SmartSwitch Router 2000
Getting Started Guide

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CABLETRON SYSTEMS

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Compatibility (EMC)

EN 61000-3-3; EN 50082-1, AS/NZS 3548; VCCI V-3

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- 21 CFR 1040.10 and 1040.11, U.S. Department of Health and Human Services (FDA)
- IEC Publication 825 (International Electrotechnical Commission)
- CENELEC EN 60825 (European Committee for Electrotechnical Standardization)

When operating within their performance limitations, laser transceiver output meets the Class 1 accessible emission limit of all three standards. Class 1 levels of laser radiation are not considered hazardous.

Laser Radiation and Connectors

When the connector is in place, all laser radiation remains within the fiber. The maximum amount of radiant power exiting the fiber (under normal conditions) is –12.6 dBm or 55×10^{-6} watts.

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European Representative's Address	Cabletron Systems Limited Nexus House, Newbury Business Park London Road, Newbury Berkshire RG13 2PZ, England
Conformance to Directive(s)/Product Standards	EC Directive 89/336/EEC EC Directive 73/23/EEC EN 55022 EN 50082-1 EN 60950
Equipment Type/Environment	Networking equipment for use in a commercial or light-industrial environment

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Mr. Ronald Fotino	Mr. J. Solari
Full Name	Full Name
Principal Compliance Engineer	Managing Director, E.M.E.A.
Title	Title
Rochester, NH, USA	Newbury, Berkshire, England
Location	Location

Contents

Preface

About This Guide

This guide provides a general overview of the 2-slot SmartSwitch Router (SSR 2000) hardware and software features and provides procedures for installing the SSR 2000 and setting it up for management using CoreWatch Element Management software. For product information not available in this guide, see the manuals listed in "Related Documentation" on page 2.

Who Should Read This Guide?

Read this guide if you are a network administrator responsible for installing and setting up the SSR 2000.

Note: Only qualified personnel should perform the installation procedures in this guide.

How to Use This Guide

If You Want To	See
Get an overview of the SSR 2000 software and hardware features	Chapter 1, "Features Overview" on page 3
Install the SSR 2000 hardware	Chapter 2, "Hardware Installation" on page 23
Install and boot the software, and set up the SSR 2000	Chapter 3, "Software Installation and Setup" on page 41
Set up the SSR 2000 for management using CoreWatch	Chapter 4, "Installing and Starting Cabletron CoreWatch" on page 61
Troubleshoot installation problems	Appendix A, "Troubleshooting" on page 67
Contact Cabletron Systems for technical support	Appendix B, "Technical Support" on page 69

Related Documentation

The Cabletron Systems documentation set includes the following items. Refer to these other documents to learn more about your product.

For Information About	See the
Managing the SSR 2000 using the CoreWatch Element Management application	*CoreWatch User's Manual* and the CoreWatch online help
How to use Command Line Interface (CLI) commands to configure and manage the SSR 2000	*SmartSwitch Router User Reference Manual*
The complete syntax for all CLI commands	*SmartSwitch Router Command Line Interface Reference Manual*
System messages	*SmartSwitch Router Error Reference Manual*

Chapter 1

Features Overview

The SmartSwitch Router 2000 (SSR 2000) provides non-blocking, high-speed Layer-2 (switching), Layer-3 (routing), and Layer-4 (application) switching. This chapter provides a basic overview of the SSR 2000 software and hardware feature set.

- If you want to skip this information and install the SSR 2000 now, see Chapter 2, "Hardware Installation" on page 23.
- If you want to boot the SSR 2000 software and perform basic configuration tasks now, see Chapter 3, "Software Installation and Setup" on page 41.
- If you want to set up a management station for using CoreWatch, see Chapter 4, "Installing and Starting Cabletron CoreWatch" on page 61.

Specifications

The SSR 2000 provides high-speed switching and full non-blocking throughput. The hardware provides high-speed performance regardless of the performance monitoring, filtering, and Quality of Service (QoS) features enabled by the software. You do not need to accept performance compromises to run QoS or access control lists (ACLs).

The following table lists the basic hardware and software specifications for the SSR 2000.

Table 1. Basic hardware and software specifications

Feature	Specification
Throughput	• 8.0-Gbps non-blocking switching fabric • 6.0 million packets-per-second routing throughput
Capacity	• Up to 16,000 routes • Up to 128,000 Layer-4 application flows • Up to 180,000 Layer-2 MAC addresses • 4,096 Virtual LANs (VLANs) • 2,000 Layer-2 security and access-control filters • 3MB input/output buffering per Gigabit port • 1MB input/output buffering per 10/100 port
Routing protocols	• IP: RIP v1/v2, OSPF, BGP v2/v3/v4 • IPX: RIP, SAP • Multicast: IGMP, DVMRP
Bridging and VLAN protocols	• 802.1d Spanning Tree • 802.1Q (VLAN trunking)
Media Interface protocols	• 802.3 (10Base-T/100Base-TX)
Quality of Service (QoS)	• Layer-2 prioritization (802.1p) • Layer-3 source-destination flows • Layer-4 source-destination flows • Layer-4 application flows
RMON	• RMON v1/v2 for each port
Management	• SNMP • CoreWatch Element Manager (GUI) • Emacs-like Command Line Interface (CLI)
Port mirroring	• Traffic from specific ports • Traffic to specific expansion slots (expansion modules)

This guide and other SSR 2000 documentation refers to the SSR 2000's Layer-2, Layer-3, and Layer-4 switching and routing. These layers are based on the International Standards Organization (ISO) 7-layer reference model. Here is an example of that model. The SSR 2000 operates within the layers that are not shaded. Notice that Layer-2 is divided into an LLC layer and a MAC layer. The SSR 2000 operates at the MAC layer but not the LLC layer.

Layer 7	Application
Layer 6	Presentation
Layer 5	Session
Layer 4	TCP/UDP - application
Layer 3	IP/IPX - routing
Layer 2	LLC
Layer 2	MAC -bridging
Layer 1	Physical Interfaces

TCP/UDP Services

The following table lists some well known TCP/UDP services provided by the SSR 2000.

Table 2. TCP/UDP services

TCP Port	UDP Port	Description
23		Telnet
	161	SNMP
	67	BOOTP/DHCP Relay Agent
	520	Routed

Features

This section describes the following SSR 2000 features:

- Address-based and flow-based bridging
- Port-based VLANs and protocol-based VLANs
- IP and IPX routing

- Layer-4 (application) switching
- Security
- Quality of Service (QoS)
- Statistics
- Management

Bridging

The SSR 2000 provides the following types of high-speed bridging:

- **Address-based bridging** – The SSR 2000 performs this type of bridging by looking up the destination address in an L2 lookup table on the expansion module that receives the bridge packet from the network. The L2 lookup table indicates the exit port(s) for the bridged packet. If the packet is addressed to the SSR 2000's own MAC address, the packet is routed rather than bridged.
- **Flow-based bridging** – The SSR 2000 performs this type of bridging by looking up an entry in the L2 lookup table containing both the source and destination addresses of the bridge packet.

Your choice of bridging method does not affect SSR 2000 performance. However, address-based bridging is more efficient because it requires fewer table entries while flow-based bridging provides tighter management and control over bridged traffic.

The SSR 2000 ports perform address-based bridging by default, but can be configured to perform flow-based bridging instead of address-based bridging on a per-port basis. A port cannot be configured to perform both types of bridging at the same time.

Port and Protocol VLANs

The SSR 2000 supports the following types of Virtual LANs (VLANs):

- **Port-based VLANs** – A port-based VLAN is a set of ports that comprises a Layer-2 broadcast domain. The SSR 2000 confines MAC-layer broadcasts to the ports in the VLAN on which the broadcast originates. SSR 2000 ports outside the VLAN do not receive the broadcast.
- **Protocol-based VLANs** – A protocol-based VLAN is a named set of ports that comprises an IP or IPX broadcast domain. The SSR 2000 confines IP or IPX broadcasts to the ports within the IP or IPX based VLAN. Protocol-based VLANs sometimes are called subnet VLANs or Layer-3 VLANs.

You can include the same port in more than one VLAN, even in both port-based and protocol-based VLANs. Moreover, you can define VLANs that span across multiple SSR 2000s. To simplify VLAN administration, the SSR 2000 supports 802.1q trunk ports,

which allow you to use a single port to "trunk" traffic from multiple VLANs to another SSR 2000 or switch which supports 802.1q.

Routing

The SSR 2000 provides high-speed routing for the following protocols:

- **Internet Protocol (IP)** – the protocol switching and routing devices use for moving traffic within the Internet and within many corporate intranets.
- **Internet Packet Exchange (IPX)** – a protocol by Novell used in Netware products.

Note: All other protocols that require routing must be tunneled using IP.

By default, the SSR 2000 uses one MAC address for all interfaces. The SSR 2000 can be configured to have a separate MAC address for each IP interface and a separate MAC address for each IPX interface. When the SSR 2000 receives a packet whose destination MAC address is one of the SSR 2000's IP or IPX interface MAC addresses, the port that received the packet from the network uses information in the module's L3 lookup tables (or information supplied by the motherboard) to route the packet to its IP destination(s).

You can create only one IP and IPX interface on a single port or VLAN. You can add secondary IP addresses to the same IP interface. When you add an interface to a set of ports, you are adding a VLAN to those ports. Ports that contain IP and IPX interfaces can still perform Layer-2 bridging.

IP Routing

The SSR 2000 supports the following IP unicast routing protocols:

- RIP v1 and RIP v2
- OSPF v2
- BGP v2/v3/v4

IP interfaces do not use a specific routing protocol by default. When you configure an interface for routing, you also specify the routing protocol the interface will use.

IP Multicast Routing

The SSR 2000 supports the following IP multicast routing protocols:

- IGMP v1 and IGMP v2
- DVMRP v3

The SSR 2000 does not use a specific IP Multicast routing protocol by default. Configuring an interface for IP Multicast simultaneously specifies its routing protocol.

IPX Routing

The SSR 2000 supports the following IPX routing protocols:

- IPX RIP – a version of the Routing Information Protocol (RIP) tailored for IPX
- IPX SAP – the Service Advertisement Protocol, which allows hosts attached to an IPX network to reach printers, file servers, and other services

By default, IPX routing is enabled on the SSR 2000 when an IPX interface is created.

Layer-4 Switching

In addition to Layer-2 bridging and Layer-3 routing, the SSR 2000 performs Layer-4 switching. Layer-4 switching is based on applications and flows.

- **Layer-4 applications** – The SSR 2000 understands the application for which an IP or IPX packet contains data and therefore enables you to manage and control traffic on an application basis. For IP traffic, the SSR 2000 looks at the packet's TCP or UDP port number to determine the application. For IPX packets, the SSR 2000 looks at the destination socket to determine the application.
- **Layer-4 flows** – The SSR 2000 can store Layer-4 flows in each expansion module. A Layer-4 flow consists of the source and destination addresses in the IP or IPX packet combined with the TCP or UDP source and destination port number (for IP) or the source and destination socket (for IPX). You can therefore manage and control individual flows between hosts on an individual application basis.

A single host can have many individual Layer-4 entries in the SSR 2000. For example, an IP host might have separate Layer-4 application entries for email, FTP, HTTP, and so on, or separate Layer-4 flow entries for specific email destinations and for specific FTP and Web connections.

Security

The bridging, routing, and application (Layer-2, Layer-3, and Layer-4) support described in previous sections enables you to implement security filters that meet the specific needs of your organization. You can implement the following types of filters to secure traffic on the SSR 2000:

- Layer-2 source filters (block bridge traffic based on source MAC address)
- Layer-2 destination filters (block bridge traffic based on destination MAC address)
- Layer-2 flow filters (block bridge traffic based on specific source-destination pairs)
- Layer-3 source filters (block IP or IPX traffic based on source IP or IPX address)
- Layer-3 destination filters (block IP or IPX traffic based on destination IP or IPX address)

- Layer-3 flow filters (block IP or IPX traffic based on specific source-destination pairs)
- Layer-4 application filters (block traffic based on UDP or TCP source and destination ports for IP or source and destination sockets for IPX)

Quality of Service

Although the SSR 2000 supplies non-blocking high-speed throughput, you can configure the SSR 2000 to apply Quality of Service (QoS) policies during peak periods to guarantee service to specific hosts, applications, and flows (source-destination pairs). This is especially useful in networks where the traffic level can exceed the network medium's capacity.

The SSR 2000 QoS is based on four queues: control, high, medium, and low. Control traffic has the highest priority, high the second highest, and so on. The default priority for all traffic is low.

You can configure QoS policies for the following types of traffic:

- Layer-2 prioritization (802.1p)
- Layer-3 and Layer-4 application flows

Statistics

The SSR 2000 can provide extensive statistical data on demand. You can access the following types of statistics:

- Layer-2 RMON and MIB II Statistics – Port statistics for normal packets and for errors (packets in, packets out, CRC errors, and so on)
- Layer-3 RMON v2 Statistics – Statistics for ICMP, IP, IP-interface, IP routing, IP multicast, VLAN
- Layer-4 RMON v2 Statistics – Statistics for TCP and UDP

Management Platforms

You can manage the SSR 2000 using the following management platforms:

- Command Line Interface (CLI) – An EMACs editor-like interface that accepts typed commands and responds when applicable with messages or tables. You will use the CLI to perform the basic setup procedures described in Chapter 3 of this guide.
- CoreWatch – Cabletron Systems' Java-based device management software. CoreWatch provides a graphical interface to the SSR 2000, providing most of the same monitoring and control features as the CLI.

