Wireless LAN Mobility System

Wireless LAN Switch and Controller Hardware Installation Guide

WX4400	3CRWX440095A
WX2200	3CRWX220095A
WX1200	3CRWX120695A
WXR100	3CRWXR10095A

http://www.3Com.com/

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CONTENTS

About This Guide

This guide shows you how to install a 3Com Wireless LAN Switch (WX) in a 3Com Mobility System wireless LAN (WLAN) and deploy basic IEEE 802.11 wireless service.

Read this guide if you are a network administrator or other person installing WX switches and deploying 802.11 wireless service in a network.

The 3Com Mobility System is an enterprise-class WLAN solution that seamlessly integrates with an existing wired enterprise network. The 3Com system provides secure connectivity to both wireless and wired users in large environments such as office buildings, hospitals, and university campuses and in small environments such as branch offices.

The 3Com Mobility System fulfills the three fundamental requirements of an enterprise WLAN: It eliminates the distinction between wired and wireless networks, allows users to work safely from anywhere (secure mobility), and provides a comprehensive suite of intuitive tools for planning and managing the network before and after deployment, greatly easing the operational burden on IT resources.

If release notes are shipped with your product and the information there differs from the information in this guide, follow the instructions in the release notes.

Most user guides and release notes are available in Adobe Acrobat Reader Portable Document Format (PDF) or HTML on the 3Com World Wide Web site:

http://www.3com.com/

Conventions

Table 1 and Table 2 list conventions that are used throughout this guide.

Table 1 Notice Icons

Icon	Notice Type	Description
	Information note	Information that describes important features or instructions
	Caution	Information that alerts you to potential loss of data or potential damage to an application, system, or device
	Warning	Information that alerts you to potential equipment damage or personal injury.

Table 2 Text Conventions

Convention	Description
`Monospace text`	Sets off command syntax or sample commands and system responses.
Bold text	Highlights commands that you enter or items you select.
Italic text	Designates command variables that you replace with appropriate values, or highlights publication titles or words requiring special emphasis.
[ ] (square brackets)	Enclose optional parameters in command syntax.
{ } (curly brackets)	Enclose mandatory parameters in command syntax.
| (vertical bar)	Separates mutually exclusive options in command syntax.
Keyboard key names	If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). Example: Press Ctrl+Alt+Del
Words in *italics*	Italics are used to: ▪ Emphasize a point. ▪ Denote a new term at the place where it is defined in the text. ▪ Highlight an example string, such as a username or SSID.

Documentation

The MSS documentation set includes the following documents.

- *Wireless Switch Manager (3WXM) Release Notes*

  These notes provide information about the 3WXM software release, including new features and bug fixes.

- *Wireless LAN Switch and Controller Release Notes*

  These notes provide information about the MSS software release, including new features and bug fixes.

- *Wireless LAN Switch and Controller Quick Start Guide*

  This guide provides instructions for performing basic setup of secure (802.1X) and guest (WebAAA™) access, and for configuring a Mobility Domain for roaming.

- *Wireless Switch Manager Reference Manual*

  This manual shows you how to plan, configure, deploy, and manage a Mobility System wireless LAN (WLAN) using the 3Com Wireless Switch Manager (3WXM).

- *Wireless Switch Manager User's Guide*

  This guide shows you how to plan, configure, deploy, and manage a Mobility System wireless LAN (WLAN) using the 3Com Wireless Switch Manager (3WXM). It contains information about recommended system requirements you should meet for optimum 3WXM performance, installing 3WXM client and 3WXM Services software, and an introduction to using the 3WXM interface.

- *Wireless LAN Switch and Controller Hardware Installation Guide*

  This guide provides instructions and specifications for installing a WX wireless switch in a Mobility System WLAN.

- *Wireless LAN Switch and Controller Configuration Guide*

  This guide provides instructions for configuring and managing the system through the Mobility System Software (MSS) CLI.

- *Wireless LAN Switch and Controller Command Reference*

  This reference provides syntax information for all MSS commands supported on WX switches.

Documentation Comments

Your suggestions are very important to us. They will help make our documentation more useful to you. Please e-mail comments about this document to 3Com at:

pddtechpubs_comments@3com.com

Please include the following information when contacting us:

- *Document title*
- *Document part number and revision (on the title page)*
- *Page number (if appropriate)*

Example:

- *Wireless LAN Switch and Controller Configuration Guide*
- *Part number 730-9502-0071, Revision B*
- *Page 25*

Please note that we can only respond to comments and questions about 3Com product documentation at this e-mail address. Questions related to Technical Support or sales should be directed in the first instance to your network supplier.

1 WX SWITCH OVERVIEW

A 3Com Wireless Switch (WX) provides mobility and authentication, authorization, and accounting (AAA) services for wireless or wired users. A WX switch also controls the operation of 3Com Managed Access Point (MAP) access points, which control and manage IEEE 802.11 operation over the air.

WARNING: *Installation must be performed by qualified service personnel only. Read and follow all warning notices and instructions marked on the product or included in the documentation.*

WARNING: *There are no user-serviceable parts inside the WX switches.*

WX Model Numbers

Table 3 lists the WX switch model numbers.

Table 3 WX Switch Model Numbers

Model	Port Configuration	Power Supply Configuration
WX2200	Two gigabit Ethernet ports. Each port has a miniature Gigabit interface converter (mini-GBIC) slot for insertion of a small form-factor pluggable (SFP) 1000BASE-SX or 1000BASE-LX fiber-optic interface. One 10/100 Ethernet port for out-of-band management (without PoE).	Two 100-240V VAC autosensing AC power supplies
WXR100	Two 10/100BASE-TX Ethernet ports Port 1 provides an uplink to the network. Port 2 supports Power over Ethernet (PoE) and provides direct connection to a MAP	One 100-240 VAC autosensing AC power supply
WX1200	Eight 10/100 Ethernet ports, six of which support PoE	One 100-120 VAC / 200-240 VAC autosensing AC power supply

Table 3 WX Switch Model Numbers (continued)

Model	Port Configuration	Power Supply Configuration
WX4400	Four dual-interface gigabit Ethernet ports. Each port has a 1000BASE-TX copper interface and a Gigabit interface converter (GBIC) slot for insertion of a 1000BASE-SX or 1000BASE-LX fiber-optic interface.	Two 100-120 VAC / 200-240 VAC autosensing AC power supplies

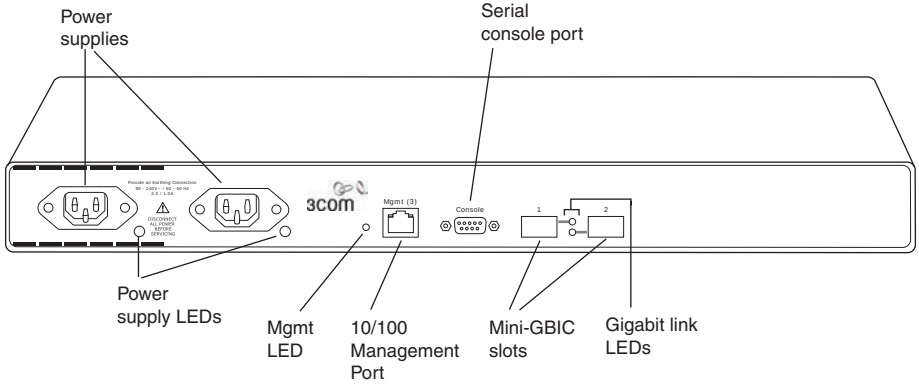
Hardware Features

The following sections describe the WX hardware features.

WX2200 Switch

A WX2200 switch is one RU high and also can be installed in a standard 48.26-cm (19-inch) equipment rack or on a tabletop. Figure 1 shows the features of a WX2200 switch.

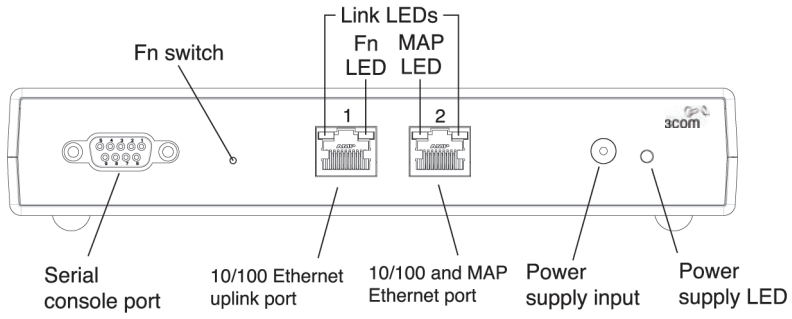
Figure 1 3Com WX2200 Switch



The rear of the switch contains a label with the serial ID, MAC address, and other identifying information.

WXR100 Switch A WXR100 switch is compact and can be installed on a tabletop. Figure 2 shows the external hardware features of an WXR100 switch.

Figure 2 3Com WXR100 Switch



CAUTION: *Do not stack WXR100 switches. Stacked WXR100 switches can overheat and cause loss of equipment functionality or permanent damage.*

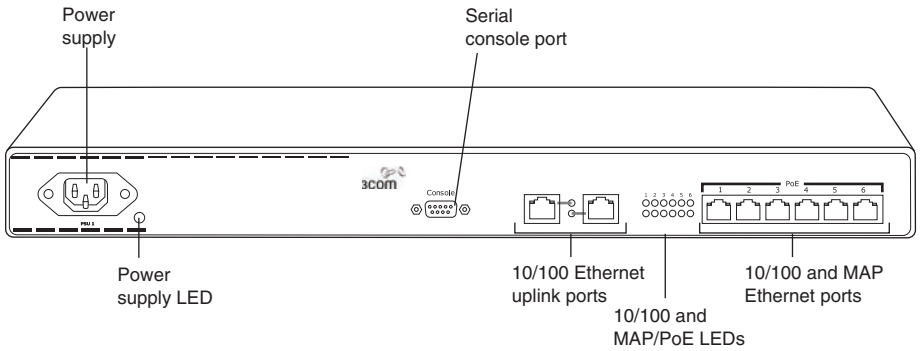
CAUTION: *Ensure adequate airflow around WXR100 switches. The WXR100 switch uses natural convection cooling and requires free entry of air. Airflow blockage can cause the system to overheat and result in a loss of equipment functionality or permanent damage.*

The underside of the switch contains a label with the serial ID, MAC address and other identifying information.

