Lucent Technologies
Bell Labs Innovations

Cajun™ P880 Switch Installation Guide

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Cajun P880 Routing Switch Installation Guide V1.0

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Preface

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Preface

This guide explains how to install, configure, and operate the Lucent P880 Cajun Switch. It also includes information on the Command Line Interface (CLI) and information on downloading new operational code to your switch.

Overview of The Contents

This guide contains the following chapters:

Chapter 1, Installing the Cajun P880 Switch - Explains how to unpack and assemble your switch.

Chapter 2, Configuring the Cajun P880 Switch - Explains how to perform the initial configuration of your switch, create users, and configure ports.

Appendix A, Product Specifications - Shows the specifications of your switch.

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```

Conventions

This document uses the following conventions:

Convention	Represents	Examples
User Input	User entered text.	To create a new password, type `store password owl`
Emphasis	A new term, text emphasis, or a document title.	The system settings are *permanently* saved to NVRAM if you use the store command.
Boldface Text	Menu command or button name.	Select **File | Save** to save your current work session. Click **Cancel** to cancel the installation.
System Output	Text displayed by the system.	If you attempt the find the physical location of port 30, the system displays `Unit 2 Port 2`

*** Note:** Provides additional information about a procedure or topic.

CAUTION

Indicates a condition that may damage hardware or software.

⚠

WARNING

Indicates a condition that may cause *injury* if warning is ignored.

Audience

This guide is intended for the following people at your site:

- Network manager or administrator
- Hardware installer

Related Documents

This section provides information on supporting documentation, including:

- Lucent Documents
- Reference Documents

Lucent Documents

The following documents provide additional information on supporting Lucent's Cajun Family of products:

Lucent CajunView User's Guide - Describes the installation and use of Lucent's Java-based, multiswitch element management system.

Lucent Cajun P550/P220 Switch Operation Guide - Describes the configuration and operation of the Cajun P550/P220 switch.

Reference Documents

The following documents supply related background information:

- *Internetworking with TCP/IP Volume I* — 3rd Edition, Douglas E. Comer, ISBN 0-13-216987-8.
- *Internet Routing Architectures* — Cisco Press, Bassam Halabi

- *Routing in the Internet* — Christian Huitema, ISBN 0-13-132192-7
- *Interconnections: Bridges and Routers* — Radia Perlman, ISBN 0-201-56332-0

Contacting Lucent Corporation

For information about Lucent Data Networking products and services, please consult the Lucent World Wide Web site at:

http://www.lucent.com

If you have any questions, please call Technical Support:

Within the United States - 1-800-237-0016, press 0 at the prompt, then dial ext. 73300.

From outside the United States - 1-813-217-2425.

1 Installing the Cajun P880 Switch

Overview

This chapter describes:

- Verifying the System Components
- Installing the System
- Selecting a Location
- Installing the System
- Installing/Removing Power Supplies
- Installing/Removing Fan Assemblies

Verifying the System Components

To unpack the system, check for the following components:

- Chassis, including:
  - Power supplies (installed in the switch)
  - Fan trays
  - Supervisor module (installed in the switch)
  - Blank faceplates
- I/O modules (shipped separately)
- Rack mounting shelf (2 side pieces, a brace for the back, and hex nuts)
- Cable management bracket
- Cable kit
- Plastic trim strips (three)

- Power cords (one for each power supply)
- 10Base-T crossover cable (for connecting to Ethernet Console Port)
- Out-of-Band connection kit, including:
  - Male DCE-to-RJ-45 connector (connects to switch)
  - Female DTE-to-RJ-45 connector (connects to computer)
  - Male DTE-to-RJ-45 null modem connector (connects to a modem)
  - Straight-through RJ-45 cable for connecting between connectors
- Product documentation
- Options (as ordered)

Unpack the shipment and report any lost or damaged items to your shipping carrier or Lucent representative.

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CAUTION

This unit has more than one power-supply cord. Disconnect all power cords BEFORE servicing to avoid electric shock.

French

Attention: Cet appareil comporte plus d’un cordon d’alimentation. Afin de prévenir les chocs électriques, débrancher tous les cordons d’alimentation AVANT le dépannage.

German

Dieses Gerät hat mehrere Stromversorgungskabel. Klemmen Sie alles Stromkabel VOR der Wartung ab, um einen elektrischen Schlag zu vermeiden.

Spanish

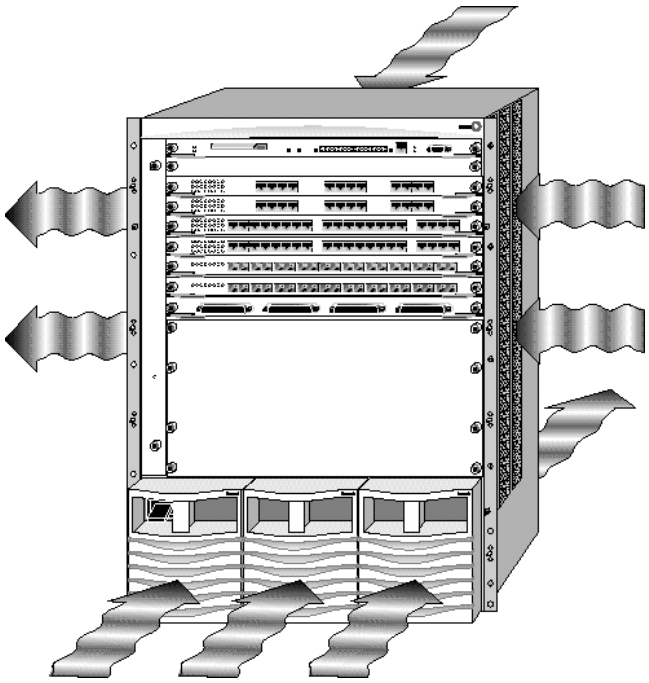
Esta unidad tiene más de un cable de toma de corriente. Desconecte todos los cables ANTES de darle mantenimiento a la unidad, para evitar descargas eléctricas.

Selecting a Location

The location you select for installing the system hardware must meet the following requirements:

- 19-inch EIA-standard grounded rack or table capable of supporting at least 154 kg (340 lb). A fully-loaded switch weighs 77 kg (170 lbs).
- At least 2 inches (5.2 cm) on either side of the chassis, and from the front and rear of the chassis, to allow adequate airflow through the chassis (*Figure1*).

Figure 1. Air Flow Requirements



- AC power source(s) within 2 m (9 ft) (separate sources, on separate circuits, if you require maximum fault tolerance)
- Ambient temperature between 0°C and 40°C (32°F to 104°F)
- Relative humidity less than 95%, non-condensing

Required Tools and Hardware

The following items are required for installing the Cajun P880:

- ESD grounding strap and an antistatic mat
- Screws and nuts (#10-32 recommended depending on the type of rack used)
- Phillips head screwdrivers (type 1 tip)
- Tape measure and a level (to check for squareness of rack and mounting shelf)

Installing the System

The process for installing the system requires the following tasks:

1. Preventing Electrostatic Discharge
2. Installing the Mounting Shelf
3. Installing the Chassis
4. Installing the Power Supply
5. Connecting the Power Supplies
6. Installing the Modules
7. Installing the Cables
8. Installing the Cable Management Bracket
9. Powering On the System
10. Replacing Fan Assemblies

Preventing Electrostatic Discharge

Protect the modules against damage from electrostatic discharge (ESD) by using a grounded ESD wrist strap while installing and removing modules. While installing the P880 Cajun Switch:

1. Ground the unit. The unit is grounded through the power cord when it is connected between the unit and the primary power source.

2. Lay out the static-dissipative work surface.

3. Connect the ground cord assembly to the ESD mat and to the ground plug on the front fan tray. This takes a standard banana jack or a #10-32 screw.

4. Wear the ESD wrist strap and attach it to the ground cord assembly.

Installing the Mounting Shelf

*** Note:** The screws and nuts needed to attach the shelf to the rack are not supplied. It is recommended you use, at least, a quantity of three #10 pan head screws for installation.

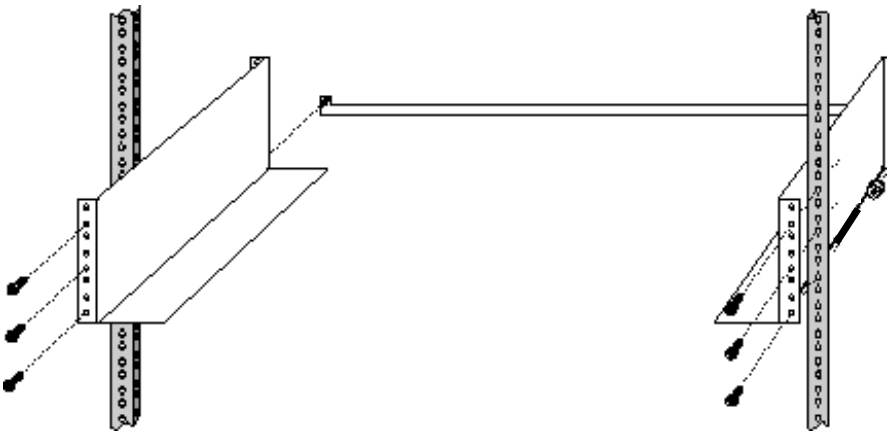
There are three brackets supplied for the shelf installation: shelf pieces and one brace for the rear of the rack. To install the shelf:

1. Install the mounting shelf. Attach the two side shelf pieces to the rack. Make sure that each hole on the mounting bracket lines up with a hole on the rail. This ensures proper vertical placement in the rack. Do **not** completely tighten the screws.

2. Attach the brace piece to the shelf pieces by inserting the attached stud into the holes on the shelf pieces and tightening the nuts (Figure 2).

3. Check the rack and shelf to ensure they are square before installing the chassis. **Tighten all screws** before installing the chassis.

Figure 2. Installing the Mounting Shelf



Installing the Chassis

The system can be installed by rack mounting the system.

Rack Mounting the System

*** Note:** It is recommended that you remove the power supplies prior to rack mounting the Cajun P880. You can use an empty power supply slot as a hand-hold when lifting the chassis.

Chassis weights are:

- The Cajun P880 chassis with one supervisor, no media modules or power supplies weighs 39kg (85 lbs.).
- The Cajun P880 chassis containing one supervisor, three power supplies and no media modules weighs 57 kg (125 lbs.).
- The Cajun P880 chassis, containing one supervisor, three power supplies and 16 media modules weighs 80 kg (175 lbs).

WARNING

Safe rack mount installation requires two people. It is recommended that gloves be worn when lifting the chassis.

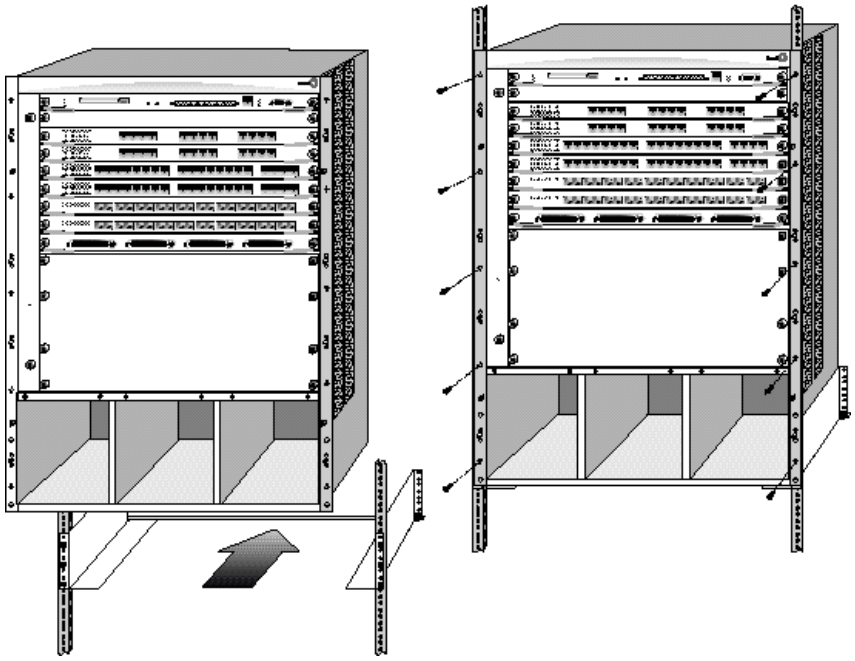
To rack mount the system:

1. Remove the power supplies from the chassis (see "Removing a Power Supply" for more information).
2. Check that all pre-installed modules are securely installed:
   - Check that the supervisor module is firmly installed.
   - Check that the Switch Element and switch contoller cards are firmly installed.
   - Check that the fans are securely in place (tighten the captive screws).

3. With one person at each side of the chassis, use the empty power supply slots as hand-grips, and lift the chassis onto the shelf. Slide it back until it is securely seated on the shelf (Figure 3).

4. Align the mounting holes on the chassis mounting ears (identified by screw icon) with the mounting holes on the rack and secure the chassis to the mounting shelf and rack rails (screw holes marked with icon) using a quantity of ten, #10 pan head (minimum recommended size) screws (not supplied).

Figure 3. Securing the chassis to the Rack



5. Use the tape measure and level to ensure that the chassis is straight and level.

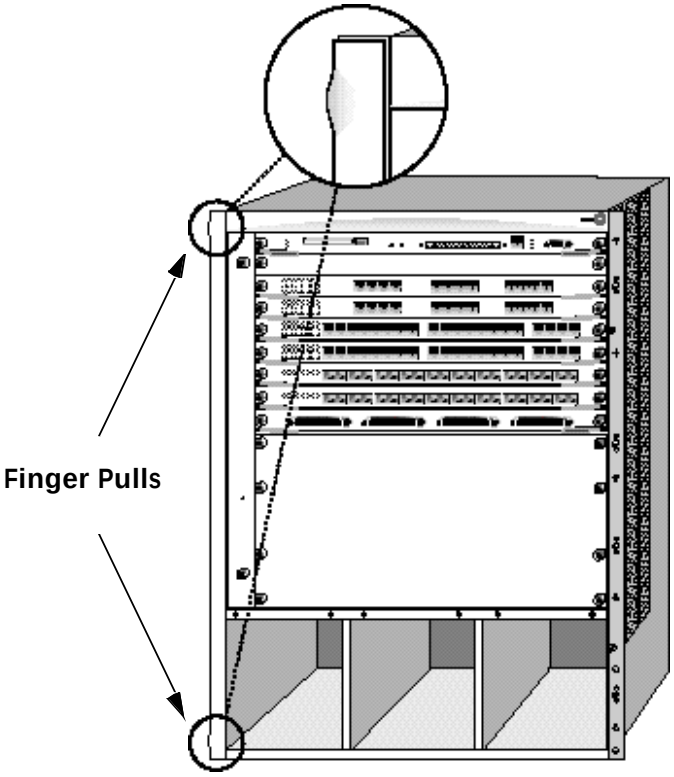
6. Install the power supplies (see "Installing the Power Supply" for more information).