- SNMP MIBs and traps – The SSR 2000 supports SNMP v1 and many standard networking MIBs. You can access the SSR 2000's SNMP agent using Cabletron integration software for HP OpenView 5.x on Windows NT or Solaris 2.x, or Cabletron Spectrum on Solaris 2.x. Chapter 3, "Software Installation and Setup" on page 41 in this guide explains how to set up SNMP on the SSR 2000. Chapter 4, "Installing and Starting Cabletron CoreWatch" on page 61 explains how to access the SSR 2000's SNMP agents.

Hardware Overview

This section describes the SSR 2000's hardware specifications. Chapter 2, "Hardware Installation" on page 23 in this guide describes how to install the hardware. This section describes the following hardware:

- Chassis and external controls
- Motherboard features
- Power supplies
- Expansion modules

Chassis

The SSR 2000 chassis contains 16 10/100BASE-TX ports and two expansion slots (slots 3 and 4). Currently, Cabletron configures the SSR 2000 at the factory in one of the following ways before shipping:

- 16 10/100BASE-TX ports and two empty expansion slots
- 24 10/100BASE-TX ports and a 2-port 1000BASE-SX or 1000BASE-LX gigabit module in the expansion slot

Figure 1 shows the front view of a loaded SSR 2000.

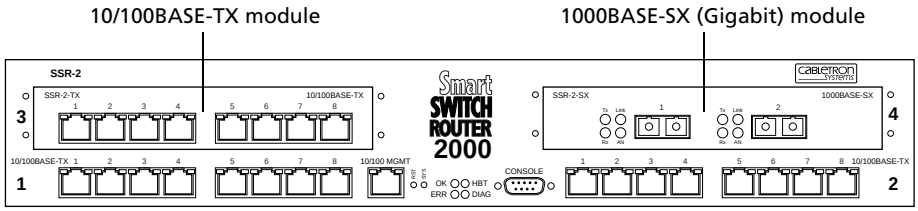

Figure 1. Front view of loaded SSR 2000

External Controls

The SSR 2000 has the following external controls. Where appropriate, this guide describes how to use the controls.

- A Male DB-9 Data Communications Equipment (DCE) port for serial connection from a management terminal. Use this port to establish a direct CLI connection to the SSR 2000. The default baud rate is 9600.
- A 10Base-T/100Base-TX Data Terminal Equipment (DTE) port for network connection from a management terminal. The port is configured as Media Data Interface (MDI). Use this port to establish a CoreWatch management connection to the SSR 2000 over a local or bridged Ethernet segment.
- A Reset switch (RST). Use this switch to reboot the SSR 2000's motherboard from the internal boot flash in the event of a system failure. The Reset switch is recessed in the SSR 2000's chassis, so you will have to use a tool like a small allen wrench to activate the switch.
- System switch (SYS). This switch stops the system software and starts the debugger. Normally, you should not use this switch unless directed to do so by Cabletron Systems personnel.
- Status LEDs.

Table 3. Status LEDs

LED Label	Description
OK	When this LED is on, the SSR 2000 and all expansion modules are functioning correctly.
ERR	When this LED is on, a fatal system error has occurred. Activate the SSR 2000's boot PROM to reboot the router.
HBT	This LED flashes when the SSR 2000's boot PROM is active.
DIAG	When this LED is on, the SSR 2000 is in diagnostic mode. (While in diagnostic mode, you will notice several other LEDs on the SSR 2000 are active, as well.)

Motherboard Features

The internal "motherboard" performs all the SSR 2000's computing and routing functions. It contains system-wide bridging and routing tables. Traffic that does not yet have an entry in the L2 and L3/L4 lookup tables on individual expansion modules is handled by the motherboard. After processing traffic, the motherboard updates the L2 and L3/L4 tables on the ports and/or expansion slot(s) that received the traffic. The ports/expansion slot(s) thus "learn" about how to forward traffic.

Boot Flash

The motherboard has a boot flash containing the SSR 2000's boot software and configuration files. The system software image file resides on an internal flash chip and can be upgraded from a TFTP server.

RAM Memory

The SSR 2000's motherboard uses 32MB of RAM to hold routing and other tables. This RAM is "fixed" and is not removable or upgradable.

The SSR-2-B128-AA uses 128MB of RAM to hold routing and other tables. This RAM is "fixed" and is not removable or upgradable.

Power Supplies

The SSR 2000 uses two power supplies, each delivering 3.3, 5, and 12 volts DC to the motherboard, internal fans, and other components. Each power supply provides a portion of the power necessary to operate the SSR 2000, with the added bonus that, in the unlikely event that one of the power supplies should fail, the remaining power supply will assume the entire load and provide enough current to operate a fully-configured SSR 2000 chassis.

Note: Be sure to plug the SSR 2000 into a single-phase grounded power source located within 6 feet of the installation site.

The following table lists the specifications for the power supplies.

Table 4. Power supply voltage and current specifications

Input voltage	Input current (maximum)
100-125 VAC	2.6 A
200-240 VAC	1.3 A

Fans

The SSR 2000 contains two internal fans to provide cooling air flow across the motherboard and expansion slot(s). The fans are located near the middle of the chassis, between the power supplies and the motherboard.

Note: To ensure that the fans can provide adequate cooling, Cabletron recommends that you allow a minimum of 3 inches of clearance on each side of the chassis.

Expansion Modules

The following expansion modules can be installed in the SSR 2000:

- 10/100BASE-TX
- 100BASE-FX
- 1000BASE-SX
- 1000BASE-LX
- Dual Serial (WAN)
- Quad Serial – C (WAN)
- Quad Serial – CE (WAN)

10/100BASE-TX Expansion Module

The 10/100BASE-TX expansion module contains eight independent Ethernet ports. Each port senses whether it is connected to a 10-Mbps segment or a 100-Mbps segment and automatically configures itself as a 10Base-T or 100Base-TX port. Figure 2 shows the front panel of the 10/100BASE-TX expansion module.

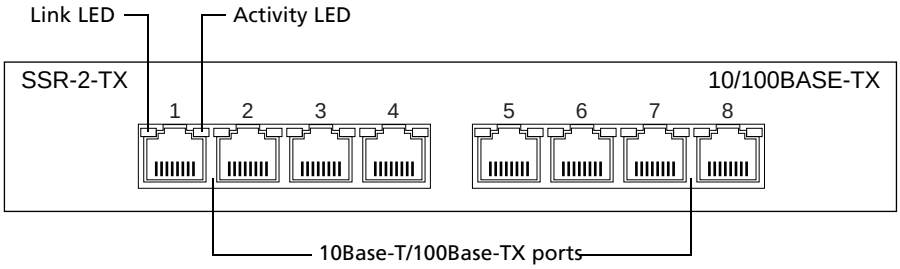

Figure 2. Front panel of 10/100BASE-TX expansion module

Cabling and Connector Specifications

The following table lists the media specifications for the 10/100BASE-TX expansion module.

Table 5. 10/100BASE-TX expansion module specifications

Port Type	Specification
10Base-T	• 802.3 standard • RJ-45 connector wired as Media Data Interface Crossed (MDIX); see "10/100BASE-TX Expansion Module" on page 34 for pin assignments • EIA Category 3, 4, or 5 unshielded twisted pair cabling • Maximum 328 feet (100 meters) segment length
100Base-TX	• 802.3u standard • RJ-45 connector wired as Media Data Interface Crossed (MDIX); see "10/100BASE-TX Expansion Module" on page 34 for pin assignments • EIA Category 5 unshielded twisted pair cabling • Maximum 100 meters (328 feet) segment length

LEDs

The 10/100BASE-TX expansion module uses the following LEDs.

Table 6. 10/100BASE-TX expansion module LEDs

LED	Description
Link	Each port has two LEDs on its connector. The green LED on the left side of the connector indicates the link status. When this LED is lit, the port hardware is detecting that a cable is plugged into the port and the port has established communication with the device at the other end.
Activity	The amber LED on the right side of each port connector flashes each time the port's transceiver sends or receives packets.

100BASE-FX Expansion Module

The 100BASE-FX expansion module provides the same features as the 10/100BASE-TX expansion module but uses multimode fiber-optic cable (MMF) to connect to the network. Figure 3 shows the front panel of the 100BASE-FX expansion module.

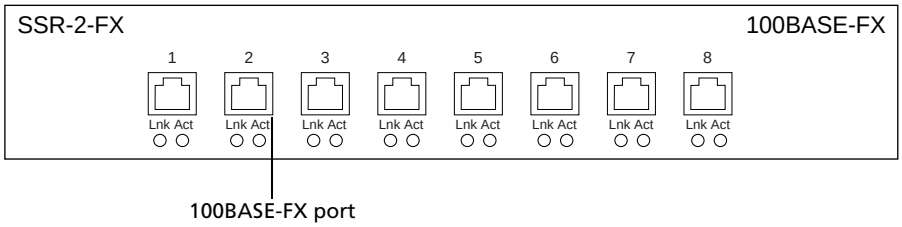

Figure 3. Front panel of 100BASE-FX expansion module

Cabling and Connector Specifications

The following table lists the media specifications for the 100BASE-FX expansion module.

Table 7. 100BASE-FX expansion module specifications

Port type	Specification
100Base-FX	• 802.3u standard • SC-style Media Interface Connector (MIC); either connection pin in the MIC can be used for transmit or receive. • 62.5 micron multimode fiber-optic cable • Maximum 412 meters (1352 feet) segment length for half-duplex links • Maximum 2 kilometers (6562 feet) segment length for full-duplex links

LEDs

The 100BASE-FX expansion module uses the following LEDs.

Table 8. 100BASE-FX expansion module LEDs

LED	Description
Lnk	Each port has two LEDs located to the left of the connector. The green Lnk LED indicates the link status. When this LED is lit, the port hardware is detecting that a cable is plugged into the port and the port has established communication with the device at the other end.
Act	The amber Act LED flashes each time the port's transceiver sends or receives packets.

1000BASE-SX Expansion Module

The 1000BASE-SX expansion module contains two independent Gigabit (1000-Mbps) Ethernet ports. The ports connect to multimode-mode fiber (MMF) cables. Figure 4 shows the front panel of the 1000BASE-SX expansion module.

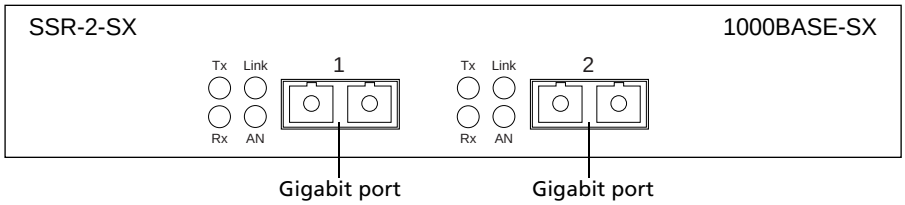

Figure 4. Front panel of 1000BASE-SX expansion module

Cabling and Connector Specifications

The following table lists the media specifications for the 1000BASE-SX expansion module.

Table 9. 1000BASE-SX expansion module specifications

Port type	Specification
1000Base-SX	• 802.3z standard (also uses 802.3x for flow control) • SC-style Media Interface Connector (MIC) • 62.5 micron or 50 micron multimode fiber-optic cable • Maximum 275 meters (902 feet) segment length for 62.5 micron fiber-optic cable, based on installed fiber bandwidth • Maximum 550 meters (1804 feet) segment length for 50 micron fiber-optic cable, based on installed fiber bandwidth

LEDs

The 1000BASE-SX expansion module uses the following LEDs.

Table 10. 1000BASE-SX expansion module LEDs

LED	Description
Per-port Link	• Green – indicates that the port hardware detects a cable plugged into the port and a good link is established. • Red (intermittent) – indicates that the port received an error during operation. • Red (solid) – indicates that the port hardware detects a cable plugged into the port, however, a bad link is established. • Off – indicates that no link from exists with the port.
Per-port Rx	• Green – indicates when the port's transceiver receives packets. • Orange – indicates when the port's transceiver receives flow-control packets.
Per-port Tx	• Green – indicates when the port's transceiver transmits packets. • Orange – indicates when the port's transceiver transmits flow-control packets.

Table 10. 1000BASE-SX expansion module LEDs (Continued)

LED	Description
Per-port AN	• Green – indicates that the expansion module is autonegotiating the operating mode of the link between full-duplex and half-duplex. • Orange (intermittent) – indicates that autonegotiation is in process. • Orange (solid) – indicates a problem with autonegotiation configuration. • Red – indicates an autonegotiation failure. This fault may occur if the link partner does not support full duplex. • Off – indicates that autonegotiation has been disabled or the link is down.

1000BASE-LX Expansion Module

The 1000BASE-LX expansion module provides the same features as the 1000BASE-SX expansion module, and supports both single-mode fiber (SMF) and MMF. Figure 5 shows the front panel of the 1000BASE-LX expansion module.