WX1200 Switch

A WX1200 switch is one RU high and can be installed in a standard 48.26-cm (19-inch) equipment rack or on a tabletop. Figure 3 shows the external hardware features of a WX1200 switch.

Figure 3 3Com WX1200 Switch—Control Features

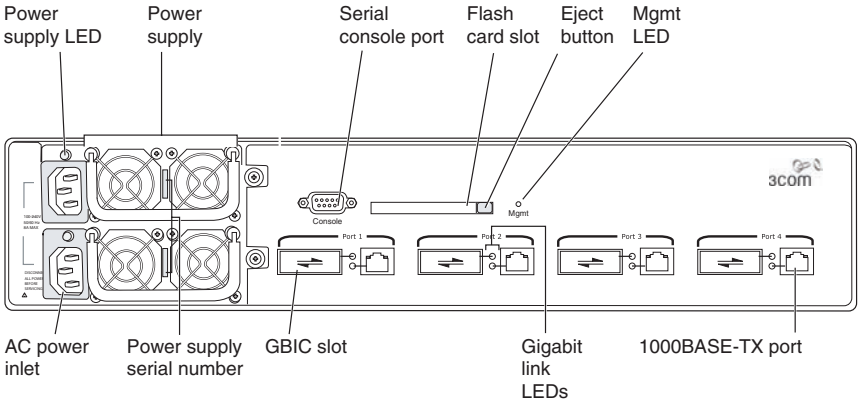


The rear of the switch contains a label with the serial ID, MAC address, and other identifying information.

WX4400 Switch

A WX4400 switch is two rack units (RUs) high and can be installed in a standard 48.26-cm (19-inch) equipment rack or on a tabletop. Figure 4 identifies the external hardware features of a WX4400 switch.

Figure 4 3Com WX4400 Switch—Control Features



Like the WX1200, the rear of the WX4400 contains a label with the serial ID, MAC address, and other identifying information.

Management Features

- Serial console port—The serial console port provides a direct management connection to a WX switch's command-line interface (CLI). The port has a DB-9 female connector and supports the EIA-232D signaling standard.
- 10/100 out-of-band management port—The WX2200 switch features an out-of-band management port, which allows you to connect the switch to a network server and configure the switch to boot using a software image downloaded from the server. The WXR100 also supports booting with a software image downloaded from a server.

CAUTION: *The Fn switch on the WXR100 performs two functions. If you press the Fn switch for less than 5 seconds, it restarts the WXR100 and reloads its configuration from the configuration file. However, if you press the switch for 5 seconds or longer, the configuration file is deleted and the switch restarts with its factory default settings. If you accidentally press the Fn switch for too long and erase the configuration, you can use the Web Quick Start to reconfigure the switch.*

- Status LEDs—The Ethernet ports and power supplies have LEDs that indicate their status. The management CPU on a WX4400 or WX2200 switch also has an LED. (For details, see "WX1200, WX4400, and WX2200 Status LEDs" on page 16.)
- Flash card slot (WX4400 only)—The flash card slot is not used for normal WX operation.

Power Features

- Power supplies—A WX4400 switch comes with one 100-240 VAC autosensing AC power supply. You can add a second supply for load sharing and redundancy. The power supplies are hot-swappable.

  A WX1200 switch contains one 100-120 VAC / 200-240 VAC autosensing AC power supply. The WX1200 power supply is a fixed-configuration supply and cannot be inserted or removed.

  A WX2200 switch contains two 100-240V VAC autosensing AC power supplies.

  A WXR100 switch uses an external power supply, which comes with the switch.

Network Interfaces

- 10/100 Ethernet ports—A WXR100 switch has two 10/100BASE-TX Ethernet ports. A WX1200 switch has eight 10/100BASE-TX Ethernet ports. Each port has a standard RJ-45 connector and uses Category 5 (Cat 5) cable based on the EIA/TIA-586 standard.

  On the WXR100, port 2 can be configured for MAP access points and can support Power over Ethernet (PoE). Port 1 is an uplink port only and does not support PoE.

  On the WX1200, ports 1 through 6 can be configured for MAP access points and can support PoE. Ports 7 and 8 on the WX1200 switch are uplink ports only and do not support PoE.

  The 10/100 Ethernet ports on the WX1200, WX2200, and WXR100 switches provide automatic MDI/MDX, which automatically crosses over the send and receive signals if required.

  The WX4400 and WX2200 switches provide high-bandwidth centralized control of many indirectly connected MAP access points. The WX4400 switch does not have 10/100 Ethernet ports and does not provide PoE. The WX2200 has one 10/100 Ethernet port (port 3); this port does not provide PoE.

- Gigabit interface converter (GBIC) slots (WX4400 only)—A WX4400 switch has four ports. Each port has a slot for a 1000BASE-SX or 1000BASE-LX fiber-optic GBIC, and a built-in 1000BASE-TX copper interface with an RJ-45 connector. Only one interface, copper or fiber, can be active on a port. The GBIC interface is active by default.

- Miniature Gigabit interface converter (mini-GBIC) slots (WX2200 only)—A WX2200 switch has two slots allowing insertion of small form-factor pluggable (SFP) 1000Base-SX, 1000Base-LX, 1000Base-T, or 1000Base-LH fiber-optic mini-GBICs to provide gigabit Ethernet interfaces to the network.

  The mini-GBICs have standard SC Duplex connectors and use either single-mode fiber (SMF) for LX or multimode fiber (MMF) for SX. Mini-GBICs are available separately and are not included with the switch.

  The gigabit Ethernet ports operate at 1000 Mbps only. They do not change speed to match 10-Mbps or 100-Mbps links.

WX1200, WX4400, and WX2200 Status LEDs

The WX1200, WX4400, and WX2200 switches have LEDs that indicate port, power, and CPU status. Table 4 lists the LEDs. (For the location of each LED, see Figure 3 and Figure 4.)

Table 4 WX1200, WX4400, and WX2200 Status LEDs

LED	Appearance	Meaning
Mgmt (WX4400 and WX2200 only)	Bright green, then fade (repeated) This LED appearance is sometimes called *breathing*.	WX switch is operating normally.
	Blinking green	WX switch is booting.
	Quickly blinking amber	WX switch was unable to boot completely.
Power supply status	Solid green	DC power output is on.
	Solid amber	Power fault has occurred.
	Unlit	AC power is off.
Gigabit fiber link activity (WX4400 and WX2200 only)	Solid green	1000-Mbps fiber link is operational.
	Blinking green	Traffic is active on the 1000-Mbps fiber link.
Gigabit copper link activity (WX4400 and WX2200 only)	Solid green	1000-Mbps copper link is operational.
	Blinking green	Traffic is active on the 1000-Mbps copper link.
Link (WX1200 only)	Solid green	100-Mbps link is operational.
	Solid amber	10-Mbps link is operational.
	Blinking green	Traffic is active on the 100-Mbps link.
	Blinking amber	Traffic is active on the 10-Mbps link.

Table 4 WX1200, WX4400, and WX2200 Status LEDs (continued)

LED	Appearance	Meaning
MAP (WX1200 only)	Solid green	For a MAP access point's active link, with PoE enabled, all the following are true: ▪ MAP access point has booted. ▪ MAP access point has received a valid configuration from the WX switch. ▪ Management link with a MAP access point is operational.
	Alternating green and amber	MAP access point is booting with an image received from the WX switch. If the LED remains in this state indefinitely, the boot or configuration attempt has failed.
	Solid amber	PoE is on but no MAP access point is connected to the link.
	Blinking amber	MAP is not connected or is unresponsive, or there is a PoE problem.
	Unlit	Port is not configured as a MAP access port, or PoE is off.

WXR100 LEDs

Figure 5 shows the locations of the WXR100 LEDs. Table 5 describes the LEDs.

Figure 5 WXR100 LEDs

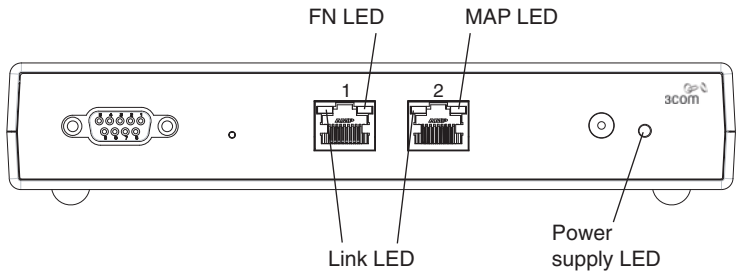


Table 5 WXR100 Status LEDs

LED	Appearance	Meaning
Power status	Solid green	The switch is receiving power.
	Unlit	The switch is not receiving power.
Link (ports 1 and 2)	Solid green	100-Mbps link is operational.
	Solid amber	10-Mbps link is operational.
	Blinking green	Traffic is active on the 100-Mbps link.
	Blinking amber	Traffic is active on the 10-Mbps link.
Fn (port 1 only)	Solid green	The switch is booting and is loading its configuration file. This LED state lasts for three seconds.
	Blinking green	The switch is booting but the Fn switch is being pressed. The switch does not load its configuration file but instead contacts WX to request a configuration. This LED state lasts for three seconds.
	Unlit	The switch has finished booting.
MAP (port 2 only)	Solid green	For a MAP access point's active link, with PoE enabled, all the following are true: MAP access point has booted. MAP access point has received a valid configuration from the WX switch. Management link with an MAP access point is operational.
	Alternating green and amber	MAP access point is booting with an image received from the WX switch. If the LED remains in this state indefinitely, the boot or configuration attempt has failed.
	Solid amber	PoE is on but no MAP access point is connected to the link.
	Blinking amber	MAP is not connected or is unresponsive, or there is a PoE problem.
	Unlit	Port is not configured as a MAP access port, or PoE is off.