7. Install any optional modules (see "Installing the Modules" for more information).

8. Install the cable management bracket (see "Installing the Cable Management Bracket" for more information).

9. Attach the plastic trim pieces on the front of the chassis (Figure 4) (line up the trim piece with the ball studs on the chassis, the finger pulls turned outward, and clip into place).

Figure 4. Attaching the Trim Pieces



Installing/Removing Power Supplies

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CAUTION

You can replace power supplies without shutting down power to the Cajun P880. However, you must turn off the power to the power supply you are replacing.

Each power supply powers approximately nine I/O modules. You need a minimum of two power supplies if you have more than 10 modules in the chassis. It takes two power supplies to power a full chassis. Using three power supplies ensures that the system has redundant power capabilities.

Use Table 1 for the precise power values:

Table 1. Power Values for System Devices

Device	Power Added/Used
Power Supply	+ 600 W (1 power supply) + 1300 W (2 or more supplies)
Backplane Elements	- 50 W
20-Port 10/100 Module	- 70 W
P880 Supervisor Module	- 50 W
2-Port Gigabit Module (L2/L3)	- 35 W
4-Port Gigabit Module	- 55 W
10-Port 100Base-FX Module (L2)	- 50 W
10-Port 100Base-FX Module (L3)	- 60 W
12-Port 10/100Base-TX Module (L3)	- 70 W
Fan Assemblies	-75 W

Installing the Power Supply

The Cajun P880 can contain up to three power supplies. This procedure describes how to add or replace the power supplies in the unit.

1. Carefully remove the supply and power cord from the shipping box, leaving the supply in its anti-static wrapping.

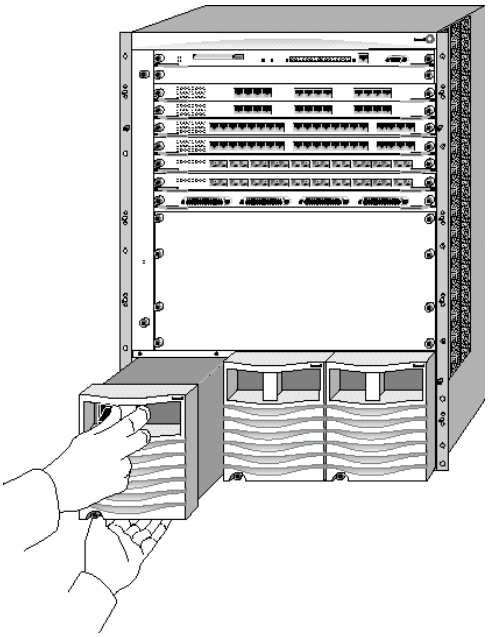
2. After taking appropriate antistatic precautions, carefully remove the supply from the antistatic wrap. (Refer to "Preventing Electrostatic Discharge" for more information on proper antistatic precautions).

3. Make sure that the ON/OFF switch on the power supply is OFF. (O)

4. Remove the filler panel from the power supply bay. You can insert new power supplies into any available bay. (Figure 6).

5. Insert the supply into the chassis and slide it in until it is firmly seated (Figure 5).

Figure 5. Installing/Removing Power Supplies



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WARNING

Support the bottom of the power supply with your free hand.

6. Make sure that the power supply is seated firmly, with the captive screw tightened.

7. Attach power cord and plug in.

Removing a Power Supply

To remove a power supply:

1. Make sure that the ON/OFF switch on the power supply is OFF (O) and the power cord removed.
2. Unfasten the captive screw securing the power supply.
3. Grasp the power supply in the finger pull (Figure 5) on the front and pull straight out of the chassis.
4. Slowly remove the supply from the chassis.

WARNING

Support the bottom of the power supply with your free hand.

Removing a Power Supply Filler Panel

To remove a filler panel:

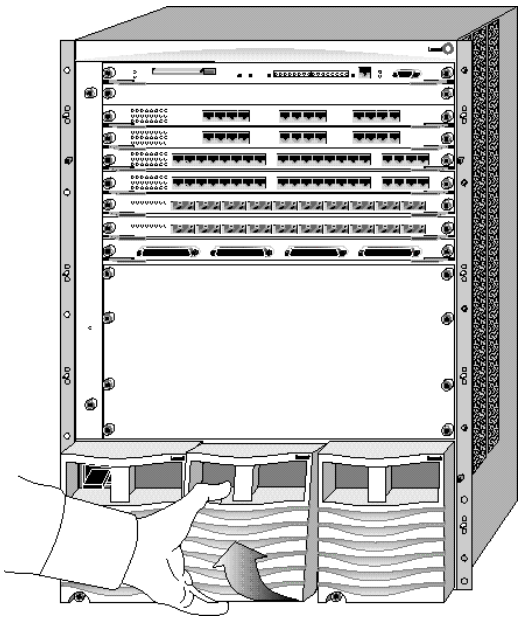
1. Unfasten the captive screw securing the filler panel.
2. Grasp the filler panel at the bottom and pull up and forward. Make sure all open slots have a filler panel to maintain EMI/FCC integrity (Figure 6).

WARNING

Support the bottom of the power supply with your free hand.

3. Remove the filler panel from the chassis.

Figure 6. Removing Power Supply Filler Panel



Connecting the Power Supplies

Before connecting the power cords:

- Make sure that all of the power supplies are seated firmly, with the captive screws tightened.
- Make sure that all of the ON/OFF switches on the power supplies are OFF. (O)
- If you are using multiple power supplies to ensure redundancy, make sure that there is a dedicated power circuit available for each supply. The separate power sources help ensure operation when the power source itself fails.

To connect the power supplies:

1. Plug the power cord into each power supply (Figure 5).
2. Plug the power cord into an AC outlet.

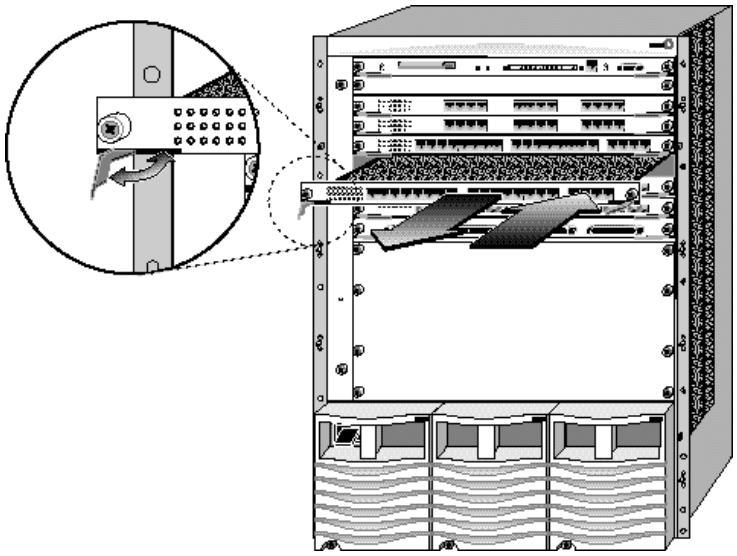
Installing the Modules

*** Note:** All Cajun media modules are hot-swappable.

To install modules in the chassis:

1. Carefully remove each module from its box, leaving the module in its antistatic wrapping.
2. After taking appropriate antistatic precautions, as described in "Preventing Electrostatic Discharge", earlier in the chapter, carefully remove the module from the antistatic wrap.
3. Open the Ejector Tabs until the stops make contact with the face plate (Figure 7).

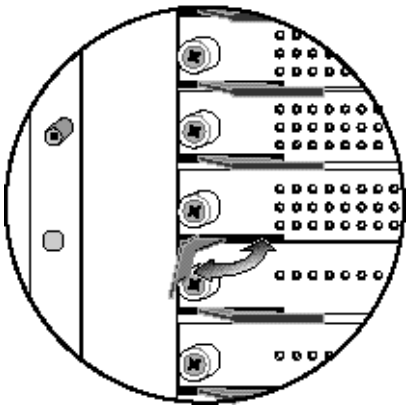
Figure 7. Installing Modules



4. Insert the module into the chassis (Figure 7).
5. Push on the center of the module pushing it into the chassis. The ejectors will snap into place.

6. Push the ejectors into the closed position to complete seating the module (Figure 8).

Figure 8. Closing the Ejector Tabs



7. Tighten the captive screws.

CAUTION

- **Ensure that all adjacent modules are seated and the captive screws secured. Failure to do this may result in difficulty installing other modules into the chassis.**
- **Ensure that all unused module slots have a filler panel installed to maintain EMI integrity.**

Installing the Cables

Install appropriate cables for your network configuration. P880 Cajun switch cable types include:

- Fiber cables with SC-type connectors
- Straight-through Category 5 cables with male RJ-45 connectors (end station/NIC (network interface card) card connections). All I/O ports are crossed over internally so you can use straight-through cables to attach to end stations.
- Crossover cables with male RJ-45 connectors (switch-to-switch connections).

The types of cable for the ethernet console (out-of-band) are different. Refer to Chapter 2, “Configuring the Cajun Switch (Layer 2 & Layer 3),” for more information.

Table 2. Cable Pinouts

Pinout to 10Base-T Cables		Pinout for RS-232 DB-9 Female Console Port	
Pin #	**Signal Description**	**Pin #**	**Signal Description**
1	Receive data (+)	**1**	DCD (output)
2	Receive data (-)	**2**	TX (output)
3	Transmit data (+)	**3**	RX (input)
4	Not used	**4**	DTR (input)
5	Not used	**5**	SGD (ground)
6	Transmit data (-)	**6**	DSR (not used)
7	Not used	**7**	RTS (not used)
8	Not used	**8**	CTS (output)
N/A	N/A	**9**	RI (not used)

Recommended Cable Distances

*** Note:** The following guidelines are based on IEEE 802.3z Draft Document, version 3.2.

Table 3. Gigabit Fiber Cable Distances

Standard	Fiber Type	Diameter (microns)	Modal Bandwidth (MHz*km)	Minimum Range (meters)
1000BASE-SX	MM	62.5	160	2 to 220*
1000BASE-SX	MM	62.5	200	2 to 275**
1000BASE-SX	MM	50	400	2 to 500
1000BASE-SX	MM	50	500	2 to 550***
1000BASE-LX	MM	62.5	500	2 to 550#
1000BASE-LX	MM	50	400	2 to 550#
1000BASE-LX	MM	50	500	2 to 550
1000BASE-LX	SM	9	NA	2 to 5000
1000BASE-SLX	SM	9	NA	2 to 10000

* The TIA 568 building wiring standard calls for 160/500 MHz*km multimode fiber.

** The international ISO/IEC 11801 building wiring standard calls for 200/500 MHz*km multimode fiber.

*** The ANSI Fibre Channel specification calls for 500/500 MHz*km 50 micron multimode fiber and 500/500 fiber will be proposed for addition to ISO/IEC 11801.

Subject to DMD distortion - be sure to use Offset Cabling.

*** Note:** The following tables describe maximum link distances only. When building half-duplex networks using Ethernet repeaters, you must also consider maximum network diameter, which is not discussed in this document.

Table 4. Maximum Fiber Link Distances for 100 Mb/s Links

Fiber Cable Description	Maximum Cable Length
Half-duplex connection	412 m
Full-duplex connection	2 km

Table 5. Maximum Copper Cable Lengths (10/100 Mb/s Links)

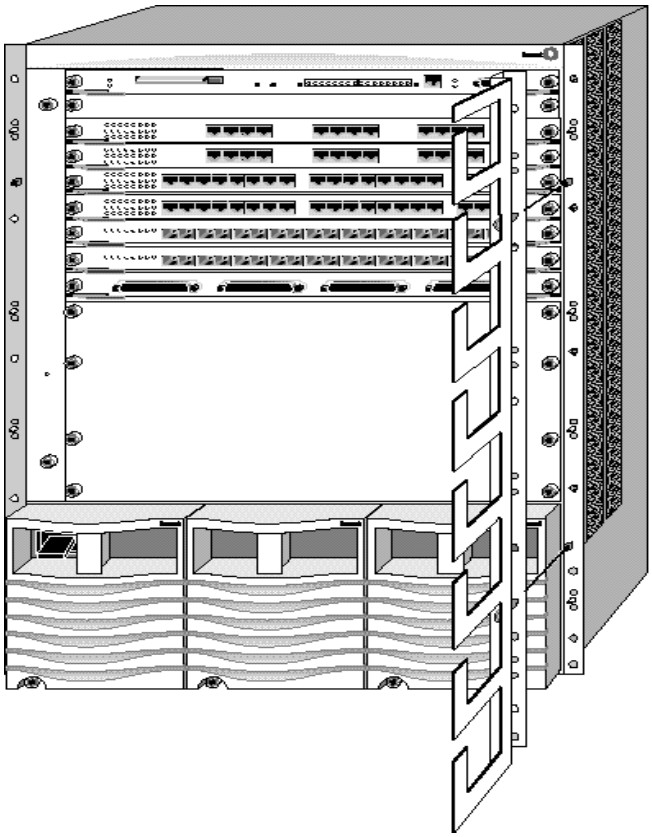
Cable Description	Maximum Cable Length
Category 5 twisted pair cable	100 m

Installing the Cable Management Bracket

The P880 comes with a cable management bracket. You attach this bracket to the right side of the chassis. To install attach the Cable management bracket:

1. Remove the plastic piece from the right side of the chassis.
2. Line the bracket up with the ball studs and screw holes and push until it locks into place (Figure 9).
3. Tighten the captive screws.