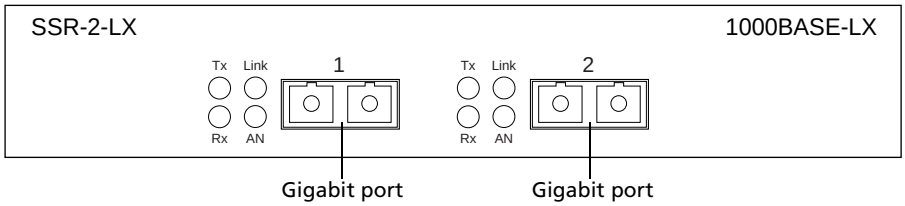

Figure 5. Front panel of 1000BASE-LX expansion module

Cabling and Connector Specifications

The following table lists the media specifications for the 1000BASE-LX expansion module.

Table 11. 1000BASE-LX expansion module specifications

Port type	Specification
1000Base-LX	• 802.3z standard (also uses 802.3x for flow control) • SC-style Media Interface Connector (MIC) • 62.5 micron or 50 micron multimode fiber-optic cable • 9.5 micron single-mode fiber-optic cable • Maximum 550 meters (1804 feet)[a] segment length for 62.5 micron fiber-optic cable, based on installed fiber bandwidth • Maximum 550 meters (1804 feet) segment length for 50 micron fiber-optic cable, based on installed fiber bandwidth • Maximum 5 kilometers (229,659 feet) segment length for 10 micron single-mode fiber-optic cable

a. Patch cord required.

LEDs

The 1000BASE-LX expansion module uses the following LEDs.

Table 12. 1000BASE-LX expansion module LEDs

LED	Description
Per-port Link	• Green – indicates that the port hardware detects a cable plugged into the port and a good link is established. • Red (intermittent) – indicates that the port received an error during operation. • Red (solid) – indicates that the port hardware detects a cable plugged into the port, however, a bad link is established. • Off – indicates that no link from exists with the port.
Per-port Rx	• Green – indicates when the port's transceiver receives packets. • Orange – indicates when the port's transceiver receives flow-control packets.

Table 12. 1000BASE-LX expansion module LEDs (Continued)

LED	Description
Per-port Tx	• Green – indicates when the port's transceiver transmits packets. • Orange – indicates when the port's transceiver transmits flow-control packets.
Per-port AN	• Green – indicates that the expansion module is autonegotiating the operating mode of the link between full-duplex and half-duplex. • Orange (intermittent) – indicates that autonegotiation is in process. • Orange (solid) – indicates a problem with autonegotiation configuration. • Red – indicates an autonegotiation failure. This fault may occur if the link partner does not support full duplex. • Off – indicates that autonegotiation has been disabled or the link is down.

Dual Serial and Quad Serial – C/CE Expansion Modules

The Dual Serial expansion module contains a single dual serial WAN port (two serial ports located on one high density connector). The Quad Serial – C and Quad Serial – CE expansion modules each contain two dual serial WAN ports. In addition, the Quad Serial – C expansion module includes compression, and the Quad Serial – CE expansion module includes compression *and* encryption, for each WAN port. Figure 6 shows the front panel of the Dual Serial WAN expansion module.

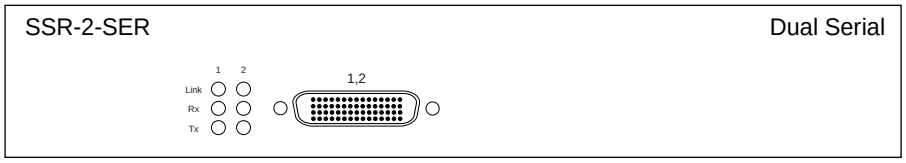

Figure 6. Front panel of Dual Serial WAN expansion module

Figure 7 shows the front panel of the Quad Serial WAN expansion module.

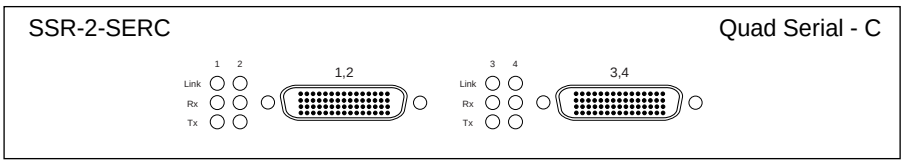

Figure 7. Front panel of Quad Serial – C/CE WAN expansion module

Cabling and Connector Specifications

The following table lists the media specifications for the Dual Serial and Quad Serial – C/CE expansion modules.

Table 13. Dual Serial and Quad Serial – C/CE WAN expansion module specifications

Port Type	Specification
Dual serial	• V.35, X.21, EIA530, EIA530A, or RS449 • LFH-60 high density connector; see "Dual Serial and Quad Serial – C/CE Expansion Modules" on page 37 for pin assignments • Recommended 3 meters (10 feet) segment length for standard WAN expansion module-to-CSU/DSU data port.[a]

a. Connector cables for WAN expansion modules may be ordered from Cabletron Systems. For detailed information, including part numbers, see "Dual Serial and Quad Serial – C/CE Expansion Modules" on page 37.

LEDs

The Dual Serial and Quad Serial – C/CE expansion modules use the following LEDs.

Table 14. Dual Serial and Quad Serial – C/CE WAN expansion module LEDs

LED	Description
Per-port Link	Indicates that the expansion module detects a cable plugged into the port and a good link is established.
Per-port Rx	Indicates when the port's transceiver receives data.
Per-port Tx	Indicates when the port's transceiver transmits data.

Chapter 2

Hardware Installation

This chapter provides hardware installation information and procedures in the following sections:

- Safety considerations
- Hardware specifications
- Installing the hardware

If the hardware is already installed and you are ready to install the software and perform basic system configuration, see Chapter 3, "Software Installation and Setup" on page 41.

Safety Considerations

Read the following safety warnings and product cautions to avoid personal injury or product damage.

Preventing Injury

Observe the following safety warnings to prevent accidental injury when working with the SSR 2000 hardware.

- To avoid back strain, be careful when lifting the SSR 2000 out of the shipping box.
- Never attempt to rack mount the SSR 2000 unaided. Ask an assistant to help you hold the SSR 2000.
- Before performing any upgrade or installation procedures, ensure that the SSR 2000 is powered off.

- Never operate the SSR 2000 with exposed expansion slots.
- Never operate the SSR 2000 if the it becomes wet or the area where it has been installed is wet.

Preventing Equipment Damage

Observe the precautions listed in this section to prevent accidental damage to the SSR 2000 components.

Caution: To prevent accidental product damage, observe the following precautions:

- Always use proper electrostatic discharge (ESD) gear when handling expansion modules or other internal parts of the chassis.
- Make sure you allow adequate room for air flow around the SSR 2000.

Hardware Specifications

The following table lists the physical and environmental specifications for the SSR 2000.

Table 15. SSR 2000 physical and environmental specifications

Dimensions	Inches: 2.8″ (height) x 17″ (width) x 18.5″ (depth) Centimeters: 7.1cm x 43.2cm x 47cm
Weight	Pounds: 22 Kilograms: 10
Power	100-125 VAC, 4 A maximum; 200-240 VAC, 2 A maximum
Operating temperature	Fahrenheit: 41°F to 104°F Centigrade: 5°C to 40°C

Installing the Hardware

This section describes how to perform the following tasks:

- Verifying your shipment
- Installing the chassis (on a tabletop or in an equipment rack)
- Installing expansion modules

- Attaching console management cables
- Attaching port cables

Verifying Your Shipment

Before you begin installing your SSR 2000, check your shipment to ensure that everything you ordered arrived securely. Cabletron assembles the SSR 2000 according to one of the configurations under "Chassis" on page 10 before shipping.

Caution: To avoid back strain, be careful when lifting the SSR 2000 out of the shipping box.

Open the shipping box(es) and verify that you received the following equipment:

- An SSR 2000, power cord(s), and a console cable. The console cable is used for connecting a terminal to the SSR 2000's console port.
- One copy of the *SmartSwitch Router 2000 Getting Started Guide* (the book you are reading now).
- An SSR Documentation CD-ROM, including current version release notes.
- An SSR 2000 software kit with a CD-ROM containing the CoreWatch element management software and user documentation (in a separate box).
- Rack mount kit, including two rack mounting brackets and fastening screws.

Depending on your order, your shipment will also contain the expansion modules you ordered.

Installing the Chassis

Cabletron recommends that only qualified personnel conduct installation of any SSR chassis.

Warning: Before performing any upgrade or installation procedures, ensure that the SSR 2000 is powered off.

This section contains procedures for the following types of installation:

- Table-top installation
- Rack mount installation

Table-Top Installation

You can install the SSR 2000 on a tabletop.

1. Select a table that is stable (not wobbly) and is not in an area subject to frequent foot traffic. Remember that you will be attaching numerous cables to the SSR 2000.
2. Place the SSR 2000 on the table, allowing at least 3" of space on each side for adequate air flow to the cooling fans.

Rack Mount Installation

You can install the SSR 2000 in a standard 19" equipment rack. The SSR 2000 chassis contains screw holes for front-mounting brackets.

Note: Never attempt to rack mount the SSR 2000 unaided. Ask an assistant to help you hold the chassis.

To install the SSR 2000 chassis in an equipment rack, use the following procedure. You need a phillips-head screwdriver to perform this procedure.

Figure 8 shows an example of how to install the SSR 2000 in an equipment rack. The procedure following the figure describes how to install the SSR 2000 in an equipment rack.

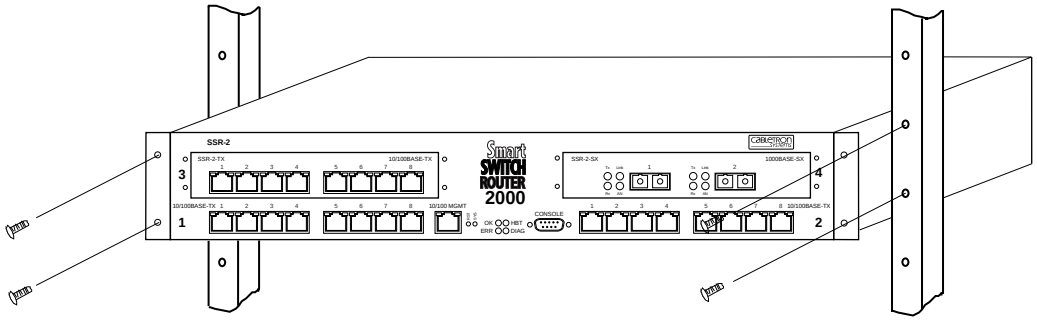

Figure 8. Installing the SSR 2000 chassis in an equipment rack

To install the SSR 2000 in an equipment rack:

1. If your SSR 2000 is not already equipped with rack-mounting brackets, take the following steps. Otherwise skip to Step 2.

   a. Align one of the mounting brackets over the corresponding holes in the side of the SSR 2000. The mounting bracket is correctly positioned when the side with two open mounting holes is flush with the front of the SSR 2000.

   b. Use the phillips-head screwdriver and the supplied phillips-head screws to attach the mounting bracket to both the side and bottom of the chassis. (There are four holes for each rack mounting bracket—the one on the side of the chassis that you exposed in Step a, and three holes in the bottom of the chassis.)

      Note: Be sure to use the phillips-head screws supplied by Cabletron. If you use screws that are longer than the ones included with your shipment, there is a danger of damaging the SSR 2000's internal components.

   c. Attach the other mounting bracket.

2. Along with an assistant, lift the SSR 2000 into place in the mounting rack.

3. While your assistant holds the chassis in place, use the phillips-head screwdriver and four phillips-head screws to attach the mounting brackets to the mounting rack.

Caution: Make sure the screws are tight before your assistant releases the chassis. If you accidentally leave the screws loose, the chassis can slip and fall, possibly becoming damaged.

Installing an Expansion Module

Warning: Before performing any upgrade or installation procedures, ensure that the SSR 2000 is powered off and that you are properly "grounded" to avoid electrostatic discharge while working inside the SSR 2000's chassis.

It may be necessary at some point for you to upgrade or replace your SSR 2000's expansion module(s) after receiving your SSR 2000 from Cabletron. Although you can install any of the available expansion modules in either of the SSR 2000's expansion slots, Figure 14 shows an example of how to install a 1000BASE-SX or 1000BASE-LX gigabit expansion module. The procedure following the figure describes how to install the expansion module.

To install a 1000BASE-SX or 1000BASE-LX gigabit expansion module:

1. Ensure that the SSR 2000 is powered off.
2. If your SSR 2000 is equipped for rackmountability, use the phillips-head screwdriver to remove the mounting brackets from each side of the SSR 2000.
3. Take off the SSR 2000's top cover.
   a. Use the phillips-head screwdriver to remove the four mounting screws (two on each side of the router, front and back) that hold the top cover on the SSR 2000.

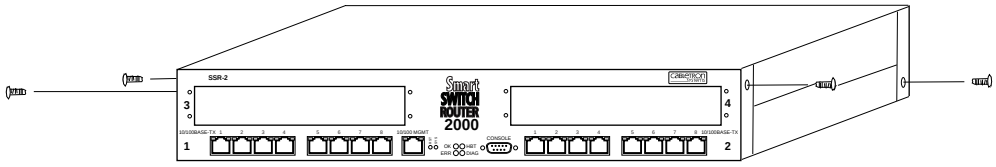

Figure 9. Removing the SSR 2000's cover

   b. Slide the cover away from the front of the SSR 2000 about 1/2", then lift it away from the SSR 2000.
4. Use the phillips-head screwdriver to remove the four mounting screws in the existing face plate or cover plate corresponding to the expansion slot where you plan to install the 1000BASE-SX or 1000BASE-LX gigabit expansion module. Be sure not to damage or remove the conductive tape on the inside of the chassis, both above and below the expansion slot opening.

