



**OmniAccess 6000
Installation Guide™
Wireless LAN Switch
Installation Guide**

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Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This product complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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Safety

Lithium Battery Notice

The Alcatel 6000 Supervisor Card used with this product contains a lithium battery.



CAUTION—The lithium battery may explode if it is incorrectly replaced. Replace only with the same or equivalent type battery recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Laser Notice

The Alcatel 6000 Line Cards used with this product use replaceable laser transceiver modules on some ports.



CAUTION—Use of controls or adjustments of performance or procedures other than those specified in this manual may result in hazardous radiation exposure.

This product complies with 21 CFR Chapter 1, Subchapter J, Part 1040.10, and IEC 60825-1: 1993, A1: 1997, A2: 2001, IEC 60825-2: 2000.

For continued compliance with the above laser safety standards, only approved Class 1 modules from our approved vendors should be installed in the product. See "[Gigabit Ethernet Ports](#)" on [page 52](#) for a list of approved modules and vendors.

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To the Network Manager

As with any full-featured network equipment, deploying the Alcatel Wireless LAN solution requires a degree of planning. The process may involve multiple components as well as various individuals in your organization. As the network manager, you should become familiar with the components and deployment summary outlined in this section.

The Alcatel Wireless LAN Solution

The Alcatel Wireless LAN solution consists of three major components:

- Alcatel Wireless LAN Switch. This is an enterprise-class switch into which multiple Access Points (APs) and Air Monitors (AMs) are connected and controlled.
- Alcatel Wireless Access Point. This is a next-generation wireless transceiver which functions as an AP or AM. Although third-party APs can be used with the Alcatel Wireless LAN system, the Alcatel AP provides the best features and easiest integration.
- Alcatel AOS-W Switch Software. This software intelligently integrates the Wireless LAN switch and APs to provide load balancing, rate limiting, self healing, authentication, mobility, security, firewalls, encryption, and centralization for monitoring and upgrades.

Deployment Summary

This section outlines the various tasks involved in deploying the Alcatel Wireless LAN solution, and indicates the document where appropriate instructions can be found.

NOTE—Documents named below are included on the *Alcatel Documentation Library CD-ROM*.

1 Physical installation of the Alcatel Wireless LAN Switch

Installation requires a trained technician, experienced with handling and installing similar equipment. This phase involves the following tasks:

- Transport, unpack, and mount the switch in a suitable rack environment.
- If using a modular switch chassis, install any extra modules you may have ordered.
- Attach power and a console.
- Boot the system and perform the initial power-on test, examining the LEDs and console messages to ensure proper operation.

The Alcatel Wireless LAN Switch Installation Guides provide the necessary instructions.

2 Initial configuration of the Alcatel Wireless LAN Switch

Configuration requires someone who understands the company's wired network and has experience with the physical and logical management and configuration of routers, switches, servers, and clients. This phase involves the following tasks:

- Use the console to perform initial configuration of the Alcatel Wireless LAN Switch.
- Attach the switch to the network.

The *Alcatel AOS-W Quick Start Guide* and the *Alcatel AOS-W User Guide* provides instructions.

3 Planning the location of access points and air monitors

This phase requires someone familiar with your wireless network deployment strategy and the features required of the Alcatel Wireless LAN solution. You can manually determine the locations for APs, or use a Web browser to access the Alcatel Wireless LAN Switch's built-in RF Plan tool and perform the following tasks:

- Define the physical site parameters.

- Determine how many access points are needed and where they should be located.
- Simulate network failures and recovery characteristics, and adjust placement if necessary.

The *Alcatel AOS-W User Guide* provides instructions.

4 Physical installation of the Alcatel Wireless Access Points

This requires a trained technician. The following tasks are involved:

- Perform initial configuration of the AP.
- Mount the AP in its appointed service location.
- Attach required network cables and power.

The Alcatel AP Installation Guides provide instructions.

5 Advanced configuration of the Alcatel Wireless LAN Switch

Again, configuration requires someone who understands the company's network and has experience managing routers, switches, servers, and clients. The following tasks are involved:

- Configure the planned network features via command line or Web interface.
- Test and debug the deployment.

The *Alcatel AOS-W Reference Guide* provides in-depth information and examples on the Alcatel Wireless LAN Switch's more advanced features.

6 Monitoring and maintenance

This requires someone experienced using various types of software tools to gather and interpret network performance information. The following tasks are involved:

- Perform remote monitor and management functions via command line or Web interface.
- Identify problems and initiate support when necessary.
- Ensure that hardware support issues are handled by a trained technician.

The *Alcatel AOS-W Reference Guide* provides instructions for collecting system health and performance information. The Alcatel Wireless LAN Switch Installation Guides and Alcatel AP Installation Guides provide instructions for hardware issues.