Software Features

Mobility System Software (MSS) provides a combination of standard wired LAN features and wireless LAN features that enable you to integrate the switch into your wired network and provide network access for wired or wireless users.

Management Features

- Serial and network command-line interface (CLI) access—You can access the CLI through a direct serial connection or through the network using Secure Shell (SSH) or Telnet.
- 3Com Wireless Switch Manager management application—3Com Wireless Switch Manager is an extensive GUI application for planning, configuring, deploying, and managing a 3Com network and its users. 3Com Wireless Switch Manager uses Secure Sockets Layer protocol (SSL) to interact with MSS.
- Software and configuration management—You can store multiple software images and configuration files in the WX switch's nonvolatile storage.
- Web View—Web View is a Web-based application for configuring and managing a single WX switch through a Web browser. Web View creates a secure connection by using Hypertext Transfer Protocol over Secure Sockets Layer (HTTPS).

Layer 2 Switching Features

- Spanning Tree Protocol (STP)—MSS is 802.1D-compatible and supports Per-VLAN Spanning Tree (PVST+). PVST+ allows a separate spanning tree in each virtual LAN (VLAN). Optional fast convergence features allow you to quickly resume traffic forwarding after a topology change.
- Load-sharing port groups—You can configure multiple physical ports into a single logical link for traffic load sharing and physical link redundancy.
- Virtual LANs (VLANs)—MSS supports logical segmentation of a switch's ports into separate Layer 2 collision domains. A port can be a member of one or more VLANs. Each VLAN can have its own IP interface. MSS supports the 802.1Q tag format.
- Internet Group Management Protocol (IGMP) snooping for multicast containment—The WX switch can learn about the multicast sources and receivers in the network and restrict forwarding for a multicast group to the users for that group. IGMPv1 and IGMPv2 are supported.

IP Services

- IP interfaces—You can configure an IP interface for each VLAN.
- IP ping and traceroute—You can test IP connectivity between the WX switch and other devices.
- Domain Name Service (DNS)—You can configure the switch to use DNS servers for name resolution. You also can configure a default domain name to append to hostnames.
- Network Time Protocol (NTP)—A WX switch can sets its time and date by polling an NTP server.
- System log—A WX generates log messages to log system events. The log messages are stored locally and also can be exported to syslog servers.
- Simple Network Management Protocol (SNMP)—A WX switch can be configured to generate SNMP traps for major system events.

Authentication, Authorization, and Accounting

- 802.1X—A WX switch can authenticate users based on 802.1X protocols. Based on authentication, users are assigned VLAN membership, access control, and roaming boundaries.
- MAC authentication—If a device does not support 802.1X, you can configure authentication based on the source MAC address to assign VLAN membership, access control, and roaming boundaries.
- Guest authentication—Guests can be authenticated by a shared set of authorization attributes that assign VLAN membership, access control, and roaming boundaries.
- Local and remote authentication—You can authenticate users locally using information configured on the WX switch, or use a Remote Authentication Dial-In User Service (RADIUS) server. When you use a remote server, the WX switch can enhance performance by performing some of the AAA tasks locally or distributing the load across multiple servers.

Roaming

- MAP access point roaming—You can configure the WX switch to allow users to roam from one MAP access point to another on the same WX switch.
- Mobility Domain™ roaming—You also can configure a group of WX switches to allow users to roam from one switch to another. Regardless of the wired subnet connections, each user maintains the same IP address and session across the network.
- Session management—You can display session information and statistics for users.

RF Management

- RF Auto-Tuning—MSS can automatically assign channels and power settings to MAP access points based on RF information collected from the network.
- Radio frequency (RF) topology—With 3Com Wireless Switch Manager, you can verify site coverage and capacity.
- Rogue detection and countermeasures—MAPs can be used to gather RF information for validating an RF deployment plan, and for detecting and combatting rogue access points.
- User-based RF—You can gather statistics on a per-user basis as users roam across the network.

2 INSTALLING AND CONNECTING A WX SWITCH

Before installing a WX switch, you might need to generate a network plan with 3Com Wireless Switch Manager. (See "3Com Wireless Switch Manager Network Plan" on page 25.)

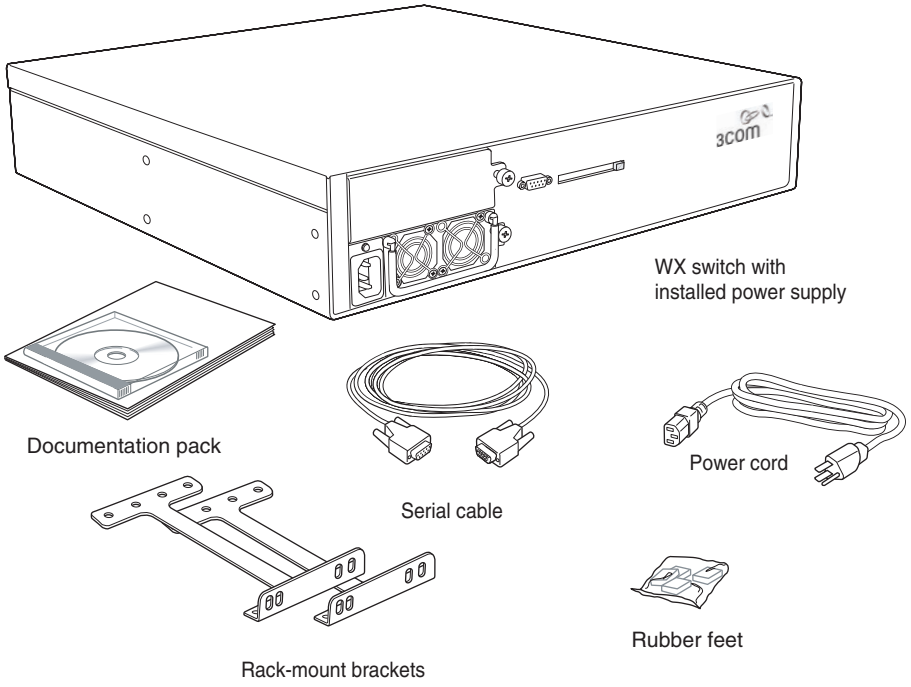
Unpacking a WX Switch

The shipping carton for a WX switch contains the following items:

- One WX switch, containing one power supply (except for the WX2200, which has two power supplies)
- For some countries, one country-specific power cord
- One serial cable for connection to the management console (not included with the WXR100)
- Two rack-mount brackets (not applicable to the WXR100)
- Four adhesive rubber feet
- One documentation pack that includes this guide
- One set of release notes

Figure 6 shows the contents of the shipping carton for a WX4400 switch. The contents of a WX1200 and WX2200 shipping carton are similar. The WXR100 carton contains the switch, a power supply and cord, rubber feet, a documentation pack, and release notes.

Figure 6 WX4400 Switch Shipping Carton Contents



Before you begin installation:

1. Open the carton and carefully remove the contents, if you have not already done so.
2. Place the packing materials back in the carton and save the carton.
3. Verify that you received each item in the previous list. If any item is missing or damaged, contact 3Com.

Installation Requirements and Recommendations

For best results, follow these requirements and recommendations before installing a WX switch.

3Com Wireless Switch Manager Network Plan

If you are using 3Com Wireless Switch Manager to plan your 3Com Mobility System installation, 3Com recommends that you create and verify a network plan for the entire 3Com network installation before installing WX switches or MAP access points. A network plan provides the following information:

- Number of WX switches required at your site, and where to install them
- Number of MAP access points required for adequate WLAN capacity in each coverage area, and where to install them
- Configuration settings for all the WX switches and MAP access points in the WLAN, which can be automatically deployed to the devices by 3Com Wireless Switch Manager.

(For information about installing 3Com Wireless Switch Manager and creating and verifying a network plan, see the *Wireless Switch Manager Reference Manual*.)

Installation Location

WX4400 switch fans and air inlets are located on the sides of the switch. WX1200 and WX2200 switch fans are located in the rear of the switch and air inlets are located on the sides of the switch. In the WX4400 switches, separate power supply fans are located on the front. Make sure these areas have adequate ventilation after installation. Do not block air vents.

WARNING: *The WX switch has been designed and tested to be installed in an operating ambient temperature of 0° C to +50° C (32° F to 122° F). To reduce the risk of equipment damage, install equipment with consideration to these ambient conditions.*

WARNING: *Do not stack WXR100 switches. Stacked WXR100 switches can overheat and cause loss of equipment functionality or permanent damage.*

WARNING: *Ensure adequate airflow around WXR100 switches. The WXR100 switch uses natural convection cooling and requires free entry of air. Airflow blockage can cause the system to overheat and result in a loss of equipment functionality or permanent damage.*

Cable Requirements

To avoid installation problems, use the proper cables.