Figure 9. Installing the Cable Management Bracket



4. Thread the cables through the bracket to secure.

Installing/Removing Fan Assemblies

The Cajun P880 contains two fan assemblies:

- One large chassis fan tray containing ten fans to cool the logic section of the system.
- One smaller rear fan tray containing four fans, mounted on the lower rear panel to cool the switch elements.

Both fan assemblies are hot-swappable and contain fan management circuitry to:

- Provides power to the fans
- Supplies reduced voltage to the fans, for reduced speed operation
- Provides the Fan OK and present status signal to the CPU
- Forces full fan speed operation, in the event of a fan failure
- Accepts a control signal from the CPU, to force full fan speed in the event of an over-temperature condition.

Replacing Fan Assemblies

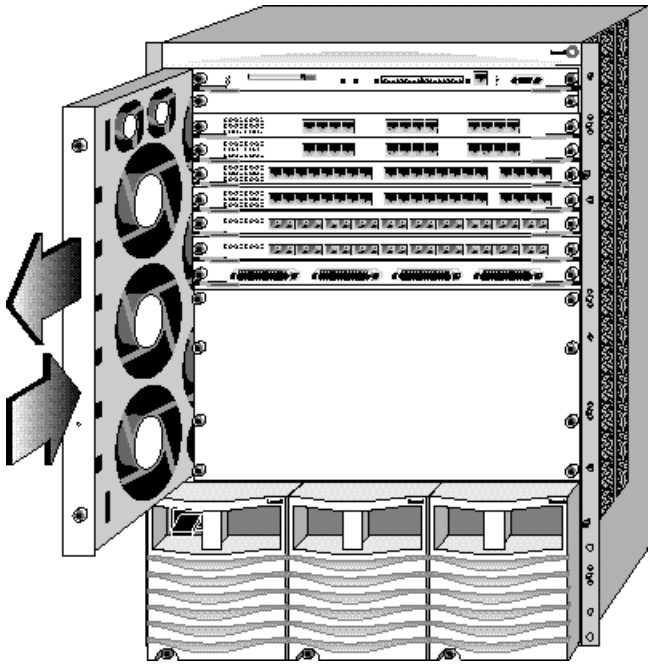
To install the front fan assembly:

1. Loosen the two captive screws securing the fan tray.
2. Grasp the two captive screws and pull the fan assembly towards you (Figure 10).
3. Remove the fan tray from the chassis.
4. Insert the new fan tray into the chassis and slide it into place.

*** Note:** Please be sure that the Pawl latches are not positioned in the locking position (the “nine o’clock” position).

5. Make sure that the fan tray is seated firmly, and tighten the captive screws.

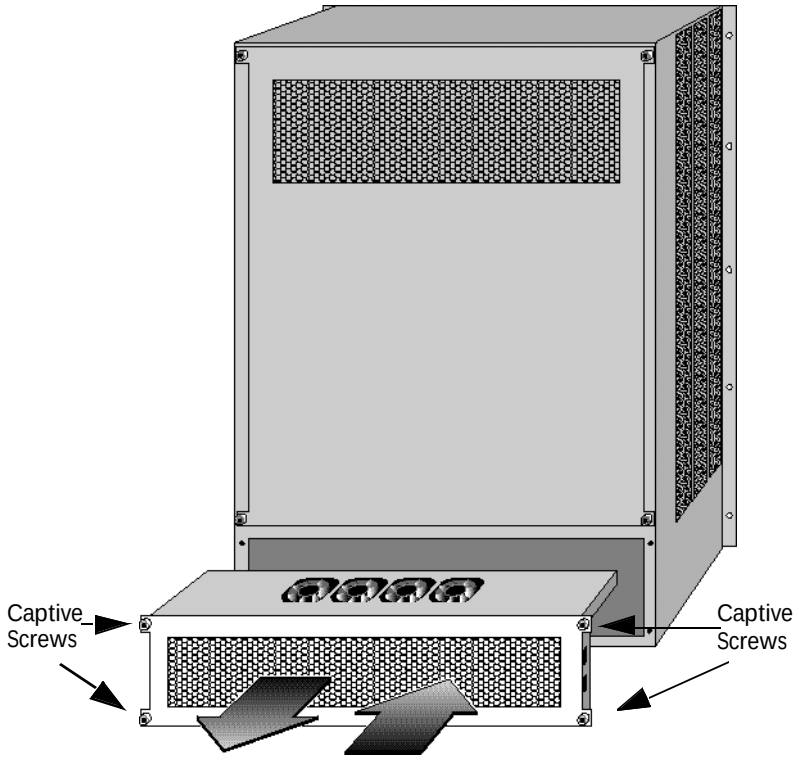
Figure 10. Installing Chassis Fan Assemblies



To install the rear fan assembly:

1. Loosen the four captive screws securing the lower panel on the rear of the chassis.
2. Grasp the two top screws on the panel and pull towards you (Figure 11).
3. Remove the fan tray from the chassis.
4. Insert the new fan tray into the chassis (fans facing up) and slide it into place.
5. Make sure that the fan tray is seated firmly and tighten the captive screws.

Figure 11. Installing Rear Fan Assemblies



Installing/Removing Switch Controllers/Elements

The following sections explain how to install switch controllers and elements.

Installing Redundant Controllers/Elements

By default, the switch is configured without the redundant controller or element.

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CAUTION

Before replacing switch controllers or elements, turn off the Cajun P880 Switch.

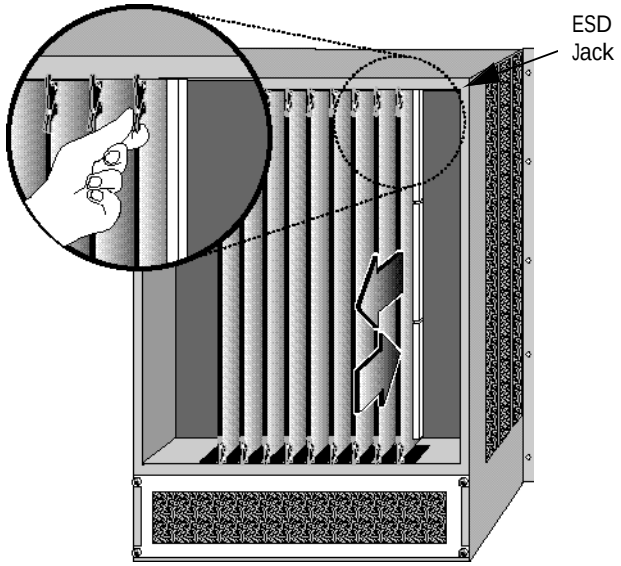
To install the redundant modules and enable module redundancy:

1. Turn power off and unplug the Cajun P880 Switch.
2. Using a Phillips-head screwdriver, loosen the captive screws on the rear panel.
3. Carefully pull the rear panel away from the chassis.
4. Carefully remove the Switch Element or Switch Controller card from the shipping box.
5. In order to take appropriate antistatic precautions, plug your ESD strap/device into the jack (this takes a standard banana jack) on the chassis (Figure 12), and carefully remove the card from the antistatic wrap.

   *** Note:** The ESD jack is only available when the rear panel has been removed.

6. Insert the module into the selected slot. The slots have guides to ensure proper insertion (Figure 12). Determine the correct slot for installing the new card.

Figure 12. Installing Switch Elements/Switch Controllers



7. Push in on the Ejector/Locking Tabs until they click to lock the card into place.

8. To remove a card, squeeze Ejector/Locking Tabs and pull outward. Once the card releases, pull it carefully toward you until it clears the guide.

9. Replace the rear panel of the switch. You will feel slight resistance as you push the panel into place.

10. Re-insert the rear panel and tighten the captive screws.

11. Restart the Cajun P880 Switch and log in.

See "Configuring Redundant Hardware," in Chapter 2 for information on configuring the controllers and elements.

Powering On the System

To power on the system:

1. Check all connections.
2. Turn on the power supplies by pushing the ON (—) switch for each supply. (ON is indicated by "—" and OFF is indicated by "O".)

Power-On Sequence

As the system powers on:

- `Cajun v4.1.x` (or later version) displays on the 8-character LED display on the front panel of the switch.
- On properly functioning modules, Port LEDs will cycle from yellow to normal operating status as the system continues through its power-on diagnostics.

When the system has completed running its internal diagnostics, the 8-character LED display should read:

`Cajun v4.1.x` (or later version)

The LEDs should function as described in "Interpreting Front Panel LED Displays" in the *Cajun P550/P220 Switch Operation Guide*. In general, you will observe the following on properly functioning modules (Table6):

Table 6. Power-up LED Function

Module	LED	Normal Behavior
All Modules	Module Status	Solid green, indicating normal operation.
Gigabit Modules	TX and RX	Solid green, flashing yellow intermittently to indicate traffic.
	Port	Solid green, indicating link integrity.
	HD/FD	Solid green, indicating full-duplex operation.
10/100 Modules	Port	Solid green, flashing yellow intermittently to indicate traffic.

Post Power-on Configuration

The system is now fully operational as an 802.1d spanning tree-compliant bridge. All ports are assigned to a single VLAN (virtual local access network):

- All ports can send traffic to all other ports in the system without using a router.
- The system is a single flood domain, so all broadcast, multicast, and unknown unicast traffic will be forwarded to all ports in the system.

2 Configuring the Cajun P880 Switch

This chapter and its procedures are common to both Layer 2 and Layer 3 configuration. Included in this chapter:

- Overview
- Terminal Settings
- Configuring the Supervisor Module Using the CLI
- Configuring the Switch Using the Web Agent
- Configuring Port Parameters Using the Web Agent
- Configuring System Information
- Managing Configuration Files

Overview

The Cajun P880 is a 17 slot chassis that supports Cajun 50 Series and 80 Series media modules.

50 Series Mode

The Cajun P880 supports Cajun 50 Series and 80 Series media modules when in the 50 Series mode. In this mode, the P880 is configured as a 16x16 crossbar switch and provides the following performance and slot-port density:

- 56 Gbps Backplane Switching Capacity
- 41 Mpps Switching
- 41 Mpps Routing
- 16 usable slots (slot 17 cannot be used in 50 Series mode)

- 720 10/100Base-TX ports (autosensing)
- 150 100Base-FX ports
- 60 Gigabit Ethernet ports

80 Series Mode

The Cajun P880 supports only Cajun 80 Series media modules in 80 Series mode. In this mode, the P880 is configured as a 33x33 crossbar switch and provides the following performance and slot/port density.

- 139 Gbps Backplane Switching Capacity
- 106 Mpps Switching
- 106 Mpps Routing
- 17 usable slots
- 768 10/100Base-TX ports (autosensing)
- 384 100Base-FX ports
- 128 Gigabit Ethernet ports

In both 50 Series and 80 Series modes of operation, the Cajun P880 offers:

- Increased port density
- N+1 switch fabric redundancy
- N+1 power supply redundancy
- Hot swappable fans trays
- Redundant switch-switch trunks (link aggregation - Hunt Groups)

Terminal Settings

To complete initial switch setup, you need a PC with a serial line connection. It must have the following terminal settings to communicate with the switch (Table 7).

Table 7. Terminal Settings

Baud Rate	Stop Bits	Data Bits	Flow Control	Parity
9,600	1	8	Xon/Xoff	None

Configuring the Supervisor Module Using the CLI

To connect to the Web Agent, you must first use the serial command line interface (CLI) to give the supervisor module an IP address and a subnetwork mask. To configure the supervisor module using the CLI:

1. Attach a **serial cable** from your PC's serial port to the serial port of the supervisor module front panel (refer to Figure 13.) using a 9-pin straight-through male-to-female serial cable (refer to "Switch Features," earlier in this guide for pinout information).

2. Run a terminal emulation program (HyperTerminal, for example) on the attached PC. Ensure that the terminal settings match those listed in Table 7.

3. Power up the switch by turning on the power supplies. In the terminal emulation program, the switch displays the following startup messages:

```
Booting the operational system, please wait ....
Initializing the event subsystem ... done
Initializing the agent subsystem ... done
Initializing the platform ...
    Resetting Thunderbolt ...done.
    Setting  module to MASTER and resetting chips ...done.
    Creating Ethernet Console ...done.
    Creating Display Manager ...done.
done
Initializing the switch subsystem ... done
Starting up threads ...
    Periodic Task
    Event
    Network Interface
    Switch  Interface
    Module Manager
```

```
    Address Table Aging
    Multicast Pruning
    IP Route Process
    Telnet Processes
    Ping Process
    IPX Route Process
    IPX Timer Process
    FE Aging Process
    Packet Generation Process
    Front Panel Display
    Download
    Fans Poller
    Power Supplies Poller
    VTP Snooping
    Redundant Controller/Element Poller Task
    AppleTalk Process
    Command Line Parser
Powering up modules ...
    Module 2 Powered
    Module 7 Powered
    Module 12 Powered
    Module 16 Powered
Initializing the module subsystem ... done
System initialization complete.
Configuring system from Startup Config file [/nvram/
startup.txt] ... done
Boot process complete - system is now operational.
Copyright © 1999, All rights reserved by Lucent
Technologies Corporation
This software is furnished under a license and may be used
in accordance with the terms of such license and with the
inclusion of the above copyright notice. This software or
any other copies thereof may not be provided or otherwise
made available to any other person. No title to and
ownership of the software is hereby transferred.
Contains software developed by:
Epilogue Technology Corporation
Copyright (c) 1988 - 1996  Epilogue Technology Corporation
TEC Technically Elite Concepts, Inc,
Copyright (c) 1994 by Technically Elite Concepts, Inc,
Hermosa Beach, California, U.S.A.
ISI Integrated Systems, Inc.
Copyright 1991 - 1995, Integrated Systems, Inc.
All other trademarks used herein are the property of their
respective owners.
Lucent Technologies Cajun Switch Agent v4.1.0
Press Ctrl-P for previous command, Ctrl-N for next command,
? for help.

Login:
```

*** Note:** Information you enter at the Login and Password prompts is case sensitive.

4. At the **Login** prompt, enter **root**. The password prompt displays.

```
Password:
```

5. At the **Password** prompt, enter **root** as the default password. The command line interface prompt displays.

6. Enter the command `enable`. This changes the command mode to privileged mode.

7. Enter the command `configure`. This changes the command mode to configure mode so that you can use the `setup` command.

