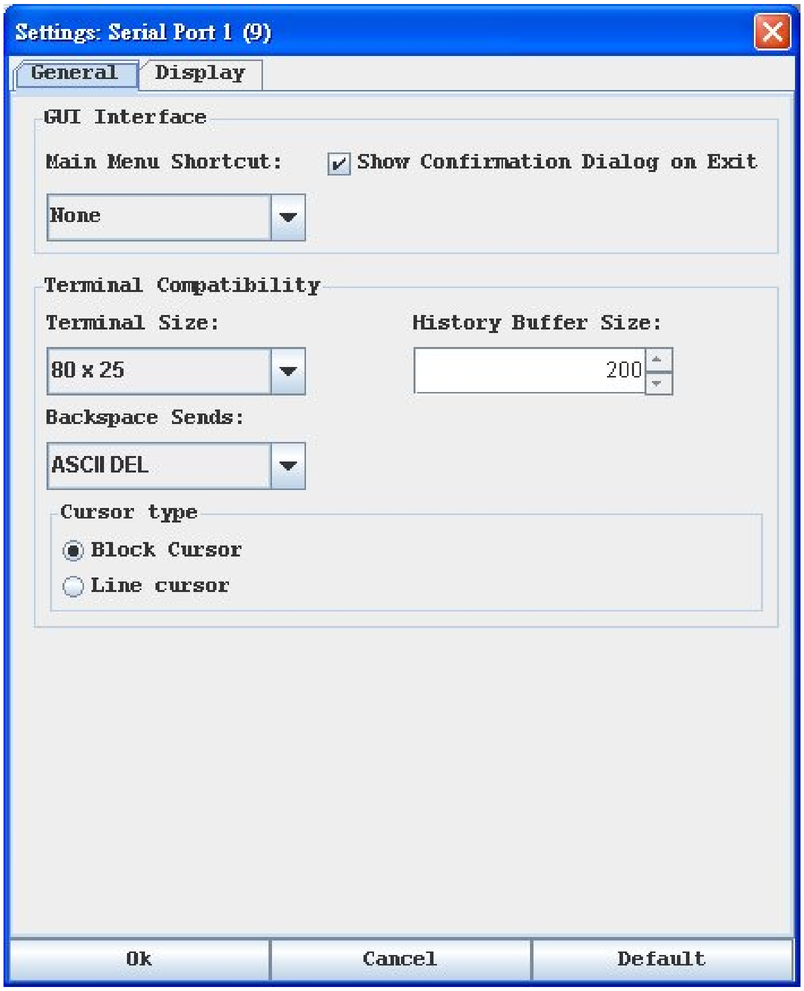
1. Change the default Idle Timeout setting and then launch the RSC.

Note: If the RSC Idle timeout expires, the Dominion SX Idle timeout period begins.

Settings

Note: An Administrator can set Terminal emulation settings using Setup > Port Configuration.

1. Choose Emulator > Settings. The Settings screen displays the General tab with the default settings.



Settings: Serial Port 1 (9)

General | Display

GUI Interface

Main Menu Shortcut: None

☑ Show Confirmation Dialog on Exit

Terminal Compatibility

Terminal Size: 80 x 25

History Buffer Size: 200

Backspace Sends: ASCII DEL

Cursor type

● Block Cursor

○ Line cursor

2. The Main Menu Shortcut default is None; accept this, or choose one of the following from the Main Menu Shortcut drop-down menu:
   - F10
   - Alt
3. The Show Confirmation Dialog on Exit checkbox is selected by default, but you can deselect it based on preference.

4. The Terminal Size default is selected, or you can choose a different size from the drop-down menu.

5. The Backspace Sends default is ASCII DEL, or you can choose Control-H from the Backspace Sends drop-down menu.

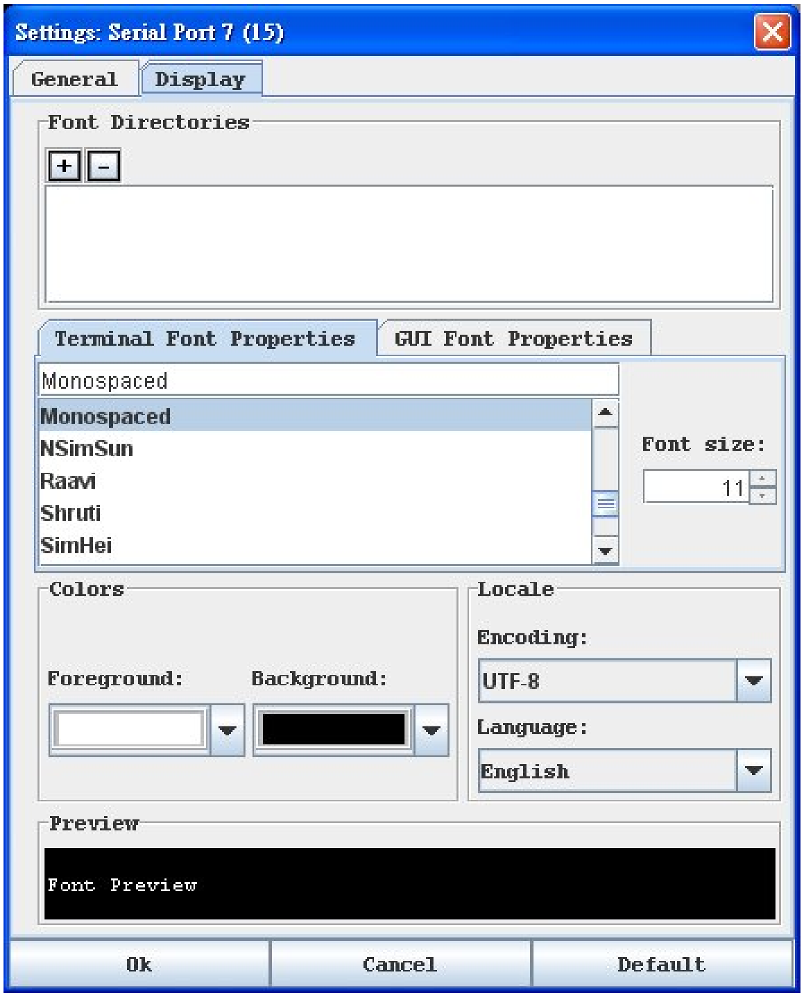
6. The History Buffer Size default is 200, or you can use the arrows to change the buffer size.

7. The Cursor type default is Block Cursor, or you can select the Line Cursor radio button.

8. Click OK.

Display Settings

1. Choose Emulator > Settings and click the Display tab.



Monospaced

Monospaced
NSimSun
Raavi
Shruti
SimHei

Font size: 11

Encoding: UTF-8

Language: English

2. Click Default to accept the Default settings, and then click Ok to close the Display Settings window. To change the settings, follow these steps:

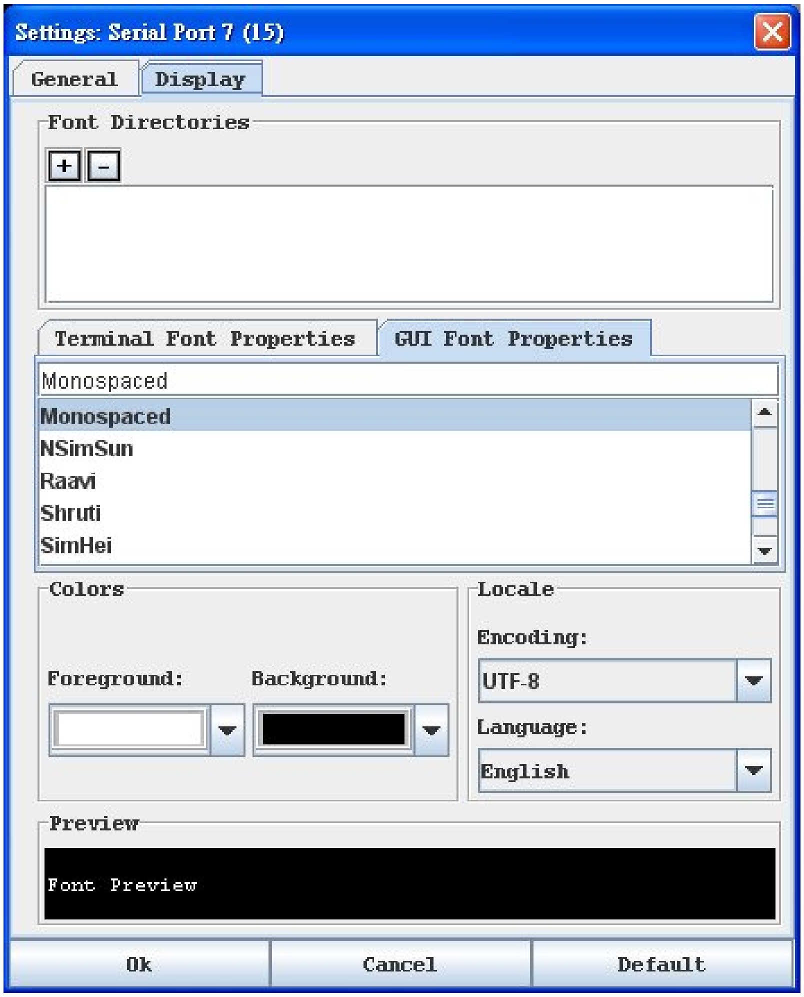
a. The Terminal Font Properties default is Arial, or you can choose a font from the Terminal Font Properties scrolling list.

b. The Antialiase Font checkbox is selected by default, or you can deselect the checkbox.

c. To change the font size, select the Lock Font Size checkbox and then use the arrows to choose a font size in the the Font size field.

d. Click the GUI Font Properties tab

e. The default font property is Monospaced, or you can choose a font from the GUI Font Properties scrolling list.



Settings: Serial Port 7 (15)

GUI Font Properties: Monospaced

Encoding: UTF-8

Language: English

Note: For Simplified Chinese characters, Raritan Serial Console supports EUC-CN encoding system.

3. Choose the following from their respective drop-down menus:

   - Foreground Color

- Background Color

4. Choose one of the following from the Encoding drop-down menu:
   - US-ASCII
   - ISO-8859-1
   - ISO-8859-15
5. Choose one of the following from the Language drop-down menu:
   - English
   - Japanese
   - Korean
   - Chinese
6. Click Ok to close the Display Settings window. If you changed the Language setting, the RSC changes to that language when the Display Settings window is closed.

Note: In case of unrecognized characters or blurry screens that might appear when RSC is launched, due to localization support, try changing the font to Courier New.

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 256 KB (64KB only on models with 64MB SDRAM; 256KB available on 128MB SDRAM Models) of recent console message history. This allows a user to see target device events over time.

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

Notes: Verify the memory on your unit from the Maintenance > Configuration menu. 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 Administrators and Operators can 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 Raritan Serial Console 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 RSC 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 will prevent 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 Administrator privileges can send a break.
- Users who are Observers cannot send a break.

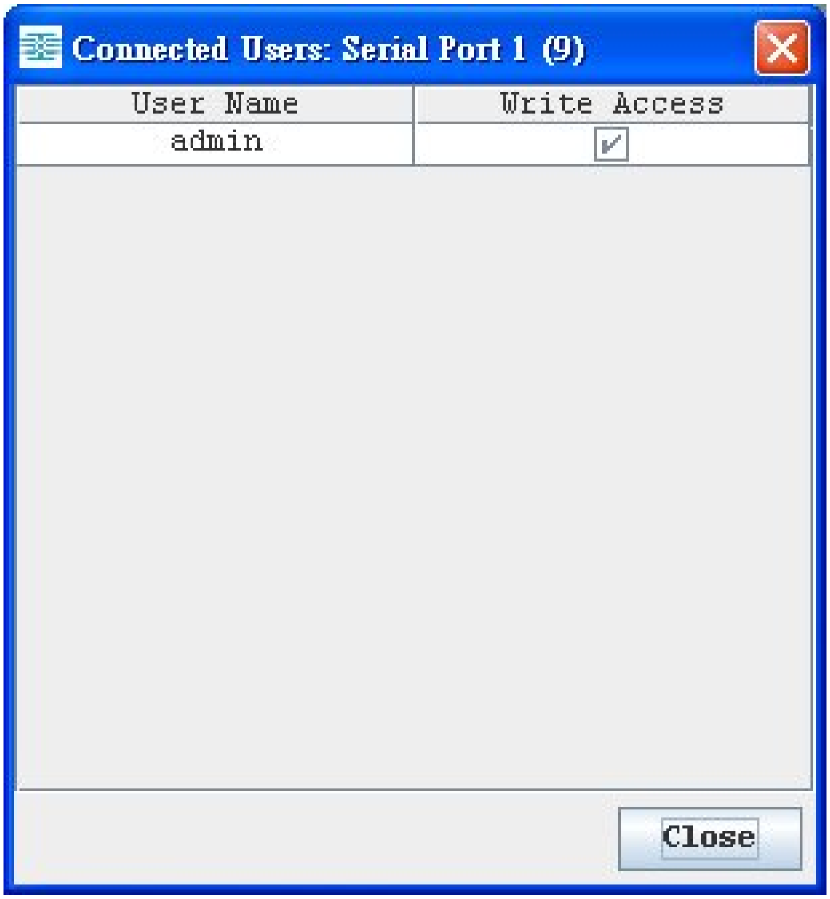
To send an intentional “break” to a Sun Solaris server:

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.

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.



User Name	Write Access
admin	☑

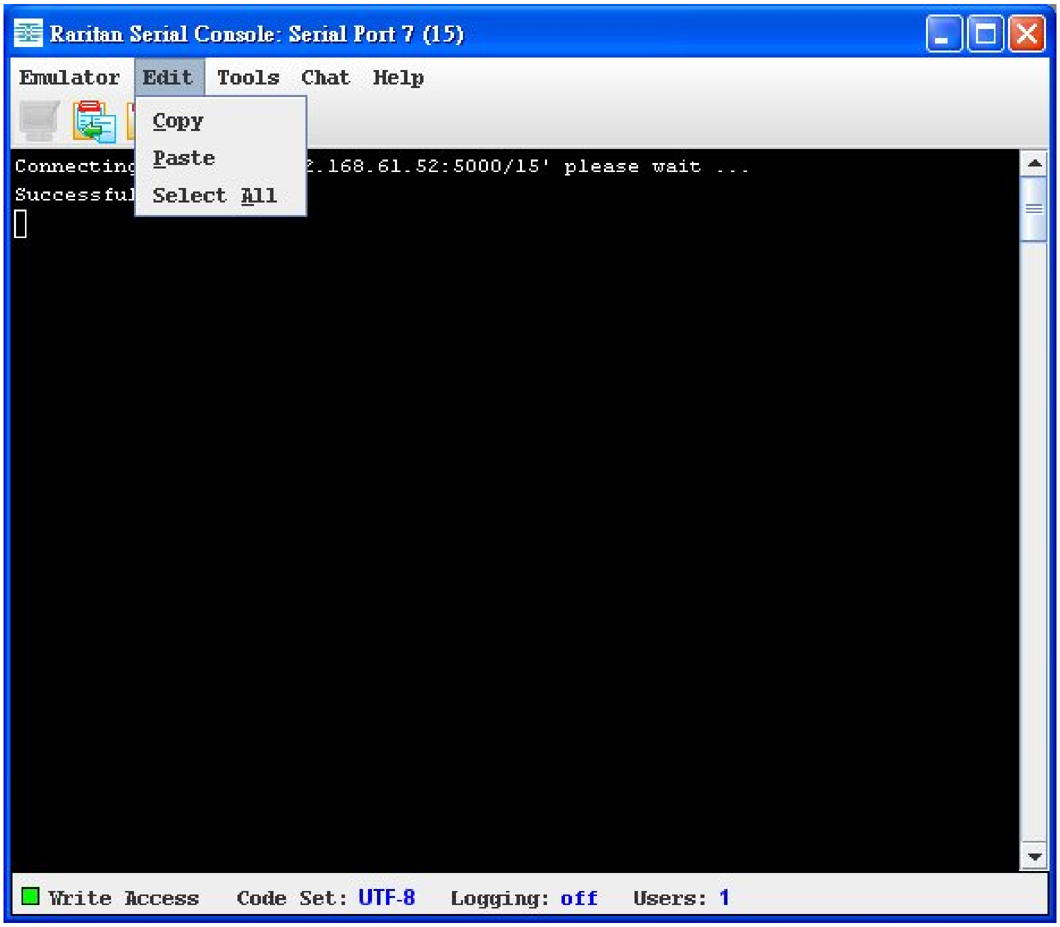
2. A check mark appears in the Write Access column after the name of the User who has Write Access to the console.
3. Click Close to close the Connected Users window.

Exit

1. Choose Emulator > Exit to close the Raritan Serial Console. The Exit Confirmation dialog appears.
2. Click Yes.

Edit

Use the Copy, Paste, and Select All text commands to relocate and/or re-use important text.



```
Connecting              2.168.61.52:5000/15' please wait ...
Successful
```

Write Access   Code Set: UTF-8   Logging: off   Users: 1

To copy and paste all text:

1. Choose Edit > Select All.
2. Choose Edit > Copy.
3. Position the cursor at the location where you want to paste the text.
4. Click once to make that location active.
5. Choose Edit > Paste.

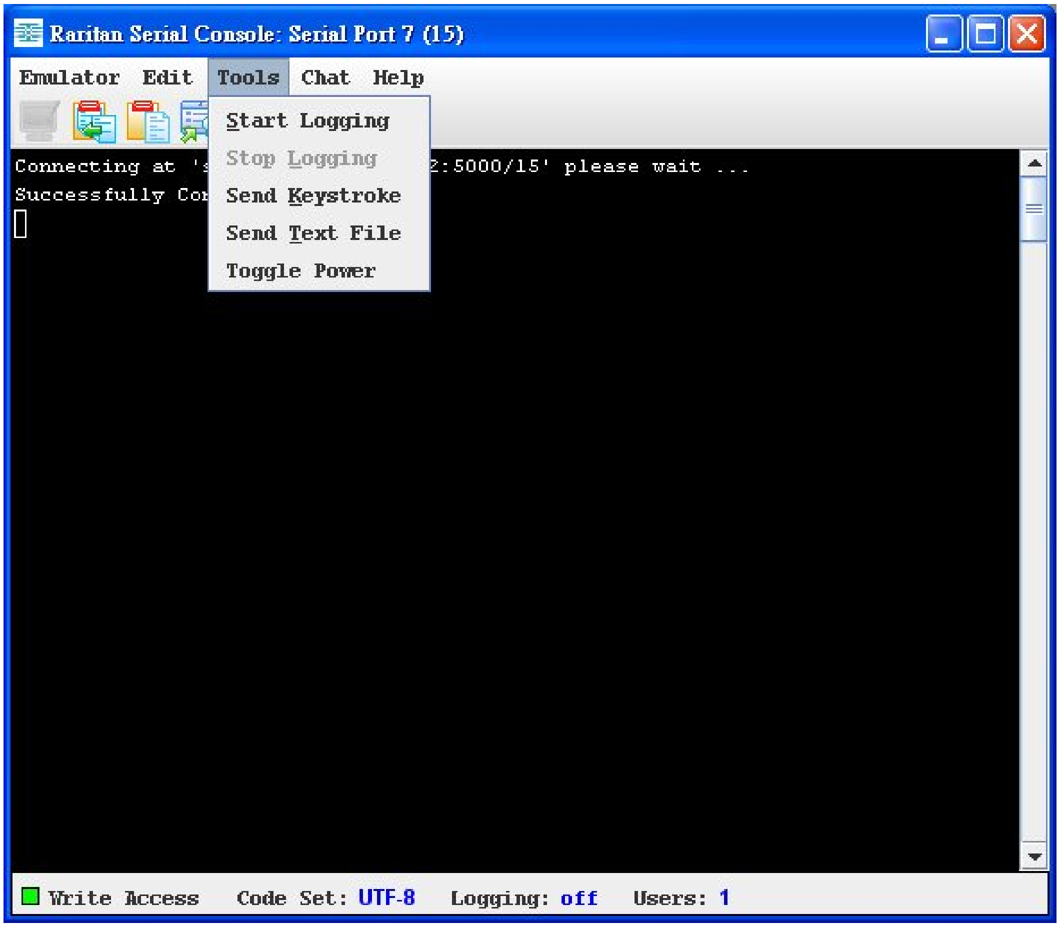
Note: The copy-paste limit of text in Raritan Serial Console is 9999 lines.

Keyboard shortcuts that you can use to highlight, copy, and paste all or partial lines of text:

- Click and drag your mouse over the text you wish to copy.
- Use Ctrl+C to copy text.
- Position the cursor where you want to paste the text and click in that location to make it active.
- Use Ctrl+V to paste text.

Tools

Click the Tools drop-down menu to display a list of topics.



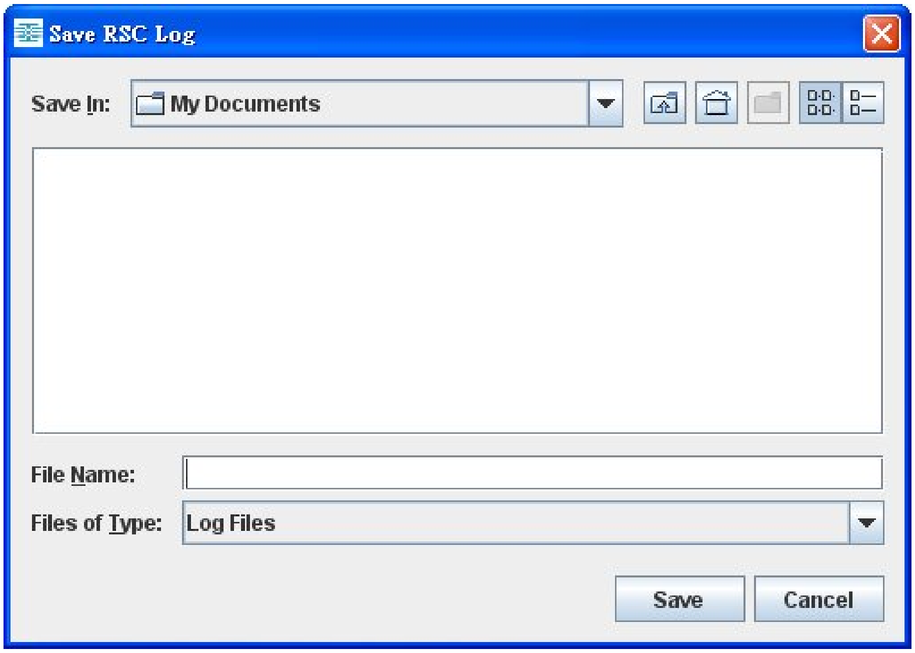
```
Connecting at 's                  :5000/15' please wait ...
Successfully Cor
```

🟩 Write Access   Code Set: UTF-8   Logging: off   Users: 1

Start Logging

The Start Logging function allows you to collect raw console data from the target device and save it to a file on your computer. When you start RSC, the Logging indicator on the status bar indicates whether logging is on or off.

1. Choose Tools > Start Logging.
2. Choose an existing file or provide a new file name in the Save RSC Log dialog.
   - When an existing file is selected for logging, data gets appended to the contents.
   - If you provide a new file name, a new file is created.



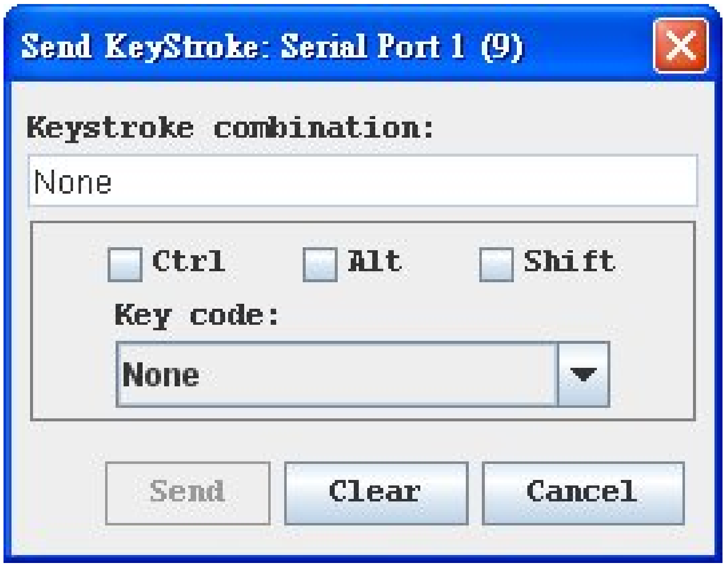
3. Click Save after selecting or creating a file.

Stop Logging

Choose Tools > Stop Logging. The logging stops.

Send Keystroke

1. Choose Tools > Send Keystroke. A Send Keystroke dialog appears:



Keystroke combination: None

Key code: None

2. Enter the keystroke combinations that you want and select a Key Code name from the drop-down menu.
3. Send the keystroke combinations.

Send Text File

1. Choose Tools > Send Text File. A Send Text File screen appears.
2. Open the directory of the Text file.
3. Click on or enter the File Name of the Text file.
4. Click Open.
    - When you click Open, it sends whatever file you selected directly to the port.
    - If there is a loopback plug inserted, you will see the file displayed.
    - If there is currently no target connected, then nothing will be visible on the screen.

Toggle Power

The Toggle Power function lets you power on or off the device that is connected to the associated outlet on a Power Distribution Unit (PDU). For example, if a router is connected to one of the outlets on the PDU, you can toggle the router’s power on or off.

You must configure the association of outlets to the target port of the device before you can use the Toggle Power feature. Go to the Power Control tab on remote console's GUI to configure the outlets. If you have not done this, the system displays a message stating that the target is not associated with a power outlet.

Note: If RSC is launched through CC-SG (version 4.x onwards) by users without the permission to toggle power, the option Toggle Power will appear as disabled.

1. Select Toggle Power to turn the device (router) on or off. A prompt appears displaying the current status of the outlet(s). You can turn the device on or off depending on its current status.
2. If you select No, the system returns you to the RSC screen.
3. If you select Yes, the system sends the power command to either turn on or off the outlets associated to the target port of the device.

If you receive a:

- Hardware error message: this means that the PDU command failed.

Software error message: this means that another user is controlling the power outlet and the power control command cannot be sent.

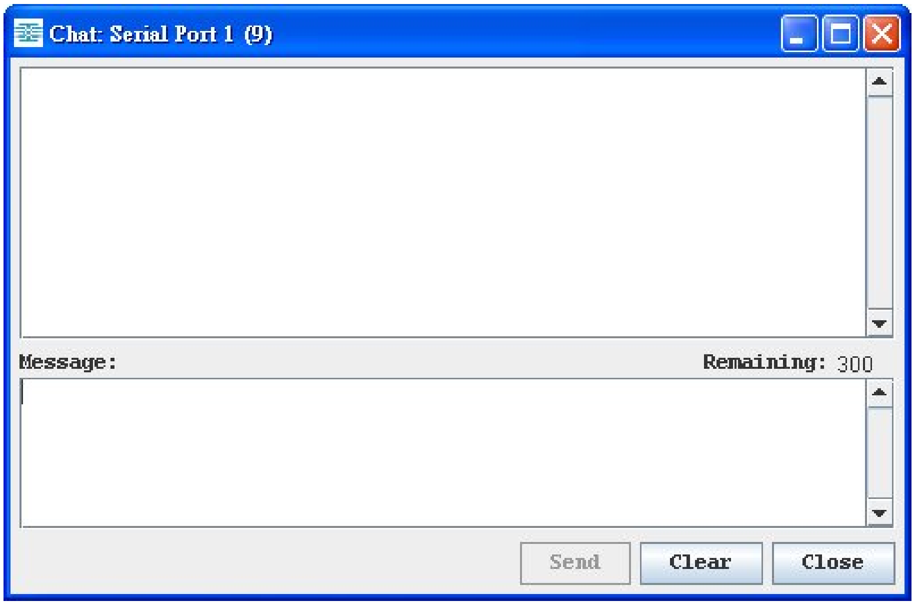
Chat

When using browser access over SSL, an interactive chat feature called Chat allows you and other users on the same port to communicate. You can conduct an online dialog for training or collaborative diagnostic activities. The maximum length of a chat message is 300 characters.

Note: When a chat is initiated, a chat window appears on the monitors of all SSL users logged on to the port. If a user is logged into a port multiple times, multiple chat messages will not appear to that user.

To open chat:

- Choose Chat > Chat.



To clear text in a chat text box:

- Click Clear to delete the typed text.

Help

Help Topics include online assistance for operating the Raritan Serial Console and release information about Raritan Serial Console.

Help Topics

▶ To access help topics:

- Choose Help > Help Topics.

About Raritan Serial Console

The About Raritan Serial Console dialog displays the copyright and version information (name and revision number) of the console terminal emulation software. When contacting Raritan for technical support or when performing a software upgrade, you may be asked for this information.

▶ To access 'About' information:

- Choose Help > About Raritan Serial Console. An About Raritan Serial Console message appears.

Standalone Raritan Serial Console Installation

Note: You can download the Standalone Raritan Serial Client from the Raritan support Web site: **http://www.raritan.com/support** *http://www.raritan.com/support*

The standalone Raritan Serial Client (RSC) is used to make direct connections to the target without going through the Dominion SX application. The user specifies the Dominion SX address and the port number (target) and then is connected.

The steps in this section install the standalone Raritan Serial Client (RSC).

Standalone Raritan Serial Client Requirements

The following requirements must be met to support the Raritan Serial Console:

- The RSC will function with JRE version 1.4.2_05 or later (except for JRE version 1.5.0_02) . However, for optimum performance, Raritan recommends using JRE 1.5.0 (except version 1.5.0_02).
- Your system may require configuration adjustments depending on the operating system and browser. The JRE provides configuration instructions with the JRE download. See ***http://www.java.com/en/download/help/testvm.xml*** (http://www.java.com/en/download/help/testvm.xml \o http://www.java.com/en/download/help/testvm.xml) to determine the JRE version currently installed on your system.

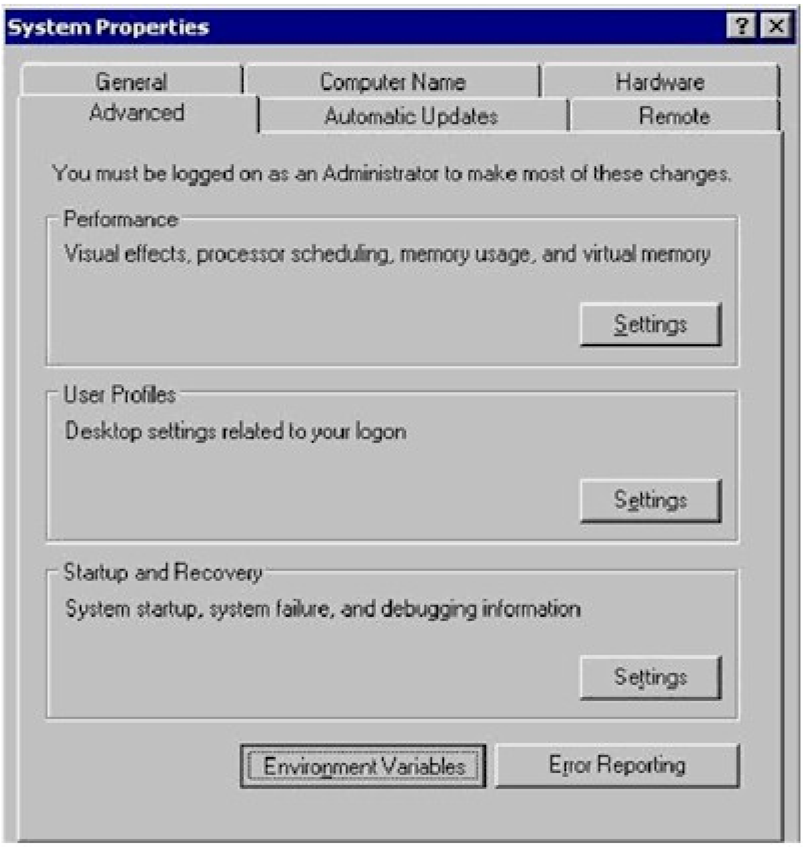
  If you do not have a compatible version of the JRE, go to ***http://www.java.com*** (http://www.java.com) and click the Download Now button.

  Note: Raritan does not support JRE version 1.5.0_02 for use with the RSC.
- Minimum 1 GHz PC with 512 MB RAM.
- Ensure that Java can be started from the command line. To do this, you must configure environment variables. Make a note of the exact path where Java was installed (the path information will be used later).

Setting Windows OS Variables

1. Choose Start > Control Panel > System.

2. Click the Advanced tab and then click Environment Variables.



You must be logged on as an Administrator to make most of these changes.

Performance

Visual effects, processor scheduling, memory usage, and virtual memory

User Profiles

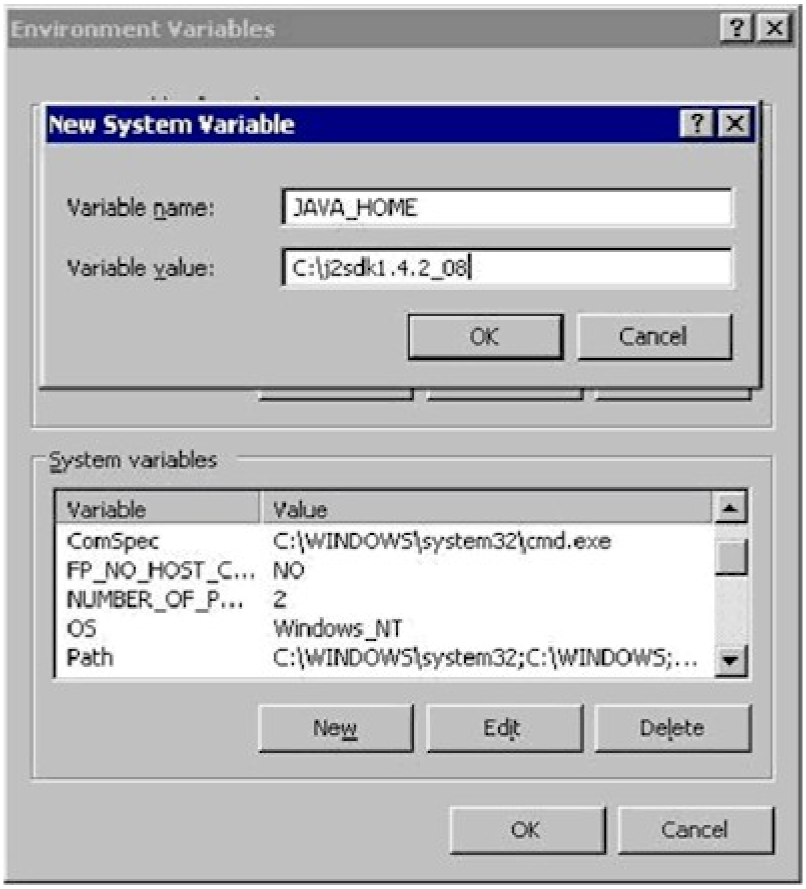
Desktop settings related to your logon

Startup and Recovery

System startup, system failure, and debugging information

3. In the System variables section, click New.

4. In the New System Variable dialog, add JAVA_HOME to the Variable name block and the path you wrote down earlier in the Variable value block.



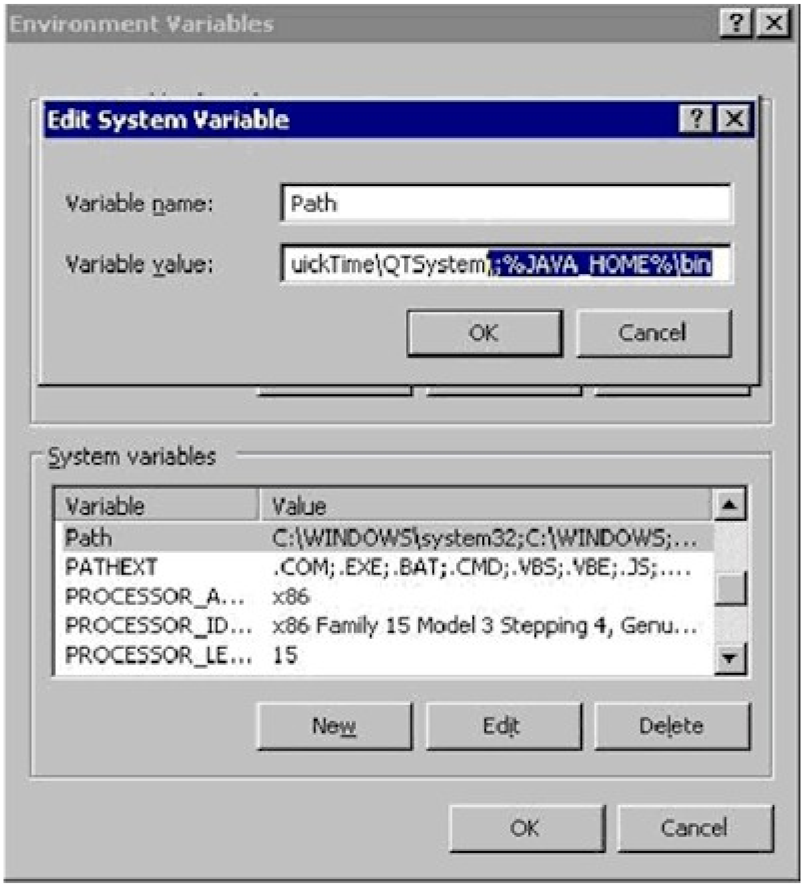
Variable name: JAVA_HOME

Variable value: C:\j2sdk1.4.2_08

Variable	Value
ComSpec	C:\WINDOWS\system32\cmd.exe
FP_NO_HOST_C...	NO
NUMBER_OF_P...	2
OS	Windows_NT
Path	C:\WINDOWS\system32;C:\WINDOWS;...

5. Click OK.
6. Select the PATH variable and click Edit.
7. Add %JAVA_HOME%\bin to the end of the current Variable value. Ensure a semicolon (;) separates the new value from the last value in the string.

8. Click OK.



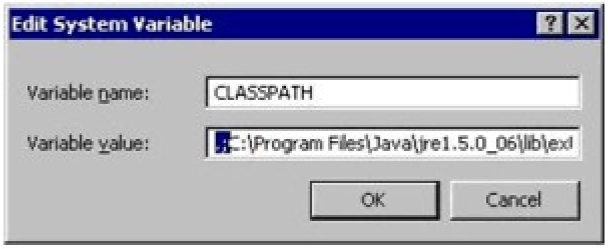
Variable name: Path

Variable value: uickTime\QTSystem\;%JAVA_HOME%\bin

Variable	Value
Path	C:\WINDOWS\system32;C:\WINDOWS;...
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;....
PROCESSOR_A...	x86
PROCESSOR_ID...	x86 Family 15 Model 3 Stepping 4, Genu...
PROCESSOR_LE...	15

9. Select the CLASSPATH variable and click Edit.

10. Ensure the CLASSPATH Variable value is configured properly; that is, its value must have a period (.) in it. If, for any reason, there is no CLASSPATH variable defined, create one.



Variable name: CLASSPATH

Variable value: .;C:\Program Files\Java\jre1.5.0_06\lib\ext

Setting Linux OS Variables

To set Java for a specific user, open and edit the **.**profile file located in the /home/Username folder.

To set Java for all users, open the .profile file in your /etc folder:

1. Find the line where you set your path:

   ```
   export

   PATH=$PATH:/home/username/somefolder
   ```

2. Before that line you must set your JAVA_HOME and then modify your PATH to include it by adding the following lines:

   ```
   export
   JAVA_HOME=/home/username/j2sdk1.4.2/
   export PATH=$PATH:$JAVA_HOME/bin
   ```

3. Save the file.

Setting UNIX OS Variables

To check the latest JRE version on Sun Solaris:

1. Launch a terminal window on the Sun Solaris desktop.
2. Type *java -version* in the command line and press Enter. The currently-installed version of Java Runtime Environment (JRE) appears.

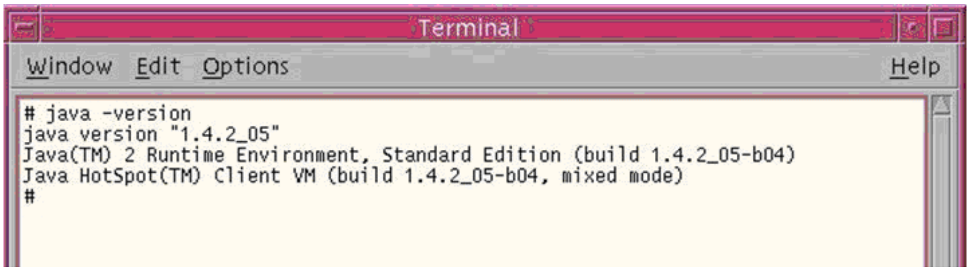
   - If your path variable is not set to where the Java binaries have been installed, you may not be able to see the JRE version.
   - Assuming JRE 1.4.2_05 is installed in /usr/local/java: you must set your PATH variable.
   - To set a path for the bash shell:

     ```
     export

     PATH=$PATH:/usr/local/java/j2re1.4.2_05/bin
     ```

   - To set path for tcsh or csh:

     ```
     set

     PATH = ($PATH /usr/local/java/j2re1.4.2_05/bin)
     ```

- These commands can either be typed at the terminal each time you log in, or you can add them to your .bashrc for bash shell or .cshrc for csh and tcsh so that each time you log in, the path is already set. See your shell documentation if you encounter problems.



```
# java -version
java version "1.4.2_05"
Java(TM) 2 Runtime Environment, Standard Edition (build 1.4.2_05-b04)
Java HotSpot(TM) Client VM (build 1.4.2_05-b04, mixed mode)
#
```

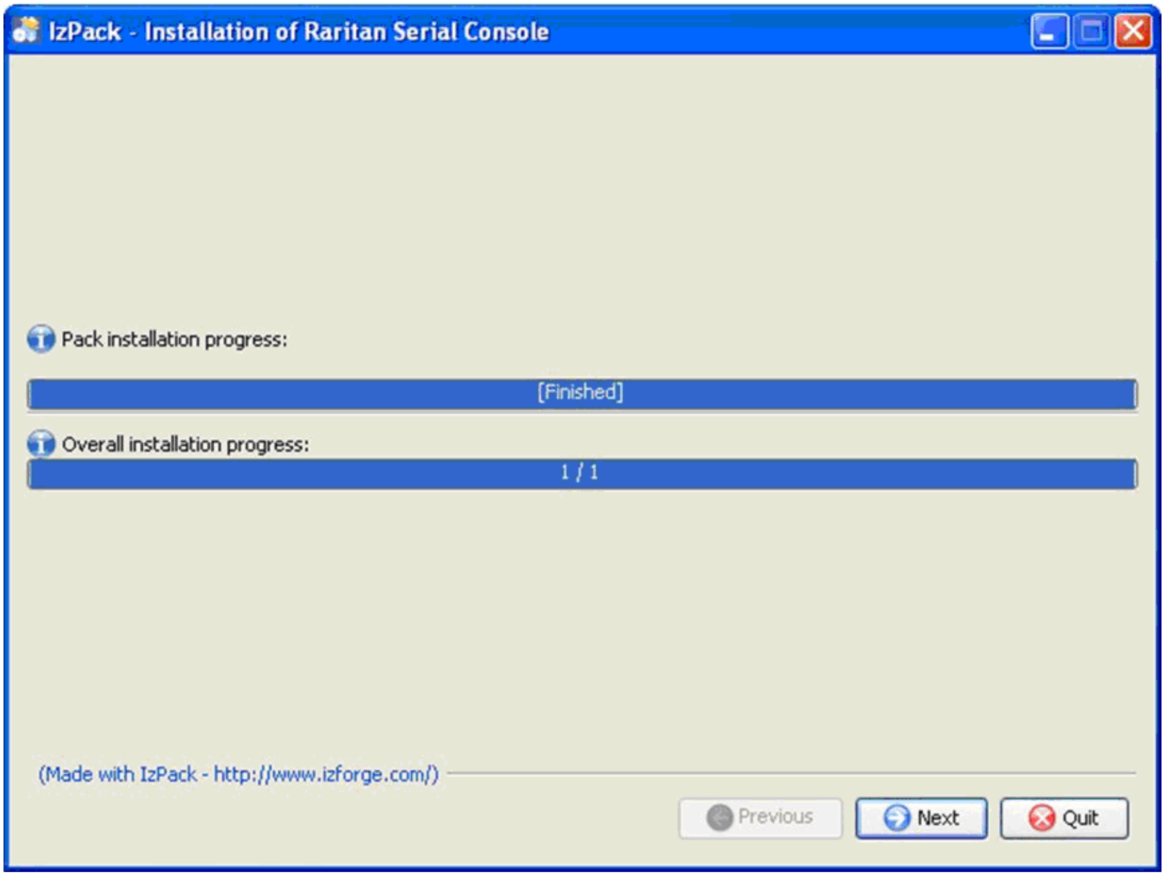
3. If the JRE is version 1.4.2_05 or later, proceed with the RSC installation. If the JRE is version 1.5.0_02 or is an older version than 1.4.2_05, go to the Sun website at (http://java.sun.com/products/) to download the latest Runtime Environment.