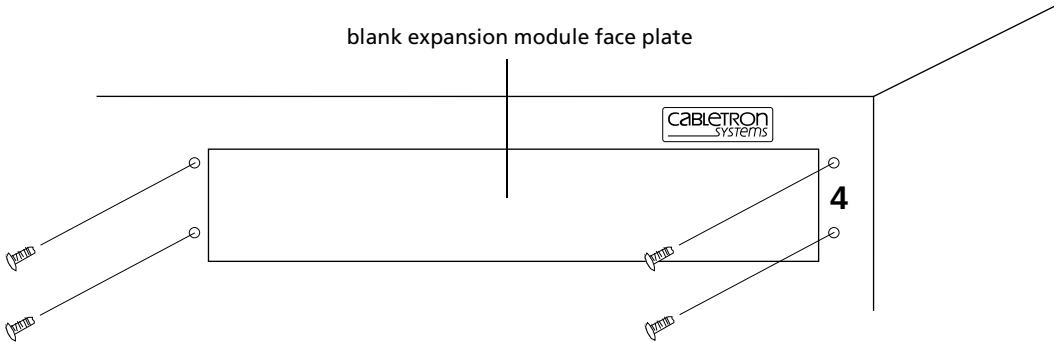

Figure 10. Removing a face plate or cover plate (view from outside chassis)

5. From the inside of the chassis, line up the four holes in the expansion module's face plate with the corresponding holes around the empty expansion slot in the chassis, and use the phillips-head screwdriver to tighten the screws (from the front) on each side of the expansion module's face plate to affix it to the chassis.

   Note: You will probably have to gently push the expansion card's face plate down while lining up the first of the screws. The grounding fingers for the 10/100BASE-TX module that sits immediately below the empty expansion slot protrude upwards to make contact with the bottom of the face plate.

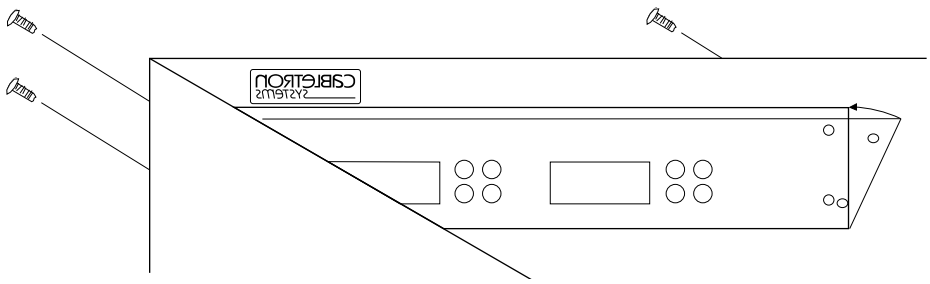

Figure 11. Installing the new face plate (view from inside chassis)

Note: There are two different types of face plates for the expansion modules. There is a regular face place and an EMI extended face plate. Shown below is a picture of the EMI extended face plate:

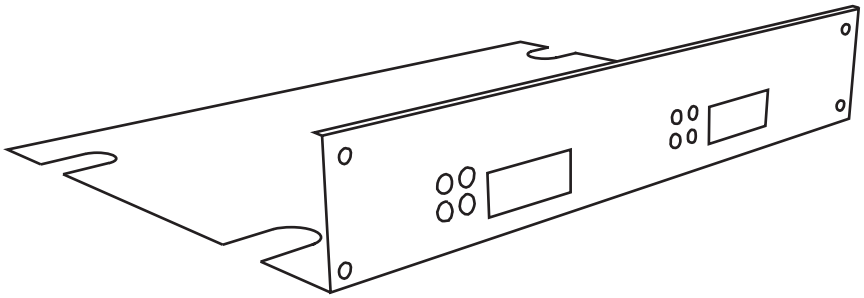

Figure 12. EMI extended face plate

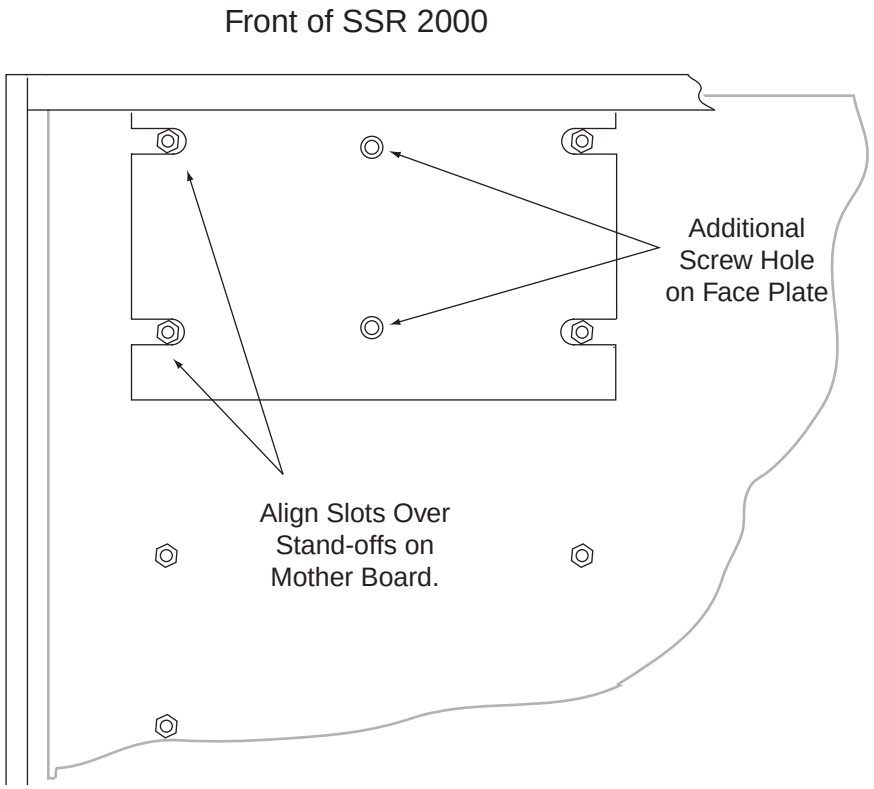

Figure 13. Installing the EMI extended face plate (view from inside chassis)

6. Insert the 1000BASE-SX or 1000BASE-LX gigabit expansion module from the top and ensure that it makes maximum surface contact with its face plate.
7. Line up the two screw holes at the back of the expansion module and connect the stacking connector at the back of the expansion module to the pins on the SSR 2000's motherboard.

Caution: The female and male connectors for the expansion modules are not keyed, so it is possible to misalign the connection. Ensure that *all* pins fit properly into the female connector on the expansion module before applying power to the SSR 2000.

8. Use the phillips-head screwdriver to tighten all six screws that will hold the expansion module in place in the SSR 2000's chassis.

Note: There are two additional screws that are required with the EMI extended face plate as shown below:

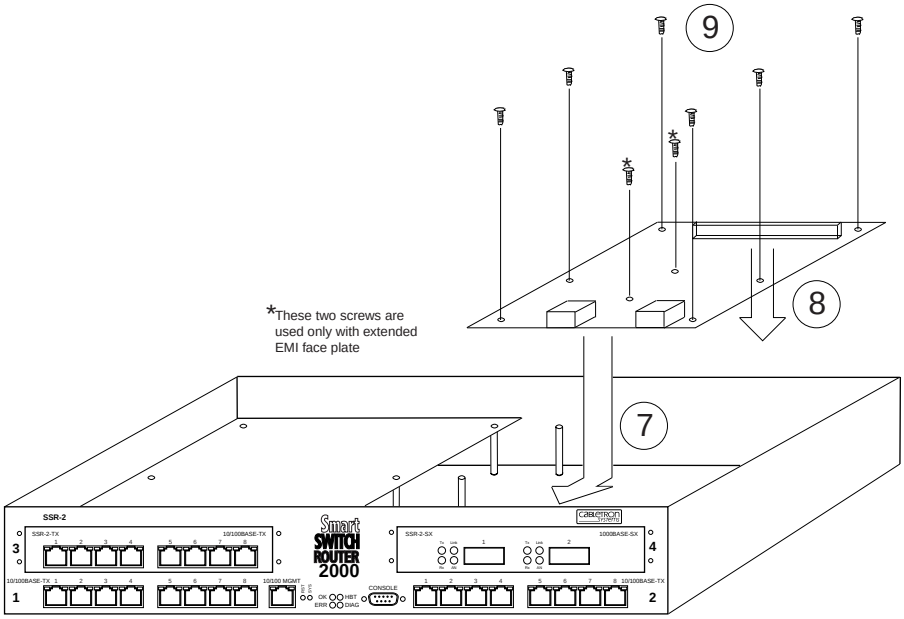

Figure 14. Installing a 1000BASE-SX or 1000BASE-LX Gigabit expansion module

9. Replace the SSR 2000's cover.

When you are ready to attach the segment cables, use the procedures in "Attaching Port Cables" on page 34.

Attaching the Console Management Cables

The SSR 2000 has two ports for attaching management consoles to the SSR 2000.

- A male DB-9 DCE port for direct serial connection from a terminal. Use this port to perform basic setup, including setting up the SSR 2000 for management through the network using CoreWatch or SNMP.
- An RJ-45 10/100Base-T DTE port for Telnet connection from a host on the network. The port is configured for Media Data Interface (MDI). You use this port to manage the SSR 2000 using CoreWatch or SNMP.

Connecting to the Serial Port

Figure 15 shows where to plug in the cable to the SSR 2000's serial port. The procedure following the figure describes how to set up and insert the cable.

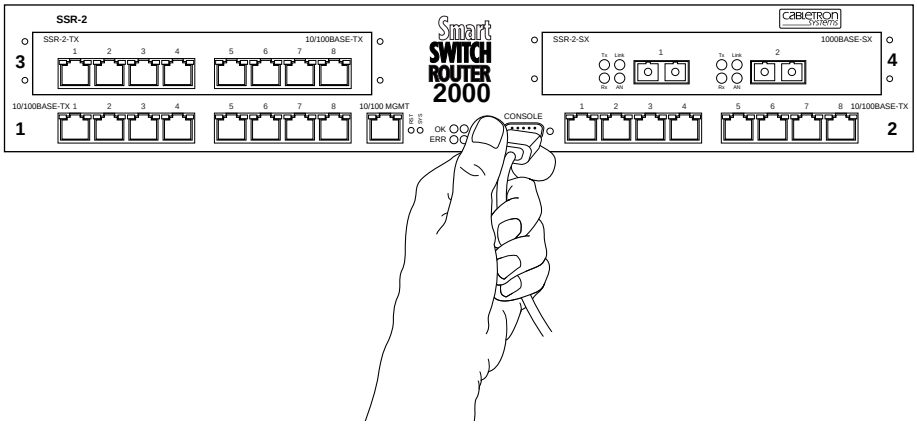

Figure 15. Plugging into the SSR 2000's serial (DB-9 DCE) port

To attach the supplied console cable to the SSR 2000's DB-9 port:

1. Locate the console cable included with the SSR 2000 chassis. The console cable is a female to female DB-9 crossover cable that has the following pin assignments:

Table 16. DB-9 connector pin assignments

Signal (SSR 2000 port)	Pin	Signal (management console port)
Unused	1	Unused
TXD (transmit data)	2	RXD (receive data)[a]
RXD (receive data)	3	TXD (transmit data)
Unused	4	Unused
GND (ground)	5	GND (ground)
Unused	6	Unused
CTS (clear to send)	7	CTS (clear to send)
RTS (request to send)	8	RTS (request to send)
Unused	9	Unused

a. The left hand column pin assignments are for the male DB-9 connector on the SSR 2000. Thus, pin 2 (TXD or "transmit data") must emerge on the management console's end of the connection as RXD ("receive data") and so on.

2. Plug one end of the console cable into the SSR 2000's DCE DB-9 port.
3. Plug the other end of the console cable into the management console's DTE port.

4. When you are ready to begin configuring the SSR 2000, use procedures in Chapter 3, "Software Installation and Setup" on page 41 to power on the switch and boot the software. You will perform initial setup by entering CLI commands on the management console.

Connecting to the 10/100Base-TX Port

Use the RJ-45 10/100Base-TX DTE port for Telnet connection from a host on the network. The port is configured for Media Data Interface (MDI). Figure 16 shows where to plug in to the SSR 2000's 10/100Base-TX port. The procedure following the figure describes how to set up and insert the cable.

