3930 Service Delivery Switch

Hardware Installation and Start-up Manual

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Corporate Headquarters	410-694-5700 or 800-921-1144	www.ciena.com
Customer Technical Support/Warranty		
In North America	1-800-CIENA24 (243-6224) 410-865-4961	
In Europe, Middle East, and Africa	800-CIENA-24-7 (800-2436-2247) +44-207-012-5508	
In Asia-Pacific	800-CIENA-24-7 (800-2436-2247) +81-3-6367-3989 +91-124-4340-600	
In Caribbean and Latin America	800-CIENA-24-7 (800-2436-2247) 410-865-4944 (USA)	
Sales and General Information	410-694-5700	E-mail: sales@ciena.com
In North America	410-694-5700 or 800-207-3714	E-mail: sales@ciena.com
In Europe	+44-207-012-5500 (UK)	E-mail: sales@ciena.com
In Asia	+81-3-3248-4680 (Japan)	E-mail: sales@ciena.com
In India	+91-124-434-0500	E-mail: sales@ciena.com
In Latin America	011-5255-1719-0220 (Mexico City)	E-mail: sales@ciena.com
Training	877-CIENA-TD (243-6283) or 410-865-8996	E-mail: techtng@ciena.com

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Publication history

October 2012

- **Revision A, Standard:**
  - — Document assigned a new document number. This document replaces the document 009-2010-115.
  - — Overview material has been moved to *39XX/51XX Product Fundamentals*
  - — Optics information remains in *Packet Networking Transceivers Reference* (009-2011-602)
  - — Orderable part number information removed. For ordering assistance please contact your Ciena representative.

December 2012

- **Revision B, Standard:**
  - — Updated to add 3930 Sync + External Timing system
  - — Updated LED information to cover Reset behavior

February 2013

- **Revision C, Standard:**
  - — Updated to add warnings and cautions

September 2013

- **Revision D, Standard :**
  - — Updated to indicate External Timing interface support for SAOS Release 6.11
  - — Rebrand portfolio as Packet Networking (was Carrier Ethernet Solutions).
  - — Update name for the transceiver reference to *Packet Networking Transceivers Reference* (009-2011-602) and the glossary to *Packet Networking Glossary* (009-3299-026)

January 2014

- **Revision E, Standard :**
  - — Rebuilt the book to move the back cover to the end.

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About this Document

Overview

This document outlines the methodologies to be followed during the Installation of 3930 Service Delivery Switch from Ciena Corporation.

Disclaimer

While every effort has been made to ensure that this document is complete and accurate at the time of publishing, the information that it contains is subject to change. Ciena® is not responsible for any additions to or alterations of the original document. Networks vary widely in their configurations, topologies, and traffic conditions. This document is intended as a general guide only. It has not been tested for all possible applications, and it may not be complete or accurate for some situations.

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Intended Audience

This document is intended for certified system installation technicians and system administrators responsible for the installation of a 3930 system. All 3930 installation personnel are required to read, understand, and observe the safety precautions described in the product manual.

Related Documentation

Additional supporting documentation is available through the Ciena website at http://www.ciena.com.

The following list contains the names of the related documents in the suite:

- *39XX/51XX Product Fundamentals*
- *39XX/51XX Software Management and Licensing*
- *39XX/51XX Administration and Security*
- *39XX/51XX Command Reference*
- *39XX/51XX Configuration*

- *39XX/51XX Fault and Performance*
- *39XX/51XX MIB Reference*
- *Packet Networking Glossary* (009-3299-026)
- *Packet Networking Transceivers Reference* (009-2011-602)

Document Comments

Ciena appreciates all comments that will help us improve our documentation quality. The user can submit comments through the Ciena website (http://www.ciena.com).

Additional Product Information

Additional product information can be obtained by contacting the local sales representative or Ciena through the contact numbers and/or e-mail addresses listed on the back of the front cover.

Overview

The Ciena Service Delivery Switch (SDS) product family provides Ethernet connectivity to buildings and residences to deliver high-speed voice, video, and data connectivity. SDS devices are designed to lower the overall cost of building out a fiber network. These edge devices are then connected to Service Aggregation Switch (SAS) products which aggregate and distribute traffic to and from various points of the network.

The 3930 SDS is a next-generation high-capacity 28 Gigabit Ethernet SDS that can be deployed in Central Offices (CO), customer premises (CPE) and other environmentally controlled telecommunications spaces. The 3930 is part of a family products designed to address the connectivity requirements of different sites and services. In addition, Ciena offers SDS and SAS units designed for both outside plant and interior applications.

The 3930 uses the Ciena Service Aware Operating System (SAOS) version 6.x. A full description of the various products in the portfolio, including a full hardware overview of the 3930, is contained in *39XX/51XX Product Fundamentals*.

The SDS units are designed to work with other products in the Ciena Corporation family to deliver complete, integrated service offerings from a single provider or multiple providers. The SDS devices incorporate advanced QoS capabilities, flexibility through pluggable optics, superior multicast control, manageability, and a small form factor chassis to present the industry's leading fiber-to-the-building solution.

Multiple variants of the 3930 are available. Table 1-1 provides a summary.

Table 1-1
Summary of Available 3930 Systems

Description	Type of 3930 Chassis		
	Standard (170-3930-900)	**Sync (170-3930-910)**	**Sync + External Timing (170-3930-930)**
2 x 1/10 GbE SFP/SFP+ ports	X	X	X
4 x 10/100/1000M combo RJ-45/SFP ports	X	X	X
4 x 100/1000M SFP ports	X	X	X
2 slots for AC or DC power supplies	X	X	X
1 RU form factor	X	X	X
Synchronous Ethernet	Not Supported	X*	X
IEEE1588v2 clock	Not Supported	X*	X*
Stratum 3E holdover clock	Not Supported	X*	X
External timing interfaces: • BITS • 1 PPS signal (Time of Day) • 10 MHz signal	Not Supported	Not Supported	 X X* X*
Note: The 1 PPS and 10 MHz signals require the use of SAOS software release 6.11 or higher.			

An overview of the chassis is provided in the following figures. Figure 1-1 shows a 3930 Standard system. The 3930 Standard and 3930 Sync systems have the same faceplate and port configuration. Figure 1-2 shows a 3930 Sync + External Timing (Synchronization capable with External timing interfaces) system. For more information, see *39XX/51XX Product Fundamentals*.

Figure 1-1
Front view of the 3930 (3930 Standard or 3930 Sync system shown)

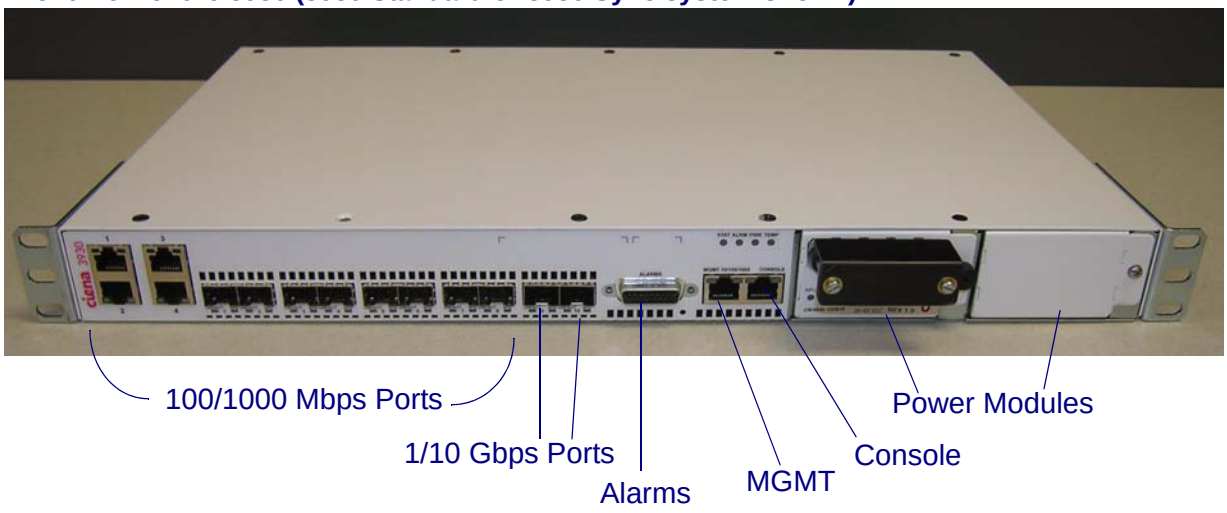
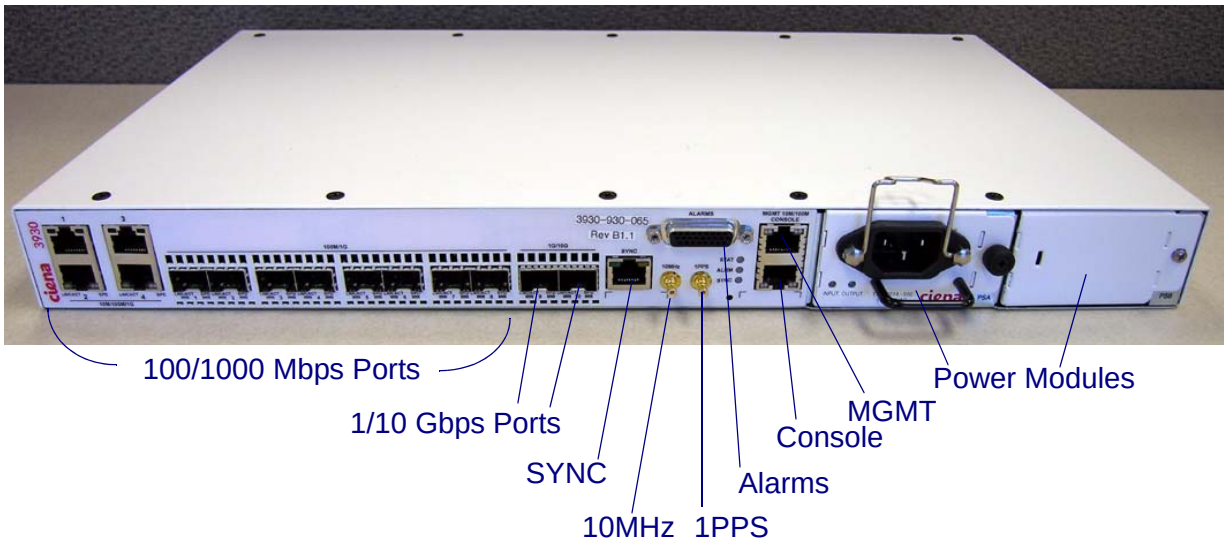


Figure 1-2
Front view of the 3930 (3930 Sync + External Timing system shown)



Installation

The 3930 is designed for deployment in Outdoor Street Cabinets, huts and other unconditioned locations. The 3930 can also be deployed in a central office environment. The 3930 Service Delivery Switch can be mounted in a standard equipment rack and requires 1 RU of space.

This chapter provides installation instructions. It discusses the following topics:

- "Package Contents"
- "Important Safety Information"
- "Mounting the Device"
- "Grounding"
- "Power Supply Modules"
- "Transceivers"
- "Cable Installation and Guidelines"
- "Initial Configuration"

Package Contents

Upon receipt, examine all shipping containers and their contents. Carefully unpack the 3930 from the packing material. Visually inspect all parts for damage.

The following items are shipped with the 3930:

- Chassis (with the power supply slot PSA empty)
- Filler plate (installed over the slot PSB)
- Grounding screws (the 2 grounding screws will be attached to the back of the chassis in the center, see Figure 2-1 on page 2-5)
- Mounting bracket kit for 19" frame (two brackets, four cable supports, four 8-32 x 1/2 length screws used to attach the cable supports to the brackets, and eight 8-32 x 5/16 length pan head screws used to attach the brackets to the side of the chassis. See Figure 8-2 on page 8-4.)

If the unit is damaged or if any of the above items are missing, please contact your sales representative.

Note: Mounting brackets for Wallmount, and 23-inch racks are also available. If they are required for your installation, you need to order these brackets separately.

You will also need to order:

- Power supplies (up to 2 AC or 2 DC power supplies)
- Power cables
- Grounding lug and grounding wire
- Alarm cable
- SFP/SFP+ modules for the 1/10 Gigabit Ethernet ports (up to 2 ports)
- SFP modules for the 100/1000 Mbps ports (up to 8 ports)
- Faceplate cabling (Cat-5 STP and optical cabling to match the SFP and SFP+ connector types used)
- SYNC cable — BITS cable available in 100 or 120 Ohm
- 1 PPS cable
- 10 MHz cable

  Note: Ciena offers a coax to SMB cable for connection to the 1 PPS and 10 MHz ports. The same cable can be used for both ports.

Required Tools and Supplies

For rack mount installations you will also require the following tools:

- Flat head screwdriver
- Phillips #2 screwdriver
- Digital Volt Ohm Meter
- rack screws (4 per device)
- cable ties / cord retainers — to secure ground, power and interface cabling
- Wire-strippers (for DC power cable)
- Fork terminal spade lugs (3 per DC power supply) — to install power cabling to a DC system
- Power wire (14 AWG) — to install power cabling to a DC system

  Note: Table 2-1 on page 2-9 provides a summary of the DC lugs that are recommended for use with the 3930.

Important Safety Information

WARNING: Read all installation instructions before connecting a 3930 device to a power source.

WARNING: The chassis of the 3930 should never be opened under any circumstances. Opening the chassis will void the warranty.

The system chassis must be returned to Ciena for service or replacement.

Power supply modules and transceivers are field-replaceable, however, the modules or transceivers must be returned to Ciena for service or replacement.

WARNING: Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals.

WARNING: Do not work on the system or connect or disconnect cables during periods of lightning activity.

WARNING: To prevent ESD damage to electronic components, always use an ESD wrist strap when handling modules.

Note: Cabling and wiring that is part or the same physical installation, even if it exits the building or enclosure for a short distance, should generally be classified as intra-building.

WARNING: Do not stack anything on top of this unit. The mounting brackets provided with this unit are designed to support only the weight of this unit, if they fail due to excess weight, it can cause bodily injury and damage the equipment.

WARNING: When installing the unit, ensure that the wiring meets the local and national electrical codes.

WARNING: All electrical interfaces on this product are intended for intra-building connections only. These interfaces are designed as type 2 or type 4 ports as described in GR-1089-CORE, Issue 6 and require isolation from the exposed outside plant cabling.

Note: Cabling and wiring that is part or the same physical installation, even if it exits the building or enclosure for a short distance, should generally be classified as intra-building.

Mounting the Device

The following installation options are available:

- Wall Mount
- Rack installation (19-inch frame or 23-inch frame)

Before you start, ensure that the frame or mounting surface (wall mount installations) is capable of supporting the weight of the system, SFPs and cabling.

Wall Mount Installation

The wall mounting brackets are attached to the chassis, so that the chassis can be mounted on a wall or other vertical surface. The wall mount bracket does not contain any cable management features. See “Installing the Wallmount Bracket” on page 8-6 for more information.

Note: For installations using the wallmount bracket, the hardware required to attach the mounting bracket to the wall is Customer supplied. In addition, the reinforced mounting surface should be capable of supporting approximately 100 pounds. Please ensure that the hardware used includes the proper fasteners/anchors required to support the weight of the unit.

See “To Install 3930 on a Wall” on page 2-16 for a high level procedure.

Frame Installation

The frame mount brackets are also compatible with cable support brackets that are designed to keep cables out of adjacent equipment space. Mounting brackets are available to fit 19-inch and 23-inch equipment frames.