Installing Standalone RSC for Windows

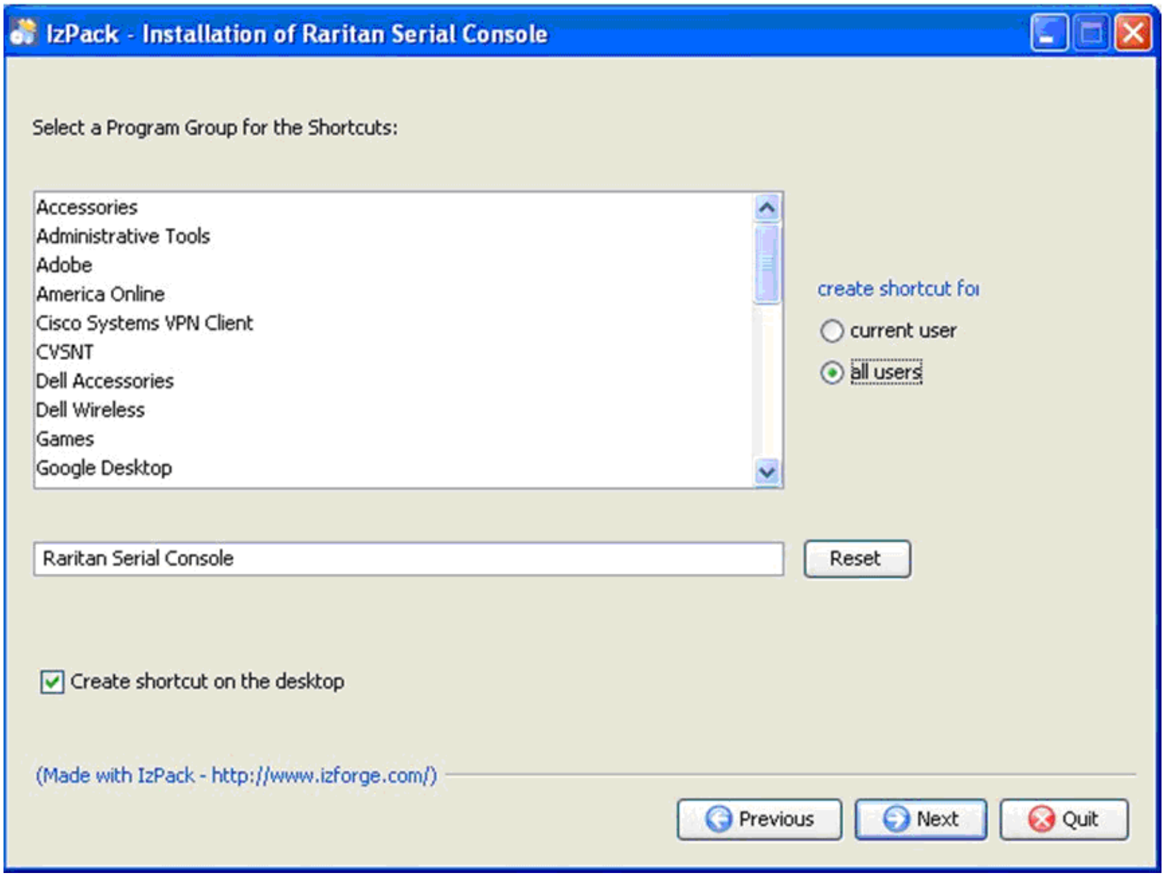
You must have administrative privileges to install RSC.

1. Log in to a Windows machine.
2. Download, or copy from a known location, the RSC-installer.jar installation file.
3. Double-click on the executable file to start the installer program. The splash page opens.
4. Click Next. The installation path page opens.
5. Change the path, if desired.
6. Click Next. The installation progress page opens.

Note: The standalone version of RSC is available from the Raritan Support website: **http://www.raritan.com/support/sup_upgrades.aspx** *(http://www.raritan.com/support/sup_upgrades.aspx)*


IzPack - Installation of Raritan Serial Console
Pack installation progress:
[Finished]
Overall installation progress:
1 / 1
(Made with IzPack - http://www.izforge.com/)
Previous
Next
Quit

7. Click Next. The Windows shortcut page opens.



IzPack - Installation of Raritan Serial Console

Select a Program Group for the Shortcuts:

Accessories
Administrative Tools
Adobe
America Online
Cisco Systems VPN Client
CVSNT
Dell Accessories
Dell Wireless
Games
Google Desktop

create shortcut for

○ current user

● all users

Raritan Serial Console

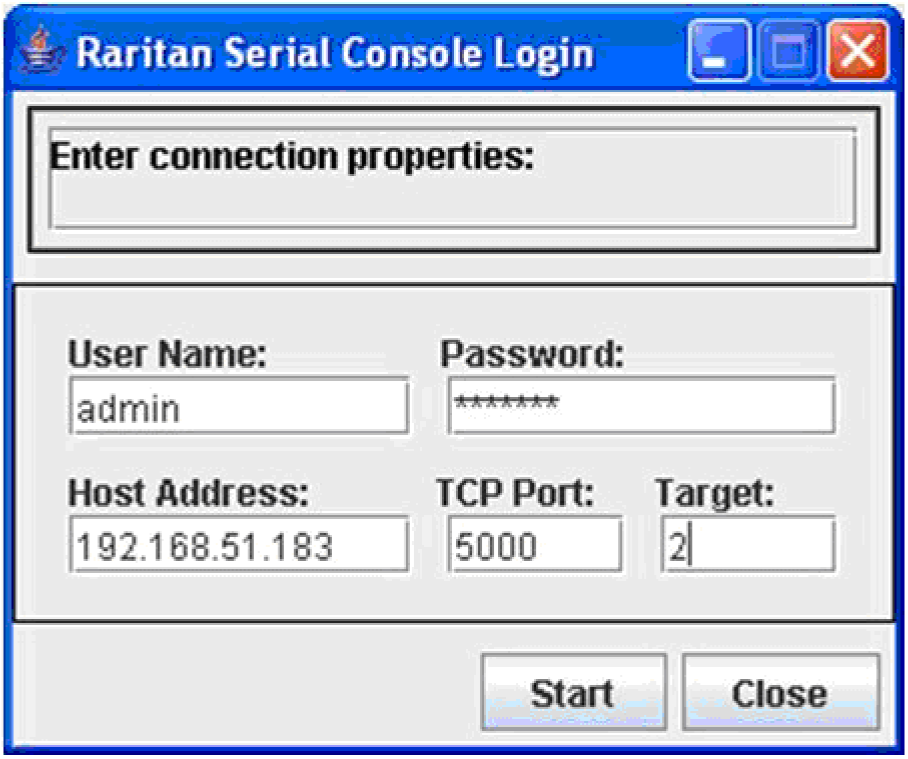
☑ Create shortcut on the desktop

(Made with IzPack - http://www.izforge.com/)

8. Select the Program Group for the Shortcut.
9. Click Next. The installation finished page opens.
10. Click Done.

Launching RSC on Windows Systems

1. Double-click the shortcut or use Start Programs to launch the standalone RSC. The Raritan Serial Console Login connection properties dialog appears.



Raritan Serial Console Login

Enter connection properties:

User Name: admin

Password: ********

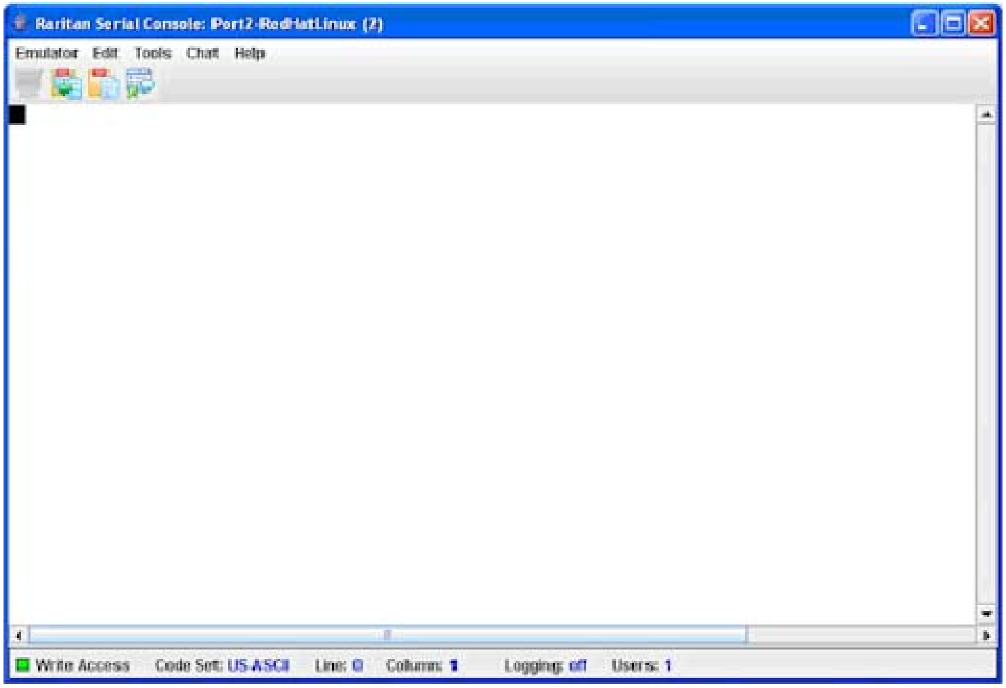
Host Address: 192.168.51.183

TCP Port: 5000

Target: 2

2. Enter the Dominion Dominion SX IP address, account information, and the desired target (port).

3. Click Start. The RSC opens with a connection to the port.



Write Access   Code Set: US-ASCII   Line: 0   Column: 1   Logging: off   Users: 1

Note: In case of unrecognized characters or blurry screens in RSC window due to localization support, try changing the font to Courier New. Choose Emulator > Settings > Display, and select Courier New for Terminal Font Properties or GUI Font Properties.

Installing RSC for Sun Solaris and Linux

You must have administrative privileges to install RSC.

1. Log in to your Sun Solaris machine.
2. Download, or copy from a known location, the RSC-installer.jar installation file.
3. Open a terminal window and change to the directory where the installer is saved.
4. Type *java -jar RSC-installer.jar* and press Enter to run the installer.
5. Click Next after the initial page loads. The Set Installation Path page opens.
   a. Select the directory where you want to install RSC and click Next.
   b. Click Browse to navigate to a non-default directory.
   c. Click Next when the installation is complete.

   d. Click Next again. The installation is complete. The final page indicates where you will find an uninstaller program and provides the option to generate an automatic installation script.

6. Click Done to close the Installation dialog.

Launching RSC on Sun Solaris

1. Open a terminal window and change to the directory where you installed the RSC.
2. Type ./start.sh and press the Enter key to launch RSC.
3. Double-click on the desired device to establish a connection.
4. Type your Username and Password.
5. Click OK to log in.

Chapter 9 Security

There are a number of elements to consider when addressing security for console servers, including

- Encrypting the data traffic sent between the operator console and the SX unit.
- Providing authentication and authorization for users.
- Logging data relevant to the operation so it can later be viewed for auditing purposes. In some cases, this data is required for compliance with governmental or company regulations.
- Encryption of port data log sent to a remote nfs server.
- Security profile.
- "Man in the Middle" properties.

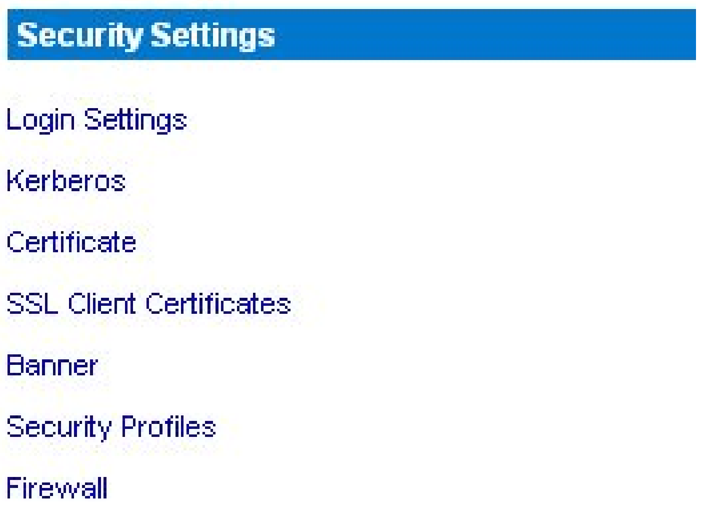
The Security function allows the Dominion SX administrator to specify and manage:

- Login authentication and handling parameters
- Kerberos settings
- Certificate specifications
- Display banner
- Security profiles
- Firewall rules

In This Chapter

Security Settings

Choose the Security tab to view security-related tools. The Security Settings page opens.



Security Settings

Login Settings

Kerberos

Certificate

SSL Client Certificates

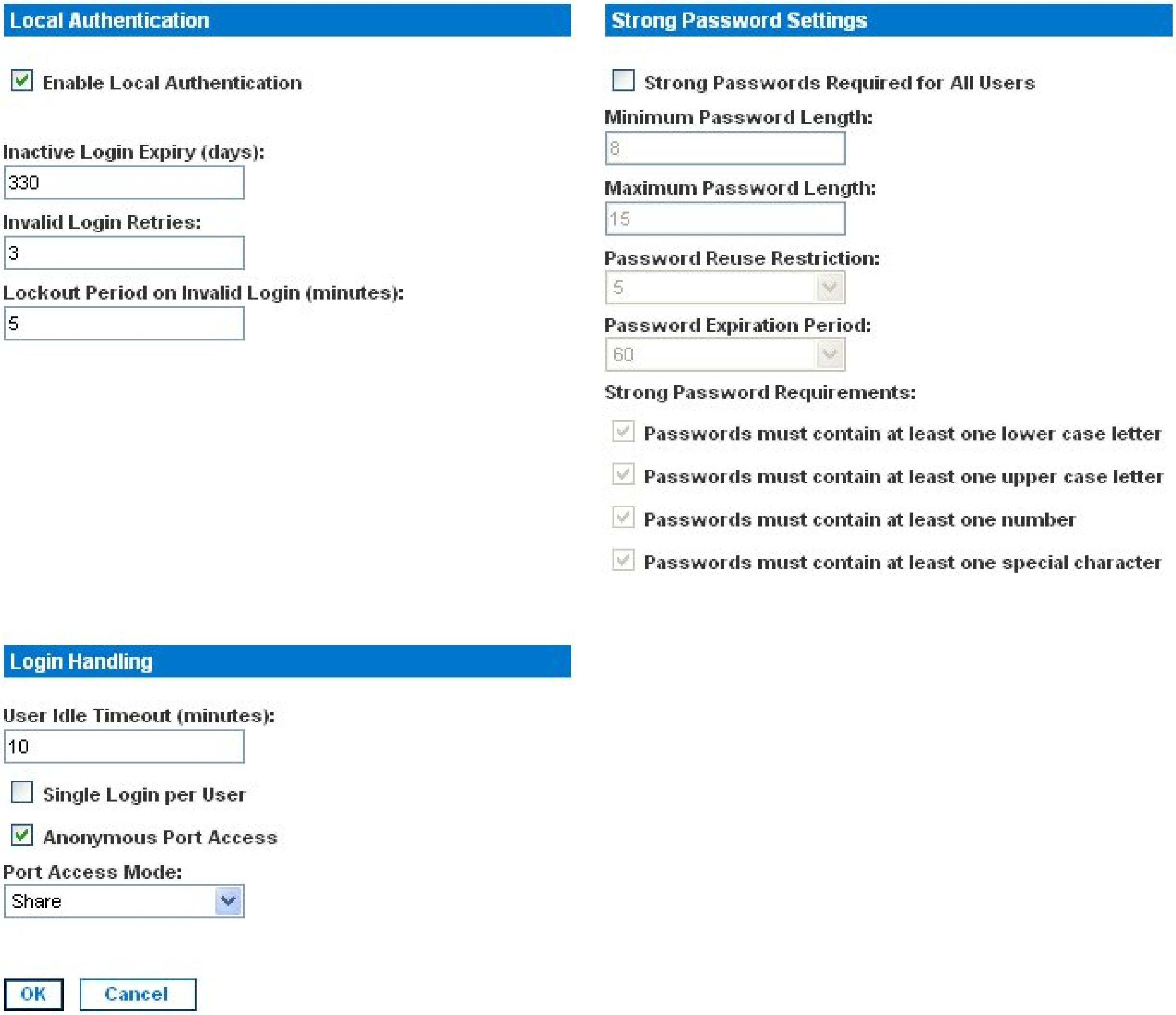
Banner

Security Profiles

Firewall

Login Settings

Choose Security > Login Settings. This panel includes Local Authentication, Login Handling, and Strong Password Settings.



Local Authentication

☑ Enable Local Authentication

Inactive Login Expiry (days): 330

Invalid Login Retries: 3

Lockout Period on Invalid Login (minutes): 5

Strong Password Settings

□ Strong Passwords Required for All Users

Minimum Password Length: 8

Maximum Password Length: 15

Password Reuse Restriction: 5

Password Expiration Period: 60

Strong Password Requirements:

☑ Passwords must contain at least one lower case letter

☑ Passwords must contain at least one upper case letter

☑ Passwords must contain at least one number

☑ Passwords must contain at least one special character

Login Handling

User Idle Timeout (minutes): 10

□ Single Login per User

☑ Anonymous Port Access

Port Access Mode: Share

Local Authentication

1. Go to the Local Authentication panel and select the Enable Local Authentication checkbox.
2. The system displays these defaults in the following fields:
   - Inactive Login Expiry (days): 330

- Invalid Login Retries: 3
- Lockout Period on Invalid Login (minutes): 5

3. Accept the system defaults or type your own.

Login Handling

1. Go to the Login Handling panel and enter a value in the User Idle Timeout (minutes) field. This is the length of inactive time, after which the user is timed out. Default time is 10 (minutes).

   Note: If no port connections are established from CC-SG to Dominion SX within the configured time of User Idle Timeout, service sessions from both devices will be disconnected.

2. To enable single login only, select the Single Login per User checkbox. Only one user can log in at a time using the same profile.
3. Select the Anonymous Port Access checkbox to turn this feature on. An Anonymous User Group is created by default and it cannot be deleted, even by the Administrator. It is visible in the Group List if Anonymous Port Access is selected, but invisible in Group List if Anonymous Port Access is deselected.

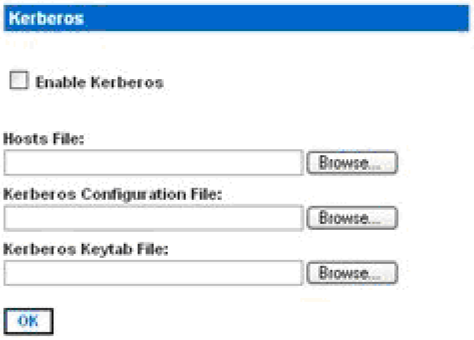
   Note: See **Port Configuration and Port Access Application** *(on page 42) for additional information about anonymous port access.*

4. Select Share in the Port Access Mode drop-down menu if port access should be shared, allowing users to connect to the port while another user is using it. The default value is Share. Change this to Private if you want to keep other users from connecting to a port while a user is using it.

Strong Password Settings

To enable strong passwords, go to the Strong Password panel and select the requirements for a strong password. This includes maximum and minimum length and special character requirements.

Configure Kerberos



1. Click Enable Kerberos.
2. Type the name of the file you want for your Hosts File in the Hosts File field or click on the Browse drop-down menu and select your file.
3. Type the name of the file you want for your Kerberos Configuration File in the Kerberos Configuration File field or click on the Browse drop-down menu and select your file.
4. Type the name of the file you want for your Kerberos Keytab File in the Kerberos Keytab File field or click on the Browse drop-down menu and select your file.
5. Click OK.

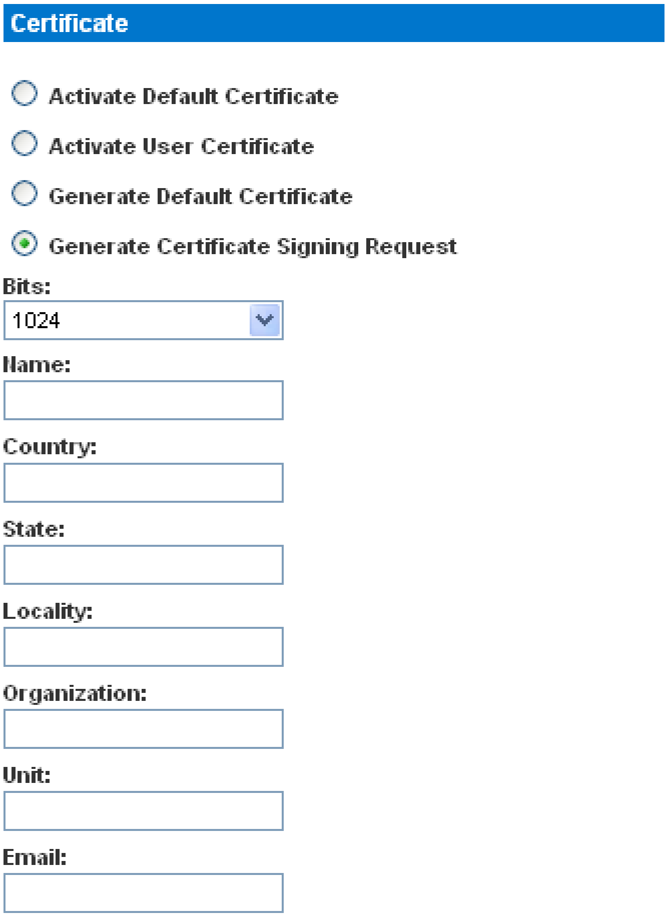
Certificates

The Certificate feature allows you to generate a Certificate Signing Request (CSR), install a user key on the SX, and install a user certificate on the SX.

Generate a Certificate Signing Request

▶ To generate a Certificate Signing Request (CSR):

1. Choose Security > Certificate. The Certificate page opens.



Certificate

○ Activate Default Certificate

○ Activate User Certificate

○ Generate Default Certificate

● Generate Certificate Signing Request

Bits: 1024

Name:

Country:

State:

Locality:

Organization:

Unit:

Email:

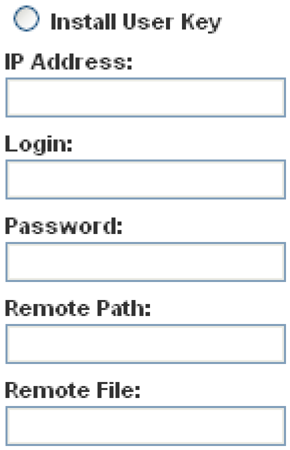
2. Click the Generate a Certificate Signing Request radio button.
3. Click on the drop-down menu in the Bits field. Keep the 1024 default or change it to 512.
4. Type the following in the corresponding fields:
    - Name
    - Country
    - State
    - Locality
    - Unit
    - Email address

5. To view the default certificate or the CSR, click the appropriate radio buttons.
6. Click OK. The CSR is generated.

Install a User Key

▶ To install a user key on the SX:

1. Choose Security > Certificate. The Certificate page opens.



○ Install User Key

IP Address:

Login:

Password:

Remote Path:

Remote File:

2. Select the Install User Key radio button.
3. Type the following in the corresponding fields:
   - IP address of the host with the key
   - Login on host
   - Password on host
   - Remote Path containing the key
   - Remote File containing the key
4. Click OK.

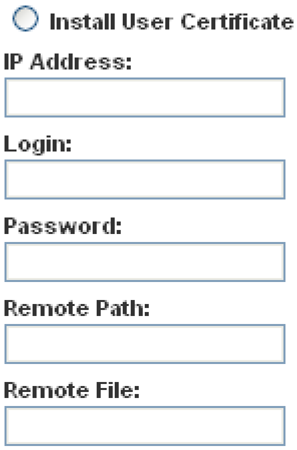
Note: If the Dominion SX is not used to generate the certificate signing request and an external certificate is used instead, encryption needs to be removed from the private key before installing it on the Dominion SX. If this is the case, to remove the encryption from the key, a command such as openssl 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 Dominion SX does not allow users to access the web server directly, encrypted private keys are not required and does not compromise security.*

Note: When the Dominion SX is used to generate the certificate signing request, the private key is not required since Dominion SX keeps the private key exclusive.

Install a User Certificate

▶ To install a user certificate on the SX:

1. Choose Security > Certificate. The Certificate page opens.



○ Install User Certificate

IP Address:

Login:

Password:

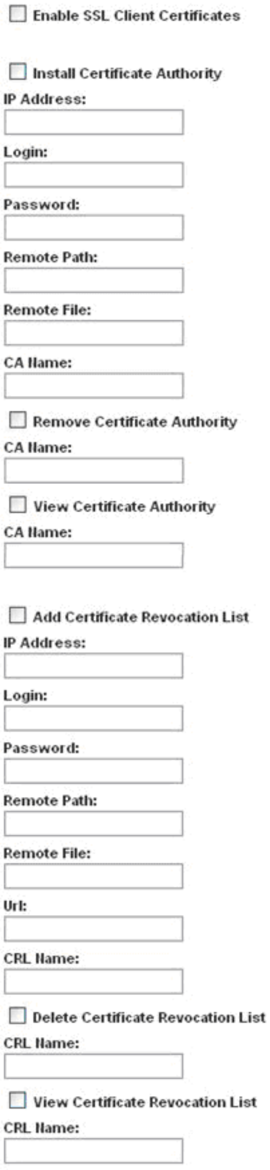
Remote Path:

Remote File:

1. Select the Install User Certificate radio button.
2. Type the following information in the corresponding fields:
   - The IP address of the host with the certificate
   - Login on the host
   - Password on the host
   - Remote Path containing the certificate
   - Remote File containing the certificate
3. Click OK.

SSL Client Certificate

SSL Security certificates are used in browser access to ensure that the device to which you are attached is the device that is authorized to be connected. See ***Appendix C: Certificates*** (see "Certificates" on page 244) for details on SSL Certificates. This section describes only how to configure the certificates, but you can find additional SSL Certificate information at: ***http://www.microsoft.com/technet/prodtechnol/ie/reskit/6/part2/c06ie6rk.mspx?mfr=true*** (http://www.microsoft.com/technet/prodtechnol/ie/reskit/6/part2/c06ie6rk.mspx?mfr=true)



□ Enable SSL Client Certificates

□ Install Certificate Authority

IP Address:

Login:

Password:

Remote Path:

Remote File:

CA Name:

□ Remove Certificate Authority

CA Name:

□ View Certificate Authority

CA Name:

□ Add Certificate Revocation List

IP Address:

Login:

Password:

Remote Path:

Remote File:

Url:

CRL Name:

□ Delete Certificate Revocation List

CRL Name:

□ View Certificate Revocation List

CRL Name:

Enable Client Certificate Authentication

▶ To enable Client Certificate Authentication:

1. Select the Enable SSL Client Certification checkbox.
2. Click OK to enable the Client Certificate authentication.

Install a New Trusted Certificate Authority

To install a new trusted Certificate Authority (CA) to the SX, the CA certificate must be on an accessible FTP server.

1. Select the Install Certificate Authority checkbox.
2. Fill in the data needed to retrieve the certificate from the FTP server.
3. Click OK to retrieve and install the CA certificate to the SX.

Remove a User-Added Certificate Authority

► **To remove a user-added CA from the SX:**

1. Select the Remove Certificate Authority checkbox.
2. In the CA Name field, type the name that was specified when the CA certificate was added.
3. Click OK to remove the certificate.

View a Certificate Authority

► **To view a CA:**

1. Select the View Certificate Authority checkbox.
2. In the CA Name field, type the name of the CA you want to view.
3. Click OK to retrieve the list of CAs.

Manage the Client Certificate Revocation List (CRL)

The SX comes with VeriSign and Thawte CA certificates and CRLs preinstalled. If a user adds a custom CA to the SX, a corresponding CRL should be added to keep track of revoked certificates. For the CRL to be automatically retrieved when it expires, it should be retrievable from a web server to which the SX can connect.

Add a New Certificate Revocation List to the SX

To add a new CRL to the SX, the CRL list must be on an accessible FTP server.

1. Select the Add Certificate Revocation List checkbox.
2. Fill in the fields to access the FTP Server.
   - The CRL Name field should match the name that was used to add the CA.
   - The URL field should be the numeric dot notation of the IP address of the HTTP server.

3. Click OK to add the CRL.

Delete a Certificate Revocation List from the SX

▶ To delete a CRL from the SX:

1. Select the Delete Certificate Revocation List checkbox.
2. In the CRL Name field, type the name of the CA to which this CRL belongs.
3. Click OK to delete the CRL.

View a Certificate Revocation List

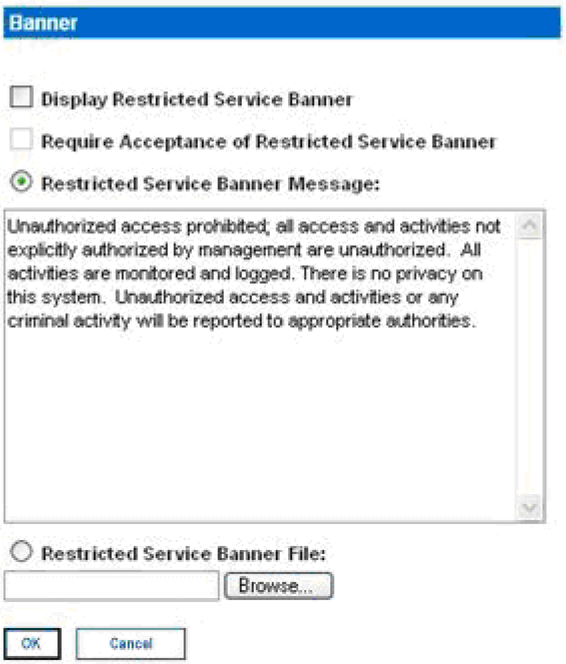
▶ To view a CRL:

1. Select the View Certificate Revocation List checkbox.
2. Click OK to retrieve the list of CRLs.

Banner

Dominion SX optionally supports a customizable welcome banner of maximum 5000 words, 8 words per row, that appears after log in. The banner identifies where the user has logged into. Dominion SX also allows you to add a consent banner that forces the user to accept stated conditions prior to advancing into operation of the console server.

Note: When you are logged in to the SX via GUI, a banner using a fixed width typeface and a common dimension like 80x25 appears. Even if the source banner is very large, the banner displayed on the GUI will not make the overall page size increase, as it will be contained within a self-scrolled text area.



Banner

□ Display Restricted Service Banner

□ Require Acceptance of Restricted Service Banner

● 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:

1. Select one of the following checkboxes.
   - Display Restricted Service Banner
   - Require Acceptance of Restricted Service Banner
2. Click one of the following radio buttons:
   - Restricted Service Banner Message
   - Restricted Service Banner File
3. If you selected Restricted Service Banner File, click on the Browse drop-down menu

4. Locate and select the file that contains the Restricted Service Banner message you want to display on the SX login dialog.
5. Click OK.

Security Profiles

The SX provides three security profiles for your use. The profiles simplify the task of assigning permissions to users and groups by defining basic permissions that automatically apply to all users.

About Security Profiles

The three security profiles are:

- Standard - Custom defaults
- Secure - All functions in Custom are checked
- Custom - Can be configured by a user

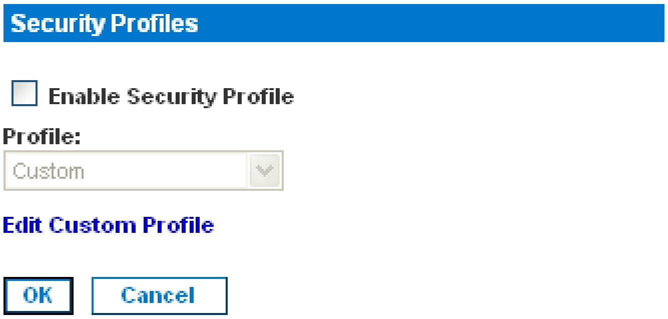
If you enable the Standard or Secure profiles, you cannot enable/disable manually any of the features they include. You must disable the profile to make those changes.

If a profile is disabled, the features in the profile keep the states they had when the profile was enabled. For example, if the default TLS Required feature is deselected and you enable the Secure profile, this feature becomes selected. When you disable the Secure profile, the TLS Required feature remains selected.

Select a Security Profile

▶ **To select a security profile:**

1. Choose Security > Security Profiles. The Security Profiles page opens.



Security Profiles

□ Enable Security Profile

Profile: Custom

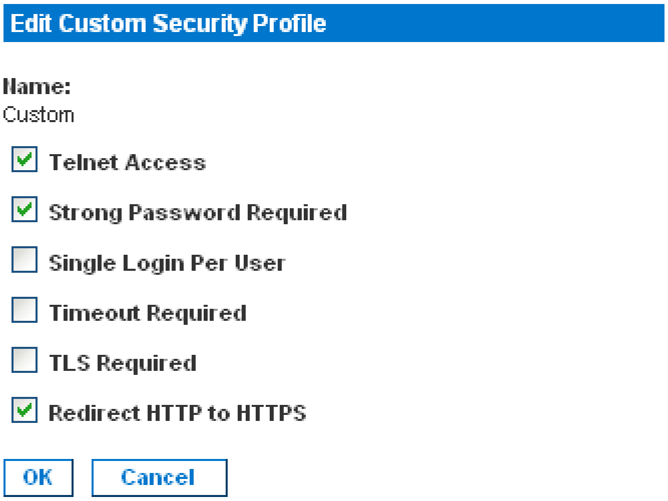
2. Click the Enable Security Profile checkbox.
3. Select the profile from the drop-down menu in the Profile field.

4. Click OK.

Edit the Custom Profile

To edit the Custom profile:

1. Choose Security > Security Profiles. The Security Profiles page opens.
2. Click the Edit Custom Profile link. The Edit Custom Security Profile page opens.



Edit Custom Security Profile

Name:
Custom

☑ Telnet Access

☑ Strong Password Required

☐ Single Login Per User

☐ Timeout Required

☐ TLS Required

☑ Redirect HTTP to HTTPS

3. Check one or more of the following checkboxes.
   - Telnet Access
   - Strong Password Required
   - Single Login Per User
   - Timeout Required
   - TLS Required
   - Redirect HTTP to HTTPS
4. Click OK.

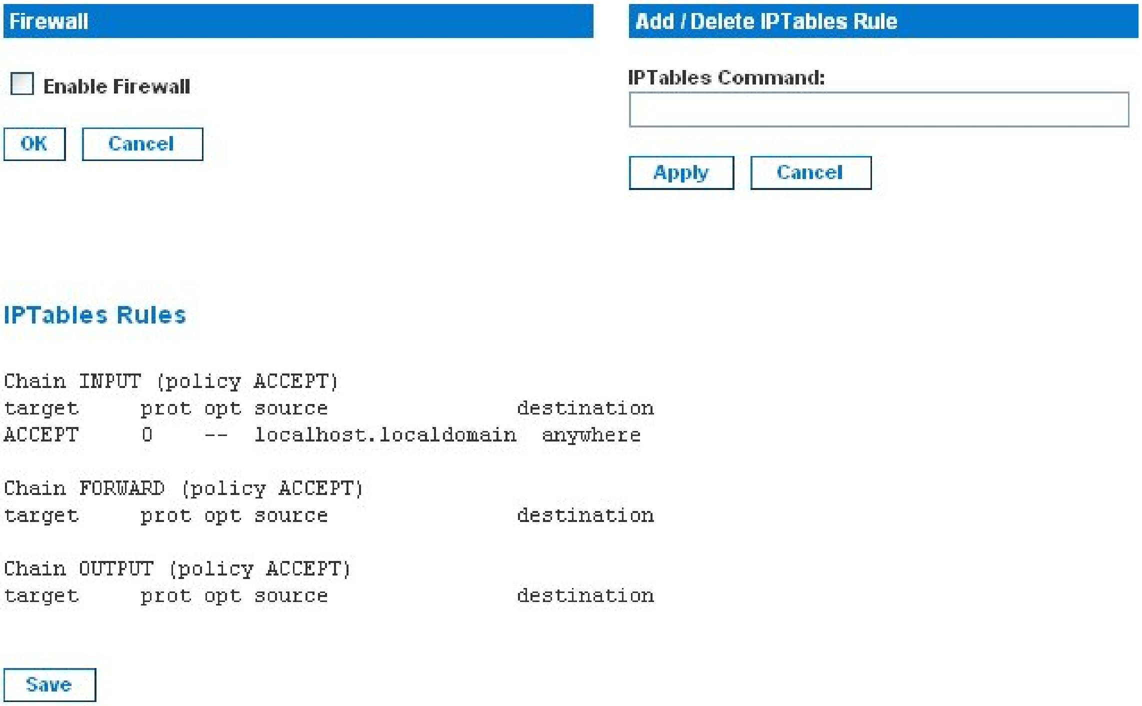
Firewall

The SX provides 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 dial modem interfaces.

Enable the Firewall

▶ **To enable the firewall:**

1. Choose Security > Firewall. The Firewall page opens, displaying the existing IPTables rules.



```
Chain INPUT (policy ACCEPT)
target     prot opt source               destination
ACCEPT     0    --  localhost.localdomain  anywhere

Chain FORWARD (policy ACCEPT)
target     prot opt source               destination

Chain OUTPUT (policy ACCEPT)
target     prot opt source               destination
```

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 an IPTables Rule

▶ **To add an IPTables rule:**

1. Choose Security > Firewall. The Firewall page opens, displaying the default IPTables rules.
2. Go to the Add/Delete IPTables Rule field and enter a rule.
3. Click Apply, and then click Save. The rule is displayed on the screen.
4. Delete some or all of the default rules if you choose to.
5. Add new rules if you choose to.

Note: Rules are added using the IPTables command to the kernel. 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 unit becomes inaccessible, while the Save action allows you to recover from the mistake. Reboot the system. If you do not Save the rules, you lose them in the reboot.

Chapter 10 Logging

This chapter explains how to enable and configure the various SX logs.

In This Chapter

Configuring Local Event Logging

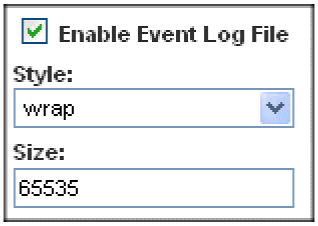
To configure the local log settings, choose Setup > Log. The Log Settings page opens. It contains a number of individual logging panels.

Enable the Event Log File

This feature enables event log messages to be stored locally on the SX unit.

To enable the Event Log File:

1. Go to the Event Log panel and select the Enable Event Log File checkbox. To turn this feature off, deselect this checkbox.



☑ Enable Event Log File

Style: wrap

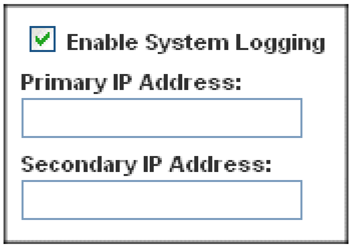
Size: 65535

2. Select the log file style in the Style field. This determines how the file reacts when the maximum file size is reached. Your choices are:
   - Wrap: This causes the log file to circle around to the beginning when the end of the file is reached.
   - Flat: This causes logging to stop when the end of the file is reached.
3. Enter the maximum size of the file in the Size field. The default is 65535 bytes.
4. Click OK.

Enable System Logging

This feature sends event log messages to a remote Syslog server. The messages from the Dominion SX unit are sent to the LOCAL0 channel of the Syslog server for more efficient parsing. To set this feature up:

1. Go to the System Logging panel and click the Enable System Logging checkbox. (To turn this feature off, clear this checkbox.)



☑ Enable System Logging

Primary IP Address:

Secondary IP Address:

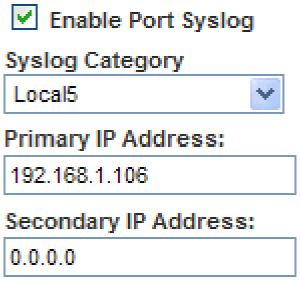
2. Type the IP address of the remote Syslog server in the Primary IP Address field.
3. If you have a backup Syslog server, types its IP address in the Secondary IP Address field.
4. Click OK.

Enable Port Syslog

This feature enables port data to be logged to a syslog server. Output from all ports will be logged to the same file in syslog. Please use NFS Port Logging if you prefer separate files for each port's data.

▶ To enable Port Syslog:

1. Go to the System Logging panel and select the Enable Port Syslog checkbox. To turn this feature off, deselect this checkbox.



☑ Enable Port Syslog

Syslog Category: Local5

Primary IP Address: 192.168.1.106

Secondary IP Address: 0.0.0.0

2. Select a channel from the drop-down menu of Syslog Category, and the messages from the Dominion SX unit are sent to the selected channel (for example, Local5) of the Syslog server.

Note: If no specific IPs are entered for the port data destination servers, port logs are sent to the Syslog server configured in the System Logging section. If the Syslog category is set to Local0, then system events and port logs are sent to all servers configured in the System Logging"section and Port Syslog section.

3. Type the IP address of the remote Syslog server in the Primary IP Address field.
4. If you have a backup Syslog server, type its IP address in the Secondary IP Address field.
5. Click OK.

Enable Port Logging

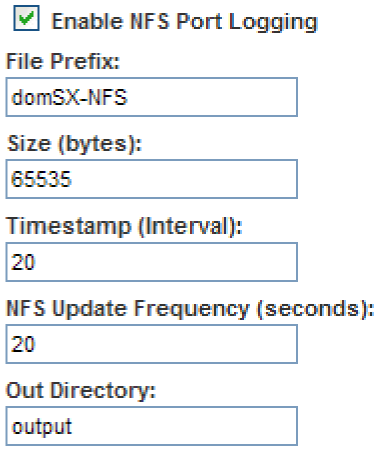
Configure NFS port logging after you have enabled NFS Logging (see Configuring NFS Logging for details).

This feature enables port data to be logged to a Network File System (NFS) server, allowing you to save and access the log files over a network.

NFS supports file sharing, which means you can store the files on the network that you want other people to access, while keeping your secure files on the Dominion SX unit. NFS stores the port sessions as viewed by the user, as well as adding messages when a user connects to or disconnects from a port.

▶ To set up port logging:

1. Go to the Port Logging panel and select the Enable NFS Port Logging checkbox. To turn this feature off, deselect this checkbox.



☑ Enable NFS Port Logging

File Prefix: domSX-NFS

Size (bytes): 65535

Timestamp (Interval): 20

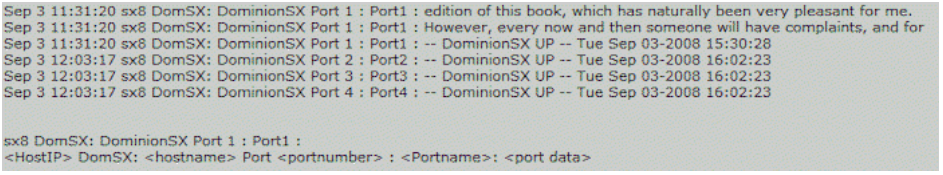
NFS Update Frequency (seconds): 20

Out Directory: output

2. Type the prefix to the port data file's name on the NFS server in the File Prefix field.

3. Type the maximum file size allowed in the Size field. Once this size is reached, a new file is created to store the port log data. If you enter a value of 0, the Dominion SX will not create a new file.
4. Type the time interval (in seconds) between two timestamp messages in the log file in the Timestamp (Interval) field. If you enter a value of 0, this will disable timestamps in the log file. The maximum value is 99999. This field is optional, but if a timestamp is configured, the syslog will have timestamps interspersed with the same timestamp interval.
5. Type the time interval (in seconds) between two updates of the port log file in the NFS Update Frequency (seconds) field. Data is buffered until the internal buffer is full or this timestamp occurs. Then the data is written to the file. This prevents severe network traffic on port activity where every character would trigger a write to the NFS server.
6. Type the subdirectory on the configured NFS server to write the output port data to in the Out Directory field. This is the default log file and contains the port sessions as visible to the user.
7. Click OK.

The following is an example of an output file.

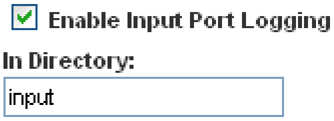


```
Sep 3 11:31:20 sx8 DomSX: DominionSX Port 1 : Port1 : edition of this book, which has naturally been very pleasant for me.
Sep 3 11:31:20 sx8 DomSX: DominionSX Port 1 : Port1 : However, every now and then someone will have complaints, and for
Sep 3 11:31:20 sx8 DomSX: DominionSX Port 1 : Port1 : -- DominionSX UP -- Tue Sep 03-2008 15:30:28
Sep 3 12:03:17 sx8 DomSX: DominionSX Port 2 : Port2 : -- DominionSX UP -- Tue Sep 03-2008 16:02:23
Sep 3 12:03:17 sx8 DomSX: DominionSX Port 3 : Port3 : -- DominionSX UP -- Tue Sep 03-2008 16:02:23
Sep 3 12:03:17 sx8 DomSX: DominionSX Port 4 : Port4 : -- DominionSX UP -- Tue Sep 03-2008 16:02:23


sx8 DomSX: DominionSX Port 1 : Port1 :
<HostIP> DomSX: <hostname> Port <portnumber> : <Portname>: <port data>
```

Configure Input Port Logging

▶ **To configure input port logging:**

1. Go to the Input Port Logging panel and select the Enable Input Port Logging checkbox. To turn this feature off, deselect this checkbox.



☑ Enable Input Port Logging

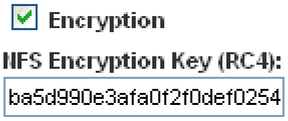
In Directory: input

2. Type a directory for input in the In Directory field.
3. Click OK.

Configure Encryption

To configure encryption:

1. Go to the Encryption panel and select the Encryption checkbox. To turn this feature off, deselect this checkbox.



☑ Encryption

NFS Encryption Key (RC4):

ba5d990e3afa0f2f0def0254

2. Accept the default encryption key or type a new one in the NFS Encryption Key (RC4) field.
3. Click OK.

Block Port Access On Failure

This feature will specify NFS mount behavior. This feature appears as checked by default, and NFS behaves as a soft mount. When it is a soft mount, NFS will be re-mounted if an operation goes wrong on the file system. If the re-mount succeeds, logging will continue; otherwise, further logging events will be inhibited.

☑ Block Port Access On Failure

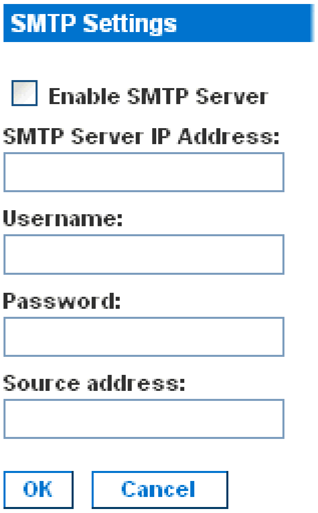
Configuring SMTP Logging

To configure SMTP logging, choose Setup > Events. The SMTP Logging screen appears, containing SMTP Settings panel and a New SMTP Event panel.