Preface

The preface includes the following information:

- An overview of the sections in this manual
- A list of related documentation for further reading
- A key to the various text conventions used throughout this manual
- Alcatel support and service information

Overview of this Manual

This manual is for trained technicians responsible for installing the Alcatel 6000 series Wireless LAN Switch. The manual is organized as follows:

- **Part 1: The Alcatel 6000-series Chassis**
The chapters in this section explain describe the Alcatel 6000-series Wireless LAN Switch system, and provide instructions for mounting the chassis, attaching power, and performing initial power-on tests.
- **Part 2: The Alcatel 6000-series Modules**
Each chapter in this section focuses on a specific module and includes instructions for installing or replacing the individual item.
- **Part 3: Appendices**

Related Documents

The following items are part of the complete documentation for the Alcatel system:

- *Alcatel Wireless LAN Switch Installation Guide* (this manual)
- *Alcatel AOS-W User's Guide*

- *Alcatel AP Installation Guide*

Text Conventions

The following conventions are used throughout this manual to emphasize important concepts:

TABLE P-1 Text Conventions

Type Style	Description
<i>Italics</i>	This style is used to emphasize important terms and to mark the titles of books.
System items	This fixed-width font depicts the following: <ul style="list-style-type: none"> ● Sample screen output ● System prompts ● Filenames, software devices, and certain commands when mentioned in the text
Commands	In the command examples, this bold font depicts text that the user must type exactly as shown.
<i><Arguments></i>	In the command examples, italicized text within angle brackets represents items that the user should replace with information appropriate to their specific situation. For example: <pre># send <text message></pre> <p>In this example, the user would type “send” at the system prompt exactly as shown, followed by the text of the message they wish to send. Do not type the angle brackets.</p>
[Optional]	In the command examples, items enclosed in brackets are optional. Do not type the brackets.
{ Item A Item B }	In the command examples, items within curled braces and separated by a vertical bar represent the available choices. Enter only one choice. Do not type the braces or bars.

Contacting Alcatel

Web Site

- Main Site <http://www.Alcatel networks.com>
- Support <http://www.Alcatel networks.com/support>

E-mail

- Sales sales@Alcatel networks.com
- Support support@Alcatel networks.com

Telephone Numbers

- Main 408-227-4500
- Fax 408-227-4550
- Sales 408-754-1201
- Support In the U.S.: 800-WI-FI-LAN (800-943-4526)
International:408-754-1200

CHAPTER 1

System Overview

The Alcatel 6000-series Wireless LAN Switch is an enterprise-class, modular switch which connects, controls, and intelligently integrates wireless Access Points (APs) and Air Monitors (AMs) into the wired LAN.

This chapter introduces you to the Alcatel Wireless LAN Switch. It describes the general features of the modular system and illustrates key physical elements. Once familiar with the system, you can begin the installation process covered in the next chapter.

Features

This section outlines the general features of the Alcatel Wireless LAN Switch.

- 10/100/1000 Mbps Ethernet switch with high-speed Layer-2/Layer-3 packet forwarding.
- High-performance packet processing provides value-added wireless services such as load balancing, rate limiting, self-healing, calibration, authentication, mobility, security, and centralized monitoring and configuration.
- 3U chassis can be mounted in a standard 19-inch network equipment rack.
- Modular, slot-based chassis allows for network expansion and fault-tolerance.
 - Up to 2 supervisor cards
 - Up to 3 line cards for up to 72 10/100 Mbps Ethernet ports and 6 Gigabit Ethernet ports
 - Up to 3 power supplies with load sharing capability
 - A fan tray containing three individual fans for redundancy

- All modules are hot-swappable by trained technicians.

Physical Description

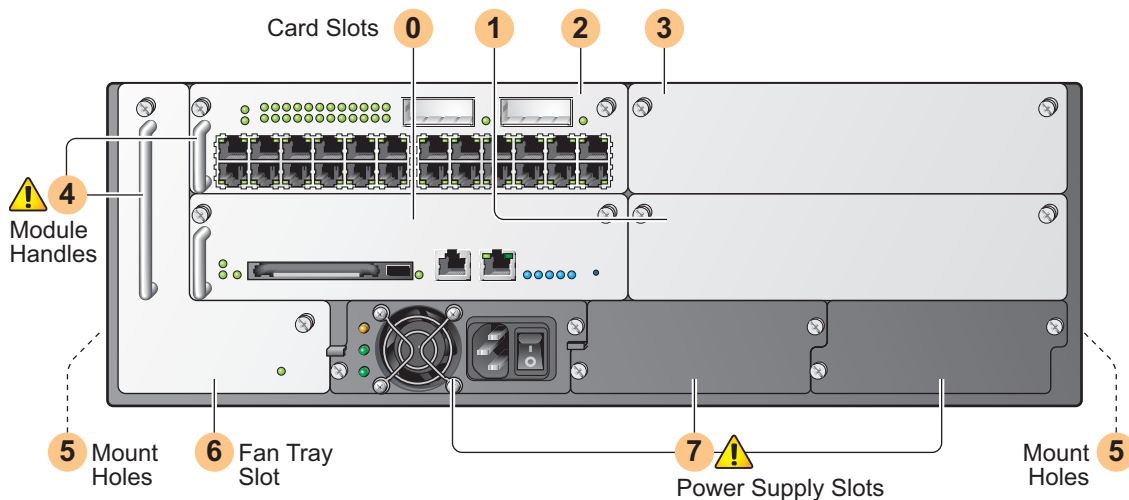


FIGURE 1-1 Alcatel 6000-series Wireless LAN Switch System

NOTE—Figure 1-1 depicts an Alcatel Wireless LAN Switch with the minimum components required for operation. Depending on the options selected when your system was purchased, your actual chassis may include more or fewer of the pictured items. Cover unused slots with blank plates.