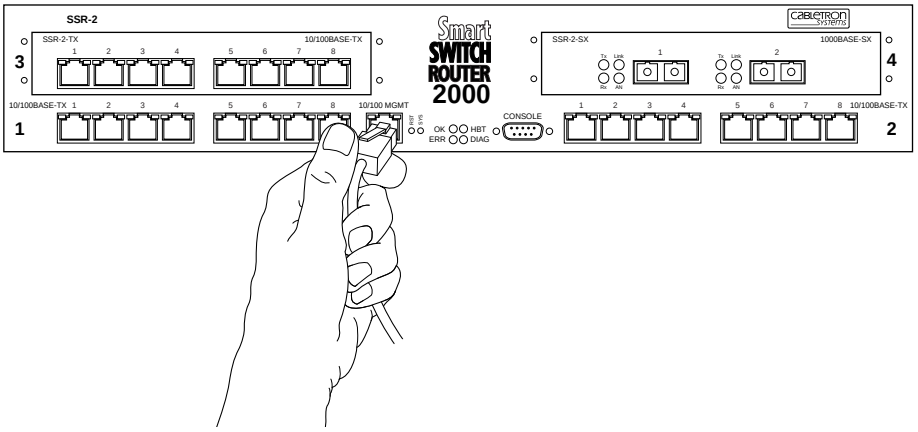

Figure 16. Plugging into the SSR 2000's 10/100Base-TX port

To attach a cable to the 10/100Base-TX port:

1. Obtain a cable with an RJ-45 connector that has the following pin assignments:

Table 17. RJ-45 connector pin assignments

Signal (SSR 2000 port)	Pin	Signal (management console port)
TXD (transmit data)	1	RXD (receive data)[a]
TXD (transmit data)	2	RXD (receive data)
RXD (receive data)	3	TXD (transmit data)
Unused	4	Unused
Unused	5	Unused

Table 17. RJ-45 connector pin assignments (Continued)

Signal (SSR 2000 port)	Pin	Signal (management console port)
RXD (receive data)	6	TXD (transmit data)
Unused	7	Unused
Unused	8	Unused

a. The right hand column pin assignments are for the RJ-45 connector on the SSR 2000. Thus, pin 1 (TXD or "transmit data") must emerge on the management console's end of the connection as RXD ("receive data") and so on.

2. Make sure the TXD signals from the SSR 2000 emerge as RXD signals on the management console and the TXD signals from the management console emerge as RXD signals on the SSR 2000.
3. After ensuring that the pin assignments on both ends of the connection are correct, plug the appropriate end of the connection into the SSR 2000's RJ-45 10/100Base-TX port.
4. Plug the other end of the connection into the management console's port.
5. When you are ready to configure the SSR 2000 using CoreWatch or SNMP, use procedures in Chapter 4, "Installing and Starting Cabletron CoreWatch" on page 61 to start an SNMP or CoreWatch management session.

Attaching Port Cables

The following sections describe how to connect the SSR 2000 to your network.

10/100BASE-TX Expansion Module

Figure 17 illustrates plugging your 10Base-T or 100Base-TX cable into a 10/100BASE-TX port. The procedure following the figure explains how to set up and insert the cable.

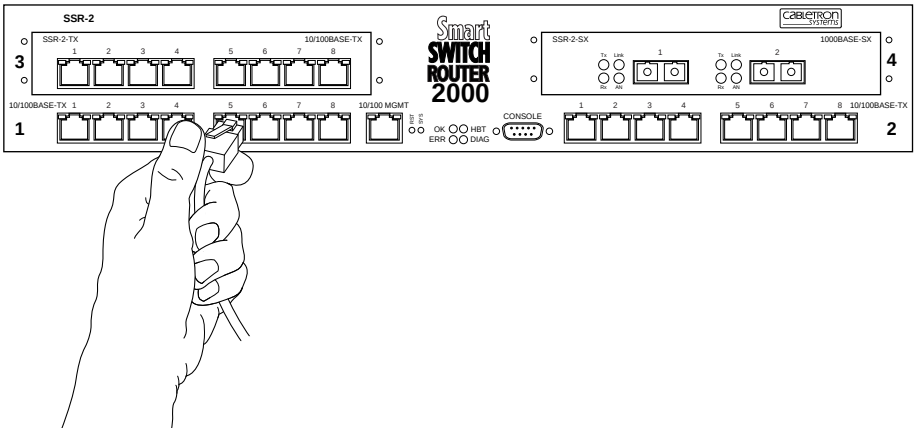

Figure 17. Plugging an ethernet cable into a 10/100BASE-TX port

To attach segment cables to your 10/100BASE-TX ports:

1. For all the 10/100-Mbps ports, obtain copper cables that have the following pin assignments. The RJ-45 connectors on the 10/100 ports are configured as Media Data Interface Crossed (MDIX). You can use Category 3 (Cat-3) or higher wire for 10-Mbps segments. For 100-Mbps segments, use Cat-5 or higher wire. The ports automatically sense to which type of segment they are connected and configure themselves to transmit and receive at the appropriate bandwidth.

Table 18. RJ-45 connector pin assignments

Signal (SSR 2000 port)	Pin	Signal (connected device port)
TXD (transmit data)	1	RXD (receive data)[a]
TXD (transmit data)	2	RXD (receive data)
RXD (receive data)	3	TXD (transmit data)
Unused	4	Unused
Unused	5	Unused
RXD (receive data)	6	TXD (transmit data)
Unused	7	Unused
Unused	8	Unused

a. The right hand column pin assignments are for the RJ-45 connector on the SSR 2000. Thus, pin 1 (TXD or "transmit data") must emerge on the management console's end of the connection as RXD ("receive data") and so on.

Figure 18 shows the pin positions in the 10/100BASE-TX connectors.

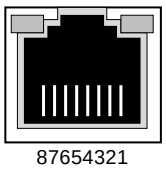

Figure 18. 10/100BASE-TX RJ-45 connector

2. Make sure the TXD signal from the port emerges as an RXD signal on the switch, router, or host on the other end of the segment cable. Likewise, make sure the TXD signal from the port emerges as an RXD signal on the other end of the segment.
3. Plug one end of the cable into the port and the other end of the cable into the device at the other end of the connection.

100BASE-FX Expansion Module

The 100BASE-FX expansion module supports multimode fiber (MMF). Figure 19 shows where to plug your fiber cable into a port on the 100BASE-FX expansion module.

The procedure following the figures describes how to set up and insert the cables.

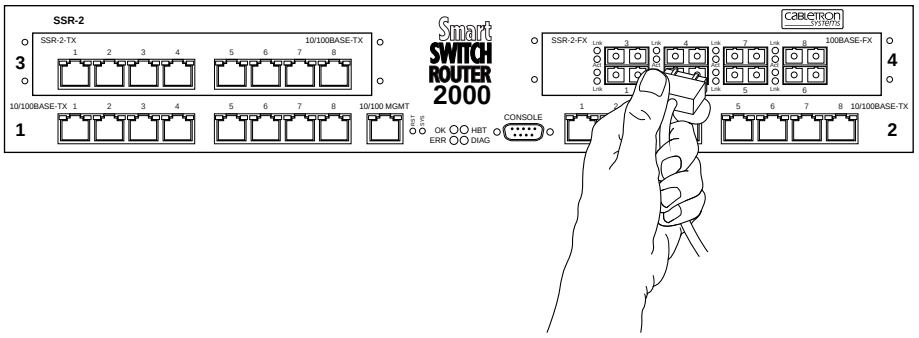

Figure 19. Plugging an ethernet cable into a 100BASE-FX expansion module port

The 100BASE-FX expansion module uses SC-style Media Interface Connectors (MICs) to attach to multimode fiber (MMF) cables.

To attach the segment cables to your 100BASE-FX expansion module, obtain an MMF cable with an SC MIC and plug the MIC into the port connector. When you plug the other end of the cable into another device, ensure that the cable connected to the transmit port on the SSR is connected to the receive port on the other device. The receive port on the SSR should be connected to the transmit port on the other device.

1000BASE-SX and 1000BASE-LX Expansion Modules

The 1000BASE-SX expansion module supports multimode fiber (MMF), and the 1000BASE-LX expansion module supports single-mode fiber (SMF) as well as MMF. Figure 20 shows how to plug your fiber cable into a port on the 1000BASE-SX or 1000BASE-LX expansion module.

The procedure following the figure describes how to set up and insert the cables.

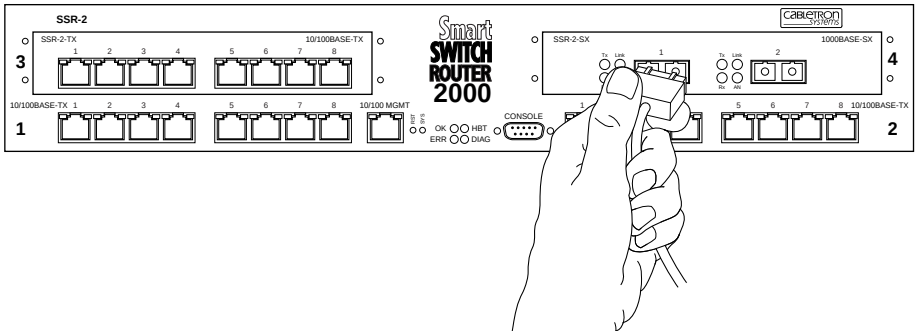

Figure 20. Plugging an ethernet cable into a 1000BASE-SX or 1000BASE-LX expansion module

The 1000BASE-SX and 1000BASE-LX expansion modules use SC-style Media Interface Connectors (MICs) to attach to SMF and/or MMF cables.

To attach the segment cables to your 1000BASE-SX or 1000BASE-LX expansion module, obtain a SMF and/or MMF cable with an SC MIC and plug the MIC into the port connector. When you plug the other end of the cable into another device, insure that the cable connected to the transmit port on the SSR 2000 is connected to the receive port on the other device. The receive port on the SSR 2000 should be connected to the transmit port on the other device.

Dual Serial and Quad Serial – C/CE Expansion Modules

The Dual Serial and Quad Serial – C/CE expansion modules each use the same 60-pin LFH-60 high density connector to link to their respective Channel Service Units/Data Service Units (CSU/DSUs). Figure 22 on page 39 shows how to plug your serial cable into a port on the Dual Serial or Quad Serial – C/CE expansion modules.

Cabletron offers the following four cables, used to connect the SSR to standard CSU/DSU modules:

Table 19. Cabletron dual serial port to CSU/DSU connector cables

Cabletron Part Number	CSU/DSU Connector Type	Standard
SSR-V35DTE-02	Two (2) V.35 34-pin connectors[a]	V.35
SSR-530DTE-02	Two (2) DB-25 25-pin connectors	EIA-530
SSR-449DTE-02	Two (2) DB-37 37-pin connectors	RS-449
SSR-X21DTE-02	Two (2) DB-15 15-pin connectors	X.21

a. The two remote ends of each type of connector cable is labeled "Port A" and "Port B". "Port A" corresponds to Port 1 on a Dual Serial WAN expansion module and Port 1 or 3 on a Quad Serial – C/CE, depending upon which WAN expansion module port you are using. Similarly, "Port B" corresponds to Port 2 on a Dual Serial WAN expansion module and Port 2 or 4 on a Quad Serial – C/CE.

Note: Because the LFH-60 high density connectors on Dual Serial and Quad Serial – C/CE expansion modules contain two serial WAN ports per interface, all four cable types defined above feed two CSU/DSU ports.

Table 20 maps the pin assignments for Cabletron's LFH-60 high density connectors for the Dual Serial and Quad Serial – C/CE expansion modules.

Table 20. LFH-60 high density connector pin assignments

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	P1_GND	16	P2_TXC_A	31	P1_GND	46	P2_TXD_A
2	P1_MODE[2]	17	P2_TXC_B	32	P1_MODE[0]	47	P2_TXD_B
3	P1_CTS_B	18	P2_DCD_A	33	P1_DCD_B	48	P2_RTS_A
4	P1_CTS_A	19	P2_DCD_B	34	P1_DCD_A	49	P2_RTS_B
5	P1_RTS_B	20	P2_MODE[1]	35	P0_RXD_B	50	P2_DSR_A
6	P1_RTS_A	21	P2_GND	36	P0_RXD_A	51	P2_DSR_B
7	P1_SCTE_B	22	P2_GND	37	Reserved	52	P2_LL_A
8	P1_SCTE_A	23	P1_TXD_A	38	P2_GND	53	P2_SHIELD
9	P1_GND	24	P1_TXD_B	39	P2_MODE[0]	54	Reserved
10	P2_GND	25	P1_TXC_A	40	P2_CTS_B	55	P1_RXC_A
11	P2_MODE[2]	26	P1_TXC_B	41	P2_CTS_A	56	P1_RXC_B

Table 20. LFH-60 high density connector pin assignments (Continued)

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
12	P2_RXD_B	27	P1_DSR_A	42	P2_DTR_B	57	P1_DTR_A
13	P2_RXD_A	28	P1_DSR_B	43	P2_DTR_A	58	P1_DTR_B
14	P2_RXC_B	29	P1_MODE[1]	44	P2_SCTE_B	59	P1_LL_A
15	P2_RXC_A	30	P1_GND	45	P2_SCTE_A	60	P1_SHIELD

Figure 21 shows the pin positions in the LFH-60 high density connector.

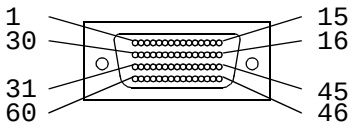

Figure 21. LFH-60 high density connector

The procedure following the figure describes how to set up and insert the cables.

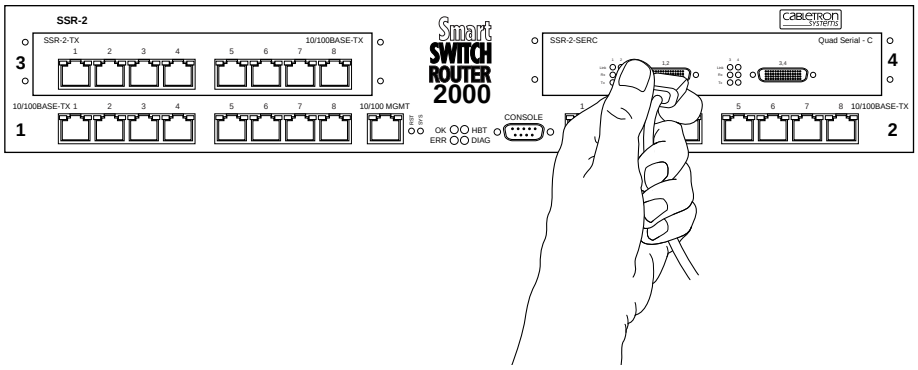

Figure 22. Plugging a LFH-60 high density connector cable into a Dual Serial or Quad Serial – C/CE expansion module

Cabletron Dual Serial and Quad Serial – C/CE expansion modules use standard copper twisted-pair cable with one of four custom remote-end connectors to attach to their respective CSU/DSU modules.