8. Enter the command `setup`. This initiates a series of queries. Answer each query as follows:

   a. When prompted to change the super user password, press **Enter** to accept the default answer of **Yes**.

   b. Enter your **old password**. The system then prompts you for a new password. The default password is root.

   c. Enter your **new password**, then re-enter the new password to verify your choice.

   d. Enter the **IP address** for the switch manager's Ethernet console.

   e. Enter the **subnet mask** for the network's IP address.

Figure 13 illustrates an example setup command session.

Figure 13. Layer 2 Setup Command Display

```
Welcome to Switch Setup. The brief series of questions that
follows will help you to configure this switch. After completing
this process, you will be able to manage the switch using:

 - the switch-based HTTP server
 - the Element Management System.

Text in [] is the default answer for each questions. To accept
the default, press ENTER.


Would you like to change the super user password [Yes]? Y

Old Password: xxxx
New Password: xxxx
Re-type New Password: xxxx

What do you want the switch manager's console
Ethernet IP Address to be [192.168.39.40]?

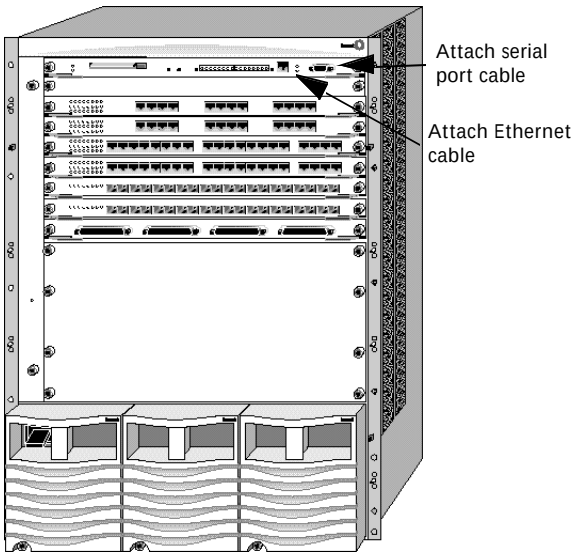
What is the subnet mask for your network's
IP address [255.255.255.0]?

What is the IP address of the default gateway <-------
for this network segment [192.168.39.240]? <-------


You can now connect to the switch using the front-panel
out-of-band 10BASE-T connection. This allows you to log in
using either the embedded web agent or the EMS.
See the Installation and Operation Guide for instructions
on establishing additional IP network connections.
```

Connect to the system with an out-of-band connection using the 10/100BASE-T port on the supervisor module.

Figure 14. Cajun P880 Switch

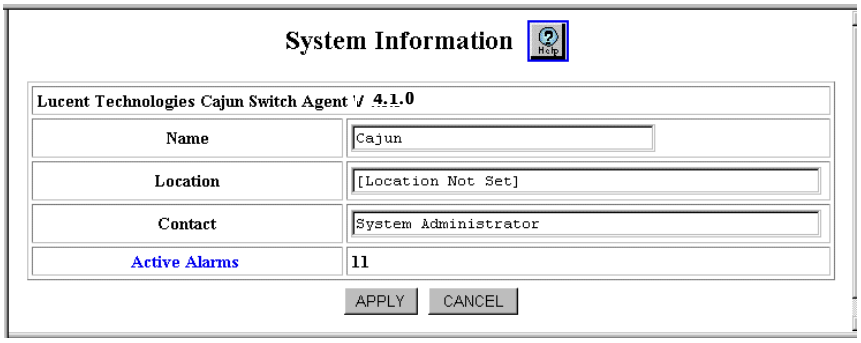


After your switch is connected to the network using an out-of-band connection, log in to the switch using a Web browser, as described in "Logging Into the Web Agent", later in this chapter.

Configuring the Switch Using the Web Agent

The switch includes an embedded HTTP server that enables you to set all the switch's parameters. Use this interface for quick and simple configuration changes. Refer to the *Cajun P550 Manager User Guide* for information on monitoring and configuring the Cajun switch using the Cajun P550 Manager interface.

Figure 15. Cajun P880 Switch Web Agent Application



Logging Into the Web Agent

Although the Web Agent supports any frames-capable browser, the system has been qualified with the following browsers:

- Netscape Navigator 4.5 or later
- Microsoft Internet Explorer 3.0 or later

To log in to the Web Agent:

1. Start your browser.
2. In the **Location** field, enter the **URL** of the switch you want to manage
   (for example: http://127.255.255.0). Remember that each interface to the supervisor module (console or inband) has a separate IP address. For Layer 3, this location can be that of any of the router interfaces.
3. Press **Enter**. The login window opens.
4. Click **Login. The Username/Password dialog box opens.**
5. Enter a valid **user name**. The default super user name is **root**.
6. Enter a valid **password**. The default password is **root**. The Web Agent window opens.

   *** Note:** Change the root password for the system as soon as possible to optimize security.

Setting Up User Accounts

User accounts set up in the system allow you to access both the command line interface and the Web Agent. To add a user to this interface:

1. Log in to the switch from your Web browser, using a user name with administrator privileges. The default login of user **root**, password **root** has this authority. The Web Agent application window opens.
2. In the **System Configuration** section of the Web Agent window, select **User Logins**. The User Account Management dialog box opens.
3. Click **Add User**. The Add User Account dialog box opens.

4. In the **User Name** field, enter a user name for the account.

5. In the **Password** field, enter a password for the account.

6. From the **Access Type** pull-down menu, select an access type (Table8).

Table 8. User Account Access Levels

User Level	Can	Cannot
User (READ_ONLY)	View switch configuration settings and statistics.	View user accounts and community strings. Change switch configurations.
Manager (READ_WRITE)	View *and set* switch configuration settings, and view statistics.	View user accounts and community strings.
Administrator (ADMINISTRATOR)	View and set all switch parameters.	N/A

7. Click **APPLY** save your changes, or **CANCEL** to restore previous settings.

Configuring Port Parameters Using the Web Agent

The system has two levels of port settings:

- **Physical port parameters** - Enables you to set up rules that guide the system's physical layer interaction (for example, enable/disable, speed, auto-negotiation).
- **Switch port parameters** - Enables you to specify how the port participates in switching (for example, VLAN mode, trunking).

The sections that follow explain how to configure these ports.

Configuring Physical Port Parameters on Gigabit Ports

To configure ports on a gigabit module:

1. In the **System Configuration** section of the Web Agent window, select **Modules & Ports**. The Module Information dialog box opens.
2. In the **Ports** column, click the number (**2** or **4** for gigabit modules) for the module you want to configure. The Physical Port Configuration dialog box opens.
3. Click the **Enable** check box to enable a port, or if the check box is enabled, click the Enable check box if you want to disable the port.
4. Click **APPLY** to save your settings, or **CANCEL** to restore previous settings.
5. In the **Name** field, click the **port name** to set additional parameters. The Detailed Physical Port Configuration dialog box opens.

   Refer to Table 9 for more information on the Gigabit port parameters.
6. In the **Name** field, enter a **port name**.
7. If this is an end-station port, from the **Category** pull-down menu, select **User Port**. For trunk ports, select **Service Port**.
8. From the **Flow Control Mode** pull-down menu, select **Enable** to use flow control to prevent buffer overflows. Disable this feature only when flow control is causing congestion in other areas of the network.
9. From the **Pace Priority Mode** pull-down menu, select **Enable** to recognize and use 3Com's PACE priority mechanism.
10. From the **Remote Fault Detect** pull-down menu, select **Enable** to detect remote link errors.

Notes:

- The remote fault detection functionality should be enabled (on both ends of a Cajun to Cajun link) in two cases. The first case is when two Cajun gigabit ports are connected that do not support auto-negotiation. The second case is when a Cajun gigabit port that does not support auto-negotiation is connected to a Cajun gigabit

port that does support auto-negotiation. If two gigabit ports that support auto-negotiation are connected, you should enable auto-negotiation.

— Auto-negotiation and remote fault detection cannot be enabled concurrently. Auto-negotiation must be disabled in order to enable remote fault detection. When auto-negotiation is enabled, remote fault detection is automatically disabled.

— For gigabit modules, auto-negotiation is always disabled.

11. Click **APPLY** to save your changes, or **CANCEL** to restore previous settings. Table9 describes the gigabit port parameters:

Table 9. Gigabit Port Parameters

Parameter	Definition
Name	A user-assigned name for this port (possibly a drop name or the name of the station or other device connected to the port).
Category	Enables you to select either User Port or Service Port. The **User Port** is intended for use with switch connections to end user nodes. The **Service Port** is intended for use with switch connections to servers or other switches. The primary difference between the User and Service Port designation is that a Service Port allows the switch to generate both *log messages* and *alarm messages* (traps). The User Port only generates log messages. This prevents your network management station from being overwhelmed by port up/down messages that result from users turning workstations on and off.
Flow Control Mode	Determines if IEEE 802.3z pause control is used on this port. The pause mechanism allows the port to stop a sending station from sending more packets if the receiving port's buffers are full. This helps prevent lost or dropped packets. This feature is recommended for use primarily on end station connections. Using this feature on trunk ports can cause unnecessary congestion on the network.

Table 9. Gigabit Port Parameters

Parameter	Definition
Port PACE Priority	Determines if the port detects 3Com's copyrighted PACE format as packets pass through the port. PACE allows a packet's priority (higher priority packets move through the switch faster) to be set at the adapter.
Remote Fault Detect	Proprietary mechanism to detect remote link errors on Cajun gigabit ports. The default is Disabled. The remote fault detection functionality should be enabled (on both ends of a Cajun to Cajun link) in two cases: • When two Cajun gigabit ports are connected that do not support auto-negotiation. • When a Cajun gigabit port that does not support auto-negotiation is connected to a Cajun gigabit port that does support auto-negotiation.

Configuring Physical Port Parameters on Fast Ethernet Ports

To configure ports on a Fast Ethernet module:

1. In the **System Configuration** section of the Web Agent window, select **Modules & Ports**. The Module Information dialog box opens.
2. In the **Ports** column, click the **number** for the module you want to configure (for example, **10** for 100BASE-FX). The Physical Port Configuration dialog box opens.
3. Click the **Enable** check box to enable a port, or if the check box is enabled, click the Enable check box if you want to disable the port.
4. Click **APPLY to** save your changes, or **CANCEL** to restore previous settings.
5. In the **Name** field, click the **port name** to set additional parameters. The Detailed Physical Port Configuration dialog box opens.

   Refer to Table 10 for more information on the Fast Ethernet (10/100) parameters.
6. In the **Name** field, enter a **port name**.

7. If this is an end-station port, from the **Category** pull-down menu, select **User Port**. For trunk ports, select **Service Port**.

8. From the **Speed Mode** pull-down menu, select a **speed** (**10 Mb/s** or **100 Mb/s**) if you want to set the port speed manually. If you set the port to auto-negotiate, this setting is ignored.

9. From the **Duplex Mode** pull-down menu, select a **mode** (**Half-duplex** or **Full-duplex**) if you want to set the port's duplex mode manually. If you set the port to auto-negotiate, this setting is ignored.

10. From the **Flow Control Mode** pull-down menu, select **Enable** if you want this port to use Flow Control to prevent buffer overflows. Disable this feature only when flow control is causing congestion in other areas of the network.

11. From the **Auto Negotiation Mode** pull-down menu, select **Enable**.

    *** Note:** This feature works best when the port or device on the other end of the connection auto-negotiates as well. If you are having problems with auto-negotiating connections, try setting the modes manually using the command line interface. For example, `set port auto 7/3 enable`.

12. From the **Auto Negotiation Speed Advertisement** and **Auto Negotiation Duplex Advertisement** pull-down menus, set **Speed** and **Duplex Advertisement**, respectively. The switch sends these values to the device on the other end of the connection at the start of the auto-negotiating process. In general, the defaults are best, but there may be situations when you want to fix one setting, but allow the other setting to auto-negotiate.

13. From the **Rate Limit Mode** pull-down menu, select **Enable** if you want this port to limit the number of unknown unicast and multicast (flooded) packets it tries to forward.

    a. From the **Rate Limit Rate** pull-down menu, select the **percentage** of a port's traffic that can be unknown unicast and broadcast packets. Lower this value if the port is having overflow problems.

    b. From the **Rate Limit Burst Size** pull-down menu, select a **packet limit** for the number of packets allowed in a single burst. Valid values are 1 to 2048. For Fast Ethernet ports, set

this value lower than 1024 (the output buffer's capacity). Set this value lower if the port is experiencing overflow problems.

14. From the **Pace Priority Mode** pull-down menu, select **Enable** if you want this port to recognize and use 3Com's PACE priority mechanism.

15. Click **APPLY to** save your changes, or **CANCEL** to restore previous settings.

Table10 describes the Fast Ethernet port parameters:

Table 10. Fast Ethernet (10/100) Port Parameters

Parameter	Definition
Name	A user-assigned name for this port (possibly a drop name or the name of the station or other device connected to the port).
Category	Allows you to select either User Port or Service Port. • The **User Port** is intended for use with switch connections to end user nodes. • The **Service Port** is intended for use with switch connections to servers or other switches. The Service Port allows the switch to generate both *log messages* and *alarm messages* (traps). The User Port only generates log messages, preventing your network management station from being overwhelmed by port up/down messages that result from users turning workstations on and off.
Speed Mode	Allows you to select the speed of the port manually (to either 10 or 100 Mb/s). **If auto-negotiation is enabled, this setting is ignored.**
Duplex Mode	Allows you set the port duplex mode (half- or full-duplex). **If auto-negotiation is enabled, this setting is ignored.**

Table 10. Fast Ethernet (10/100) Port Parameters

Parameter	Definition
Flow Control Mode	Determines if flow control is used on this port. For half-duplex links, active backpressure jams the sending Ethernet channel until the port's buffers can receive more packets. This prevents lost or dropped packets. For full-duplex links, IEEE 802.3z pause control allows the port to stop a sending station from sending more packets if the receiving port's buffers are full. For TX and FX ports, there is an additional option for Enable with Aggressive Backoff. This option limits the size of the bursts. Flow Control is recommended for use primarily on end-station connections. Using this flow control on trunk ports can cause unnecessary congestion on the network.
Auto Negotiation Mode	Allows you to set the port to auto-negotiate a speed and duplex mode. Auto-negotiate works best when the connection on the other end of the link is set to auto-negotiate as well. If you set a port to auto-negotiate, and the connection is not successful, set the port speed and duplex mode manually.
Auto Negotiation Speed/Duplex Advertisement	Determines what information the port advertises when it starts auto-negotiating. In most cases, **10/100** and **Half/Full** are the best settings, but there may be cases when you want to auto-negotiate one parameter, while keeping the other fixed.
Rate Limit Mode	Prevents the switch from overwhelming the output buffer on lower-speed ports by placing a threshold on the percentage of port traffic that can be flooded packets (unknown unicasts and multicasts). You can optionally include known multicast packets in this percentage to further decrease the possibility of the port's output buffer being overwhelmed.
Rate Limit Rate	Determines the percentage of a port's forwarded traffic that can be unknown unicast and multicast (flooded). Lower this value if the port has overflow problems.