See “To Install 3930 in a Frame” on page 2-17 for a high level procedure.

Grounding

The 3930 is connected to ground at the power supplies and the chassis.

Note: The Battery Return lead is considered DC-I (isolated from frame ground) as described in GR-1089-CORE, Issue 6.

Power Supply Grounding

The safety ground connection is provided by the AC power cord or by the grounding terminal on the DC power supply. Further details are provided in "Power Supply Modules" on page 2-6.

Supplemental Ground

A supplemental ground connection is provided for connection to a Common Bonding Network (CBN). The grounding screws are supplied and are located in the center on the rear of the chassis. See Figure 2-1.

Figure 2-1
Installed Grounding Lug

You are required to provide the grounding lug and grounding wire. The following description indicates the required specifications:

- #6 AWG (minimum) wire
- 2 hole lug @ 5/8" centers and with hole size for #10 or 1/4" screw

The ground source should be connected in accordance with local and national regulations and safety guidelines, and the grounding procedures used by your company.

The DC resistance between the chassis and the supplemental ground source should be verified to be less than 100 milliohms.

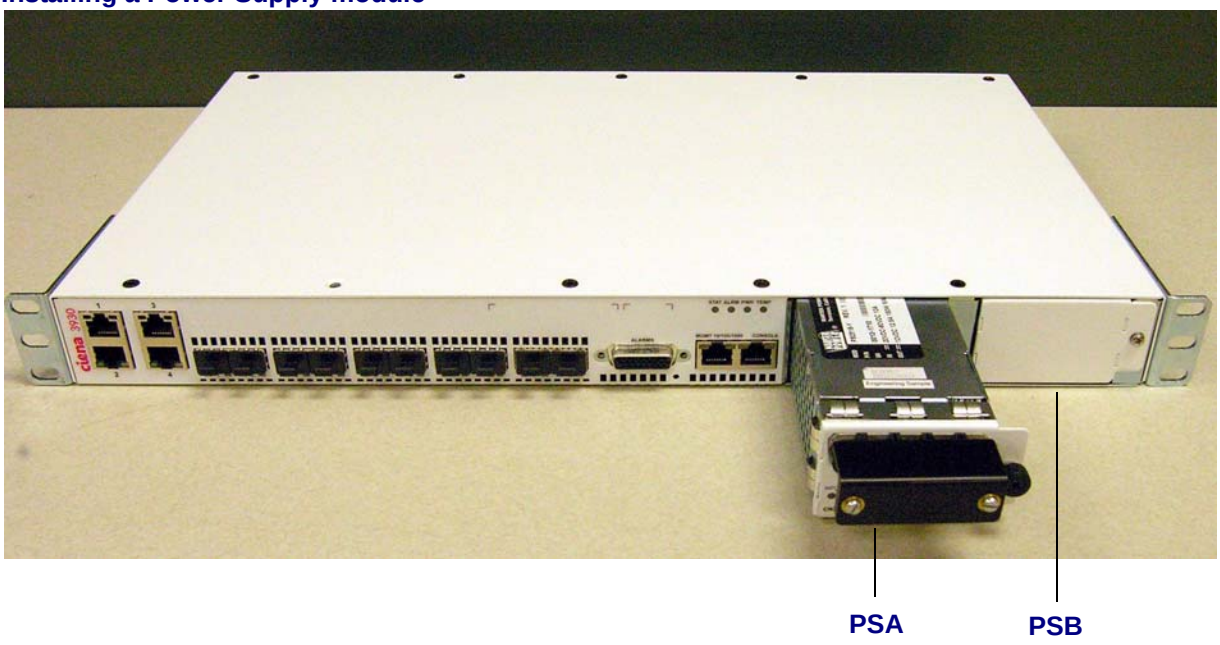
Note: If your installation site allows rear access to the chassis, you can install the supplemental ground connection after the chassis is mounted. However, if you will not be able to access the rear of the unit after it is mounted, you will need to install the supplemental ground connection before mounting the chassis in the cabinet or frame.

See "Installing Supplemental Ground" on page 2-18 for a procedure.

Power Supply Modules

The 3930 can be deployed with either one or two power supply modules. Both AC and DC power supply modules are available. When two power supplies are installed, both modules must be of the same type. An overview of the power supply modules is included in *39XX/51XX Product Fundamentals*.

Figure 2-2
Installing a Power Supply module



This section contains the following information:

- “Simplex Power”
- “Redundant Power”
- “Dressing the Power Cord”
- “AC Power Supplies”
- “DC Power Supplies”

Simplex Power

When a single power supply is installed, the power supply can be installed in either slot. However, the remaining power supply slot must be covered with a filler plate. The filler plate is necessary for safety and ensures proper airflow within the chassis.

By default a filler plate is installed over the PSB slot on the right. You can relocate the filler plate to cover the PSA slot if desired.

Redundant Power

When two AC power supplies are used, each power supply should be connected to a separate input circuit. Similarly, when two DC power supplies are used, each power supply should be connected to separate breakers. This allows you to remove power from one power supply and replace the inactive supply while the 3930 is operating.

Dressing the Power Cord

The power cord will be dressed to the right, across the front of the power supply. It is not appropriate to dress the power cord to the left, across the front of the 3930 chassis.

This section includes separate instructions for installing DC and AC power supply modules. Use the instructions that match the type of power supply being used in your installation.

AC Power Supplies

One or two power supply modules can be installed. If only one module is being installed, it can be installed in either power supply slot (PSA or PSB). However, the remaining slot must be covered with a filler plate. The filler plate is necessary for safety and ensures proper airflow within the chassis. By default, the chassis has the filler plate installed over PSB on the right.

WARNING: As per GR-1089 Section 4.12 an external Surge Protective Device (SPD) is required at the AC input of the 3930.

The AC power supplies use a standard power cord. However, plug configurations vary around the world. You will need to order a cord with a plug that matches the local requirements for the installation site.

WARNING: All AC power cords must meet the requirements of the local and national electric codes prior to installation.

WARNING: The AC socket outlet shall be installed near the equipment and shall be easily accessible.

Ciena offers the following AC power cables for the 3930:

- AC Power Cord, IEC C13, Europe
- AC Power Cord, IEC C13, North America
- AC Power Cord, IEC C13, United Kingdom
- AC Power Cord, C13, Universal

See "Installing an AC Power Supply" on page 2-19 for a procedure.

DC Power Supplies

One or two power supply modules can be installed. If only one module is being installed, it can be installed in either power supply slot (PSA or PSB). However, the remaining slot must be covered with a filler plate. The filler plate is necessary for safety and ensures proper airflow within the chassis. By default, the chassis has the filler plate installed over PSB on the right.

WARNING: The DC version relies on the connector at the front of the power supply to provide Safety Ground. This grounding connection must be properly attached when the 3930 is installed.

WARNING: A readily accessible disconnect device shall be incorporated external to the equipment.

For installations using 24 V or 36 V input voltage, the recommended fuse value is a minimum of 5 Amps. For systems using 48 V input voltage, the recommended fuse value is a minimum of 2.5 Amps.

The DC power cord should be 14 AWG - 18 AWG wire. You will need to install fork terminal spade lugs on the power cord to ensure a proper connection with the terminal block of the power supply. Table 2-1 on page 2-9 contains a summary of the recommended locking fork terminal lugs.

Table 2-1
3930 DC Lug Summary

Wire Size	Stud	Maximum Lug Width	Recommended Lug
14 AWG	#6	0.31”	Panduit PV14-6FF-C (16-14 AWG)
14 and 18 AWG	#6	0.31”	Panduit PV14-6LF-C (18-14 AWG)
			Panduit PV14-6LFW-C (18-14 AWG)
18 AWG	#6	0.31”	Panduit PV18-6FF-CY (22-16 AWG)
			Panduit PV18-6LF-CY (22-18 AWG)
			Panduit PV18-6LFW-CY (22-18 AWG)
Note: Use one of these recommended lugs or a close equivalent. If a ring lug is used, you will need to remove and reinstall the screw. Take care not to lose the screw during this process.			

See “Installing a DC Power Supply” on page 2-21 for a procedure.

Transceivers

The faceplate of the 3930 has:

- 8 connections which use 100/1000 Mbps Ethernet pluggable SFP transceivers.
- 2 connections which use 1 or 10 Gigabit Ethernet pluggable SFP/SFP+ transceivers.

Figure 1-1 on page 1-3 shows the location of these different ports on the faceplate of the 3930. For more information about the ports see *39XX/51XX Product Fundamentals*.

The SFP/SFP+ modules provide the media-specific portion of an interface, allowing it to support Ethernet using different media types. One optic module can be installed into each available port and can be hot swapped. Figure 2-3 shows a typical pluggable optic module and its parts.

Figure 2-3
Pluggable Optic Modules

The installation procedure is the same for both SFP and SFP+ optics. However, ensure that the installed optic matches the capability of the port and that the optic is supported by the system. The list of supported SFPs is documented in *Packet Networking Transceivers Reference* (009-2011-602). Unsupported optics may not function.

Once installed, the port has LED indications. See "LED Overview" on page 5-1 for more information.

For additional information see:

- "To Install a Pluggable Optic" on page 2-26
- "To Remove a Pluggable Optic" on page 2-27

Cable Installation and Guidelines

This guide assumes that the site's data cables have been properly installed in a centrally wired distribution configuration. When installing fiber optic cables and other network cabling, always have them installed and tested by a technician who is certified by the Electronics Industry Association/ Telecommunications Industry Association (EIA/TIA). This ensures a quality installation and presents one less variable to consider when troubleshooting.

WARNING: All electrical connections are intended for indoor use only.

When installing cable, **Do:**

- Use more cable than required, leaving some slack.
- Test each section of the network as it is installed. Even in new installations, problems may occur that will be difficult to isolate later.
- When using shielded cables, ensure that the cable is terminated to Ground at both ends
- Cover cables with cable protectors if it is necessary to run cables across the floor.
- Label both ends of all cables.
- Use cable ties or Velcro tie wraps to secure cables. If staples are used, they must be hand installed or use a depth stop.
- Use cable hangers and J-hooks.

Do **NOT**:

- Use electrical tape or any other type of tape to secure cables.
- Overstress cables by over tightening cable ties or stapling cables to the point where crushing is visible. This is particularly applicable for fiber optic cables.
- Exceed the minimum bending radius for fiber optic cables.
- Install cables near sources of electrical interference. All twisted pair wires must be at least 3 feet away from fluorescent light boxes and other sources of electrical interference such as a power source. Fiber optic cables are not affected by electrical interference.
- Run cable in power conduits or air plenums.

  Note: Fiber optic cables are not affected by electrical interference.

  Note: When connecting to copper SFPs, shielded Cat 5e cables are required. Ensure that both ends of the shielded cable are properly grounded.

Connecting Cables to the 3930

When connecting cables to the 3930, always make only one connection at a time. Ciena recommends that cables be connected in the following order:

- Synchronization cable first
- SMB cables next
- Fiber cables next
- Ethernet cables last

  Note: The alarm cable can be connected before, during or after the installation of the other cables. See “Alarm Cable” on page 2-12 for more information about the alarm cable. See “Installing an Alarm Cable (Optional)” on page 2-24 for a procedure.

In order for two devices to communicate properly, the transmit ports on the first device must be connected to the receive ports of the second device.

Note: When two Ethernet ports are connected, the devices will automatically assign the transmit and receive ports.

Alarm Cable

The alarm cable is an optional component.

The 3930 supports 16 external alarm inputs. The alarm connector is located in the center/right section of the 3930 labeled **ALARMS**. The 15 foot alarm cable has a high density 26-pin D-sub connector on one end, and bare wires on the other. These wires are then connected to a wire wrap panel.

Of the 26 pins on the connector, there are 16 alarm sense connections to detect any combination of switch close or opens and 8 returns. Up to two alarm sense lines can be connected to each return. The alarm sense lines can be paired with any return, however, it is recommended that the sensed switches that are paired come from equipment that is commonly grounded. The alarm pinout is provided in Table 2-2 on page 2-12.

Table 2-2
3930 Alarm Port Pin Assignments

Pin #	Lead	Color		Pin #	Lead	Color
1	Alarm sense 15	WH/BL		14	Alarm sense return 4	RD/OR
2	Alarm sense 13	BL/WH		15	Alarm sense return 3	OR/RD
3	Alarm sense 11	WH/OR		16	Alarm sense return 2	RD/GR
4	Alarm sense 9	OR/WH		17	Alarm sense return 1	GR/RD
5	Alarm sense 7	WH/GR		18	Frame ground	No connect
6	Alarm sense 5	GR/WH		19	Alarm sense 16	RD/BR
7	Alarm sense 3	WH/BR		20	Alarm sense 14	BR/RD
8	Alarm sense 1	BR/WH		21	Alarm sense 12	RD/SL
9	Frame ground	No connect		22	Alarm sense 10	SL/RD
10	Alarm sense return 8	WH/SL		23	Alarm sense 8	BK/BL
11	Alarm sense return 7	SL/WH		24	Alarm sense 6	BL/BK
12	Alarm sense return 6	RD/BL		25	Alarm sense 4	BK/OR
13	Alarm sense return 5	BL/RD		26	Alarm sense 2	OR/BK

See “Installing an Alarm Cable (Optional)” on page 2-24 for a procedure.

Synchronization Cable

The synchronization cable is connected to the SYNC port on the faceplate of the 3930 system. This port is used for the BITS interface, 1PPS or Time of Day and has an RJ-45 jack.

> ***Note:*** The BITS interface can be configured to be either BITS-IN or BITS-OUT. It cannot do both BITS-IN and BITS-OUT simultaneously.

Ciena offers two optional cables for this interface that are 6 foot long shielded cables with the following specifications:

- 100 Ohm cable with RJ-45 connectors is cable 170-0083-900
- 120 Ohm cable with RJ-45 connectors is cable 170-0084-900

One end has a shielded RJ-45 connector and the other end is un-terminated. When using this cable, the shield of the un-terminated end must be connected.

A customer supplied cable can also be used provided it is shielded, the cable is CAT 5 or better and the shield is terminated at both ends. This interface is classified as intra-building only.

Table 2-3
Sync Cable Wiring Connection Summary

Pair	Color	Signal	Pin
1	White	Rx tip	1
	Blue	Rx ring	2
2	White	ToD/1PPS	3
	Green	ToD/1PPS	6
3	White	Tx tip	4
	Orange	Tx ring	5
4	White	—	7
	Brown	—	8
Note: The wiring information in this table applies to both the available Ciena cables.			

See “Installing a Sync Cable (Optional)” on page 2-25 for a procedure.

GPS/1PPS/TOD Cable

There are two ports on the 3930 that use a GPS/1PPS/TOD cable:

- 1PPS
- 10MHz

Note: These ports are available on 3930 Sync + External Timing systems only. This feature requires SAOS software release 6.11 or higher.

Note: The 1PPS and 10MHz ports can be configured to be either input or output references. These ports cannot provide both input and output references simultaneously.

Ciena offers a cable (170-0085-900) for connection to these ports. The cable is 6 feet long, with coax on one end and an SMB connector on the other.

This interface is classified as intra-building only.

To install a GPS cable, insert the BNC connector into the port on the device. Insert the tail end of the cable into the port on the terminating device.