0 Slot 0

This slot is for the required supervisor card. The supervisor card processes all traffic from the line cards and performs all management functions.

1 Slot 1

This is a dual-purpose slot. It can be used for a second, optional supervisor card to provide redundancy for extra processing capacity or fault tolerance. Alternately, this slot can be used for a third line card to provide extra network port capacity.

2 Slot 2

This slot is for the required line card. The line card provides network ports for connecting wireless APs, such as the Alcatel Wireless Access Point, as well as wired LAN segments.

3 Slot 3

This slot is for adding a second line card.

4 Module Handles

All module handles are used only for removing and inserting the individual modules.



CAUTION—Never use the module handles to lift or move the Alcatel Wireless LAN Switch chassis. Using the handles to support the chassis can result in serious damage to both the module and the chassis.

5 Holes for attaching rack mounting brackets (on side)

6 Fan Tray Slot

The Alcatel Wireless LAN Switch is cooled by a hot-swappable fan tray. The fan tray pulls air from right to left (as viewed from the front of the chassis) across the installed cards.

During operation, the air vents on the left and right sides of the chassis must remain unobstructed by cables or mounting equipment. For proper air circulation, leave at least 10 cm (4 inches) of clearance on the left and right of the chassis.

7 Power Supply Slots

The chassis has slots for up to three power supplies. The number and type of power supplies required for your system depends on the number and type of line cards installed, and whether you wish to include redundancy for fault tolerance. See [“Power Management”](#) on [page 27](#) for more information.

Each power supply has its own power cord and power switch.



CAUTION—*Never* insert or remove a power supply while its power switch is in the On (I) position or while the power cord is plugged in. First verify the power switch is Off (O) and the cord is unplugged.



CAUTION—Be sure to exercise proper Electrostatic Discharge (ESD) precautions when handling Alcatel 6000-series components.

CHAPTER 2

Installing the Chassis



CAUTION—Installation should be performed by a trained technician.

This chapter covers the following installation topics:

- Precautions to observe during installation
- Requirements for Alcatel Wireless LAN Switch components and rack mounting gear
- Selecting a proper environment for the Alcatel Wireless LAN Switch
- Mounting the Alcatel Wireless LAN Switch in a rack
- Connecting power to the Alcatel Wireless LAN Switch

Pre-Installation Checklist

You will need the following during installation:

- OmniAccess 6000 Installation Guide Wireless LAN Switch components (see [“Minimum Switch Configuration”](#) on [page 7](#)).
- OmniAccess 6000 Installation Guide rack mounting kit (see [“Rack Mounting Kit”](#) on [page 7](#)).
- Phillips or cross-head screwdriver.
- 19-inch equipment rack, or equivalent.
- 3U rack space with 10 cm (4 inches) clearance to the left, right, front, and rear of the rack.
- Another person to help position the switch.
- Alcatel power cord for each power supply, rated to at least 10 A with IEC320 connector.
- Adequate power supplies and electrical power (see [“Power Management”](#) on [page 27](#)).
- Cool, non-condensing air 0 to 40 °C (32 to 104 °F). May require air conditioning.
- Console terminal with RJ-45 or DB-9 serial port.
- RS-232 serial cable with RJ-45 male connectors.
- Alcatel serial adapter (included) if connecting to the console with DB-9.

Precautions



CAUTION—Dangerous voltage in excess of 240VAC is always present while the Alcatel Power Supply Module is plugged into an electrical outlet. Remove all rings, jewelry, and other potentially conductive material before working with this product.

Never insert foreign objects into the chassis, the power supply, or any other component, even when the power supplies have been turned off, unplugged, or removed.

Main power is fully disconnected from the Alcatel Wireless LAN Switch by unplugging all installed power supplies' power cords from their power outlets. For safety reasons, verify the power outlets and plugs are within easy reach of the operator.

Do not handle electrical cables which are not insulated. This includes any network cables.

To minimize electrical hazard, keep water and other fluids away from the product.

Comply with electrical grounding standards during all phases of installation and operation of the product. Do not allow the Alcatel Wireless LAN Switch chassis, network ports, power supplies, or mounting brackets to contact any device, cable, object, or person attached to a different electrical ground. Also, never connect the device to external storm grounding sources.