Table 10. Fast Ethernet (10/100) Port Parameters

Parameter	Definition
Rate Limit Burst Size	Determines the limit of packets allowed in a single burst. Accepted values are 1 to 2048. For Fast Ethernet ports, set this value lower than 1024 (output buffer capacity). Lower this value if the port has overflow problems.
Port PACE Priority	Determines if the port detects 3Com's proprietary PACE format as packets pass through the port. PACE allows a packet's priority (higher priority packets move through the switch before lower priority packets) to be set at the adapter.

Using the All Ports Configuration Dialog Box

The All Ports Configuration dialog box allows you to apply the same parameter settings to all ports in a module using a single command.

To set all ports in a module:

1. In the **System Configuration** section of the Web Agent window, select **Modules & Ports**. The Module Information dialog box opens.
2. In the **Ports** column, click the **number** for the module you want to configure (for example, **10** for 100BASE-FX). The Port Configuration dialog box opens.
3. Click **All Module Switch Ports Configuration**. The All Ports Configuration dialog box opens.
4. Set port parameters as described beginning in "Configuring Physical Port Parameters on Gigabit Ports", earlier in this chapter.
5. Click **APPLY** to save your changes, or **CANCEL** to restore previous settings.

Viewing Switch Port Parameters

To view switch port parameters:

1. In the **System Configuration** section of the Web Agent window, select **Modules & Ports**. The Module Information dialog box opens.
2. In the **Switch Ports** column, click the **number** for switch port information about the desired module. The Switch Ports dialog box opens.
3. Use Table11 for more information on switch port parameters:

Table 11. Switch Port Parameters

Parameter	Definition
Links	Opens associated dialog boxes.
Port	Displays the port name associated with the selected module.
Name	Displays the port name and opens the Switch Port Configuration dialog box for the selected module.
Port VLAN	Displays the port VLAN for the selected module.
VLAN Classification	Displays the port VLAN classification for the selected module.
Trunk Mode	Displays the port's trunk mode for the selected module.
Hunt Group	Displays the hunt group of which the port is a member for the selected module.
STAP Mode	Displays whether the spanning tree algorithm protocol is enabled or disabled for the selected module.
MAC Address	Displays the port's MAC address for the selected module.

4. Click one of the following for more information on switch ports:

   — **Next/Previous Module** - to view the next or previous module's switch port parameters.

   — **Modules** - to return to the Module Information dialog box.

   — **All Module Switch Ports Configuration** - to open the Switch Port Configuration All Ports dialog box and configure all ports for the selected module.

Configuring Switch Port Parameters

Switch port parameters set how each port performs switching functions (for example, VLAN parameters, hunt group assignments, trunk mode, and frame tag scheme). Refer to Table12 for more information on individual switch port configuration parameters.

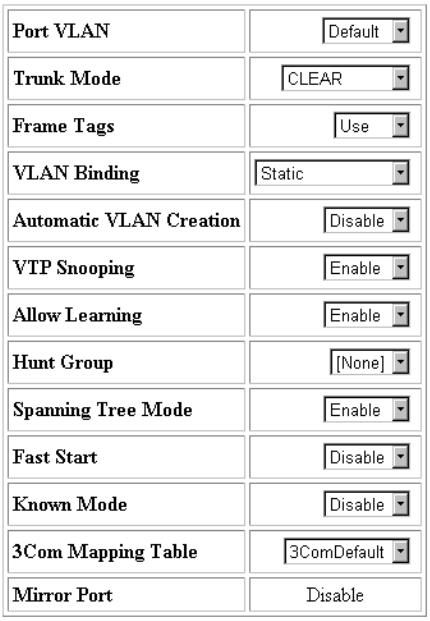
To configure switch port parameters:

1. In the **System Configuration** section of the Web Agent window, select **Modules & Ports**. The Module Information dialog box opens.

2. From the **Model Number** column, locate the **module** for which you want to configure ports. Click the **Switch Ports** column next to the selected module. The Switch Ports dialog box opens.

3. In the **Name** column, click the name for the port you want to configure. The Switch Port Configuration dialog box opens.

Figure 16. Switch Port Configuration Dialog Box



Refer to “Configuring Port VLAN Parameters” and “Configuring Non-VLAN Switch Port Parameters”, later in this chapter, for your specific configuration needs.

Table 12 describes Switch Port configuration parameters:

Table 12. Switch Port Configuration Parameters

Parameter	Definition
Port VLAN	Specifies the VLAN assignment for this port.
Trunk Mode	Select the trunk mode.Allows you to define the port as a trunk and allows you to select the appropriate VLAN trunking format if the port is connected to another switch. Refer to Table13 for more information on trunk mode options.
Frame Tags	Select whether to ignore or use received Frame VLAN tags. If you ignore VLAN tags on incoming frames, the frames are bound to the port’s default VLAN. The default is Use.

Table 12. Switch Port Configuration Parameters

Parameter	Definition
VLAN Binding	Select the port's VLAN binding type. Refer to Table14 for more information on VLAN binding options.
Automatic VLAN Creation	Select to enable or disable the ability to automatically create a VLAN each time the port receives a frame from an unknown VLAN. The default is Disable.
VTP Snooping	Select to enable or disable VTP Snooping on this port. The default is Disable.
Allow Learning	Select to enable or disable the port's learning of new addresses. The default is Enable.
Hunt Group	Select a hunt group for which this port will be a member. The default is None.
Spanning Tree Mode	Select to enable or disable spanning tree protocol on this port. The default is Enable.
Fast Start	Select to enable or disable fast start on this port. The default is Disable.
Known Mode	Select to enable or disable known mode. The default is Disable.
3Com Mapping Table	Select how incoming tagged frames from 3Com equipment are mapped to Lucent VLANs. The default is 3ComDefault.
Mirror Port	Displays whether the mirror port is enabled or disabled. This is a Fast Ethernet only option.

Configuring Port VLAN Parameters

Port VLAN parameters determine how a particular port's traffic is flooded to VLANs when tagged and untagged packets are received on the port. See the examples later in this section for recommendations on settings for particular trunk port connections.

Refer to "VLAN Operation", in the *Cajun P550/P220 Switch Operation Guide*, for more information on creating VLANs.

Refer to "Viewing Switch Port Parameters", earlier in this chapter, for information on accessing the Switch Port dialog box.

To configure port VLAN parameters:

1. From the **Port VLAN** pull-down menu in the Switch Port dialog box, select a **VLAN** as the VLAN assignment for this port. This causes all untagged frames arriving on this port to be assigned to the specified VLAN. The port will still assign incoming tagged packets to the VLAN indicated by the tag.

2. From the **Trunk Mode** pull-down menu, select the **option (**excluding **Clear)** to indicate that the port is a trunk and to select the appropriate VLAN trunking format if the port is connected to another switch.

Table 13. describes the VLAN Trunking Mode options:

Table 13. VLAN Trunking Mode Options

VLAN Mode	Applies the following format to packets entering this port:
Clear	No VLAN tag. This is the default setting.
IEEE-802.1Q	The IEEE 802.1Q Ethernet VLAN tagging scheme.
Multi-layer	A widely available proprietary VLAN tagging scheme, that is fully Cisco ISL compatible.
3Com	3Com's VLAN tagging scheme.

3. From the **Frame Tags** pull-down menu, select whether you want to **Ignore** or **Use** received Frame VLAN tags. If you ignore VLAN tags on incoming frames, the frames are bound to the port's default VLAN.

4. From the **VLAN Binding** pull-down menu, select a **VLAN binding type** for this port.

Table14 describes the VLAN Binding Options.

Table 14. VLAN Binding Options

Option	Definition
Static	Assigns VLAN membership manually, using the VLAN Switch Ports page described in "*Creating and Implementing VLANs*", in the *Cajun P550/P220 Switch Operation Guide*.
Bind to All	Binds this port to all VLANs known to the switch. This is an appropriate mode for switch-to-switch connections. If you use 3Com Mapping Tables, this setting is ignored. **Note:** When a tagged IEEE 802.1Q packet arrives on a port that is set to bind to all and the VLAN does not exist on the switch, the packet is forwarded on to the VLAN assigned to the port default VLAN for that port. To prevent unintended forwarding of unknown VLAN traffic to the port's default VLAN, configure the port default VLAN to Discard. The automatic VLAN creation feature will not work if the port's default VLAN is the discard VLAN, because the switch does not learn for this VLAN.
Bind to Received	Binds this port to any VLAN it receives traffic from. **Note:** If Automatic VLAN Creation is enabled, the port binds to previously unknown VLANs, and a VLAN entry is added to the switch VLAN table. If Automatic VLAN Creation is disabled, the port does not bind to any VLAN unknown to the switch.

5. From the **Automatic VLAN Creation** pull-down menu, select **Enable** to automatically create a VLAN each time the port receives a frame from an unknown VLAN.

*** Note:** This feature does not create entries in 3Com Mapping Tables. Refer to "Creating 3Com Mapping Tables", in Chapter 12, for more information on 3Com Mapping Tables.

6. Click **APPLY** to save your changes, or **CANCEL** to restore previous settings.

Configuring VTP Snooping

VTP is a Layer 2 protocol developed by Cisco to maintain VLAN configuration consistency among its switches. this protocol only runs over trunk ports that have enabled either Cisco ISL or IEEE 802.1Q tagging. VTP Snooping allows a Cajun switch to synchronize its VLAN configuration with that of a Cisco switch running VTP in the same network. VLAN additions, deletions, and name changes made on the network's Cisco VTP server will be automatically updated on Cajun switches that have VTP Snooping enabled and have connectivity to the Cisco VTP server. VLAN changes made on a Cajun switch are not automatically updated on any other switch.

*** Note:** VTP Snooping is enabled by default. You would only need to change VTP Snooping port settings if you wanted to disable its ability to learn VLAN changes on the network's Cisco VTP server.

To configure switch port VTP Snooping parameters:

1. In the **System Configuration** section of the Web Agent, click **Modules and Ports**. The Module Information dialog box opens.
2. In the **Switch Ports** column, click on the **Switch Ports link** for the module which you want to enable VTP snooping. The Switch Ports dialog box for that module opens.
3. In the **Name** column, click the **port** on which you want to enable VTP Snooping switch wide. The Switch Port Configuration dialog box opens for that port.
4. From the **Trunk Mode** pull-down menu, select either **IEEE 802.1Q** or **Multi-layer** to match the trunk mode setting of the switch port of the switch port at the other end of the link.
5. From the **VTP Snooping** pull-down menu, select **Enable**. This is enabled by default.
6. Click **APPLY** to save your changes, or **CANCEL** to restore previous settings.
7. In the **Switching Parameters** section of the Web Agent window, click **VTP Snooping**. The VTP Snooping Configuration dialog box opens.

8. Use Table15 to configure your switch VTP Snooping parameters.

Table 15. VTP Snooping Parameters

Parameter	Definition
VTP Snooping State	Select to enable or disable the VTP snooping protocol globally for the switch. The default value is Disabled.
Domain Name	Enter the name associated with the Cisco VTP domain. The default is Null. **Note:** The domain name is automatically learned within approximately five minutes from a Cisco VTP switch provided both the Domain Name is Null and the VTP Snooping State is enabled on the Cajun switch.
Configuration Revision Number	Displays the VTP snooping configuration revision number associated with the last successful VTP configuration update on the Cajun switch.
Updater Identity	Displays the IP address of the Cisco switch that initiated the configuration update.
Update Timestamp	Displays the date and time that the Cisco switch initiated the configuration update.

9. Click **APPLY** to save your changes, or **CANCEL** to restore previous settings.

Configuring Non-VLAN Switch Port Parameters

To configure Non-VLAN switch port parameters:

1. In the **Switch Port Configuration** dialog box, from the **Allow Learning** pull-down menu, select **Disable** to stop the port's learning of new addresses. This feature can be useful for security. Selecting Enable allows the port to learn new addresses.

   For example, you can set this parameter to Disable, then add a static MAC address entry for this port.

2. From the **Hunt Group** pull-down menu, select a **hunt group** for which this port will be a member. Refer to "Using Hunt Groups to Aggregate Bandwidth between Switches", in the *Cajun P550/P220 Switch Operation Guide*, for more information on hunt groups.

3. From the **Spanning Tree** pull-down menu, select to **Enable** or **Disable** spanning tree protocol on this port.

4. From the **Fast Start** pull-down menu, select to **Enable** or **Disable**. When enabled, Fast Start mode ports begin forwarding traffic without waiting for the spanning tree negotiation to complete. Fast start eliminates the waiting time of listen and learn states. Ports immediately enter the forward state.

5. From the **Known Mode** pull-down menu, select to **Enable or Disable. Selecting Enable** limits the packets with unknown unicast destination addresses flooded to this port. For example, if a known end-station or file server is connected to the port, there's no need to flood unknown unicasts to that port. You must manually enter a static MAC address for the station actually attached to the port.

6. From the **3Com Mapping Table** pull-down menu, select an **assignment** to specify how incoming tagged frames from 3Com equipment are mapped to Lucent VLANs. Refer to "Creating 3Com Mapping Tables", in the *Cajun P550/P220 Switch Operation Guide*, for more information on 3Com Mapping Tables.

7. Click **APPLY** to save your changes, or **CANCEL** to restore previous settings.

Examples of Switch Ports Settings for Various VLAN Connection Types

Use Table 16 through Table18 for recommended switch port settings for each connection type.