Fiber Optic Cables

There are two types of ports on the 3930 that accept pluggable optics:

- 1/10 Gigabit Ethernet ports which support SFP and SFP+ optics
- 100/1000 Mbps Ethernet ports which support SFP optics

The SFP/SFP+ pluggables in the 3930 allow you to select the port speed, wavelength, etc to match the device on the terminating end. See “Transceivers” on page 2-9 for more information about the transceivers, and their installation.

The SFP/SFP+ ports will require optical cables. You will need to know the specification of the optic to select the appropriate cable.

Do not remove the dust cover until immediately prior to mating the connectors. For best results, prior to mating the Fiber optic connectors clean both the port and the connector with a lint free cloth moistened with alcohol. If available, the connectors should also be blown dry using canned, compressed air. Insert the connector into the port on the device until you hear a clicking sound.

Ethernet Cables

The following ports on the 3930 use Ethernet cables and have standard RJ-45 jacks:

- MGMT 10/100 Port
- Console Port
- 10/100/1000 Mbps ports — these copper ports are located on the far left of the front of the chassis. These are ports 1 to 4 in the system and are combo ports. The combo ports have both a copper and an SFP optic version for the same port. Both ports can be cabled, however only one of the copper/optic ports will be active at any time. The use of copper or optical for Ports 1 to 4 is controlled through the software.

Ciena requires the use of Cat 5 STP cables or better for the Management and copper ports. These interfaces are classified as intra-building only. The cable shield must be terminated at both ends.

To install an Ethernet cable, insert the connector into the port on the device until you hear a clicking sound. Insert the tail end of the cable into the port on the terminating device.

Initial Configuration

Two different methods can be used to assign an IP address to the device:

- using a DHCP server to automatically assign an IP address (recommended)
- configuring the IP address manually.

Both methods are accomplished through the CLI and are not described in this document. See “Turning Up the System” on page 3-1 for more information.

Note: If the device has not been assigned an IP address other than the default IP address (either manually or through a DHCP server) communication can only take place through the local management port. Initial IP address configuration must therefore be done through the local management port.

CAUTION: Use caution when setting an IP address or subnet mask, the new value takes effect immediately. If information is set that is inconsistent with network settings, communication with the device may no longer be possible. If all other troubleshooting methods have been exhausted, recovery may be possible using the Reset button.

Procedure 2-1
To Install 3930 on a Wall

Step	Action
1	Install the wallmount bracket on the chassis as instructed in “Installing the Wallmount Bracket” on page 8-6. ***Note:*** If your installation location does not allow rear access to the chassis, the supplemental ground cable needs to be routed and connected to the rear of the chassis before mounting the chassis.

WARNING: For units with side vent holes, the vent holes must be positioned at the top when the chassis is wall mounted. In some cases where a particular direction (left or right) is required for cable routing and faceplate access, the bracket may need to be mounted with the flange at the top of the unit resulting in the unpainted underside of the unit facing outward when installed.

2	Install supplemental ground. See “Installing Supplemental Ground” on page 2-18.
3	Install the power supplies and connect power. Both AC and DC power supply modules are available. For detailed instructions see either: • “Installing an AC Power Supply” on page 2-19 • “Installing a DC Power Supply” on page 2-21 *Verify that the PWR LED on the front of the device is green.*
4	Install the alarm cable (if required). See “Installing an Alarm Cable (Optional)” on page 2-24.
5	Install SFP/SFP+ optics, see “To Install a Pluggable Optic” on page 2-26.
6	Install faceplate cabling for the UNI and NNI connections. See “Cable Installation and Guidelines” on page 2-10. ***Note:*** Dress and secure the cables using local practices, ensuring that the weight of the cable is supported and does not drag on the plug. **You have installed the 3930 on a wall.**

Procedure 2-2
To Install 3930 in a Frame

Two frame mounting brackets are available. Use the one that suits your installation.

Step	Action
1	Install the frame bracket on the chassis as instructed in either: • "Installing the 19" Frame Mount Bracket - 1 RU" on page 8-8 • "Installing the 23" Frame Mount Bracket - 1 RU" on page 8-10 ***Note:*** If your installation location does not allow rear access to the chassis, the supplemental ground cable needs to be routed and connected to the rear of the chassis before mounting the chassis.
2	Install supplemental ground. See "Installing Supplemental Ground" on page 2-18.
3	Install the power supplies and connect power. Both AC and DC power supply modules are available. For detailed instructions see either: • "Installing an AC Power Supply" on page 2-19 • "Installing a DC Power Supply" on page 2-21 *Verify that the PWR LED on the front of the device is green.*
4	Install the alarm cable (if required). See "Installing an Alarm Cable (Optional)" on page 2-24.
5	Install SFP/SFP+ optics, see "To Install a Pluggable Optic" on page 2-26.
6	Install faceplate cabling for the UNI and NNI connections. See "Cable Installation and Guidelines" on page 2-10. ***Note:*** Dress and secure the cables using local practices, ensuring that the weight of the cable is supported and does not drag on the plug. **You have installed the 3930 in a frame.**

Procedure 2-3
Installing Supplemental Ground

The ground lug and ground wire are customer supplied. The specifications are provided in “Grounding” on page 2-5.

The supplemental ground connection is made on the rear of the chassis. If you will not have access to the rear of the chassis after the system is mounted in the frame, install the supplemental ground connection before you mount the system.

Step	Action
1	Route the supplemental ground cable through the cabinet or installation site.
2	Using a Phillips screwdriver and the two screws (supplied), connect a copper conductor ground wire to the ground connectors on the right of the rear of the chassis. Figure 2-1 on page 2-5 shows the grounding lug attached to the chassis with the supplied screws.
3	Connect the other end of the grounding wire to supplemental ground in accordance with local and national regulations and safety guidelines, and the grounding procedures used by your company.
4	Using an appropriate Digital Milli-Ohm meter, verify that the DC resistance between the chassis and the supplemental ground source is less than 100 milliohms. **You have mounted and grounded the 3930. You are now ready to proceed with one of the following:** • “Installing an AC Power Supply” on page 2-19 • “Installing a DC Power Supply” on page 2-21

Procedure 2-4
Installing an AC Power Supply

WARNING: The AC socket outlet shall be installed near the equipment and shall be easily accessible.

Step	Action
1	Remove the power supply module(s) from the packaging and inspect them for damage.
2	Do one of the following: • If a single power supply module is being installed, slide the power supply module into slot PSA. Ensure that the PSB slot is covered by a filler plate. (By default, the chassis has a filler plate installed over PSB.) See Figure 2-2 on page 2-6. • If redundant power supply modules are being installed, remove the filler plate covering PSB, then slide the power supply modules into slots PSA and PSB. See Figure 2-2 on page 2-6.
3	Using a Phillips screwdriver, secure the module in place using the captive hold down screw on the right of the module.
4	Plug the AC power cord into the receptacle on the front of the power supply module. Snap the bail lock latch up over the boot of the cable to lock the cable into place. ***Note:*** After it is installed, the power cord will be dressed to the right, across the front of the power supply. It is not appropriate to dress the power cord to the left, across the front of the 3930 chassis.
5	If two power supplies are installed, repeat step 4. If only one power supply is installed, proceed to step 6
6	Dress the power cable(s) to the right, through the cable support bracket at the right of the chassis.
7	Plug the other end of the power cord(s) into a power source. *The power supplies will turn on.*

8 Verify the power supply LEDs. The following LED indications should be present on the 3930:

- PSA - Status LED is solid green, Input LED is solid green
- PSB - Status LED is solid green, Input LED is solid green
- PWR - solid green

Note: The system does not distinguish between a faulty and an unpowered supply. As a result, if redundant power supplies are installed, but only one supply is connected to a power source, the unpowered supply will cause the system to report an alarm state (ALRM LED solid yellow and STAT LED off). This alarm will be cleared when the power supply is properly initialized.

The power supplies have now been installed and the system has been powered on.

Procedure 2-5
Installing a DC Power Supply

To install DC power a number of customer supplied components is required. See “DC Power Supplies” on page 2-8 for more information.

WARNING: Before performing the procedure, ensure that all power is off to the DC circuit. Locate the circuit and switch it to the OFF position. Tape the circuit breaker switch handle in the OFF position to prevent accidental closing of the circuit.

WARNING: A readily accessible disconnect device shall be incorporated external to the equipment.

Step	Action
1	Remove the power supply module(s) from the packaging and inspect them for damage.
2	Do one of the following: • If a single power supply module is being installed, slide the power supply module into slot PSA. Ensure that the PSB slot is covered by a filler plate. (By default, the chassis has a filler plate installed over PSB.) See Figure 2-2 on page 2-6. • If redundant power supply modules are being installed, use a Phillips screwdriver to loosen the screw securing the filler plate in PSB. Remove the filler plate and set aside. Then slide the power supply modules into slot PSA and PSB. See Figure 2-2 on page 2-6.
3	Using a Phillips screwdriver, secure the module in place using the captive hold down screw on the right of the module.
4	Prepare the DC power cord. The power cord should be a 14 AWG to 18 AWG wire and should be of a length suitable for your installation. Remember to allow the necessary slack for the cable to be properly retained between the chassis and the terminal block. You will also need to install fork terminal spade lugs suitable for the installation environment on the wires. Use UL/CSA approved parts and local practices to install spade lugs at both the chassis and terminal block ends of the power cord. ***Note:*** Table 2-1 on page 2-9 provides a summary of the DC lugs that are recommended for use with the 3930.

Note: After it is installed, the power cord will be dressed to the right, across the front of the power supply. It is not appropriate to dress the power cord to the left, across the front of the 3930 chassis.

5 Remove power from the DC circuit(s) that will supply power to the system.

6 Using a flat head screwdriver, remove the plastic terminal block cover from the front of both power supplies and set them aside.

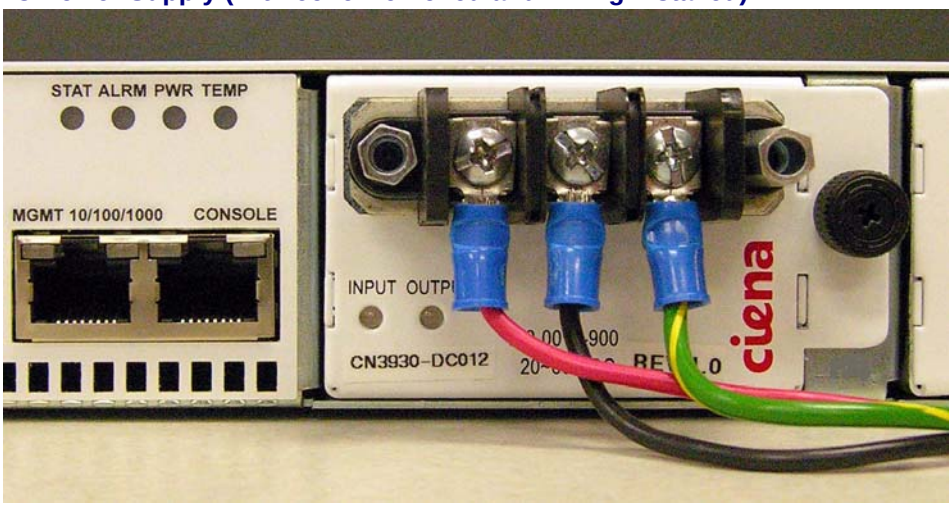
7 Use the terminal block on the front of the DC power supply to connect the wires as follows:

- Ground — connect to the right connector
- Negative — connect to the middle connector
- Positive — connect to the left connector

Note: The ground connection should be made first. The wires should be installed so they flow down from the terminal block. The power cabling will be dressed to the right in step 11.

Figure 2-4 shows the faceplate of the DC power supply with the power wiring installed, and the plastic terminal block cover removed.

Figure 2-4
DC Power Supply (with cover removed and wiring installed)



8 Tighten the set screws on the terminal block with a Phillips screwdriver.

WARNING: When making connections to the terminal block, make sure that no stray strands of the input wire come into contact with any other part of the terminal block.

9 Repeat step 7 and step 8 to connect wires to the terminal block on the front of the second power supply.

10 Using a flat head screwdriver, re-install the plastic terminal block covers that were removed in step 6.

11 Dress the power cable to the right and use a cable support on the right chassis bracket to help retain the cable. This helps relieve the cord weight form the connector and avoid the inadvertent disconnection of the power supply cord.

12 At the breaker, connect the power input wires for PSA and PSB and tighten the set screws (if present).

Note: Separate breakers should be used for PSA and PSB. This ensures that power can be removed from one power supply so that it can be replaced while the unit is operating.

13 Restore power to the input DC circuit for PSA and PSB.

The power supplies will turn on.

14 Verify the power supply LEDs. The following LED indications should be present on the 3930:

- PSA - Status LED is solid green, Input LED is solid green
- PSB - Status LED is solid green, Input LED is solid green
- PWR - solid green

Note: The system does not distinguish between a faulty and an unpowered supply. As a result, if redundant power supplies are installed, but only one supply is connected to a power source, the unpowered supply will cause the system to report an alarm state (ALRM LED solid yellow and STAT LED off). This alarm will be cleared when the power supply is properly initialized.

The power supplies have now been installed and the system has been powered on.

Procedure 2-6
Installing an Alarm Cable (Optional)

Step	Action
1	Route the alarm cable for the 3930 so that it can extend from the ALARMS connector on the faceplate, then to the left across the front of the chassis, through the cable management bracket, down the frame and over to the wire wrap panel. ***Note:*** Do not actually plug the alarm cable into the ALARMS port until after the cable has been trimmed and connected to the wire wrap panel. However, when you are routing the cable, ensure there is sufficient slack to properly connect the cable to the faceplate when asked to do so.
2	Using local practices, trim the cable to the desired length and connect the alarm sense and return leads to the wire wrap panel for each alarm being connected to the system. The alarm pinout is provided in Table 2-2 on page 2-12.
3	Plug the 26-pin D-sub connector into the connector on the faceplate of the 3930 labeled ALARMS. Using a Phillips screwdriver to secure the captive screws on either side of the connector.
4	If desired, use a cable tie to secure the alarm cable to the cable support bracket or frame to further assist with cable retention. **You have now installed the Alarm Cable.**

Procedure 2-7
Installing a Sync Cable (Optional)

The two cables that Ciena offers for connecting to the Sync port have a shielded RJ-45 connector on one end and the other end is un-terminated. When using this cable, the shield of the un-terminated end must be connected. The Ciena cables are 6 feet long. If a longer cable is needed a customer supplied cable should be used. The customer supplied cable must be shielded, the cable is CAT 5 or better and the shield is terminated at both ends. This interface is classified as intra-building only.

Step	Action
1	Route the sync cable for the 3930 so that it can extend from the SYNC connector on the faceplate, then to the left across the front of the chassis, through the cable management bracket, down the frame and over to the wire wrap panel or terminating device. ***Note:*** Do not actually plug the cable into the SYNC port until after the cable has been trimmed and connected to the wire wrap panel or terminating device. However, when you are routing the cable, ensure there is sufficient slack to properly connect the cable to the faceplate when asked to do so.
2	If you are connecting to a wire wrap panel, use local practices to trim the cable to the appropriate length and connect the leads to the wire wrap panel. ***Note:*** The sync cable pinout is provided in Table 2-3 on page 2-13. ***Note:*** Ensure that the shield of the un-terminated end is connected to ground.
3	If you are connecting to a piece of terminating equipment complete the following: **a.** Identify the connector type required by the terminating equipment and locate the appropriate connector. **b.** Use local practices to trim the cable to the appropriate length and install the connector on the cable. ***Note:*** The sync cable pinout is provided in Table 2-3 on page 2-13. **c.** Plug the newly installed connector on the faceplate of the terminating equipment. ***Note:*** Ensure that the shield of the un-terminated end is connected to ground.
4	Plug the RJ-45 connector into the SYNC port on the faceplate of the 3930 until you hear a clicking sound.
5	If desired, use a cable tie to secure the sync cable to the cable support bracket or frame to further assist with cable retention. **You have now installed the Sync Cable.**

Procedure 2-8
To Install a Pluggable Optic

WARNING: To prevent ESD damage to electronic components, always use an ESD wrist strap when handling modules.