Enable SMTP Logging

To enable SMTP logging:

1. Go to the SMTP Settings panel and select the Enable SMTP Server checkbox.



SMTP Settings

□ Enable SMTP Server

SMTP Server IP Address:

Username:

Password:

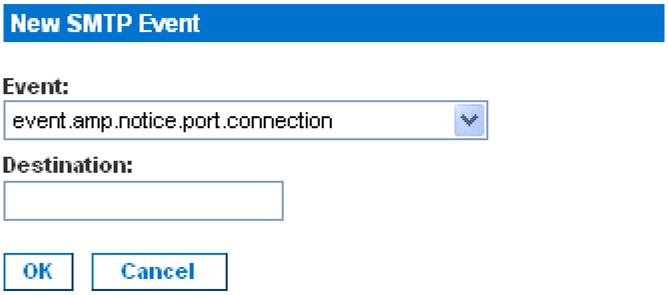
Source address:

2. Type the IP address of the SMTP server in the SMTP Server IP Address field.
3. Type the username and password in the Username and Password fields. These are required to access the SMTP server.
4. Type your source address in the Source Address field.
5. Click OK.

Select a New SMTP Event

▶ To select a new SMTP event:

1. Go to the New SMTP Event panel and select a new event from the Event drop-down list.



Event: event.amp.notice.port.connection

Available events include:

- event.amp.notice.port.connection
- event.amp.notice.user.logoff
- event.amp.notice.backup
- event.amp.notice.restore
- event.amp.notice.config.directaccesslockout
- event.amp.notice.reboot
- event.amp.notice.boot
- event.amp.notice.config.datacom
- event.amp.notice.config
- event.amp.notice.upgrade
- event.amp.keyword
- event.amp.strongpasssword
- event.amp.banner
- event.amp.firewall
- event.amp.iptablesaved
- event.amp.security.clientauth
- event.amp.security.clientcert.ca
- event.amp.security.clientcert.crl.expired
- event.amp.security.clientcert.crl.updated

2. In the Destination field, type the email address to which you want to send the event.

3. Click OK.

Test SMTP Logging

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

To verify that the information is correct and working:

1. Send a test email by selecting an event such as: *event.amp.notice.port connection*
2. Connect to a port and see if the message is 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.

Configuring 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:

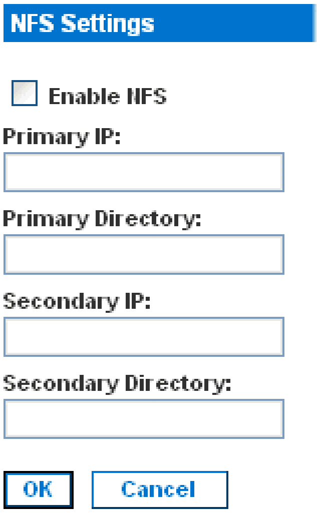
- Input: Records all input (keystrokes) from users.
- Output: Contains all the messages that come from the server into the console server. This includes all user input that is echoed back from the managed device/server.

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.

To configure NFS Logging:

1. Choose Setup > NFS. The NFS Settings page opens.



2. Select the Enable NFS checkbox to enable NFS logging.
3. Type the IP address of the NFS server in the Primary IP field, and then enter the path to the log file in the Primary Directory field.
4. If you have a backup NFS server, enter the same information for this server in the Secondary IP field and Secondary Directory fields. If the primary server fails, port logging is redirected to the secondary server.
5. Click OK.

Configuring SNMP Logging

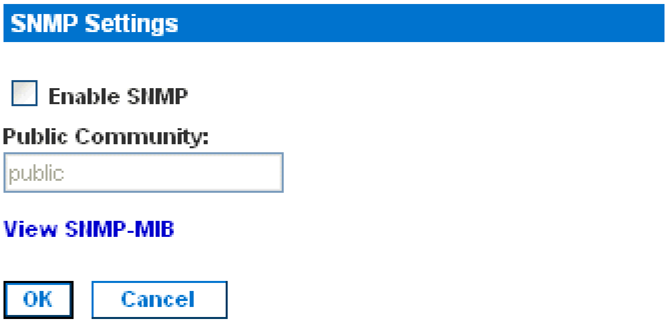
The SX supports Simple Network Management Protocol (SNMP) traps and logging.

Enable SNMP Logging

▶ **To enable SNMP logging:**

1. Choose Setup > SNMP. The SNMP page opens.

2. Go to the SNMP Setting panel and select the Enable SNMP checkbox.



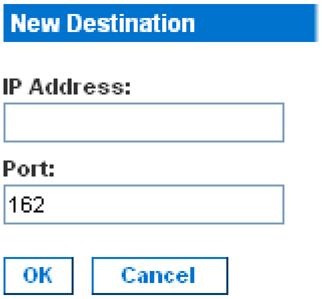
3. Type an SNMP public community in the Public Community field. The default is Public. The public community determines which SNMP management stations receive SNMP alerts.
4. Click OK.

Create a New SNMP Destination

SNMP destinations determine which SNMP management stations receive SNMP traps.

▶ **To create a new SNMP destination:**

1. Go the SNMP Destination panel and type the IP address of the new destination in the IP Address field.



2. By default, the new destination will use the standard SNMP port of 162. Change this to another port by entering a different port number in the Port field. Click OK.

Note: To display the SNMP Management Information Base (MIB), click the View SNMP-MIB link in the SNMP Settings Panel (as shown in **Enable SNMP Logging** *(on page 103)).*

Chapter 11 Maintenance

The Dominion SX maintenance features presented in this chapter allow the administrator perform the following tasks:

- Manage event logs
- View configuration report
- Backup and restore the Dominion SX unit settings
- Upgrade firmware and track upgrade history
- Reset to factory default settings
- Reboot the unit

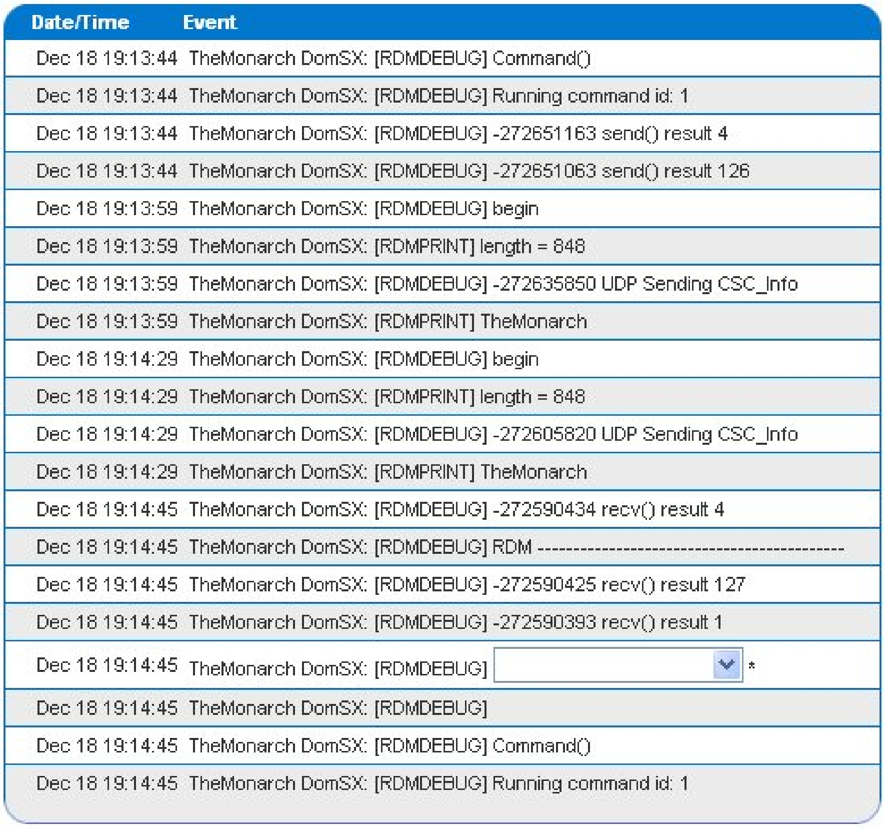
In This Chapter

Managing the Local Event Log

The Dominion SX allows you to display the contents of the event log, clear the log, and send the log to a remote FTP server.

Display the Local Event Log

To display the contents of the local event log, choose Maintenance > View Event Log. The following figure shows a typical event log.



Date/Time	Event
Dec 18 19:13:44	TheMonarch DomSX: [RDMDEBUG] Command()
Dec 18 19:13:44	TheMonarch DomSX: [RDMDEBUG] Running command id: 1
Dec 18 19:13:44	TheMonarch DomSX: [RDMDEBUG] -272651163 send() result 4
Dec 18 19:13:44	TheMonarch DomSX: [RDMDEBUG] -272651063 send() result 126
Dec 18 19:13:59	TheMonarch DomSX: [RDMDEBUG] begin
Dec 18 19:13:59	TheMonarch DomSX: [RDMPRINT] length = 848
Dec 18 19:13:59	TheMonarch DomSX: [RDMDEBUG] -272635850 UDP Sending CSC_Info
Dec 18 19:13:59	TheMonarch DomSX: [RDMPRINT] TheMonarch
Dec 18 19:14:29	TheMonarch DomSX: [RDMDEBUG] begin
Dec 18 19:14:29	TheMonarch DomSX: [RDMPRINT] length = 848
Dec 18 19:14:29	TheMonarch DomSX: [RDMDEBUG] -272605820 UDP Sending CSC_Info
Dec 18 19:14:29	TheMonarch DomSX: [RDMPRINT] TheMonarch
Dec 18 19:14:45	TheMonarch DomSX: [RDMDEBUG] -272590434 recv() result 4
Dec 18 19:14:45	TheMonarch DomSX: [RDMDEBUG] RDM ---
Dec 18 19:14:45	TheMonarch DomSX: [RDMDEBUG] -272590425 recv() result 127
Dec 18 19:14:45	TheMonarch DomSX: [RDMDEBUG] -272590393 recv() result 1
Dec 18 19:14:45	TheMonarch DomSX: [RDMDEBUG] *
Dec 18 19:14:45	TheMonarch DomSX: [RDMDEBUG]
Dec 18 19:14:45	TheMonarch DomSX: [RDMDEBUG] Command()
Dec 18 19:14:45	TheMonarch DomSX: [RDMDEBUG] Running command id: 1

Note: If the number of events in the log exceeds the size of one page, click the Next link that appears under "Event Log" at the top of the screen to display the next page.

For each event, the log gives the date and time the event was logged and a brief description. The following are typical events:

Feb 5 12:55:23 DominionSX DomSX: DominionSX notice SXRebootCompleted

Feb 5 12:55:25 DominionSX DomSX: DominionSX notice SXSystemReady

Feb 1 16:30:35 DominionSX DomSX: DominionSX notice SXSettingSaved User Elaine changed

configuration for Logging

Clear the Event Log

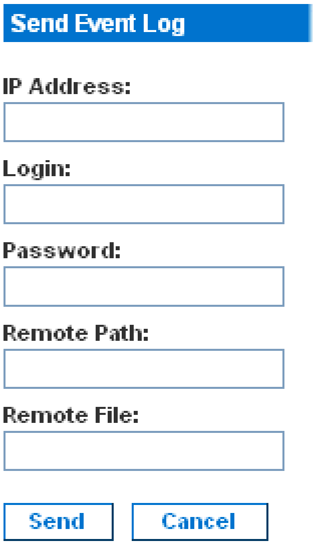
▶ To clear the event log:

1. Choose Maintenance > Clear Event Log. You are prompted to confirm the clear action.
2. Click Yes. The log is cleared of all contents. (If you change your mind, click No.)

Send the Event Log

▶ To send the contents of the event log to a remote FTP server:

1. Choose Maintenance > Send Event Log. The Send Event Log page opens.


Send Event Log

IP Address:

Login:

Password:

Remote Path:

Remote File:

2. Enter the IP address of the FTP server in the IP address field.
3. Enter a login name and password on the FTP server in the Login and Password fields. This is necessary to access the FTP server.
4. Enter the path to the location where the event log will be stored in the Remote Path field.
5. Enter the name of the file to store the event log in the Remote File field.
6. Click Send.

Displaying a Configuration Report

The Configuration Report provides detailed information about the SX unit. To display the report, choose Maintenance > Configuration Report. The report shows:

- Version and firmware information
- Port settings
- User and group settings
- HTTP, HTTPS, SSH, and Telnet ettings
- RADIUS, LDAP, TACACS+, and Kerberos settings
- Local authentication settings
- Other settings

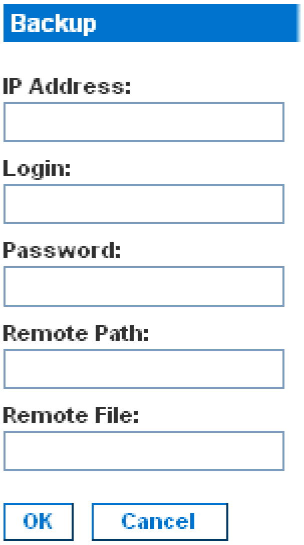
Backing Up and Restoring the SX

When you back up the Dominion SX, the system makes a copy of the SX configuration (without network settings) and writes the copy to an FTP server. The file can be recovered using a Restore operation, if necessary.

Back Up the SX

► To back up the SX unit:

1. Choose Maintenance > Backup. The Backup page opens.



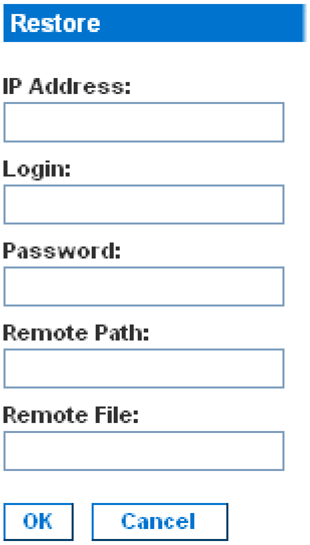
2. Type the IP address of the target FTP server where the backup will be written in the IP Address field.
3. Type the login name of the account on the system where the backup will be stored in the Login field.
4. Type the password of the account on the system where the backup will be stored in the Password field.
5. Type the path to the backup file in the Remote Path field.
6. Type the name of the file in which the backup will be saved in the Remote File field.
7. Click OK.

Restore the SX

Restoring the SX retrieves a copy of the SX configuration from the FTP server where it has been backed up and writes the file to the SX.

▶ To perform a restore operation:

1. Choose Maintenance > Restore. The Restore page opens.



2. Type the IP address of the source FTP server system from which the restore data will be retrieved in the IP Address field.
3. Type the login name of the account on the system where the restore data will be stored in the Login field.
4. Type the password of the account on the system where the restore data will be stored in the Password field.
5. Type the path to the restore file in the Remote Path field.

6. Type the name of the file in which the restore will be saved in the Remote File field.
7. Click OK.

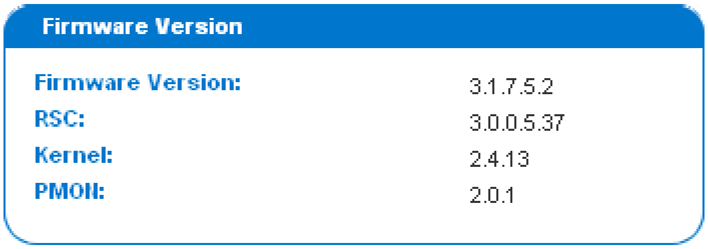
Upgrading the SX Firmware

You can display the version of the firmware currently running on the SX, upgrade the firmware to a later version, and display a history of firmware upgrades.

Note: Dominion SX can only be upgraded, while downgrade is not possible.

Display the Current Firmware Version

To display the current version of firmware running on an SX unit, choose Maintenance > Firmware Version. The Firmware Version page opens, displaying the Firmware Version, RSC, Kernel, and PMON.



Firmware Version

Firmware Version: 3.1.7.5.2
RSC: 3.0.0.5.37
Kernel: 2.4.13
PMON: 2.0.1

Upgrade the Firmware

Before you perform a firmware upgrade, you must:

1. Download the upgrades file(s), which are in WinZip format onto a folder on the local FTP server.
2. Obtain the IP address of the FTP server.
3. Obtain the file path to the upgrade file(s). This is the path to the extracted upgrade files, for example, cert_pact.tgz, on the FTP server.
4. Obtain a user account (optional) if “anonymous” access to the FTP server is not supported.

   The Firmware Upgrade feature allows you to upgrade the Dominion SX unit's firmware to a newer version. These upgrades preserve user-defined settings. You do not need to re-configure the unit after the upgrade is complete.

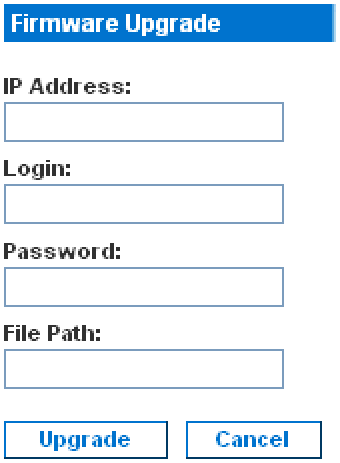
Important: During an upgrade procedure, do not attempt to access any unit features or functions, including, but not limited to, Reset and Exit. Interrupting the upgrade procedure can cause memory

corruption and render the unit non-functional. Such an action may void your warranty or service contract, and in such a case unit repair/replacement costs are solely the responsibility of the user.

Note: Many upgrades can be performed "anonymously" from the FTP server.

To perform the upgrade:

1. Choose Maintenance > Firmware Upgrade. The Firmware Upgrade page opens.



2. Type the IP Address of the FTP server in the IP Address field.
3. Type your login name in the Login field.
4. Type your password in the Password field.
5. Type the path to the firmware file in the File Path field (for example, /home/downloads/firmware/UpgradePack_2.5.6_3.1.0.5.2/Pack1of1).
6. Click Upgrade.

   The upgrade lasts about 20 minutes. After about half the time, the SX unit will restart. The upgrade will continue for another 20 minutes or so after the restart.

   Once the upgrade is initiated, the upgrade status message indicates the progress of the upgrade. The files are copied and the unit is reset. You receive the following message:

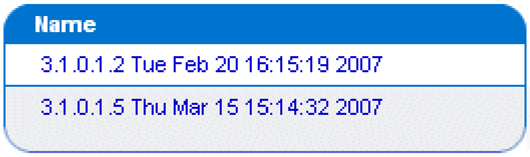
   Upgrade is Complete, The unit is now resetting.

   The blue light on your SX will turn off, flash once while it is extracting more files, turn off, then turn on and remain on. You will be logged out. It should now be running the new firmware.

Note: If the upgrade fails, the system will display an error message detailing the failure.

Display a Firmware Upgrade History

To display the firmware upgrade history for an SX unit, choose Maintenance > Firmware Upgrade History. The Firmware Upgrade History page opens, displaying the version of each past firmware upgrade and the date and time the upgrade was performed.



Name
3.1.0.1.2 Tue Feb 20 16:15:19 2007
3.1.0.1.5 Thu Mar 15 15:14:32 2007

Performing a Factory Reset on the SX

Performing a factory Reset returns the SX unit to its default factory settings. Be very careful when doing this, because it will erase all the data and settings on the SX unit and return it to the state in which it was originally shipped.

To perform a factory reset, choose Maintenance > Factory Reset. You will be prompted to confirm the reset. Click Yes to proceed. If you change your mind, click No.

Note: In case you are not aware of the administrative password to log in the SX GUI to perform a factory reset, you may want to try resetting from the SX hardware. To do so, insert a pin into the RESET hole on the back panel of the SX unit and hold for about 15 seconds. The SX is then reset to factory defaults.

Rebooting the SX

Performing a reboot powers the SX off and then back on. Be careful when doing this, because it will log all current users off the system.

To perform a reboot, choose Maintenance > Reboot You will be prompted to confirm the reboot. Click Yes to proceed. If you change your mind, click No.

Chapter 12 Diagnostics

The Diagnostics function provides the administrator with the tools to test the network and to monitor processes.

Click the Diagnostics tab to display the Diagnostics page, which provides links to Network Infrastructure Tools and Administrator Tools.

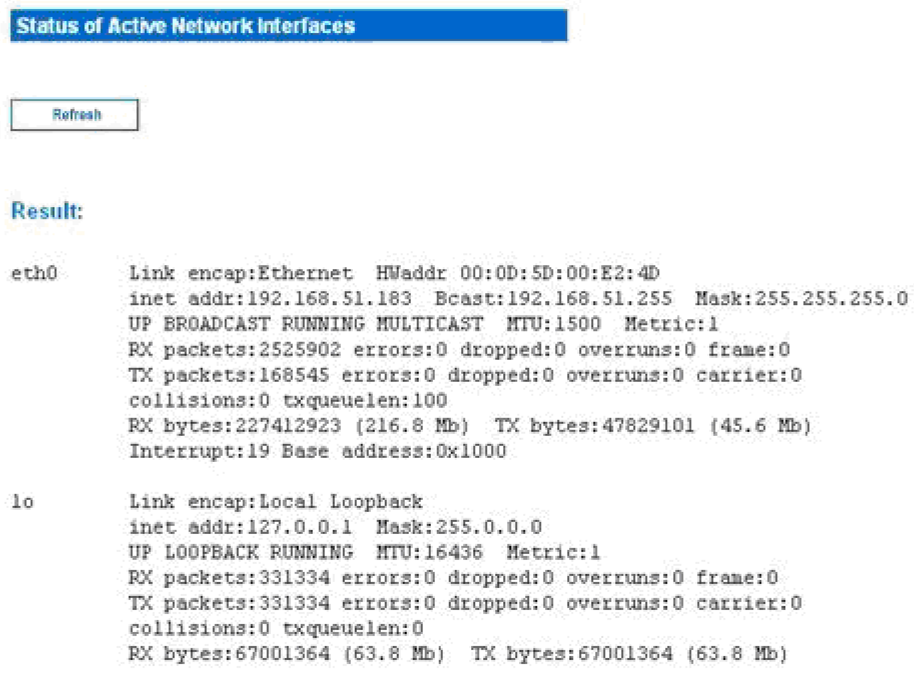
In This Chapter

Network Infrastructure Tools

Network infrastructure tools allow you to view the status of the active network interfaces and important network statistics. You can also perform ping and trace route operations.

Status of Active Network Interfaces

1. Choose Diagnostics > Status of Active Network Interfaces. The system displays status information about the active network interfaces.



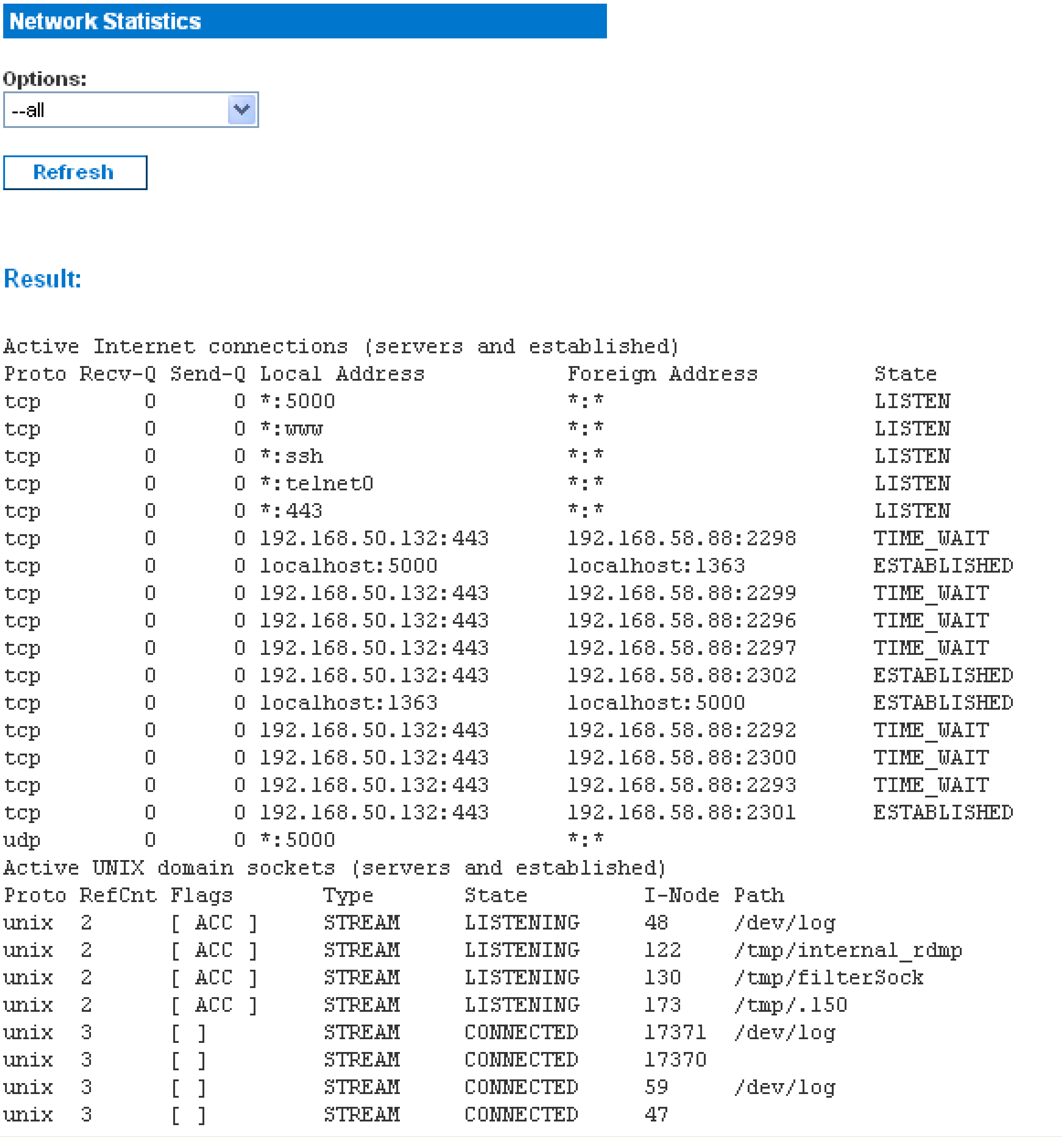
Result:

```
eth0      Link encap:Ethernet  HWaddr 00:0D:5D:00:E2:4D
          inet addr:192.168.51.183  Bcast:192.168.51.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:2525902 errors:0 dropped:0 overruns:0 frame:0
          TX packets:168545 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:100
          RX bytes:227412923 (216.8 Mb)  TX bytes:47829101 (45.6 Mb)
          Interrupt:19 Base address:0x1000

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:331334 errors:0 dropped:0 overruns:0 frame:0
          TX packets:331334 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:67001364 (63.8 Mb)  TX bytes:67001364 (63.8 Mb)
```

2. Click Refresh to update the information.

Network Statistics

1. Choose Diagnostics > Network Statistics. The Network Statistics page opens.



```
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp          0      0 *:5000                  *:*                     LISTEN
tcp          0      0 *:www                   *:*                     LISTEN
tcp          0      0 *:ssh                   *:*                     LISTEN
tcp          0      0 *:telnet0               *:*                     LISTEN
tcp          0      0 *:443                   *:*                     LISTEN
tcp          0      0 192.168.50.132:443      192.168.58.88:2298      TIME_WAIT
tcp          0      0 localhost:5000          localhost:1363          ESTABLISHED
tcp          0      0 192.168.50.132:443      192.168.58.88:2299      TIME_WAIT
tcp          0      0 192.168.50.132:443      192.168.58.88:2296      TIME_WAIT
tcp          0      0 192.168.50.132:443      192.168.58.88:2297      TIME_WAIT
tcp          0      0 192.168.50.132:443      192.168.58.88:2302      ESTABLISHED
tcp          0      0 localhost:1363          localhost:5000          ESTABLISHED
tcp          0      0 192.168.50.132:443      192.168.58.88:2292      TIME_WAIT
tcp          0      0 192.168.50.132:443      192.168.58.88:2300      TIME_WAIT
tcp          0      0 192.168.50.132:443      192.168.58.88:2293      TIME_WAIT
tcp          0      0 192.168.50.132:443      192.168.58.88:2301      ESTABLISHED
udp          0      0 *:5000                  *:*
Active UNIX domain sockets (servers and established)
Proto RefCnt Flags       Type       State         I-Node Path
unix  2      [ ACC ]     STREAM     LISTENING     48     /dev/log
unix  2      [ ACC ]     STREAM     LISTENING     122    /tmp/internal_rdmp
unix  2      [ ACC ]     STREAM     LISTENING     130    /tmp/filterSock
unix  2      [ ACC ]     STREAM     LISTENING     173    /tmp/.150
unix  3      [ ]         STREAM     CONNECTED     17371  /dev/log
unix  3      [ ]         STREAM     CONNECTED     17370
unix  3      [ ]         STREAM     CONNECTED     59     /dev/log
unix  3      [ ]         STREAM     CONNECTED     47
```

2. By default, all statistics are shown. To show specific statistics, select an entry from the drop-down menu in the Options field. Your choices are:

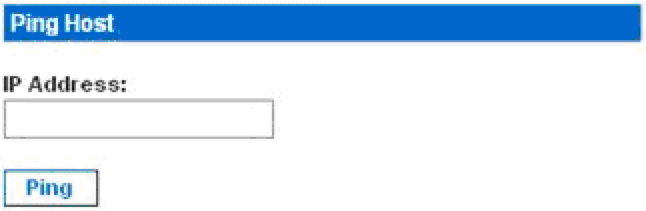
   - Route

- Interfaces
- Groups
- Statistics
- Program

3. Click Refresh to update the information.

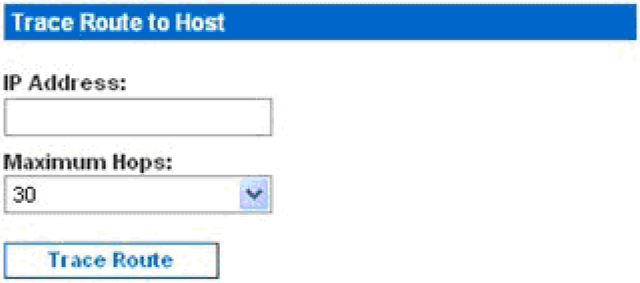
Ping Host

1. Choose Diagnostic > Ping Host. The Ping Host page opens.



2. Type the IP address of the host to be pinged in the IP Address field.
3. Click Ping. The page displays the results of the ping.

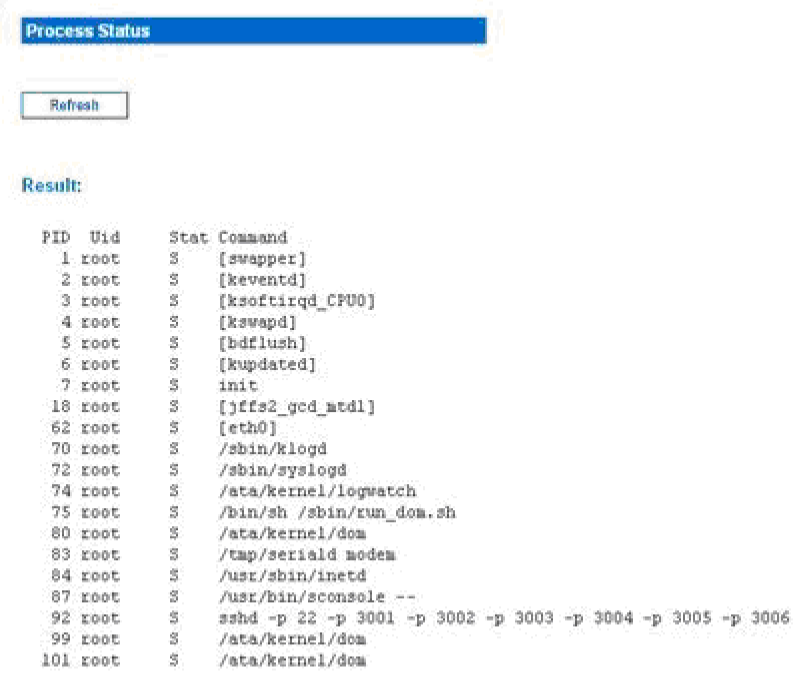
Trace Route to Host



1. Choose Diagnostics > Trace Route to Host. The Trace Route to Host page opens.
2. Type the IP address of the host in the IP Address field.
3. Select the maximum amount of hops from the drop-down menu in the Maximum Hops field.
4. Click Trace Route. The page displays the results of the Trace Route.

Administrator Tools - Process Status

1. Choose Diagnostics > Process Status. The Process Status page opens.



```
PID  Uid      Stat Command
  1 root      S    [swapper]
  2 root      S    [keventd]
  3 root      S    [ksoftirqd_CPU0]
  4 root      S    [kswapd]
  5 root      S    [bdflush]
  6 root      S    [kupdated]
  7 root      S    init
 18 root      S    [jffs2_gcd_mtdl]
 62 root      S    [eth0]
 70 root      S    /sbin/klogd
 72 root      S    /sbin/syslogd
 74 root      S    /ata/kernel/logwatch
 75 root      S    /bin/sh /sbin/run_dom.sh
 80 root      S    /ata/kernel/dom
 83 root      S    /tmp/seriald modem
 84 root      S    /usr/sbin/inetd
 87 root      S    /usr/bin/sconsole --
 92 root      S    sshd -p 22 -p 3001 -p 3002 -p 3003 -p 3004 -p 3005 -p 3006
 99 root      S    /ata/kernel/dom
101 root      S    /ata/kernel/dom
```

2. Click Refresh to update the information.

Chapter 13 Command Line Interface

In This Chapter

Command Line Interface Overview

The Dominion SX Serial Console supports all serial devices, including:

- Servers, including Windows Server 2003 when using the Emergency Management Console (EMS-) Special Administration Console, or SAC with BIOS redirection in the server BIOS
- Routers
- Layer 2 switches
- Firewalls
- Power strips
- Other user equipment

The Dominion SX allows an Administrator or User to access, control, and manage multiple serial devices. You can use the Command Line Interface (CLI) to configure the Dominion SX or to connect to target devices. The RS-232 interface may operate at all standard rates from 1200 bps to 115200 bps.

The following common commands can be used from all levels of the CLI to the preceding figure:

- top
- history
- logout
- quit
- show
- help

Accessing the Dominion SX Using CLI

Access the Dominion SX using one of these methods:

- TELNET via IP connection
- HTTP and HTTPS via IP connection
- SSH (Secure Shell) via IP connection
- Local Port-via RS-232 serial interface

Many SSH/TELNET clients are available and can be obtained from the following locations:

- PuTTY - ***http://www.chiark.greenend.org.uk/~sgtatham/putty/*** http://www.chiark.greenend.org.uk/~sgtatham/putty/
- SSH Client from ssh.com - ***www.ssh.com*** http://www.ssh.com
- Applet SSH Client - ***www.netspace.org/ssh*** http://www.netspace.org/ssh
- OpenSSH Client - ***www.openssh.org*** http://www.openssh.org

SSH Connection to the Dominion SX

Use any SSH client that supports SSHv2 to connect to the device. You must enable SSH access from Network Service Settings page (See ***Change Network Service Settings*** (on page 25)).

Note: For security reasons, SSH V1 connections are not supported by the Dominion SX.

SSH Access from a Windows PC (Shared KSX II, KX II 101, SX)

To open an SSH session from a Windows PC:

1. Launch the SSH client software.
2. Enter the IP address of the Dominion SX server. For example, 192.168.0.192.
3. Choose SSH, which uses the default configuration port 22.
4. Click Open.

The `login as:` prompt appears.

SSH Access from a UNIX/Linux Workstation

- **To open an SSH session from a UNIX/Linux workstation and log in as the user admin, enter the following command:**

```
ssh -l admin 192.168.30.222
```

The Password prompt appears.

Login

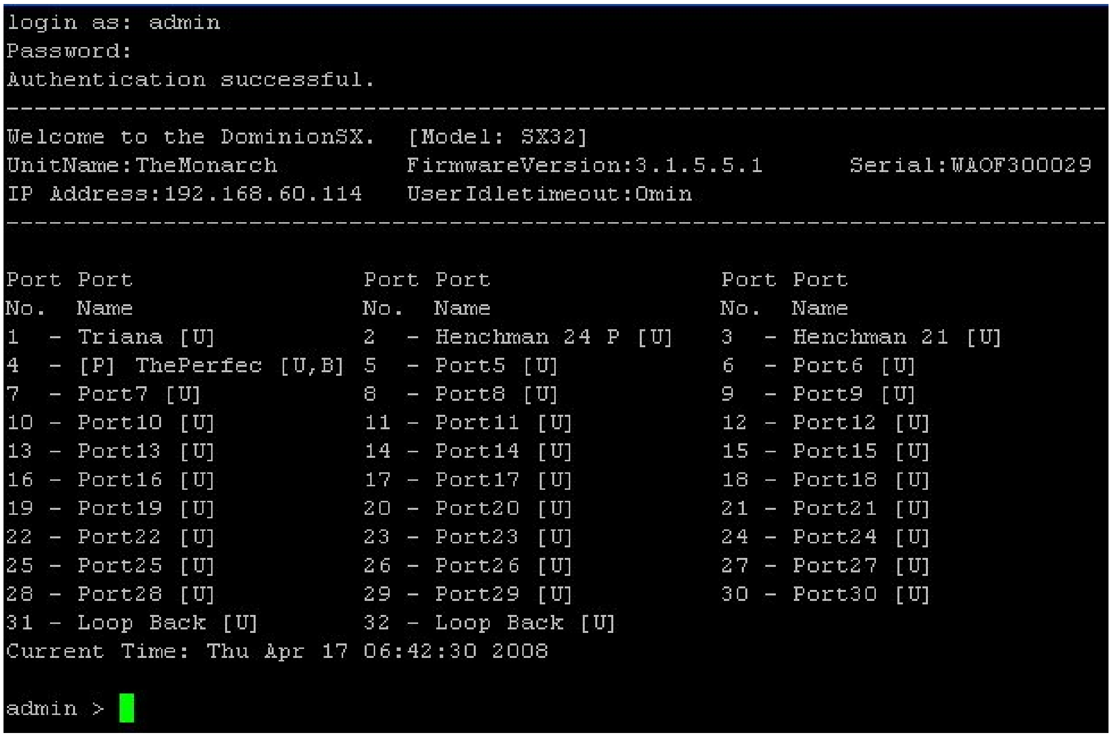
- **To log in, enter the user name admin as shown:**

```
Login: admin
```

The password prompt appears. Enter the default password: raritan

```
Password:
```

The welcome message appears. You are now logged in as an Administrator.



```
login as: admin
Password:
Authentication successful.
-----------------------------------------------------------------------------
Welcome to the DominionSX.  [Model: SX32]
UnitName:TheMonarch         FirmwareVersion:3.1.5.5.1      Serial:WAOF300029
IP Address:192.168.60.114   UserIdletimeout:0min
-----------------------------------------------------------------------------

Port Port                Port Port                Port Port
No.  Name                No.  Name                No.  Name
1  - Triana [U]          2  - Henchman 24 P [U]   3  - Henchman 21 [U]
4  - [P] ThePerfec [U,B] 5  - Port5 [U]           6  - Port6 [U]
7  - Port7 [U]           8  - Port8 [U]           9  - Port9 [U]
10 - Port10 [U]          11 - Port11 [U]          12 - Port12 [U]
13 - Port13 [U]          14 - Port14 [U]          15 - Port15 [U]
16 - Port16 [U]          17 - Port17 [U]          18 - Port18 [U]
19 - Port19 [U]          20 - Port20 [U]          21 - Port21 [U]
22 - Port22 [U]          23 - Port23 [U]          24 - Port24 [U]
25 - Port25 [U]          26 - Port26 [U]          27 - Port27 [U]
28 - Port28 [U]          29 - Port29 [U]          30 - Port30 [U]
31 - Loop Back [U]       32 - Loop Back [U]
Current Time: Thu Apr 17 06:42:30 2008

admin >
```

After reviewing ***Navigation of the CLI*** (on page 123), perform the initial configuration tasks.

Telnet Connection to the Dominion SX

Due to the lack of security, user name, password and all traffic is in clear-text on the wire. Telnet access is disabled by default.

Enabling Telnet

To use Telnet to access the Dominion SX, first access the Dominion SX from the CLI or a browser.

CLI

1. Use the following command:
   ```
   Admin Port > Config > Services > telnet enable true
   ```
   The system returns the following message:
   ```
   The system will need to be rebooted for changes to
   take effect.
   ```
   Note: By default, the telnet port is set to 23. You may change it by issuing the following command:
   ```
   Admin Port > Config > Services > telnet enable true
   port <preferred port number>
   ```
2. Reboot the system.

Browser (GUI)

Enable Telnet access in the Setup > Services menu.

Accessing the Dominion SX Unit

Once Telnet access is enabled, use it to access the Dominion SX unit and set up the remaining parameters.

Accessing Telnet from a Windows PC

▶ **To open a Telnet session from a Windows PC:**

1. Choose Startup > Run.
2. Type *Telnet* in the Open text box.
3. Click OK. The Telnet page opens.
4. At the prompt enter the following command: `Microsoft Telnet> open <IP address>` where <IP address> is the Dominion SX IP address.
5. Press the Enter key. The following message appears: `Connecting To <IP address>... The login as` prompt appears.

Local Port Connection to the Dominion SX

If your Dominion SX's terminal port uses an RJ45 jack, a special cable (CRLVR) is used with an ASCSDB9F connector on the client machine. The CRLVR may also be used if RJ45-RJ45 connection to local port is established - that is, if you connect the local port of a Dominion SX device as a serial target to another Dominion SX.

Port Settings

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

- Data bits = 8
- Parity = None
- Stop bits =1
- Flow Control = None

Connection

▶ **To make a local port connection:**

1. Open a HyperTerminal application or equivalent.
2. Ensure the HyperTerminal is configured to communicate with the port that is connected to the Dominion SX unit.
3. Disable Flow control.
4. Press the Enter key and the following prompt appears: `user name`

See ***Login*** (on page 120) for details.

To Change the Local Port Parameters:

The local port is enabled by default and is enabled on both serial ports for units with two local ports at 9600 bps.

▶ **To change the local port parameters:**

As an example, to change the baud rate from the default 9600 bps to 115200 bps, type:

```
Admin Port > Config > Services > lpa enable true
bps 115200
```

▶ **To disable local port access:**

```
Admin Port > Config > Services > lpa enable false
```

Navigation of the CLI

Before using the CLI, it is important to understand CLI navigation and syntax. There are also some keystroke combinations that simplify CLI use.

Completion of Commands

The CLI supports the completion of partially-entered commands. After entering the first few characters of an entry, press the Tab key. If the characters form a unique match, the CLI will complete the entry.

- If no match is found, the CLI displays the valid entries for that level.
- If multiple matches are found, the CLI displays all valid entries.

Enter additional text to make the entry unique and press the Tab key to complete the entry.

CLI Syntax -Tips and Shortcuts

Tips

- Commands are listed in alphabetical order.
- Commands are not case sensitive.
- Parameter names are single word without underscore.
- Commands without arguments default to show current settings for the command.
- Typing a question mark (?) after a command produces help for that command.
- A pipe symbol (|) indicates a choice within an optional or required set of keywords or arguments.

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 to execute the command.
- Press Tab to complete a command. For example, `Admin Port > Conf.` The system then displays the `Admin Port > Config >` prompt.

Common Commands for all Command Line Interface Levels

CLI Commands (on page 128) lists the commands that are available at all CLI levels. These commands also help navigate through the CLI.

Commands	Description
top	Return to the top level of the CLI hierarchy, or the “username” prompt
history	Display the last 200 commands the user entered into the Dominion SX CLI
show	Show the settings for the given parameter or show all configurations by default
help	Display an overview of the CLI syntax
quit	Places the user back one level
logout	Logs out the user session

Show Command

The show command displays various configuration settings and is available at all levels.

The syntax of the show command is:

```
show [ clock | version | network | route | firewall |
 ipforwarding | modem | dpa |
 anon | port | idletimeout | users | groups |
 lpa | ssh | telnet | http | https |
 encryption | clientcert | ntp | keywords |
 smtp | snmp | eventlogfile | syslog | nfs | portlog |
 ldap | radius | tacacs | kerberos | security_profile
|
 strongpassword | inactiveloginexpiry |
invalidloginretries |
 lockoutperiodoninvalidlogin | localauth |
singleloginperuser |
 powerstrip | powerdelay | association | powergroup ]
[all]
```

Command Example

The following command shows the general settings of the Dominion SX unit:

```
Admin Port > show


Dominion SX4 [64Mb]     Serial: WACEA00008

Current time: 2006-09-20 23:08:42

------------------------------------------------------------

Date /Time Settings:

       Date : 2006-09-20 23:08:42

       Timezone : 13

Version Information :

Firmware Version : 3.0.0.1.15

Kernel Version : 2.4.12
```

PMON Version: 2.0.1

RSC Version: 1.0.0.1.16

Supporting software:

```
OpenSSH_4.3p2, OpenSSL 0.9.7i 14 Oct 2005

HTTP Server version: Apache/2.2.0

HTTP Server built: Mar 29 2006 16:06:30

TELNET Linux NetKit 0.17
```

Note: Dominion SX security is not impacted if the version of Apache 2.2 installed on the remote host is older than 2.2.9.

Initial Configuration

Dominion SX units come from the factory with default factory settings. When you first turn on and connect to the unit, you must set the following basic parameters so the device can be accessed securely from the network:

1. Reset the administrator password.
   All Dominion SX units are shipped with the same default password; therefore, to avoid security breaches it is imperative that you change the admin password from “raritan” to one customized for the administrators who will manage the Dominion SX device.
2. Assign the IP address, subnet mask, and gateway IP address to allow remote access.
3. Set the time and date.

After the preceding parameters are set, the rest of the system configuration can be performed.

Setting Parameters

To set parameters, you must be logged on with administrative privileges. At the top level, you will see the `"Username"` > prompt, which for the initial configuration is `"admin"`. Enter the top command to return to the top menu level.

Note: If you have logged on with a different user name, that user name will appear instead of admin.

Date and Time Configuration

Note: It is important to set the date and time correctly to ensure that log entries and events contain the correct timestamp.