To attach the segment cables to your Dual Serial or Quad Serial – C/CE expansion module:

1. Obtain one of the for Cabletron connector cables described in "Cabletron dual serial port to CSU/DSU connector cables" on page 38 and connect the single LFH-60 high density connector to the SSR WAN interface you wish to use.
2. Plug the remote end of the connector for each port you wish to use into its respective CSU/DSU data port.

Chapter 3

Software Installation and Setup

This chapter provides the following software installation and basic setup procedures:

- Powering on and booting the software
- Starting the Command Line Interface (CLI)
- Setting basic system information
- Setting up SNMP community strings
- Setting up passwords
- Setting the DNS domain name and address
- Setting SYSLOG parameters
- Loading system image software
- Loading the boot PROM software
- Activating configuration changes and saving the configuration file

Powering On and Booting the Software

To power on the SSR 2000 and boot the software:

1. Make sure any exposed expansion slots are free of foreign objects, such as tools or your hands, and are covered with coverplates.

2. Plug the SSR 2000's power supplies into a power source. Assuming that your power source is currently active, the SSR 2000 will automatically power on and attempt to boot using the software image in the motherboard's boot flash.

   While the software is booting, the HBT (heartbeat) LED on the chassis flashes. When the software finishes booting, the HBT LED goes dark and the OK LED lights up, indicating that the SSR 2000 software is online. As the software boots, the management console attached to the SSR 2000's DB-9 DCE port displays messages related to the phases of the boot sequence. When the software is fully booted, the following message appears on the management console:

   ```
   Press RETURN to activate console...
   ```

3. Press Return (or Enter) to activate the CLI on the console.

Starting the Command Line Interface

To start the Command Line Interface (CLI), power on the system. Startup messages appear on the console (the terminal attached to one of the SSR 2000's ports).

After the software is fully booted and you press Return (or Enter) to activate the CLI, the CLI prompts you for a password. You can define separate passwords for login access and Enable mode. The factory default password for both of these is set to blank. (Simply press Return.)

Access Modes

The CLI has the following access modes:

- **User** – Allows you to display basic information and use basic utilities such as ping but does not allow you to display SNMP, filter and access control list information, or make other configuration changes. You can tell you are in User mode when the command prompt ends with a "`>`" character.
- **Enable** – Allows you to display SNMP, filter, and access control information as well as all the information you can display in User mode. To enter Enable mode, enter the **enable** command, then supply the password when prompted. When you are in Enable mode, the command prompt ends with a "#" character.
- **Configure** – Allows you to make configuration changes. To enter Configure mode, first enter Enable mode (**enable** command), then enter the **configure** command from the Enable command prompt. When you are in Configure mode, the command prompt ends with "`(config)#`."
- **Boot** – This mode appears when the SSR 2000 or the system image is not found during bootup. You should enter the **reboot** command to reset the router. If the SSR 2000 still fails to bootup, please call Cabletron Technical Support.

Note: The command prompt will show the name of the SSR 2000 in front of the mode character(s). The default name is "ssr". The procedure in "Setting Basic System Information" on page 44 describes how to change the system name.

When you are in Configure or Enable mode, use the **exit** command or press Ctrl+Z to exit to the previous access mode.

Note: When you exit Configure mode, the CLI will ask you whether you want to activate the configuration commands you have issued. If you enter **yes** or **y**, the configuration commands you issued are placed into effect and the SSR 2000's configuration is changed accordingly. However, the changes are not written to the Startup configuration file in the SSR 2000's boot flash and therefore are not reinstated after a reboot. See "Activating Configuration Changes and Saving the Configuration File" on page 57 for information about saving configuration changes.

Basic Line Editing Commands

The CLI supports EMACs-like line editing commands. The following table lists some commonly used commands. For a complete set of commands, see the *SmartSwitch Router User Reference Manual*.

Table 21. Some commonly used CLI commands

Key sequence	Command
Ctrl+A	Move cursor to beginning of line
Ctrl+B	Move cursor back one character
Ctrl+D	Delete character
Ctrl+E	Move cursor to end of line
Ctrl+F	Move cursor forward one character
Ctrl+N	Scroll to next command in command history (use the **cli show history** command to display the history)
Ctrl+P	Scroll to previous command in command history
Ctrl+U	Erase entire line
Ctrl+X	Erase from cursor to end of line
Ctrl+Z	Exit current access mode to previous access mode

Setting Basic System Information

Use the procedure in this section to set the following system information:

- System time and date
- System name
- System location
- Contact name (the person to contact regarding this SSR 2000)

Note: Some of the commands in this procedure accept a string value. String values can be up a maximum of 255 characters in length, including blank spaces. Surround strings that contain blanks with quotation marks (example: "**string with internal blanks**").

To set the system information:

1. Ensure that you are in Enable mode by entering the **enable** command in the CLI.
2. Use the following commands to set the system time and date and then verify the setting

```
set date year <number> month <month-name> day <day> hour <hour>
  minute <minute> second <second>

system show date
```

Here is an example:

```
ssr# system set date year 1998 month january day 19 hour 11 minute 54
  second 0
Time changed to: Mon Jan 19 11:54:00 1998
ssr# system show date
Current time: Mon Jan 19 11:54:04 1998
```

3. Ensure that you are in Configure mode by entering the **configure** command in the CLI. The commands in Step 4 through Step 10 can be entered only from Configure mode.
4. Use the following commands to set the system name, location, and contact information:

```
system set name "<string>"
system set location "<string>"
system set contact "<string>"
```

Here is an example:

```
ssr(config)# system set name "ctron-ssr-1"
ssr(config)# system set location "Sunnyvale, CA"
ssr(config)# system set contact "John Smith"
```

5. Use the **interface add ip** command to set the IP address and netmask for the en0 Ethernet interface, as shown in the following example:

```
ssr(config)# interface add ip en0 address-netmask 10.50.11.22/16
```

Note: The en0 interface is automatically created by the system and is reserved for the SSR 2000's management port.

6. To show the changes accumulated in the scratchpad, enter the **show** command while in Configure mode, as shown in the following example:

```
ssr(config)# show
-EDIT-I-NOCONFIG, the running system has no configuration

******** Non-committed changes in Scratchpad ********
 1*: system set name "ctron-ssr-1"
 2*: system set location "Sunnyvale, CA"
 3*: system set contact "John Smith"
```

When you enter commands in Configure mode, the SSR 2000 does not immediately execute the commands. Instead, the SSR 2000 checks the syntax of the commands and if they are syntactically correct, stores them in a temporary scratchpad in memory. The scratchpad is automatically cleared when you log out of the SSR, so you must activate the changes and then save them to the Startup configuration file to retain the changes, as explained below.

The scratchpad allows you to make configuration changes without worrying about the order in which you issue the commands. Also, if you change your mind about configuration changes you are making, you do not need to incrementally back out of the changes. You can simply choose not to activate them. As you become more familiar with the SSR 2000 and the CLI and begin to make detailed configuration changes, you may find the scratchpad quite useful. For simple changes such as the ones in this procedure, you might instead want to activate the changes as you go, then use CLI commands to view the results of the changes.

7. Enter the **save active** command to activate commands, such as the **"system set..."** commands you used in Step 4, in the scratchpad.

If you exit Configure mode (by entering the **exit** command or pressing Ctrl+Z) before activating any of your changes in the scratchpad, the CLI will ask you whether you want to make the changes in the scratchpad active by displaying the following message:

```
Do you want to make the changes Active [yes]?
```

8. Enter **yes** or **y** to activate the changes.
9. To display the active configuration, enter the **system show active-config** command, as shown in the following example:

```
ctron-ssr-1# system show active-config
Running system configuration:
     !
     ! Last modified from Console on Mon Jan 19 11:55:35 1998
     !
 1 : system set name "ctron-ssr-1"
 2 : system set location "Sunnyvale, CA"
 3 : system set contact "John Smith"
```

   Changes in the active configuration take effect on the running system but will not be restored following a reboot.

10. To ensure that changes are restored following a reboot, you must save the active database to the Startup configuration file by taking the following steps:

    a. Enter the **exit** command to return to Enable mode.

    b. Enter the **copy active to startup** command.

    The CLI displays the following message:

```
Are you sure you want to overwrite the Startup configuration [no]?
```

11. Enter **yes** or **y** to add the active configuration to the Startup configuration file.

Note: You also can save active changes to the Startup configuration file from within Configure mode by entering the **save startup** command.

See "Activating Configuration Changes and Saving the Configuration File" on page 57 for more information about the scratchpad, active database, and Startup configuration.

Setting Up SNMP Community Strings

To use SNMP to manage the SSR 2000, you need to set up an SNMP community on the SSR 2000. Otherwise, the SSR 2000's SNMP agent runs in local trap process mode until you disable it using the **snmp stop** command. In addition, if you want to be able to access the SNMP traps issued by the SSR 2000's SNMP agent, you need to specify the IP address of the target for the SNMP traps.

To add the SNMP community string and specify the target for traps, take the following steps:

1. Ensure that you are in Enable mode by entering the **enable** command in the CLI.

2. Ensure that you are in Configure mode by entering the **configure** command in the CLI.
3. Use the following commands to add an SNMP community string and set a target for the traps.

```
snmp set community <community-name> privilege read
snmp set target <IP-addr> community <community-name>
```

Note: The target IP address must be locally attached to the SSR 2000. You cannot specify a target that is connected to the SSR 2000 by another router. If the IP address is more than one hop away from the SSR 2000, configure the SSR 2000 with a static route to the target so that a cold start trap is sent.

4. Enter the **show** command to examine the changes accumulated in the scratchpad.
5. Enter the **save active** command to activate the commands you entered in the previous steps.
6. To verify the changes, enter the **snmp show all** command.

Here is an example of the commands and output for configuring SNMP and saving the changes.

```
ctron-ssr-1# config
ctron-ssr-1(config)# snmp set community public privilege read-only
ctron-ssr-1(config)# snmp set target 10.50.11.12 community public
ctron-ssr-1(config)# save active
ctron-ssr-1(config)# exit
ctron-ssr-1# snmp show all
SNMP Agent status:
        enabled mode
SNMP Last 2 Clients:
10.50.100.53   Mon Mar 30 10:31:27 1998
10.50.100.43   Mon Mar 30 10:31:22 1998


SNMP Chassis Identity:
not configured.

Trap Table:
Index Trap Target Addr    Community String    Status
----- none configured -----

Traps by Type:
Authentication trap: enabled
Link Up/Down   trap: enabled

Community Table:
Index Community String         Privilege
1.    public                   READ-WRITE


SNMP statistics:
        247019 packets received
                246346 get requests
                745 get-next requests
                184 get-bulk requests
                50 set requests
                0 bad SNMP versions
                1 bad community names
                0 ASN.1 parse errors
                0 PDUs too big
        247018 packets sent
                246346 get responses
                745 get-next responses
                184 get-bulk responses
                50 set responses
```

7. After verifying the SNMP configuration, save the changes to the Startup configuration file by entering the **copy active to startup** command.

Remember to enter **yes** or **y** when the CLI asks you whether you want to overwrite the Startup configuration.

Setting Up Passwords

You can password protect CLI access to the SSR 2000 by setting up passwords for login access and Enable access. Users who have a login password but not an Enable password can use only the commands available in User mode. Users with an Enable password can use the commands available in Enable and Configure modes as well as the commands in User mode.

In addition, you can set up the SSR 2000 for TACACS and/or RADIUS authentication on login and password by a TACACS or RADIUS server. You can find a section describing configuration of the SSR 2000 for TACACS and RADIUS in the *SmartSwitch Router User Reference Manual*.

Note: If a password is configured for Enable mode, the SSR 2000 prompts you for the password when you enter the **enable** command. Otherwise, the SSR 2000 displays a message advising you to configure an Enable password before entering Enable mode. From Enable mode, you can access Configure mode to make configuration changes.

The default password for each access level is blank. (Simply press Enter or Return without entering a password.) If you want to add password protection to the CLI, use the following procedure.

1. Ensure that you are in Enable mode by entering the **enable** command in the CLI.
2. Ensure that you are in Configure mode by entering the **configure** command in the CLI.
3. Use the following command for each password you want to set:

```
system set password login|enable <string>|none
```

4. Enter the **show** command to examine the changes accumulated in the scratchpad.
5. Enter the **save active** command to activate the commands.
6. Enter the **system show active-config** command to verify the active changes.