Step	Action
1	Hold the optic module by the sides and position it so that the label is facing up and the 20-pin connector card (rear of the optic) is facing the empty optic slot. ***Note:*** If installed upside down, the optic will only insert halfway into the slot. Remove the optic, turn it over, and reinstall. Do not forcibly insert an optic.
2	Gently insert the pluggable optic module into the available slot until it seats completely. Take care not to crush the side clips, if present. ***Note:*** Certain types of SFP transceivers have small springs/clips on each side, near the front (connector) end. These springs may catch on the SFP cage during insertion, and prevent the full insertion of the optic. Take extra care when installing these types of optics, do not force the optic into the slot if any resistance is felt. Bent springs may be carefully reformed with needle nose pliers.
3	Gently pull on the optic to make sure that it has seated properly.

WARNING: Optic operation should be verified by observing the status LEDs. Do not look into the laser to verify operation. For additional laser safety information, refer to "Important Safety Information" on page 2-3.

WARNING: This is a Class 1 laser product. Only optics that have been qualified by Ciena should be used in this product. See *Packet Networking Transceivers Reference* (009-2011-602) for the list of supported optics.
These optics have been demonstrated to meet Class 1 eye safe levels by a Nationally recognized Authority(s) such as The Food and Drug administration's 21CFR1040 Laser Energy Source, UL 60950 Information Technology equipment and European norms EN60825-1 and EN60825-2. Failure to use laser transceivers which meet these standards could result in eye damage to users or service personnel working around the equipment.

You have installed the pluggable optic.

Procedure 2-9
To Remove a Pluggable Optic

WARNING: To prevent ESD damage to electronic components, always use an ESD wrist strap when handling modules.

Step	Action
1	Disable customer traffic for the port.
2	Remove any cabling from the optic.
3	Press or pull on the ejector lever (depending on the type of optic used) and gently pull the optic out of the slot.

CAUTION: Because invisible radiation may be emitted from the aperture of the port when no fiber cable is connected, avoid exposure to radiation and do not stare into open apertures.

WARNING: If you are not immediately re-installing another pluggable optic, install a dust cover in the slot to protect it from ambient dust.

You have removed the pluggable optic. You can now install a different optic into this port, or install the removed optic into a different port. Pluggable optic installation instructions are provided in "To Install a Pluggable Optic" on page 2-26.

Turning Up the System

This chapter contains procedures to assist with the initial configuration of the 3930, including the following:

- “Logging in through the Serial Console Port”
- “Creating a New User Account”
- “Deleting a User Account”
- “Managing Licenses”
- “Configuring the Remote Management Interface”
- “Accessing the CLI Using Telnet”
- “Configuring the Local Management Interface”
- “Configuring an Interface using DHCP”
- “Setting the System Host Name”
- “Logging Out of the System”

For information on managing system software, including performing software upgrades, see *39XX/51XX Configuration*.

> ***Note:*** The system turn-up process is similar across all systems using the SAOS software. As a result, this chapter may make reference to other products within the product family.

Logging in through the Serial Console Port

On 3902, 3916, 3930, 3931, and 5150 switches, the serial console port requires a null modem cable connected to a male DB-9 to male RJ-45 cable to connect to the RJ-45 connector.

Other switches in the product family, such as the 3911, 3920, 3940, 3960, and 5140, support an EIA-232 connector requiring a DB-9 cable.

Before you begin, ensure the 3930 is powered on.

For information on provisioning commands for the serial-console interface, see *39XX/51XX Command Reference*.

For a procedure see "Logging in through the Serial Console Port" on page 3-8.

Creating a New User Account

The 3930 is preconfigured with default user accounts. The default user accounts are common to all Ciena Carrier Ethernet products and are not confidential. When you turn-up the system you need to configure new user accounts and delete the default accounts in order to protect the system.

The default user accounts and passwords are summarized in Table 3-1.

Table 3-1
Default User Accounts and Passwords

User Name	Password	Access Rights	Access Level
user	< empty >	Read-only	Limited User — able to execute commands that do not change the state of the system in a significant way or change the configuration of the device. For example, "show" commands.
admin	www	Read/write	Admin User — includes all the privileges of the Limited User and can make significant system state changes, modify the configuration, and perform execute commands.
su	wwp	Read/write/ create	Super User — includes all the privileges of the Limited User and can make significant state changes, modify the device configuration, and perform execute commands.
gss	pureethernet	Diagnostic	Diag User — includes all the privileges of the Super User and can center special hardware diagnostic commands as instructed by the Ciena Customer Support Department during advanced troubleshooting.
Note: User names and passwords are limited to 16 characters each.			

A user at the super access level can create user accounts with the following access levels:

- limited (read-only)
- admin (read/write)
- super (read/write)
- diag (read/write)

See the related procedures:

- “Creating a new user account” on page 3-9
- “Deleting a user account” on page 3-10

Deleting a User Account

After you have created new user accounts for all access levels described in Table 3-1, it is recommended that you delete the default user accounts. At least one user with super user privileges must be configured on the device.

See the related procedures:

- “Creating a new user account” on page 3-9
- “Deleting a user account” on page 3-10

Managing Licenses

A license is a permit to use a feature or set of features. The physical license consists of a cover sheet and a copy of the license terms. The cover sheet has a label affixed to it identifying the license model number and license key. The licenses are shipped with the hardware.

> ***Note:*** It is strongly recommended that you keep a copy of your license keys in a safe place.

You need to install the license key on the 3930 in order to activate the features associated with the license.

You can install multiple licenses on a device. The names of the licenses and the devices on which they are supported are summarized in Table 3-2 on page 3-4.

Table 3-2
License Key Summary

Product	Advanced-10G	Advanced-Ethernet	Advanced-OAM	Advanced-Security	Advanced-Sync	MPLS	PBB-TE
3902		x	x	x			
3911		x	x	x			
3916		x	x	x		x	x
3920		x	x	x			
3930	**x**	**x**	**x**	**x**	**x**	**x**	**x**
3931	x	x	x	x	x	x	x
3932	x	x	x	x	x	x	x
3940		x	x	x			x
3960		x	x	x		x	x
5140		x	x	x			x
5142	x	x	x	x	x	x	x
5150		x	x	x	x	x	x
5160		x	x	x	x	x	x

For more information on associated features and managing software license keys, see *39XX/51XX Software Management and Licensing* .

For a procedure see “Managing Licenses” on page 3-11.

Configuring the Remote Management Interface

The factory default IP address and subnet for the remote interface is **0.0.0.0:0.0.0.0**. These values will be entered if the system is reset to factory defaults.

You can configure the remote management interface directly by using this procedure, or automatically by using DHCP. See “Configuring an Interface using DHCP” on page 3-6. The default priority for the remote management interface defaults to 7 and is not configurable.

> ***Note:*** The local and remote management interfaces cannot be configured to the same IP subnet.

For more information on provisioning commands for the remote interface, see the *39XX/51XX Command Reference*.

For a procedure see “Configuring the Remote Management Interface” on page 3-12.

Accessing the CLI Using Telnet

Once the remote interface is configured with a valid IP address, you can access the device through Telnet.

The Telnet client must have a route set up to allow access to the device. See step 3 of “Configuring the Remote Management Interface” on page 3-12.

> ***Note:*** A maximum of 10 Telnet sessions can be connected at the same time.

For a procedure see “Accessing the CLI using Telnet” on page 3-13.

Configuring the Local Management Interface

The local management interface accepts untagged packets only; all tagged packets are dropped.

The factory default IP addresses and subnets for 3930 are documented in *39XX/51XX Product Fundamentals*. The default values are automatically entered if the switch is reset to factory defaults.

You can configure the local management interface directly by using this procedure, or automatically by using DHCP. See “Configuring an Interface using DHCP” on page 3-6.

> ***Note:*** The local and remote management interfaces cannot be configured to the same IP subnet.

For more information on provisioning commands for the local interface, see *39XX/51XX Command Reference*.

CAUTION: Use caution when setting an IP address or subnet mask, the new value takes effect immediately. If information is set that is inconsistent with network settings, communication with the device may no longer be possible. If all other troubleshooting methods have been exhausted, recovery may be possible using the Reset button.

For a procedure see “Configuring the Local Management Interface” on page 3-14.

Configuring an Interface using DHCP

DHCP can be used for automatic configuration on IP networks. By default, DHCP is enabled to run on the remote interface. When DHCP is disabled, static IP addresses must be assigned for all interfaces. When DHCP is enabled, you have the option of using it to configure the remote interface or the local interface, but not both. The interface that is not using DHCP must have a static IP address.

If the interface is running DHCP, the DHCP server assigns an IP address and you cannot access the static IP address you configured on the interface.

Even if you are running DHCP on an interface, you may want to manually configure the interface so that there is a valid static IP address defined for the interface when DHCP is not running:

- To manually configure a remote interface, see "Configuring the Remote Management Interface" on page 3-4.
- To manually configure a local interface, see "Configuring the Local Management Interface" on page 3-5.

  Note: Ensure DHCP is disabled while you are configuring the remote or local interface.

  Note: The local interface is only available on the 3920, 3930, 3940, 3960 and 5150. The other devices in the product family do not have a local interface and have a remote interface only.

For a procedure see "Configuring an Interface using DHCP" on page 3-15.

Setting the System Host Name

The system host name is a string used to uniquely identify the system. The system host name replaces the default user prompt with a user-defined name. The host name can be set manually, through DHCP, or through SNMP.

The following rules apply when setting a host name:

- String between 2 and 63 characters.
- The host name must not be an IP address.
- No spaces are allowed.
- At least one character must be alpha (a-z) or a dash (-).
- Host name is case sensitive.
- The following special characters are not allowed: " % * ? !

For a procedure see "Setting the System Host Name" on page 3-16.

Logging Out of the System

When you have completed your initial system configuration, you can log out of the system and remove the connection to the serial console port.

> ***Note:*** Before you disconnect from the system, ensure that you have saved the configuration using the configuration save command.

For a procedure see "Logging out of the System" on page 3-17.

Procedure 3-1
Logging in through the Serial Console Port

Step	Action
1	Ensure that the chassis is properly rack-mounted, grounded, and installed.
2	Connect a terminal or PC running terminal emulation software to the serial console port using the recommended cable. ***Note:*** The serial console port does not support connectivity to a modem.
3	If using a PC, launch the terminal emulation software.

4	At the prompt, configure the connected terminal with the following settings:
	`Character size = 8`
	`Parity = None`
	`Stop Bit = 1`
	`Baud Rate = 9600 bps`
	`Control = None`

5	When the Hyper Terminal prompt is displayed, press **Enter** and the login prompt is displayed. Enter the default user name and password.
	`username = su`
	`password = wwp`
	You have logged in to the system.

Procedure 3-2
Creating a new user account

Step	Action

1	Create the new account.
	`user create user <user> access-level <limited|super|diag> password <password>`
	For example, the following command creates the super user account, NewSuper, with the password changeme:
	`user create user NewSuper access-level super password changeme`

2	Display the accounts in the system.
	`user show`
	Example output:
	`+--------- USER ACCOUNT TABLE --------+---------+`
	`| Username | Privilege | Default |`
	`+------------------+------------------+---------+`
	`| NewSuper | super | P |`
	`| su | super | DP |`
	`| user | limited | D |`
	`+------------------+------------------+---------|`

3	Repeat step 1 through step 2 for every remaining user account you want to create.
4	When you are finished creating user accounts, save and complete the process. `configuration save` **You have created a user account.**

Procedure 3-3
Deleting a user account

Step	Action
1	Identify the user name of the account to be deleted.

2	Delete the account.
	`user delete user <user>`
	For example, the following command deletes the user account su:
	`user delete user su`

3	Display the accounts in the system.
	`user show`
	Example output:
	`+--------- USER ACCOUNT TABLE --------+---------+`
	`| Username | Privilege | Default |`
	`+------------------+------------------+---------+`
	`| NewSuper | super | P |`
	`| user | limited | D |`
	`+------------------+------------------+---------|`

4	Repeat step 1 through step 3 for every remaining user account you want to delete.
5	When you are finished deleting user accounts, save and complete the process. `configuration save` **You have deleted a user account.**

Procedure 3-4
Managing Licenses

Step	Action

1	Install a license key. You can install a license key directly by identifying the license key and module number. When the module number is not specified, the value defaults to 1.
	Alternatively, you can install by specifying a license file, which identifies the license key and module, along with the server from which to download the file.
	`software license install {license-key <String[32]> module <NUMBER: 1-3>} | {file <FileName> server <IPHost>}`
	Example:
	`software license install license-key W1SSH2D3E4FGH5`

2	Display the status of installed licenses on the 3930. `software license show` Each license name displays one of the following statuses: • Not Installed - Also referred to as an invalid license. This means that none of the operationally enabled modules has a key installed for this license. • Installed - Also referred to as a valid license. This means that all of the operationally enabled modules have a key installed for this license and all conditional requirements for such license installation have been satisfied. • Partial License Detected - This means that one or more, but not all, operationally enabled modules have a key installed for this license. **You have installed the license.**

Procedure 3-5
Configuring the Remote Management Interface

Step	Action
1	Ensure DHCP is disabled. `dhcp client disable`
2	Modify the remote management interface configuration. `interface remote set {[ip <IpAddressWithMask>], [vlan <Vlan>], [gateway <IpAddress>}]` ***Note:*** You can change the IPv4 gateway in the same command line as the IP address to avoid loss of connectivity due to mismatch between IP and gateway. If you specified a gateway IP address in step 2, skip to step 4.
3	Configure a default gateway. `interface set gateway <IpAddress>`
4	Validate that your changes were made. `interface remote show`
5	Save and complete the process. `configuration save` **You have configured the remote management interface.**

Procedure 3-6
Accessing the CLI using Telnet

Step	Action
1	Use a Telnet client to connect to the 3930. `Telnet <IpAddress>`

2	At the login prompt enter a valid user name and password.
	Example:
	`3916 00:02:A1:07:B0:80`
	`SAOS is True Carrier Ethernet TM software.`
	
	`3916 login: su`
	`Password:`
	
	`SAOS is True Carrier Ethernet TM software.`
	
	`Welcome to the shell.`
	
	You have logged in to the CLI using Telnet.