Return to the top menu level by entering the top command. Use the following command to view the current date and time settings:

```
Admin Port > Config > Time > clock
```

The system displays the current settings. For example:

```
Date /Time Settings:

   Date : 2006-09-20 23:20:24

   Timezone : 13
```

Use the following steps to set the user date and time.

1. `Admin Port > Config > Time > timezonelist`
2. `Admin Port > Config > Time > clock tz 21 datetime "2006-09-23 13:22:33"`

Setting Network Parameters

Network parameters are configured using the interface command.

```
Admin Port > Config > Network > dhcp false interface
enable true if lan1 ip 192.16.151.12 mask 255.255.255
gw 192.168.51.12
```

When the command is accepted, the unit automatically reboots and drops the connection. You must reconnect to the unit using the new IP address and the username admin and password newp/w entered in the resetting factory default password section.

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

The Dominion SX now has the basic configuration and can be accessed remotely via SSH, GUI or locally using the local serial port. Next, you must configure the users and groups, services, security, and serial ports to which the serial targets are attached to the Dominion SX.

CLI Prompts

The Command Line Interface prompt indicates the current command level. The root portion of the prompt is the login name. For a direct admin serial port connection with a terminal emulation application, Admin Port is the root portion of a command.

```
admin >
```

For TELNET/SSH, admin is the root portion of the command:

```
admin > config > network >
```

0

CLI Commands

Available CLI commands.

Command	Description
backup	System command to backup the console server settings.
cleareventlog	Clears the contents of the local event log.
config	Port configuration command - switch to the Configuration menu.
connect	Connect to a port.
diagnostics	Switch to diagnostic commands menu.
encryption	Select the encryption method for HTTPS.
eventlogfile	Controls and configures the local event log.
eventsyslog	Controls system event logging.
factoryreset	System command to reset to the factory settings.
fixedtcpwindow	Disable automatic TCP window scaling.
firmware	System command to display the versions of the firmware.
help	Display an overview of the CLI syntax.
history	Display the current session's command line history.
http	Enable http connections.
ifconfig	Show detailed network configuration.
interface	Configure the Dominion SX network interface.

Command	Description
backup	System command to backup the console server settings.
ipmi	IPMI Configuration commands.
listports	List accessible ports.
Kerberos	Kerberos based Network Authentication.
ldap	LDAP Configuration.
localauthentication	Local Authentication Configuration.
logout	Logout of the current CLI session.
maintenance	Switch to System Maintenance commands.
netstat	Print network connections.
nfsget	Generates an encryption key.
nfssetkey	Enables encryption of log data.
password	Set the current user's password.
ping	Ping a remote system.
portlog	Enables and configures the logging of port data to a NFS server.
portsyslog	Enables and configures logging of port data to a syslog server.
ps	Report system process status.
quit, q, close	Exit terminal sessions.
radius	Switch to the RADIUS Configuration menu.
reboot	System command to reboot the system.
restore	System command to restore the system.
security	Switch to the security menu.
sendeventlog	Sends the local event log to a remote FTP server.
show (see "Administering the Dominion SX Console Server Configuration Commands" on page 136)	Show configuration options.
tacacsplus	Switch to the TACACS+ Configuration Menu.

Command	Description
backup	System command to backup the console server settings.
telnet	Enable telnet communication and specify the port.
top	Return to the root menu.
traceroute	Print the route to a remote system.
upgrade	System command to upgrade the firmware.
upgradehistory	System command to show the upgrade history.
userlist	List users.
vieweventlog	Displays the local event log.

Security Issues

Elements to consider when addressing security for console servers:

- Encrypting the data traffic sent between the operator console and the Dominion SX unit.
- Providing authentication and authorization for users.
- Logging 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.
- Security profile.

Dominion SX supports each of these elements; however, they must be configured prior to general use.

Encryption of traffic between the operator console and the Dominion SX unit is determined by the access methodology being used. SSH and encrypted browser access (HTTPS) are enabled by default. SSH and HTTPS, by definition, support 128-bit encryption of the traffic between the two ends of the link. To accept unencrypted connections, you must manually enable the HTTP and Telnet services.

Welcome Banner Configuration

The Dominion SX optionally supports a customizable (maximum 6000 words) welcome banner that is displayed after login. When you log in to a Dominion SX via a GUI, a banner with a fixed width typeface and a common dimension like 80x25 appears. If the banner is very large, that is, over 9000 lines, the banner displayed on GUI will not increase overall page size because it will be contained within a self-scrolled text area.

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.

Defining SSL Security Certificates

SSL Security certificates are used in browser access to ensure that the device you are attaching to is the device that is authorized to be connected. This section describes only how to configure the certificates on the console server. See ***Appendix C: Certificates*** (see "Certificates" on page 244) for details on SSL Certificates.

Enabling Firewall Protection

Dominion SX provides a firewall function to provide protection for the IP network and to control access between the internal router, LAN (or LAN1 and LAN2 if dual-LAN units) and the dial modem interfaces.

Enabling Security Profiles

Dominion SX provides the ability to define security profiles which simplify the assigning of permissions to users and groups. There are three types of profiles. Two are predefined: standard and secure. The third allows for the definition of custom profiles; this allows assignment of all permissions by assigning one security profile. Multiple custom security profiles may be defined.

Configuring Logging and Alerts

As part of the security capabilities of the Dominion SX, facilities are provided to log data and to provide alerts based on activities between the users, Dominion SX, and the target device. These facilities provide an audit trail that allows authorities to review what has happened in the system, determine who implemented what action, and when.

Among these facilities are event logging and SNMP traps. Events may be logged locally using Syslog. Local events are maintained in a 256K per port buffer and can be stored, reviewed, cleared, or sent periodically to an FTP server.

Configuring Users and Groups

Users and groups are related. Dominion SX 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. By enabling groups, the permissions for each user do not have to be configured individually, reducing the time to configure users one by one.

Command Language Interface Permissions

Administrators can execute all commands.

Operators and Observers can execute only the following commands:

- connect (the port list appears after returning from connect command)
- ? (functions as help)
- logout
- password
- history

Target Connections and the CLI

The purpose of the Dominion SX is to let authorized users establish connections to various targeted devices using the connect command. Before connecting to a target, the terminal emulation and escape sequence must be configured. When a target is disconnected, the appropriate disconnect message appears. The Dominion SX also provides the ability to share ports among users.

Setting Emulation on a Target

▶ **To set emulation on the target:**

- Ensure that the encoding in use on the host matches the encoding configured for the target device, that is, if the character-set setting on a Sun Solaris server is set to ISO8859-1, the target device should also be set to ISO8859-1.

Note: ISO9660 format is the standard supported by Raritan. However, other CD-ROM extensions may also work.

- Ensure that the terminal emulation on the target host connected to the Dominion SX 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, that is, if the terminal type setting on a HP-UX server is set to VT100, the Access Client should also be set to VT100.

The setting for terminal emulation on the Dominion SX is a property associated with the port settings for a particular target device. Ensure that the settings for terminal emulation in the client software such as Telnet or SSH client are capable of supporting the target device.

Set Escape Sequence

To set the Escape sequence, ensure that the default Escape sequence set on the Dominion SX server does not conflict with a key sequence required by either the Access Client or the host operating system. The Escape key sequence is user-configurable. Console sub-mode should be displayed when the default escape key sequence ^] (programmable) is pressed.

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

Port Sharing Using CLI

Access Client users can share ports with other authenticated and authorized users, regardless of whether they are Access Client users or SSH/Telnet users. Port sharing is used for training or for troubleshooting applications.

- Users are notified in real time if they have Write access or Read Only access at any point during the port-sharing session.
- Users can request Write permission to a port.

Configuring Authorization and Authentication (AA) Services

Dominion SX supports both local and remote authentication and authorization (AA) services. Local databases for AA are maintained in an encrypted format to prevent unauthorized access.

Remote Services

For remote services, Dominion SX supports LDAP, Active Directory, TACACS+ and Kerberos. The Dominion SX server supports an additional level of security services that further enhance protection of the console server. These services are:

- Idle timeout for inactive users
- User defined certificates
- Security profiles

Command	Description
ldaps	getservercert removecert viewcert
primaryldap	
secondaryldap	
radius	primaryradius secondaryradius
tacacsplus	primarytacacs secondarytacacs

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

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}“.

When configuring the TACACS+ server, the user-group format for the user on the server should contain the name of a group configured on the Dominion SX.

If you use older formats of "op:1:2:4" or “a:” , the system will allow you to log in and will restrict port accessibility according to user types and their limitations. The Dominion SX will not have any database information about groups at this time and will therefore display the following message in the banner after login.*

Error: Cannot get group information

The port display will show all ports because the client will not know which port limitations exist.

LDAP Configuration Menu

The LDAP configuration menu offers commands to set up LDAP and LDAPS.

LDAP is entered by typing ldap at the following prompt:

```
admin > Config > Authentication > ldap
```

LDAP Command	Description
ldaps	Switches to the ldaps menu which includes the following commands: getservercert - FTP Retrieval of ldap certificate removecert - Remove LDAPS Certificate viewcert - View LDAPS Certificate
primaryldap	Used to configure the primary ldap settings.
secondaryldap	Used to configure the secondary ldap settings.

LDAP Command Examples

```
admin > Config > Authentication > ldap
```

```
admin > Config > Authentication > ldap > ldaps
```

```
admin > Config > Authentication > ldap > ldaps >
viewcert
```

RADIUS Command

The RADIUS menu provides access to commands used to configure access to a RADIUS server.

Syntax

```
primaryraduius <>
```

RADIUS Command Example

```
admin > Config > Authentication > radius >
primaryradius
```

TACACS+ Command

The TACACS+ menu offers commands used to configure access to a TACACS+.

Syntax

```
primarytacacs <>
```

TACACS+ Command Example

```
admin > Config > Authentication > radius >
primarytacacs
```

Administering the Dominion SX Console Server Configuration Commands

Note: CLI commands are the same for SSH, Telnet, and Local Port access sessions.

The configuration menu provides commands to help configure the Dominion SX:

- authentication
- events
- log
- modem
- network
- nfs
- ports
- services
- snmp
- time
- users

Configuring Events

The Events menu provides access to commands used to configure SMTP events and servers.

Command	Description
add	Add an SMTP event.
delete	Delete an SMTP event.

smtp	Configure the SMTP server settings.

Events Menu Command Examples

```
admin > Config > events

admin > Config > events > add

admin > Config > events > smtp
```

Configuring Log

Configuration log commands allow you to manage the logging features of the Dominion SX server:

- cleareventlog
- eventlogfile
- eventsyslog
- nfsgetkey
- nfssetkey
- portlog
- sendeventlog
- vieweventlog

Cleareventlog Command

The cleareventlog command clears the contents of the local event log.

Syntax

```
cleareventlog
```

Cleareventlog Command Example

```
admin > Config > Log > cleareventlog
```

Eventlogfile Command

The eventlogfile command controls and configures the logging of events to the local log.

Syntax

```
eventlogfile [enable <true|false>] [size value] [style
<wrap|flat>]
```

eventlogfile Command	Description
enable <true|false>	Enable or disable the system event log

eventlogfile Command	Description
	logging.
size value	Maximum size of local log file (in bytes).
style <wrap|flat>	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.

Eventlogfile Command Example

```
admin > Config > Log > eventlogfile enable true size
256000 style wrap
```

eventsyslog Command

The eventsyslog command controls system event logging.

The syntax of the eventsyslog command is:

eventsyslog [enable <true|false>] [primip ipaddress] [secip ipaddress]

The eventsyslog command options are described in the following table.

Command	Description
enable <true|false>	Enable or disable the system event log logging.
primip ipaddress	Primary FTP server address
secip ipaddress	Secondary FTP server address

Eventsyslog Command Example

admin > Config > Log > eventsyslog enable true primip 192.168.134.11 secip 192.168.245.11

portsyslog Command

The portsyslog command controls system event logging.

Syntax

```
portsyslog [enable <true|false>] [primaryip ipaddress]
[secondaryip ipaddress] [category category]
```

portsyslog Command	Description
enable <true|false>	Enable or disable logging of port data to remote a NFS server and also to the Syslog server.
primaryip ipaddress	Primary Portlog Syslog server address
secondaryip ipaddress	Secondary Portlog Syslog server address
category category	Portlog Syslog message category 0 ~ 7 corresponds to Local0 ~ Local7

portsyslog Command Example

```
admin > Config > Log > portsyslog enable true
primaryip 192.168.134.11 secondaryip 192.168.245.11
category 5
```

nfsgetkey Command

The nfsgetkey command gets an NFS encryption key to be used for encrypting port log data. Use the key value as input to the nfssetkey command.

Syntax

```
nfsgetkey [type <rc4|aes128>]
```

nfsgetkey Command	Description
type <rc4|aes128>	Type of encryption key used for encryption (rc4 or aes128)

nfsgetkey Command Example

```
admin > Config > Log > nfsgetkey type aes128
```

nfssetkey Command

The nfssetkey command sets the type of encryption and the key. Because NFS is insecure, it can be easily accessed and the data misused. With Dominion SX, you can encrypt the data stored on the NFS server. Consequently, if the data were to be accessed inappropriately, it would be of no use to anyone without the encryption key.

The key can be set and obtained only from the Dominion SX.

Syntax

```
nfssetkey [type <rc4|aes128>] [key string]
```

nfssetkey Command	Description
type <rc4|aes128>	Type of encryption type to be used
key string	Provide key string to be used for encryption

Note: aes128 is not supported in 3.0.

nfssetkey Command Example

```
admin > Config > Log > nfssetkey type aes128 key
D2F05B5ED6144138CAB920CD
```

NFS Encryption Enable Command

To enable port logging and encryption of data:

```
admin > Config > Log > portlog enable true encrypt
true
```

Portlog Command

The portlog command enables and configures the logging of port data.

Syntax

```
portlog [enable <true|false>] [prefix name] [size
value] [timestamp interval] [update interval]
[inputlog <true|false>] [indir name] [outdir name]
[encrypt <true|false>] [block <true|false>]
```

portlog Command	Description
enable <true|false>	Enable/Disable logging of port data to remote NFS server.
prefix name	Prefix for log file name.
size value	Maximum Size (in bytes) for the log file.

portlog Command	Description
timestamp interval	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.
update interval	Time interval (in seconds) between two updates to the remote log file The default interval is 20. The max value is 99999.
inputlog <true|false>	Enable/Disable logging of user input data on the port. Input implies data sent to the target; that is, keystrokes entered by the user).
indir name	Filename for storing input log
outdir name	Filename for storing output log. Output implies data sent from target to the Dominion SX port.
encrypt <true|false>	Enable/Disable Encryption of log data sent to the remote NFS Server.
block on failure <true|false>	Indicate whether the NFS Server is a soft mount (when set to false) or a hard mount (when set to true).

Portlog Command Example

```
portlog enable true prefix DomSX1size 1000000
timestamp 1 update 20 inputlog false indir
/nfs_SX_DomIn outdir SX_Dom_Out encrypt true
```

The following command displays the default portlog values:

```
admin > Config > Log > portlog

Portlog Settings :

        Enable : false

        File Prefix: domSX-NFS

        File Size : 65535

        UpdateFrequency : 20

        TimestampFrequency : 20

        Input Log Enable : false

        Input Log Directory: input

        Output Log Directory: output

        Encrypted : false

        Block on Failure : true
```

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 > nfsgetkey type rc4`
2. Cut and paste the response of this command into a file, for example, dsx-encrypt.key.
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`>.

Sendeventlog Command

The sendeventlog command sends the local logfile to a remote FTP server.

Syntax

```
sendeventlog [ip ipaddress] [login login] [password
password] [path pathname] [file filename]
```

sendeventlog Command	Description
ip ipaddress	FTP server IP address
login login	FTP Server login name
password password	FTP Server password
path pathname	FTP server path, for example, /ftphome
file filename	Filename on FTP server to save log. For example, sxlogfile

sendeventlog Command Example

```
sendeventlog ip 72.236.162.187 login acy password
pasraritansword path sxlogfile file log_32
```

Vieweventlog Command

The vieweventlog command displays the local log file.

Syntax

```
vieweventfile
```

vieweventlog Command Example

```
admin > Config > Log > vieweventlog
```

Configuring a Modem

The Modem menu offers commands used to configure modem access. Callback (dialback) occurs when the originator of a call is immediately called back in a second call as a response to the first dial-in. Both Dial-in and Dialback must be enabled, and the dialback number for a user must be configured in the authentication service used on the device (local, RADIUS, LDAP, or TACACS+).

Once you have configured the modem, the device will need to be rebooted in order for the changes to take effect (you will receive a message prompting you to do this once you have made and applied your changes).

The modem can be configured to allow a PPP connection, a direct modem connection via Hyperterm, or both.

- All - Allows modem access to all modems. Looks for a PPP signal and falls back to allow console access if the PPP signal is not detected. In this mode, Modem Dial Back cannot be enabled.
- PPP Only - Allows only PPP connections. Allows GUI, SSH and Telnet access (if enabled). Dialback is only allowed when utilizing a PPP-Only configuration since allowing direct modem access would circumvent this security protection.
- Console Only - Allows only console connections. Only CLI access is allowed through a terminal emulation programs such as Hypertreminal.

If All or PPP Only are used:

- The IP addresses of the Point-to-Point (PPP) server must be entered. The default is 10.0.0.1
- The IP address of the PPP client must be entered. The default is 10.0.0.2.

If PPP Only is used:

- If you want to enable modem dialback, select the Enable Modem Dial Back check box.

Command	Description
dialback	Enable/Disable the modem dial-back. Modem must be enabled for this to work.
dialin	Enable/Disable Modem and PPP settings. [enable <true|false>] [serverip ipaddress] [clientip ipaddress]
accessmodes	[accessmodes <All|PPPOnly|ConsoleOnly]

Modem Menu Command Examples

```
admin > Config > modem > dialin enable true serverip
10.0.13.211

clientip 10.0.13.212 accessmodes PPPOnly

admin > Config > modem > dialback enable true

admin > Config > Modem > show modem

Modem Settings

      Dialin Enabled: false

      Access Mode: All

      Server Address: 10.0.13.211

      Client Address: 10.0.13.212
```

Dialback with local user

Before a modem connection can be established, the local user for dial-in authentication should be configured. A new user can be added or an existing one can be reconfigured with a correct dialback. An example configured user (dialback number is 129) should have the following settings:

```
User Settings:

        Login : Modem

        Name : Dialback

        Info: SX

        Dialback: 129

        Group :Admin

        Active : 1
```

When this configuration is set, the modem connection can be established. The user may use various types of modem dial-up clients to accomplish a successful modem connection to the Dominion SX.

Dialback with remote Radius user (Cistron Radius v1.6.7)

Dialin and Dialback should be enabled on the device used for modem communication. Primary (or/and Secondary) RADIUS Server Settings should be configured correctly and enabled on the Dominion SX:

```
admin > Config > Authentication > RADIUS >
primaryradius

RADIUS Server Settings

----------------------------------------
```

```
Primary Server

        Enabled - true

        IP Address - 10.0.0.188

        Port - 1812

        Secret - qaz1wsx
```

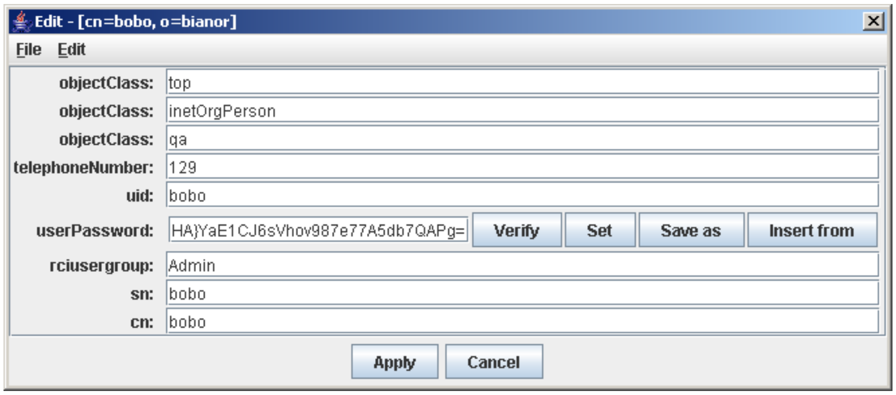
On the Remote Radius Server, the user's configuration should contain the following line:

```
Filter-Id = "raritan:G{<local user group>}:D{<number
for dialback>}"
```

Dialback with remote LDAP user (OpenLdap v.2 & v.3)

Dial-in and Dialback should be enabled on the device used for modem communication. Primary (or/and Secondary) LDAP Server Settings should be configured correctly and enabled on the Dominion SX:

```
LDAP Server Settings

----------------------------------------

Primary Server

        Enabled - true

        IP Address - 10.0.0.188

        Port - 389

        Secret - root

        Base DN - cn=root,o=bianor

        Base Search - o=bianor

        Auth Query String -rciusergroup

        Dialback Query String - telephoneNumber
```



objectClass: top
objectClass: inetOrgPerson
objectClass: qa
telephoneNumber: 129
uid: bobo
userPassword: HA}YaE1CJ6sVhov987e77A5db7QAPg=
rciusergroup: Admin
sn: bobo
cn: bobo

The Remote LDAP Server user's configuration should be:

Dialback with remote TACACS user (Tacacs+ v.4.0.3a)

Dial-in and Dialback should be enabled on the device used for modem communication. Primary (or/and Secondary) TACACS Server Settings should be configured correctly and enabled on the Dominion SXs:

```
Primary Server

        Enabled - true

        IP Address - 10.0.0.188

        Port - 49

        Secret - alabala
```

On the Remote Tacacs Server user's configuration should own the following line:

```
user-dialback='129'
```

Configuring Network

The Network menu commands allow you to configure the Dominion SX network adapter.

Commands	Description
ethernetfailover	Enable/Disable network failover
interface	The Dominion SX network interface configuration
ipfowarding	IP forwarding configuration
name	Network name configuration
ports	Network port configuration
route	Show kernel routing table
routeadd	Add route to kernel routing table
routedelete	Delete route of kernel routing table

Note: All operations that normally trigger a reboot or prompt the user for feedbacks are now added a new parameter named force. This force parameter prevents reboot, prompting or both from taking place until all configurations are completed. The commands that now have a force parameter are: `ethernetfilover` (see "Ethernetfailover Command" on page 148), `interface` (see "Interface Command" on page 148), `name` (see "Name Command" on page 149), `ports` (see "Ports Command" on page 150), `factoryreset` (see "Factoryreset Command" on page 181) and `reboot` (see "Reboot Command" on page 183).

Ethernetfailover Command

The ethernetfailover command is used to enable and disable the ability to failover from one LAN to another.

Syntax

```
ethernetfailover [enable <true|false>] [interval
value] [force <true|false>]
```

Interface Command

The interface command is used to configure the Dominion SX network interface. When the command is accepted, the unit automatically reboots and drops the connection. You must then reconnect using the new IP address and the username admin and password newp/w in the resetting factory default password section.

Syntax

```
interface [enable <true|false>] [if <lan1 | lan2>]
[dhcp <true|false>] [ip ipaddress] [mask subnetmask]
[gw ipaddress] [mode <auto | 100fdx>] [force
<true|false>]
```

interface Command	Description
enable <true|false>	Enable/Disable Interface
dhcp	Enable DHCP as ip configuration
if <lan1 | lan2>	Select LAN interface you are configuring
ip ipaddress	IP Address of the Dominion SX assigned for access from the IP network
mask subnetmask	Subnet Mask obtained from the IP administrator
gw ipaddress	Gateway IP Address obtained from the IP administrator.
mode <auto | 100fdx>	Set Ethernet Mode to auto detect or force 100Mbps full duplex (100fdx)
force <true|false>	The force parameter is used so that sequences of commands can be inserted without need for user interaction.

interface Command Example

The following command enables the interface number 1, sets the IP address, mask, and gateway addresses, and sets the mode to auto detect.

```
Admin Port > Config > Network > interface enable true
if lan1 ip 192.16.151.12 mask 255.255.255 gw
192.168.51.12 mode auto
```

```
Admin Port > Config > Network > interface if lan1 ip
10.0.13.98 force true
```

IPForwarding Command

The ipforwarding command is used to configure the ability to forward between two networks.

Syntax

```
ipforwarding [enable <true|false>]
```

ipforwarding Command Example

The following command enables the IP Forwarding:

```
admin > Config > Network > ipforwarding enable true
```

Name Command

The name command is used to configure the device and host name.

Syntax

```
name [unitname name] [domain name] [force
<true|false>]
```

name Command Example

The following command sets the device name:

```
Admin Port > Config > Network > name unitname
<device name> domain <host name> force trues
```

Ports Command

The ports command is used to configure the network ports.

Syntax

```
ports [discoveryport value] [csc value] [force
<true|false>]
```

- discoveryport - udp discovery port used with Command Center - Secure Gateway
- csc - CSC Protocol tcp port used with Command Center - Secure Gateway

ports Command Example

The following command configures the network ports:

```
Admin > Config > Network > ports discoveryport 5000
csc 5000
```

Route Command

The route command is used to view the kernel routing table.

Syntax

```
route <>
```

route Command Example

The following command displays the routing table:

```
Admin Port > Config > Network > route
```

Routeadd Command

The routeadd command is used to add a route to the kernel routing table.

Syntax

```
routeadd [if <eth0 | eth1>] [flags <net|host>] [dest
ipaddress] [mask mask] [gw ipaddress] [mss value]
[window value] [irtt value]
```

If Interface [eth0 | eth1], LAN1 is mapped to eth0, LAN2 is mapped to eth1

- flags net - Route for a subnet host / host machine
- dest - Destination host IP Address or subnet
- mask - Netmask
- gw - Gateway IP Address
- mss - Set the TCP Maximum Segment Size (MSS) in bytes
- window - Set the TCP window size for connections over this route in bytes
- irtt - Set the initial round trip time (irtt) for TCP connections over this route in milliseconds (1-12000)

routeadd Command Example

The following command adds a route to the routing table:

```
admin > Config > Network > routeadd if eth0 flags net
dest 192.56.76.0 mask 255.255.255.0
```

Routedelete Command

The routedelete command is used to remove a route from the kernel routing table.

Syntax

```
routedelete <>
```

routedelete Command Example

The following command remove a route from the routing table:

```
admin > Config > Network > routedelete
```

Getconfig Command

The getconfig command retrieves the script from an FTP server. This command appears only in the administrator's help menu.

You can write a script using the same sequence and commands used in a normal CLI session, also known as a recorded session. The script can be used to set up commonalities among multiple Dominion SX devices, including remote authentication servers, users, and security settings. The script ca nalso be used by technicians who know little about the Dominion SX to set up machines after the administrator has written the script.

getconfig Command Example

The following command retrieves remote configure script from an FTP server.

```
admin > getconfig [ip ipaddress] [login login]
[password password] [path pathname]


ip IP Address of FTP Server

login FTP Server login name

password FTP Server password

path FTP server path.for config file Eg.,
/ftphome/config.txt
```

Runconfig Command

The runconfig command attempts to run the configuration script downloaded by the getconfig command. This command appears only in the administrator's help menu.

runconfig Command Example

```
admin > runconfig
```

Configuring NFS

The nfs command enables all keystrokes echoed from the target device to be logged to a remote NFS server located within the network. The logs can be reviewed at a later time.

```
admin > Config > NFS > nfs
```

Syntax

```
nfs [enable <true|false>] [primaryip primaryip]
[secondaryip secondaryip] [primarydir primarydir]
[secondarydir secondarydir]
```

nfs Command	Description
enable <true|false>	Enable or disable NFS logging.
primaryip primaryip	IP address of the primary NFS server.
secondaryip secondaryip	IP address of the secondary NFS server.
primarydir primarydir	Primary Server mount directory
secondarydir secondarydir	Secondary Server mount directory

nfs Command Example

The following command displays the current NFS settings:

```
admin > Config > NFS > nfs

NFS Settings :

        Enable : 0

        Primary IP : 0.0.0.0

        Pimary Directory:  /export/domSX/

        Secondary IP : 0.0.0.0

        Secondary Directory:  /export/domSXLog/
```

Use the following command to enable remote NFS logging and configure the NFS Server:

```
admin > Config > NFS > nfs enable true primaryip
72.236.162.172 secondaryip 72.236.161.173 primarydir
/nfs/domlogging1 secondarydir /nfs/domlogging2
```

Configuring Ports

Ports Configuration Menu

Target serial ports are configured from the CLI using the ports menu. In addition to the description of the physical nature of the ports, other services may also be defined, including:

- The escape sequence used to disconnect from the port to access the emulator to send breaks or control multi user functions such as Ctrl + a.
- The exit string sent to the target when an idle timeout occurs. By sending the exit string, the port is disconnected from the Dominion SX and the next user logging in to the port will have to log in to the target as well. (Cisco router example: logout)
- The addresses used for direct port addressing. Direct port addressing can use an individual IP address per port or a unique TCP Port address per port. Direct Port Addressing is supported by both Telnet and SSH. See ***Direct Port Access*** (on page 47) for details.

Ports Config Command

Syntax

```
config [port <number|range|*>] [name string] [bps
value] [parity <none|even|odd>] [flowcontrol
<none|hw|sw>] [detect <true|false>] [escapemode
<none|control>] [escapechar char] [emulation type]
[sendbreak <duration>] [exitstring <cmd[#delay;]>]
[dpaip ipaddress] [telnet port] [ssh port]
[alwaysactive <true|false>] [suppress <none|all>]
```

ports config Command	Description
port <number|range|*>	Single port or range of ports (1-n or 1,3,4 or * for all ports)
name string	Port Name
bps value	Port speed (bitrate) in bits-per-second (1200|1800|2400|4800|9600|19200|38400|57600|115200)
parity <none|even|odd>	Port parity type

flowcontrol <none|hw|sw>	Port flowcontrol type
	hw = hardware flow control
	sw =X on / X off)

ports config Command	Description
detect <true|false>	Enable/Disable detection of port connection
escapemode <none|control>	Use Ctrl-key (escapemode=control) or single key (escapemode=none) as escape sequence; for example, Ctrl-] => escapemode=control, escapechar=]
escapechar char	Escape character
emulation type	Target Emulation type: VT100|VT220|VT320|ANSI
sendbreak duration	Duration of the sendbreak signal. (100|200|300|400|500|600|700|800|900|1000)
exitstring <cmd[#delay;]>	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)
dpaip ipaddress	IP Address assigned for direct port access
telnet port	TCP Port assigned for direct port access via Telnet
ssh port	TCP Port assigned for direct port access via ssh
alwaysactive	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)
suppress	Determine whether none or all messages should be displayed during a DPA connection, such as "Authentication successful"

ports config Command Example

```
admin > ports >config port 1 name ld1 bps 115200
parity odd flowcontrol hw detect true escapemode none
emulation VT100
```

The following command displays the current settings for port 1:

```
admin > Config > Port > config port 1

Port number 1:

        Name: Port1

        BPS: 9600

        Parity: 0

        Flow control: 0

        RSC Terminal Emulation: VT100

        Disconnect: Disabled

        Application: RaritanConsole

        Exit String:

        Escape: Control-]

        DPA:

                IP: 0.0.0.0

                Telnet Port: 0

                SSH Port: 0

        Always Active: False

        Messages suppressed: none
```

The following example configures DPA port settings when the you choose DPA mode IP. The IP Address is assigned for direct port access using the following command:

```
admin > Config > Port > config port 1 dpaip 10.0.13.1
```

`admin > Config > Services > dpa mode IP` (upper case for IP!)

After this option is enabled, the SX unit is restarted. DPA changes will not be available until after the Dominion SX is rebooted.

```
ssh -l sx_user 10.0.13.1

Password:
```

```
Authentication successful.
```

```
Port 1: Configuration Saved.
```

After entering the password, you have direct access to port 1, using the newly assigned IP specifically for port 1.

The following example configures DPA port settings for a group of ports (make sure a free range of IPs are available for dpa IP mode usage):

```
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 when you choose DPA mode TCPPort. You must set the SSH or Telnet port value assigned for direct port access:

```
admin > Config > Port > config port 1 ssh 7000 telnet
8000
```

```
admin > Config > Services > dpa mode TCPPort
```

After this option is enabled, the Dominion SX is restarted. DPA changes will not be available until after the Dominion SX is rebooted.

```
try ssh -l sx_user -p 7000 10.0.13.13 or telnet -l
sx_user 10.0.13.13 8000
```

```
Password:
```

```
Authentication successful.
```

```
Port 1: Configuration Saved.
```

After entering the password, you have direct access to port 1, using the newly assigned TCPPorts(either ssh or telnet), specifically for port 1.

The following example configures DPA port settings for a group of ports (make sure no TCPPorts have been assigned, and a free range of TCPPorts are available for dpa TCPPort 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.

Other DPA TCPPort options:

```
config <port *> <ssh tcpport>
config <port portnumber> <ssh tcpport>
config <port port_range> <ssh tcpport>
config <port *> <telnet tcpport>
config <port portnumber> <telnet tcpport>
config <port port_range> <telnet base_tcpport>
```

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 will be used. The given value of base_tcpport is used as starting value. For individual port configuration, the <port portnumber> command can be used.

Ports Keywordadd Command

Keywords can be configured per port. After a keyword is configured for a port, if the event is selected for notification, an SMTP notification is sent upon detecting this keyword in the data coming from the target connected to the port.

Syntax

```
keywordadd [port <number|range|*>] [keyword value]
```

keywordadd Command Example

```
admin > ports > keywordadd port 1 keyword ll
```

Ports Keyworddelete Command

The keyworddelete command removes an existing keyword.

Syntax

```
keyworddelete [keyword value]
```

keyworddelete Command Example

```
admin > ports > keyworddelete keyword ll
```

Configuring Services

These commands provide the ability to configure the Dominion SX server services:

- DPA
- Encryption
- HTTP
- HTTPS
- Logout
- LPA
- SSH
- Telnet
- fixedtcpwindow

dpa Command

The permitted TCP Port Range is 1024-64510. When run without the mode parameter, the system displays the current dpa type.

The general syntax of the dpa command is:

```
dpa [mode <Normal|IP|TCPPort>]
```

The syntax for accessing a port directly using tcp port# is:

```
ssh -l sx_user -p tcp_port_N sx_ip_addr

sx_user@sx_ip_addr's password: <prompted by ssh>


telnet -l sx_user sx_ip_addr tcp_port_N

Password: <prompted by telnet>
```

The syntax for accessing a port directly using the ip address assigned per port is:

```
ssh -l sx_user dpa_ip_addr

sx_user@dpa_ip_addr's password: <prompted by ssh>


telnet -l sx_user dpa_ip_addr

Password: <prompted by telnet>
```

The dpa command options are described in the following table.

dpa Command	Description
mode <Normal|IP|TCPPort>	Per-port Direct Port Access type mode Normal - a default value that means DPA access cannot be established IP - access target port directly by unique IP Address via ssh/telnet/http/https TCPPort - access target port directly by unique TCP port via ssh/telnet

Note: There is currently no way to set the device back to the default DPA IP of 0.0.0.0.

dpa Command Example

The following example chooses the DPA IP mode IP:

```
admin > Config > Services > dpa mode IP
```

Note: When any changes are made over DPA mode and ports DPA configuration, the Dominion SX needs to be rebooted to apply new settings. DPA changes will not be available until after the Dominion SX is rebooted.

After a successful DPA connection, try the following:

```
ssh -l sx_user 10.0.13.1

Password:

Authentication successful.

Starting DPA for port 1

Authentication successful.

Escape Sequence is: Control-]
```

You can now go directly to port 1 using the newly assigned IP.

To disable DPA (set by default, this option could be used after you have explicitly enabled DPA before):

```
admin > Config > Services > dpa mode Normal
```

Enabling unauthorizedportaccess to a set of ports assigned to 'Anonymous' group.

Unauthorized port access is available only for configured DPA methods. Use the following command:

```
admin > Security > LoginSettings >
unauthorizedportaccess enable true
```

When unauthorizedportaccess is enabled, it automatically enables Anonymous group and the user is able to configure it according to his requirement:

```
admin > Security > LoginSettings >
unauthorizedportaccess

Unauthorized Port Access Settings:
        Enable: 1
Group Settings:
        Name: Anonymous
        Class: Operator
        Ports:
```

To configure Anonymous group settings choose config > user and execute the following command:

```
admin > Config > User > editgroup name Anonymous class
op ports 1,2,3,4,5

Editing group...

Group Anonymous: Configuration Saved


The 'Anonymous' group is successfully configured.
```

DPA Anonymous access

The DPA is already configured (see the DPA configuration settings section).

DPA Mode is IP, IP 10.0.13.240 is assigned to port 1.

When accessing the serial port with Anonymous port access, user name should be "anonymous" and empty password <blank> as shown below. Anonymous access is granted if both username and password fields are empty (<blank>).

Note: If "anonymous" with a lower case a is entered, the application will allow access without prompting for a password.

```
ssh -l anonymous 10.0.13.240

Password:

Authentication successful.

Starting DPA for port 1

Authentication successful.

Escape Sequence is: Control-]
```

If suppress option is "all", no authentication credentials are shown and you jump directly to the target prompt.

```
configuration > ports > config port 1 suppress all

ssh -1 anonymous 10.0.13.240
```

If option suppress is "none", authentication credentials are shown (username: password:).

```
configuration > ports > config port 1 suppress none


ssh -l anonymous 10.0.13.240

Password:

Authentication successful.

Starting DPA for port 1

Authentication successful.

Escape Sequence is: Control-]
```

You are now master for the port.

Encryption Command

The encryption command sets the type of encryption for HTTPS.

Note: The factory default value of this protocol is SSL.

Syntax

```
encryption [prot <TLS|SSL>]
```

encryption Command	Description
prot <TLS|SSL>	Select TLS or SSL encryption

encryption Command Example

The following example sets SSL encryption for HTTPS:

```
admin > Config > Services > encryption prot SSL
```

HTTP Command

The http command is used to control http access and redirection and to define the port.

Syntax

```
http [enable <true|false>] [port value] [redirect
<true|false>]
```

http Command	Description
enable <true|false>	Enable/Disable HTTP access
port value	HTTP server default listen port (tcp)
redirect <true|false>	Enable/Disable redirection from HTTP to HTTPS

http Command Example

The example below enables http access and redirection to https and sets the default port to 2.

```
admin > Config > Services > http enable true port 2
redirect true
```

HTTPS Command

The https command is used to control https access and define the port.

Syntax

```
https [enable <true|false>] [port value]
```

https Command	Description
enable <true|false>	Enable/Disable HTTP access
port value	HTTP server default listen port (tcp)

https Command Example

```
admin > Config > Services > https


Https Settings:

        Enabled : true

        Port : 443
```

Logout Command

The logout command is used to log out of the current CLI session.

You can log out at any command level.

LPA Command

The lpa command is used to display and set local port access configuration. Dominion SX units have one or two local ports, depending on the model. See ***Appendix A*** (see "Dominion SX Serial RJ-45 Pinouts" on page 234) for pinouts on DB9-M and RJ45-F ports.

Syntax

```
lpa [enable <true|false>] [bps value]
```

lpa Command	**Description**
none	The lpa command with no parameters specified displays the current LPA configuration.
enable <true|false>	enable Enable/Disable Local Port access
[bps value]	Local Port speed (bit rate) in bit/s. Possible values are: (9600|19200|38400|57600|115200)

lpa Command Example

The following command enables local port access and sets the baud rate.

```
admin > Config > Services > lpa enable true 115200
```

SSH Command

Syntax

```
ssh [enable <true|false>] [port value]
```

ssh Command	**Description**
enable <true|false>	Enable or disable SSH access.
port value	SSH server tcp listen port

ssh Command Example

```
admin > Config > Services > ssh enable true port 4
```

The system displays this message after entering the preceding command.

The system must be rebooted for changes to take effect.

Note: Customers experiencing slow SSH connectivity in Dominion SX 3.1.5 or Dominion SX 3.1.6 after upgrading to Dominion SX 3.1.7 should invoke the `ssh enable true` *command to avoid this issue in the future.*

Telnet Command

Syntax

```
telnet [enable <true|false>] [port value]
```

telnet Command	Description
enable <true|false>	Enable or disable Telnet access.
port value	Telnet server tcp listen port

telnet Command Example

The command below enables telnet access on port 23.

```
admin > Config > Services > telnet enable true port 23
```

fixedtcpwindow Command

The fixed TCP Window is enabled by default. The Fixed TCP window command is used to disable automatic TCP window scaling. This is necessary for some Windows Vista clients to be able to properly connect to the Dominion SX. If you notice connection issues to the Dominion SX, you may need to disable this.

Syntax

```
fixedtcpwindow [enable <true|false>]

enable <true|false>   enable fixed tcp windows, or
disable(allow TCP

window scaling)
```

fixedtcpwindow Command Example

admin > Config > Services > fixedtcpwindow enable true

Configuring SNMP

The Dominion SX server supports sending SNMP alerts to a predefined SNMP server. The Raritan SNMP MIB is found in the FAQs in the support section of the Raritan web site. The following commands configure the SNMP features:

- add
- delete
- snmp

SMNP Add Command

The add command adds trap recipients. A recipient is an IP address with an optional space- separated port number. Traps may be sent to multiple ports with the same IP address.

Syntax

```
add [dest ipaddress] [port value]
```

add Command	Description
dest ipaddress	SNMP destination IP address
port value	SNMP destination port

SNMP add Command Example

```
admin > Config > SNMP > add 72.236.162.33 78
```

SNMP Delete Command

The SNMP delete command deletes trap recipients. A recipient is an IP address with an optional space-separated port number. When removing a recipient with a port number, include the port number in the delete command. Traps may be sent to multiple ports with the same IP address.

Syntax

```
delete [dest ipaddress]
```

delete Command	Description
dest ipaddress	SNMP destination ip address to be deleted

SNMP delete Command Example

```
admin > Config > SNMP > delete 72.236.162.33
```

SNMP Command

The SNMP command controls SNMP traps and specifies the community name used to send traps.

Syntax

```
snmp [enable <true|false>] [public community-string]
```

snmp Command	Description
enable <true|false>	Enable/Disable SNMP
public community-string	Community string

snmp Command Example

```
admin > Config > SNMP > snmp enable true public XyZZy1
```

Configuring Time

Time-related configuration mode commands:

- clock
- ntp
- timezonelist

Clock Command

The clock command allows you to set the time and date for the server.

Syntax

```
 clock [tz timezone] [datetime datetime-string]
```

clock Command	Description
tz timezone	The timezone index is a number corresponding to the desired time zone.
datetime datetime-string	The date and time string for the console server unit. Enter in the following format: "YYYY-MM-DD HH:MM:SS"
timezonelist	Using this option displays a list of time zones and index values. Use the index values with the [tz] option.

clock Command Example

The following command sets the Dominion SX date and time to 12-Jul-06, 09:22:33 AM, in time zone 21.

```
admin > Config > Time > clock tz 21 datetime "2006-07-
12 09:22:33"
```

NTP Command

The ntp command lets you determine if a Network Time Protocol (NTP) server should be used to synchronize the Dominion SX clock to a reference.

Syntax

```
ntp [enable <true | false>] [primip primip] [secip
secip]
```

ntp Command	Description
enable	Enable or disable the use of NTP.
primip primip	The primary NTP server to use first.
secip secip	The NTP server to use if the primary is not available.

ntp Command Example

The following command enables NTP.