WARNING: *The gigabit Ethernet fiber-optic interfaces use Class 1 lasers. To reduce the risk of eye injury, do not stare into the interface or otherwise direct the laser beam into your eye.*

Serial Console Cable

The serial console port has a female DB-9 connector and supports the EIA-232D signaling standard. You need a standard DB-9-male-to-DB-9-female PC modem cable. Table 6 lists the pin signals.

Table 6 Serial Console Pin Signals

WX Pin	Usage	PC Pin	Usage
2	Receive	3	Transmit
3	Transmit	2	Receive
5	Ground	5	Ground

Network Cables

Table 7 lists the interface types supported by WX switches and the cable type required for each type of interface.

Table 7 Ethernet Interfaces

Link Type	Cable Type	Connector Type	Maximum Distance
100 BASE-T	Cat 5 copper Straight-through or crossover signaling	RJ-45	100 m (328 feet)
1000BASE-SX	Multimode 50-µm fiber	SC	550 m (1804.5 feet)
	Multimode 62.5-µm fiber	SC	275 m (902.2 feet)

Table 7 Ethernet Interfaces (continued)

Link Type	Cable Type	Connector Type	Maximum Distance
1000BASE-LX	Single mode 9/10-µm fiber	SC	10,000 m (32,808.4 feet)
	Multimode 50-µm fiber	SC	550 m (1804.5 feet)
	Multimode 62.5-µm fiber	SC	550 m (1804.5 feet)
1000BASE-TX	Cat 5 copper Can use straight-through or crossover signaling, provided all four wire pairs are connected	RJ-45	100 m (328 feet)

The WX1200 supports 10/100 Ethernet connections. Table 8 lists the link type and properties of the supported connections.

Table 8 Ethernet Interfaces

Link Type	Cable Type	Connector Type	Maximum Distance
10/100BASE-T	Cat 5 copper Straight-through or crossover signaling	RJ-45	100 m (328 feet)

10/100 Ethernet Cable Wiring Connections on the 10/100 ports require Category 5 (Cat 5) cable based on the EIA/TIA-586 standard. For direct connection to a MAP access point, a router, or an end station such as a PC, printer, or server, use a straight-through cable. For direct connection to another switch, use a crossover cable. (The 10/100 Ethernet ports on the WX1200 switch provide automatic MDI/MDX, which automatically crosses over the send and receive signals if required.)

Table 9 on page 28 lists the pin signals for 10/100 Ethernet straight-through wiring. Pins 4, 5, 7, and 8 are used only when Power over Ethernet (PoE) is enabled on the port. *RD* means *Receive Data* and *TD* means *Transmit Data*.

Table 9 10/100 Ethernet Straight-Through Pin Signals

WX Switch		Other Device	
Pin	**Function**	**Pin**	**Function**
1	RD+	1	TD+
2	RD-	2	TD-
3	TD+	3	RD+
4	PoE+	4	PoE+
5	PoE+	5	PoE+
6	TD-	6	RD-
7	PoE-	7	PoE-
8	PoE-	8	PoE-

MAP Cable Requirement

Use a straight-through Ethernet cable to connect a MAP access point directly to a WX switch or indirectly through another device.

1000BASETX Gigabit Ethernet Cable Wiring Use Cat 5 Enhanced (Cat 5E) or better cable. 1000BASE-TX uses all 8 wires in the cable. The wiring can be straight-through or crossover. The port automatically configures its pin signals accordingly.

PoE is not supported on 1000BASE-TX links. All wires in the cable are used for data.

Installation Hardware and Tools

Table 10 lists the mounting hardware and tools required for each type of installation.

Table 10 Required Mounting Hardware and Tools

Mounting Option	Required Hardware and Tools	Included with the Product
Equipment rack	Mounting brackets	Yes
▪ Front-mount or center-mount option for the WX4400 switch ▪ Front-mount option for the WX1200 and WX2200 switch	Four rack-mount screws and screwdriver **Note**: Equipment racks vary, and the screw and screwdriver type depend on the equipment rack.	No
	Power cords	Yes (one)
	Serial console cable	Yes
Tabletop (applicable to all switch models)	Four adhesive rubber feet	Yes
	Power cord(s)	Yes
	Serial console cable	Yes

WARNING: *To reduce the risk of equipment damage, make sure the WX switch is installed so that the mechanical load on the device is evenly distributed. For example, make sure the switch is level in the equipment rack, is evenly fastened by screws on either side, and does not have a heavy object resting on one side of the switch.*

Installing a WX Switch

You can mount a WX1200, WX4400, or WX2200 switch in a standard 48.26-cm (19-inch) equipment rack or on a tabletop. Each switch is shipped with two brackets for rack mounting and four adhesive rubber feet for tabletop mounting. The WX4400 mounting brackets support either front or center mounting. The WX1200 and WX2200 mounting brackets support front mounting only.

The WXR100 switch does not have rack mounting brackets but can be installed on a tabletop.

To install a WX switch, use one of the following procedures.

WARNING: *Earth grounding is required for a WX switch installed in a rack. If you are relying on the rack to provide ground, the rack itself must be grounded with a ground strap to the earth ground. Metal screws attaching the switch to the rack provide ground attachment to the rack.*

WARNING: *In the U.S., overcurrent protection must be provided by the installation. Branch circuit protection in accordance with National Fire Protection Association (NFPA) 70, National Electrical Code (NEC) is required. Consideration must be given to the electrical ratings on the WX switch and branch circuit protection. Do not install equipment such that the branch circuit current and voltage protection is exceeded. Pay particular attention to the earthing connection for the supply connections. When using an extension cord or power strip, pay attention to the grounding type.*

CAUTION: *Do not stack WXR100 switches. Stacked WXR100 switches can overheat and cause loss of equipment functionality or permanent damage.*

CAUTION: *Ensure adequate airflow around WXR100 switches. The WXR100 switch uses natural convection cooling and requires free entry of air. Airflow blockage can cause the system to overheat and result in a loss of equipment functionality or permanent damage.*

Equipment Rack Installation

You can install a WX4400 switch into a front-mount or center-mount equipment rack. You can install a WX2200 or WX1200 switch into a front-mount equipment rack.

- Figure 7 shows how to install a WX4400 switch into a front-mount equipment rack. (Installation of a WX1200 or WX2200 switch is similar.)
- Figure 8 shows how to install a WX4400 switch into a center-mount equipment rack.

Refer to these figures as you perform the procedure.

Figure 7 WX4400 Installation—Front-Mount Equipment Rack

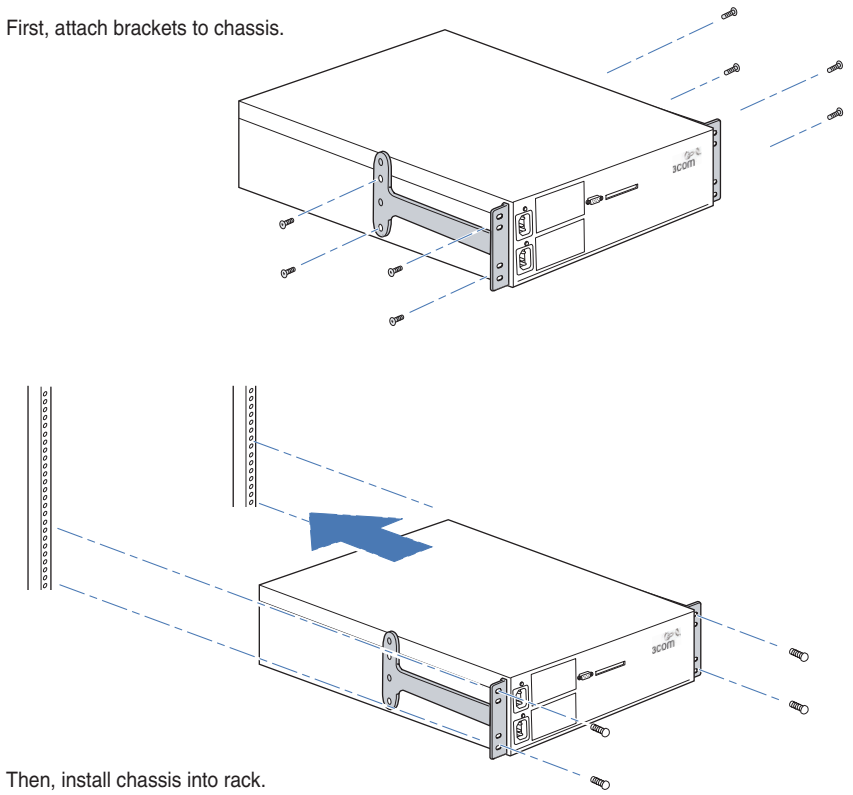
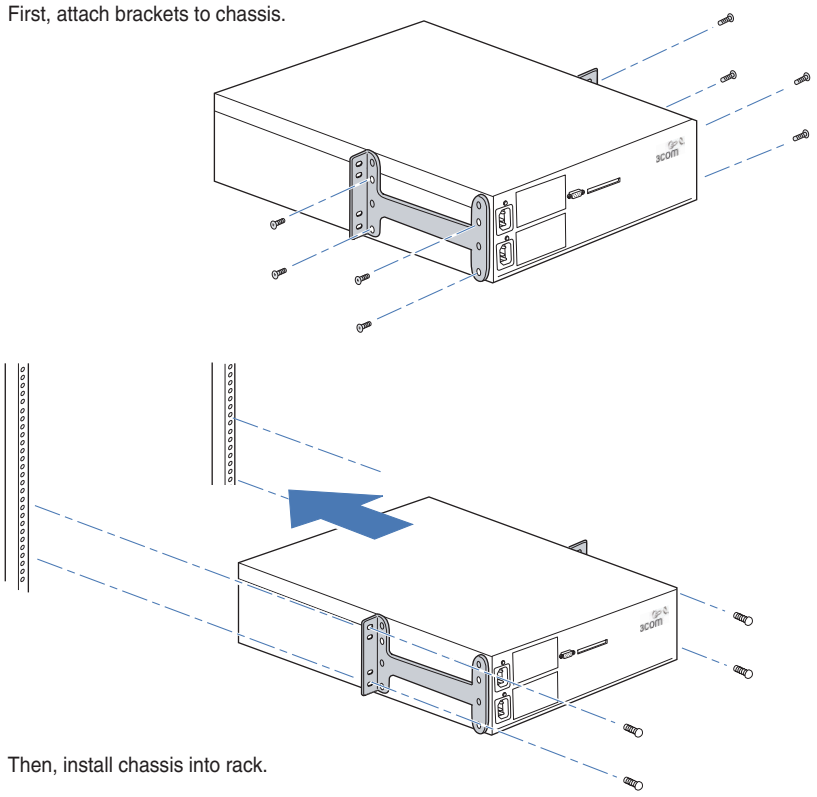