Installation or removal of the chassis or any module must be performed in a static-free environment. The proper use of anti-static body straps and mats is strongly recommended.

Modules must be kept in anti-static packaging when not installed in the chassis.

Do not ship or store this product near strong electromagnetic, electrostatic, magnetic or radioactive fields.

Do not disassemble the chassis or any module. They have no internal user-serviceable parts. When service or repair is needed, see ["Contacting Alcatel"](#) on [page vii](#).

Requirements

Minimum Switch Configuration

An OmniAccess 6000 Installation Guide Wireless LAN Switch must include the following basic components (as shown in [Figure 1-1](#) on [page 2](#)):

- One modular Wireless LAN switch chassis
- One fan tray
- One supervisor card in Slot 0
- One line card in Slot 2
- Adequate power supplies

NOTE—The number and type of power supplies required depends on the number and type of line cards installed in the chassis (see [“Power Management”](#) on [page 27](#)).

In most cases, the Alcatel Wireless LAN Switch is shipped with all required modules installed. If you have received your modules separately, first install the chassis as described in this chapter, and then see Part 2 of this manual for instructions on installing each additional module.

Rack Mounting Kit

Using the included rack mounting kit, the Alcatel Wireless LAN Switch can be mounted in a standard 19-inch network equipment rack. The rack mounting kit contains the following parts:

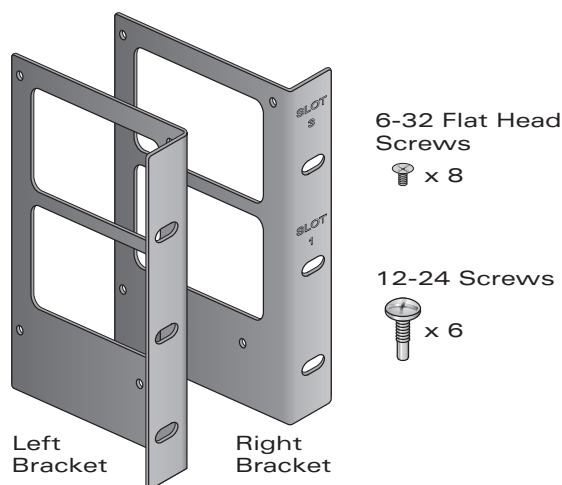


FIGURE 2-1 Rack Mounting Kit

NOTE—The six 12-24 screws are intended for securing the switch to the rack. Some racks require different screws which are not included. Verify that you have the correct screws or fasteners for your rack system before attempting to mount the switch.

Selecting a Location

The Alcatel Wireless LAN Switch, like other network and computing devices, requires an “electronics friendly” environment.

- **Reliable power**

Verify that your electrical outlet is compatible with the Alcatel Wireless LAN Switch power supplies.

- The standard power supply (OWA-6000-PS200) is rated at 200 W total and is auto-ranging to accept 90-132/ 170-264 VAC, at 50 to 60 Hz.
- The optional power supply (OWA-6000-PS400) is rated at 400 W total and is auto-ranging to accept 85 to 264 VAC, at 50 to 60 Hz.

The power cords must be rated to 10 A and conform to grounded electrical standards in the country where the product is operated.

Use of a power line conditioner or Uninterruptable Power Supply (UPS) can decrease or mitigate problems caused by power service fluctuations. Verify that the output of any power shaping device is compatible with the Alcatel Wireless LAN Switch power supplies.

- **Cool, non-condensing ventilation**

For proper operation, the Alcatel Wireless LAN Switch requires an environment with an ambient air temperature between 0 and 40 °C (32 to 104 °F). Humidity must be kept at non-condensing levels between 5 and 95%.

Where a large number of electrical devices are working in the same area, additional air conditioning or air circulation equipment may be required.

- **Ample space**

For proper air circulation, leave at least 10 cm (4 inches) clearance for the vents on the left, right, front, and rear of the chassis.

Leave additional space in front of the chassis to access power cords, network cables, and indicator LEDs.

- **Limited electromagnetic interference**

For best operation, keep the Alcatel Wireless LAN Switch and all cords and cables at least 0.7 meters (2 feet) from fluorescent lighting fixtures, and 2 meters (6 feet) from photocopiers, radio transmitters, electric generators, and other sources of strong electromagnetic interference.

Mounting the Chassis

- 1 Verify that your rack environment meets requirements (see [“Selecting a Location”](#) on [page 8](#)).
- 2 Attach the rack mounting brackets to the switch chassis as shown in [Figure 2-2](#).