Here is an example of the commands in the previous steps:

```
ctron-ssr-1(config)# system set password login demo
ctron-ssr-1(config)# system set password enable demo
ctron-ssr-1(config)# save active
ctron-ssr-1# exit
ctron-ssr-1# system show active-config

Running system configuration:
!
! Last modified from Console on Mon Jan 19 12:12:19 1998
!
 1 : system set name "ctron-ssr-1"
 2 : system set location "Sunnyvale, CA"
 3 : system set contact "John Smith"
 4 : system set hashed-password login jNIssH c976b667e681d03ccd5fc527f219351a
 5 : system set hashed-password enable zcGzbO 5d1f73d2d478ceaa062a0b5e0168f46a
 6 : snmp set community public privilege read
 7 : snmp set target 10.50.11.12 community public
```

Caution: Test all the new passwords before saving the active configuration to the Startup configuration file. As shown in the example above, the passwords are shown in the active configuration in an encrypted format and will also appear this way in the Startup configuration.

To keep your passwords secure, the SSR 2000 does not have a command for displaying passwords. If you forget a password, you can remove the password by entering the following command while in Configure mode. (See the *SmartSwitch Router Command Line Interface Reference Manual* for more information.)

```
system set password login|enable none
```

Setting the DNS Domain Name and Address

If you want the SSR 2000 to be able to access a DNS server, use the following procedure to specify the domain name and IP address for the DNS server.

1. Ensure that you are in Enable mode by entering the **enable** command in the CLI.

2. Use the following command to verify that the SSR 2000 can reach the DNS server by pinging the server, as shown in the following example:

```
ctron-ssr-1# ping 10.50.11.12
PING 10.50.11.12 (10.50.11.12): 56 data bytes
64 bytes from 10.50.11.12: icmp_seq=0 ttl=255 time=0 ms

--- 10.50.11.12 ping statistics ---


1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 0/0/0 ms
```

3. Ensure that you are in Configure mode by entering the **configure** command in the CLI.

4. If you have not done so already, use the **interface add ip** command to set the IP address and netmask for the en0 Ethernet interface, as shown in the following example:

```
ssr(config)# interface add ip en0 address-netmask 10.50.11.22/16
```

Note: The en0 interface is automatically created by the system and is reserved for the SSR 2000's management port.

5. Use the following command to specify the domain name for which the DNS server(s) have authority:

```
system set dns domain <domain-name>
```

where <*domain-name*> is your specified domain name (example: **cabletron.com**).

6. Use the following command to "add" one or more DNS servers to the SSR 2000:

```
system set dns server ["]<IP-address> [<IP-address>] [<IP-address>]["]
```

where <*IP-address*> is the IP address of the DNS server. You can specify up to three DNS servers.

Note: If you specify more than one IP address, you must separate the addresses with a space and surround them with a single pair of quotes. You do not need to surround a single IP address with quotes.

7. Enter the **save active** command to activate the commands and enter **yes** or **y** to activate the changes.

Here is an example of the commands above featuring the addition of two DNS server IP addresses:

```
ctron-ssr-1# config
ctron-ssr-1(config)# system set dns domain "mktg.cabletron.com"
ctron-ssr-1(config)# system set dns server "10.50.11.12 10.50.12.11"
ctron-ssr-1(config)# save active
```

8. Enter the **system show dns** command to verify the new DNS settings, as shown in the following example:

```
ctron-ssr-1# system show dns
DNS domain: cabletron.com, DNS server(s): 10.50.11.12 10.50.12.11
```

9. Use the **ping** command to verify that the SSR 2000 can resolve the DNS server name into its IP address, as shown in the following example:

```
ctron-ssr-1# ping ssr1
PING ssr1.mktg.cabletron.com (10.50.11.12): 56 data bytes
64 bytes from 10.50.11.12: icmp_seq=0 ttl=255 time=0 ms

--- ssr1.mktg.cabletron.com ping statistics ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 0/0/0 ms
```

Setting SYSLOG Parameters

The CLI can use SYSLOG messages to communicate the following types of messages to a SYSLOG server:

- **Fatal** – Provide information about events that caused the SSR 2000 to crash and reset.
- **Error** – Provide information about errors.
- **Warning** – Provide warnings against invalid configuration information and other conditions that are not necessarily errors. This is the default.
- **Informational** – Provide informational messages such as status messages. The SYSLOG messages that the SSR 2000 displays while booting the software and reading the startup configuration file are examples of Informational messages.

The SSR 2000 writes the SYSLOG messages to a SYSLOG daemon on UDP port 514. You can set the CLI to send all or only some of the message types. By default, the CLI sends warning, error, and fatal messages but not informational messages to the specified SYSLOG server.

Use the following procedure to specify the SYSLOG server and the types of messages you want the CLI to log on the server.

1. Ensure that you are in Enable mode by entering the **enable** command in the CLI.
2. Use the following command to verify that the SSR 2000 can reach the SYSLOG server by pinging the server:

```
ping <IP-addr>
```

3. Ensure that you are in Configure mode by entering the **configure** command in the CLI.
4. If you have not already done so, use the **interface add ip** command to set the IP address and netmask for the en0 Ethernet interface, as shown in the following example:

```
ssr(config)# interface add ip en0 address-netmask 10.50.11.22/16
```

Note: The en0 interface is automatically created by the system and is reserved for the SSR 2000's management port.

5. Use the following commands to "add" the SYSLOG server to the SSR 2000, set the message level, and set the SYSLOG facility:

```
system set syslog server <hostname-or-IP-addr>
system set syslog level fatal|error|warning|info
system set syslog facility <facility-type>
```

Here is an example:

```
ctron-ssr-1# config
ctron-ssr-1(config)# system set syslog server 10.50.11.12
ctron-ssr-1(config)# system set syslog level info
ctron-ssr-1(config)# system set syslog facility local0
```

6. Enter the **show** command to show the commands you just entered. Because you have not activated these configuration changes yet, they are listed in the scratchpad section of the output. Here is an example:

```
ssr-1(config)# show
Running system configuration:
!
! Last modified from Console on Mon Jan 19 12:37:21 1998
!
 1 : interface add ip en0 address-netmask 10.50.11.22/16
!
 2 : system set dns server 10.50.11.12
 3 : system set dns domain mktg.cabletron.com
 4 : system set name "ctron-ssr-1"
 5 : system set location "Sunnyvale, CA
 6 : system set contact "John Smith"
 7 : system set hashed-password login jNIssH c976b667e681d03ccd5fc527f219351a
 8 : system set hashed-password enable zcGzbO 5d1f73d2d478ceaa062a0b5e0168f46a
!
 9 : snmp set community public privilege read
10 : snmp set target 10.50.11.12 community public

******** Non-committed changes in Scratchpad ********
 1*: system set syslog server 10.50.11.12
 2*: system set syslog level info
 3*: system set syslog facility local0
```

Note: The other configuration changes made during this CLI session are also listed. Active changes are listed in the "Running system configuration section" and unactivated changes are listed in the "Non-committed changes in Scratchpad" section.

7. To activate the SYSLOG commands, enter the **save active** command.

Loading System Image Software

The SSR 2000 operates using the system image software installed in its internal flash chip. To upgrade the system software and operate using the upgraded image, go through the following procedure:

1. Display the current boot settings by entering the **system show version** command, as shown in the following example:

```
ssr8-2# system show version
Software Information
  Software Version   : 1.2.0.0
  Copyright          : Copyright (c) 1998 Cabletron Systems, Inc.
  Image Information  : Version 1.2.0.0, built on Thu Jul 30 01:16:15 1998
  Image Boot Location: tftp://10.50.89.88/ssr1200
  Boot Prom Version  : prom-1.1.0.0
```

Note: In this example, the location "pc-flash" indicates that the SSR 2000 is set to use the factory-installed system software in the motherboard's internal flash chip.

2. Copy the software upgrade you want to install onto a TFTP server that the SSR 2000 can access. (Use the **ping** command to verify that the SSR can reach the TFTP server.)

3. Use the following command to copy the software upgrade onto the internal flash chip in the SSR 2000:

```
system image add <IPaddr-of-TFTP-host> <image-file-name>
```

Here is an example:

```
ctron-ssr-1# system image add 10.50.11.12 ssr2000
Downloading image 'ssr1200' from host '10.50.11.12'
 to local image ssr1200 (takes about 3 minutes)
kernel: 100%
Image checksum validated.
Image added.
```

4. Enter the **system image list** command to verify that the new image exists on the internal flash chip, as shown in the following example:

```
ctron-ssr-1# system image list
Images currently available:
ssr1200
```

5. Use the following command to select the image file the SSR 2000 will use the next time you reboot the switch.

```
system image choose <file-name>
```

Here is an example:

```
ctron-ssr-1# system image choose ssr1200
Making image ssr1200 the active image for next reboot
```

6. Enter the **system image list** command to verify the change.

Note: You do not need to activate this change.

Loading Boot PROM Software

The SSR boots using the boot PROM software installed in the SSR 2000's internal memory. To upgrade the boot PROM software and boot using the upgraded image, use the following procedure.

1. Display the current boot settings by entering the **system show version** command, as shown in the following example:

```
ctron-ssr-1# system show version
Software Information
  Software Version   : 1.2.0.0
  Copyright          : Copyright (c) 1998 Cabletron Systems, Inc.
  Image Information  : Version 1.2.0.0, built on Thu Jul 30 01:16:15 1998
  Image Boot Location: tftp://10.50.89.88/ssr1200
  Boot Prom Version  : prom-1.1.0.0
```

   Note: In this example, the location "pc-flash" indicates that the SSR 2000 is set to use the factory-installed software in the motherboard's internal flash chip.

2. Copy the software upgrade you want to install onto a TFTP server that the SSR 2000 can access. (Use the **ping** command to verify that the SSR can reach the TFTP server.)

3. Use the following command to copy the boot PROM upgrade into the SSR 2000's internal memory:

```
system promimage upgrade <IPaddr-of-TFTP-host> <image-file-name>
```

   Here is an example:

```
ctron-ssr-1# system promimage upgrade 10.50.11.12 prom2
Downloading image 'prom-1.1.0.0' from host '10.50.11.12'
 to local image prom-1.1.0.0 (takes about 3 minutes)
kernel: 100%
Image checksum validated.
Image added.
```

4. Enter the **system show version** command to verify that the new boot PROM software is on the internal memory of the SSR 2000.

Upgrading the VFS

A new VFS files system called VFS2 is now available. The new VFS2 dramatically decreases the time required for deleting and adding system images.

Note: Upgrading the file system to VFS2 will **not** erase your configuration image.

The new VFS2 file system is only compatible with:

- boot PROM version v.1.1.0.8
- system image version 3.1 or later

To upgrade the VFS file system to VFS2, perform the following steps:

1. Upgrade the firmware to release version 3.1 or later.
2. Upgrade the bootprom to version v.1.1.0.8. See "Loading Boot PROM Software" on page 55 for instructions on upgrading the software.
3. Reboot.
4. Press **esc** during bootup to enter the bootprom mode.
5. Type **pcmakeversion2** to convert your old VFS1 flash card into a new VFS2 file system.
6. Reboot.

Activating Configuration Changes and Saving the Configuration File

The SSR 2000 uses three special configuration files:

- **Active** – The commands from the Startup configuration file and any configuration commands that you have made active from the scratchpad (see below).

Caution: The active configuration remains in effect only during the current power cycle. If you power down or reboot the SSR 2000 without saving the active configuration changes to the Startup configuration file, the changes are lost.

- **Startup** – The configuration file that the SSR 2000 uses to configure itself when the system is powered on.
- **Scratchpad** – The configuration commands you have entered during a management session. These commands do not become active until you explicitly activate them. Because some commands depend on other commands for successful execution, the SSR 2000 scratchpad simplifies system configuration by allowing you to enter configuration commands in any order, even when dependencies exist. When you activate the commands in the scratchpad, the SSR 2000 sorts out the dependencies and executes the command in the proper sequence.

Activating the Configuration Commands in the Scratchpad

The configuration commands you have entered using procedures in this chapter are in the Scratchpad but have not yet been activated. Use the following procedure to activate the configuration commands in the scratchpad:

1. Ensure that you are in Enable mode by entering the **enable** command in the CLI.
2. Ensure that you are in Configure mode by entering the **configure** command in the CLI.

3. Enter the **save active** command.

   If you exit Configure mode (by entering the **exit** command or pressing Ctrl+Z) before activating any of your changes in the scratchpad, the CLI will ask you whether you want to make the changes in the scratchpad active by displaying the following message:

```
Do you want to make the changes Active [yes]?
```

4. Enter **yes** or **y** to activate the changes.

Saving the Active Configuration to the Startup Configuration File

After you save the configuration commands in the scratchpad, the SSR 2000 executes the commands and makes the corresponding configuration changes. However, if you power down or reboot the SSR 2000, the new changes are lost. Use the following procedure to save the changes into the Startup configuration file so that the SSR 2000 reinstates the changes when you reboot the software.

1. Ensure that you are in Enable mode by entering the **enable** command in the CLI.
2. Enter the **copy active to startup** command to copy the configuration changes in the Active configuration to the Startup configuration.

   The CLI displays the following message:

```
Are you sure you want to overwrite the Startup configuration [no]?
```

3. Enter **yes** or **y** to save the changes.

Note: You also can save active changes to the Startup configuration file from within Configure mode by entering the **save startup** command.

The new configuration changes are added to the Startup configuration file stored in the SSR 2000's boot flash.

Viewing the Current Configuration

If you want to view the current configuration:

1. Ensure that you are in Enable mode by entering the **enable** command in the CLI.
2. Enter the following command to display the status of each command line:

```
system show active-config
```

The CLI displays the active configuration file with the following possible annotations:

– Commands without errors are displayed without any annotation.