Procedure 3-7
Configuring the Local Management Interface

Step	Action
1	Ensure DHCP is disabled. `dhcp client disable`
2	Modify the local management interface configuration. `interface local set {[ip <IpAddress>], [subnet <SubnetMask>]}`
3	Configure a default gateway if you did not already configure one in "Configuring the Remote Management Interface" on page 3-4. `interface set gateway <IpAddress>`
4	Validate that your changes were made. `interface local show` Example output:

```
+----------------------------------  local -------------------------------------+
| Parameter             | Operational        | User             | DHCP             |
+-----------------------+--------------------+------------------+------------------+
| IP Address            | 10.10.120.165      | 172.16.233.214   | 10.10.120.165    |
| Subnet Mask           | 255.255.255.0      | 255.255.255.0    | 255.255.255.0    |
+-----------------------+--------------------+------------------+------------------+
| Index                 | 3                  |                  |                  |
| Admin State           | Enabled            |                  |                  |
| Oper State            | Enabled            |                  |                  |
| Broadcast Address     | 10.10.120.255      |                  |                  |
| MAC Address           | 00:02:a1:07:ef:1e  |                  |                  |
| VLAN                  | 0                  |                  |                  |
| Priority              | 0                  |                  |                  |
| MTU                   | 1500               |                  |                  |
+-----------------------+--------------------+------------------+------------------+
```

5	Save and complete the process. `configuration save` **You have configured the Local Management Interface.**

Procedure 3-8
Configuring an Interface using DHCP

Step	Action

1 Display DHCP information.

```
dhcp client show
```

Example output where DHCP is disabled and configured to run on the local interface:

```
+------------------- DHCP CLIENT STATE --------------------+
| Parameter                          | Value                |
+------------------------------------+----------------------+
| Interface Name                     | local                |
| Admin State                        | Disabled             |
| Oper State                         | Disabled             |
| DHCP State                         | Disabled             |
| Discovery Interval                 | 30                   |
| Lease Time (days hh:mm:ss)         | 0:00:00:00           |
| Lease Remaining (seconds)          | 0                    |
| Renewal (T1) Time (seconds)        | 0                    |
| Rebinding (T2) Time (seconds)      | 0                    |
| DHCP Server                        | ::                   |
+------------------------------------+----------------------+
```

2 Set which interface will use DHCP.

```
dhcp client set interface <interfacetype>
```

For example, to configure a remote interface:

```
dhcp client set interface remote
```

3 Enable DHCP.

```
dhcp client enable
```

4 Verify that the DHCP server is bound to the interface.

```
dhcp client show
```

Example output where DHCP is enabled and running on the remote interface:

```
+------------------- DHCP CLIENT STATE --------------------+
| Parameter                          | Value                |
+------------------------------------+----------------------+
| Interface Name                     | remote               |
| Admin State                        | Disabled             |
| Oper State                         | Disabled             |
| DHCP State                         | Disabled             |
| Discovery Interval                 | 30                   |
| Lease Time (days hh:mm:ss)         | 0:00:00:00           |
| Lease Remaining (seconds)          | 0                    |
| Renewal (T1) Time (seconds)        | 0                    |
| Rebinding (T2) Time (seconds)      | 0                    |
| DHCP Server                        | ::                   |
+------------------------------------+----------------------+
```

5 Save and complete the process.

```
configuration save
```

You have configured an Interface using DHCP.

Procedure 3-9
Setting the System Host Name

Step	Action

1	Set the system host name.
	`system set host-name <newhostname>`
	For example, to change the system prompt from the default prompt to 3930_alpha_MainSt_CO>:
	`system set host-name 3930_Alpha_MainSt_CO`

2	Save and complete the process. `configuration save` **You have set the System Host Name.**

Procedure 3-10
Logging out of the System

Note: Before you disconnect from the system, ensure that you have saved the configuration using the `configuration save` command.

Step	Action
1	At the prompt, enter the following command: `exit`
2	Remove the cable connecting the console port to the serial port on the terminal or PC. **You have logged out of the system.**

Maintenance

The 3930 is designed so that the cabling, optics, and power supply units are hot swappable. This means that the unit can remain powered for all these maintenance tasks. There is no requirement to remove power from the unit before performing these types of routine maintenance.

> ***Note:*** If you have opted to power both DC power supplies from the same circuit, you will need to power down the system to replace a power supply. Ciena recommends that each power supply be fed from a separate circuit

This chapter provides maintenance instructions related to the power supply modules. It includes the following procedures:

- "Replacing an AC Power Supply"
- "Replacing a DC Power Supply"

Replacing a Power Supply Module

The 3930 has space for two power supply modules. The system can operate with a single power supply or with redundant power supplies. An overview of the power supply modules is included in *39XX/51XX Product Fundamentals*.

> ***Note:*** The system does not distinguish between a faulty and an unpowered supply. As a result, if redundant power supplies are installed, but only one supply is connected to a power source, the unpowered supply will cause the system to report an alarm state (ALRM LED solid yellow and STAT LED off). This alarm will be cleared when the power supply is properly initialized.

Simplex Power

If a single power supply is used, replacing the power supply will be a service impacting procedure.

Redundant Power

If redundant power supplies are used, replacing a power supply does not need to be a service impacting procedure.

AC Power Supplies

When redundant AC supplies are used, simply remove power from the supply being replaced. Leave the other supply powered. The remaining AC supply will be able to provide power to the system while the other power supply is replaced.

See "Replacing an AC Power Supply" on page 4-3 for a procedure.

DC Power Supplies

If the DC power supplies are powered off separate breakers, you will be able to turn off power feeding the power supply that is being replaced. While the second independent circuit remains on, and powers the unit during the replacement process.

If the DC power supplies are both powered off the same breaker, the power supply replacement will be a service impacting maintenance. As a result, Ciena recommends that each DC power supply be connected to a separate breaker.

See "Replacing a DC Power Supply" on page 4-4 for a procedure.

Procedure 4-1
Replacing an AC Power Supply

WARNING: To prevent ESD damage to electronic components, always use an ESD wrist strap when handling modules.

Step	Action
1	Remove the new power supply module from the packaging and inspect it for damage.
2	For the AC power supply being replaced, unsnap the bail lock latch securing the power cord to the power supply module and disconnect the power cord from the receptacle on the faceplate of the supply. *The Input LED on the power supply will turn off.*
3	Using a Phillips screwdriver, loosen the captive hold down screw on the right of the module.
4	Pull the power supply module out of the slot and set it aside.
5	Slide the new power supply module into the empty slot.
6	Using a Phillips screwdriver, secure the module in place using the captive hold down screw on the right of the module.
7	Plug the AC power cord into the receptacle on the front of the power supply module. Snap the bail lock latch up over the boot of the cable to lock the cable into place. *The power supply will turn on.*
8	Verify the power supply LEDs. The following LED indications should be present on the 3930: • PSA - Status LED is solid green, Input LED is solid green • PSB - Status LED is solid green, Input LED is solid green • PWR - solid green
9	Ensure that the power cable is properly dressed to the right and retained in the cable support bracket to the right of the chassis. This helps relieve the cord weight from the connector and avoid the inadvertent disconnection of the power supply cord. **The power supply has now been replaced.**

Procedure 4-2
Replacing a DC Power Supply

WARNING: To prevent ESD damage to electronic components, always use an ESD wrist strap when handling modules.

WARNING: Before performing the procedure, ensure that all power is off to the DC circuit. Locate the circuit and switch it to the OFF position. Tape the circuit breaker switch handle in the OFF position to prevent accidental closing of the circuit.

Step	Action
1	Remove the new power supply module from the packaging and inspect it for damage.
2	Remove power from the DC circuit that supplies power to the DC power supply module being replaced. *The Input LED on the power supply will turn off.*
3	Using a flat head screwdriver, remove the plastic cover from the front of the power supply.
4	Using a Phillips screwdriver, loosen the set screws on the terminal block and remove the wires from the DC power supply.
5	Using a Phillips screwdriver, loosen the captive hold down screw on the right of the module.
6	Pull the power supply module out of the slot and set it aside.
7	Slide the new power supply module into the empty slot.
8	Using a Phillips screwdriver, secure the module in place using the captive hold down screw on the right of the module.
9	Use the terminal block on the front of the DC power supply to connect the wires as follows: • Ground — connect to the right connector • Negative — connect to the middle connector • Positive — connect to the left connector ***Note:*** The ground connection should be made first.
10	Tighten the set screws on the terminal block with a Phillips screwdriver.

WARNING: When making connections to the terminal block, make sure that no stray strands of the input wire come into contact with any other part of the terminal block

11 Using a flat head screwdriver, re-install the plastic terminal block cover that was removed in step 3.

12 Ensure that the power cable is properly dressed to the right and retained in the cable support bracket to the right of the chassis. This helps relieve the cord weight from the connector and avoid the inadvertent disconnection of the power supply cord.

13 At the DC input circuit, restore power to the DC circuit.

The power supply will turn on.

14 Verify the power supply LEDs. The following LED indications should be present on the 3930:

- PSA - Status LED is solid green, Input LED is solid green
- PSB - Status LED is solid green, Input LED is solid green
- PWR - solid green

The power supply has now been replaced.

LED Overview

This chapter provides an overview of the LED indications available in the system. It contains the following sections:

- "Unit Status LEDs"
- "Power Supply LEDs"
- "10 Gigabit Ethernet Port LEDs"
- "10/100/1000 Mbps Port LEDs"
- "Local Management Port LEDs"
- "Sync Port"

All interfaces on the 3930 are accessible from the faceplate of the unit. With the exception of the Console and Alarm ports, all the interfaces have integrated LEDs which provide status information for the port.

> ***Note:*** The connector for the Console port has LEDs, however these LEDs are not used. They will not light at any time.

Figure 1-1 on page 1-3 shows the faceplate of the unit and identifies the locations of the different ports.

System Reset Button and LED Behavior

Pressing the reset button will turn on all of the LEDs in the system. If you initiate a hard reset (pressing the reset button for 3 seconds or longer) all of the LEDs will flash simultaneously to acknowledge that a reset to factory defaults has been initiated.

If this is a 3930 Sync + External Timing system, and the system was in a non-responsive state when the reset button was depressed, the following LED indications will occur after the reset button is released:

- the port LEDs will count down while the state dump is in progress. The count down will start with all port LEDs on, and will turn off LEDs in sequence until they are all off. This sequence will repeat until the state-dump has completed.
- when the system reboots, the LEDs proceed through the normal startup behavior with the STAT LED blinking green until the system has initialized.

Unit Status LEDs

The unit status LEDs communicate system operational status. They are located on the right center portion of the faceplate. The three types of 3930 systems have slightly different unit status LEDs. For 3930 Standard and 3930 Sync systems, see Figure 5-1. For 3930 Sync + External Timing systems, see Figure 5-2.

Figure 5-1
Unit Status LEDs on 3930 Standard and 3930 Sync systems

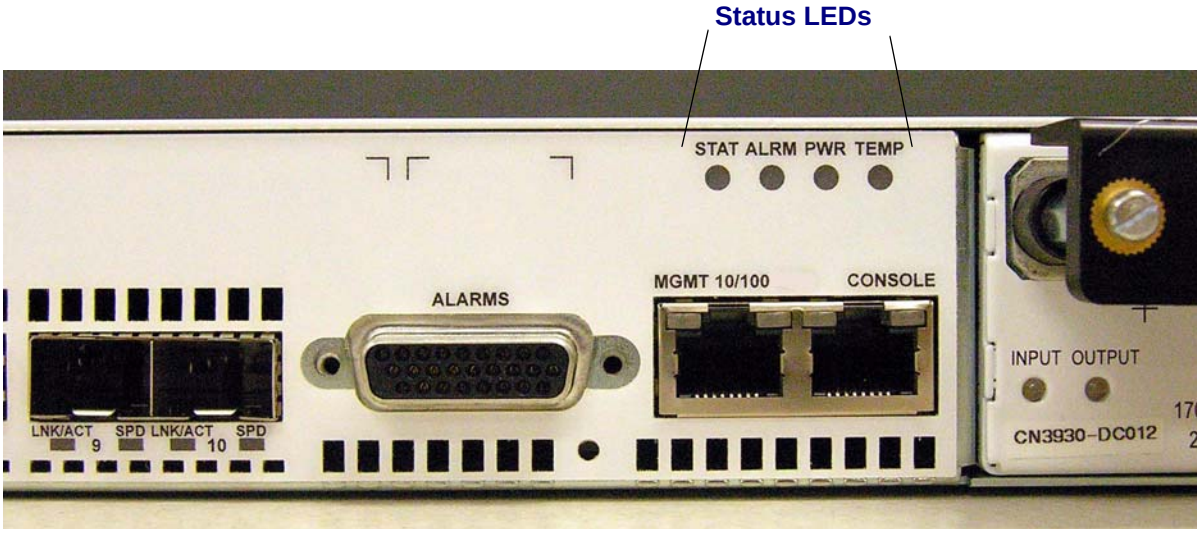


Figure 5-2
Unit Status LEDs on a 3930 Sync + External Timing system

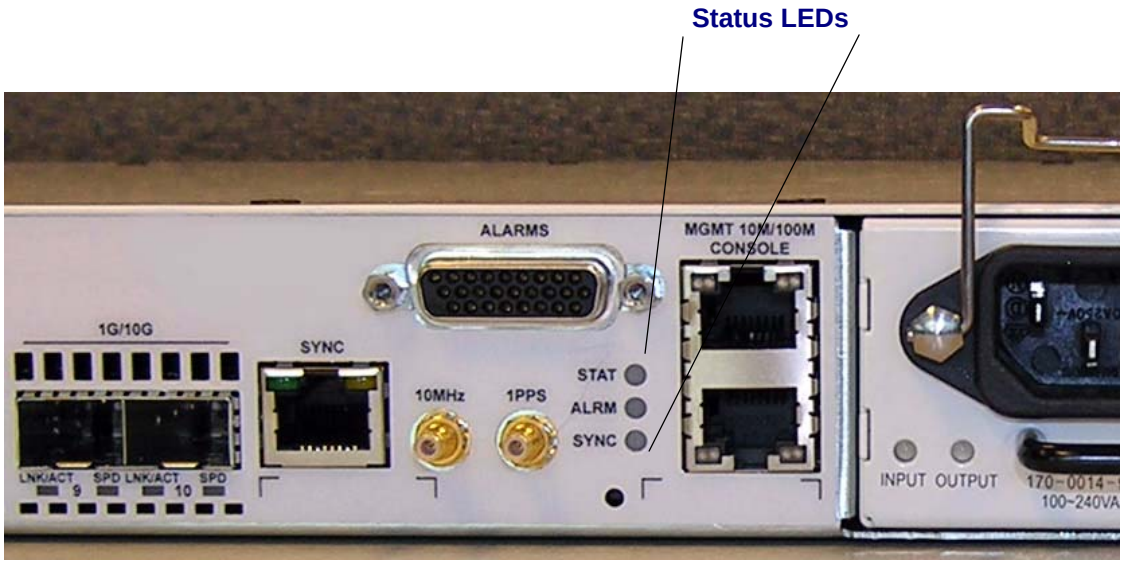


Table 5-1
Unit Status LEDs on 3930 Standard and 3930 Sync systems

LED	Indication	Description
STAT	Off	System is not powered or is not operating normally.
	Green	Indicates status normal/system ready.
	Blinking Green	System is initializing and performing self tests.
PWR	Green	Turns on when power is applied and remains on until the system is powered off.
ALRM	Off	Normal operating conditions.
	Yellow	An error has been detected.
TEMP	Off	System temperature is within the defined operating range.
	Yellow	Over temperature alarm condition present. The system temperature has exceeded the operating temperature range.

Table 5-2
Unit Status LEDs on a 3930 Sync + External Timing system

LED	Indication	Description
STAT	Off	System is not powered or is not operating normally.
	Green	Indicates status normal/system ready.
	Blinking Green	System is initializing and performing self tests.
ALRM	Off	Normal operating conditions.
	Yellow	An error has been detected.
SYNC	Off	System is in free run timing mode.
	Green	System is locked to a synchronization source (external input such as 1588, SyncE, etc).
	Blinking Green	System is acquiring synchronization.
	Yellow	System is in holdover timing mode.

Power Supply LEDs

Each power supply module has integrated LEDs on the left section of the faceplate. See Figure 5-3.