Figure 8 WX4400 Installation—Center-Mount Equipment Rack



1 Remove the four bracket screws from each side of the WX switch.

2 Align a bracket over the screw holes:

- *For a front-mount equipment rack, align the bracket so that the bracket flange is flush with the WX switch's front panel and extends away from the switch.*
- *For a center-mount equipment rack, align the bracket so that the bracket flange is located near the center screw holes.*

3 Reinsert the screws to secure the brackets to the WX switch.

4 Repeat for the other bracket.

WARNING: *3Com recommends that you ask someone to assist you with the remaining steps. If you accidentally drop the WX switch, you can be injured and the switch can be damaged.*

5 Lift the WX switch into position in the equipment rack.

WARNING: *To prevent the WX switch from slipping, do not release the switch until all the rack-mount screws are tight.*

6 Insert the bottom rack-mount screws into the bracket flanges to secure the WX switch to the equipment rack, then insert the top screws.

7 Do one of the following:

- If you are installing a second power supply into the switch, go to "Installing a Power Supply in a WX4400 Switch" on page 34.
- If you are ready to turn on power, go to "Powering On a WX Switch" on page 37.

Tabletop Installation

1 On a clean work surface with no debris, carefully turn the WX switch upside down.

2 Wipe the four placement locations for the rubber feet to clear away any oil or dust. The location areas are marked by *X*'s.

3 Attach the four rubber adhesive feet over the *X*'s.

4 Turn the WX switch right-side up, and place the switch in position on the table.

5 Do one of the following:

- If you are installing a second power supply into the switch, go to "Installing a Power Supply in a WX4400 Switch" on page 34.
- If you are ready to turn on power, go to "Powering On a WX Switch" on page 37.

Installing a Power Supply in a WX4400 Switch

A WX4400 switch is shipped with a single 100-240 VAC autosensing AC power supply. One power supply provides enough power for a fully configured system. You can add a second power supply for load sharing and redundancy. A WX4400 switch containing one power supply can have the supply installed in either slot. If the switch contains two power supplies and one supply fails, the other supply automatically takes over to provide uninterrupted operation.

The power supplies are hot-swappable. You can remove or insert a power supply while the other power supply is running.

Use the following procedures to install a second power supply or replace a failed power supply.

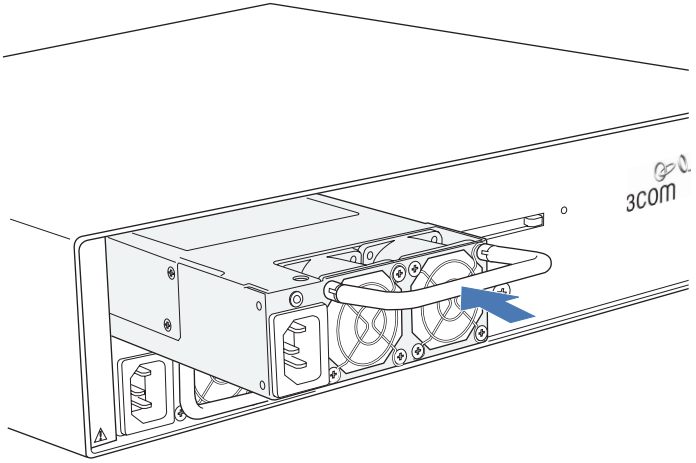
To attach the power supply to an WXR100, see "Powering On a WX Switch" on page 37.

Installing a New Power Supply

1. If you are replacing a failed power supply and have not already removed it from the WX switch, go to "Replacing a Power Supply" on page 35.
2. If you are installing a new power supply in an unused slot, loosen the thumbscrew with a #2 Phillips-head screwdriver and remove the cover plate.

   Store the cover plate in a safe place in case you need to use it at another time.
3. Remove the new power supply from its packaging and lift the supply by grasping the front handle with one hand and supporting the supply from the bottom with the other hand.
4. Insert the power supply into the WX switch's slot as shown in Figure 9, pushing gently but firmly until the supply is fully seated and flush with the switch's front panel.

Figure 9 Inserting a Power Supply in a WX4400 Switch



5 Tighten the thumbscrew using a #2 Phillips-head screwdriver.

6 Go to "Powering On a WX Switch" on page 37.

Replacing a Power Supply

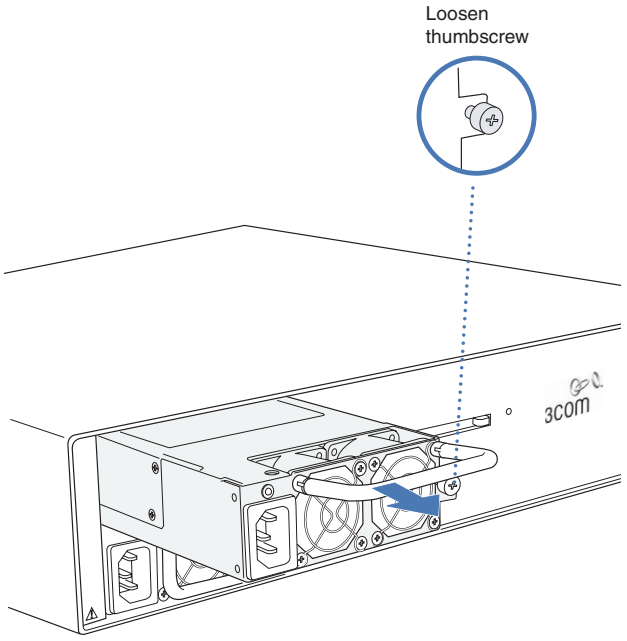
1 Remove the power cord from the power supply.

2 Loosen the thumbscrew using a #2 Phillips-head screwdriver as shown in Figure 10.

3 Use the handle to pull the power supply partway out of the slot as shown in Figure 10.

CAUTION: *Support the bottom of the power supply while removing it from the WX switch. If the rear of the power supply is not supported, the supply will fall when you remove it, possibly damaging the rear components of the supply.*

Figure 10 Removing a Power Supply from a WX4400 Switch



4 Place your other hand under the supply to support it and remove the supply the rest of the way out of the slot.

5 Go to step 3 of "Installing a New Power Supply" on page 34.

Powering On a WX Switch

WARNING: *The WX switch relies on the building's installation for overcurrent protection. Ensure that a fuse or circuit breaker no larger than 120 VAC, 15 A U.S. (240 VAC, 10 A international) is used on the phase conductors.*

CAUTION: *If a WX1200 or WXR100 switch is connected to Power Sourcing Equipment (PSE), it is possible for the switch to remain powered on even when the power cord is unplugged. PSE can be a dedicated PoE injector or even another networking switch such as the WX that is capable of supplying PoE. To completely power off a WX1200 or WXR100, unplug the power cord, then unplug all Ethernet cables that are connected to other PoE devices.*

To power on a WX1200, WX4400, or WX2200 switch:

1. Make sure any power supply is fully seated in the WX switch.
2. For each power supply that you are using on the WX switch, attach a power cord to an AC power source.
3. Plug the power cord into the WX power supply.

   The WX switch begins booting as soon as you plug in the power cord(s).
4. Observe the power supply LED for each connected power supply to verify that the LED is steadily glowing green. This indicates normal power supply operation.
5. On the WX4400 switch only, wait a few seconds, then observe the Mgmt LED to verify that it is breathing (repeatedly flashing bright green, then fading) to indicate that the WX switch has successfully booted and is operating normally.

Powering On a WXR100 Switch

To power on a WXR100 switch:

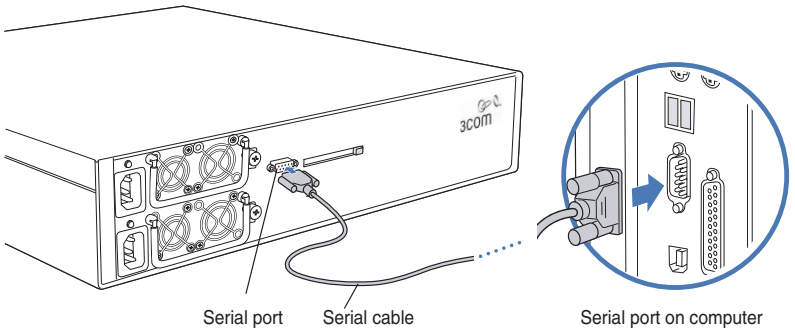
1. Plug the power supply into an AC power source.
2. Plug the power supply into the Power port.

   The LED turns green when the WXR100 is receiving power.