```
admin > Config > Time > ntp enable true primip
132.163.4.101
```

Timezonelist Command

The timezonelist command returns a list of timezones and associated index values. The index values are then used as part of the clock command.

Syntax

```
timezonelist
```

Configuring Users

The following commands allow you to manage users:

- addgroup
- adduser
- deletegroup
- deleteuser
- editgroup
- edituser
- groups
- users

Addgroup Command

The addgroup command creates a group with common permissions.

Syntax

```
addgroup [name groupname] [class <op|ob>] [ports
<number|range|*>] [power <number|range|*>] [sharing
<true|false>]
```

addgroup Command	Description
name groupname	Group name
class <op|ob>	Group user class <op>erator or <ob>server
ports <number|range|*>	Port(s) assigned to the group. Single port or range of ports (1-n or 1,3,4 or * for all ports)
power <number|range|*>	Power strip assigned to the group. Single power strip or range of power strips.
sharing <true|false>	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.

addgroup Command Example

```
admin > Config > User > addgroup name unixgroup class
op ports 1,2,3 power 1,2,3
```

Adduser Command

The adduser command is used to manage information about a specified user.

Syntax

```
adduser [user loginname] [fullname user's-fullname]
[group name] [dialback phonenumber] [password
password] [info user-information] [active
<true|false>]
```

adduser Command	Description
user loginname	Login Name (Required)
fullname user's-fullname	User's full name (required)
group name	Group to associate with user (required)
dialback phonenumber	Dialback phone number for this user (optional)
password password	User's password (required)
info user-information	Miscellaneous user information
active <true|false>	Activate/Deactivate user account

adduser Command Example

The following command shows how to add a user:

```
admin > Config > User > adduser user jjones fullname
John-Jones group unix dialback 12146908003 password
123abc info AP-Systems active true
```

Deletegroup Command

The deletegroup command deletes an existing group.

Syntax

```
deletegroup [name groupname]
```

deletegroup Command	Description
name groupname	Group name

deletegroup Command Example

```
admin > Config > User > deletegroup name unixgroup
```

Deleteuser Command

The deleteuser command is used to remove a specified user.

Syntax

```
adduser [user loginname]
```

deleteuser Command	Description
user loginname	Login Name (Required)

deleteuser Command Example

```
admin > Config > User > deleteuser user jjones
```

Editgroup Command

The editgroup command edits an existing group.

Syntax

```
editgroup [name groupname] [class <op|ob>] [ports
<number|range|*>] [power <number|range|*>] [sharing
<true|false>]
```

editgroup Command	Description
name groupname	Group name
class <op|ob>	Group user class <op>erator or

editgroup Command	Description
	<ob>server
ports <number|range|*>	Port(s) assigned to the group. Single port or range of ports (1-n or 1,3,4 or * for all ports)
power <number|range|*>	Single power strip or range of power strips assigned to the group.
sharing <true|false>	Indicate whether port access is shared while the port is being utilized.

editgroup Command Example

```
admin > Config > User > editgroup name unixgroup class
op ports 1,4 power 1,4
```

Edituser Command

The edituser command is used to manage information about a specified user.

Syntax

```
edituser [user loginname] [fullname user's-fullname]
[group name] [dialback phonenumber] [password
password] [info user-information] [active
<true|false>]
```

edituser Command	Description
user loginname	Login Name (Required)
fullname user's-fullname	User's full name
group name	Group to associate with user
dialback phonenumber	Dialback phone number for this user
password password	User's password
info user-information	Miscellaneous user information
active <true|false>	Activate/Deactivate user account

edituser Command Example

The following command shows how to change a user's password:

```
admin > Config > User > edituser user admin password
newp/w
```

Groups Command

The groups command shows the details of existing groups.

Syntax

```
groups
```

groups Command Example

```
admin > Config > User > groups
```

Users Command

The users command shows the details of existing users.

Syntax

```
users
```

users Command Example

```
admin > Config > User > users
```

Connect Commands

The connect commands allow you to access ports and their histories.

Command	Description
connect	Connect to a port. The port sub-menu, reached using escape key sequence.
clearhistory	Clear history buffer for this port.
close, quit, q	Close this target connection.
gethistory	Display the history buffer for this port.
getwrite	Get write access for the port.
return	Return to the target session.
sendbreak	Send a break to the connected target.
writelock	Lock write access to this port.
writeunlock	Unlock write access to this port.
powerstatus	Query Power status of this port.
powertoggle	Toggle Power On/Off of this port.
uptime	Prints the current system uptime information.

Configuring Power

The following power commands allow you to manage power strips attached to the Dominion SX.

Command	Description
associate	Associate a Power Strip outlet to a Dominion SX Port.
association	View Currently configured associations.
cycle	Power cycle specified ID.
off	Power off specified ID.
on	Power on specified ID.
outlet	Edit outlet information.
powerdelay	Configure global Power Strip delays.
powergroup	Switch to Power Group Menu.
powerstatus	Get Power Strip status.
powerstrip	Edit Power Strip information.
setpowerport	Configure an Dominion SX Port to contain a Power Strip device.
unassociate	Remove a power outlet association from an Dominion SX Port.
unsetpowerport	Configure an Dominion SX Port to remove a Power Strip device.

See ***CLI Command for Power Control*** (on page 212) for details about power command scenarios.

Diagnostic Commands

The diagnostic commands allow you to gather information for troubleshooting.

Command	Description
ifconfig	Show detailed network configuration
netstat	Print network connections
ping	Ping a remote system
ps	Report system process status

traceroute	Trace the network route to a host [-dnrv] [-m maxttl] [-p port#] [-q nqueries] [-s srcaddr] [-t tos] [-w wait] host [data size]
uptime	Print the current system uptime information

IPMI Commands

IPMIDiscover and IPMITool commands allow you to work with IPMI-supported devices.

IPMIDISCOVER

The ipmidiscover tool is user to discover Intelligent Platform Management Interface (IPMI) servers in the network.

- The IP address range can be set using startIP and endIP.
- Only users belonging to the Administrator group are able to configure the support of IPMI. The supported IPMI version 2.0.

Syntax

```
ipmidiscover [OPTIONS] startIP endIP
```

All discovered targets supporting IPMI version 2.0 will be listed, allowing the user to select one and execute the IPMI operations.

ipmidiscover Command	Description
[OPTIONS]	Two options are supported: -t timeout [seconds] to complete the discovery -i interval [seconds] between each ping
startIP	Beginning IP address
endIP	Ending IP address

ipmidiscover Command Example

```
admin> IPMI > ipmidiscover -t 20 10.0.22.1 10.0.22.10


Discovering IPMI Devices :

IPMI IP: 10.0.22.2

IPMI IP: 10.0.22.7
```

It is possible for the IP address range to span different subnets.

IPMITOOL

This command lets you manage the IPMI functions of a remote system, including printing FRU information, LAN configuration, sensor readings, and remote chassis power control. The ipmitool command controls IPMI-enabled devices. The user name to access the IPMI device is ADMIN, password ADMIN.

Syntax

```
ipmitool [-c|-h|-v|-V] -I lanplus -H <hostname> [-
p <port>] [-U <username>] [-L <privlvl>] [-a|-E|-P|-
f <password>] [-o <oemtype>] [-C <ciphersuite>]
```

ipmitool Command	Description
-c	Present output in CSV (comma separated variable) format. This is not available with all commands.
-h	Get basic usage help from the command line.
-v	Increase verbose output level. This option may be specified multiple times to increase the level of debug output. If given three times you will get hexdumps of all incoming and outgoing packets.
-V	Display version information.
-I <interface>	Selects IPMI interface to use. Supported interfaces that are compiled in are visible in the usage help output.
-H <address>	Remote server address, can be IP address or hostname. This option is required for lan and lanplus interfaces.
[-p <port>]	Remote server UDP port to connect to. Default is 623.
[-U <username>]	Remote server username, default is NULL user.
[-L <privlvl>]	Force session privilege level. Can be CALLBACK, USER, OPERATOR, ADMIN. Default is ADMIN.
[-a|-E|-P|-f <password>]	-a Prompt for the remote server password. -E The remote server password is specified by the environment variable IPMI_PASSWORD. -P <password> Remote server password is specified on the command line. If supported it will be obscured in the process list. -f <password_file> Specifies a file containing the remote server password. If this option is absent, or if password_file is empty, the password will default to NULL.

ipmitool Command	Description
[-o <oemtype>]	Select OEM type to support. This usually involves minor hacks in place in the code to work around quirks in various BMCs from various manufacturers. Use -o list to see a list of current supported OEM types.
[-C <ciphersuite>]	The remote server authentication, integrity, and encryption algorithms to use for IPMIv2 lanplus connections. See table 22-19 in the IPMIv2 specification. The default is 3 which specifies RAKP-HMAC-SHA1 authentication, HMAC-SHA1-96 integrity, and AES-CBC-128 encryption algorithms.
<command>	raw - Send a RAW IPMI request and print response i2c - Send an I2C Master Write-Read command and print response lan - Configure LAN Channels chassis - Get chassis status and set power state power - Shortcut to chassis power commands event - Send pre-defined events to MC mc - Management Controller status and global enables sdr - Print Sensor Data Repository entries and readings sensor - Print detailed sensor information fru - Print built-in FRU and scan SDR for FRU locators sel - Print System Event Log (SEL) pef - Configure Platform Event Filtering (PEF) sol - Configure and connect IPMIv2.0 Serial-over-LAN tsol - Configure and connect with Tyan IPMIv1.5 Serial-over-LAN isol - Configure IPMIv1.5 Serial-over-LAN user - Configure Management Controller users channel - Configure Management Controller channels session - Print session information firewall - Configure firmware firewall (IPMIv2.0) sunoem - OEM Commands for Sun servers picmg - Run a PICMG/ATCA extended cmd fwum - Update IPMC using Kontron OEM Firmware Update Manager

ipmitool Command	Description
	shell - Launch interactive IPMI shell exec - Run list of commands from file set - Set runtime variable for shell and exec

ipmitool Command Example

The following command allows the user to get the chassis status and set the power state.

```
admin> IPMI > ipmitool -I lan -H 10.0.22.7 -U ADMIN
chassis status

Password:
System Power             : on
Power Overload          : false
Power Interlock          : inactive
Main Power Fault       : false
Power Control Fault   : false
Power Restore Policy : always-off
Last Power Event       : command
Chassis Intrusion        : active
Front-Panel Lockout  : inactive
Drive Fault                 : false
Cooling/Fan Fault      : false
```

See http://ipmitool.sourceforge.net/manpage.html for additional information.

Listports Command

Command	Description
listports	List accessible ports. admin > listports Port no. Port name 1 Port1 [U] 2 Port2 [U] 3 Port3 [U] 4 Port4 [U]

Port names up to 23 characters are displayed when two columns are needed to display the available ports. When three columns are needed to list the ports, the port names are limited to 13 characters in order to ensure the entire port list fits on a standard 80x25 screen.

Longer port names are truncated to 22 characters, with a $ sign at the end. The letter after the port name describes the state of each port. This includes:

- D, B - Down, Busy
- U, B - Up, Busy
- D - Down
- U - Up

Maintenance Commands

The maintenance commands allow you to perform maintenance-related tasks on the Dominion SX firmware:

- backup
- cleareventlog
- factoryreset
- firmware
- logoff
- reboot
- restore
- sendeventlog
- upgrade
- upgradehistory
- upgradestatus
- userlist
- vieweventlog

Note: All operations that normally trigger a reboot or prompt the user for feedbacks are now added a new parameter named force. This force parameter prevents reboot, prompting or both from taking place until all configurations are completed. The commands that now have a force parameter are: `ethernetfilover` *(see "Ethernetfailover Command" on page 148),* `interface` *(see "Interface Command" on page 148),* `name` *(see "Name Command" on page 149),* `ports` *(see "Ports Command" on page 150),* `factoryreset` *(see "Factoryreset Command" on page 181) and* `reboot` *(see "Reboot Command" on page 183).*

Backup Command

The backup command makes a copy of the Dominion SX configuration and writes the backup onto an ftp server. The current Dominion SX configuration is saved to the computer with the IP set in the command parameters in an encrypted format. All device settings except network settings are stored in the file, wh can be recovered if a Restore operation becomes necessary.

Syntax

```
backup [ip ipaddress] [login login] [password
password] [path pathname] [file filename]
```

backup Command	Description

[ip ipaddress]	IP address of the target system where the backup will be written.
<login login>	Username of the account on the system where the backup will be stored.
<password password>	Password of the account on the system where the backup will be stored.
[path pathname]	Specifies the path to the backup file.
[file filename]	Specifies the name of the file in which the backup will be saved.

backup Command Example

In this example, the console server data is sent to a system at the IP address 192.168.51.220. The guest account and password are used. The data will be saved at the top level of the guest account as a file named backupfile.

```
admin > system > backup ip 10.0.0.188 login sx
password qaz1wsx path /home/backup file bac
```

Cleareventlog Command

The cleareventlog command clears the contents of the local event log.

Syntax

```
Cleareventlog
```

cleareventlog Command Example

```
admin > Config > Log > cleareventlog
```

Factoryreset Command

The factoryreset command returns the Dominion SX console server to its default factory settings.

Important: If you choose to revert to the factory settings, you will erase all your custom settings and will lose your connection to the Dominion SX because, upon rebooting, the IP address of the unit will be reset to the factory default IP address of 192.168.0.192. If the network is running a DHCP server, the unit will be reset to a different IP address, because DHCP is enabled by default when the unit is reverted to factory settings.

Syntax

```
factoryreset
```

factoryreset Command Example

```
admin > Maintenance > factoryreset

Network Settings:

        Name: DominionSX

        Domain : raritan.com

        CSC Port: 5000

        Discover Port: 5000

        DHCP Client: true

        IP: 192.168.0.192

        Net Mask : 255.255.255.0

        Gateway : 192.168.0.192

        Failover : true

Do you wish to commit these settings (no/yes)
(default: no)
```

Firmware Command

The firmware command provides the versions of the firmware.

Syntax

```
firmware
```

firmware Command Example

```
admin > Maintenance > firmware

Version Information :

Firmware Version : 3.0.0.1.15

Kernel Version : 2.4.12

PMON Version: 2.0.1

RSC Version: 1.0.0.1.16
```

Logoff Command

Command	Description
logoff	Force logoff (terminate) a user or port

	session.

Reboot Command

The reboot command restarts the Dominion SX console server. This command is only available to users with administrative privileges. All user sessions will be terminated without warning, and no confirmation will be required. It is highly recommended that you ask all users to log off before you reboot the unit. The userlist command can be used to display a list of connected users and sessions.

Syntax

```
reboot
```

reboot Command Example

```
admin > Maintenance > reboot
```

The system responds with the following messages:

```
Rebooting the system will log off all users.
```

```
Do you want to proceed with the reboot? (no/yes)
(default: no) yes
```

Restore Command

The restore command retrieves a copy of the Dominion SX system from a system and writes the file to the Dominion SX server.

Syntax

```
restore [ip ipaddress] [login login] [password
password] [path pathname] [file filename]
```

restore Command	Description
[ip ipaddress]	IP address of the target system from which the restore data will be retrieved
<login login>	Username of the account on the system where the restore data is stored
<password password>	Password for the above account
[path pathname]	Specifies the path to the backup file to be restored to a similar system with the same port density
[file filename]	Specifies the name of the file in which the backup data was saved

restore Command Example

In this example, the console server data is being retrieved from a system at IP address 192.168.51.220. The guest account and password are used. The data will be pulled from the top level of the guest account in a file named backupfile.

```
admin > system > restore ip 192.168.51.220 login guest
password guestpassword path /home/bac file backupfile1
```

Sendeventlog Command

The sendeventlog command sends the local logfile to a remote FTP server.

Syntax

```
sendeventlog [ip ipaddress] [login login] [password
password] [path pathname] [file filename]
```

sendeventlog Command	Description
ip ipaddress	FTP server IP address
login login	FTP Server login name
password password	FTP Server password
path pathname	FTP server path. For example, /ftphome
file filename	Filename on FTP server to save log. For example, sxlogfile

sendeventlog Command Example

```
admin > Config > Log > sendeventlog ip 72.236.162.187
login acy password pasraritansword path sxlogfile file
log 32
```

Upgrade Command

Note: To perform an upgrade, there must be a configured remote ftp server.

The upgrade command upgrades one version of the system to another version, for example v2.5 to v3.0.

Syntax

```
upgrade [ip ipaddress] [login login] [password
password] [path pathname]
```

upgrade Command	Description
ip ipaddress	IP Address of FTP Server
login login	FTP Server login name
password password	FTP Server password
path pathname	FTP server path. For example, /ftphome/UpgradePack/Pack1of1

upgrade Command Example

```
admin > Maintenance > upgrade ip 10.0.0.188 login sx
password qaz1wsx path
/var/ftp/UpgradePack_2.5.6_3.0.0.1.15/Pack1of1
```

Upgradehistory Command

The upgradehistory command provides information about the last time you upgraded the system.

Syntax

```
upgradehistory
```

upgradehistory Command Example

```
admin > Maintenance > upgradehistory

Overall Upgrade History:

3.0.0.1.15           Wed Sep 13 19:07:38 2006
```

Userlist Command

The userlist command displays a list of all users who are logged in, their source IP Addresses and any ports to which they are connected.

Syntax

```
userlist
```

Vieweventlog Command

The vieweventlog command displays the local log file.

Syntax

```
Vieweventfile
```

vieweventlog Command Example

```
admin > Config > Log > vieweventlog
```

Security Commands

Dominion SX controls the ability to hack into the system by using random logins. These security command menus provide access to the commands needed to configure the Dominion SX security features:

- banner
- certificate
- firewall
- kerberos
- loginsettings
- securityprofiles

Banner Command

The banner command controls the display of a security banner immediately after login.

Syntax

```
banner [display <true|false>] [audit <true|false>]
```

banner Command	Description
display <true|false>	Enable/Disable banner display
audit <true|false>	Enable/Disable audit for the banner, when banner display is enabled

banner Command Example

```
admin > Security > banner > banner display true audit
false
```

Ftpgetbanner Command

The ftpgetbanner command directs the Dominion SX to go to this site to retrieve the welcome banner. The welcome banner and the audit statement are maintained on an external FTP site.

Syntax

```
ftpgetbanner [ip ipaddress] [login login] [password
password] [path pathname]
```

ftpgetbanner Command	Description
ip ipaddress	FTP server IP address

login login	FTP Server login name
password password	FTP Server password
path pathname	FTP server path for the banner file banner.txt. for example,/ftphome/banner.txt

ftpgetbanner Command Example

```
admin > Security > Banner> ftpgetbanner ip
72.236.162.171 login raritan password acy path
/ftphome/banner.txt
```

Certificate Command Menu

The certificate command menu provides the client and server commands to create and manage security certificates.

Note: If the Dominion SX 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 the Dominion SX. 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 Dominion SX does not allow users to access the web server directly, encrypted private keys are not required and does not compromise security.*

Note: When the Dominion SX is used to generate the certificate signing request, the private key is not required since Dominion SX keeps the private key exclusive.

Syntax

```
certificate <>
```

Note: For a description of how to enable LDAP over SSL with a third-party certification authority, see http://support.microsoft.com/default.aspx?scid=kb;en-us;321051. The document requires the exchange of certificate of authority created by the MS Server.

certificate Command	Description
add	Install a User Certificate
addcrl	Install a CA's CRL
clientcert	Activate Client Side Certificate Verification
delete	Remove Client CA Certificate
deletecrl	Remove Client CA's CRL

viewcacert	View Client CA Certificate
viewcrl	View Client CA CRL Certificate

Certificate Client Command Example

Enable SSL Client Certificates:

```
admin > Security > certificate > clientcert enable
true
```

Install Certificate Authority:

```
admin > Security > certificate > add ip 10.0.0.189
login root password passwordword path /home/cert/
SXCert  file cacert.pem ca ca_test
```

Add Certificate Renovation List:

```
admin > Security > certificate > addcrl ip 10.0.0.189
login root password pass path /home/cert/SXCert file
demoCA.crl ca crl_test
```

Delete Certificate Renovation List:

```
admin > Security > certificate > deletecrl ca crl_test
```

certificate Command	**Description**
activatedefaultcert	Activate Default System SSL Certificate
activateusercert	Activate User SSL Certificate
generatecsr	View Default System Cert
generatedefaultcert	Generate Default System SSL Certificate
installusercert	Install a User Certificate
installuserkey	Install a User Certificate Key
viewcsr	View The Certificate Signing Request
viewdefaultcert	View default system certificate

Server Command Example

Install User Certificate:

```
admin > Security > certificate > installusercert ip
10.0.0.189 login root password pass path /home/SXCert
file sx.pem
```

Install User Key:

```
admin > Security > certificate > installuserkey ip
10.0.0.189 login root password pass path /home/ SXCert
file sx.pem
```

Activate User Certificate:

```
admin > Security > certificate > activateusercert
```

Generate Certificate Signing Request:

```
admin > Security > certificate > generatecsr bits 1024
name test_csr country BG state Ko locality Seoul org
Bnr unit SX email sx@bir.net
```

Firewall Command

The firewall command provides control for the turning on or off the firewall.

Syntax

```
firewall [enable <true|false>]
```

firewall Command	**Description**
enable <true|false>	Enable/Disable firewall with true or false

firewall Command Example

```
admin > Security > Firewall > firewall enable true
```

Note: Use the following when working with the Firewall.

```
Chain FORWARD (policy ACCEPT)

target     prot opt source               destination
```

When you enable IP forwarding for Dual LAN units, use IPTables rules to create policies for traffic being forwarded between LAN interfaces.

IPtables Command

The iptables command is an administration tool for IPv4 packet filtering and Network Address Translation (NAT). The iptables command provides an interface to the linux iptables. The command parameters and options are the same as the linux system command.

iptables Command	Description
-A input	Append one or more rules to specified chain.
--dport	Destination port.
--flush	Clear the iptables.
-j target	Jump based on the following target keywords: ACCEPT - Packet is passed through (i.e. for INPUT chain, processed by local stack, for OUTPUT, sent) DROP -Packet is dropped and no further processing is performed LOG - QUEUE - Passes datagram to user space (if supported by kernel) RETURN - Terminates processing by this chain and resumes the calling chain (or executes the chain policy if there is no calling chain)
-list	View the current iptables.
--log-prefix DOM_IPACL	
-m state	Load a match extension module.
-p	The protocol of the traffic.
-s	Source address.
-save	Save the IP Tables.
--state NEW <enter rule to trigger here>	
-t filter	

iptables Command Examples

Iptables can be configured in a plethora of ways that is outside the scope of this document. The examples below show some simple configuration options created with iptables.

The following example enables a log for iptables:

```
admin > firewall > iptables -A INPUT -t filter -j LOG
--log-prefix DOM_IPACL -m state --state NEW -s <IP>
```

Adding a default local rule

The default local rule is included as part of the standard Dominion SX implementation.

Restricting Access from an IP Address

To restrict access to the Dominion SX from a specific IP address (192.168.1.100):

```
admin > Security > firewall > iptables -A INPUT -t
filter -j DROP
-s 192.168.1.100
```

Logging a message when IP Address connects

To send a syslog message when an IP Address connects to the Dominion SX:

```
admin > Security >firewall >iptables -A INPUT -t
filter -j LOG
--log-prefix DOM_IPACL -m state --state NEW -s
192.168.1.100
```

Allowing Access from an IP Range

To allow access to the Dominion SX from a specific IP range (192.168.0.1-192.168.0.255).

```
admin > Security > firewall > iptables -A INPUT -t
filter
-j ACCEPT -s 192.168.0.0/255.255.255.0
```

Disable all ICMP traffic

To disable ICMP protocol traffic, and have the Dominion SX not respond to pings.

```
admin > Security > firewall > iptables -A INPUT -p
icmp -j DROP
```

Prevent Access to the Telnet port from an IP Address

To disable acccess to the telnet port for a particular ip address

```
admin > Security > firewall > iptables -A INPUT -p tcp
--dport 23
-j DROP -s 192.168.0.100
```

View the current iptables

To view the current iptables rule:

```
admin > Security > firewall > iptables --list
```

```
or
```

```
admin > Security > firewall > iptables -xvnL
```

Clear the iptables rules

To clear the iptables rules.

```
admin > Security > firewall > iptables --flush
```

Save the configured settings

To save the iptables rules into the local database.

```
admin > Security > firewall > iptables-save
```

Note: No spaces between iptables and save.

Execute this command once you have configured all the settings.

Kerberos Command

The Kerberos command menu offers access to the commands used to configure the Kerberos network authentication protocol:

Kerberos Command	Description
gethostnamefile	Get /etc/hosts in case of DNS failure file.
getkrbconfig	Get Kerberos 5 configuration file.
kadmin	Kerberos admin client.
kerberos	Kerberos-based Network Authentication.
kinit	get kerberos ticket.
klist	list kerberos ticket.

Kerberos and Dominion SX

The Dominion SX can use Kerberos authentication with the following steps and as a result, Kerberos-based network mutual authentication, and symmetric, also called private/secret, key cryptography can be achieved in the CLI and GUI of the Dominion SX for remote user authentication.

See the MIT Kerberos website for information about Kerberos, KDC, kadmin, client machine setup, and the FAQs related to these topics.

1. Set your krb5.conf stanzas and ftp it using getkrbconfig [configuration settings available in: http://www.faqs.org/faqs/kerberos-faq/general/section-38.html]
2. Get a ticket using kinit.
3. Use kadmin to add the keys to /etc/krb5.keytab for HTTP/FQDN@REALM and host/FQDN@REALM. These keys are consistent across boots.
4. Remote authentication and authorization can be set up along with Kerberos authentication. HTTP and telnet access will prompt you to enter username and password. Currently Kerberos does not automatically map to local or remote usernames.
5. Enable Kerberos.
6. After a reboot, the Dominion SX is ready for secure telnet and HTTP protocol remote access.

Diagnostic Tips:

- Use the name command in the network menu to set the FQDN for the Dominion SX.
- Disable HTTP redirect from the services menu.
- Synchronize the time of the client machine, Dominion SX, KDC and kadmin machines using time menu and ntp option.
- The above 3 machines should be pingable by FQDN. Get the hosts file using gethostnamefile from the Kerberos menu.
- Use klist to check the ticket expiration.
  Most of the kadmin error messages are associated with ticket expiration
- Kadmin: List principal and add missing principal if it doesn't already exist in the KDC database.
- Browser rule: Do not include the REALM part when the browser prompts for principal.
- Telnet access: Use -x -l and -k option appropriately. Telnet will initially print that authentication

Key and Definitions:

1. For KDC, kadmind, the application server, and client machine, see MIT Kerberos FAQ [http://www.cmf.nrl.navy.mil/CCS/people/kenh/kerberos-faq.html]
2. FQDN: Fully Qualified Domain Name

Note: Information about setting up KDC kadmind is not in the scope of this document. Use the references mentioned in this section for this information.

Kerberos Command Example

1. admin > Security > Kerberos > getkrbconfig ip 192.168.52.197 login vijay password vijayv path /home/vijay/krb5.conf

   Success
2. kadmin: addprinc host/dsx-182.domain.com@REALM

   kadmin: addprinc HTTP/dsx-182.raritan.com@RARITAN.COM

Loginsettings Commands

The loginsettings command menu offers commands used to configure the systemwide login settings:

Command	Description
idletimeout	Set systemwide idletimeout.
inactiveloginexpiry	Configure local login expiry time.

Command	Description
invalidloginretries	Configure local login max number of retries.
localauth	Configure local authentication.
lockoutperiod	Lockout period on invalid login attempt.
singleloginperuser	Restrict to a single login session per user.
strongpassword	Configure strong password rules.
unauthorizedportaccess	Unauthorized (Anonymous) port access.
portaccess	Configure port access shared by user group.
profiledata	Modify or view a security profile.

Idletimeout Command

The idletimeout command sets or changes the amount of idle time allowed before the system disconnects the user.

Syntax

```
idletimeout [time value]
```

idletimeout Command Example

```
admin > Security > LoginSettings > idletimeout time 99
```

Inactiveloginexpiry Command

The inactiveloginexpiry command sets the number of days before an account will expire due to inactivity.

Syntax

```
inactiveloginexpiry [days value]
```

inactiveloginexpiry Command	Description
days <value>	Number of days before account will expire for local users on inactivity

Command Example

```
admin > Security > LoginSettings > inactiveloginexpiry
days 5
```

Invalidloginretries Command

The invalidloginretries command specifies the number of failed invalid login attempts before the account is deactivated.

Syntax

```
invalidloginretries [number value]
```

invalidloginretries Command	Description
number value	Number of failed login retries allowed before account is deactivated

invalidloginretries Command Example

```
admin > Security > LoginSettings > invalidloginretries
number 5
```

Localauth Command

The localauth command is used to configure local authentication.

Syntax

```
localauth [enable <true|false>]
```

localauth Command Example

```
admin > Security > LoginSettings > localauth enable
false
```

Lockoutperiod Command

The lockoutperiod command defines the lockout period on invalid login attempts.

Syntax

```
lockoutperiod [time time]
```

lockoutperiod Command	Description
time time	Period of time (in minutes) for which the user cannot login after account deactivation.

lockoutperiod Command Example

```
admin > Security > LoginSettings > lockoutperiod time
120
```

Singleloginperuser Command

The singleloginperuser command enables or disables multiple logins per user.

Syntax

```
singleloginperuser [enable <true|false>]
```

singleloginperuser Command	Description
enable <true|false>	Enable/Disable multiple login sessions per user.

singleloginperuser Command Example

```
admin > Security > LoginSettings > singleloginperuser
enable true
```

Strongpassword Command

The Dominion SX server supports both standard and strong passwords.

- Standard passwords have no rules associated with them; they can be in any format and will not expire.
- Strong passwords increase the effectiveness of the password by setting rules around content, length, and expiration dates.
- Strong passwords allow the administrator to pick the rules they want to implement from the following table.
- The maximum length of a strong password is 64 characters.

Syntax

```
strongpassword [enable <true|false>] [minlength value]
[maxlength value] [expiry time] [history value]
[uppercase <true|false>] [lowercase <true|false>]
[numeric <true|false>] [other <true|false>]
```

strongpassword Command	Description
enable <true|false>	Enable/Disable strong password rules for local users.
minlength	Minimum password length.
maxlength	Maximum password length.
expiry	Number of days before password will expire for local users.
history	Number of passwords to store in password history.

strongpassword Command	Description
uppercase <true|false>	If true, force uppercase characters in password.
lowercase <true|false>	If true, force lowercase characters in password.
numeric <true|false>	If true, force numeric characters in password.
other <true|false>	If true, force other characters in password.

strongpassword Command Example

The following example sets the Strong Password rules in effect:

- Strong password is enabled.
- The minimum length of the password when you create user is 6 symbols.
- The maximum length of the password is 30.
- The password will expire in 30 days.
- Number of password changes to be kept in history is 3 times.
- There should be at least one and more uppercase / numeric / other symbols in the password.
- There could be 0 or more lowercase symbols in the password.

```
admin > Security > LoginSettings > strongpassword
enable true minlength 6 maxlength 30 expiry 30 history
3 uppercase true numeric true other true
```

Unauthorizedportaccess Command

Syntax

```
unauthorizedportaccess [enable <true|false>]
```

unauthorizedportaccess Command	Description
enable <true|false>	Enable/Disable unauthorized access to a set of ports assigned to 'Anonymous' group

unauthorizedportaccess Command Example

```
admin > Security > LoginSettings >
unauthorizedportaccess enable false
```

Portaccess Command

Syntax

```
portaccess <share|private>
```

portaccess Command	Description
`portaccess <share|private>`	Indicate whether port access should be private or shared.

portaccess Command Example

```
admin > Security > LoginSettings > portaccess share
```

```
admin > Security > LoginSettings > portaccess private
```

Securityprofiles Commands

The securityprofiles command menu provides access to the commands used to configure and control security profiles.

securityprofiles Command	Description
profiledata	View or modify a Security Profile.
securityprofiles	Enable and select a Security Profile.

Profiledata Command

The profiledata command allows you to modify or view a security profile. Dominion SX provides the ability to define security profiles that simplify assigning permissions to users and groups. There are three types of profiles:

- Two are predefined and are standard and secure.
- The third allows definition of custom profiles to allow assignment of all permissions by assigning one security profile.
  Multiple custom security profiles may be defined.

Syntax

```
profiledata [name <Standard|Secure|Custom>] [telnet
<true|false>] [strongpass <true|false>] [timeout
<true|false>] [single <true|false>] [redirect
<true|false>] [tls_required <true|false>]
```

profiledata Command	Description
[name <Standard|Secure|Custom>]	Specifies the type of security profile.
[telnet <true|false>]	Enable/Disable telnet.
[strongpass <true|false>]	Enable/Disable strong password.
[timeout <true|false>]	Enable/Disable idle timeout.
[single <true|false>]	Enable/Disable single login per user.
[redirect <true|false>]	Enable/Disable redirection from HTTP to HTTPS.
[tls_required <true|false>]	Enable/Disable forcing of Transport Layer Security (TLS) on HTTPS.

Profiledata Command Example

The following example defines the custom security profile with telnet disabled, strong passwords required, idle timeout enabled, multiple logins allowed, HTTP to HTTPS redirection disabled, and the forcing of Transport Layer Security (TLS) on HTTPS.

```
admin > Security > SecurityProfiles > profiledata name
Custom telnet false strongpass true timeout true
single false redirect false tls_required true
```

Chapter 14 Intelligent Platform Management Interface

The Intelligent Platform Management Interface (IPMI) lets you manage the IPMI functions of a remote system. The following topics are covered in this chapter:

- Discover IPMI Devices
- IPMI Configuration

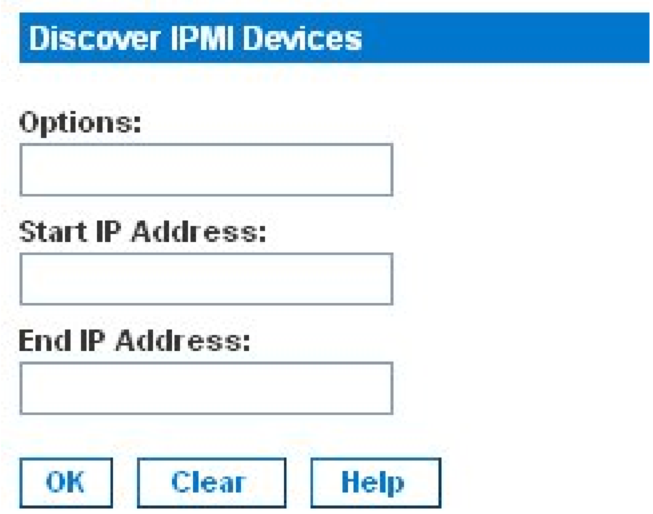
The Intelligent Platform Management Interface (IPMI) lets you manage the IPMI functions of a remote system.

In This Chapter

Discover IPMI Devices

▶ **To discover IPMI servers on the network:**

1. Choose IPMI > Discover IPMI Devices. The Discover IPMI Devices page opens.



2. Leave the Options field blank or enter -t timeout [seconds].
3. Type starting and ending IP addresses in the corresponding fields. SX will discover all IPMI devices within this range of IP addresses.
4. Click the IPMI Discover button.

Example

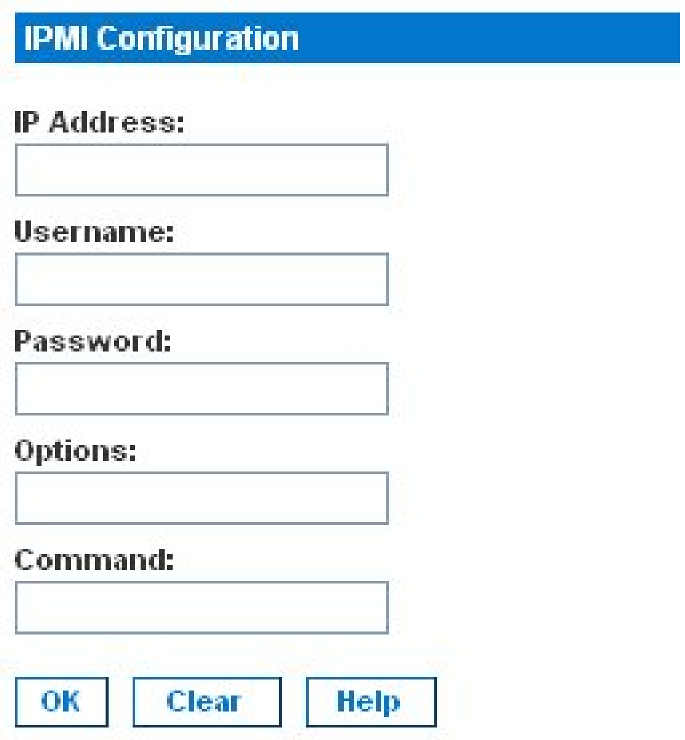
The following is an example of the output when nothing has been entered in the Options field:

```
Result:

 Discovering IPMI Devices ...

--- ipmidiscover statistics ---

448 requests transmitted, 0 responses received in
time, 100.0% packet loss
```

IPMI Configuration

IPMI configuration allows you to manage the IPMI functions of a remote system, including printing FRU information, LAN configuration, sensor readings, and remote chassis power control.

1. Choose IPMI > IPMI Configuration. The IPMI Configuration page opens.



2. Click the Help button to get IPMI configuration information, which appears on the IPMI Configuration page.

   Help:

   ipmitool version 1.8.7

   usage: ipmitool [options...]

-h	This help
-V	Show version information
-v	Verbose (can use multiple times)
-c format	Display output in comma separated
-I intf	Interface to use
-H hostname	Remote host name for LAN interface

```
       -p port                   Remote RMCP port [default=623]

       -U username               Remote session username

       -f file                   Read remote session password from file

       -S sdr                    Use local file for remote SDR cache

       -a                        Prompt for remote password

       -e char                   Set SOL escape character

       -C ciphersuite            Cipher suite to be used by lanplus
       interface

       -k key                    Use Kg key for IPMIv2 authentication

       -L level                  Remote session privilege level
       [default=ADMINISTRATOR]

       -A authtype               Force use of auth type NONE,
       PASSWORD, MD2, MD5 or OEM

       -P password               Remote session password

       -E                        Read password from IPMI_PASSWORD
       environment variable

       -m address                Set local IPMB address

       -b channel                Set destination channel for bridged
       request

       -l lun                    Set destination lun for raw commands

       -t address                Bridge request to remote target address

       -o oemtype                Setup for OEM (use 'list' to see available
       OEM types)

       -O seloem                 Use file for OEM SEL event descriptions

   Interfaces:

       open         Linux OpenIPMI Interface [default]

       imb          Intel IMB Interface

       lan          IPMI v1.5 LAN Interface

   Commands:

       raw              Send a RAW IPMI request and print response

       i2c              Send an I2C Master Write-Read command and
       print response

       lan              Configure LAN Channels

       chassis          Get chassis status and set power state

       power            Shortcut to chassis power commands

       event            Send pre-defined events to MC
```

mc enables	Management Controller status and global
sdr readings	Print Sensor Data Repository entries and
sensor	Print detailed sensor information
fru locators	Print built-in FRU and scan SDR for FRU
sel	Print System Event Log (SEL)
pef	Configure Platform Event Filtering (PEF)
sol	Configure and connect IPMIv2.0 Serial-over-LAN
tsol Serial-over-LAN	Configure and connect with Tyan IPMIv1.5
isol	Configure IPMIv1.5 Serial-over-LAN
user	Configure Management Controller users
channel	Configure Management Controller channels
session	Print session information
firewall	Configure firmware firewall (IPMIv2.0)
sunoem	OEM Commands for Sun servers
picmg	Run a PICMG/ATCA extended cmd
fwum Update Manager	Update IPMC using Kontron OEM Firmware
shell	Launch interactive IPMI shell
exec	Run list of commands from file
set	Set runtime variable for shell and exec

3. Type the IP address in the IP Address field.
4. Type your username in the Username field.
5. Type your password in the Password field.
6. Type an option in the Option field.
7. Type a command in the Command field.
8. Click the IPMI Discover button. The system displays the results of your command.

Chapter 15 Power Control

Power Control allows you to manage power functions. The following topics are covered in this chapter:

- Power Control
- Associations Power Control
- Power Strip Power Control
- Power Strip Status

> Important: A maximum of 31 powerstrips can be run with the Dominion SX.

In This Chapter

Port Power Associations

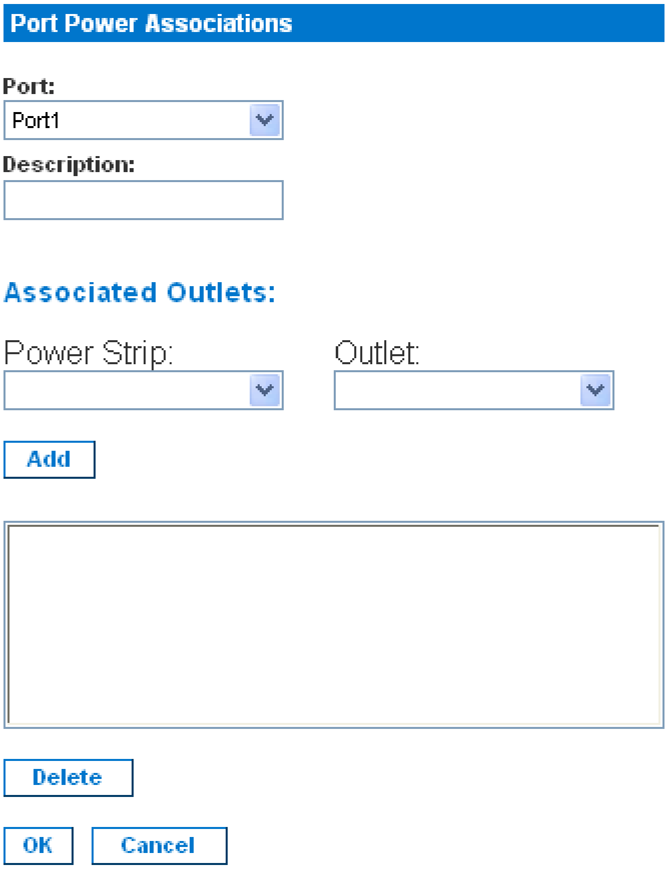
You can associate one or more outlets on a powerstrip connected to the SX to specific SX ports.

Create a Port Power Association

▶ **To create a port power association:**

1. Choose Setup > Port Power Association List.

2. Click Add. The Port Power Association page opens.



Port Power Associations

Port: Port1

Description:

3. Select the port from the drop-down menu in the Port field.
4. Select the power strip name from the drop-down menu in the Power Strip field.
5. Select the outlet to associate with the port from the drop-down menu in the Outlet field.
6. Click Add.

Note: It is not recommended to access the port associated with a power strip via RSC or CLI. Accessing the power strip directly will display a raw character stream of commands between SX and the power strip and you will be write-locked from any control.

Delete a Port Power Association

▶ **To delete a port power association:**

1. Choose Setup > Port Power Association List.
2. Click Add. The Port Power Association page opens.

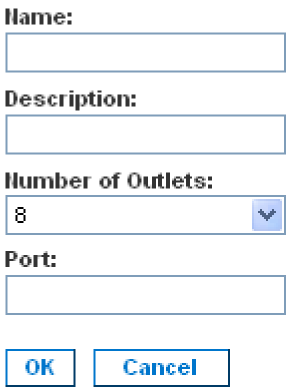
3. Select the association in the Outlet Association list.
4. Click Delete.

Power Strip Configuration

Important: A maximum of 31 powerstrips can be run with the Dominion SX.

To configure a power strip:

1. Choose Setup > Power Strip Configuration.
2. Click Add. The Power Strip Configuration page opens.



Name:

Description:

Number of Outlets: 8

Port:

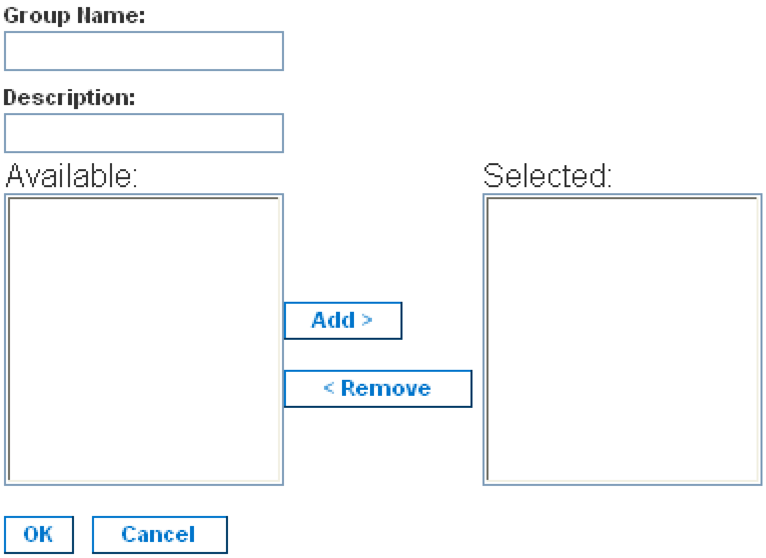
3. Type a name and description in the Name and Description fields.
4. Select the number of outlets from the drop-down menu in the Number of Outlets field.
5. Type the port number in the Port field.
6. Click OK.

Power Association Groups

To create a power associations group:

1. Choose Setup > Power Association Groups List.

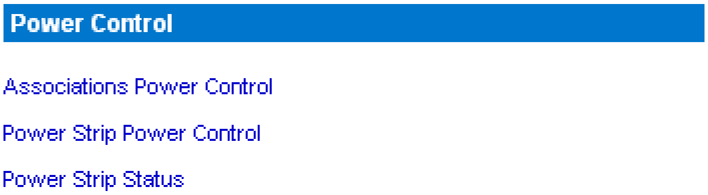
2. Click Add. The Power Association Groups page opens.



3. Type a name and description in the Group Name and Description fields.
4. Select the number of outlets from the drop-down menu in the Number of Outlets field.
5. Click OK.

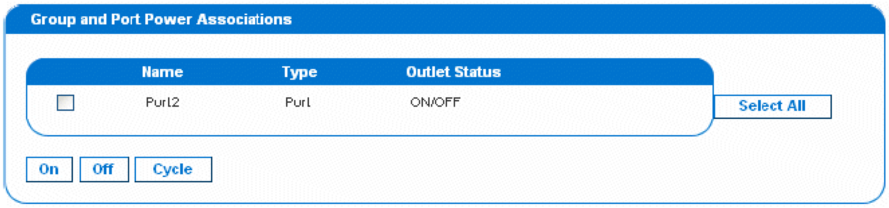
Power Control

Click the Power Control tab to display the power control-related tools.



Associations Power Control

Choose Power Control > Associations Power Control to access the tool to manage power control associations.



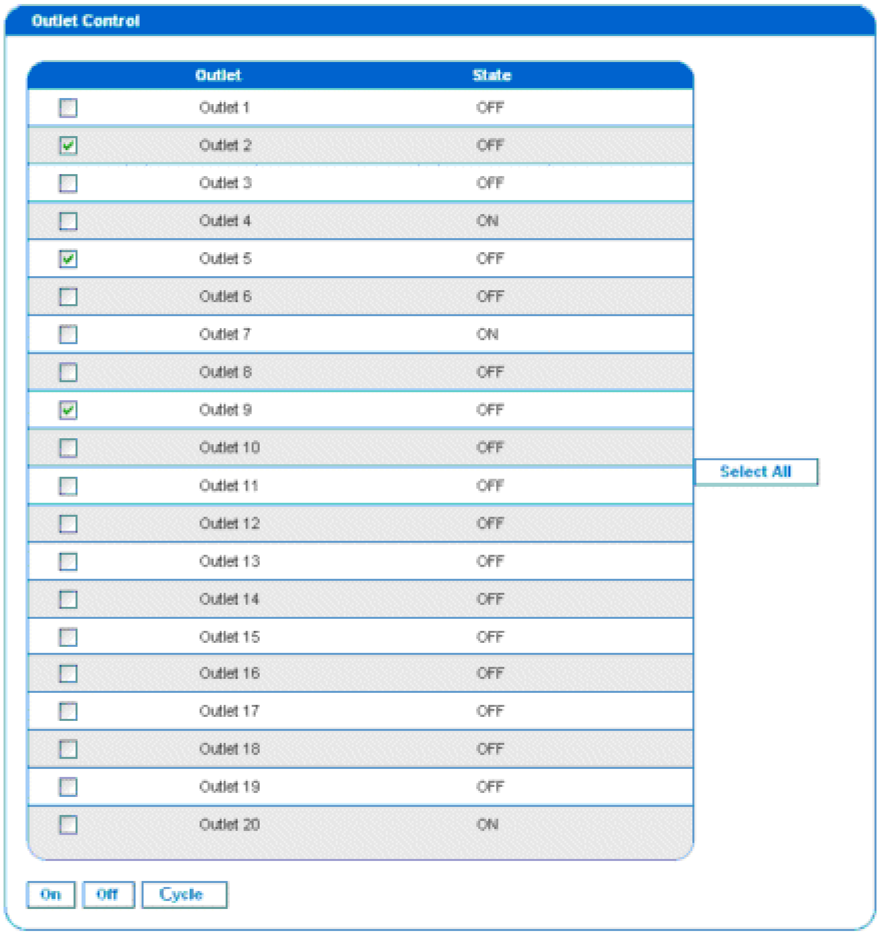
	Name	Type	Outlet Status
□	Purl2	Purl	ON/OFF

Note: When executing power on/off operation, about ~5 seconds are added to the configured sequential interval, resulting in an operational delay time (minimum amount of time to operate). If power cycle is selected, all associated outlets will be powered off sequentially, and then powered on sequentially. The cycle delay time reacted here determines the minimum length of time needed to turn back on the outlets after they're shut down, which is user-specified by administrator. The delay time to experience would be operational delay + user-specified delay.

Note: If you disconnect the Dominion PX after creating an association in SX, the association would appear empty until you re-plug-in the PX into the same port.

Power Strip Power Control

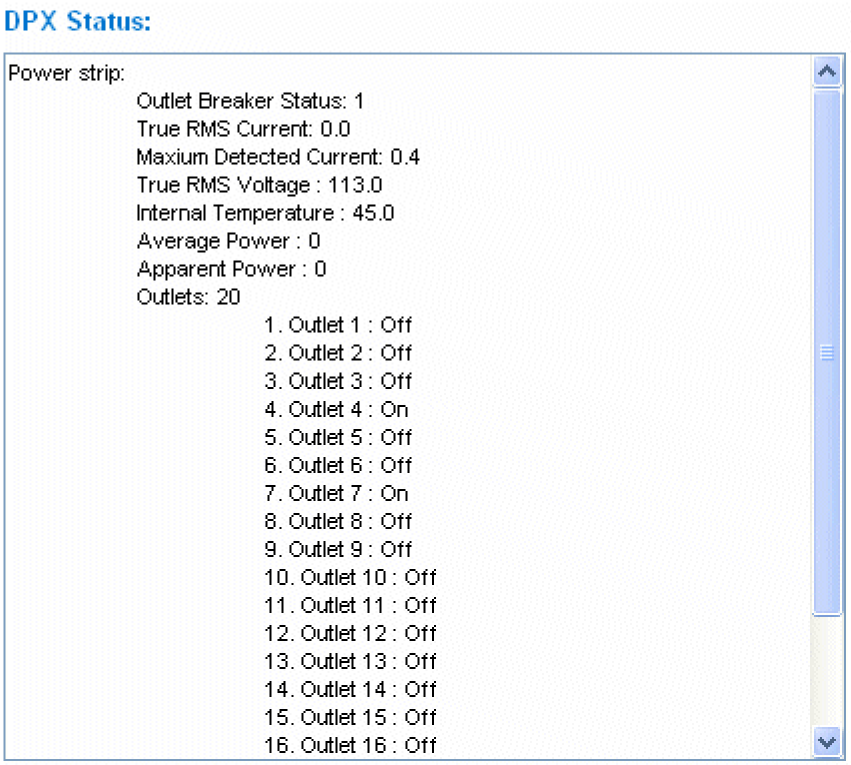
Choose Power Control > Power Strip Power Control to access the Outlet Control page, where you can manage power strips.



	Outlet	State
□	Outlet 1	OFF
☑	Outlet 2	OFF
□	Outlet 3	OFF
□	Outlet 4	ON
☑	Outlet 5	OFF
□	Outlet 6	OFF
□	Outlet 7	ON
□	Outlet 8	OFF
☑	Outlet 9	OFF
□	Outlet 10	OFF
□	Outlet 11	OFF
□	Outlet 12	OFF
□	Outlet 13	OFF
□	Outlet 14	OFF
□	Outlet 15	OFF
□	Outlet 16	OFF
□	Outlet 17	OFF
□	Outlet 18	OFF
□	Outlet 19	OFF
□	Outlet 20	ON

Power Strip Status

Choose Power Control > Power Strip Status to check power strip status.



DPX Status:

```
Power strip:
          Outlet Breaker Status: 1
          True RMS Current: 0.0
          Maxium Detected Current: 0.4
          True RMS Voltage : 113.0
          Internal Temperature : 45.0
          Average Power : 0
          Apparent Power : 0
          Outlets: 20
                    1. Outlet 1 : Off
                    2. Outlet 2 : Off
                    3. Outlet 3 : Off
                    4. Outlet 4 : On
                    5. Outlet 5 : Off
                    6. Outlet 6 : Off
                    7. Outlet 7 : On
                    8. Outlet 8 : Off
                    9. Outlet 9 : Off
                    10. Outlet 10 : Off
                    11. Outlet 11 : Off
                    12. Outlet 12 : Off
                    13. Outlet 13 : Off
                    14. Outlet 14 : Off
                    15. Outlet 15 : Off
                    16. Outlet 16 : Off
```

CLI Command for Power Control

CLI Port Power Association

Description: Power Control menu - Associate a power strip outlet to an SX port

Scenario #1	Port power association - add outlet
Pre-condition	Administrator user is logged in via CLI. Power Strip device (DPX) is physically connected to SX named PowerStr1. User is in power menu.
Action	Type command. Press Enter.
CLI Input	associate port 1 powerstrip PowerStr1 outlet 1

Scenario #2	**Port power association - associate 6 outlets to one port**
Pre-condition	Administrator user is logged in via CLI. Power Strip device (DPX) is physically connected and configured to DSX named PowerStr1. User is in power menu.
Action	Type command - associate [port port] [powerstrip powerstrip] [outlet outlet] to associate Outlet1 to Port1 Press Enter. Repeat steps 3 and 4 for Outlet 2, 3, 4, 5 and 6.
CLI Input	associate port 1 powerstrip PowerStr1 outlet 1-6

Scenario #3	**Port power association - associate 6 outlets to one port spread across two PDUs**
Pre-condition	Administrator user is logged in via CLI. Two Power Strip devices (DPX) are physically connected and configured to the SX, respectively named PowerStr1 and PowerStr2. User is in power menu.
Action	Type command - associate [port port] [powerstrip powerstrip] [outlet outlet] to associate Outlet1 of PowerStr1 to Port1 Press Enter. Repeat steps 1 and 2 for Outlet 2 and 3. Type command - associate [port port] [powerstrip powerstrip] [outlet outlet] to associate Outlet1 of PowerStr2 to Port1 Press Enter. Repeat steps 4 and 5 for Outlet 2 and 3.
CLI Input	associate port 1 powerstrip PowerStr1 outlet 1,2,3 associate port 1 powerstrip PowerStr2 outlet 1,2,3

Scenario #4	**Port power association - associate one outlet to two ports**
Pre-condition	Administrator user is logged in via CLI.

Scenario #4	Port power association - associate one outlet to two ports
	Power Strip device (DPX) is physically connected and configured to the SX named PowerStr1. User is in power menu.
Action	Enter command Press Enter
CLI Input	associate port 1 powerstrip PowerStr1 outlet 1 associate port 2 powerstrip PowerStr1 outlet 1

Scenario #5	Port power association - associate all available outlets to ports
Pre-condition	Administrator user is logged in via CLI. Power Strip device (DPX) is physically connected and configured to the SX named PowerStr1. User is in power menu
Action	Enter command. Press Enter. Repeat steps 1 and 2 for all available Outlets with up to 6 outlets associated to a single port.
CLI Input	associate port 1 powerstrip PowerStr1 outlet 1

Scenario #6	Port power association - associate outlets to one port from different power strips
Pre-condition	Administrator user is logged in via CLI. Two Power Strip devices (DPX) are physically connected and configured to the SX respectively named PowerStr1 and PowerStr2. User is in power menu.
Action	Enter command to associate Port1 to Outlet1 from PowerStr1. Press Enter. Enter command to associate Port1 to Outlet1 from PowerStr2. Press Enter.
CLI Input	associate port 1 powerstrip PowerStr1 outlet 1 associate port 1 powerstrip PowerStr2 outlet 1

Scenario #7	**Port power association - associate outlets from 6 different power strips to one port**
Pre-condition	Administrator user is logged in via CLI. 6 Power Strip devices (DPX) are physically connected and configured to SX. User is in power menu.
Action	Enter Command to associate Port1 to Outlet1 of PowerStr1. Press Enter. Repeat steps 1 and 2 to associate Port1 with Outlet1 from each of the other PDUs.
CLI Input	associate port 1 powerstrip PowerStr1 outlet 1 associate port 1 powerstrip PowerStr2 outlet 1 associate port 1 powerstrip PowerStr3 outlet 1 associate port 1 powerstrip PowerStr4 outlet 1 associate port 1 powerstrip PowerStr5 outlet 1 associate port 1 powerstrip PowerStr6 outlet 1

Scenario #8	**Port power association - edit outlet names**
Pre-condition	Administrator user is logged in via CLI. Power Strip device (DPX) is physically connected and configured to SX named PowerStr1. User is in power menu.
Action	Enter Command to edit outlet1 name of PowerStr1. Press Enter.
CLI Input	outlet name PowerStr1 outlet 1 newname TestName

Remove Port Power Association

Description: Power Control Menu - Remove a power outlet association from an SX port.

Scenario #1	**Remove port power association**
Pre-condition	Administrator user is logged in via CLI. Power Strip device (DPX) is physically connected and configured to SX named PowerStr1. User is in power menu.
Action	Enter command.

Scenario #1	Remove port power association
	Press Enter.
CLI Input	Command: unassociate port 1 powerstrip PowerStr1 outlet 1

Scenario #2	Delete multiple outlets association
Pre-condition	Administrator user is logged in via CLI. Power Strip device (DPX) is physically connected and configured to the SX named PowerStr1. User is in power menu.
Action	Enter command. Press Enter.
CLI Input	Command: unassociate port 1 powerstrip PowerStr1 outlet 1,4,7

CLI Power Strip Configuration

Description: Power Control Menu

Scenario #1	Configure an SX port to contain a power strip device (the port is previously connected to a power strip)
Pre-condition	Administrator user is logged in via CLI. Power Strip device (DPX) is physically connected to Port1 of SX. Administrator is in power menu.
Action	Enter command. Press Enter.
CLI Input	setpowerport name PowerStr1 type DPCS12 port 1

Scenario #2	Power strip configuration after factory reset
Pre-condition	Power strip device (DPX) named PowerStr1 is physically connected to Port1 of SX. SX user has already configured the port as a Power Strip.
Action	Log in to SX unit with administrator privileges via CLI. Go to Maintenance menu Perform Factory Reset
CLI Input	Command: factoryreset

CLI Power Association Group

Description: Power > PowerGroups menu

Scenario #1	**Create new power group**
Pre-condition	Administrator user is logged in via CLI. Power strip device (DPX) named PowerStr1 is physically connected to Port1 of SX. Administrator is in Power > PowerGroups menu.
Action	Enter Command. Press Enter.
CLI Input	Command: addpowergroup name "Test Group" description "Test group"

Scenario #2	**Add a port to a power group**
Pre-condition	Administrator user is logged in via CLI. Power strip device (DPX) named PowerStr1 is physically connected to Port1 of SX. Administrator is in Power > PowerGroups menu.
Action	Enter Command. Press Enter.
CLI Input	Command: addpowergroupport name "test Group" port port 2

Scenario #3	**Add multiple ports to a power group**
Pre-condition	Administrator user is logged in via CLI. Power strip device (DPX) named PowerStr1 is physically connected to Port1 of SX. Administrator is in Power > PowerGroups menu.
Action	Enter Command. Press Enter.
CLI Input	Command: addpowergroupport name "test Group" port port 2-4,10

Scenario #4	Remove group member
Pre-condition	Administrator user is logged in via CLI. Power strip device (DPX) named PowerStr1 is physically connected to Port1 of SX. Administrator is in Power > PowerGroups menu.
Action	Enter Command. Press Enter.
CLI Input	Command: deletepowergroupport name "Test Group" port 2

Scenario #5	Delete power group
Pre-condition	Administrator user is logged in via CLI. Power strip device (DPX) named PowerStr1 is physically connected to Port1 of SX. Administrator is in Power > PowerGroups menu.
Action	Enter Command. Press Enter.
CLI Input	Command: deletepowergroup name "Test Group"

CLI Power Strip Power Control

Description: Power Control Menu

Scenario #1	Switch on/off a single Outlet
Pre-condition	Administrator user is logged in via CLI. Power Strip device (DPX) named PowerStr1 is physically connected to Port1 of SX. Administrator is in power menu.
Action	Enter Command. Press Enter.
CLI Input	on powerstrip PowerStr1 outlet 1 off powerstrip PowerStr1 outlet 1

Scenario #2	Switch on/off all Outlets
Pre-condition	Administrator user is logged in via CLI. Power Strip device (DPX) named PowerStr1 is

Scenario #2	Switch on/off all Outlets
	physically connected to Port1 of SX. Administrator is in power menu.
Action	Enter Command. Press Enter.
CLI Input	on powerstrip PowerStr1 outlet * off powerstrip PowerStr1 outlet *

Scenario #3	Switch on/off group of outlets
Pre-condition	Administrator user is logged in via CLI. Power Strip device (DPX) named PowerStr1 is physically connected to Port1 of SX. Administrator is in power menu.
Action	Enter Command. Press Enter.
CLI Input	on powerstrip PowerStr1 outlet 1,3,7 off powerstrip PowerStr1 outlet 1,3,7

Scenario #4	Power rescycle group of outlets
Pre-condition	Administrator user is logged in via CLI. Power Strip device (DPX) named PowerStr1 is physically connected to Port1 of SX. Administrator is in power menu.
Action	Enter Command. Press Enter.
CLI Input	cycle powerstrip PowerStr1 outlet 1,3,7

Scenario #5	Sequence interval for switch off operation
Pre-condition	Administrator user is logged in via CLI. Power Strip device (DPX) named PowerStr1 is physically connected to Port1 of SX. Administrator is in power menu.
Action	Enter command to set sequence interval. Press Enter. Enter command to switch off group of outlets. Press Enter.

Scenario #5	Sequence interval for switch off operation
CLI Input	powerdelay sequence 2 off powerstrip PowerStr1 outlet 1,3,7

Scenario #6	Sequence interval for switch on operation
Pre-condition	Administrator user is logged in via CLI. Power Strip device (DPX) named PowerStr1 is physically connected to Port1 of SX. Administrator is in power menu.
Action	Enter command to set sequence interval. Press Enter. Enter command to switch on group of outlets. Press Enter.
CLI Input	powerdelay sequence 2 off powerstrip PowerStr1 outlet 1,3,7

Scenario #7	Power Recycle Interval
Pre-condition	Administrator user is logged in via CLI. Power Strip device (DPX) named PowerStr1 is physically connected to Port1 of SX. Administrator is in power menu.
Action	Enter command to set sequence and power recycle interval. Press Enter. Enter command to power recycle group of outlets. Press Enter.
CLI Input	powerdelay sequence 2 cycle 5 cycle powerstrip PowerStr1 outlet 1,3,7

CLI Association Power Control - Port Association

Description: Power Control Menu

Scenario #1	**Association Power Control - Recycle Port Association (Target is associated to One Outlet)**
Pre-condition	Administrator user is logged in via CLI. Power Strip device (DPX) named PowerStr1 is physically connected to Port1 of SX. Port Power Association named Target2 is already created and available in the list. Outle1 of PowerStr1 is associated to Target2. Administrator is in Power Control > Associations Power Control menu.
Action	Select Port Association named Target2 Click on Power Recycle Interval and enter value: Press Recycle button.
CLI Input	Power Recycle Interval value: 1 sec.

Scenario #2	**Association Power Control - Recycle Port Association (Target is associated to Two Outlets from one Power Strip)**
Pre-condition	Administrator user is logged in via CLI. Power Strip device (DPX) named PowerStr1 is physically connected to Port1 of SX. Port Power Association named Target2 is already created and available in the list. Outle1 of PowerStr1 is associated to Target2. Administrator is in Power Control > Associations Power Control menu.
Action	Select Port Association named Target2 Click on Power Recycle Interval and enter value: Press Recycle button.
CLI Input	Power Recycle Interval value: 1 sec.

Scenario #3	**Association Power Control - Recycle Port Association (Target is associated to Two Outlets from two different Power Strip devices)**
Pre-condition	Administrator user is logged in via CLI. Power Strip device (DPX) named PowerStr1 is physically connected to Port1 of SX. Port Power Association named Target2 is already

Scenario #3	**Association Power Control - Recycle Port Association (Target is associated to Two Outlets from two different Power Strip devices)**
	created and available in the list. Outle1 of PowerStr1 is associated to Target2. Administrator is in Power Control > Associations Power Control menu.
Action	Select Port Association named Target2 Click on Power Recycle Interval and enter value Press Recycle button.
CLI Input	Power Recycle Interval value: 1 sec.

Scenario #4	**Association Power Control - Recycle Port Association (outlets in the association are with different statuses)**
Pre-condition	Administrator user is logged in via GUI. Two Power Strip devices (DPX) named PowerStr1 and PowerStr2 are physically connected to SX Ports. Port Power Association named Target2 is already created and available in the list. Outle1 of PowerStr1 and Outlet2 of PowerStr2 are associated to Target2. Outlet1 and Outlet2 are with different statuses. Administrator is in Power Control > Associations Power Control menu.
Action	Select Port Association named Target2 Click on Power Recycle Interval and enter value: Press Recycle button.
CLI Input	Power Recycle Interval value: 1 sec.

CLI Association Power Control - Group Association

Description: Power Control Menu

Scenario #1	**Turn ON Group Association**
Pre-condition	Administrator user is logged in via CLI. Administrator is in power menu.

Scenario #1	**Turn ON Group Association**
	Group Association named Group1 (shown in Fg.1) is already created.
Action	Enter Command. Press Enter.
CLI Input	Command: on nodegroup Group1

Scenario #2	**Turn ON Group Association (outlets in association are with different statuses)**
Pre-condition	Administrator user is logged in via CLI. Administrator is in power menu. Group Association named Group1 (shown in Fg.1) is already created. Outlets in Group1 are with different statuses.
Action	Enter Command. Press Enter.
CLI Input	Command: on nodegroup Group1

Scenario #3	**Turn OFF Group Association**
Pre-condition	Administrator user is logged in via CLI. Administrator is in power menu. Group Association named Group1 (shown in Fg.1) is already created.
Action	Enter Command. Press Enter.
CLI Input	Command: off nodegroup Group1

Scenario #4	**Turn OFF Group Association (outlets in association are with different statuses)**
Pre-condition	Administrator user is logged in via CLI. Administrator is in power menu. Group Association named Group1 (shown in Fg.1) is already created. Outlets in Group1 are with different statuses.
Action	Enter Command. Press Enter.
CLI Input	Command: off nodegroup Group1

Scenario #5	**Recycle Group Association**
Pre-condition	Administrator user is logged in via CLI. Administrator is in power menu. Group Association named Group1 (shown in Fg.1) is already created.
Action	Enter Command. Press Enter.
CLI Input	powerdelay sequence 2 cycle 5 cycle nodegroup Group1

Scenario #6	**Recycle Group Association (outlets in association are with different statuses)**
Pre-condition	Administrator user is logged in via CLI. Administrator is in power menu. Group Association named Group1 (shown in Fg.1) is already created. Outlets in Group1 are with different statuses.
Action	Enter Command. Press Enter.
CLI Input	powerdelay sequence 2 cycle 5 cycle nodegroup Group1

Scenario #7	**Turn ON Group and Port Association simultaneously**
Pre-condition	Administrator user is logged in via CLI. Administrator is in power menu. Group Association named Group1 (shown in Fg.1) is already created. Port3 is already associated with outlet8 of PowerStr1 which has been created and available in the list.
Action	Enter Command. Press Enter.
CLI Input	powerdelay sequence 2 cycle 5 on port 3 nodegroup Group1

Scenario #8	Turn OFF Group and Port Association simultaneously
Pre-condition	Administrator user is logged in via CLI. Administrator is in power menu. Group Association named Group1 (shown in Fg.1) is already created. Port3 is already associated with outlet8 of PowerStr1 which has been created and available in the list.
Action	Enter Command. Press Enter.
CLI Input	powerdelay sequence 2 cycle 5 off port 3 nodegroup Group1

Scenario #10	Recycle Group and Port Association simultaneously
Pre-condition	Administrator user is logged in via CLI. Administrator is in power menu. Group Association named Group1 (shown in Fg.1) is already created. Port3 is already associated with outlet8 of PowerStr1 which has been created and available in the list.
Action	Enter Command. Press Enter.
CLI Input	powerdelay sequence 2 cycle 5 cycle port 3 nodegroup Group1.

CLI Power Strip Status

Description: Power Control Menu

Scenario #1	Power Strip Status
Pre-condition	Administrator user is logged in via CLI. Power strip device (DPX) named PowerStr1 is physically connected to Port1 of SX. Administrator is in Power menu.
Action	Enter Command. Press Enter.
CLI Input	Command: powerstrip name PowerStr1

Scenario #1	Power Strip Status
Result	Status of PDU should correctly display the following parameters: Power Consumption Average Power Apparent Power True RMS Voltage True RMS Current Maximum Current Status of the outlet breaker Internal Temperature

Scenario #2	Status of Power Strip that is actually turn off or disconnected
Pre-condition	Administrator user is logged in via CLI. Power strip device (DPX) named PowerStr1 is disconnected from Port1 or turned off. Administrator is in Power menu.
Action	Enter Command. Press Enter.
CLI Input	Command: powerstrip name PowerStr1

Scenario #3	Power Strip Status - Outlet status
Pre-condition	Administrator user is logged in via CLI. Power strip device (DPX) named PowerStr1 is physically connected to Port1 of SX.
Action	Check the current status of outlets - outlet1 is turn on Turn off outlet1. Go to Power menu and check the status of outlet1.
CLI Input	powerstrip name PowerStr1 off powerstrip PowerStr1 outlet 1 powerstrip name PowerStr1

Scenario #4	Power Strip Status - Outlet status when port association is removed
Pre-condition	Administrator user is logged in via CLI.

Scenario #4	**Power Strip Status - Outlet status when port association is removed**
	Power strip device (DPX) named PowerStr1 is physically connected to Port1 of SX. Outlet1 and Outlet2 are associated with Port1. Outlet1 and Outlet2 are with status "ON". Administrator is in Power menu.
Action	Check the current status of outlets - outlet1 is turn on Remove Outlet1 and Outlet2 from outlet association to Port1. Go to Power menu and check the status of outlet1.
CLI Input	powerstrip name PowerStr1 unassociated port 1 powerstrip PowerStr1 outlet 1,2 powerstrip name PowerStr1

Scenario #5	**Power Strip Status - Outlet status when group association is removed**
Pre-condition	Administrator user is logged in via CLI. Power strip device (DPX) named PowerStr1 is physically connected to Port1 of SX. Group association named Group1 is created. Outlet1 and Outlet2 are with status “ON”. Administrator is in Power menu.
Action	Check the current status of outlets - outlet1 is turn on Remove Group1. Go to Power menu and check the status of outlet1.
CLI Input	powerstrip name PowerStr1 deletepowergroup name Group1 powerstrip name PowerStr1

Appendix A Specifications

This appendix contains sections describing:

- SX models and specifications
- Requirements and tested browser requirements
- SX hardware for connecting SX to common vendor models
- SX Serial RJ-45 pinouts
- DB9 and DB25 Nulling Serial Adapter Pinouts
- SX Terminal ports

In This Chapter

Dominion SX Models and Specifications

The following table lists the Dominion SX models by the number of ports (4 - 48) in the unit.

MODEL	Ports	Built-In Modem	# of Local Ports	# of Ethernet Ports	Power Supply
DSX4	4	No	2	1	Single AC
DSXB-4-M	4	Yes	1	1	Single AC
DSX8	8	No	1	1	Single AC
DSXA-8	8	Yes	1	1	Dual AC

MODEL	Ports	Built-In Modem	# of Local Ports	# of Ethernet Ports	Power Supply
DSXB-8-M	8	Yes	1	1	Single AC
DSXA-16	16	Yes	1	1	Dual AC
DSXA-16-DL	16	No	2	2	Dual AC
DSXA-16-DLM	16	Yes	1	2	Dual AC
DSXA-32	32	Yes	1	1	Dual AC
DSXA-32-AC	32	No	2	1	Dual AC
DSXA-32-DL	32	No	2	2	Dual AC
DSXA-32-DLM	32	Yes	1	2	Dual AC
DSXA-48	48	Yes	1	2	Dual AC
DSXA-48-AC	48	No	2	2	Dual AC

The following table lists the Dominion SX models, their dimensions, and weights.

MODEL	DIMENSIONS (W) x (D) x (H)	WEIGHT
DSX4	11.41" x 10.7" x 1.75"; 290 x 270 x 44 mm	4.61 lbs; 2.08 kg
DSXB-4-M	11.41" x 10.7" x 1.75"; 290 x 270 x 44 mm	4.61 lbs; 2.08 kg
DSX8	11.41" x 10.7" x 1.75"; 290 x 270 x 44 mm	4.81 lbs; 2.17 kg

MODEL	DIMENSIONS (W) x (D) x (H)	WEIGHT
DSXA-8	17.32" x 11.41" x 1.75"; 440 x 290 x 44 mm	8.00 lbs; 3.60 kg
DSXB-8-M	11.41" x 10.7" x 1.75"; 290 x 270 x 44 mm	4.81 lbs; 2.17 kg
DSXA-16	17.32" x 11.41" x 1.75"; 440 x 290 x 44 mm	8.28 lbs; 3.756 kg
DSXA-16-DL	17.32" x 11.41" x 1.75"; 440 x 290 x 44 mm	8.58 lbs; 3.86 kg
DSXA-16-DLM	17.32" x 11.41" x 1.75"; 440 x 290 x 44 mm	8.58 lbs; 3.86 kg
DSXA-32	17.32" x 11.41" x 1.75"; 440 x 272 x 44 mm	8.40 lbs; 3.78 kg
DSXA-32-AC	17.32" x 11.41" x 1.75"; 440 x 290 x 44 mm	8.40 lbs; 3.78 kg
DSXA-32-DL	17.32" x 11.41" x 1.75"; 440 x 290 x 44 mm	8.78 lbs; 3.95 kg
DSXA-32-DLM	17.32" x 11.41" x 1.75"; 440 x 290 x 44 mm	8.78 lbs; 3.95 kg
DSXA-48	17.32" x 11.41" x 1.75"; 440 x 290 x 44 mm	8.97lbs; 4.04 kg
DSXA-48-AC	17.32" x 11.41" x 1.75"; 440 x 290 x 44 mm	8.97lbs; 4.04 kg

The following table lists the information of Cables/Adapters/Brackets. The Dominion SX is able to support long distance cables. The actual distance you may achieve is dependent on many factors including baud rate, cable quality, environmental radiation, and the target serial device's specifications, quality and tolerances. You may achieve higher or lower lengths based on these factors. Raritan recommends that you test in your environment to validate the desired distance.

Part Number	Description
ASCSDB9F	RJ-45(F) to DB9(F) serial adapter
ASCSDB9M	RJ-45(F) to DB9(M) serial adapter
ASCSDB25F	RJ-45(F) to DB25(F) serial adapter
ASCSDB25M	RJ-45(F) to DB25(M) serial adapter
ASCSDB9F-DCE	Serial Adapter for DB9 DCE Port to Dominion SX

Part Number	Description
CRLVR-15	15’ (4.5m) serial rollover Cat5 cable - for most Cisco and Sun serial RJ-45 ports (**Note:** This is NOT a standard or a crossover Ethernet cable.)
CSCSPCS-10	10’ (3m) Cat5e cable to connect Dominion SX to Raritan remote power control unit
CRLVR-1	1’ (0.3m) serial rollover Cat5 adapter cable (RJ45 Male to RJ45 Female) - for most Cisco and Sun serial RJ-45 ports
CRLVR-1-5PK	Package of 5 CRLVR-1 (1’; 0.3m) serial rollover Cat5 adapter cables (RJ45 Male to RJ45 Female) - for most Cisco and Sun serial RJ-45 ports
CSCSPCS-1	1’ (0.3m) Cat5e adapter cable (RJ45 Male to RJ45 Female) to connect Dominion SX to Raritan remote power control unit
CSCSPCS-1-5PK	Package of 5 CSCSPCS-1 (1’; 0.3m) adapter cables (RJ45 Male to RJ45 Female) to connect Dominion SX to Raritan remote power control unit
RUST-LM304	19” (482.6mm) standard rack mount brackets for DSX4, DSXB-4-M, DSX8, and DSXB-8-M

Only RoHS and WEEE compliant units are available in the EU and other selected areas. RoHS and WEEE compliant units can be provided elsewhere upon request.

CRLVR-15:

1. A Cat5 cable in YELLOW color with a length of 15 feet.
2. RJ-45 male terminators, wired with the following pin-out:

Pin	Pin
1	8
2	7
3	6
4	5
5	4
6	3

Pin	Pin
7	2
8	1

Requirements

The following table lists the requirements for the SX.

Requirements	Description
Form factor	1U, rack mountable (brackets included on DSX16, DSX32, DSXA-8 and DSX48)
Power	110/240VAC auto-switching: 50-60 Hz
Max. power consumption	4-Port SX: 5.75W 8-port SX: 6W 16-port SX: 8W 32-port SX: 9.375W 48-port SX: 12.5W
Environmental requirements	
Operating temperature	32° to 104° F (0° to 40° C)
Humidity	20% - 85% RH non-condensing
Altitude	Operates properly at any altitude from 0 to 10,000 feet
Approvals	CE, FCC Part 15 Class A, US and Canadian UL, VCCI-A
Remote Connection	
Network	One (1) or two (2) 10/100 Ethernet Base-T; RJ-45 connection
Protocols	TCP/IP, PPP, PAP, HTTP, HTTPS, SSL, SSH, TACACS+, LDAP(S), RADIUS, SNMP, Kerberos
Warranty	Two Years with Advanced Replacement*

*To qualify for advanced replacement under the standard warranty, you must register the product at ***http://Raritan.com/standard_warranty*** (p://Raritan.com/standard_warranty). Specifications are subject to change without notice.

Browser Requirements - Supported

The following table lists the browsers that were tested with the SX.

PLATFORM	BROWSER
WIN XP Professional SP2 - SUN JRE 1.5.0_06	IE 6.0
	IE 7.0
	Firefox 2.0
WIN XP Home Edition SP2 - SUN JRE 1.5.0_06	IE 6.0
	IE 7.0
	Netscape 7.1
	FireFox 1.5.0.1
	Mozilla 1.6
WIN 2000 Professional SP4 SUN JRE 1.5.0_06	IE 6.0
	FireFox 1.5.0.1
WIN 2000 Professional SP2 SUN JRE 1.4.2_05	IE 6.0
Fedora Core 4 JRE 1.4.2_05	Mozilla 1.6
	Netscape 7.1
Slackware 10.2	FireFox 1.5.0.6
FreeBSD 6.1	FireFox 1.5.0.7

Connectivity

The following table lists the necessary Dominion SX hardware (adapters and/or cables) for connecting the Dominion SX to common Vendor/Model combinations.

Vendor	Device	Console Connector	Serial Connection
Checkpoint	Firewall	DB9M	ASCSDB9F adapter and a CAT 5 cable
Cisco	PIX Firewall		

Vendor	Device	Console Connector	Serial Connection
Cisco	Catalyst	RJ-45	CRLVR-15 rollover cable; or CRLVR-1 adapter cable and a CAT5 cable CRLVR-1 cable for connecting a terminal port (RJ-45 Connector type) of Dominion SX-48 models that have this connector to another Dominion SX.
Cisco	Router	DB25F	ASCSDB25M adapter and a CAT 5 cable
Hewlett Packard	UNIX Server	DB9M	ASCSDB9F adapter and a CAT 5 cable
Silicon Graphics	Origin		
Sun	SPARCStation	DB25F	ASCSDB25M adapter and a CAT 5 cable
Sun	Netra T1	RJ-45	CRLVR-15 cable; or CRLVR-1 adapter and a CAT5 cable
Sun	Cobalt	DB9M	ASCSDB9F adapter and a CAT 5 cable
Various	Windows NT		
Raritan	RPCU	RJ-45	CSCSPCS-10 cable or CSCSPCS-1 adapter cable

Contact your reseller or Raritan Support for further information on cables and adapters.

Dominion SX Serial RJ-45 Pinouts

To provide maximum port density and to enable simple UTP (Category 5) cabling, Dominion SX provides its serial connections via compact RJ-45 ports. However, no widely adopted industry-standard exists for sending serial data over RJ-45 connections.

The following tables list the RJ-45 pinouts for the RJ-45 connector, located on the back of the SX.

RJ-45 PIN	SIGNAL
1	RTS
2	DTR
3	TxD
4	GND
5	Signal GND
6	RxD
7	DSR
8	CTS

See http://www.raritan.com/support for the latest information about the Dominion SX serial pinouts (RJ-45).

DB9F Nulling Serial Adapter Pinouts

RJ-45 (female)	DB9 (female)
1	8
2	1, 6
3	2
4	SHELL
5	5
6	3
7	4
8	7

DB9M Nulling Serial Adapter Pinouts

RJ-45 (female)	DB9 (male)
1	8
2	1, 6
3	2
4	SHELL
5	5

RJ-45 (female)	DB9 (male)
6	3
7	4
8	7

DB25F Nulling Serial Adapter Pinouts

RJ-45 (female)	DB25 (female)
1	5
2	6, 8
3	3
4	1
5	7
6	2
7	20
8	4

DB25M Nulling Serial Adapter Pinouts

RJ-45 (female)	DB25 (male)
1	5
2	6, 8
3	3
4	1
5	7
6	2
7	20
8	4

Dominion SX Terminal Ports

All Dominion SX models, except the DSX16 and DSX32, have the same pinouts on the two DB9M serial ports. This applies to models with two serial ports. All dual-LAN (dual-power) models have one RJ-45 serial port. The DSX16 and DSX32 models have only one external DB9M serial port (labeled TERMINAL). All dual-LAN (dual-power) models have one RJ-45 serial port. The DSX16 and DSX32 models have only one external DB9M serial port (labeled TERMINAL).

Both ports support a VT100 terminal or equivalent (that is, a PC running VT100 emulation software such as HyperTerminal or Linux Minicom). Local port access must be enabled and set to the same speed as the managed device for it to work. Local port access can be enabled or disabled from the GUI and the CLI using the lpa command through SSH or Telnet, if it is enabled. The telnet server on the Dominion SX unit is disabled by default.

Models with two terminal ports support an external modem only on the port with the RI signal. On models with only one serial port, a modem is built in. The externally accessible serial port does not include the RI signal, so it supports only devices such as a VT100 terminal or equivalent.

The following table identifies the first DB9M serial port pinouts.

DB9M PIN	SIGNAL
1	DCD
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

The second DB9M serial port supports only two pins as identified in the following table (Pin 4 and pin 7 are fixed too high).

DB9M PIN	SIGNAL
1	
2	RxD
3	TxD

DB9M PIN	SIGNAL
4	DTR (H)
5	GND
6	
7	RTS (H)
8	
9	

Dominion SX16 and SX32 Terminal Ports

A modem should not be connected to the terminal ports on DSX16 and DSX32 because the Ring Indicator (RI) signal is not present. These models have a built-in modem that can be enabled or disabled. The modem is disabled by default.

DB9M PIN	Color	SIGNAL
1	Brown	GND
2	Red	RxD
3	Orange	TxD
4	--	--
5	Green	GND
6	No Connection	
7	Purple	RTS
8	Gray	CTS
9	Blue	BUSY-Reserved for Factory Reset Plug

Additional information about the Dominion SX16 and SX32 Terminal Ports:

- Pins 1 and 9 are used to factory reset units shipped after August 2004.
- Units shipped prior to August 2004 have the DB9M port labeled RESERVED (not TERMINAL/RESERVED), since this port was used to factory reset the unit, with a Factory reset adapter shipped with each SX unit. Pins 1 and 6 were used for factory reset. The reset adapters for these early units are different from the current units, which have local port functionality.
- DSX16 and DSX32 units shipped from the factory with the SX2.2 (or higher) release support the local port capability.
- DSX versions through 2.5 have the local port disabled by factory default.
- In DSX 3.1 or higher, the local port is enabled by default.

Appendix B System Defaults

This appendix contains the system defaults and directions for port access.

Item	Default
IP Address	192.168.0.192
Subnet Mask	255.255.255.0
CSC Port Address (TCP)	5000
Port address for CC discovery (UDP)	5000
Factory default username	admin
Factory default password	raritan
General Settings	
Direct Port Access (DPA)	Normal Mode (Off)
TACACS+	Disabled
RADIUS	
LDAP	
Local Port Access	
Fixed TCP Window	Enabled
HTTP	
HTTPS	
SSH	
Syslog	
Event Notification	Disabled
Dialback	
IP-ACL	
Modem	
NTP	
Telnet	
SMTP	
SNMP	

Item	Default
Logging to NFS	
Serial Ports	
Baud Rate	9600
Parity	None
Flow Control	None

In This Chapter

Initiate Port Access

Use the following information for initiating port access:

Initiate port access using	Ports Kept open or Closed	Directions
HTTP	Ports 80, 443 and 5000 must be kept open in the firewall for the unit to operate. Port 5000 can be configured.	Both
HTTPS SSL(S) only	TCP port 443 needs to be open; port 80 can be closed	Both
SSH	TCP port 22 needs to be open	Both
Telnet	TCP port 23 needs to be open	Both
RADIUS	TCP port 1812 needs to be open	Outgoing
LDAP	Port 389 needs to be open	Outgoing
SNMP	Port 162 needs to be open	Outgoing
TACACS+	Port 49 needs to be open	Outgoing
Notes		
For FTP Upgrades	Port 21 needs to be open	Outgoing
For syslog	UDP port 514 needs to be open	Outgoing

You may have to open additional ports when NFS logging, 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.

Supported Character Length of Various Field Types

The following table lists the supported character length of various field types:

Field Type	Character Length
username	255
user full name	255
user information	64
user password	64
group name	255
Remote Auth Secret	128
LDAP BaseDN	128
LDAP Query	128
LDAP Search	128
LDAP Dialback Query	128
Remote Auth Port	1-65535
Network Failover Interval	0-65535
Network Domain Name	255
Network Unit Name	64
CSC port	1-64510
CSC Discovery Port	1-64510
HTTP/HTTPS Port	1-64510
Telnet /SSH Port	1-64510
Port Name	64
Port Exit Command	100
Port DPA SSH Port	1024-64510
Port DPA Telnet Port	1024-64510
Port Keyword	40

Field Type	Character Length
Power Sequence Delay	2-60
Power Cycle Delay	5-60
Power Strip Name	64
Power Strip Description	255
Power Association Group Name	255
Power Association Group Description	255
PortLog Prefix	64
PortLog Timestamp	0-99999
PortLog NFS Update	0-99999
PortLog In/Out Directory	64
SMTP Username	255
SMTP Password	128
SMTP Source address	64
Event Destination	64
NFS Directory	128
SNMP Community	64
SNMP Dest Port	1-65535
Login Inactive Expiration	0-65535
Login Retries	0-65535
Login Lockout Period	0-65535
Strong Password Min Length	8 - 15
Strong Password Max Length	15 - 64
Idle Timeout Period	0-65535

Appendix C Certificates

This appendix contains information on Certificates and Certificate Authorities and provides directions to:

- Install Dominion SX CA Certificate to a Browser Certificate.
- Install SX Server Certificate for IE Browsers.
- Install SX Server Certificate for Netscape Navigator.
- Install a Third Party Root Certificate In Browsers.
- **Generate a CSR for a Third Party CA to sign.
- **Install Third Party Certificate to SX.
- **Install Client Certificate root into the SX.
- **Install Client Certificate into Internet Explorer.
- **Install Client Certificate into Netscape Navigator.

A Certificate Authority (CA) is an entity which issues digital certificates for use by other parties. These certificates contain a public and private key pair as described in standard cryptography references. There are many commercial CAs that charge for their services; however, the Dominion SX acts as a free CA that generates its own certificates. CA and certificates are part of highly available security technology that can be built into browsers and web servers, in particular SSL. Browsers and Operating Systems come with a pre-installed list of trusted Certification Authorities, known as the Trusted Root CA store. The Dominion SX certificates can be added into a browser as Trusted CA.

In This Chapter

Default SX Certificate Authority Settings

The Server Certificate generated in the Dominion SX unit must be installed in the browser in order for the browser to trust the Server Certificate.

Each time you access an SSL-enabled Dominion SX unit, you see a New Site Certificate window. You can accept this on a per-session basis or you can eliminate this window's appearance by accepting a session certificate permanently. The following steps will show how to install the Dominion SX unit's certificate into the browser's certificate store.

These steps must be performed for each Dominion SX unit to be accessed for each client browser that accesses the Dominion SX.

Installing Dominion SX Server Certificate for Netscape Navigator

By installing the Dominion SX Server certificate in Netscape, you can prevent the Security Alert pop-up from appearing whenever you access the Dominion SX Unit. This step will have to be performed for each Dominion SX unit that you wish to access from each client's browser.

Accept a Certificate (Session-Based)

Upon initial connection to a Dominion SX unit, a certificate warning pop-up appears. By default, this certificate will be signed by the local Dominion SX unit's CA as described above and you will have to accept this certificate to continue. To eliminate the appearance of the warning pop-up for this Dominion SX unit permanently, you must install the server certificate in your browser. This procedure is described in the section that follows.

Install the Dominion SX Server Certificate in Netscape Navigator

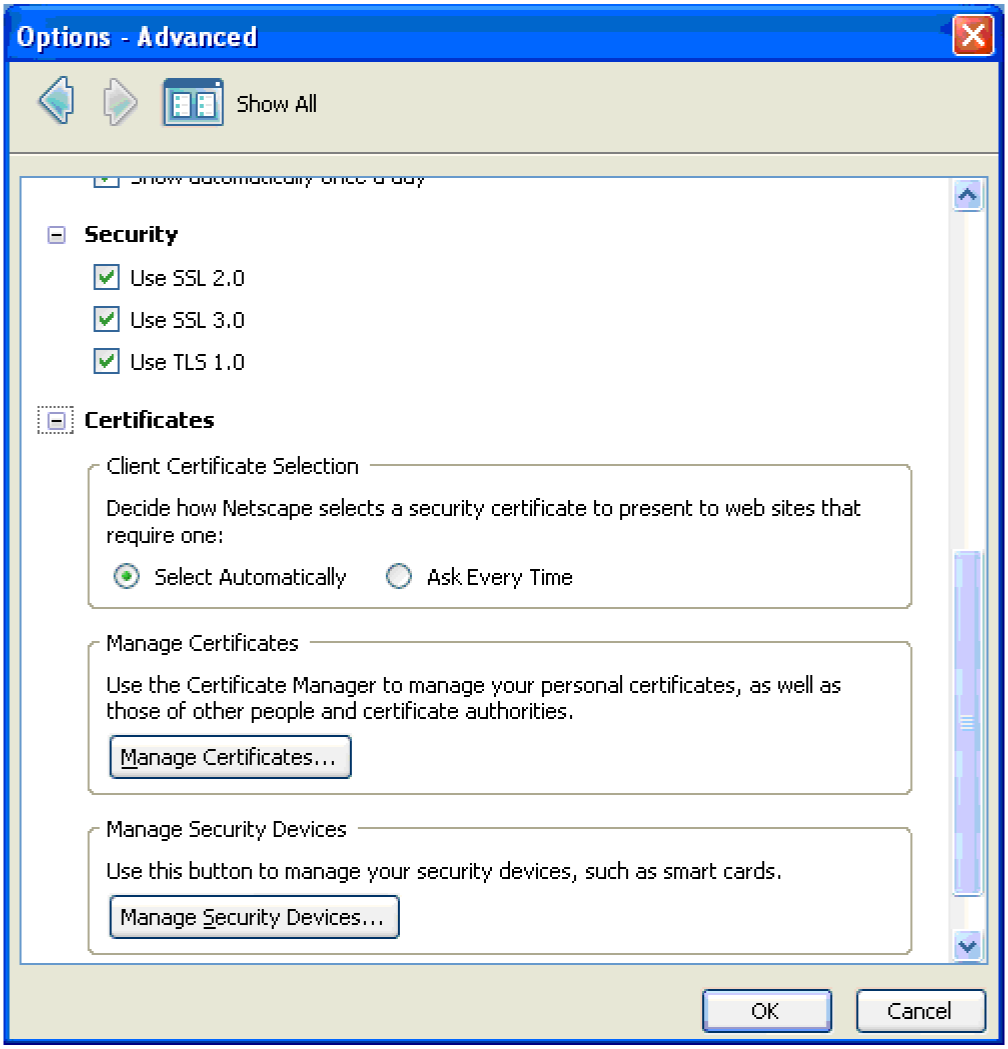
1. Launch Netscape Navigator and connect to the IP address of the Dominion SX unit. The “Web Site Certified by an Unknown Authority” page appears.
2. Select Accept this certificate permanently and click OK.
3. Select OK on the Security Warning window
4. The Raritan default certificate is now accepted on this computer.

Remove an Accepted Certificate

Removing a previously accepted certificate from a Dominion SX unit uses the same process whether removing a Raritan default certificate or removing a user-installed third-party certificate.

Note: The Dominion SX does not use encrypted private keys. When removing encryption from the key, the Dominion SX uses a command such as openssl rsa -in server.key -out server2.key *or* server2.key.

1. Choose Tools > Options.
2. Select Advanced panel and double-click the Certificates category.
3. In the Manage Certificates section, click the Manage Certificates... button to view the Certificate Manager.



Security

☑ Use SSL 2.0

☑ Use SSL 3.0

☑ Use TLS 1.0

Certificates

Client Certificate Selection

Decide how Netscape selects a security certificate to present to web sites that require one:

● Select Automatically ○ Ask Every Time

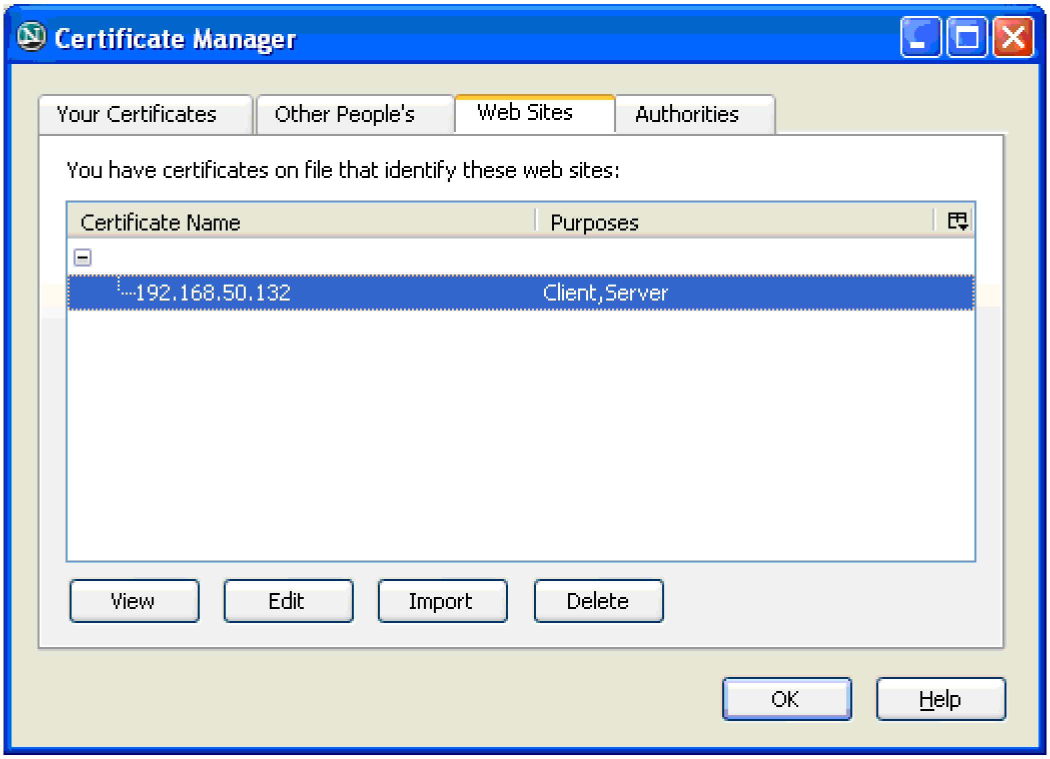
Manage Certificates

Use the Certificate Manager to manage your personal certificates, as well as those of other people and certificate authorities.

Manage Security Devices

Use this button to manage your security devices, such as smart cards.

4. Select the Web Sites tab, select the certificate name that is the common name of the IP address of the Dominion SX, and click Delete.



You have certificates on file that identify these web sites:

Certificate Name	Purposes
192.168.50.132	Client,Server

5. Click OK on the Delete Web Site Certificates window to confirm the deletion of the certificate.

6. On the left side of this page, locate Certificates, and click Web Sites.

7. Click OK on the Options Advanced Window.

Installing a Third-Party Root Certificate

If you have installed a third-party certificate on the unit, you can get its corresponding root certificate from the Certificate Authority that provided you with a certificate. These instructions can be used for any of the CAs; this example uses Thawte.

The CA that provided you with a certificate will have a root certificate available for download. Root certificates are available on the CA web site; click on the links to download. Some of the popular CAs and their sites:

Thawte Digital Certificate Services
http://www.thawte.com/ http://www.thawte.com/

VeriSign Incorporated
http://www.verisign.com/ http://www.verisign.com/

Note: Some CAs will provide the root certificate code in text format rather than providing a downloadable root certificate. If this occurs, select the root certificate code, copy it, and follow the steps outlined in the section Install the Raritan Root Certificate, then follow the steps outlined below.

Install a Third-Party Root Certificate to Internet Explorer

To install a third party certificate to Internet Explorer, download the CA certificate and install it following the steps above in Install the Dominion SX Server Certificate In Internet Explorer.

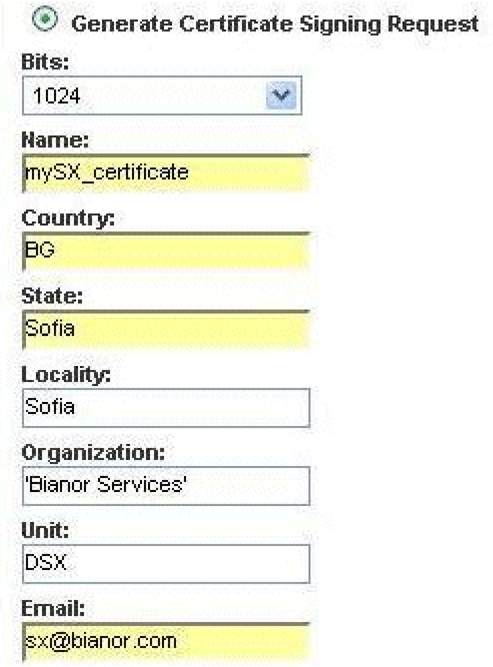
Install a Third-Party Root Certificate to Netscape Navigator

1. On the CA Web site, click on the root certificate link and the New Certificate Authority window appears. Click Next, and then click Next again.
2. The Certificate Fingerprint will appear, providing information about the CA and the root certificate you are downloading. It will look similar to the following window. Record the Signed by information and click Next.
3. Select the Accept this Certificate Authority for Certifying network sites checkbox. The second and third boxes are optional.
4. Click Next, and then click Next again. When prompted to type a name for the Certificate Authority, type the Signed by name that you recorded in Step 6.
5. Click Finish. The root certificate for this Certificate Authority is now installed for this computer.
6. If the root certificate has already been installed, the following error will appear and you must follow the steps below to remove the currently installed certificate.
7. Click the Security button in Netscape or click on the lock icon in the lower left of the window to access the Security Information window.
8. Locate the Certificates section in the left panel and click Signers to display a list of root certificates currently installed.
9. Find the name of the CA whose certificate you are installing. There may be more than one listing for your CA. Select the listing with the same name as the certificate you are trying to install.
10. Click Delete and then click OK.
11. Return to the CA's Web site and try to download the root certificate again and follow steps 1 through 5 again.

Generate a CSR for a Third Party CA to sign

To have a third party CA certificate (for example, Verisign) installed on the Dominion SX rather than the internal CA on the Dominion SX signing the certificate, a Certificate Signing Request (CSR) must be generated by the SX to be signed. The third party CA will take this CSR and generate a Certificate. This certificate must be installed on the Dominion SX along with the CA's public key in order for this certificate to be enabled. This Certificate and key must then be installed onto the Dominion SX.

1. Choose Security > Certificate.
2. Click the Generate Certificate Signing Request radio button.



● Generate Certificate Signing Request

Bits: 1024

Name: mySX_certificate

Country: BG

State: Sofia

Locality: Sofia

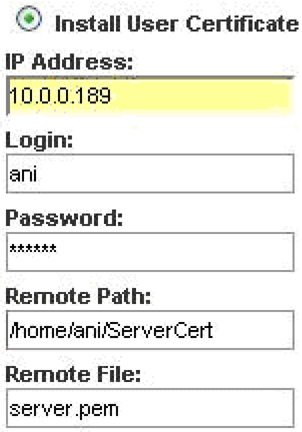
Organization: 'Bianor Services'

Unit: DSX

Email: sx@bianor.com

3. Fill in parameters underneath the radio button (bits, name, and so forth), and click OK. Note that the email address is mandatory.
4. Click OK to generate a CSR.
5. Send the generated CSR to a third party CA to get it signed.
6. CA returns a Signed Certificate built from the CSR.

7. Install the certificate to Dominion SX.



● Install User Certificate

IP Address: 10.0.0.189

Login: ani

Password: ******

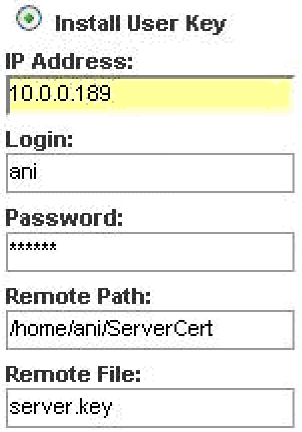
Remote Path: /home/ani/ServerCert

Remote File: server.pem

8. Reboot the Dominion SX unit.

If the CSR is generated by an external source:

1. Generate a CSR for the Dominion SX by an external computer.
2. Send this CSR to the third party CA to get it signed.
3. CA returns a Signed Certificate built from the CSR.
4. Install the certificate to the Dominion SX.
5. Upload the private key received for this CSR to the Dominion SX.



● Install User Key

IP Address: 10.0.0.189

Login: ani

Password: ******

Remote Path: /home/ani/ServerCert

Remote File: server.key

6. Reboot the Dominion SX unit.

Install Client Root Certificate into the DominionSX

In order for Client Certificates to be recognized as valid by the SX, the Root Certificate of the CA that signed the Client Certificates must be installed on the SX unit with the following steps:

1. Retrieve the CA's Root certificate used to sign the client certificates and place it on an accessible FTP server
2. Choose Security > SSL Client Certificates.
3. Select Install Certificate Authority.
4. Fill in the FTP parameters to retrieve the CA Root certificate.
5. Click OK.
6. Make sure the Enable SSL Client Certificate checkbox is selected.
7. Restart the Dominion SX device for the settings to take place.

Install Client Certificate into Internet Explorer

Installing client certificate into Internet Explorer mostly follows the steps described in the following link:

http://www.microsoft.com/technet/prodtechnol/ie/reskit/6/part2/c06ie6rk.mspx?mfr=true

Importing Certificates for LDAP

The Dominion SX will properly add only binary encoded certificates to the local certdb. In order to import LDAP certificates, the certificates should be retrieved from the LDAP's server and placed on an FTP server from which the Dominion SX unit can retrieve them.

Retrieve LDAP Certificate via Access from HTTP Interface

The following steps must be taken in order to insert the Retrieved Server certificate to Dominion SX from the GUI. The LDAPS Server certificate should be available on a valid FTP Server to which you know the authentication information.

1. Log into the Dominion SX as admin.
2. Click the Set tab.
3. Click the Remote Authentication button.
4. Click the LDAPS Certificate Settings link.
5. Fill in IP, username, password, and path to the LDAPS Certificate.
6. If the certificate is ASCII encoded, select ASCII. If it is a binary certificate file, select binary.

7. Enter a unique name for this certificate to be stored on the Dominion SX.
8. Click OK and the Dominion SX should retrieve the specified certificate file with supplied credentials.

Import Certificates from Windows XP

Follow these steps to load the Dominion SX certdb with sufficient certificates to allow for LDAP connectivity:

1. Launch Internet Explorer.
2. Type https://<ldap server ip_addr>:636.

   Click View Certificate in the name mismatch dialog box.
3. Click the Certification Path tab.
4. Select VeriSign/RSA Secure Server CA.
5. Click View Certificate in the name mismatch dialog box.
6. Click the Details tab.
7. Click Copy To File.
8. Click Next in the certificate import wizard box.
9. Select DER encoded Binary and click Next.
10. Complete the wizard to save ROOT_BIN.cer in the FTP root.
11. Close all windows.

Import Certificates from Dominion SX via CLI

A user with Administrator privileges can do the following to import certificates for LDAP.

Type the configuration command and issue the following commands:

```
Config > Authentication > LDAP > LDAPS >getservercert
ip <FTP Server ip_addr> login <FTP username> password
<FTP password> path / file ROOT_BIN.cer encode binary
name root_bin
```

The command will then display the certificate retrieved, and prompt you to insert the certificate if it can be retrieved as a valid certificate (as shown below).

```
Certificate:
Data:
Version: 1 (0x0)
Serial Number:
02:ad:66:7e:4e:45:fe:5e:57:6f:3c:98:19:5e:dd:c0
Signature Algorithm: PKCS #1 MD2 With RSA Encryption
Issuer: OU=Secure Server Certification Authority, O="RSA Data
Security, Inc.", C=US
Validity:
Not Before: Wed Nov 09 00:00:00 1994
Not After: Thu Jan 07 23:59:59 2010
Subject: OU=Secure Server Certification Authority, O="RSA Data
Security, Inc.", C=US
Subject Public Key Info:
Public Key Algorithm: PKCS #1 RSA Encryption
RSA Public Key:
Modulus:
92:ce:7a:c1:ae:83:3e:5a:aa:89:83:57:ac:25:01:76:
0c:ad:ae:8e:2c:37:ce:eb:35:78:64:54:03:e5:84:40:
51:c9:bf:8f:08:e2:8a:82:08:d2:16:86:37:55:e9:b1:
21:02:ad:76:68:81:9a:05:a2:4b:c9:4b:25:66:22:56:
6c:88:07:8f:f7:81:59:6d:84:07:65:70:13:71:76:3e:
9b:77:4c:e3:50:89:56:98:48:b9:1d:a7:29:1a:13:2e:
4a:11:59:9c:1e:15:d5:49:54:2c:73:3a:69:82:b1:97:
39:9c:6d:70:67:48:e5:dd:2d:d6:c8:1e:7b
Exponent: 65537 (0x10001)
Fingerprint (MD5):
```

```
D4:1D:8C:D9:8F:00:B2:04:E9:80:09:98:EC:F8:42:7E
Fingerprint (SHA1):
DA:39:A3:EE:5E:6B:4B:0D:32:55:BF:EF:95:60:18:90:AF:D8:07:09

Signature Algorithm: PKCS #1 MD2 With RSA Encryption
Signature:
65:dd:7e:e1:b2:ec:b0:e2:3a:e0:ec:71:46:9a:19:11:
b8:d3:c7:a0:b4:03:40:26:02:3e:09:9c:e1:12:b3:d1:
5a:f6:37:a5:b7:61:03:b6:5b:16:69:3b:c6:44:08:0c:
88:53:0c:6b:97:49:c7:3e:35:dc:6c:b9:bb:aa:df:5c:
bb:3a:2f:93:60:b6:a9:4b:4d:f2:20:f7:cd:5f:7f:64:
7b:8e:dc:00:5c:d7:fa:77:ca:39:16:59:6f:0e:ea:d3:
b5:83:7f:4d:4d:42:56:76:b4:c9:5f:04:f8:38:f8:eb:
d2:5f:75:5f:cd:7b:fc:e5:8e:80:7c:fc:50
Certificate Trust Flags:
SSL Flags:
Valid CA
Trusted CA
Trusted Client CA
Email Flags:
Object Signing Flags:

Do you wish to add this certificate to the system database? (no/yes)
(default: no) yes
Adding certificate root_bin to database…
```

Appendix D Server Configuration

This appendix contains sections describing the steps to configure Dominion SX units and authentication servers for the following authentication protocols:

- Microsoft Internet Authentication Service (IAS) RADIUS Server
- Cisco Access Control Server (ACS) Radius Server
- TACACS+ (Terminal Access Controller Access-Control System Plus)

In This Chapter

Microsoft IAS RADIUS Server

The Internet Authentication Service (IAS) is a Microsoft implementation of the Remote Authentication Dial-In User Service (RADIUS) protocol. The procedures in this section describe how to configure the Dominion SX to use an IAS server.

Configure the Dominion SX to Use an IAS RADIUS Server

The tasks to set up the Dominion SX unit to use an IAS RADIUIS server are:

- Configure a Primary Radius Server (and optional secondary Radius server).
- Configure a Radius port.
- Configure a secret (shared secret) that will be matched in the IAS client configuration within IAS.

The following example shows a simple setup based on a new IAS installation.

Note: If the IAS setup already exists, these instructions may not apply exactly as shown.

Enable IAS on the Server

1. On the IAS server, go to the Control Panel and launch Add or Remove Programs.
2. Click Add/Remove Windows Components.

3. Highlight Networking Services then click the Details... button.
4. Select the Internet Authentication Service checkbox and then click OK.
5. Click Next> and continue with the wizard steps.

IAS Active Directory Access

If using a Domain Controller, set IAS to access the Active Directory using the following steps:

1. Launch IAS (choose Start > All Programs > Administrative Tools > Internet Authentication Service).
2. Right-click on Internet Authentication Service (Local) and select Register Server in Active Directory.

Note: See the following Microsoft URL for information about Active Directory: http://support.microsoft.com/default.aspx?scid=kb;en-us;321051

Add Dominion SX to the client list

1. From the Internet Authentication Service, right-click on RADIUS Clients and select New RADIUS Client.
2. Type a friendly name and the IP address of the SX unit.
3. Select the RADIUS Standard in the Client-Vendor drop-down menu, and type a Shared Secret that matches the Dominion SX configuration.

Create an IAS Policy

This section describes the steps to create a policy to allow Radius users to access the Dominion SX. The example in this section requires two conditions: the client source IP address of the Dominion SX and that the UserID is a member of the SX User Group:

- NAS-IP-Address = Type the IP address of Dominion SX
- Windows-Group = SX User Group

Note: If you have multiple Dominion SX units or different models of Dominion product family (DKX, DKSX or KX101), then using an appropriate condition to match (NAS-IP-Address) rule will help apply the correct policy for the appropriate Dominion unit.

1. From Internet Authentication Service, right-click on Remote Access Policies and select New Remote Access Policy.
2. The New Remote Policy Wizard starts. Click Next>.
3. Select the Set up a custom policy radio button and type a Policy name.

4. The Policy Conditions dialog appears. Click the Add... button.
5. Select the NAS-IP-Address name and click the Add... button. Type the IP address of the Dominion SX unit.
6. Type a second condition using the name Windows-Group and the value SX User Group. Click Next>.
7. Select the Grant remote access permission radio button.
8. Click Next>. The Profile dialog appears.
9. Click the Edit Profile... button.
10. Choose the Authentication tab. Deselect all other checkboxes select the Unencrypted authentication (PAP, SPAP) checkbox.

Note: This version of Dominion SX does not support Challenge Authentication Protocol (CHAP).

11. Click the Advanced tab. Remove Framed-Protocol.

Note: Each policy has conditions that must be met. If the conditions are not met, then IAS goes to the next policy and examines the conditions.

12. Click the Add... button. The RADIUS attributes list appears.
13. Select Filter-Id Name and click the Add button. Click Add in the Attribute values section. Type the attribute value: Raritan:G{Admin}.
14. Click OK.
15. The value in G{} is the name of a group locally on the SX, in this case the default Admin group.
    - The value can be Raritan:G{Admin}:D{1234567890} if you are using the dial back feature, where 1234567890 is the phone number for dial back.
    - The value Raritan:G{Admin} must match with the local group on the Dominion SX.
    - The Dominion SX comes from the factory with the default Admin group.
    - Additional user groups can be created on Dominion SX unit by using the User Management>User Group option.
    - Appropriate port access and user class (Operator or Observer) can be defined. The group name should be specified in the Filter-Id attribute value accordingly in order to authorize the RADIUS user to access the Dominion SX unit
16. Move the new policy so it appears as the first (top) policy in the Policy List.

Note: If required, create a policy to allow dialup access to all users that are members of a group (Windows may already have a default Policy in place to permit access by any user with Dial In enabled, so this new policy would be optional. If you want to use a new Policy, ensure that it appears above the default policy).

17. Ensure that the service is started.
18. Ensure that the Active Directory / Local account for the user has Dial In access enabled in their user profile. If the Windows 2000 Domain server is in Native Mode and IAS is registered with the Active Directory, you can set the User Profile > Dial In setting to use Remote Access Policies.

Cisco ACS RADIUS Server

The Cisco Access Control Server (ACS) is another authentication solution supported by the Dominion SX unit. For the Dominion SX to support RADIUS, both the unit and the user information must be added into the RADIUS configuration.

Configure the Dominion SX to use a Cisco ACS Server

The following procedure configures the Dominion SX unit to work with a Cisco Radius Server.

1. Choose User Management > Configuration > User Group List.
2. Click Add New User Group.

You can define port access and user class (operator or observer). This user group will be used later as a value to the Filter-Id attribute on the Cisco Radius Server. The Dominion SX comes with factory default group Admin that will be used as an example in this section; however, any local group can be used as value to the Filter-Id attribute on the Cisco ACS Server.

Notes: Group names are case sensitive and must match exactly those defined in the
Filter-Id attribute on the Radius server.

Only Version 3.1 of the Cisco Radius Server has been tested; however, other versions of the RADIUS server should operate with the SX.

Configure the Cisco ACS Server

1. Log in to Cisco ACS Server using the browser.
2. Type your Username and Password.
3. Click Login.

4. Click Network Configuration in the left panel of the page and select Add Entry to add/edit an AAA Client. This must be done for each unit that is going to be accessed via RADIUS.
5. Click Authenticate Using drop-down menu and select RADIUS (IETF).
6. Click Submit.
7. Click Interface Configuration in the left panel of the page.
8. Click the RADIUS (IETF) link to edit properties.
9. Under the User and Group columns, select the Filter-Id checkbox.
10. Click Submit.
11. To add new users and configure RADIUS (IETF) attributes, click User Setup in the left panel of the page.
12. Type the user's name and click Add/Edit.
13. To edit existing users, click User Setup in the left panel of the page and click List All Users.
14. Select a user from the list.
15. Once you have selected a user, on the user properties page, scroll down to the IETF RADIUS Attribute section.
16. Select the Filter-Id checkbox and add the following value for this attribute:
    Raritan:G{Admin}

    The value in G{} is the name of a group locally on the SX, in this case the default Admin group.

    - The value can be Raritan:G{Admin}:D{1234567890} if using dial back feature, where 1234567890 is the phone number for dial back.
    - The value Raritan:G{Admin} must match with the local group on the Dominion SX unit.
    - The Dominion SX comes from the factory with the default Admin group.
    - Additional user groups can be created on Dominion SX unit by using the User Management>User Group option.
    - Appropriate port access and user class (Operator or Observer) can be defined and the group name should be specified in the Filter-Id attribute value accordingly in order to authorize the RADIUS user to access the Dominion SX unit.
17. Click Submit.

Note: If there is more then one Radius user requiring the same authorization on the Dominion SX, the Filter-Id attribute and its value can be defined at the group level on the Cisco ACS as long as these users belong to the same group.

TACACS+ Server Configuration

The Dominion SX unit has the capability to use Terminal Access Controller Access-Control System Plus (TACACS+) for authentication services.

The Dominion SX requires a new service to be added and two argument-value pairs to be returned by the server. The new service is called dominionsx. The valid authorization parameter is user-group. If this user is to have a modem dialback, the valid dialback parameter is user-dialback.

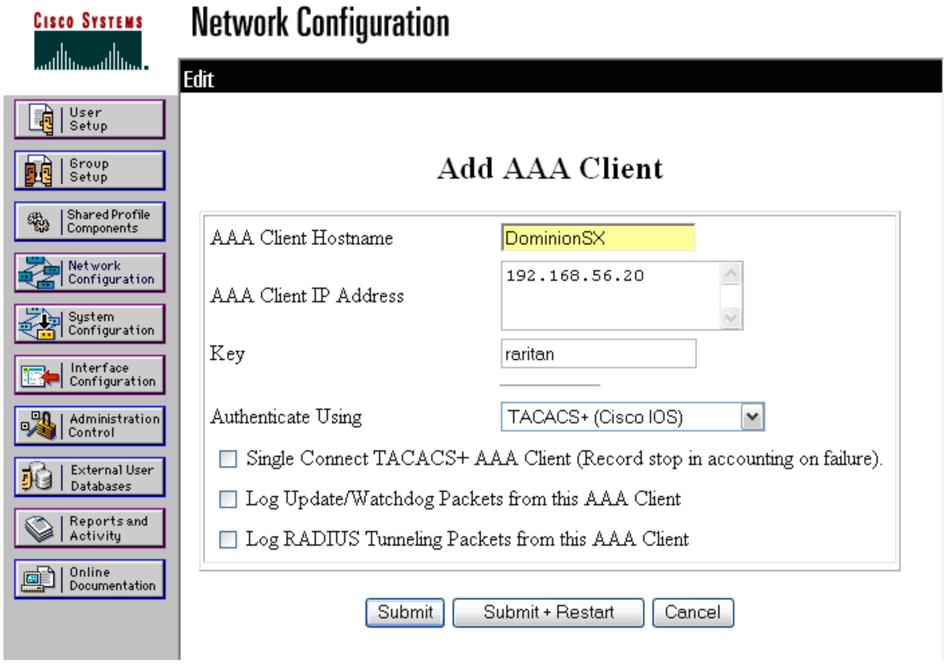
- user-group: Specifies the user group name that matches with local group on Dominion SX. Group name specified for this attribute on TACACS+ Must exactly (case sensitive) match with group name on Dominion SX unit or else authentication for TACACS+ user on Dominion SX will fail.
- user-dialback: Specifies the user's modem dialback number. If the SX has dialback enabled, this phone number will be used to call back the user.

CiscoSecure ACS

These instructions are written for CiscoSecure ACS version 3.2.

Note: See the following URL: http://cisco.com/en/US/products/sw/secursw/ps2086/products_user_guide_chapter09186a008007cd49.html#12231

1. Add Dominion SX as a client on Cisco ACS TACACS+.



Network Configuration

Edit

Add AAA Client

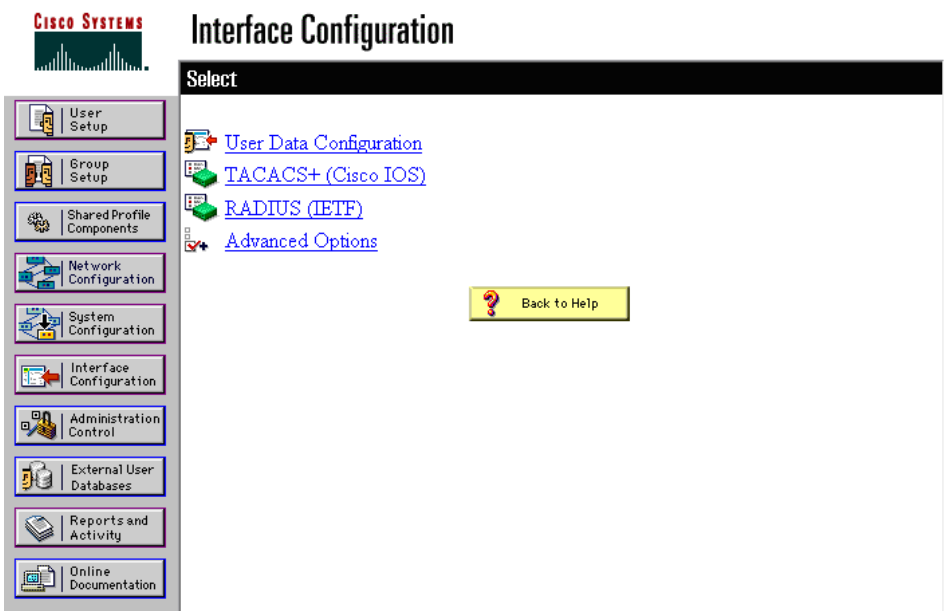
AAA Client Hostname	DominionSX
AAA Client IP Address	192.168.56.20
Key	raritan
Authenticate Using	TACACS+ (Cisco IOS)

□ Single Connect TACACS+ AAA Client (Record stop in accounting on failure).

□ Log Update/Watchdog Packets from this AAA Client

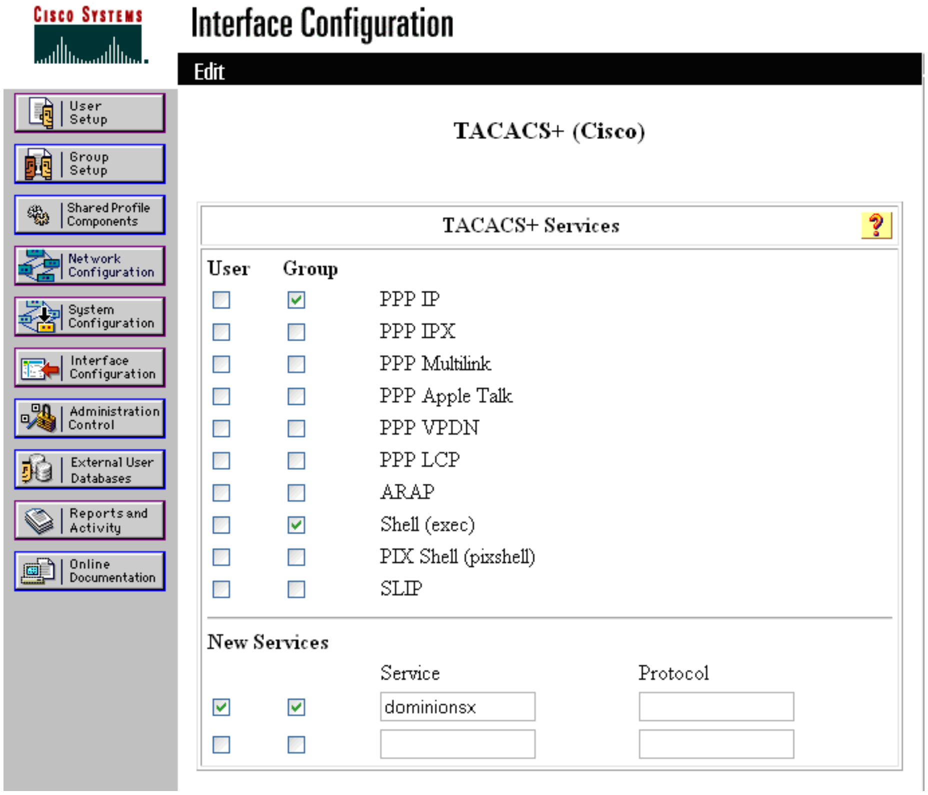
□ Log RADIUS Tunneling Packets from this AAA Client

2. Select Interface Configuration.



3. Select TACACS+ (Cisco IOS).

4. Add dominionsx service under the heading New Services.



Interface Configuration

Edit

TACACS+ (Cisco)

TACACS+ Services

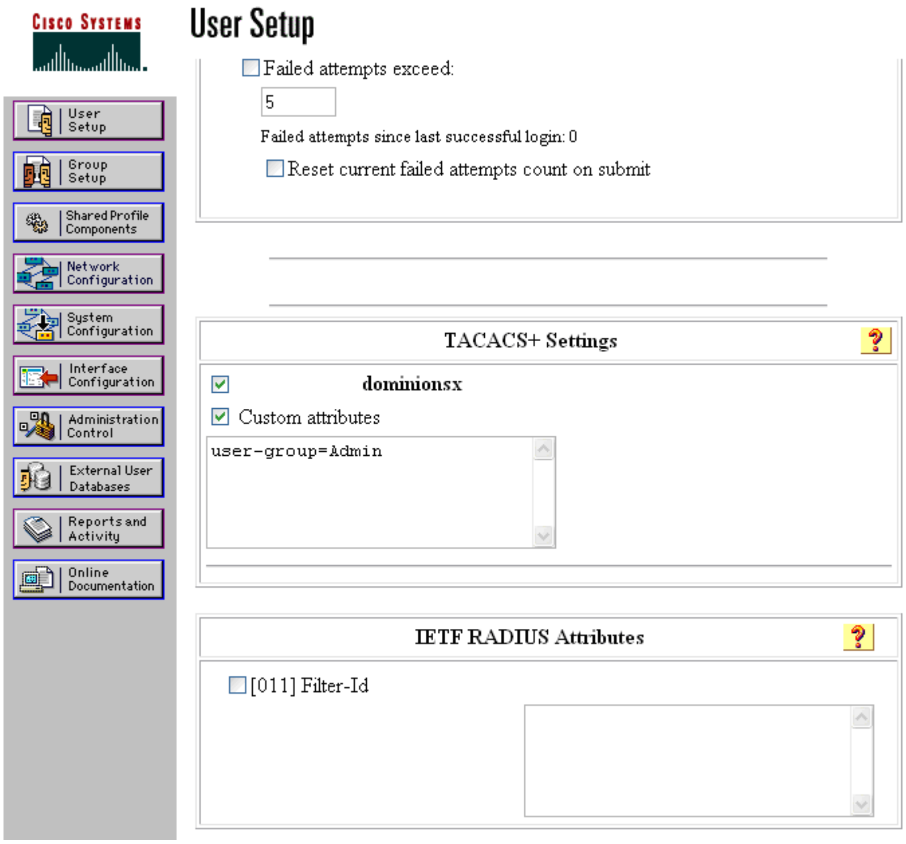
User	Group	
□	☑	PPP IP
□	□	PPP IPX
□	□	PPP Multilink
□	□	PPP Apple Talk
□	□	PPP VPDN
□	□	PPP LCP
□	□	ARAP
□	☑	Shell (exec)
□	□	PIX Shell (pixshell)
□	□	SLIP

New Services

		Service	Protocol
☑	☑	dominionsx	
□	□		

5. When adding or editing a user or group, the dominionsx service will appear under the heading TACACS+ Settings. The service can be enabled per user or per group by selecting the dominionsx and Custom Attributes checkboxes. Add the attributes (user-type) and the appropriate values to the text box.

Note: The value for the user-group attribute is case sensitive; ensure that it matches exactly the same as the local group name on Dominion SX unit.



□ Failed attempts exceed:

5

Failed attempts since last successful login: 0

□ Reset current failed attempts count on submit

TACACS+ Settings

☑ dominionsx

☑ Custom attributes