Figure 5-3
Power Supply LEDs

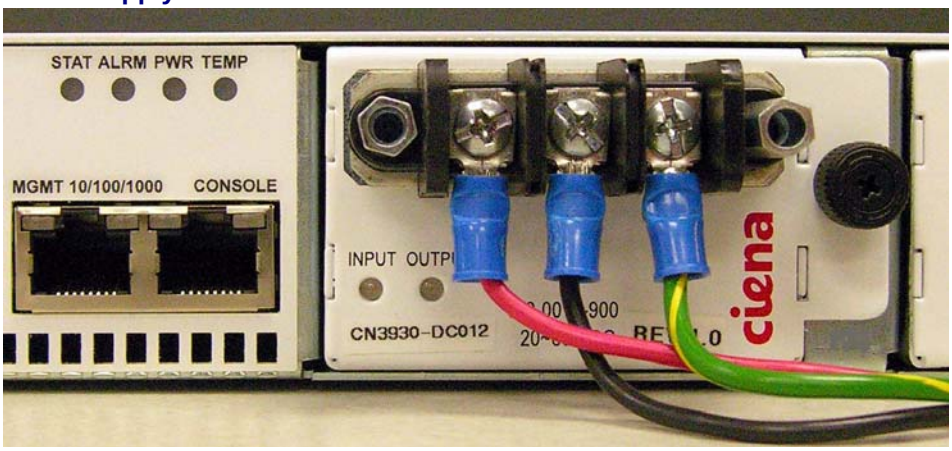


Table 5-3
Power Supply LEDs

LED	Indication	Description
INPUT	Off	Input power is not present. Or input power is outside of the specified range. Or an internal failure has occurred.
	Green	Input power is present and is within the specified range.
OUTPUT	Off	No input power present
	Green	Output power is present and within acceptable limits. In addition, the locally determined temperature is within the normal operating range.
	Red	One of the following conditions is present: • Output power is not within the specified limits. • System ordered power shutdown • Locally determined over-temperature condition.

10 Gigabit Ethernet Port LEDs

Each 10 Gigabit Ethernet port has two LED located at the bottom of the SFP connectors. The LEDs are labeled LNK/ACT and SPD. See Figure 5-4.

Figure 5-4
1/10 Gbps Port LEDs

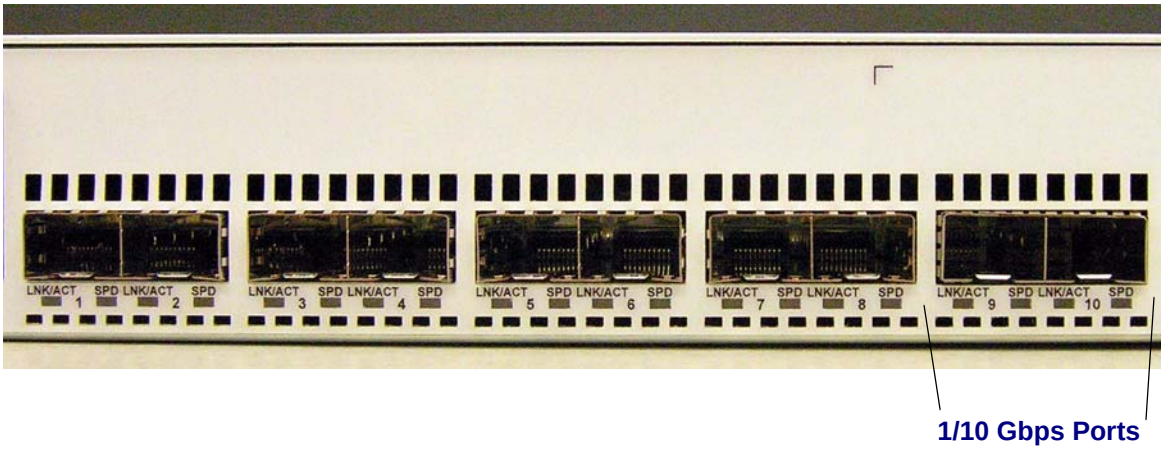


Table 5-4
10 Gigabit Ethernet Port LEDs

LED	Indication	Description
LNK / ACT	Off	The port is not operational.
	Green	Indicates a valid network connection.
	Blinking Green	The port is currently receiving or transmitting Ethernet packets.
SPD	Yellow	Port speed is 1 Gbps.
	Green	Port speed is 10 Gbps.

10/100/1000 Mbps Port LEDs

Each of the 10/100/1000 Mbps ports has two LEDs associated with it to indicate port status and speed.

The optical 100/1000 Mbps ports are located in a row along the center of the chassis and are labeled Ports 1 to 8 on the faceplate. The LEDs are located at the bottom of the SFP connectors and are labeled LNK/ACT and SPD. See Figure 5-5.

The copper 10/100/1000 Mbps ports are Ports 1 to 4 on the far left of the faceplate of the chassis. These ports also have two LEDs associated with each port, either below or above the connector. See Figure 5-5. The LEDs are unlabeled but have the same function as the LEDs on the optical ports. This makes the left LED the LNK/ACT, and the right LED the SPD indicator.

Figure 5-5
100/1000 Mbps Port LEDs

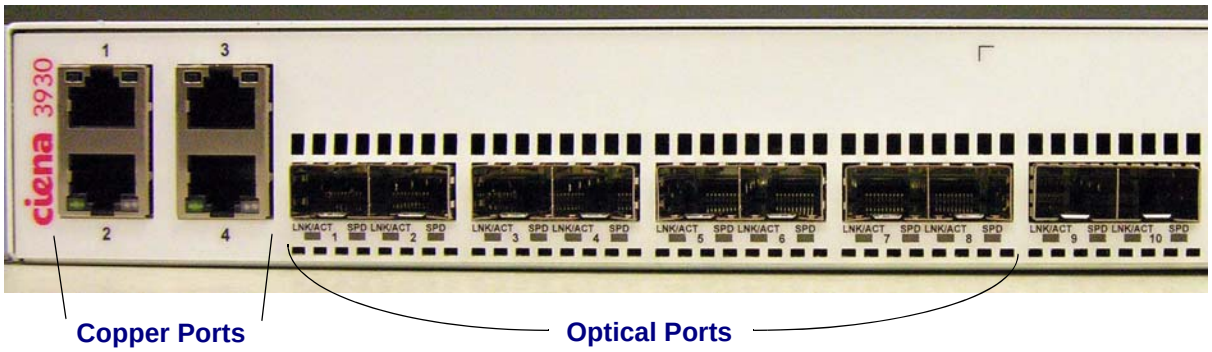


Table 5-5
100/1000 Mbps Port LEDs

LED	Indication	Description
LNK / ACT (Left LED)	Off	The port is not operational.
	Green	Indicates a valid network connection.
	Blinking Green	The port is currently receiving or transmitting Ethernet packets.
SPD (Right LED)	Off	Port speed is 10/100 Mbps.
	Yellow	Port speed is 1000 Mbps.

Local Management Port LEDs

The local management port has two LEDs associated with it. They are located at the top of the port and indicate port status and speed. See Figure 5-6 and Figure 5-7.

Figure 5-6
MGMT LEDs on 3930 Standard and 3930 Sync systems

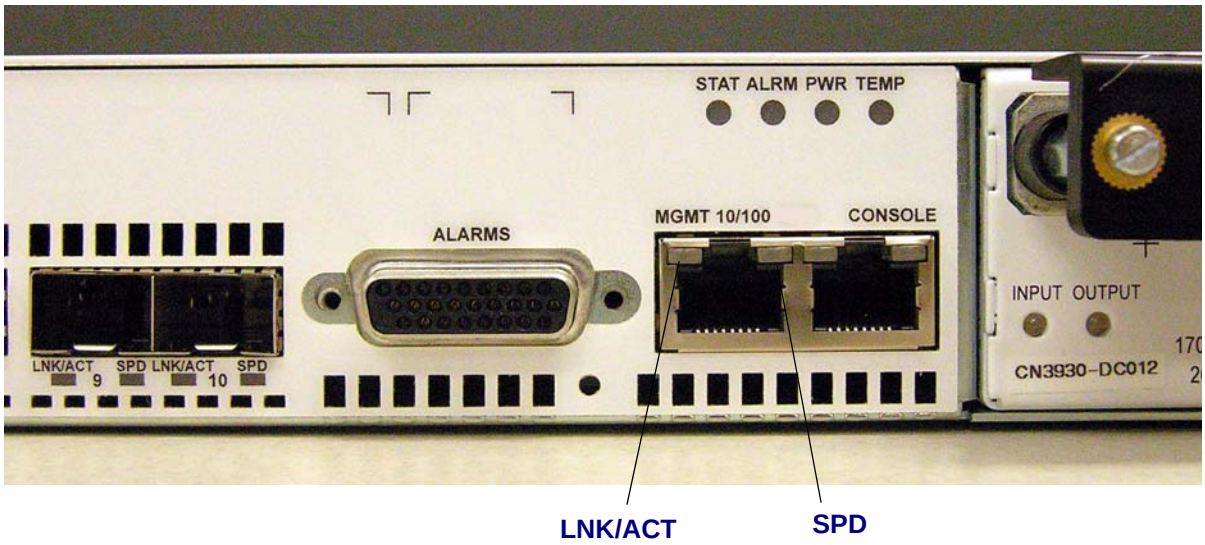


Figure 5-7
MGMT LEDs on a 3930 Sync + External Timing system

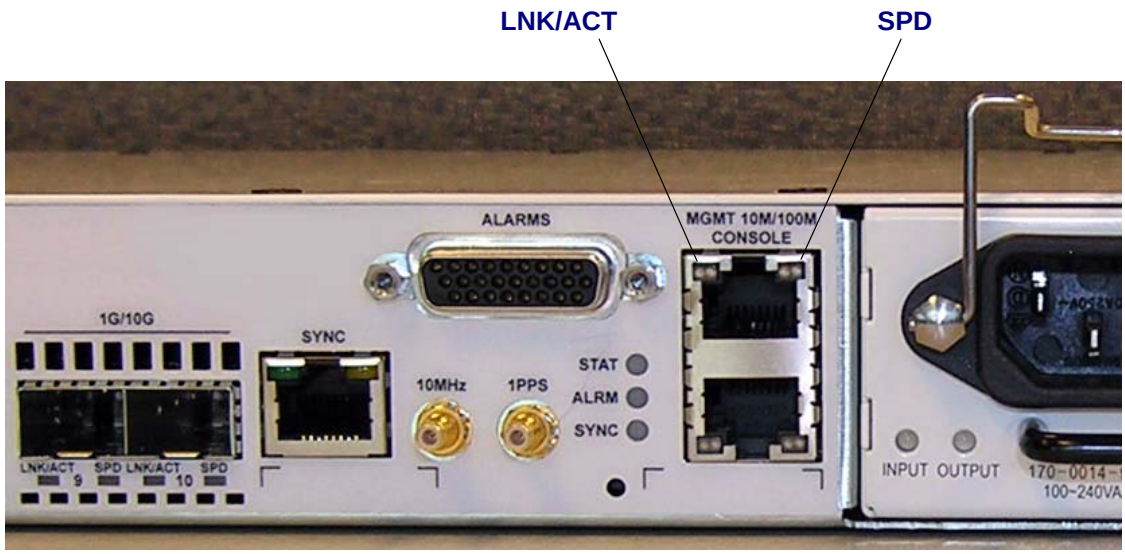


Table 5-6
MGMT LEDs (all 3930 systems)

LED	Indication	Description
LNK / ACT	Off	The port is not operational.
	Green	Indicates a valid network connection.
	Blinking Green	The port is currently receiving or transmitting Ethernet packets.
SPD	Off	Port speed is 10/100 Mbps.
	Yellow	Not used.

Sync Port

The Sync port has two LEDs associated with it. They are located at the top of the port and are related to BITS-IN and BITS-OUT. See Figure 5-6.

Figure 5-8
Sync Port LEDs

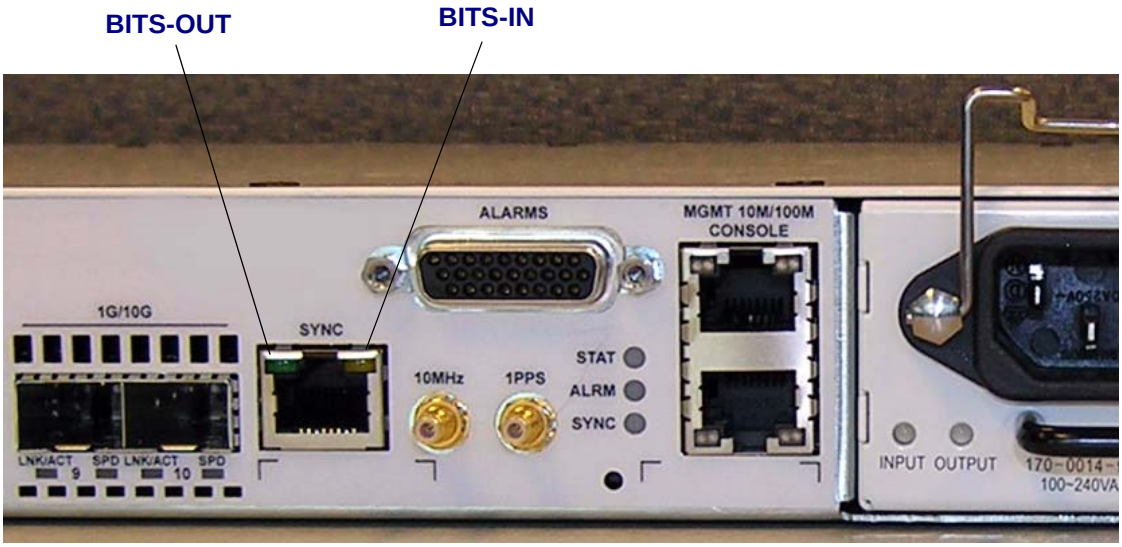


Table 5-7
Sync Port LEDs

LED	Indication	Description
BITS-IN	Off	LOS detected on the receive signal or no signal present.
	Yellow	Input signal being received on the interface.
BITS-OUT	Off	BITS-Out port is not provisioned or active.
	Green	BITS-Out is provisioned and enabled.
	Blinking green	BITS port is in maintenance state.

Technical Specifications

This chapter summarizes the technical specifications for 3930.