– Commands with errors are annotated with an “E”.

– If a particular command has been applied such that it can be expanded on additional interfaces/modules, then it is annotated with a “P”. For example, if you enabled stp on all ports in the current system, however, the SSR contains only 1 module, then that particular command could be expanded at a later date when more modules have been added to the SSR.

  A command like **stp enable et.*.*** would be displayed as follows:

```
P: stp enable et.*.*
```

  indicating that it is only partially applied. If you add more modules to the SSR at a later date and then update the configuration file to encompass all of the available modules in the SSR, then the “P:” portion of the above command line would disappear when displaying this configuration file.

  If a potentially partial command, which was originally configured to encompass all of the available modules on the SSR, becomes only partially activated (after a hotswap or some such chassis reconfiguration), then the status of that command line will automatically change to indicate a partial completion status, complete with “P:”.

Note: Commands with no annotation or annotated with a “P:” are not in error.

Chapter 4

Installing and Starting Cabletron CoreWatch

This chapter:

- Provides an overview of Cabletron CoreWatch, a Java-based graphical user interface (GUI) you can use to monitor and configure your SmartSwitch Router
- Discusses the browser and hardware requirements of CoreWatch
- Explains installing the CoreWatch software
- Describes starting CoreWatch

What Is Cabletron CoreWatch?

Cabletron CoreWatch is a comprehensive, easy-to-use, network management and device configuration application for SSRs. Based on Java, CoreWatch provides configuration, monitoring, and reporting capabilities with the assistance of wizards and drag-and-drop operations. Cabletron CoreWatch simplifies tasks such as configuring routers, VLANs, security filters, and setting up application-level QoS policies.

Cabletron CoreWatch management features include:

- Java-based GUI
- Simplified routing configuration
- Intuitive QoS management
- Configuration of security filters and ACLs
- Drag-and-drop VLAN setup and administration
- Extensive performance monitoring

- Comprehensive configuration using wizards and drag-and-drop operation
- Detailed HTML-based reporting

System Requirements

Cabletron CoreWatch can run in the Solaris, Windows NT, and Windows 95/98 environments. As shown in the following table, CoreWatch's system requirements depend on your operating system. The table identifies which browser to use with each operating system and gives the minimum hardware requirements for each environment.

	Solaris 2.5.1 or 2.6	**Windows NT 4.0x**	**Windows 95/98**
Browser	Netscape Navigator 3.0 or above	Netscape Navigator 3.0 or above, or Microsoft Internet Explorer 4.0 or above	Netscape Navigator 3.0 or above, or Microsoft Internet Explorer 4.0 or above
CPU	Sparc20 or above	Pentium 133 or above	Pentium 133 or above
RAM	128 MB	64 MB	64 MB
Disk	40 MB Free	20 MB Free	20 MB Free

Installing Cabletron CoreWatch

You can install CoreWatch on a Solaris 2.5.1 or Solaris 2.6 running CDE, Windows NT, Windows 95, or Windows 98 system. The method you use to install CoreWatch depends on your environment. Separate discussions on installing CoreWatch in the Solaris or Windows environments follow.

Note: Cabletron CoreWatch requires CDE to run properly on Solaris 2.5.1 and 2.6 operating systems. Ensure that your Solaris system includes CDE before attempting to run CoreWatch.

Installing on a Solaris System

To install CoreWatch from a CD onto a Solaris 2.5.1 or 2.6 system:

1. If you plan to integrate CoreWatch with HP OpenView, be sure the HP OpenView daemon is running. For details, see your HP OpenView documentation.
2. Insert the CoreWatch CD into your CD-ROM drive.

3. Log in as super user by entering the following command:

```
% su - root
```

4. Ensure that you are in the appropriate subdirectory to access the CD-ROM by entering the following command:

```
# cd /cdrom/cdrom0
```

5. Run the CoreWatch installation script by entering the following command:

```
# install.sh
```

   Cabletron CoreWatch is installed on your system in the **/opt/CScw** directory.

6. Add **/opt/CScw/bin** to your environment path.

   For details on adding items to a path, see your Solaris documentation.

Installing on a Windows NT or Windows 95/98 System

Note: You must have Admin privileges to install CoreWatch on a Windows NT system.

To install CoreWatch on a Windows NT or Windows 95/98 system:

1. If you plan to integrate CoreWatch with HP OpenView on a Windows NT system, be sure the HP OpenView daemon is running. For details, see your HP OpenView documentation.
2. Insert the CoreWatch CD into your CD-ROM drive and double-click on the **install.bat** icon. The CoreWatch installation wizard appears.
3. Click **Next**.
4. After reviewing the license agreement, click **Yes** to accept it.
5. Enter your name and your company's name in the appropriate text boxes. Then click **Next**.
6. Specify the folder in which you want to install the software and click **Next**.

   You can keep the default folder or click **Browse** and then browse to another folder.

7. Set up the type of installation by doing one of the following:
   - Choose **Typical** to install the most common options.
   - Choose **Compact** to install the minimum files needed to run CoreWatch.

– Choose **Custom** and click **Next** if you are an advanced user and want to specify which files to install. Options with a check mark will be installed. Click to the left of an item to select or clear its check box.

8. Click **Next**.
9. Specify a name for the CoreWatch program group, which is Cabletron CoreWatch by default. Then click **Next**.
10. When the Explorer window reappears, close it.
11. Click **Finish** to complete the installation.

Starting Cabletron CoreWatch

The method you use to start CoreWatch depends on whether you installed it in the Solaris or Windows environment. If you choose to integrate CoreWatch with HP OpenView or Cabletron SPECTRUM during installation, you can start CoreWatch from within either environment in both Solaris and Windows NT/Windows 95/98.

Separate discussions on starting CoreWatch in the Solaris and Windows environments and from within SPECTRUM or HP OpenView follow.

Starting CoreWatch in Solaris

To start CoreWatch in the Solaris 2.5.1 or 2.6 environment, enter the following command at the Solaris prompt:

```
% CoreWatch -a <IPaddr> -r <community-string>
```

where <*ipaddr*> is the IP address of the SSR and <*community-string*> is the SSR's community string. If you do not know this information, see your network administrator.

Notes:

- If the **CoreWatch** command is not found, you can locate it in **/opt/CScw/bin**.
- If you do not supply the <*ipaddr*> and the <*community-string*> parameters, the CoreWatch **Login Dialog** box appears and prompts you for them.

Starting CoreWatch in Windows NT or Windows 95/98

To start CoreWatch in the Windows NT or Windows 95/98 environment:

1. Select the **Start** menu, choose **Programs**, choose **CoreWatch**, and then choose **CoreWatch**. The **Login Dialog** box appears.

Note: If you installed the program in a startup folder other than **Programs → CoreWatch**, select that folder from the **Start** menu and then select **CoreWatch**.

2. Type the name or IP address and community string for the SSR. If you do not know this information, see your network administrator.
3. Click **OK**.

Alternately, you can start CoreWatch by selecting the **Start** menu, choosing **Run...**, and entering the following command in the **Run** dialog box:

```
C:\Program Files\Cabletron\BIN\CoreWatch -a <IPaddr> -r <community-string>
```

where <*ipaddr*> is the IP address of the SSR and <*community-string*> is the SSR's community string. If you do not know this information, see your network administrator.

Starting CoreWatch from within SPECTRUM Enterprise Manager

Cabletron SPECTRUM Enterprise Manager is an object-oriented network management platform. SPECTRUM, which is available on Solaris and Windows NT, provides a suite of bundled applications as well as additional optional applications. The SSR is modeled in SPECTRUM using the SmartSwRtr model type. The SSR can be Auto-Discovered or manually created in a SPECTRUM Topology View and then copied to an Organization and/or Location View.

To start CoreWatch from within SPECTRUM:

1. Start SPECTRUM.
2. If you know the topology location for your model, proceed to that location. Otherwise, open the Find View by choosing the **View** menu, selecting **New View**, and then selecting **Find**. Select **Model-Type Name** and enter the **SmartSwRtr** command to display all the SmartSwRtr models or select **Network Address** to display a particular model.
3. Bring up the menu for the SmartSwRtr model and select **CoreWatch**.

This starts CoreWatch using the SmartSwRtr model's network address and community name.

Appendix A

Troubleshooting

If you experience difficulty with the basic hardware or software setup procedures in this guide, check the following table to see whether the difficulty you are experiencing is described. If you find a description of the difficulty you are experiencing, try the resolution(s) recommended for the difficulty.

If the resolution does not remove the difficulty or the difficulty is not listed in this appendix, see Appendix B, "Technical Support" on page 69 for information about contacting Cabletron Systems or your reseller for technical support.

If you experience this difficulty	Try this remedy
The SSR 2000 exhibits no activity (no LEDs are on, the fan module is not operating, and so on).	Make sure the power supply is installed and plugged into a power source and the power source is active. Also check to see whether the switch on the power supply is in the on position.
The power supply is installed but is not operating.	Check the power cable and the circuit to which the power supply is connected.
The fan is not active.	Check the power cable and the circuit to which the power supply is connected.
No expansion modules are active.	Check the power cable and the circuit to which the power supply is connected.
A specific expansion module is inactive.	Make sure the expansion module has been properly installed in its expansion slot. See "Installing an Expansion Module" on page 27 for more detailed information.
An older software version continues to boot instead of the newer version on a TFTP server.	Use the procedure in "Loading System Image Software" on page 54 to configure the SSR 2000 to boot using newer software.

If you experience this difficulty	Try this remedy
You are unable to access the configuration commands in the CLI.	From the CLI, type **enable** to access Enable mode, then type **configure** to access Configure mode.
Configuration changes do not seem to be taking effect.	Use the procedure in "Activating the Configuration Commands in the Scratchpad" on page 57 to activate the changes.
Configuration changes are not reinstated after a reboot.	Use the procedure in "Saving the Active Configuration to the Startup Configuration File" on page 58 to save the configuration changes to the Startup configuration file.
CoreWatch cannot access the SSR 2000.	Make sure you have properly installed CoreWatch and check the network connection between the CoreWatch management station and the SSR 2000.
The SSR 2000 is not resolving DNS names.	Use the procedure in "Setting the DNS Domain Name and Address" on page 50 to set up DNS. If you have already performed this procedure, make sure you can use NS lookup on the DNS server to get the default domain.
An SNMP manager cannot access the SSR 2000.	Use the procedure in "Setting Up SNMP Community Strings" on page 46 to set up an SNMP community string and specify a target for SNMP traps. If you have already performed this procedure, type **snmp show all** in the CLI to check the SNMP settings. Use the **traceroute** and **ping** commands to verify that the SSR 2000 can reach the SNMP management station.
You are unable to ping a certain host.	Create and add an IP or IPX interface for the host. See the *SmartSwitch Router User Reference Manual* for information.

Appendix B

Technical Support

This appendix tells you what to do if you need technical support for your SSR.

Cabletron offers several important support and service programs that provide high-quality support to our customers. For technical support, first contact your place of purchase. If you need additional assistance, contact Cabletron Systems, Inc. There are several easy ways to reach Cabletron Customer Support and Service.

Telephone Assistance

Our Technical Support Center is available Monday through Friday, 8am to 8pm Eastern Time, by calling (603) 332-9400.

FAX Service

You can fax support questions to us at any time at 603-337-3075.

Electronic Services

You can contact Cabletron's Bulletin Board Service by dialing 603-335-3358.

Our internet account can be reached at support@ctron.com.

You can reach the Cabletron FTP site:

ftp://ftp.cabletron.com
Login: *anonymous*
Password: *your email address*

To send comments or suggestions concerning this document, contact the Cabletron Systems Technical Writing Department via the following email address: **TechWriting@cabletron.com**. Make sure to include the document Part Number in the email message.

You can also check our home pages on the World Wide Web.

- http://www.cabletron.com
- http://www.ctron.com

Placing a Support Call

Before calling Cabletron Systems, have the following information ready:

- Your Cabletron Systems service contract number
- A description of the failure
- A description of any action(s) already taken to resolve the problem (e.g., changing mode switches, rebooting the unit, etc.)
- The serial and revision numbers of all involved Cabletron Systems products in the network
- A description of your network environment (layout, cable type, etc.)
- Network load and frame size at the time of trouble (if known)
- The device history (i.e., have you returned the device before, is this a recurring problem, etc.)
- Any previous Return Material Authorization (RMA) numbers

Hardware Warranty

Cabletron warrants its products against defects in the physical product for one year from the date of receipt by the end user (as shown by Proof of Purchase). A product that is determined to be defective should be returned to the place of purchase. For more detailed warranty information, please consult the Product Warranty Statement received with your product.

Software Warranty

Cabletron software products carry a 90-day software warranty. During this period, customers may receive updates and patches for verified, reported software issues.

Repair Services

Cabletron offers an out-of-warranty repair service for all our products at our Santa Clara Repair Facility. Products returned for repair will be repaired and returned within 5 working days. A product sent directly to Cabletron Systems, Inc. for repair must first be assigned a Return Material Authorization (RMA) number. A product sent to Cabletron Systems, Inc., without an RMA number displayed outside the box will be returned to the sender unopened, at the sender's expense.

To obtain an RMA number, contact Cabletron Technical Support. When you call for an RMA number, your support representative will spend a few minutes with you, making sure the board is defective. Once they confirm that the board is defective, they will assign an RMA number. Payment, shipping instructions, and turnaround time will be confirmed when the RMA number is assigned.

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