Table 16. Example 1. Trunk to Cisco Catalyst 5000™

Parameter	Recommended Setting
Port VLAN	**Default** - causes untagged packets to be assigned to the default VLAN.
Trunk Mode	**Multi-level** - causes the port to send frames using the multilevel format.
VLAN Binding	**Bind to All** - binds the port to all VLANs known to the switch.
Automatic VLAN Creation	**Enable** - causes the switch to learn new VLAN IDs that arrive at the port, and then bind the port to these VLANs.
VTP Snooping	**Enable** - cause the switch to update its VLANs as they are created, deleted, or changed on the Catalyst.

Table 17. Example 2. Trunk to 3Com SuperStack™

Parameter	Recommended Setting
Port VLAN	**Default** - This parameter is ignored when using 3Com VLANs.
Trunk Mode	**3Com** - Allows the switch to read the incoming VLAN tags.
VLAN Binding	**Static** - This parameter is ignored when using 3Com VLANs.
Automatic VLAN Creation	**Disable** - This parameter is ignored when using 3Com VLANs.

Table 18. Example 3. Trunk to Bay Networks System 5000™

Parameter	Recommended Setting
Port VLAN	**Default** - Causes untagged packets to be assigned to the default VLAN.
Trunk Mode	**IEEE-802.1Q** - Causes the port to send frames using the IEEE-802.1Q format. This assumes that you have configured the Bay Networks switch to use IEEE-802.1Q VLAN tagging as well.
VLAN Binding	**Bind to All** - Binds the port to all VLANs known to the switch.
Automatic VLAN Creation	**Enable** - Causes the switch to learn new VLAN IDs that arrive at the port, and then bind the port to these VLANs.

Configuring Fast Start Mode

Fast Start mode causes ports to begin forwarding traffic without waiting for the spanning tree negotiation to complete. Examples of situations where you may want to set a port to Fast Start mode are:

- End-station ports that do not need to participate in the full spanning tree negotiation
- Loop-free topologies that do not need spanning tree protocol to resolve redundant connections

To enable Fast Start for ports on a module associated with a selected bridge:

1. In the **System Configuration** section of the Web Agent window, click **Modules & Ports**. The Module Information dialog box opens.
2. In the **Switch Ports** column, click on the **switch port number** listed for the selected module. The Switch Ports dialog box opens.
3. To set Fast Start mode on individual ports, in the **Name** column, click **the port name for the selected module.** The Switch Port Configuration dialog box opens.

   Or

   To set Fast Start mode on all ports in a module, click **All Module Switch Port Configuration**. The Switch Port Configuration on All Ports dialog box opens.
4. From the **Fast Start** pull-down menu, select **Enable** to enable Fast Start mode on the selected module ports.
5. Click **APPLY** to save your changes, or **CANCEL** to clear your selection.

Using the All Ports Configuration Dialog Box

The All Ports Configuration dialog box allows you to apply the same parameter settings to all switch ports in a module using a single command.

To set all switch ports in a module using a single command:

1. In the **System Configuration** section of the Web Agent window, select **Modules & Ports**. The Module Information dialog box opens.
2. In the **Ports** column, click the **number** of ports listed for the module you want to configure (for example, **10** for 100BASE-FX). The Physical Port Configuration dialog box opens.
3. Click **All Module Ports Configuration** at the bottom of the dialog box. The All Ports Configuration dialog box opens.
4. Select the port on which you want your changes to occur.

5. Set port parameters for the selected ports, as described in "Viewing Switch Port Parameters", earlier in this chapter.

6. Click **APPLY** to save your changes, or **CANCEL** to restore previous settings.

Setting Up SNMP Communities

SNMP communities are the SNMP values that an SNMP manager uses to manage the switch. SNMP Version 2c is supported.

Table 19. SNMP Communities Parameters

Parameter	Definition
Community String	This string serves as a password that you enter at the network management station. It provides the level of access to the switch that you specify on this page.
IP Address	Allows you to send SNMP responses only to a station with any or a particular IP address.
Access	Helps provide security when you use SNMP to manage the network from a single workstation. Refer to Table20 for more information on Access options. The default is Read-Write.
Security Level	Allows you to select the security level for this community string. Refer to Table21 for more information on security level options. The default is Normal.
Trap Receiver	Allows you to enable or disable the transmission of traps to the selected IP address. The default is Disable.

To set SNMP communities:

1. In the **System Configuration** section of the Web Agent window, select **SNMP Administration**. The SNMP Community Management dialog box opens.

2. Click **CREATE**. The Create SNMP Community dialog box opens.

3. In the **Community String** field, enter a **community name**.

4. From the **IP Address** pull-down menu, select **Any** for any IP address or **Specific** and enter an **IP Address** in the appropriate fields.

5. From the **Access** pull-down menu, select a **level** for this community (Table 20).

Table 20. Access Levels

Access Level	Manager Can...	Manager Cannot...
Read-Only	View switch configuration settings and statistics.	View community strings. Change switch configurations.
Read-Write	View and set switch configuration settings, and view statistics.	View community strings.
Read-Write with Security Level Set to admin	View and set all switch parameters, including community table.	N/A
None	Do nothing. This selection allows you to disable a string without deleting it.	Access any switch features.

6. From the **Security Level** pull-down menu, select a **security level** for this community string (Table21).

Table 21. SNMP Security Levels

Option	Allows Access to...
normal	All switch configuration and reporting functions.
admin	All switch configuration and reporting functions, including access to **community configuration**.

7. From the **Trap Receiver** pull-down menu, select **Enable**.

8. Click **APPLY** to save your changes, or **CANCEL** to restore previous settings.

Changing the Console Serial Port Settings

You can use the Web Agent to change the communications settings for the serial port connection on the front panel of the Layer 3 supervisor module.

Initially, the switch's console port is configured as a TTY Console to support a TTY connection. The Layer 2 and Layer 3 supervisor modules allow you to reconfigure the console serial port as a PPP Console to support a dial-in PPP connection using a modem.

*** Note:** As a PPP console, you can change only the switch's baud rate and flow control parameters. The flow control parameters are limited to None or Xon/Xoff.

Configuring the Serial Console Port as a TTY Console

To configure the console serial port as a TTY Console:

1. In the **System Configuration** section of the Web Agent window, select **Console Configuration**. The Console Configuration dialog box opens.
2. Click **TTY** for your console type and click **SELECT**. The Console Port Configuration dialog box opens.
3. Use Table22 to set your console serial port settings:

Table 22. Console Serial Port Options

Option	Default	Available Settings
Baud Rate	9600	300, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
Flow Control	Xon/Xoff (TTY)	None, Xon/Xoff (TTY)
Data Bits	8	7 or 8
Parity	None	Odd, Even, or None
Stop Bits	1	1 or 2

4. Click **APPLY** to save your changes, or **CANCEL** to restore previous settings.

Connecting a Modem

In order to use the serial console port as a PPP console, you must connect a modem to the switch. When you use the specified serial cable and connectors, the switch will convert the normal DCE interface to a DTE interface that is used by modems.

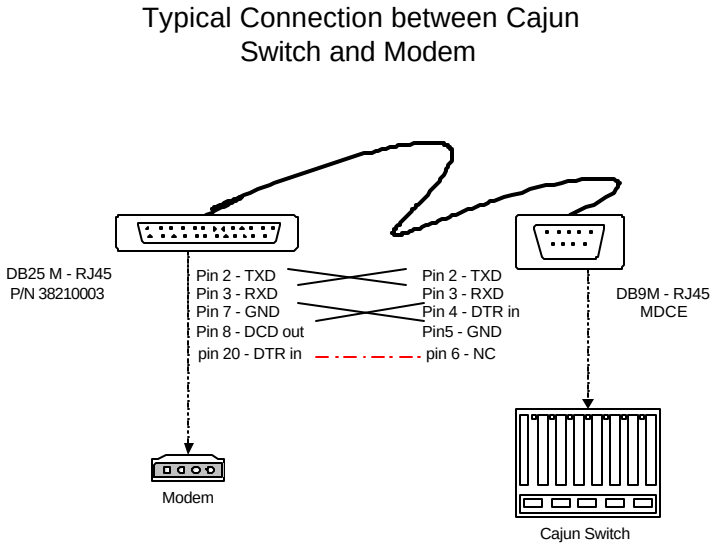
When the switch is configured for PPP mode, it will periodically send the modem config string from the serial console port. This will synchronize the baud rates between the modem and the console port and configure the modem to operate with the switch's DTE interface.

The switch does not use any output signals except for TXD. It uses the DTR (converted to DSR by the specified cable and connectors) input connected to the modem DCD output, to detect that the modem is connected. It supports XON/XOFF flow control (or none).

To connect a modem:

1. Attach a DB25M-RJ45 (P/N 38210003)connector to the modem.
2. Attach the DB9M-RJ45 MDCE connector to the switch's serial console port on the front panel of the switch.

Figure 17. Typical Connection Between the Switch and a Modem



Configuring the Serial Console Port as a PPP Console

You can reconfigure the console serial port as a PPP Console to support a dial-in PPP connection using a modem.

*** Note:** The lack of an IP address for the PPP serial interface causes the switch to immediately return to sending the modem configuration string. Typing TTY will re-access the CLI login prompt.

To configure the console serial port as a PPP console:

1. In the **System Configuration** section of the Web Agent window, select **Console Configuration**. The Console Configuration dialog box opens.
2. Click **PPP** for your console type and click **Select**. The Console Port Configuration dialog box opens.
3. Use Table22 to change your console port settings.

*** Note:** The only parameters you can change as a PPP console is baud rate and flow control. The flow control settings are limited to None or Xon/Xoff.

4. In the **Modem Init Cmd** field, enter your **modem initialization command**. The default modem configuration string is **AT&D0S0=1**.

Table 23. Modem Configuration String Parameters

Parameter	Definition
&D0	Disable DTR
S0=1	Auto-answer mode (one ring)
CD follows carrier	Depends on modem
E0	Disable local echo
Software Flow Control (Receive and Transmit)	Depends on modem

5. Click **APPLY** to save your changes, or **CANCEL** to restore previous settings.

*** Note:** If you misconfigure your PPP serial console port, you can regain CLI access to correct the configuration parameters. For more information, refer to “Regaining Configuration Access to the PPP Serial Port Console”.

Safety Tip: To successfully dial-in with PPP to the switch, you must also configure an IP address and interface for the PPP Serial Interface (Serial-Console).

Regaining Configuration Access to the PPP Serial Port Console

If the PPP serial port console is configured incorrectly, the command line interface (CLI) becomes temporarily unavailable for reconfiguration.

To regain access to the CLI when the console port is in PPP mode:

1. In the console window, type **TTY**. The CLI login prompt displays. It may be necessary to press Enter several times to see the login prompt. You may see the modem init command string.
2. At the **Login** prompt, enter your **user name**. The password prompt displays.
3. At the **Password** prompt, enter your **password**. The Cajun CLI prompt displays.
4. Enter the PPP configuration commands necessary to start PPP. Refer to "Configuring the Serial Console Port as a PPP Console", earlier in this chapter, and "Creating an IP Interface", in Chapter 7, for more information on PPP configuration commands.
5. After you complete your configuration settings, type **exit** at the CLI prompt to reinvoke the modem control software and exit CLI mode.

   *** Note:** You do not need to exit from CLI if the serial port console has been configured as a TTY console, or if you do not intend to re-attempt connecting using PPP.

Configuring Dial-Up Networking

To configure your PC for dial-up networking with a PPP serial port console:

1. From **My Computer**, double-click **Dial-Up Networking**. The Dial-Up Networking dialog box opens.

   *** Note:** You must have dial-up networking installed on your PC.

2. Double-click **Make New Connection** to configure your modem. The Make New Connection wizard opens.
3. In the **Type a name for the computer you are dialing** field, enter a **connection name** for the computer you are dialing.
4. From the **Select a Modem** pull-down menu, select your **modem** and click **Configure**. The Modem Properties dialog box opens.
5. Click the **Connection** tab. The Connection tab opens.

6. In **Connection preferences**, select the following:
   - From the **Data bits** pull-down menu, select **8**.
   - From the **Parity** pull-down menu, select **None**.
   - From the **Stop bits** pull-down menu, select **1**.
7. Click Advanced. The Advanced Connection Settings dialog box opens.
8. In **Use flow control**, click **Software** (XON/XOFF).
9. Click **OK** to close the dialog box. The Modem Properties dialog box re-opens.
10. Click the **Options** tab. The Option tab opens.
11. In **Connection control**, click **Bring up terminal window after dialing** and click **OK**. The Modem Properties dialog box closes and the wizard continues.
12. In the wizard dialog box, click **Next** and enter the **telephone number** you are calling.
13. Click **Next**. The wizard reports that you have successfully configured a modem.
14. Click **Finish**. The wizard closes and the newly configured connection displays in your Dial-Up networking program group.
15. Right-mouse click on your new connection and select **Properties**. The Properties dialog box opens.
16. Click the **Server Types** tab and **de-select** all advanced options except TCP/IP.
17. Click **TCP/IP Settings**. The TCP/IP settings dialog box opens.
18. Click **Specify an IP Address** and enter the **IP address** of the serial port interface.
19. Click **Server assigned name server addresses**.
20. De-select **Use IP header compression** and **Use default gateway on remote network**.
21. Click **OK** to close the TCP/IP dialog box.
22. Click **OK** to close the new connections properties dialog box.

Using Dial-Up Networking with a PPP Serial Port Console

To use TCP/IP applications (Telnet, HTTP, and SNMP) over your PPP serial port interface:

1. From **My Computer**, double-click **Dial-Up Networking**. The Dial-Up Networking program group opens.
2. Double-click on the **PPP modem** previously created. The Connect To dialog box opens.
3. Enter your **password** and click **Connect**. A Pre-Dial Terminal Screen opens.

   When the modem has successfully connected, a Post-Dial Terminal Screen opens.
4. In the **Post-Dial Terminal screen**, **login** using your **CLI user name** and **password**. It may be necessary to enter several carriage returns to view the Login prompt.
5. At the CLI prompt, go to configuration mode and enter **set console transfer PPP**. ASCII characters display below the CLI prompt. This is typical while the switch attempts to connect via PPP.
6. In the **Post-Dial Terminal screen**, click **Continue (F7)**. PPP verification completes and the Connected To dialog box displays a message that the modem connection has been successfully established.