Table 6-1
Specifications

Feature	Specification	
Fault Tolerance	• Redundant power supplies	
Power Rating	• AC Input Power	100 to 240 VAC, 50/60 Hz, 1.0 to 0.5 Amps
	• DC Input Power	-/+24 VDC. -/+36 VDC, or -/+ 48 VDC Minimum 20 VDC, Maximum 60 VDC, 4 Amps
Power Consumption	• Typical Power Consumption	3930 Standard: 60 W 3930 Sync: 62 W 3930 Sync + External Timing: 70 W
	• Maximum Power Consumption	3930 Standard: 70 W 3930 Sync: 72 W 3930 Sync + External Timing: 95 W

Table 6-1
Specifications (continued)

Feature	Specification	
Connector Types	• NNI / UNI Ports (10 Gigabit)	SFP+ optics
	• NNI / UNI Ports (100/1000 Mbps)	SFP optics
	• NNI / UNI Ports (10/100/1000 Mbps)	RJ-45
	• Local Management Port (10/100 Mbps)	RJ-45
	• Console Port	RJ-45 (EIA-561)
	• Sync Port	RJ-45 ***Note:*** On 3930 Sync + External Timing systems only.
	• 1 PPS Port	50 Ohm SMB interface ***Note:*** On 3930 Sync + External Timingg systems only.
	• 10 MHz Port	50 Ohm SMB interface ***Note:*** On 3930 Sync + External Timingg systems only.
	• Alarm	26-pin D-sub
Physical	• Chassis Dimensions	4.4 cm H x 44.4 cm W x 25.4 cm D (1.75 in H x 17.5 in W x 10 in D)
	• Rack Unit Height	1 RU
Environmental	• Ambient Operating Temperature	Outdoor Street Cabinets, huts and other unconditioned locations -40C to +65C (-40F to 149F)
	• Operating Humidity	5 - 95%, non-condensing

Table 6-1
Specifications (continued)

Feature	Specification	
Alarm Circuit	• Alarm Sense	• Is negative with respect to local ground • Will be within +/- 60 V of local ground • The sense loop can be closed if the alarm sense is connected to a remote ground as opposed to the supplied sense return signal • Current in the sense loop will be less than 2 mA when closed with a short • The default state of each alarm circuit can be open or closed. The system will flag any state changes.
	• Alarm Circuit Voltage	• The alarm will not be triggered with a leakage current of up to +/- 1 uA • The alarm will function normally if a resistance of 8.6K or less and a voltage of +/- 6.8 V or less is introduced into the loop.

Regulatory Compliance

This chapter lists the different agency approval declarations for 3930. It also includes installation safety notes. The compliance specifications differ depending on system type as follows:

- For 3930 Standard systems see Table 7-1
- For 3930 Sync systems see Table 7-1
- For 3930 Sync + External Timing systems see Table 7-2 on page 7-2

Table 7-1
Regulatory Approval Declarations for 3930 Standard and 3930 Sync systems

Issue	Approval/Declaration
Agency Marks	CE (Europe)
	C-Tick (Australia and New Zealand)
	NRTL Listed
	VCCI (Japan)
Emissions	CISPR 22 (2006) (Australia and New Zealand)
	CISPR 22 (2005) with amendment A1 (2005)
	EN 300 132-2 (2007-10)
	EN 300 132-3 (2003-08)
	EN 300 386 (v1.4.1, 2008)
	EN 55022 (2006) with amendment A1 (2006)
	EN 61000-3-2 (2006)
	FCC Part 15 (2009) (US)
	ICES-003 Issue 4 (2004) (Canada)
Environmental	RoHS 2002/95/EC
	WEEE 2002/96/EC

Table 7-1
Regulatory Approval Declarations for 3930 Standard and 3930 Sync systems (continued)

Issue	Approval/Declaration
Immunity (EMC)	CISPR 24 (1997) with amendments A1 (2001) and A2 (2002)
	EN 300 132-2 (2007-10)
	EN 300 132-3 (2003-08)
	EN 300 386 V1.4.1: 2008
	EN 55024 (1998) with amendments A1 (2001) and A2 (2003)
	EN 61000-3-3 (2008)
	EN 61000-4-11(ed.2) (2005)
Laser Safety	CDRH Letter of Approval (US FDA approval)
	FCC 21 CFR subpart (J) (Safety of Laser Products)
	IEC 60825-1:2007
Safety	CSA 60950-1-07 (Canada)
	EN 60950-1: 2006 (EU)
	IEC 60950-1: 2005 (Second Edition) (International)
	UL 60950-1-07 (US)

Table 7-2
Regulatory Approval Declarations for 3930 Sync + External Timing systems

Issue	Approval/Declaration
Agency Marks	CE (Europe)
	C-Tick (Australia and New Zealand)
	NRTL Listed
	VCCI (Japan)

Table 7-2
Regulatory Approval Declarations for 3930 Sync + External Timing systems (continued)

Issue	Approval/Declaration
Emissions	CISPR 22 (2008)
	EN 300 132-2 (2007-10)
	EN 300 132-3 (2003-08)
	EN 300 386 (v1.5.1, 2010)
	EN 55022 (2010)
	EN 61000-3-2 (2006, A1, A2)
	FCC Part 15 (2011) (US)
	ICES-003 Issue 5 (August 2012) (Canada)
Environmental	RoHS 2002/95/EC
	WEEE 2002/96/EC
Immunity (EMC)	CISPR 24 (2010)
	EN 300 132-2 (2007-10)
	EN 300 132-3 (2003-08)
	EN 300 386 V1.5.1: 2010
	EN 55024 (2010)
	EN 61000-3-3 (2008)
	EN 61000-4-11(ed.2) (2005)
Laser Safety	CDRH Letter of Approval (US FDA approval)
	FCC 21 CFR subpart (J) (Safety of Laser Products)
	IEC 60825-1:2007
Safety	ANSI/UL 60950-1, Second Edition 2007 (US)
	CAN/CSA 22.2 No. 60950-1-07 (Canada)
	EN 60950-1: 2006, with A1: 2010 and A11: 2009 (EU)
	IEC 60950-1: 2005, with A1:2009 (International)

Canada

This Class A digital device complies with Canadian ICES-003.

CE Compliance

The CE mark on the chassis of unit signifies that the system meets all relevant European standards requirements based on the following directives:

- 2004/108/EC — EMC Directive
- 2006/95/EC — Low Voltage Directive

FCC Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

If this equipment does cause interference to radio or television reception, the user is encouraged to try to correct the interference using the following measures:

- Reorient the receiving antenna.
- Relocate the equipment with respect to the receiver.
- Move the equipment away from the receiver.
- Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/ television technician for additional suggestions.

Modifications to this product not authorized by Ciena could void the FCC approval and negate your authority to operate the product.

VCCI - Japan

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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

Mounting Options

Ciena has qualified some mounting brackets that can be used to mount the 1 rack unit products in the portfolio. This chapter contains the detailed mounting instructions for 1 RU products only. The instructions will also specify which products each bracket has been approved for.

This chapter contains the following:

- "Wallmount Bracket Installation Instructions"
- "19" Frame Mount Bracket - 1 RU"
- "23" Frame Mount Bracket - 1 RU"

Wallmount Bracket Installation Instructions

Orderable Part Number: 170-0023-900 (Mounting Bracket Kit)

Can be used to mount the following products:

- 3920
- 3930
- 3932
- 3940
- 3960
- 5140
- 5142
- 5150
- 5160

The wallmount bracket is attached to the sides of an unpowered/unconnected chassis and used to hang the unit onto the wall. Units may be oriented for either left or right access. Figure 8-1 on page 8-2 shows a 3920 installed using the wallmount brackets.

Figure 8-1
Mounted Unit

The mounting bracket kit includes:

- two identical brackets, and
- eight 8-32 x 5/16 length pan head screws used to attach the brackets to the side of the chassis. When you are mounting a 3930, 3932, 3960, 5140, 5142, 5150 or 5142 three screws will be used per bracket. When you are mounting a 3920 or 3940 four screws will be used per bracket.

Hardware required to attach the mounting bracket to the wall is Customer supplied. The reinforced mounting surface should be capable of supporting approximately 100 pounds. Please ensure that the hardware used includes the proper fasteners/anchors required to support the weight of the unit.

The same mounting bracket can be used to mount a number of different units. The installation procedure is essentially the same for all units. The main difference will be the location of the mounting holes on the sides of the units varies between equipment.

The 3920, 3930, 3932, 3940, 3940, 3960, 5142 and 5160 chassis are a single rack unit in height. For these units the bracket will be installed on the sides of the chassis and near the front of the chassis. The 5140 and 5150 chassis are 2 rack units in height. For these units the bracket will be installed on the sides of the chassis near the front, and towards the bottom of the unit. When installed, the bottom of the unit will be positioned against the mounting surface.

WARNING: For units with side vent holes, the vent holes must be positioned at the top when the chassis is wall mounted. In some cases where a particular direction (left or right) is required for cable routing and faceplate access, the bracket may need to be mounted with the flange at the top of the unit resulting in the unpainted underside of the unit facing outward when installed.

For a procedure see "Installing the Wallmount Bracket" on page 8-6.

19" Frame Mount Bracket - 1 RU

Orderable Part Number: 170-0602-903 (19" 1RU Mounting Bracket Kit)

Can be used to mount the following 1 RU products:

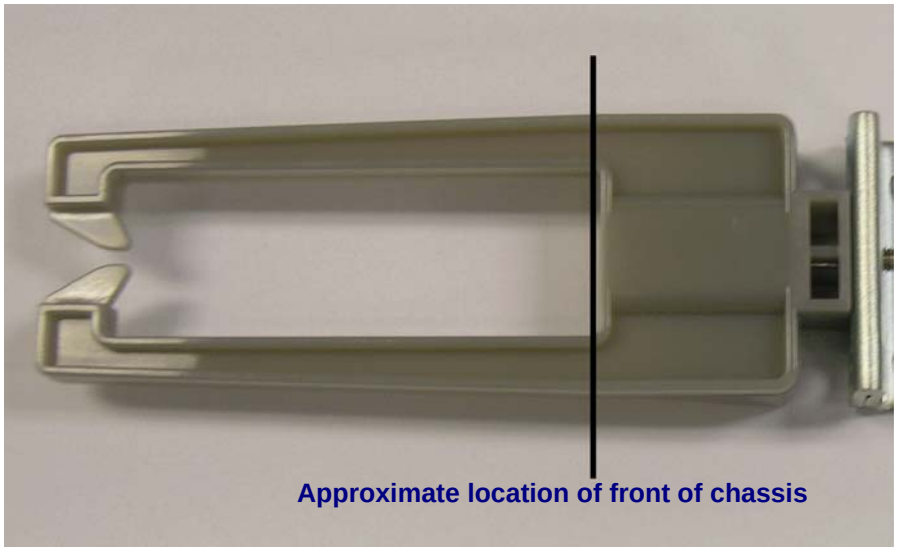
- 3920
- 3930
- 3932
- 3940
- 3960
- 5142
- 5160

The frame mount bracket is attached to the sides of an unpowered/ unconnected chassis and used to position the unit in a 19" frame. This bracket kit also includes cable supports. The cable supports are installed on the mounting brackets and are used to keep the cables out of adjacent equipment space by directing them along the faceplate of the unit.

The mounting bracket kit includes:

- two brackets (the same bracket is used for both the left and right sides),
- two cable supports,
- two 8-32 x 1/2 length pan head screws (used to attach the cable supports to the brackets), and
- eight 8-32 x 5/16 length pan head screws (used to attach the brackets to the side of the chassis).

Figure 8-2
Bracket cable support, mounting offset shown



The same mounting bracket can be used to mount a number of different single rack unit high chassis including: 3920, 3930, 3932, 3940, 3960, 5142 and 5160. The installation procedure is essentially the same for all units. The main difference will be the placement and number of screws used.

> ***Note:*** The bracket will be installed on the sides of the chassis and near the front of the chassis. The bracket will be positioned slightly behind the front of the chassis. It is not installed flush with the front of the chassis. When correctly installed, the back of the channel on the cable support bracket will be approximately flush with the front of the chassis. See Figure 8-2.

Two screws will be used to attach each bracket to the chassis.

For a procedure see “Installing the 19” Frame Mount Bracket - 1 RU” on page 8-8.

23” Frame Mount Bracket - 1 RU

Orderable Part Number: 170-0603-903 (23” 1RU Mounting Bracket Kit)

Can be used to mount the following 1 RU products:

- 3920
- 3930
- 3932
- 3940
- 3960
- 5142
- 5160

The frame mount bracket is attached to the sides of an unpowered/ unconnected chassis and used to position the unit in a 23" frame. This bracket kit also includes cable supports. The cable supports are installed on the mounting brackets and are used to keep the cables out of adjacent equipment space by directing them along the faceplate of the unit.

The 23” brackets can be installed on a frame with 1” vertical hole spacing or 1.25” spacing (associated with standard 1.75” RU mounting).

The mounting bracket kit includes:

- Left and right brackets,
- two cable supports,
- two 8-32 x 5/8 length pan head screws (used to attach the cable supports to the brackets), and
- eight 8-32 x 5/16 length pan head screws (used to attach the brackets to the side of the chassis).

The same mounting bracket can be used to mount a number of different single rack unit high chassis including: 3920, 3930, 3932, 3940, 3960, 5142 and 5160. The installation procedure is essentially the same for all units. Two screws will be used per bracket. The main difference will be the location of the mounting holes on the sides of the units varies between equipment.

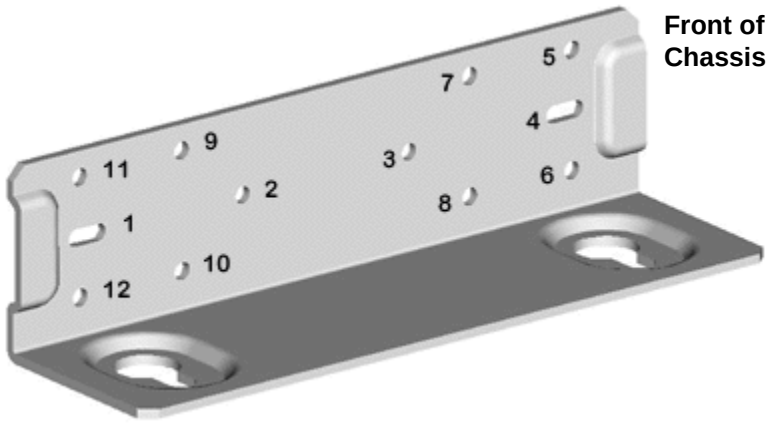
The bracket will be installed on the sides of the chassis and near the front of the chassis. The bracket will be positioned slightly behind the front of the chassis. It is not installed flush with the front of the chassis. When correctly installed, the back of the channel on the cable support bracket will be approximately flush with the front of the chassis. See Figure 8-2 on page 8-4.

For a procedure see “Installing the 23” Frame Mount Bracket - 1 RU” on page 8-10.

Procedure 8-1
Installing the Wallmount Bracket

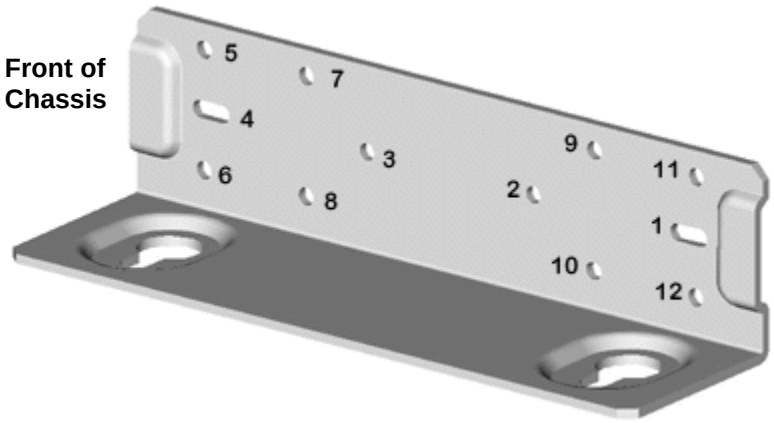
Step	Action
1	Align the holes of the mounting bracket with the holes on the left side of the unit (see Figure 8-3) as follows: • 3930, 3932, 3960, 5142, 5150 and 5160 — beginning with hole 3, install screws in holes 3, 4 and 2. • 3940 — beginning with hole 3, install screws in holes 3, 4, 2 and 1. • 5140 — beginning with hole 3, install screws in holes 3, 4 and 1. • 3920 — beginning with hole 5, install screws in holes 5, 6, 9 and 12.