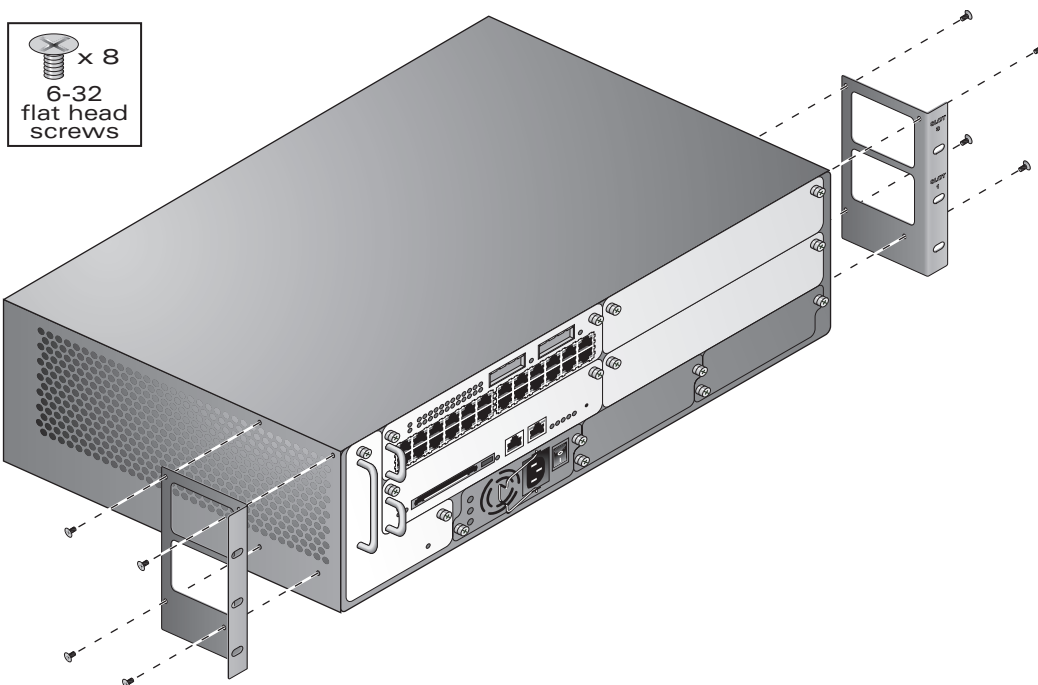


FIGURE 2-2 Attaching the Rack Mounting Brackets

The bracket stamped with slot numbers is for the right-hand side of the switch. Orient both brackets so that the narrow flange faces the front. When placed properly, the brackets' large rectangular voids will be positioned over the side vents to allow proper air flow during operation.

Use a Phillips or cross-head screwdriver to attach each bracket securely with four 6-32 flat head screws (included).

3 Attach the Alcatel Wireless LAN Switch to the rack.

CAUTION—To avoid personal injury or damage to equipment, get help for lifting and positioning the Alcatel Wireless LAN Switch. Also, do not install the Alcatel Wireless LAN Switch in any fashion where instability or uneven mechanical loading may occur.

NOTE—For proper operation, the Alcatel Wireless LAN Switch requires an ambient air temperature between 0 and 40 °C (32 to 104 °F). Verify your rack environment is in compliance.

Position the switch chassis in the equipment rack and align the brackets' mounting holes with the corresponding holes in your rack frame.