Configuring the IP Interface for the PPP Console

To configure the PPP console with an IP address and mask:

1. Configure your console serial port as a PPP Console. See "Connecting a Modem", earlier in this chapter.
2. Connect your modem cable to the Cajun's serial port.
3. From the **IP Configuration** section of the Web Agent, click **Interfaces**. The IP Interfaces dialog box opens.
4. Click **CREATE**. The Add IP Interface dialog box opens.
5. From the **VLAN** pull-down menu, select **Serial-Console**. This specifies the interface for the PPP console.
6. In the **Network Address** field, enter the **IP address** to be associated with the PPP console port.

   *** Note:** If you do not enter a name for this interface, the IP address is used as the interface name.

7. In the **Mask** field, enter the **network mask IP address (**for example, 255.255.255.0).

8. Click **APPLY** to save your changes, or **CANCEL** to restore previous settings.

Configuring a Static Route for the PPP Console

To configure a PPP Console static route:

1. Configure your console serial port as a PPP Console. Refer to "Connecting a Modem", earlier in this chapter.

2. From the **IP Configuration** section of the Web Agent window, click **Static Routes**. The IP Static Routes dialog box opens.

3. Click **CREATE**. The Add IP Static Routes dialog box opens. This allows you to define a static route for the PPP console.

4. In the **Network Address** field, enter the **IP address** to be associated with the PPP console port.

5. In the **Mask** field, enter the **network mask IP address**.

6. In the **Next-Hop Address** field, enter the **IP address** of the gateway associated with this static route.

7. Click **APPLY** to save your changes, or **CANCEL** to restore previous settings.

Hardware Requirements for Routing

To configure your switch as an IP/IPX or AppleTalk router, you must first configure your Cajun switch with the following hardware:

- P880 supervisor module (mandatory)
- Layer 3 media modules (optional) including:
  - 2-Port Gigabit Ethernet module
  - 10-Port 100-BASE-F module
  - 12-Port 10/100-BASE-T module

Configuring IP Routing on the Switch

The Cajun P880 Switch with Integrated Routing combines scalable wire speed IP Layer3 switching (routing) with 10/100/1000 Ethernet Layer 2 switching (bridging) in a high-capacity chassis-based system. The product emphasizes traditional, standards-compliant IP operation and ample capacity to avoid bottlenecks.

For more detailed information on Cajun P880 Switch routing operations, refer to "Routing with Layer 2 and Layer 3 Modules", in the *Cajun P550/P220 Switch Operation Guide.*

Minimum IP Routing Configuration Requirements

The configuration process for the Cajun P880 Switch with integrated routing has the following minimum requirements for using IP routing:

- IP routing must be globally enabled.
- At least one routing protocol must be enabled (RIP, OSPF) to allow communication between routers.
- Determine which interfaces need to have IP routing enabled.
- If you plan to expand your current network, create VLANs (subnets) to address your network configuration.
- Assign an IP address, subnet mask, routing protocol, and multicast routing protocol to each IP interface you configure.

Routing Configuration Quickstart

This section provides an overview of the LAN router configuration operation. For more information on these configuration steps, see the sections referenced after each step.

To configure the switch as a LAN router:

1. Create a **IP interface** for each subnet. Refer to "Creating and Implementing VLANs", in the *Cajun P550/P220 Switch Operation Guide.*
2. Create or assign a **VLAN** to the IP interface. Refer to "Assigning IP Interfaces to the VLAN", in the *Cajun P550/P220 Switch Operation Guide.*
3. **Bind ports** to the VLANs assigned to the IP interfaces. Refer to "Viewing Switch Port Parameters", earlier in this chapter.
4. Specify how the router will communicate with other routers. Refer to "Assigning IP Interfaces to the VLAN", in the *Cajun P550/P220 Switch Operation Guide,* to configure OSPF and RIP parameters.

Configuring System Information

The System Information section of the Web Agent allows you to configure general system information and settings, such as:

- Entering General System Information
- Enabling SNTP
- Setting Summer Time Hours
- Displaying the Power System Statistics
- Displaying Cooling System Statistics
- Performing a System Reset
- Configuring Redundant Hardware

Entering General System Information

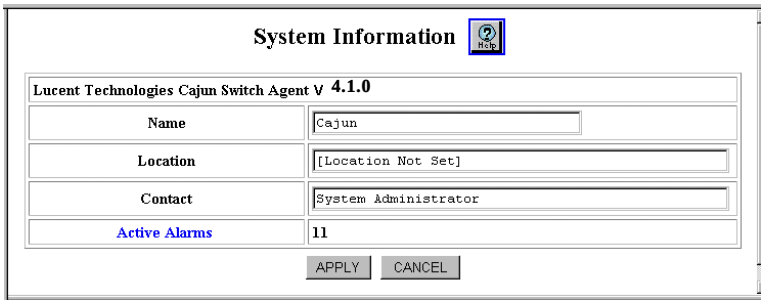
The system allows you to enter general system identification information from the Web Agent. Use these fields to uniquely identify each switch:

- ❒ Switch name
- ❒ Device location
- ❒ Device contact

To change these values:

1. In the **System Information** section of the Web Agent window, click **General**. The System Information dialog box opens (Figure 18).

Figure 18. General System Information Dialog Box



2. In the **Name** field, enter a name for the switch.

3. In the **Location** field, enter the location for the switch (for example, floor and closet location).

4. In the **Contact** field, enter information about the person who should be contacted in the event of a problem.

5. Click **APPLY** to save your changes, or **CANCEL** to restore previous settings.

Enabling SNTP

The Simple Network Time Protocol (SNTP) ensures that you can automatically synchronize time on all computers, switches, and other devices connected to your Cajun P880 Switch. By enabling SNTP, you ensure that all devices connected to your switch reflect the same time.

When you enable SNTP, you are required to set your time zone and the rule or dates of Summer Time Hours followed by your location. For information about setting your time zone, refer to "Setting One-Time Summer Time Hours". For information about setting Summer Time Hours, refer to "Setting Summer Time Hours". To enable SNTP:

1. In the **System Information** section of the Web Agent window, click **System Clock**. The System Clock dialog box opens.

2. In the **Clock Options** section, click **Simple Network Time Protocol (SNTP)**. The SNTP Client Configuration dialog box opens.

3. From the **Enable State** pull-down menu, select **Enable**.

4. In the **Server IP Address** field, type the IP address of the switch for which you enable SNTP.

5. Click **Apply**. SNTP is enabled for the switch.

Setting Summer Time Hours

Summer Time Hours, also referred to as Daylight Savings Time (DST), is the strategy of moving clocks ahead to provide greater amounts of daylight in the afternoon and to standardize time with other parts of the world. In many parts of the world, the Summer Time Hours algorithm is based on a standardized rule. For example, in the Western hemisphere, the rule used by most locations in Canada, Mexico, and the United States is to set clocks forward by

one hour at 2:00 a.m. on the first Sunday in April and back an hour at 2:00 a.m. on the first Sunday in October annually. Many countries in Europe and Asia follow similar rules. The offset, or amount of time by which the clock is set forward or backward, varies from country to country.

Many parts of the world follow a one-time change of Summer Time Hours. When you configure the switch for these locations, you reset the clock by specifying a scheduled time and date.

*** Note:** If you upgrade the Cajun P880 from a previous version, your local time settings are saved as Greenwich Mean Time values. Ensure that you change the Summer Time Hours Algorithm before you set the clock.

Setting Recurring Summer Time Hours

To set recurring Summer Time Hours:

1. In the **System Information** section of the Web Agent window, click **System Clock**. The System Clock dialog box opens.
2. In **Clock Options**, click **Summer Time Hours Algorithm**. The Summer Time Hours Configuration box opens.
3. From the **Enable State** pull-down menu, select **Enable**.
4. In the **Offset** cell of the **Value** column, enter the reset value for the clock in minutes.

   For example, if you intend to reset the clock forward or backward by one hour, retain the default value of 60 minutes.
5. Click **Recurring**.

*** Note:** The Web Agent enables you to select the boxes next to both Recurring and One-time Summer Time Hours. However, the option to set both Recurring and One-time hours is not provided.

6. Use Table24 for information about configuring Summer Time Hours.

Table 24. Recurring Summer Time Hours Configuration

Parameter	Definition
Recurring	Select if Summer Time Hours is defined by a rule such as Daylight Savings Time (DST). All Start and End fields associated with Recurring Summer Time Hours provide the default values for Daylight Savings Time. When you select recurring Summer Time Hours, you indicate the time, in hours and minutes, on a specified day, week, and month that Summer Time Hours begin and end.
Start	Specifies the start of Summer Time Hours.
End	Specifies the end of Summer Time Hours.
Week	Select the week during which you want recurring Summer Time Hours to start or end. The selected week should reflect the day on which Summer Time Hours start. For example, if Summer Time Hours start on the first Sunday in April, select the First week. Options include: • **First -** First week of the month, the default Start value, when Daylight Savings Time starts in the Western hemisphere. • **Second -** Second week of the month. • **Third -** Third week of the month. • **Fourth -** Fourth week of the month. • **Last -** Remaining days of the month that form the last week of the month. Last is specified as the default End value, denoting when Daylight Savings Time ends in the Western hemisphere.

Table 24. Recurring Summer Time Hours Configuration

Parameter	Definition
Day	Select the day of the week when you want recurring Summer Time Hours to start or end. Options are based on a seven-day week and include: • **Sunday -** the default Start and End values. In the Western hemisphere, DST starts on the first Sunday in April and ends on the last Sunday in October. • Monday • Tuesday • Wednesday • Thursday • Friday • Saturday
Month	Select the month when recurring Summer Time Hours start or end. The twelve months of the Gregorian calendar are provided. For recurring Summer Time Hours, the default Start value is April, the month during which DST starts in the Western hemisphere. The default End value is October, the month during which DST ends in the Western hemisphere.
Hour	Enter a value to represent the hour when Summer Time Hours start or end for Recurring settings. For Recurring Summer Time Hours, the default value is 02, meaning 2:00 a.m., for both Start and End hours.
Minutes	Enter a value to represent the number of minutes into the hour when Summer Time Hours start or end for Recurring Summer Time Hours. The default value is 00 for both Start and End minutes.

7. To set Summer Time Hours that recur annually, according to a rule:

a. Select **Recurring**.

b. Select values for the Week, Day, and Month when Summer Time Hours start and end.

c. Enter values for the Hour and Minutes when Summer Time Hours start and end.

8. Click **APPLY** to save your changes, or **CANCEL** to restore previous settings.

Setting One-Time Summer Time Hours

To set Summer Time Hours that are not based on a standard rule:

1. In the **System Information** section of the Web Agent window, click **System Clock**. The System Clock dialog box opens.
2. In **Clock Options**, click **Summer Time Hours Algorithm**. The Summer Time Hours Configuration box opens.
3. From the **Enable State** pull-down menu, select **Enable**.
4. In the **Offset** cell of the **Value** column, enter the **reset value** for the clock in minutes.

   For example, if you intend to reset the clock forward or backward by one hour, retain the default value of 60 minutes.
5. Click **One-Time**.

*** Note:** The Web Agent enables you to select the boxes next to both Recurring and One-time Summer Time Hours. However, the option to set both Recurring and One-time hours is not provided.

6. Use Table25 to configure Summer Time Hours on a one-time basis.

Table 25. One-Time Summer Time Hours Configuration

Parameter	Definition
One-time	Select if Summer Time Hours change one time, such as on a specified date. When you select one-time Summer Time Hours, you indicate the time and date on which Summer Time Hours begin and end.
Start	Specifies the start of Summer Time Hours.
End	Specifies the end of Summer Time Hours.

Table 25. One-Time Summer Time Hours Configuration

Parameter	Definition
Week	Select the week of the month during which you want recurring Summer Time Hours to start or end. Options include: • **First** - First week of the month, the default Start value, when Daylight Savings Time starts in the Western hemisphere. • **Second** - Second week of the month. • **Third** - Third week of the month. • **Fourth** - Fourth week of the month. • **Last** - The final days of a month, such as the 29th, 30th, and 31st days of a month. Last is specified as the default End value, denoting when Daylight Savings Time ends in the Western hemisphere.
Day	Select the day of the week when you want recurring Summer Time Hours to start or end. Options are based on a seven-day week and include: • **Sunday** - The default Start and End values. In the Western hemisphere, DST starts on the first Sunday in April and ends on the last Sunday in October. • Monday • Tuesday • Wednesday • Thursday • Friday • Saturday
Month	Select the month when one-time Summer Time Hours start or end. The twelve months of the Gregorian calendar are provided. For a one-time setting of Summer Time Hours, the default value for start and end months is January.
Hour	Enter a value to represent the hour when Summer Time Hours start or end for One-time settings. The default value is 00.
Minutes	Enter a value to represent the number of minutes into the hour when Summer Time Hours start or end for One-time Summer Time Hours. The default value is 00 for both Start and End minutes.

7. To set Summer Time Hours on a one-time basis:

   a. Select **One-Time**.

   b. Set the **date** on which Summer Time Hours start and end by selecting the Month, Day, and Year on which Summer Time Hours start and end.

   c. Enter **values** for the Hour and Minutes when Summer Time Hours start and end.

8. Click **APPLY** to save your changes, or **CANCEL** to restore previous settings.

Setting the System Clock

The system clock is used for setting traps, alarms, and other events of the switch. Set SNTP and Summer Time Hours before you set the system clock.

To set the system clock:

1. In the **System Information** section of the Web Agent window, click **System Clock**. The System Clock dialog box opens.

2. In the **Current Time Setting** fields, enter the time using 24-hour time format (for example, 10 p.m. is 22 00 00).

3. From the **Time Zone** pull-down menu, select your time zone.

4. In the **Current Date Setting** fields, enter the current month, date, and year.

5. **Click APPLY** to save your changes, or **CANCEL** to restore previous settings.

   *** Note:** The system clock does not automatically change with Daylight Savings Time.

Setting the Temperature System

You can set the upper and lower temperature warning systems for your switch's backplane and slot 1.