```
user-group=Admin
```

IETF RADIUS Attributes

□ [011] Filter-Id

Active Directory

Microsoft Active Directory uses the LDAP protocol natively, and can function as an LDAP server and authentication source for Dominion SX. See the following Microsoft URL for information about active directory: http://support.microsoft.com/default.aspx?scid=kb;en-us;321051

If you choose LDAP authentication protocol, complete the LDAP fields as follows:

- Default Port / User Defined Port - By default, LDAP uses port 389. To use a different port, click User defined ports, and then enter a different port number in the Single port field.
- Base DN, Base Search - This describes the name you want to bind against the LDAP, and where in the database to begin searching for the specified Base DN. An example Base DN value might be: “cn=Administrator,cn=Users,dc=testradius,dc=com” and 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.
- Certificate File - Consult your authentication server administrator for the appropriate values to type into this field on LDAP configuration menu/page, in order to process LDAP authentication queries from Dominion SX.

Appendix E Modem Configuration

If you are connecting to HyperTerminal via modem and are using a Dominion SX prior to version 3.1.7, do not disconnect from HyperTerminal without first properly logging off. Disconnecting without logging off will cause the modem to still believe it is connected to HyperTerminal, which prevents users from dialing back in and reestablishing a connection. This issue only occurs with Dominion SX versions prior to 3.1.7.

In This Chapter

Client Dial-Up Networking Configuration

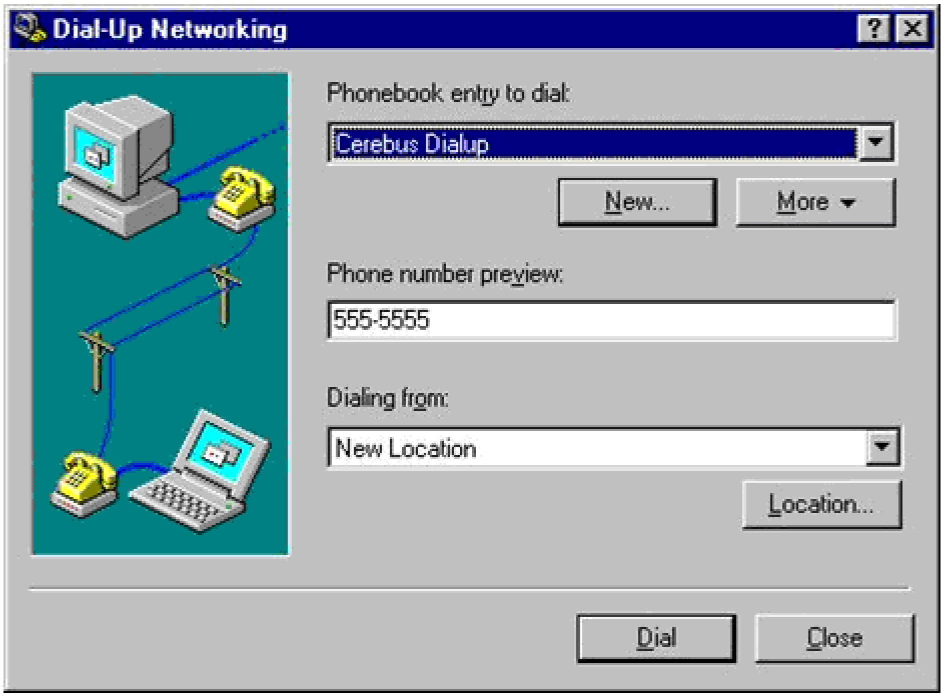
Configuring Microsoft Windows Dial-Up Networking for use with Dominion SX allows configuration of a PC to reside on the same PPP network as the Dominion SX. After the dial-up connection is established, connecting to a Dominion SX is achieved by pointing the web browser to the PPP Server IP. Modem installation guidelines are provided for the following client based systems:

- Windows NT
- Windows 2000
- Windows XP

Windows NT Dial-Up Networking Configuration

1. Choose Start > Programs > Accessories > Dial-Up Networking.

2. Click New in the Dial-Up Networking dialog. The New Phonebook Entry dialog allows you to configure the details of this connection.



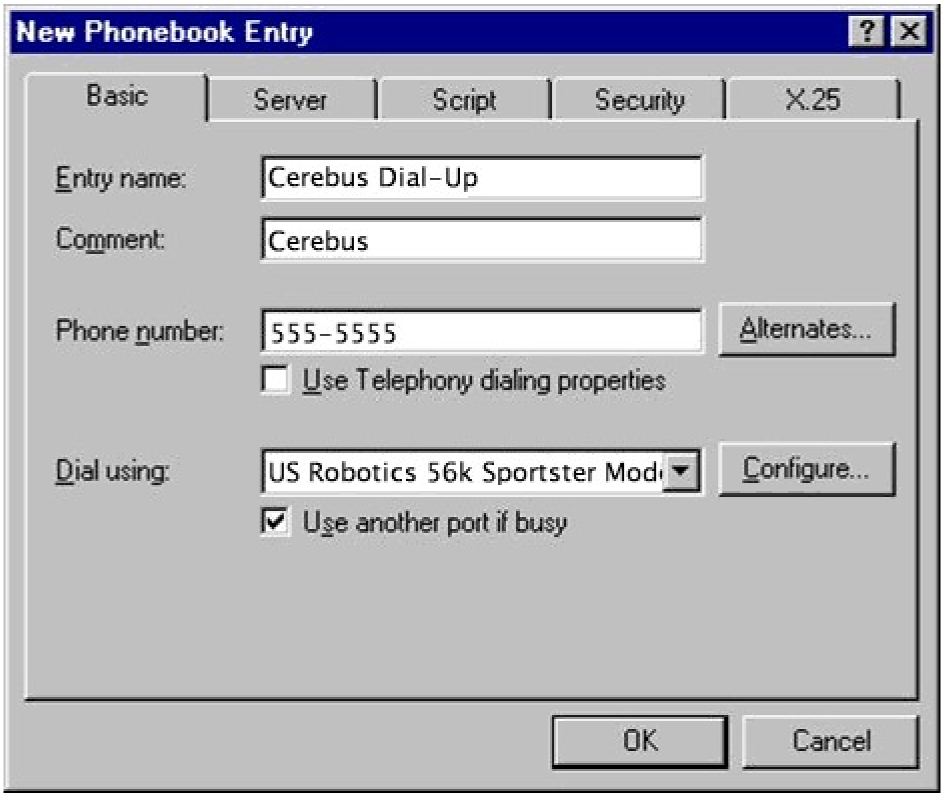
Phonebook entry to dial: Cerebus Dialup

Phone number preview: 555-5555

Dialing from: New Location

3. Click the Basic tab and complete the following fields:
   - Entry name - Name of the Dominion SX connection
   - Phone number - Phone number of the line attached to the Dominion SX

- Dial using - Modem being used to connect to Dominion SX; if there is no entry here, there is no modem installed in your workstation



Entry name: Cerebus Dial-Up

Comment: Cerebus

Phone number: 555-5555

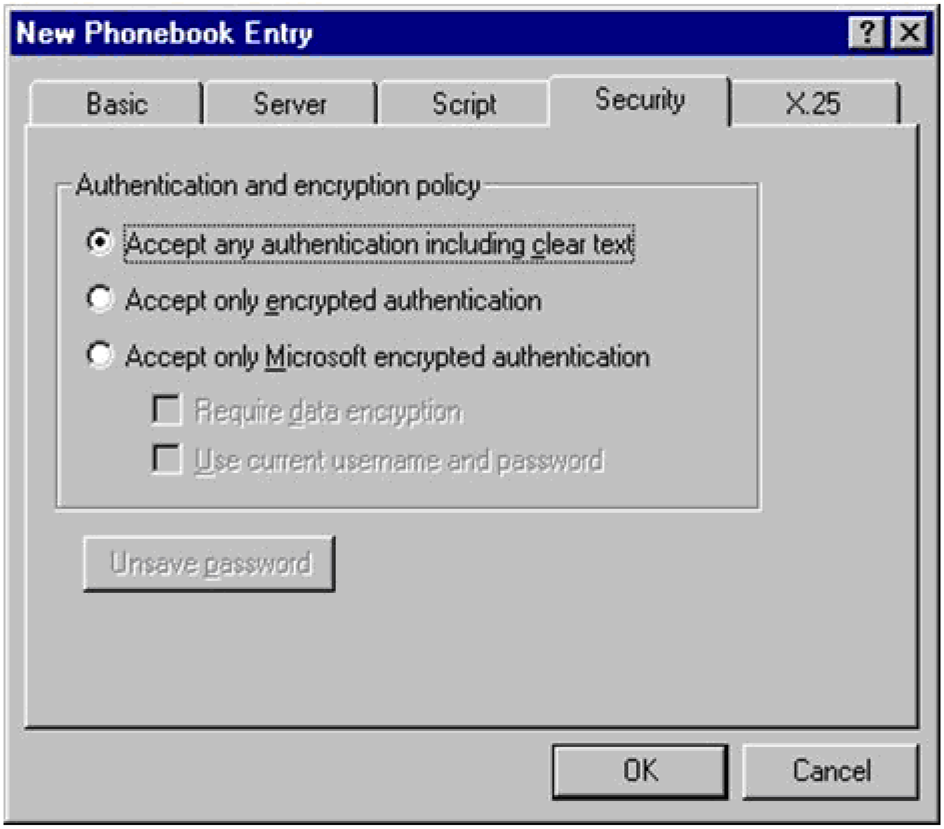
☐ Use Telephony dialing properties

Dial using: US Robotics 56k Sportster Mod

☑ Use another port if busy

4. Click the Security tab. The Security section allows you to specify the level of security to use with the modem connection. When connecting to the Dominion SX, security is provided by SSL/ with RC4 encryption, therefore no dial-up security is required.

5. Click the "Accept any authentication including clear text" radio button.



New Phonebook Entry

Authentication and encryption policy

● Accept any authentication including clear text

○ Accept only encrypted authentication

○ Accept only Microsoft encrypted authentication

□ Require data encryption

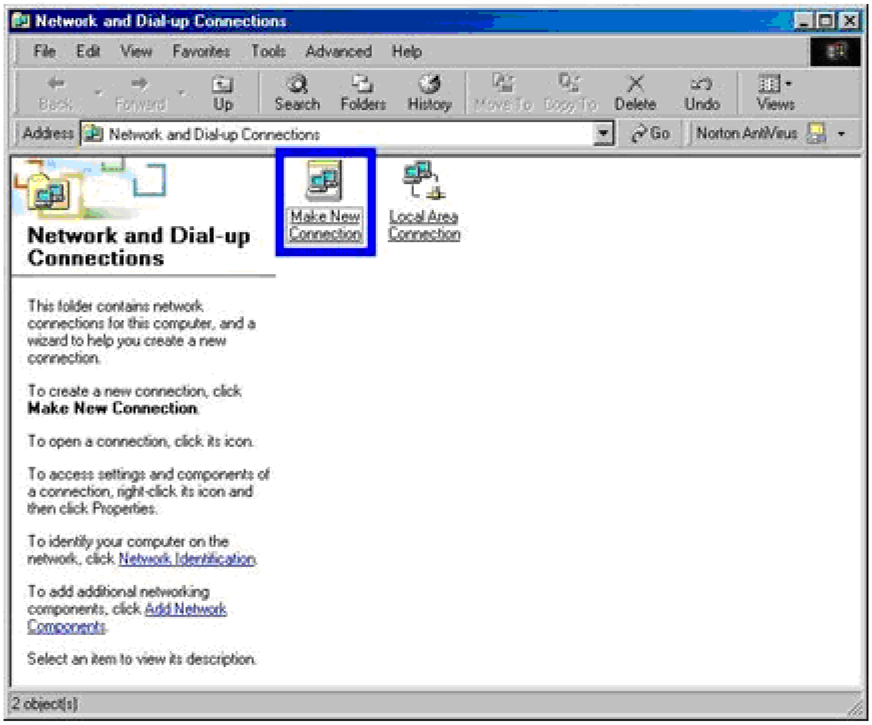
□ Use current username and password

6. Click OK to return to the main Dial page.
7. Click Dial. See the Windows NT Users Guide if you receive any error messages.

Windows 2000 Dial-Up Networking Configuration

1. Choose Start > Programs > Accessories > Communications > Network and Dial-Up Connections.

2. Double-click the Make New Connection icon when the Network and Dial-Up Connections window appears.



Network and Dial-up Connections

This folder contains network connections for this computer, and a wizard to help you create a new connection.

To create a new connection, click **Make New Connection**.

To open a connection, click its icon.

To access settings and components of a connection, right-click its icon and then click Properties.

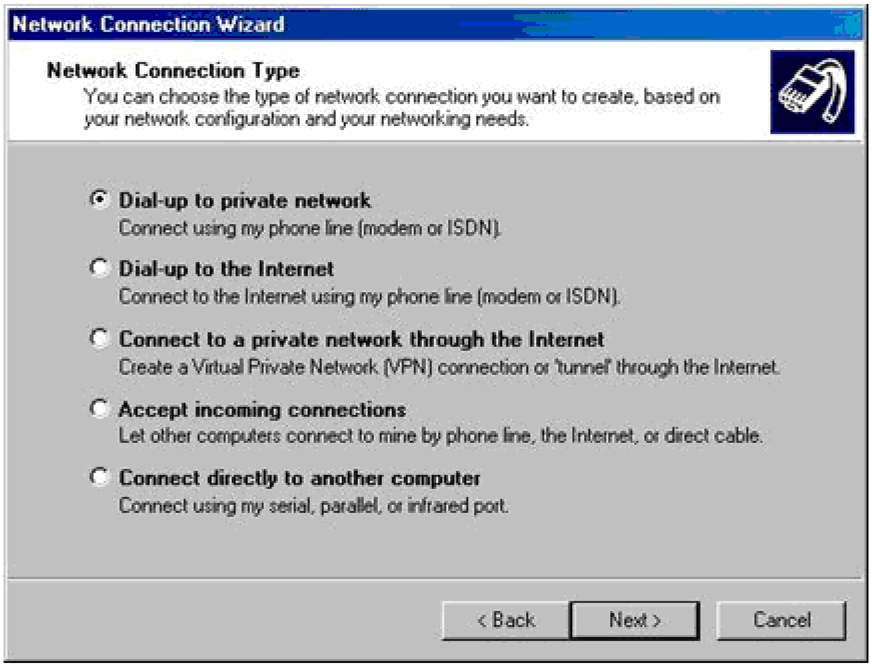
To identify your computer on the network, click Network Identification.

To add additional networking components, click Add Network Components.

Select an item to view its description.

3. Click Next and follow the steps in the Network Connection Wizard dialog to create custom dial-up network profiles.

4. Click the Dial-up to private network radio button and click Next.



Network Connection Wizard

Network Connection Type

You can choose the type of network connection you want to create, based on your network configuration and your networking needs.

● **Dial-up to private network**
Connect using my phone line (modem or ISDN).

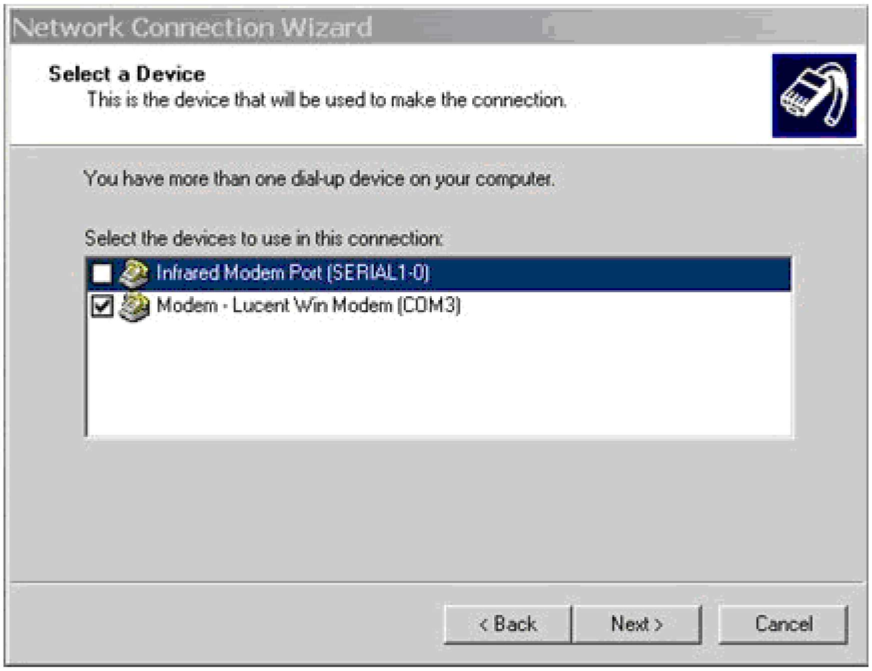
○ **Dial-up to the Internet**
Connect to the Internet using my phone line (modem or ISDN).

○ **Connect to a private network through the Internet**
Create a Virtual Private Network (VPN) connection or 'tunnel' through the Internet.

○ **Accept incoming connections**
Let other computers connect to mine by phone line, the Internet, or direct cable.

○ **Connect directly to another computer**
Connect using my serial, parallel, or infrared port.

5. Select the checkbox before the modem that you want to use to connect to the Dominion SX and then click Next.



Network Connection Wizard

Select a Device

This is the device that will be used to make the connection.

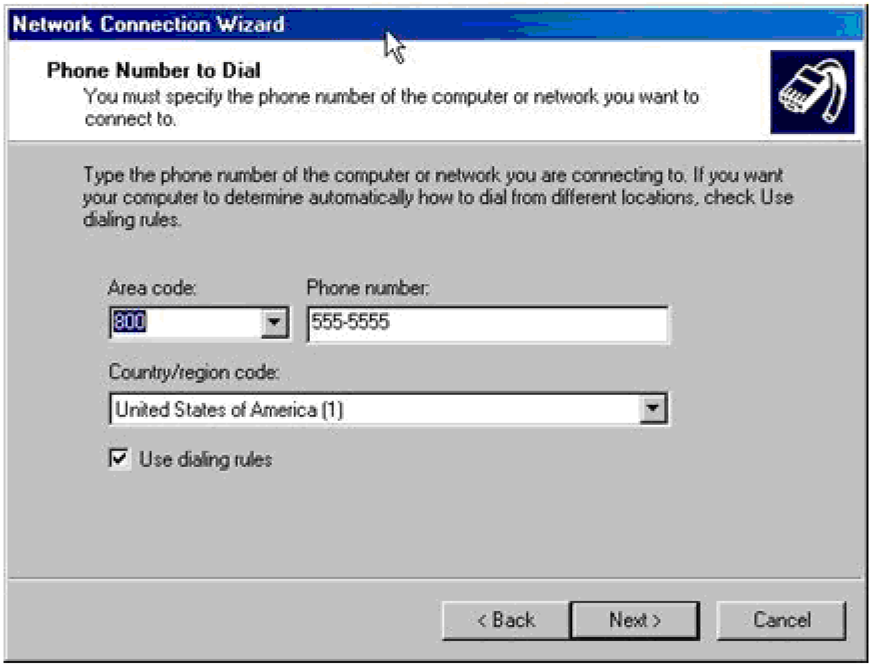
You have more than one dial-up device on your computer.

Select the devices to use in this connection:

□ Infrared Modem Port (SERIAL1-0)
☑ Modem - Lucent Win Modem (COM3)

6. Type the area code and phone number you wish to dial in the appropriate fields.

7. Click the Country/region code drop-down arrow and select the country or region from the list.



Network Connection Wizard

Phone Number to Dial

You must specify the phone number of the computer or network you want to connect to.

Type the phone number of the computer or network you are connecting to. If you want your computer to determine automatically how to dial from different locations, check Use dialing rules.

Area code: 800

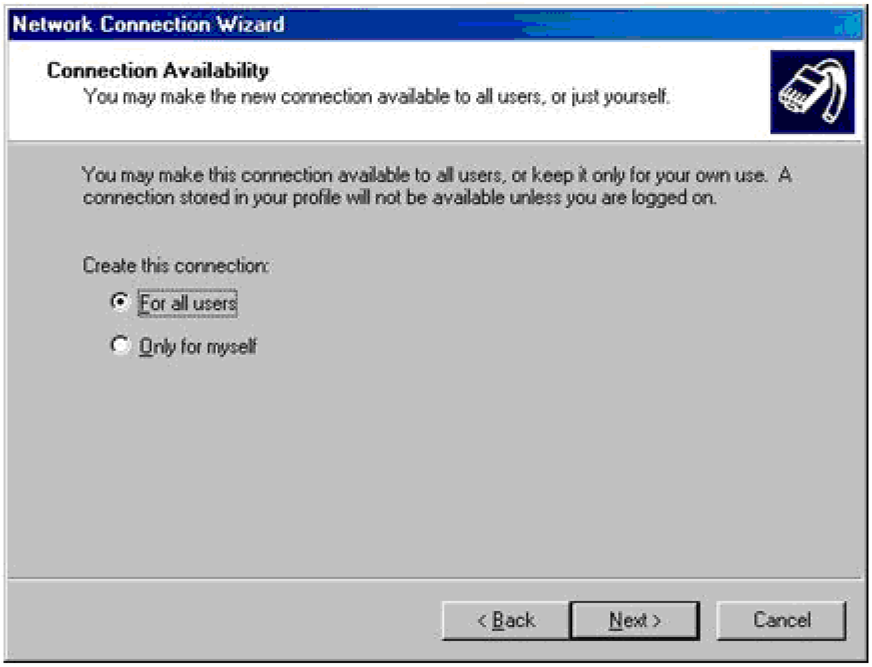
Phone number: 555-5555

Country/region code: United States of America (1)

☑ Use dialing rules

8. Click Next. The Connection Availability dialog appears.

9. Click the Only for myself radio button in the Connection Availability dialog.



Network Connection Wizard

Connection Availability

You may make the new connection available to all users, or just yourself.

You may make this connection available to all users, or keep it only for your own use. A connection stored in your profile will not be available unless you are logged on.

Create this connection:

● For all users

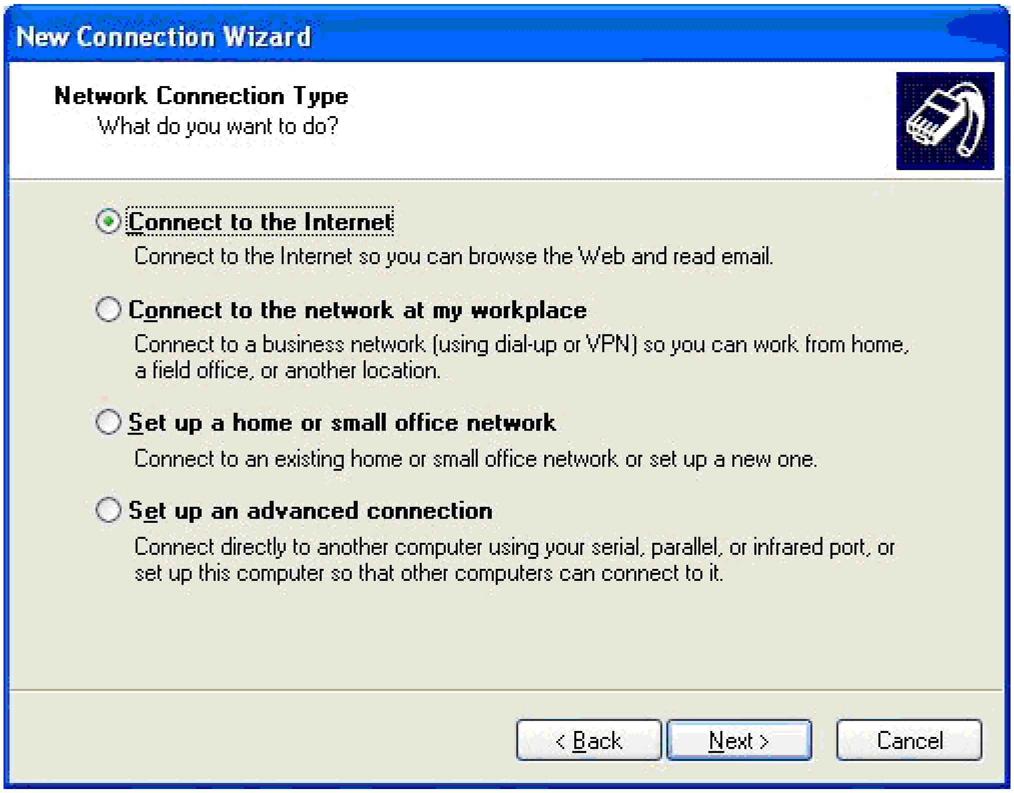
○ Only for myself

10. Click Next. The Network Connection has been created.
11. Type the name of the Dial-up connection.
12. Click Finish.
13. Click Dial to connect to the remote machine when the Dial dialog appears. A dialog indicating that a successful connection has been established will appear.

Consult the Windows 2000 Dial-up Networking Help if you receive any error messages.

Windows XP Dial-Up Networking Configuration

1. Choose Start > Programs > Accessories > Communications > New Connection Wizard.
2. Click Next and follow the steps in the New Connection Wizard to create custom dial-up network profiles.
3. Click the Connect to the Internet radio button and click Next.



New Connection Wizard

Network Connection Type

What do you want to do?

● **Connect to the Internet**

Connect to the Internet so you can browse the Web and read email.

○ **Connect to the network at my workplace**

Connect to a business network (using dial-up or VPN) so you can work from home, a field office, or another location.

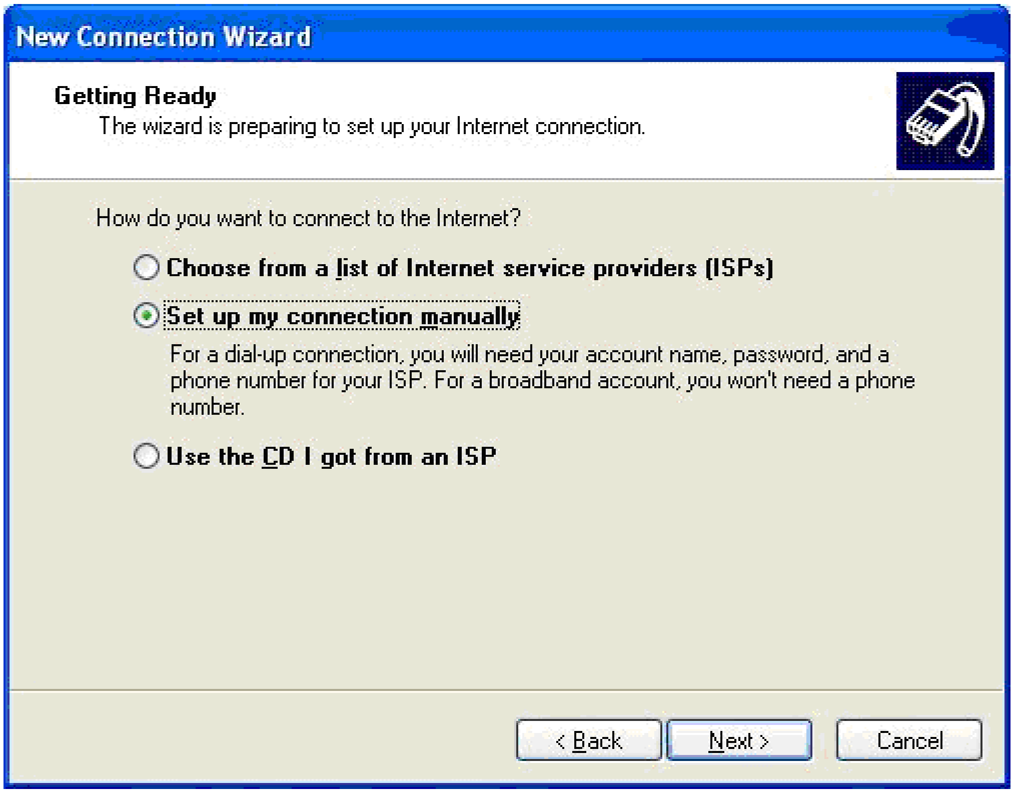
○ **Set up a home or small office network**

Connect to an existing home or small office network or set up a new one.

○ **Set up an advanced connection**

Connect directly to another computer using your serial, parallel, or infrared port, or set up this computer so that other computers can connect to it.

4. Click the Set up my connection manually radio button and click Next.



New Connection Wizard

Getting Ready

The wizard is preparing to set up your Internet connection.

How do you want to connect to the Internet?

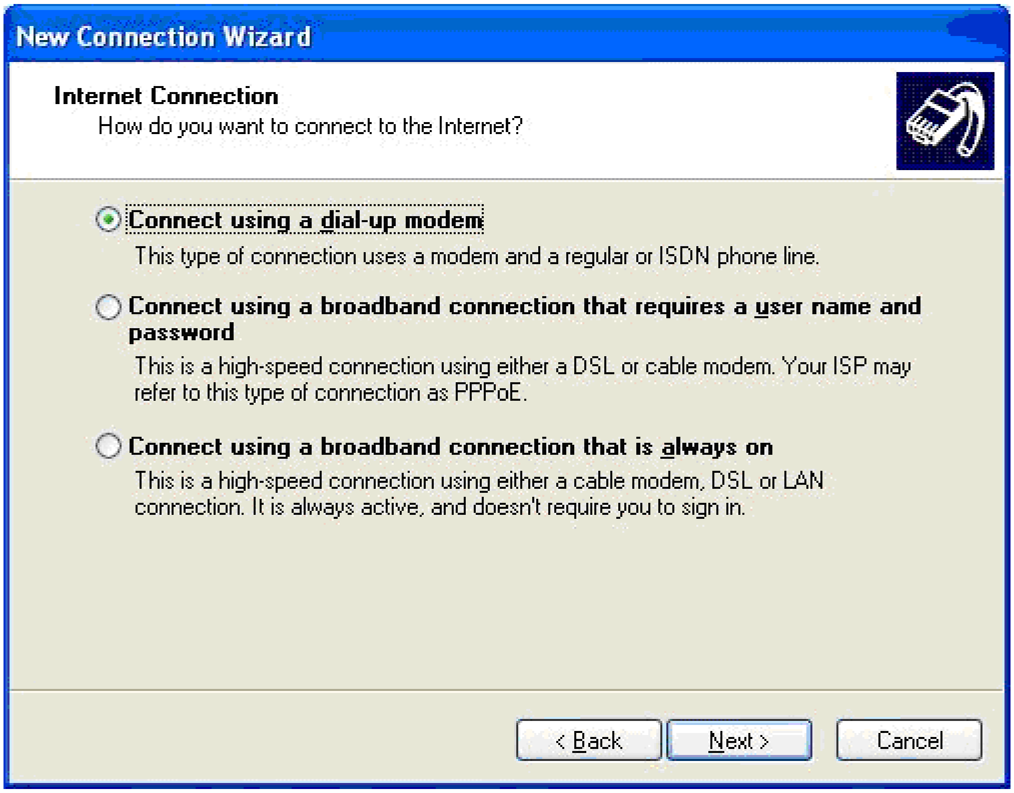
○ Choose from a list of Internet service providers (ISPs)

● Set up my connection manually

For a dial-up connection, you will need your account name, password, and a phone number for your ISP. For a broadband account, you won't need a phone number.

○ Use the CD I got from an ISP

5. Click the Connect using a dial-up modem radio button and click Next.



New Connection Wizard

Internet Connection

How do you want to connect to the Internet?

● **Connect using a dial-up modem**

This type of connection uses a modem and a regular or ISDN phone line.

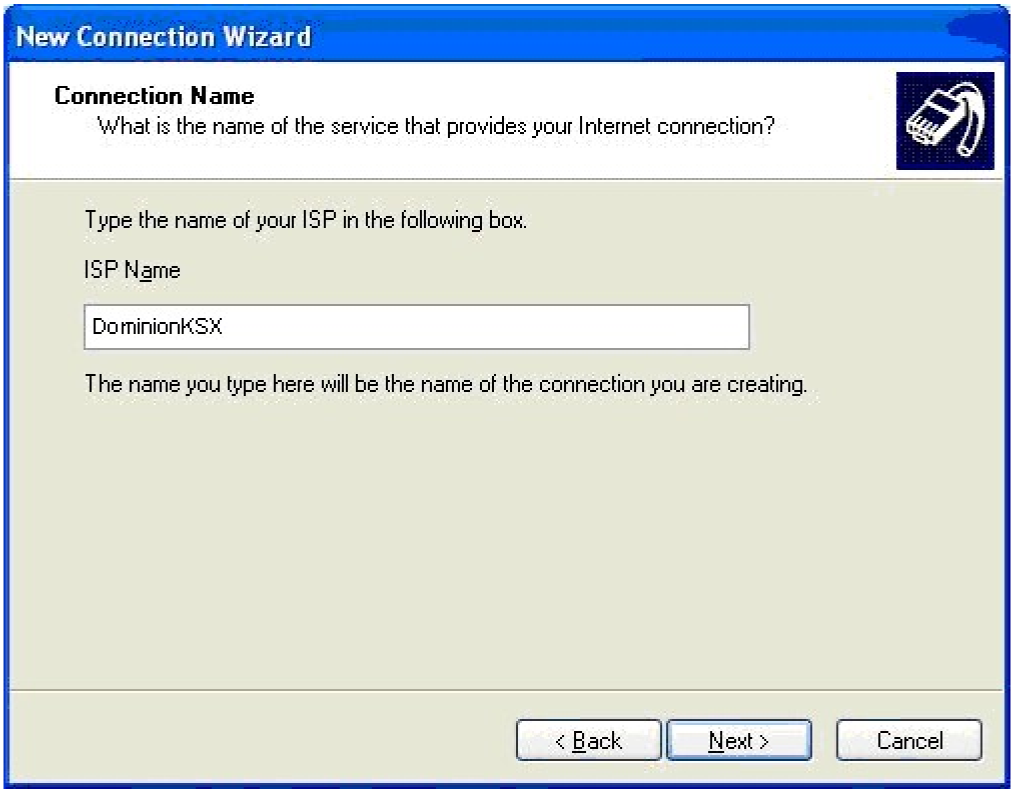
○ **Connect using a broadband connection that requires a user name and password**

This is a high-speed connection using either a DSL or cable modem. Your ISP may refer to this type of connection as PPPoE.

○ **Connect using a broadband connection that is always on**

This is a high-speed connection using either a cable modem, DSL or LAN connection. It is always active, and doesn't require you to sign in.

6. Type a name to identify this particular connection in the ISP Name field and click Next.



Connection Name

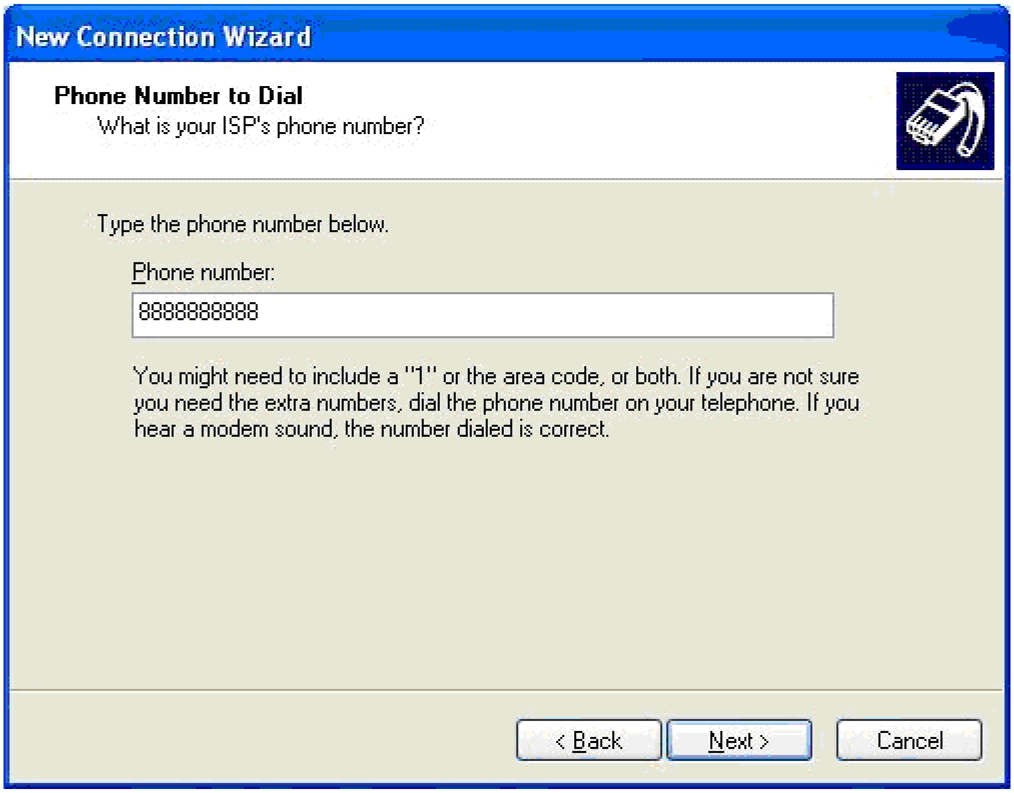
What is the name of the service that provides your Internet connection?

Type the name of your ISP in the following box.

ISP Name: DominionKSX

The name you type here will be the name of the connection you are creating.

7. Type the phone number for the connection in the Phone number field and click Next.



New Connection Wizard

Phone Number to Dial

What is your ISP's phone number?

Type the phone number below.

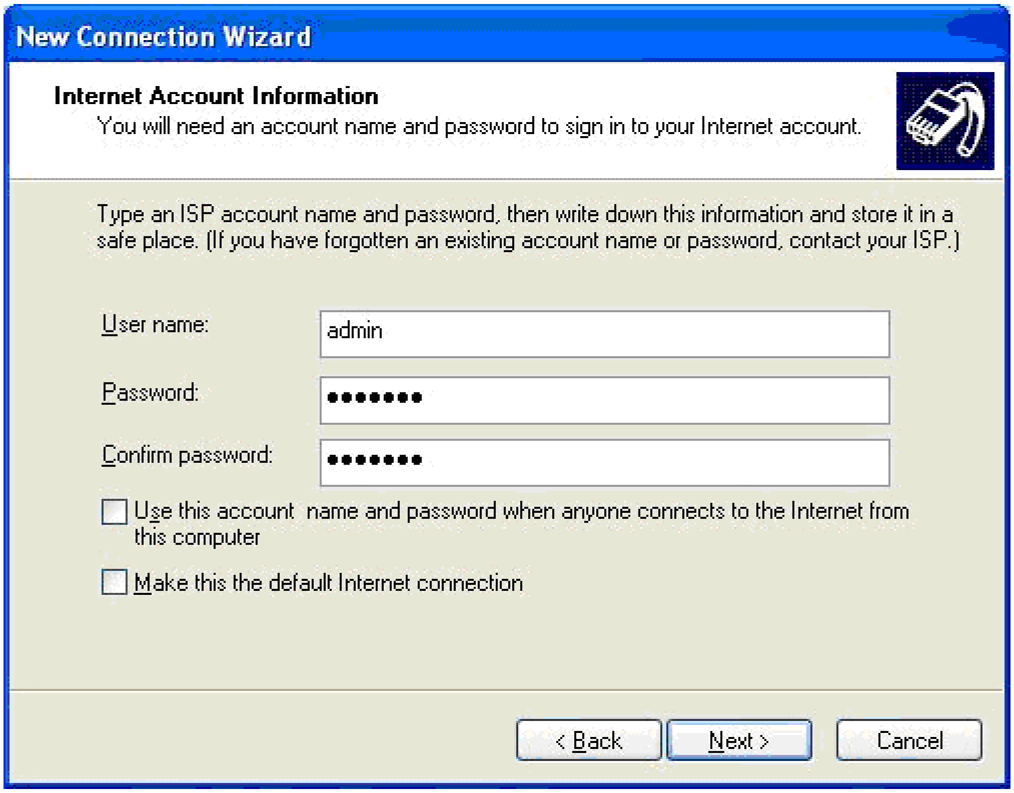
Phone number:

8888888888

You might need to include a "1" or the area code, or both. If you are not sure you need the extra numbers, dial the phone number on your telephone. If you hear a modem sound, the number dialed is correct.

8. Type your ISP information. Type the user name and password in the appropriate fields, and retype the password to confirm it.

9. Select the checkbox before the appropriate option below the fields and click Next.



New Connection Wizard

Internet Account Information

You will need an account name and password to sign in to your Internet account.

Type an ISP account name and password, then write down this information and store it in a safe place. (If you have forgotten an existing account name or password, contact your ISP.)

User name: admin

Password: ●●●●●●●

Confirm password: ●●●●●●●

□ Use this account name and password when anyone connects to the Internet from this computer

□ Make this the default Internet connection

10. Click Finish.

11. Click Dial to connect to the remote machine when the Dial dialog appears. A dialog indicating that you connected successfully appears. If you get any errors, consult Windows XP Dial-up Networking Help.

Note: The maximum modem speed connecting to the Dominion SX is 33,600 bps, as it is a Linux default limitation.

Appendix F Troubleshooting

The following tables describe problems and suggested solutions for the problems.

In This Chapter

Page Access

Problem	Solution
Cannot login - what are factory defaults? (only for Dominion SX units running firmware version 2.5 or higher)	username: admin (all lower case) password: raritan (all lower case)
	Check multiple login per user status. If disabled and there is already a session established opening anew one fails.
Cannot login - non defaults.	Check Local Authentication status. If it is not enabled only remote users may login.
Server Unreachable	If a unit appears to be unreachable by a given browser, run through the following troubleshooting list: ▪ Verify that the unit is powered on. ▪ Verify that the unit is properly connected to a network. ▪ Ping the unit from a computer on the same network to ensure that network communication with the unit occurs. ▪ Should the ping fail, contact your network administrator. There may be a problem with your network configuration that is preventing communication with the unit. ▪ Should the ping succeed, consult the following topics.
DNS Error/Server Unreachable	When attempting to connect to the Dominion SX URL using Microsoft IE, a web page may appear indicating a DNS error and reading that the server is unreachable. Remove any installed Dominion SX certificates and

Problem	Solution
	restart the browser.
Unsupported Encryption	The unit supports only 128-bit SSL encryption. In Internet Explorer, view Help > About Internet Explorer and determine the maximum SSL bit strength for the browser. If it is not at the desired strength, it is recommended that the browser be upgraded. In Netscape, view Communicator > Tools > Security Info > SSL v3.0 Configuration and ensure that 128-bit SSL is supported
Number of Users Exceeded	The unit has a security measure that allows only a specific number of login pages to be authenticated at any given time. Should this number be reached when attempting to login to the unit, a pop-up window displays indicating that the maximum number of users is exceeded. This is normal behavior for the unit. Wait for a few minutes and attempt to login again. You may need to refresh or <Shift+Refresh> your browser to successfully log in.

Firewall

Problem	Solution
Unable to Access the Web Page	Firewalls must allow access on port 80 (for http) and 443 (for https) for the unit to operate through a firewall. Contact your system administrator and request port 80 and 443, or other custom configured ports for access.
Login Failure	Firewalls must be configured to allow connections using the Dominion SX configurable port network parameter (Default 51000). If the firewall does not allow these connections, the applet indicates that the login has failed. Contact your system administrator and request that connections be allowed on the configurable port.
SSL Security Warnings	The unit embeds its Internet Address (IP) in its SSL certificate. Should the firewall perform Network Address Translation (NAT), the SSL certificate will not match the IP address recognized by the browser generating a security warning. This is normal behavior. The warning message does not affect operation of the unit.

Login

Problem	Solution
Login Failure	To provide additional security, the unit login page expires after three minutes. Therefore, all login attempts after this time period will fail. Reload the browser to reset this timer. Hold down the SHIFT key and click Reload in your browser. This will refresh the login page from the unit itself (not from a local cache) and allow login to the unit.
RADIUS Users	The unit can be configured to support RADIUS authentication. Any user not defined as a local user is considered to be a RADIUS user when RADIUS is enabled. If the RADIUS server is not reachable for user authentication for any reason, the unit will not allow the user to log in until the unit receives the result of the authentication request from the RADIUS server. Authentication may take up to 20 seconds. Be patient and wait until either the user successfully logs in, or the Authentication Denied message is displayed.

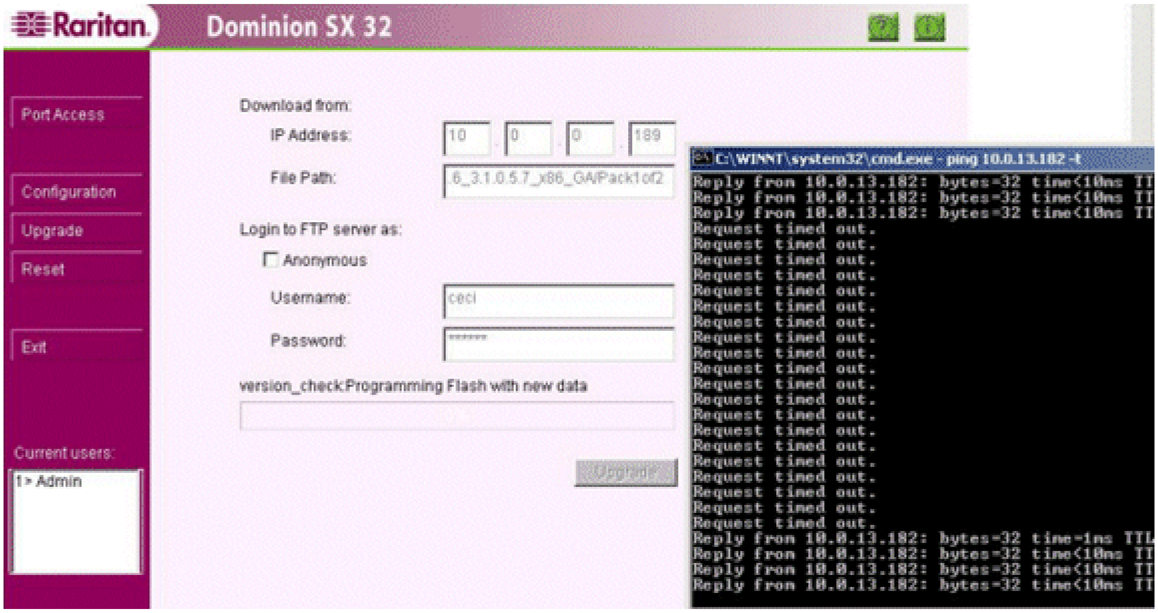
Port Access

Problem	Solution
Port Access Refresh	The unit does not automatically refresh the Port Access list. It is refreshed only when the user clicks Port Access. Therefore, it is possible that a user will have permissions revoked and these changes will not be visible on the port access page until the Port Access button is activated. **You must log out and log in again for the new restriction to be applied. Then the restricted ports are invisible.** Whenever possible, it is recommended that Administrators not change port access rights to a user who is already logged in to the unit.

Upgrade

Problem	Solution
FTP - Server Unreachable	If FTP server specified in the upgrade panel is unreachable or

Problem	Solution
	incorrect, the upgrade process halts until a response is received from the FTP server or until a timeout occurs. Wait and allow the FTP Server Unreachable message to appear.
FTP - File Not Found	The unit requires a package of upgrade files to be in the directory specified by the upgrade path. This package must have all included files and an upgrade.cnf file. Should this file not exist, or if the contents of the file are not in the indicated places, the File Not Found message will appear. Verify that the upgrade package is in the correct directory and confirm the upgrade path and IP address of the FTP server. If the upgrade still fails, reinstall the upgrade package and begin again.
Insufficient Partition Size	The latest 3.1.0.5.7 firmware is specifically applicable to Dominion SX models - DSX16 and DSX32 only (purchased before August 2004). This version also supports the use with CC-SG 3.1 (CommandCenter SecureGateway) or higher. Note that the attempt to upgrade firmware to the latest 3.1.0.5.7 version will be aborted if the SX unit is detected with less than 32mb partition size. Then the upgrade will not be performed, and the unit's operation will not be impacted. The unit will auto restart after the upgrade is attempted. Following screen shots exhibit a sample upgrade attempted for such unit (IP Address for the unit is 10.0.13.182). (See the figures shown below for details.)



Download from:

IP Address: 10 . 0 . 0 . 189

File Path: 6_3.1.0.5.7_x86_GA/Pack1of2

Login to FTP server as:

□ Anonymous

Username: ceci

Password: *******

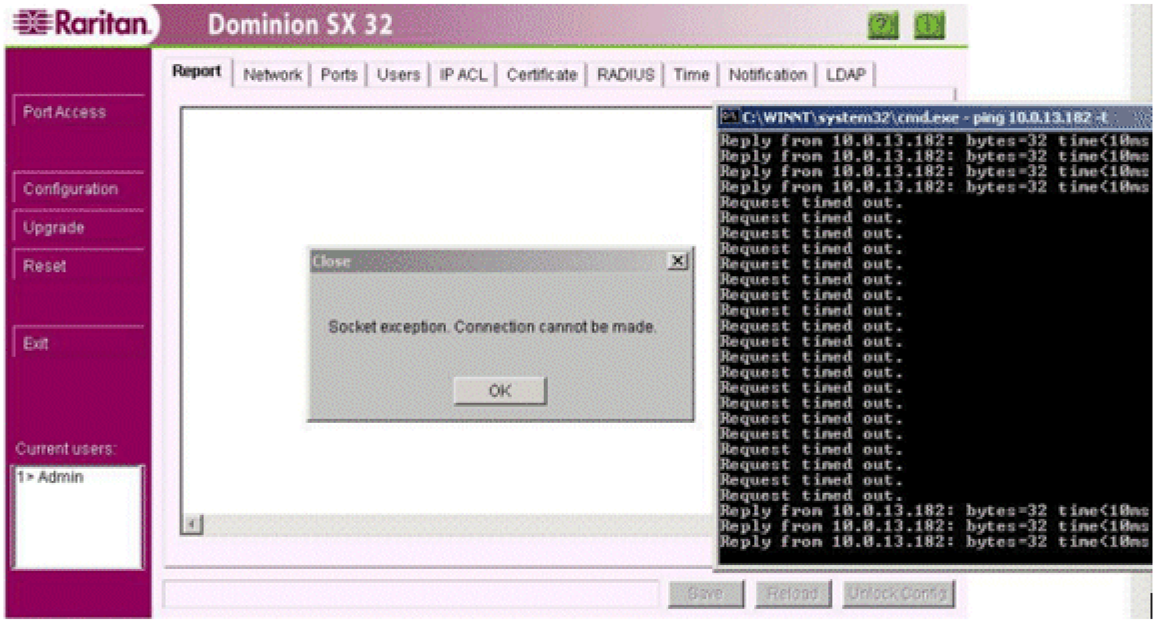
version_check:Programming Flash with new data

Current users:

1 > Admin

C:\WINNT\system32\cmd.exe - ping 10.0.13.182 -t

```
Reply from 10.0.13.182: bytes=32 time<10ms TT
Reply from 10.0.13.182: bytes=32 time<10ms TT
Reply from 10.0.13.182: bytes=32 time<10ms TT
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Reply from 10.0.13.182: bytes=32 time=1ms TTL
Reply from 10.0.13.182: bytes=32 time<10ms TT
Reply from 10.0.13.182: bytes=32 time<10ms TT
Reply from 10.0.13.182: bytes=32 time<10ms TT
```



Socket exception. Connection cannot be made.

Current users:

1 > Admin

C:\WINNT\system32\cmd.exe - ping 10.0.13.182 -t

```
Reply from 10.0.13.182: bytes=32 time<10ms
Reply from 10.0.13.182: bytes=32 time<10ms
Reply from 10.0.13.182: bytes=32 time<10ms
Reply from 10.0.13.182: bytes=32 time<10ms
Request timed out.
Request timed out.
Request timed out.
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Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Reply from 10.0.13.182: bytes=32 time<10ms
Reply from 10.0.13.182: bytes=32 time<10ms
Reply from 10.0.13.182: bytes=32 time<10ms
```

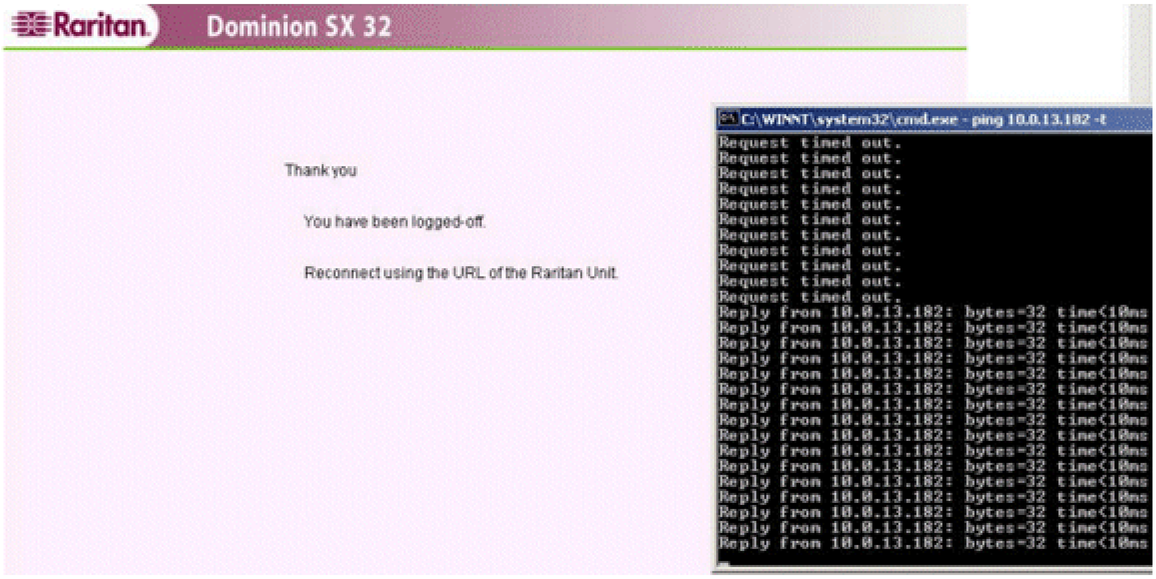

Thank you

You have been logged-off.

Reconnect using the URL of the Raritan Unit.

C:\WINNT\system32\cmd.exe - ping 10.0.13.182 -t

```
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Request timed out.
Reply from 10.0.13.182: bytes=32 time<10ms
Reply from 10.0.13.182: bytes=32 time<10ms
Reply from 10.0.13.182: bytes=32 time<10ms
Reply from 10.0.13.182: bytes=32 time<10ms
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Reply from 10.0.13.182: bytes=32 time<10ms
Reply from 10.0.13.182: bytes=32 time<10ms
Reply from 10.0.13.182: bytes=32 time<10ms
Reply from 10.0.13.182: bytes=32 time<10ms
```
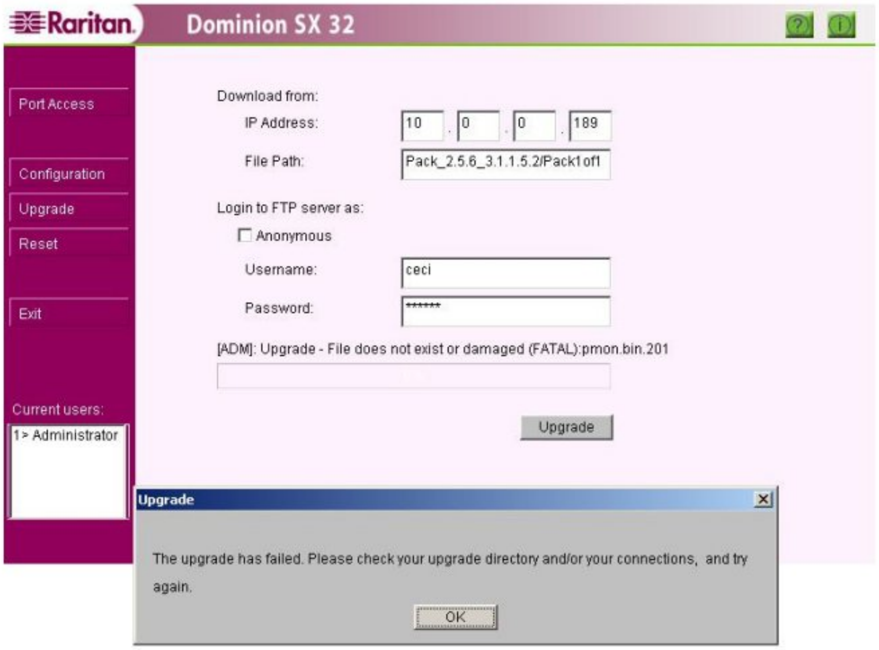

Problem	Solution
Upgrade failed in dual-LAN units	While upgrading dual-LAN units from 2.5.x versions, an error message appears stating "The upgrade has failed. Check your upgrade directory and/or your connections, and try again.". (See the figure below for details.) In order to properly complete the upgrade, do not reboot the unit when the message appears, but re-apply the upgrade pack again.



Download from:

IP Address: 10 . 0 . 0 . 189

File Path: Pack_2.5.6_3.1.1.5.2/Pack1of1

Login to FTP server as:

□ Anonymous

Username: ceci

Password: ******

[ADM]: Upgrade - File does not exist or damaged (FATAL):pmon.bin.201

Current users:

1> Administrator

Upgrade

The upgrade has failed. Please check your upgrade directory and/or your connections, and try again.

Modem

Problem	Solution
Login Failure	The unit supports Web-browser access through the modem at connection speeds of 28.8K bps or greater. If the baud rate is insufficient, the user may be unable to log in to the unit via the modem. 28.8K bps minimum connection speed is recommended for browser-based modem authentications (login). For CLI-based access, using SSH or Telnet, speed as low as 9600bps is adequate.

SSH Connection

Problem	Solution
SSH Access to Dominion SX from a client running Windows Vista failed to connect.	There may be a problem experienced by some users of Vista's Enterprise (and Business) edition with SX where the SSH window starts and fails to open. This is independent of the SX firmware version and does not require an upgrade of SX firmware to resolve.

	This problem seems to stem from the Vista's implementation of TCP auto tuning.
	Vista's Enterprise (and Business) editions utilize an aggressive scaling factor, which causes issues in packet segmentation, leading to SSH handshake messages being split apart and connection to never complete. The problem with Vista, is what Vista is doing when it sees that the SX cannot support the window scaling size of 8. Microsoft has described this problem at ***http://support.microsoft.com/kb/929868/*** http://support.microsoft.com/kb/929868/. SX cannot support a window scaling of 8 at all, because there is insufficient memory to support this level of packet buffering. When this scaling factor is shrunk or disabled entirely, the SSH handshaking completes correctly and the connection can be established.
	To perform this on vista, run a cmd.exe shell at an elevated admin level and execute the following command:
	`netsh interface tcp set global autotuninglevel=highlyrestricted`
	- or -
	`netsh interface tcp set global autotuninglevel=disable`

iptables --list Hanging

If iptables --list hangs, it may be because the current rules are preventing access to the DNS server from the Dominion SX. Execute iptables -n --list to prevent DNS lookups from hanging this command.

Index

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