Figure 8-3
Left Side Application



2	Align the holes of the mounting bracket with the holes on the right side of the unit (see Figure 8-4 on page 8-7) as follows: • 3930, 3932, 3960, 5142, 5150 and 5160 — beginning with hole 3, install screws in holes 3, 4 and 2. • 3940 — beginning with hole 3, install screws in holes 3, 4, 2 and 1. • 5140 — beginning with hole 3, install screws in holes 3, 4 and 1. • 3920 — beginning with hole 5, install screws in holes 5, 6, 9 and 12.

Figure 8-4
Right Side Application



3 Position the unit against the wall and mark the location of the two screw holes for the upper bracket.

Note: The mounting holes are 5” center to center.

4 Drill the holes for the upper bracket into the reinforced mounting surface.

5 Install the anchors/fasteners and mounting screws into the two holes.

6 Using the keyhole slots on the upper bracket, hang the chassis on the mounting surface.

7 Mark the location of the two screw holes in the lower bracket.

Note: Bottom screws should be centered on the bottom of the keyhole. This ensures that the unit cannot be removed from the wall without removing the bottom screws. The vertical distance between the upper and lower mounting holes is 20.1" center to center.

8 Remove the chassis from the wall and set it aside.

9 Drill the holes for the lower bracket into the reinforced mounting surface.

10 Install the anchors/fasteners into the two holes.

11 Using the keyhole slots on the upper bracket, hang the chassis on the mounting surface.

12 Install two screws into the fasteners for the lower bracket.

Note: Both the upper and lower mounting brackets need to be securely fastened to the mounting surface to properly support the unit.

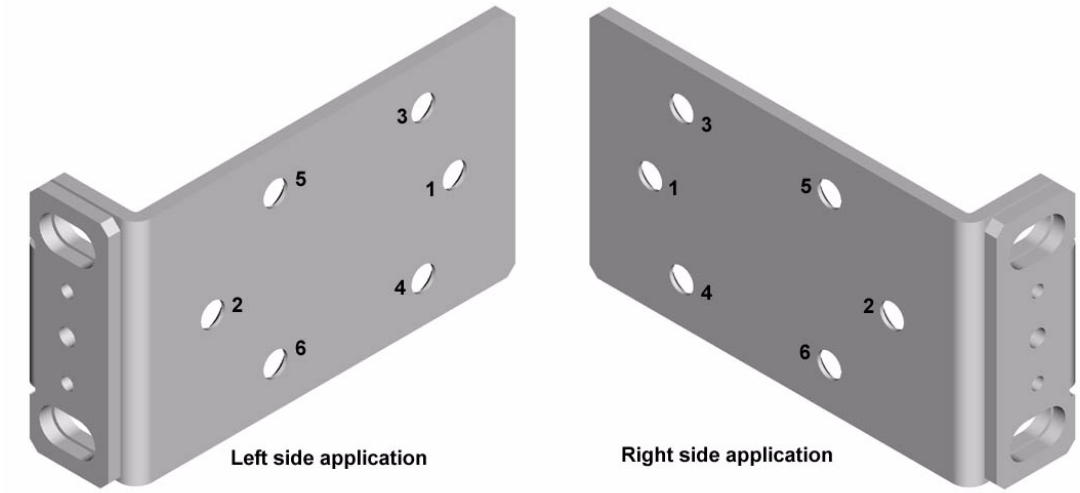
13 Dress and secure the cables using local practices. Ensure that the weight of the cable is supported and does not drag on the plug. For detailed cabling information, see the hardware install manual for the unit.

You have successfully mounted the unit.

Procedure 8-2
Installing the 19” Frame Mount Bracket - 1 RU

Step	Action
1	Align the holes of the mounting bracket with the holes on the side of the unit (see Figure 8-5) as follows: • 3930, 3932, 3940, 3960, 5142 and 5160 — install screws in holes 1 and 2. • 3920 — install screws in holes 5 and 6. ***Note:*** When mounting a 3920, install the screws in the set of holes on the side of the chassis that is located closest to the middle of the chassis. ***Note:*** When correctly installed, the mounting flange will be recessed approximately 2 inches from the front faceplate of the chassis.

Figure 8-5
Mounting bracket, with holes labeled



2	Repeat step 1 to install the second bracket.
3	Position the chassis in place in the frame.
4	Install four customer supplied screws in the slots on both the left and right brackets.
5	Tighten all screws to ensure they make a firm connection between the bracket and the frame.
6	Install the cable supports on the mounting brackets using the available screw position and the two longer 8-32 screws provided in the kit. One screw is used per bracket. Figure 8-2 on page 8-4 shows the Cable Supports installed on the mounting bracket.

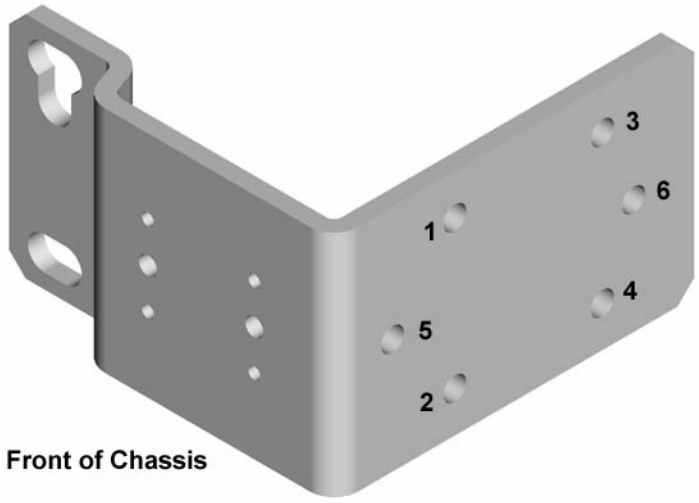
7 Use the cable support brackets to dress and secure the cables. Use local practices to secure the cables. Ensure that the weight of the cable is supported and does not drag on the plug. For detailed cabling information, see the hardware installation manual for the unit.

You have successfully mounted the unit.

Procedure 8-3
Installing the 23” Frame Mount Bracket - 1 RU

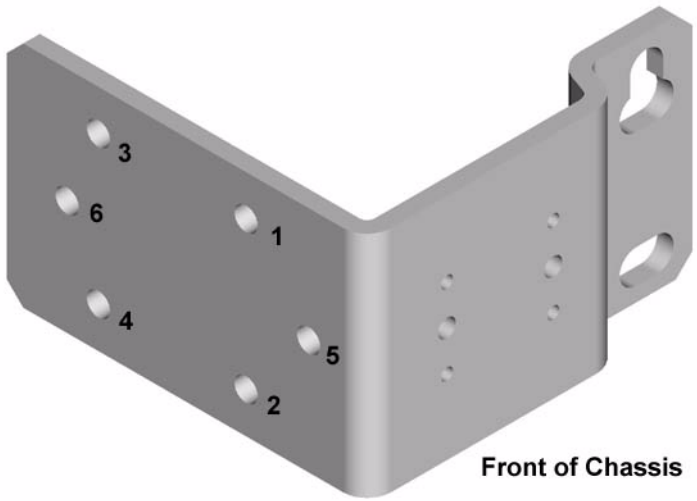
Step	Action
1	Align the holes of the mounting bracket with the holes on the left side of the unit (see Figure 8-6) as follows: • 3930, 3932, 3940, 3960, 5142 and 5160 — install screws in holes 5 and 6. • 3920 — install screws in holes 1 and 2.

Figure 8-6
Back side of left bracket



2	Align the holes of the mounting bracket with the holes on the right side of the unit (see Figure 8-7 on page 8-11) as follows: • 3930, 3932, 3940, 3960, 5142 and 5160 — install screws in holes 5 and 6. • 3920 — install screws in holes 1 and 2.

Figure 8-7
Back side of right bracket

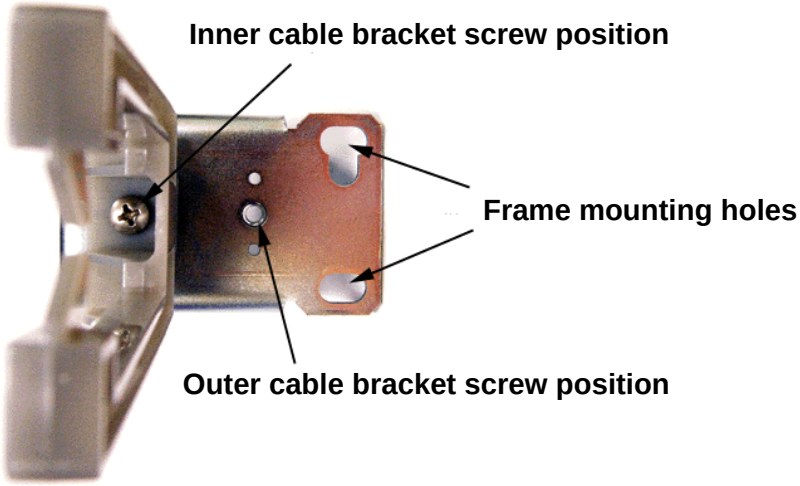


3 Position the chassis in place in the frame.

4 Install four customer supplied screws in the slots on both the left and right brackets.

5 Install the cable support on the mounting brackets using either the Inner or Outer screw position and the two longer 8-32 screws provided in the kit. One screw will be used per bracket. Figure 8-2 on page 8-4 shows the Cable Support installed on the mounting bracket, and Figure 8-8 shows the Inner and Outer mounting holes available on the bracket.

Figure 8-8
Front view of right bracket, showing mounting holes



6 Use the Cable Support Bracket to dress and secure the cables. Use local practices to secure the cables. Ensure that the weight of the cable is supported and does not drag on the plug. For detailed cabling information, see the hardware installation manual for the unit.

You have successfully mounted the unit.

Reset Button

It is possible to initiate soft resets of the system through the local console port, local management port, or the management VLAN. Instructions for initiating a soft reset are included in the *39XX/51XX Command Reference*. This is the recommended way to reset the system.

The 3930 has a reset button. To avoid accidentally triggering the reset button, it is recessed behind the faceplate. You will need a straightened paper clip or similar small tool to depress the reset button. The reset button is located to the left of the management port on the far right of the chassis. Figure 9-1 and Figure 9-2 on page 9-2 show the location of the reset button.

Figure 9-1
Location of the 3930 Reset Button (3930 Standard and 3930 Sync systems)

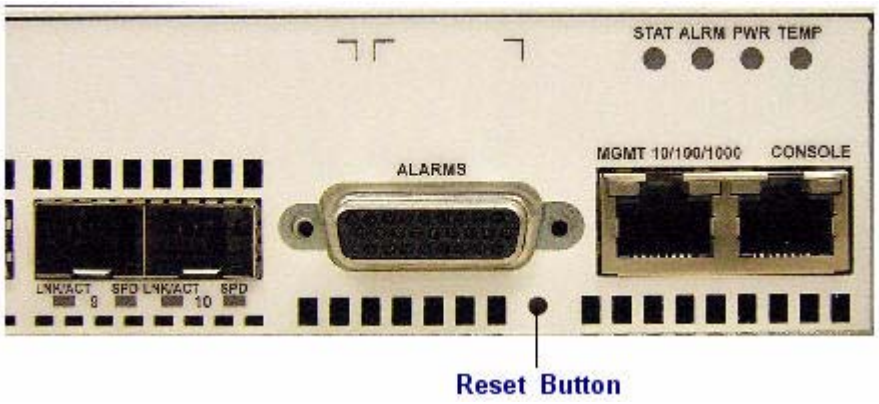
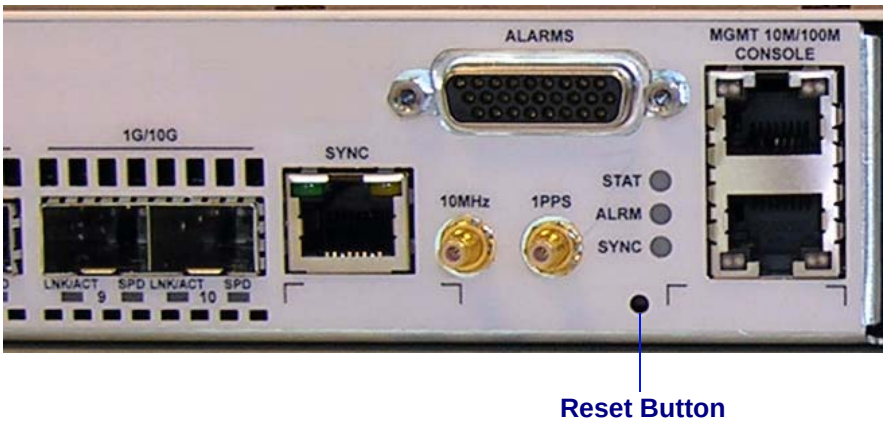


Figure 9-2
Location of the 3930 Reset Button (3930 Sync + External Timing system)



There are two different types of resets available:

- Quick reset, which is accomplished by depressing the reset button for less than three seconds. A quick reset reboots the system with the current saved configuration. When you press the reset button for less than 3 seconds, all the LEDs on the faceplate will be lit.
- Hard reset, which is accomplished by depressing the reset button for three seconds or more continuously. When you press the reset button for more than 3 seconds, all the LEDs on the faceplate will be lit, then they will flash to indicate that the hard reset has been initiated. A hard reset erases the current configuration and restores the unit to the factory default settings. See *39XX/51XX Product Fundamentals* for more information about the factory default settings.

  Note 1: The 3930 Sync + External Timing systems have additional behavior that occurs when the reset button is pushed and the system is unresponsive. If you are using a 3930 Sync + External Timing unit you should also read the section “Creating a State Dump or Core Dump Log File” on page 9-3

  Note 2: Pressing the reset button will also result in an LED indication. The LED behavior is described in “LED Overview” on page 5-1.

Creating a State Dump or Core Dump Log File

Note: The functionality described in this section is only available on 3930 Sync + External Timing systems. This feature is not supported on 3930 Standard and 3930 Sync systems.

Two types of log files are available:

- **State dump log** — The state dump provides a summary of the current and previous state of the system.
- **Core dump log** — The core dump provides a summary of the processes that were running when the system became unresponsive.

The creation of these files is triggered by depressing the reset button (for either a quick or hard reset) on 3930 Sync + External Timing systems.

The log file creation varies depending on the state of the system when the reset button is depressed. One of the following scenarios will occur:

- **System was responsive when the reset button was depressed** — The state dump file is generated before the system reboots. There will be minimal delay (approximately 5 seconds) while the state dump file is created and stored to the system memory. After the state dump file is created the system will reboot.
- **System was unresponsive when the reset button was depressed** — In this case a full core dump will be initiated, and then a state dump. There will be a delay (up to 2 minutes) while the core dump file is created and stored to system memory. Next the state dump file is created and stored to system memory. After the both the core dump and state dump files are created the system will reboot.

When the system reboots, you will be able to retrieve the state dump file and core dump file (if it exists) from the system. The log files are stored in the following locations:

- State dump log files: /mnt/sysfs/log/push_button_state-dump

  Note: If a state dump file already exists on the system, it will be renamed push_button_state-dump.prev when the new file is created.

- Core dump log files: /tmp/corefiles/

These files can be used to assist with troubleshooting the system.

3930 Service Delivery Switch

Hardware Installation and Start-up Manual

Publication: 009-3223-001
Document status: Standard
Revision E
Document release date: January 2014

CONTACT CIENA
For additional information, office locations, and phone numbers, please visit the Ciena web site at **www.ciena.com**

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