To configure the temperature warning systems:

1. In the **System Information** section of the Web Agent window, click **Temperature**. The Temperature System dialog box opens.
2. Enter the desired temperature **warnings** for the **switch backplane** and **slot 1 sensors**, and enter the desired temperature **warning** for the **CPU sensor**.
3. Click on **APPLY** to save your changes, or **Defaults** to restore the temperature defaults.

*** Note:** The supervisor modules shut down the switching modules if the temperature reaches the Shutdown temperature. The modules are restarted if the temperature goes below the Upper Warning Temperature. The default Shutdown temperature for the slot 1 sensor and backplane sensor is 50° C. You can set the warning temperature to a value lower than 50° C to ensure prompt notification of an over-temperature situation.

Displaying the Power System Statistics

To display the power system statistics:

1. In the **System Information** section of the Web Agent window, click **Power System**. The Power System dialog box opens.
2. Use Table26 to review your power system statistics:

Table 26. Power System Statistical Parameters

Parameter	Definition
Power Supply	Indicates the power supply is present.
Status	Identifies if the power supply is working properly.
Type	Describes the type of power supply detected.

Table 26. Power System Statistical Parameters

Parameter	Definition
Total System Power	Displays the total system power in Watts.
Current Power Available	Displays the current power available.

*** Note:** The power system settings only display 1400W of available power with two or three power supplies installed. A maximum configured switch requires a maximum of two power supplies. A third power supply may be added for redundancy in the event one of the other power supplies fails. All three power supplies will load-share during redundant operation. The remaining power supplies will share the full system load, in the event that the third power supply fails.

Displaying Cooling System Statistics

To display the switch's cooling system status:

1. In the **System Information** section of the Web Agent window, click **Cooling System**. The Cooling System dialog box opens.
2. Ensure that all the individual components are operational by checking the status column for each component.
3. If a component's status is non-operational, power down the Caju P880 Switch and contact a service representative to diagnose the failing unit.

Configuring Redundant Hardware

The Cajun P880 switch provides a redundant controllers and elements to ensure that if a controller or an element fails, the switch will continue to route data properly. The redundant components are available as separate options.

When the redundant controller and element are installed, the backplane consists of the following parts:

- One main controller
- One redundant controller
- Six switch elements
- One redundant element

The Cajun P880 switch is equipped with diagnostics to monitor the status of switch controllers and elements. When an element fails, diagnostics run automatically and test the hardware. In the Web Agent, information about a failed controller or element displays in the Switch Fabric Status dialog box.

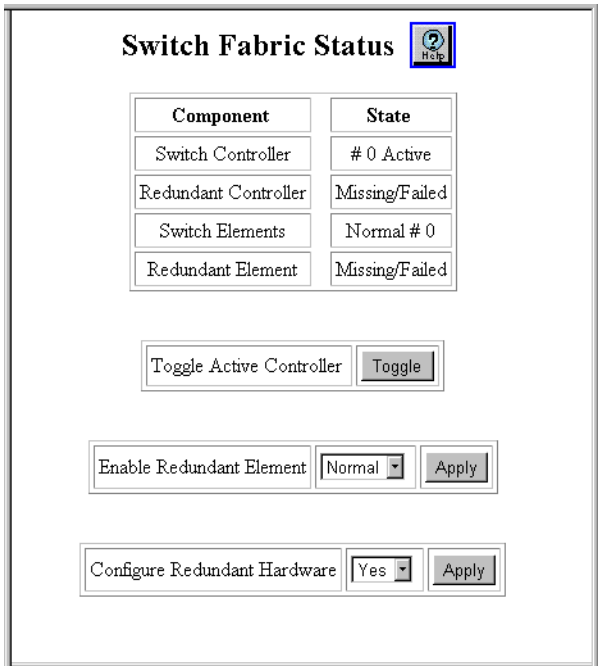
If the primary controller fails, the redundant controller takes over switch operation until you replace the primary controller. If an element fails, the redundant element takes over the function of the failed element until you replace the element.

Checking for Proper Installation

1. In the **System Information** section of the Web Agent window, click **Switch Fabric**. The Switch Fabric Status dialog box opens.

   If the redundant controller and element installed properly, settings display as in Figure 19.

Figure 19. Properly-Installed Redundant Hardware Settings



2. From the **Configure Redundant Hardware** pull-down menu, select **Yes**.
3. Click **APPLY** to save your changes.

   The redundant hardware is enabled. If the primary controller fails, the redundant controller takes over in its place. If an element fails, the redundant element takes over in its place.

Replacing the Primary Controller

If the primary controller fails, you are notified by a console message and an event log message. In the Web Agent, the **Switch Controller** field displays **# 0 Failed**. If the switch is installed with a redundant controller, the redundant controller automatically takes over the operation of the failed primary controller.

To replace the primary controller:

1. In the **System Information** section of the Web Agent window, click **Switch Fabric**. The Switch Fabric Status dialog box displays.
2. From the **Configure Redundant Hardware** pull-down menu, select **No**.
3. Click **APPLY** to disable the primary controller.
4. Shut down the switch.

CAUTION

Before replacing switch controllers or elements, you must turn off the switch.

5. Replace the failed primary controller by inserting it in the slot to the right of the redundant controller and to the left of element three.
6. Restart the switch and login.
7. In the **System Information** section of the Web Agent, click **Switch Fabric**. The Switch Fabric Status dialog box displays.
8. From the **Configure Redundant Hardware** pull-down menu, select **Yes.**
9. Click **APPLY** to enable the redundant controller.

   The Switch Controller field displays # 1 Active to show that the redundant controller is now enabled.
10. In the **Toggle Active Controller** field, click **Toggle** to restore control to the primary controller.

    The Switch Controller field displays # 0 Active to show that the primary controller is now enabled.

Replacing an Element

If an element fails, you are notified by a console message and an event log message. In the Web Agent, the Switch Elements field displays # Failed <number>, where `<number>` is the number that indicates the failed element.

To configure the redundant element:

1. In the **System Information** section of the Web Agent window, click **Switch Fabric**. The Switch Fabric Status dialog box displays.
2. From the **Configure Redundant Hardware** pull-down menu, select **No**.
3. Click **Apply** to disable the failed element.
4. Shut down the switch.

CAUTION

Before replacing switch controllers or elements, you must turn off the switch.

5. Replace the failed element by inserting it into the appropriate slot.

6. Restart the switch and login.

7. In the **System Information** section of the Web Agent window, click **Switch Fabric**. The Switch Fabric Status dialog box displays.

8. From the **Configure Redundant Hardware** pull-down menu, select **Yes** and click **APPLY** to enable the redundant element.

   The Switch Elements field displays Normal # 0 to show that the redundant element is now enabled.

9. From the **Enable Redundant Element** pull-down menu, select **Normal** and click **APPLY**.

   The Switch Element field displays Normal # 0 to show that the replaced element is now enabled.

Performing a System Reset

To perform a system reset:

1. In the **System Information** section of the Web Agent window, click **System Reset**. The System Reset Page dialog box opens.

2. Click **Save** to save your running configuration to the startup configuration before performing a system reset.

3. Click **Yes** to reset the switch, or **No** to cancel the operation.

Managing Configuration Files

You can manage the system files that contain the configuration data for your Cajun P880 switch. When you first install the switch, or upgrade from a previous installation, your configuration parameters are stored in a startup.txt file located in the switch's Non-Volatile Random Access Memory (NVRAM). When the switch is restarted, the startup.txt file runs and stores configuration parameters in volatile RAM as a running configuration.

Changes you make to the switch configuration are automatically recorded in RAM, but not in NVRAM. When you want to retain your current configuration, you must manually save it to NVRAM through the Web Agent or the Command Line Interface (CLI). For information about how to save your running configuration file to

your startup configuration, refer to “"Copying Running Configuration to Startup Configuration"” later in this section. To determine changes you have made to your running configuration, you can view and compare your running and startup configuration files.

Viewing Your Running Configuration

To view your running configuration:

- In the **CLI Configuration** section of the Web Agent window, click **Running Configuration**.

  Or

- In **privileged mode** in the Command Line Interface, enter `show running_config`.

Viewing Your Startup Configuration

To view your startup configuration:

- In the **CLI Configuration** section of the Web Agent window, click **Startup Configuration**.

  Or

- In **privileged mode** in the Command Line Interface, enter `show startup_config`.

Viewing Your Script Execution Log File

Each time the startup.txt file or other script runs, a log file is generated. Log files contain the data that scripts return.

To view your script execution log file:

- In the **CLI Configuration** section of the Web Agent window, click **Script Log File**.

  The Script Execution Log File dialog box opens showing the contents of the script execution log file.

  Or

- In **privileged mode** in the Command Line Interface, enter `show file logfile.txt`.

Copying Configuration Files

If you modify your running configuration through the Command Line Interface (CLI) or the Web Agent, and you want your changes to replace your startup configuration, copy your running configuration to your startup configuration. Before you copy a running configuration over your startup configuration, copy your startup configuration to a file on the switch or on a TFTP server using the Web Agent or the Command Line Interface. On the switch, configuration files are automatically saved as text files using the *.txt extension. On a TFTP server, you can edit the startup.txt file using a text editor of your choice and save copies of it with or without a file extension.

Copying Running Configuration to Startup Configuration

To save your running configuration as your startup configuration in NVRAM:

1. In the **CLI Configuration** section of the Web Agent window, click **Config File Management**.
2. Click **Save** to save your running configuration as your startup configuration.

   Or

   In **privileged mode** in the CLI, enter:

   ```
   copy running-config startup-config
   ```

Copying Files

Using the Configuration File Management dialog box, you can copy files to and from multiple locations. For example, if you modify your running configuration and you want to reinstate your startup configuration parameters, you can copy your startup configuration to your running configuration in volatile RAM. Also, you can upload configuration and other ASCII files from the switch to a TFTP server. Likewise, you can download files by copying files from a TFTP server directory to the switch or to a startup or running configuration file.

To copy files:

1. In the **CLI Configuration** section of the Web Agent, click **Config File Management**. The Configuration File Management dialog box opens.

2. Use Table27 for information about copying a source file to a TFTP server destination:

Table 27. Configuration File Management Parameters

Parameter	Description	Options
Save Running-Config to Startup-Config	Saves the running configuration to the startup configuration	N/A
Copy Source	Specifies the source file to be copied	• **Unspecified**- No source specified. Choose a source. • **File** - Specifies a source file located on the switch in NVRAM. • **Running-Config** - Specifies a running configuration. • **Startup-Config** - Specifies a startup configuration. • **TFTP Server** - Specifies a source file located in a directory on a TFTP server.
Source Filename	Specifies the path and name of the source file	Source files can be ASCII files in NVRAM available for upload or files located on a TFTP server available for download

Table 27. Configuration File Management Parameters

Parameter	Description	Options
Copy Destination	Specifies the destination of the file to be copied	• **Unspecified** - No destination specified. Choose a destination. • **File** - Specifies that a source is copied or downloaded to NVRAM. • **Running-Config** - Specifies that a source is copied to the running configuration. • **Startup-Config** - Specifies that a source is copied to the startup configuration. • **TFTP Server** - Specifies that a source is copied to a TFTP server location.
Destination Filename	Specifies the location of the destination	Configuration files and other files can be copied to NVRAM on the switch or to a TFTP server as a destination location.
TFTP Server IP Address	Specifies the IP address of a source or destination TFTP server	Copy (download) source files, located on a TFTP server, to your running configuration, your startup configuration, or a location on the switch. Or, copy (upload) your configuration files, or a file located on the switch, to a TFTP server.

3. From the **Copy Source** pull-down menu, select one of the following:

   — **Running-Config** - To copy your running configuration to your startup configuration, to a file located on the switch, or to a file located on a TFTP server.

   — **Startup-Config** - To copy your startup configuration to your running configuration, to a file located on the switch, or to a file located on a TFTP server.

   — **File** - To copy a file stored on the switch to your running or startup configuration, to a location on the switch, or to a location on a TFTP server.

   — **TFTP Server** - To copy a file stored on a TFTP server to your running or startup configuration or to a file on the switch.

   If you select **File** or **TFTP Server**, also provide the path and filename of the source file in the **Source Filename** field.

4. From the **Copy Destination** pull-down menu, select one of the following:

   — **Running-Config** - If you are copying your startup configuration, or other file located on the switch or on a TFTP server, to your running configuration.

   — **Startup-Config** - If you are copying your running configuration, or other file located on the switch or on a TFTP server, to your startup configuration.

   — **File** - If you are copying your startup or running configuration, another file located on the switch, or a file located on a TFTP server to a file on the switch.

   — **TFTP Server** - If you are copying your startup or running configuration, or another file located on the switch, to a location on a TFTP server.

   If you select **File** or **TFTP Server**, also provide the path and filename of the destination file in the **Source Destination** field.

5. In **TFTP Server IP Address**, enter the IP address of the source or destination TFTP server, if applicable.

6. Click **Copy**. Your source configuration or file is copied to your specified destination.

*** Note:** The Web Agent returns an `Invalid operation!` error message if you attempt to copy:

- The current running configuration to the running configuration.
- The startup configuration to the same startup configuration.
- The specified TFTP server to a TFTP server.

Viewing the Status of a TFTP Transfer

After you have copied the startup configuration or other files to a TFTP server, you can check the status of the TFTP transfer to ensure that files copied correctly.

To view the status of a TFTP transfer:

1. In the **CLI Configuration** section of the Web Agent, click **Config File Management**. The **Configuration File Management** dialog box opens.
2. In the **Get Status of Most Recent TFTP Copy** field, click **Status**.

A Compliance and Specification Information

Safety

UL 1950

EN60950

CSA 22.2-No. 950

IEC 950

TUV GS

EMI

FCC 15J, Class A

CE Mark

EN55022 Class A

CISPR 22 Class A

EN55024

Power

AC input voltage: 100-240 VAC @ +6%, -10%

Frequency: 50 - 60 Hz

Maximum Power Consumption Per Power Supply: 10.0 A @ 120 V

5.5 A @ 240 V

Line cord connector to power supply must be IEC320/C15. Cordage must be sized appropriately for rated current.

Operating/Physical

Operating Temperature (Sea Level): 0° to 40° C

Storage Temperature (Sea Level): -20° to 80° C

Relative Humidity: 5% to 95% noncondensing

Physical Dimensions: 17.375" W x 18.5" D x 25" H (15 RU)

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W

X