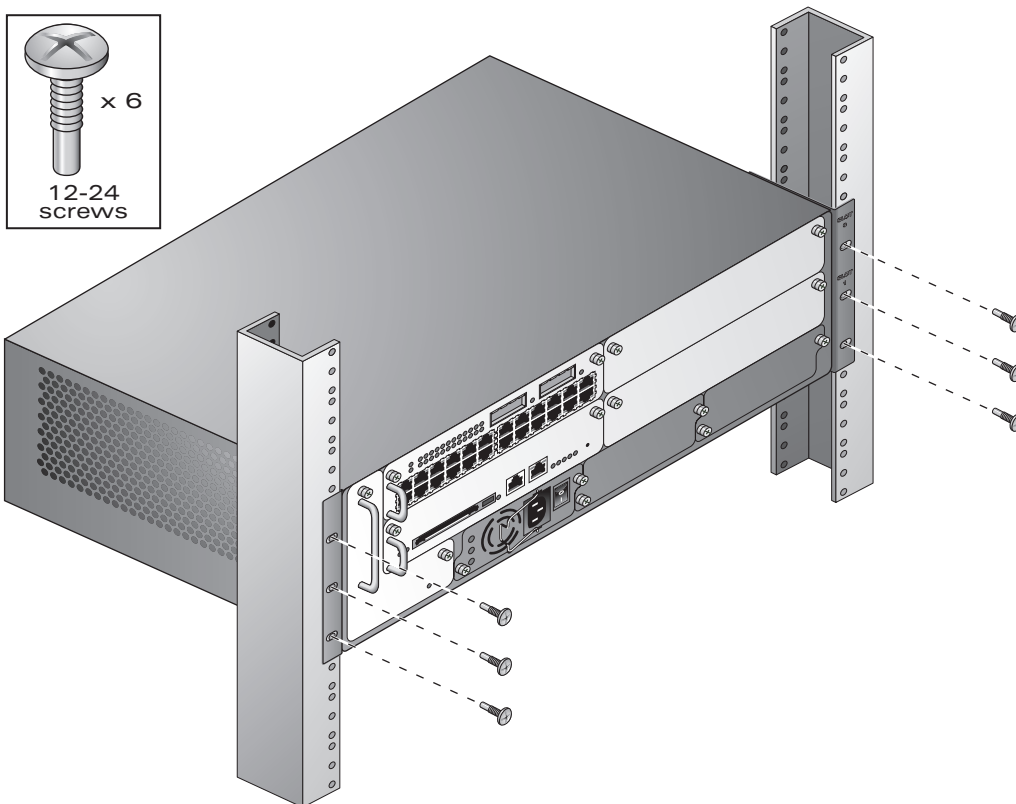


FIGURE 2-3 Mounting the Alcatel Wireless LAN Switch

Use a Phillips or cross-head screwdriver to secure the switch to the rack with three 12-24 screws (included) for each mounting bracket.

NOTE—Some cabinets require different screws which are not included. Verify that you use the correct screws or fasteners for your rack system.

Adding Modules

If you have received your modules separately from the chassis, or wish to expand the system with additional modules, see Part 2 of this manual for specific instructions on installing each module.

NOTE—By adding modules, you are increasing the switch's total power load. Depending on the modules installed, you may be required to add power supplies to the switch and/or increase the capacity of your site's electrical systems. For details, see "[Power Management](#)" on [page 27](#).

Connecting Power



CAUTION—This procedure should be performed by a trained technician.

- 1 Verify you understand the procedure and all precautions.

Before beginning, read the entire procedure. Verify you understand all the precautions in these steps as well as those on [page 6](#).

- 2 Verify that the installed power supplies can handle the switch's power load.

The number of power supplies required for your Alcatel Wireless LAN Switch depends on the number and type of modules installed. See "[Power Management](#)" on [page 27](#) for details.

- 3 Verify that your site's electrical systems can handle the switch's power load.
 - Each standard power supply (OWA-6000-PS200) is rated at 200 W total and is auto-ranging to accept 90-132/ 170-264 VAC, at 50 to 60 Hz.
 - Each optional power supply (OWA-6000-PS400) is rated at 400 W total and is auto-ranging to accept 85 to 264 VAC, at 50 to 60 Hz.

Depending on the switch's total power load, you may be required to increase the capacity of your site's electrical systems. See "[Maximum Power Load](#)" on [page 29](#) for details.

NOTE—Use of a power line conditioner or Uninterruptable Power Supply (UPS) can decrease or mitigate problems caused by power service fluctuations. Verify that the output of any power shaping device is compatible with the Alcatel Wireless LAN Switch power supplies.

- 4 **Step 4** Verify the power switch on the power supply is in the Off (O) position.



CAUTION—Never attach a power cord to a power supply while its power switch is in the On (I) position. Verify the power switch is Off (O) first.

- 5 **Step 5** Attach the power cord to the power supply.

Plug an appropriate power cord into the power input socket. The socket accepts a power cord with a standard IEC320 plug.



CAUTION—For proper safety and performance, the power cord must be rated to 10 A and conform to grounded electrical standards in the country where the product is operated.

NOTE—The 400 W power supply (OWA-6000-PS400) includes a power cord retaining clip. When the power cord is attached, the clip can be used to hold the cord in place and help prevent it from being pulled out accidentally (see [Figure 5-3](#) on [page 32](#)).

- 6 **Step 6** Attach the power cord to a proper electrical outlet.



CAUTION—For safety reasons, verify the power outlets and plugs are within easy reach of the operator and can be quickly disconnected if necessary.

Repeat [Step 4](#) through [Step 6](#) for each installed power supply.

Once power is connected, you can perform the power-on test (see [page 15](#)).

CHAPTER 3

Verifying the Installation

Once the Alcatel Wireless LAN Switch is physically installed, run the following power-on test:

- 1 Turn on all installed power supplies in quick succession.

For each power supply, place the power switch in the on (I) position.

NOTE—To avoid overloading the first power supplies to be turned on while using line cards that provide Power Over Ethernet to attached devices, all required power supplies should be turned on at roughly the same time (within about three seconds).

- 2 Check for the proper power indicators.

Immediately upon power up, you should observe the following:

- All power supply AC OK and DC OK LEDs light solid green.
- The fan tray Fan Status LED is solid green and you should be able to feel significant airflow blowing from the chassis vents at each of the three fan positions.
- The line card Power LED is solid green.
- The supervisor card Power LED is solid green.
- The supervisor card Utilization LEDs begin blinking sequentially from left to right and then right to left.

- 3 Check for the appropriate operation indicators.

Once the system has successfully booted, you should observe the following:

- The power supply AC OK and DC OK LEDs are still solid green.