Connecting to a Serial Management Console

Initial configuration of the WX switch requires a connection to the switch's CLI through the serial console port. Figure 11 shows how to install a serial cable on the WX switch. Refer to this figure as you perform the procedure. (For cable requirements, see "Serial Console Cable" on page 26.)

Figure 11 Serial Cable Installation



To connect a PC to the serial console port:

1. Insert the serial cable into the PC port as shown in Figure 11.
2. Insert the other end of the cable into the serial console port on the WX switch as shown in Figure 11.
3. Start a standard VT100 terminal emulation application on the PC, and configure the following modem settings:
   - 9600 bps
   - 8 bits
   - 1 stop
   - No parity
   - Hardware flow control *off* or *disabled*
4. Open a connection on a serial port.
   - If the WX switch is already powered on, press Enter three times to display a command prompt. For example:

     ```
     WX1200>
     ```

     See "Using the quickstart Command (any model)" of the "Mobility System Software Quick Start Guide" for instructions.
   - If a command prompt does not appear, go to "Troubleshooting a Serial Management Connection".

Troubleshooting a Serial Management Connection

If a command prompt does not appear when attempting to initiate a serial management connection, do the following:

1. Verify that the WX switch is powered on.
2. Verify that the serial cable is fully inserted in the PC and WX switch ports.
3. Verify that the correct modem settings are configured in the terminal emulation application:
   - 9600 bps
   - 8 bits
   - 1 stop
   - No parity
   - Hardware flow control *disabled*
4. Verify that you opened the connection on the PC port connected to the WX switch.

   For example, if you inserted the cable in PC port COM1, make sure you open the connection on COM1 instead of COM2 or another port.

   If none of the previous steps results in a management connection, use another serial cable.

Connecting to the Network

Use the following procedures to connect a WX switch to MAP access points or other 10/100 Ethernet devices and to gigabit Ethernet devices.

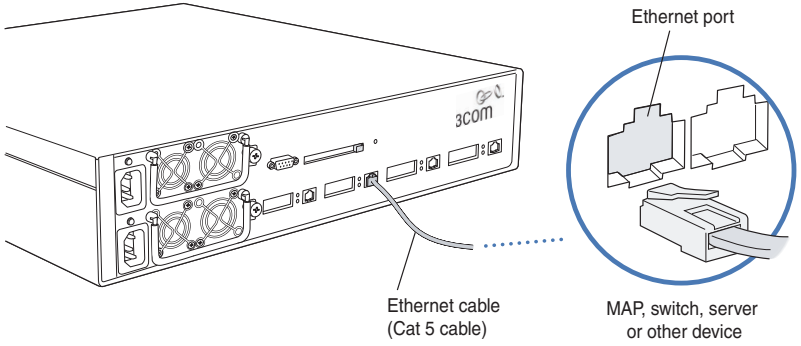
Connecting to a MAP or Other 10/100 Ethernet Device

The 10/100 Ethernet ports are configured as wired network ports by default. You must change the port type for locally connected MAP access points, and for wired end stations that use AAA through the WX switch to access the network.

For installations in Japan: Provide an earthing connection before you connect the mains plug to the mains. When disconnecting the earthing connection, make sure to disconnect only after you pull out the mains plug for the mains.

Figure 12 shows how to install a Cat 5 cable for a 10/100 Ethernet port. Refer to this figure as you perform the procedure.

Figure 12 10/100 Cat 5 Cable Installation



To connect to a MAP or other 10/100 Ethernet device:

1 Insert a Cat 5 cable with a standard RJ-45 connector:
   - For direct connection to a MAP access point, use a straight-through cable.
   - For connection to a router or to an end station such as a PC, printer, or server, use a straight-through cable.
   - For connection to another switch, use a crossover cable. (For cable requirements, see "Network Cables" on page 26.)

The 10/100 Ethernet ports on WXR100, WX1200, and WX2200 switches provide automatic MDI/MDX.

2 If the cable is directly attached to a MAP access point:
   - For a first-time installation, set the port type to activate the link. (For information, see "Setting the Port Type" in the *Wireless LAN Switch and Controller Configuration Guide.*
   - If the port type is already set for a MAP access point, observe the appearance of the MAP LED for the port:

MAP LED Appearance	Meaning
Solid green	For a MAP access point's active link, with PoE enabled, all the following are true: ▪ MAP access point has booted. ▪ MAP access point has received a valid configuration from the WX switch. ▪ Management link with a MAP access point is operational. For a MAP access point's secondary link, the link is present.
Alternating green and amber	MAP access point is booting with an image received from the WX switch.
Solid amber	PoE is on, but no MAP access point is connected to the link.
Blinking amber	MAP access point is unresponsive or there is a PoE problem.
Unlit	PoE is off.

3 If the cable is attached to a wired end station that uses AAA through the WX switch to access the network:

- For a first-time installation, set the port type to activate the link. (For information, see "Setting a Port for a Wired Authentication User" in the *Wireless LAN Switch and Controller Configuration Guide*.)
- If the port type is already set for a wired authentication port, go on to step 4.

4 If the cable is directly attached to a device other than a MAP access point:

a Observe the appearance of the Link LED for the port:

Link LED Appearance	Meaning
Solid green	100-Mbps link is operational.
Solid amber	10-Mbps link is operational.
Blinking green	Traffic is active on the 100-Mbps link.
Blinking amber	Traffic is active on the 10-Mbps link.
Unlit	Link is not operational.

b If the Link LED is unlit, check the cable and verify that the device at the other end of the link is operating.

Connecting to Gigabit Ethernet Devices

The following procedures explain how to connect a WX4400 switch's copper or fiber Gigabit port to the network.

WARNING: *The gigabit Ethernet fiber-optic interfaces use Class 1 lasers. To reduce the risk of eye injury, do not stare into the interface or otherwise direct the laser beam into your eye.*

Connecting to a Copper Gigabit Device (WX4400 only)

Insert a Cat 5 cable with a standard RJ-45 connector. The cable can use straight-through or crossover signalling.

1. Insert the Cat 5 cable into the port's RJ-45 (copper) interface.
2. Access the command-line interface (CLI) on the switch, use the **enable** command to enter configuration mode, and use the following command to set the active interface on the port to RJ-45 (copper):

   `set port media-type` *`port-list`* **`rj45`**
3. Observe the lower LED to the left of the port:
   - If the LED is solid green, the 1000-Mbps link is operational.
   - If the LED is blinking green, traffic is active on the 1000-Mbps link.
   - If the LED is unlit, the link is not operational. Check the cable and verify that the device at the other end of the link is operational.

Connecting to a Fiber Gigabit Device

You must install a gigabit interface converter (GBIC) to connect a WX4400 switch to 1000BASE-SX or 1000BASE-LX cable. Figure 13 shows how to install a GBIC Figure 14 shows how to remove one. Refer to these figures as you perform the procedures. (For cable requirements, see "Network Cables" on page 26.)

Figure 13 GBIC Installation in a WX4400 Switch

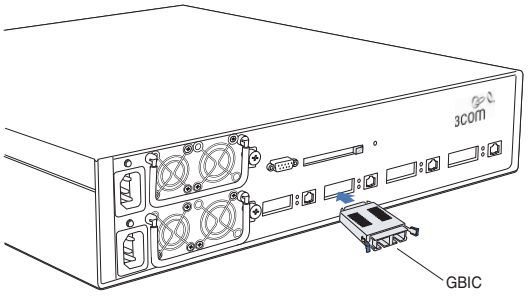
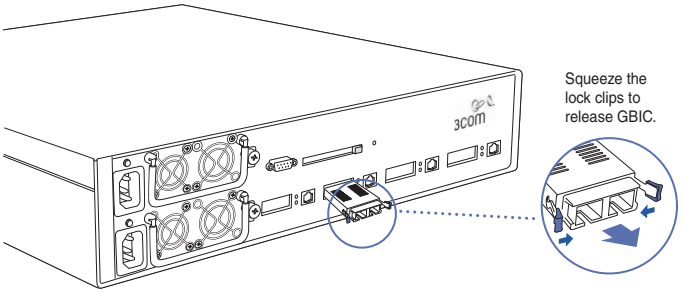


Figure 14 GBIC Removal from a WX4400 Switch



To install a GBIC:

1. Insert the GBIC into a GBIC slot on the front panel until it clicks into place.
2. Remove the protective covering(s) from the port connector(s) and set them aside in a safe place for later use.
3. Insert the network cable.

   For 1000BASE-SX or 1000BASE-LX fiber, make sure you insert the two cable ends in the proper sides (transmit or receive). Otherwise, the link does not work.
4. Observe the upper LED to the right of the GBIC port:
   - If the LED is green, the 1000-Mbps link is operational.
   - If the LED is blinking amber, traffic is active on the 1000-Mbps link.
   - If the LED is unlit, the link is not operational. Check the cable and verify that the device at the other end of the link is operational.

To remove a GBIC:

1. Remove the network cable(s).
2. Insert the protective covering(s) into the port connector(s).
3. Squeeze the clips on the sides of the GBIC and pull the GBIC out of the slot.

Connecting to a Fiber Gigabit Device (WX2200)

You must install a miniature gigabit interface converter (mini-GBIC) to connect a WX2200 switch to 1000BASE-SX, 1000BASE-LX, or 1000BASE-TX cable.

Figure 15 shows how to install a mini-GBIC. Figure 16 shows how to remove one. Refer to these figures as you perform the procedures. (For cable requirements, see "Network Cables" on page 26.)