- The fan tray Fan Status LED is still solid green.
 - On the line card:
 - The Power LED is still solid green.
 - The Status LED is solid green.
 - On the supervisor card:
 - The power LED is still solid green.
 - The Status and Active/Standby LEDs are solid green.
 - The Utilization LED panel reflects the expected level of usage.
- In a typical power-on test performed after initial installation, a single blinking LED will indicate utilization of under 1%.

NOTE—For more information on LED behavior, refer to the individual chapters for the specific modules.

- 4 Once the system has passed the initial power-up test:
 - Connect appropriate network cables (see [“The Supervisor Card”](#) and [“The Line Cards”](#) for port and cable information).
- 5 You are now ready to perform the initial setup as described in the *Alcatel Quick Start Guide* (which is included in the Accessory Kit).

CHAPTER 4

The Fan Tray

The Alcatel 6000-series Fan Tray (OWA-6000-FT) promotes proper air circulation for cooling the specialized modules in the Alcatel Wireless LAN Switch and is required for their normal operation.

This chapter describes the general features and physical characteristics of the fan tray, and provides instructions for replacing the module if necessary.

Features

Built-in Redundancy

Three fans are provided in the fan tray. The module is designed to provide for cooling, even if one fan fails. Any two operating fans will provide enough airflow for proper cooling until the fan tray can be replaced.

Hot Swap

Hot swapping should be performed by a trained technician. Hot swapping allows you to replace the fan tray without having to shut down the system. During the replacement operation, the switch will continue to function without fans, though the procedure must be completed within about one minute to resume proper cooling.

Physical Description

The fan tray slot is located on the left side of the Alcatel Wireless LAN Switch chassis and extends from the front of the chassis to the back.

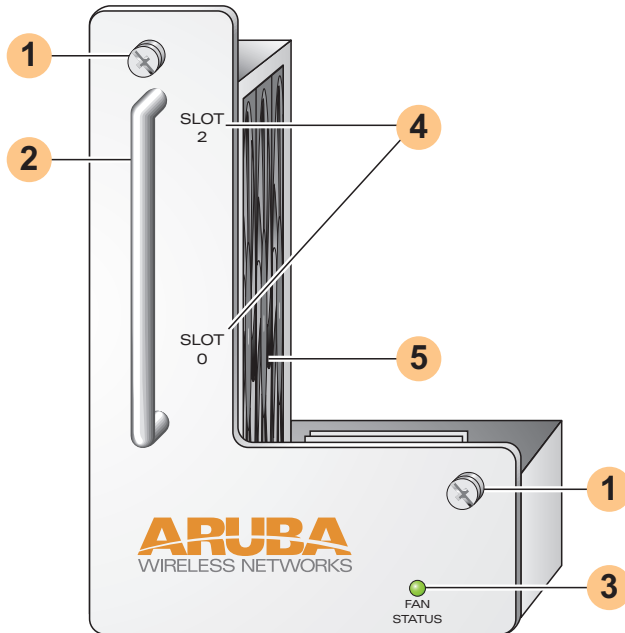


FIGURE 4-1 Alcatel 6000-series Fan Tray

1 Module Fastening Screws

These captive screws are used for securing the module into the switch fan tray slot.

2 Module Handle

This handle is used for removing or inserting the module into the switch chassis.



CAUTION—Do not use the fan tray handle to lift or move the Alcatel Wireless LAN Switch. Serious damage could result.

3 Fan Status LED

During operation, the Fan Status LED provides the following information:

TABLE 4-1 Fan Status LED

Status	Description
Off	The fan tray is not operating.
Green	The fan tray is receiving power and all three fans are operating properly.
Amber	One fan has failed, but the remaining two can provide proper cooling until the fan tray can be conveniently replaced.
Red	Two or more fans have failed. Replace the fan tray immediately.

4 Slot Labels

When the fan tray is installed in the Alcatel Wireless LAN Switch, these labels name the module slots to the immediate right of the fan tray (see [Figure 1-1](#) on [page 2](#)).

5 Fans (on side)

Three independent fans provide redundancy for cooling the Alcatel Wireless LAN Switch cards.

Replacing a Fan Tray



CAUTION—This procedure should be performed by a trained technician.

If hot swapping the fan tray, please be aware that there are time-critical aspects to parts of the procedure. To ensure proper preparation, please read through all the steps in the procedure before attempting the replacement.

Also, make sure you understand all the precautions in these steps as well as those on [page 6](#).

Prepare the New Fan Tray

- 1 Unpack the new fan tray.
- 2 Inspect the new fan tray to verify that it is undamaged.
- 3 Place the new fan tray in a safe, accessible place near the switch, ready for prompt insertion.
- 4 Locate a #2 Phillips or cross-head screwdriver.

Remove the Old Fan Tray

- 1 Loosen the fan tray's fastening screws.

At the front of the Alcatel Wireless LAN Switch, use the screwdriver to loosen both of the fastening screws on the faceplate of the installed fan tray. The screws loosen with counter-clockwise rotation, but are captive and cannot be fully removed.

- 2 Disengage the fan tray.