Figure 15 Mini-GBIC Installation in WX2200 Switch

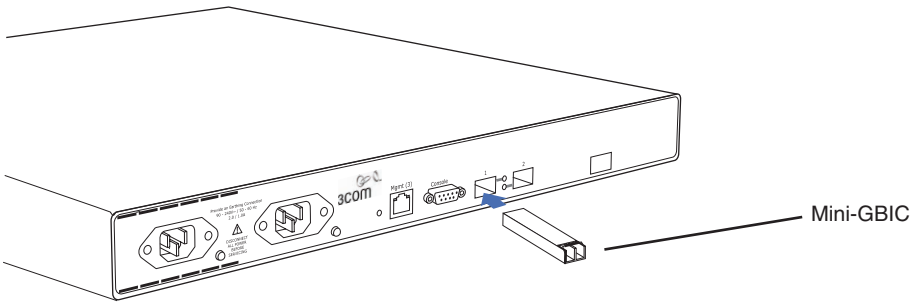
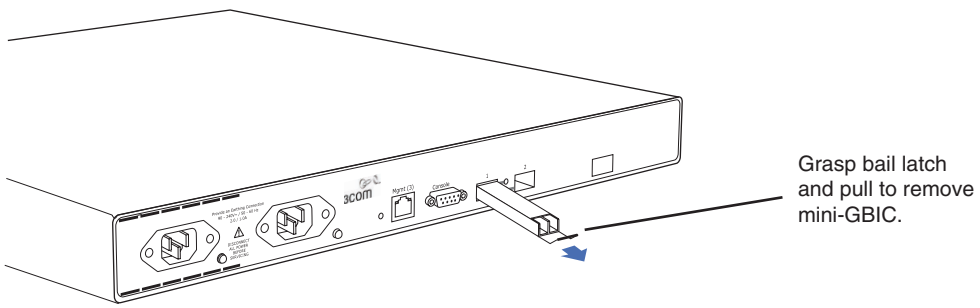


Figure 16 Mini-GBIC removal from WX2200 Switch



To install a mini-GBIC:

1. Insert the mini-GBIC into a mini-GBIC slot on the front panel until it clicks into place.
2. Remove the protective covering(s) from the port connector(s).
3. Insert the network cable.

For 1000BASE-SX or 1000BASE-LX fiber, make sure you insert the two cable ends in the proper sides (transmit or receive). Otherwise, the link does not work.

4. Observe the LED next to the mini-GBIC port:
   - If the LED is green, the 1000-Mbps link is operational.
   - If the LED is blinking amber, traffic is active on the 1000-Mbps link.
   - If the LED is unlit, the link is not operational. Check the cable and verify that the device at the other end of the link is operational.

To remove a mini-GBIC:

1. Remove the network cable(s).
2. Insert the protective covering(s) into the port connector(s).
3. Pull the bail latch on the mini-GBIC forward, away from the WX switch, to unlock it from the front panel.
4. Grasping the bail latch, pull the mini-GBIC out of the slot.

A WX TECHNICAL SPECIFICATIONS

See the appropriate table for the technical specifications for the following wireless switch models:

- Table 11 — Wireless switch model WX4400
- Table 12 — Wireless switch model WX1200
- Table 13 — Wireless switch model WXR100
- Table 14 — Wireless switch model WX2200

Table 11 WX4400 Mechanical and Compliance Specifications

Specification	Description
Size	Width: 44.2 cm (17.4 inches)
	Depth: 46.23 cm (18.2 inches)
	Height: 8.81 cm (3.47 inches)
Weight	With one power supply: 9.75 kg (21.50 pounds)
	With two power supplies: 11.35 kg (25.00 pounds)
Operating Temperature	0° C to +50° C (32° F to +122° F)
Storage Temperature	-20° C to +70° C (-4° F to +158° F)
Humidity	10% to 95% noncondensing
Power supply	100-240 VAC
	50 Hz to 60 Hz
	Up to 350 W
	8 A_{rms} at 120 V_{rms} and 3.5 A_{rms} at 230 V_{rms}, with 50-A peak inrush current
	Hot-swappable
	Load sharing with two supplies installed

Table 11 WX4400 Mechanical and Compliance Specifications (continued)

Specification	Description
Status indicators	Management CPU status LED
	Power supply status LEDs
	Port activity and link speed LEDs
	(For descriptions of the LEDs, see "WX1200, WX4400, and WX2200 Status LEDs" on page 16.)
Wired network ports	Four dual-interface gigabit Ethernet ports. Each port has a 1000BASE-TX copper interface and a GBIC slot for insertion of a 1000BASE-SX or 1000BASE-LX fiber-optic interface.
Safety and electromagnetic compliance	FCC PART 15, UL 60950
	ICES PART 15, CSA 22.2 NO. 60950
	EN 55022, EN 55024
	CISPR 22
	TUV/GS (EN 60 950)
	VCCI

Table 12 WX1200 Mechanical and Compliance Specifications

Specification	Description
Size	Width: 44.2 cm (17.4 inches)
	Depth: 25.6 cm (10.08 inches)
	Height: 4.4 cm (1.72 inches)
Weight	Without a power supply: 3.40 kg (7.50 pounds)
	With power supply: 3.8 kg (8.50 pounds)
Operating Temperature	0° C to +50° C (32° F to +122° F)
Storage Temperature	-20° C to +70° C (-4° F to +158° F)
Humidity	10% to 95% noncondensing
Power supply	100-120 VAC / 200-240 VAC
	47 Hz to 63 Hz
	2.5 A_{rms} at 115 V_{rms} and 1.25 A_{rms} at 230 V_{rms}, with 70-A peak inrush current
Power over Ethernet (PoE)	48 VDC
	91.8 W total budget for all ports (15.3 W * 6 ports)
	15.3 W per port maximum

Table 12 WX1200 Mechanical and Compliance Specifications (continued)

Specification	Description
Status indicators	Power supply status LEDs
	Port activity and link speed LEDs
	(For descriptions of the LEDs, see "WX1200, WX4400, and WX2200 Status LEDs" on page 16.)
Wired network ports	Six RJ-45 ports for 10/100BASE-T Ethernet and optional Power over Ethernet (PoE)
	Two RJ-45 ports for 10/100BASE-T Ethernet uplinks (without PoE)
Safety and electromagnetic compliance	FCC PART 15, UL 60950
	ICES PART 15, CSA 22.2 NO. 60950
	EN 55022, EN 55024
	CISPR 22
	TUV/GS (EN 60 950)
	VCCI

Table 13 WXR100 Mechanical and Compliance Specifications

Specification	Description
Size	Width: 19.0 cm (7.5 inches)
	Depth: 14.6 cm (5.75 inches)
	Height: 3.18 cm (1.25 inches)
Weight	0.7 kg (1.5 pounds)
Operating Temperature	0° C to +50° C (32° F to +122° F)
Storage Temperature	-20° C to +70° C (-4° F to +158° F)
Humidity	10% to 95% noncondensing
Power supply	Input: 100-240 VAC, 47-63 Hz, auto-sensing
	Output: 48 VDC, 0.83A
	Amperage draw maximums:
	At 115V (RMS): 0.8A
	At 230V (RMS): 0.4A
Power over Ethernet (PoE)	Voltage output: 48 VDC
	Wattage on port: 15.4 W

Table 13 WXR100 Mechanical and Compliance Specifications (continued)

Specification	Description
Status indicators	Power supply status LED
	Port activity and link speed LEDs
	Fn LED
	(For descriptions of the LEDs, see "WXR100 LEDs" on page 17.)
Wired network ports	One RJ-45 port for 10/100BASE-T Ethernet and optional Power over Ethernet (PoE)
	One RJ-45 10/100BASE-T Ethernet uplink (without PoE)
Safety and electromagnetic compliance	FCC PART 15 Class B, UL 60950
	ICES Class B, CSA 22.2 NO. 60950
	EN 55022 Class B, EN 55024, EN 60950
	EN 60101-1-2 EU Medical Directive
	CISPR 22 Class B
	VCCI Class B

Table 14 WX2200 Mechanical and Compliance Specifications

Specification	Description
Size	Width: 44.2 cm (17.4 inches)
	Depth: 30.7 cm (12.1 inches)
	Height: 4.4 cm (1.72 inches)
Weight	4.54 kg (10 pounds)
Operating Temperature	0° C to +50° C (32° F to +122° F)
Storage Temperature	-20° C to +70° C (-4° F to +158° F)
Humidity	10% to 95% noncondensing
Power supply	Input: 100-240 VAC, 50-60 Hz
	1 A_{rms} at 120 VAC and 0.51 A_{rms} at 230 VAC
	17 A max. at 120 VAC and 32 A max. at 230 VAC
Status indicators	Management CPU status LED
	Power supply status LEDs
	Port activity and link speed LEDs
	(For descriptions of the LEDs, see "WX1200, WX4400, and WX2200 Status LEDs" on page 16.)

Table 14 WX2200 Mechanical and Compliance Specifications (continued)

Specification	Description
Wired network ports	Two miniature gigabit interface converter (mini-GBIC) slots for 1000BASE-SX, 1000BASE-LX, or 1000BASE-TX gigabit Ethernet ports One RJ-45 port for 10/100BASE-T Ethernet (without PoE) used for out-of-band management
Safety and electromagnetic compliance	Regulatory Safety: ▪ UL 60950 ▪ TUV/GS (EN 60 950) ▪ CSA 22.2 NO. 60950 EMI/EMC: ▪ FCC PART 15 Class A ▪ ICES PART 15 Class A ▪ VCCI Class A ▪ EN 55022 Class A ▪ EN 55024 ▪ CISPR 22 Class A ▪ Taiwan: CNS 13438 Class A ▪ China: CCC GB 9254-88 Class A ▪ Australia/New Zealand: AS/NZ 3548 Class A Environmental: ▪ EN Directive 2002/95/EC: RoHS (Restriction of the use of certain hazardous substances in electrical and electronic equipment) ▪ EN Directive 2003/108/EC: WEEE (Waste of electrical and electronic equipment)

B WX TROUBLESHOOTING

Table 15 contains remedies for some common problems that can occur during basic installation and setup of a WX switch.

Table 15 WX Setup Problems and Remedies

Symptom	Diagnosis	Remedy
3Com Wireless Switch Manager or a web browser (if you are using Web View) warns that the WX switch's certificate date is invalid.	The switch's time and date are currently incorrect, or were incorrect when you generated the self-signed certificate or certificate request.	**1** Use **set timezone** to set the time zone in which you are operating the switch. (See "Setting the Time Zone" in the *Wireless LAN Switch and Controller Configuration Guide*.) **2** Use **set timedate** to configure the current time and date in that time zone. (See "Statically Configuring the System Time and Date" in the *Wireless LAN Switch and Controller Configuration Guide*.) **3** Reconfigure the administrative certificate(s). (See "Creating Keys and Certificates" in the *Wireless LAN Switch and Controller Configuration Guide*.) **4** If you have already configured a certificate on the switch for authentication by network users, you must recreate this certificate, too.

Table 15 WX Setup Problems and Remedies (continued)

Symptom	Diagnosis	Remedy
WX switch does not accept configuration information for an MAP access point or a radio.	The country code might not be set or might be set for another country.	**1** Type the **display system** command to display the country code configured on the switch. **2** If the value in the System Countrycode field is *NONE* or is for a country other than the one in which you are operating the switch, use the **set system countrycode** command to configure the correct country code. (See "Specifying the Country of Operation" in the *Wireless LAN Switch and Controller Configuration Guide*.)
Client cannot access the network.	This symptom has more than one possible cause:	
	▪ The client might be failing authentication or might not be authorized for a VLAN.	**1** Type the **display aaa** command to check the authentication rules on the WX switch, to ensure that the client can be authenticated. **2** Check the authorization rules in the switch's local database (**display aaa**) or on the RADIUS servers to ensure the client is authorized to join a VLAN that is configured on at least one of the WX switches in the Mobility Domain.
	▪ If the client and switch configurations are correct, a VLAN might be disconnected. A client connected to a VLAN that is disconnected is unable to access the network.	**1** Type the **display vlan config** command to check the status of each VLAN. **2** If a VLAN is disconnected (VLAN state is Down), check the network cables for the VLAN's ports. At least one of the ports in a VLAN must have a physical link to the network for the VLAN to be connected.

Table 15 WX Setup Problems and Remedies (continued)

Symptom	Diagnosis	Remedy
Configuration information disappears after a software reload.	The configuration changes were not saved.	**1** Retype the commands for the missing configuration information. **2** Type the **save config** command to save the changes.
Mgmt LED is quickly blinking amber. CLI stops at boot prompt (boot>).	The WX switch was unable to load the system image file.	Type the **boot** command at the boot prompt.

C Obtaining Support for Your 3Com Products

3Com offers product registration, case management, and repair services through eSupport.3com.com. You must have a user name and password to access these services, which are described in this appendix.

Register Your Product to Gain Service Benefits

To take advantage of warranty and other service benefits, you must first register your product at:

http://eSupport.3com.com/

3Com eSupport services are based on accounts that are created or that you are authorized to access.

Solve Problems Online

3Com offers the following support tool:

- **3Com Knowledgebase —** Helps you to troubleshoot 3Com products. This query-based interactive tool is located at:

  http://knowledgebase.3com.com

  It contains thousands of technical solutions written by 3Com support engineers.

Purchase Extended Warranty and Professional Services

To enhance response times or extend your warranty benefits, you can purchase value-added services such as 24x7 telephone technical support, software upgrades, onsite assistance, or advanced hardware replacement.

Experienced engineers are available to manage your installation with minimal disruption to your network. Expert assessment and implementation services are offered to fill resource gaps and ensure the success of your networking projects. For more information on 3Com Extended Warranty and Professional Services, see:

http://www.3com.com/

Contact your authorized 3Com reseller or 3Com for additional product and support information. See the table of access numbers later in this appendix.

Access Software Downloads

You are entitled to *bug fix / maintenance releases* for the version of software that you initially purchased with your 3Com product. To obtain access to this software, you need to register your product and then use the Serial Number as your login. Restricted Software is available at:

http://eSupport.3com.com/

To obtain software releases that *follow* the software version that you originally purchased, 3Com recommends that you buy an Express or Guardian contract, a Software Upgrades contract, or an equivalent support contract from 3Com or your reseller. Support contracts that include software upgrades cover feature enhancements, incremental functionality, and bug fixes, but they do not include software that is released by 3Com as a separately ordered product. Separately orderable software releases and licenses are listed in the 3Com Price List and are available for purchase from your 3Com reseller.

Contact Us

3Com offers telephone, internet, and e-mail access to technical support and repair services. To access these services for your region, use the appropriate telephone number, URL, or e-mail address from the table in the next section.

Telephone Technical Support and Repair

To obtain telephone support as part of your warranty and other service benefits, you must first register your product at:

http://eSupport.3com.com/

When you contact 3Com for assistance, please have the following information ready:

- Product model name, part number, and serial number
- A list of system hardware and software, including revision level
- Diagnostic error messages
- Details about recent configuration changes, if applicable

To send a product directly to 3Com for repair, you must first obtain a return materials authorization number (RMA). Products sent to 3Com without authorization numbers clearly marked on the outside of the package will be returned to the sender unopened, at the sender's expense. If your product is registered and under warranty, you can obtain an RMA number online at http://eSupport.3com.com/. First-time users must apply for a user name and password.

Telephone numbers are correct at the time of publication. Find a current directory of 3Com resources by region at:
http://csoweb4.3com.com/contactus/

Country	Telephone Number	Country	Telephone Number
Asia, Pacific Rim — Telephone Technical Support and Repair			
Australia	1800 075 316	Philippines	1800 144 10220 or 029003078
Hong Kong	2907 0456		
India	000 800 440 1193	PR of China	800 810 0504
Indonesia	001 803 852 9825	Singapore	800 616 1463
Japan	03 3507 5984	South. Korea	080 698 0880
Malaysia	1800 812 612	Taiwan	00801 444 318
New Zealand	0800 450 454	Thailand	001 800 441 2152

Country	Telephone Number	Country	Telephone Number
Pakistan Call the U.S. direct by dialing 00 800 01001, then dialing 800 763 6780 Sri Lanka Call the U.S. direct by dialing 02 430 430, then dialing 800 763 6780 Vietnam Call the U.S. direct by dialing 1 201 0288, then dialing 800 763 6780			
You can also obtain non-urgent support in this region at this email address apr_technical_support@3com.com Or request a return material authorization number (RMA) by FAX using this number: +61 2 9937 5048, or send an email at this email address: ap_rma_request@3com.com			

Europe, Middle East, and Africa — Telephone Technical Support and Repair

From anywhere in these regions not listed below, call: +44 1442 435529

From the following countries, call the appropriate number:

Austria	0800 297 468	Luxembourg	800 23625
Belgium	0800 71429	Netherlands	0800 0227788
Denmark	800 17309	Norway	800 11376
Finland	0800 113153	Poland	00800 4411 357
France	0800 917959	Portugal	800 831416
Germany	0800 182 1502	South Africa	0800 995 014
Hungary	06800 12813	Spain	900 938 919
Ireland	1 800 553 117	Sweden	020 795 482
Israel	180 945 3794	Switzerland	0800 553 072
Italy	800 879489	U.K.	0800 096 3266

You can also obtain support in this region using this URL: http://emea.3com.com/support/email.html

You can also obtain non-urgent support in this region at these email addresses:
Technical support and general requests: customer_support@3com.com
Return material authorization: warranty_repair@3com.com
Contract requests: emea_contract@3com.com

Latin America — Telephone Technical Support and Repair

Antigua	1 800 988 2112	Guatemala	AT&T +800 998 2112
Argentina	0 810 444 3COM	Haiti	57 1 657 0888
Aruba	1 800 998 2112	Honduras	AT&T +800 998 2112
Bahamas	1 800 998 2112	Jamaica	1 800 998 2112
Barbados	1 800 998 2112	Martinique	571 657 0888
Belize	52 5 201 0010	Mexico	01 800 849CARE
Bermuda	1 800 998 2112	Nicaragua	AT&T +800 998 2112
Bonaire	1 800 998 2112	Panama	AT&T +800 998 2112
Brazil	0800 13 3COM	Paraguay	54 11 4894 1888
Cayman	1 800 998 2112	Peru	AT&T +800 998 2112
Chile	AT&T +800 998 2112	Puerto Rico	1 800 998 2112
Colombia	AT&T +800 998 2112	Salvador	AT&T +800 998 2112
Costa Rica	AT&T +800 998 2112	Trinidad and Tobago	1 800 998 2112
Curacao	1 800 998 2112	Uruguay	AT&T +800 998 2112
Ecuador	AT&T +800 998 2112	Venezuela	AT&T +800 998 2112
Dominican Republic	AT&T +800 998 2112	Virgin Islands	57 1 657 0888

You can also obtain support in this region in the following ways:

- Spanish speakers, enter the URL: http://lat.3com.com/lat/support/form.html
- Portuguese speakers, enter the URL: http://lat.3com.com/br/support/form.html
- English speakers in Latin America, send e-mail to: lat_support_anc@3com.com

Country	Telephone Number	Country	Telephone Number
US and Canada — Telephone Technical Support and Repair			
All locations:	Network Jacks; Wired or Wireless Network Interface Cards:		1 847-262-0070
	All other 3Com products:		1 800 876 3266

INDEX

T

U

V

W