Grasp the module handle firmly and draw the fan tray forward from its slot. There may be moderate resistance as the module comes free from its connections with the chassis backplane, but do not use excessive force.

When the module is fully disengaged from the backplane, power to the working fans is lost and they will gradually stop spinning.



CAUTION—The fans will continue to spin for a short while, even though there is no power to them. Wait for the fans to stop spinning before removing the fan tray.

Also, when hot swapping, once the fans stop spinning, the Alcatel Wireless LAN Switch will continue to operate, though heat will begin to build in the operational components. From this point, there is a limited time (approximately one minute) before installation of the new fan tray must be completed.

- 3 Fully remove the fan tray and place it safely aside.

Once disengaged, the fan tray should easily slide out of the switch chassis.

Insert the New Fan Tray

- 1 Pick up the new fan tray by the handle provided on its front panel.
- 2 Carefully insert the fan tray into the chassis fan tray slot.

Align the rear of the fan tray with the guide rails in the switch fan tray slot and slide it gently toward the backplane. The module should slide in easily most of the way.

- 3 Engage the fan tray.

As the fan tray reaches the back of the chassis, moderate resistance may be felt. Press firmly so the connectors at the back of the module engage with the backplane, but do not use excessive force.

When hot swapping the fan tray and when the connectors are properly engaged, power to the fans should be restored and they should start spinning.

- 4 Check the fans to verify all of them are working.

Once power has been restored to the fan tray, either by engaging the module to the backplane during hot-swap or by turning on system power after a cold-swap, the Fan Status LED should be green and you should be able to feel significant airflow blowing from the chassis vents at each fan position.

If the fans are all working, this ends the time critical portion of the hot-swap procedure.

If *one* of the fans in a newly hot-swapped fan tray does not work (yellow Fan Status LED), allow at least three minutes for the remaining fans to cool the switch before attempting another hot-swap replacement.



CAUTION—If *two or more* fans in the newly hot-swapped fan tray do not work (the Fan Status LED is red or off), shut down the Alcatel Wireless LAN Switch, replace the fan tray, and allow the switch at least five minutes to cool before turning it back on.

- 5 Secure the fan tray.

Use the screwdriver to push in and tighten both of the fastening screws on the faceplate of the newly installed fan tray. Rotate the screws clockwise until moderate resistance is felt, but do not over-tighten.

CHAPTER 5

The Power Supply

The Alcatel 6000-series Power Supply adapts electrical power for use with the Alcatel Wireless LAN Switch. The switch chassis has multiple slots that can hold individual power supplies to support load sharing and fault tolerance.

This chapter describes the general features and physical characteristics of the power supply. It also covers important power consumption management information and includes a *Power Supply Management Worksheet*. The final sections of the chapter cover the steps required to insert and remove power supplies.

Features

Rating

There are two different power supplies available for the Alcatel 6000-series Wireless LAN Switch

- The standard 200 W Power Supply (OWA-6000-PS200)
This standard power supply is rated at 200 W total output and is auto-ranging to accept 90-135/ 170-264 VAC, at 50 to 60 Hz. Up to two 200 W power supplies can be installed in the Alcatel Wireless LAN Switch in power supply slots 1 and 3 only.

NOTE—The 200 W power supply cannot be installed in power supply slot 2.

- The optional 400 W Power Supply (OWA-6000-PS400)
This optional power supply is rated at 400 W total output and is auto-ranging to accept 85 to 264 VAC, at 50 to 60 Hz. Up to three 400 W power supplies can be installed in the Alcatel Wireless LAN Switch.

Load Sharing

Load sharing occurs when more than one power supply of the same rating are installed in the Alcatel Wireless LAN Switch and turned on. Load sharing divides the total power load of the switch among all available power supplies. Since the power supplies work together, the effective power capacity of the switch is increased with each additional power supply.

NOTE—When using more than power supply, verify that they are all of the same type. Do not mix 200 W and 400 W power supplies in the same chassis.

Redundancy

With power redundancy, the Alcatel Wireless LAN Switch can continue normal operation even when a power supply fails or is turned off. When multiple power supplies are installed, if one becomes unavailable (fails, or is turned off or removed) the remaining power supplies will attempt to provide full power for the switch. If the switch's total power load does not exceed the combined rated output of the remaining, operational power supplies, the switch will continue to operate.

NOTE—This feature depends on the number and type of modules installed in your Alcatel Wireless LAN Switch. For details, see [“Power Management” on page 27](#).

Hot Swap

Hot swapping should be performed by a trained technician. Hot swapping allows you to replace one failed power supply while the others provide full power. This makes it unnecessary to shut down the Alcatel Wireless LAN Switch during the replacement procedure.

Hot swapping is supported only when power redundancy is in effect. This requires that after the target power supply is removed, the switch's total power load does not exceed the combined rated output of the remaining power supplies.

NOTE—This feature depends on the number and type of modules installed in your Alcatel Wireless LAN Switch. For details, see [“Power Management” on page 27](#).

Physical Description

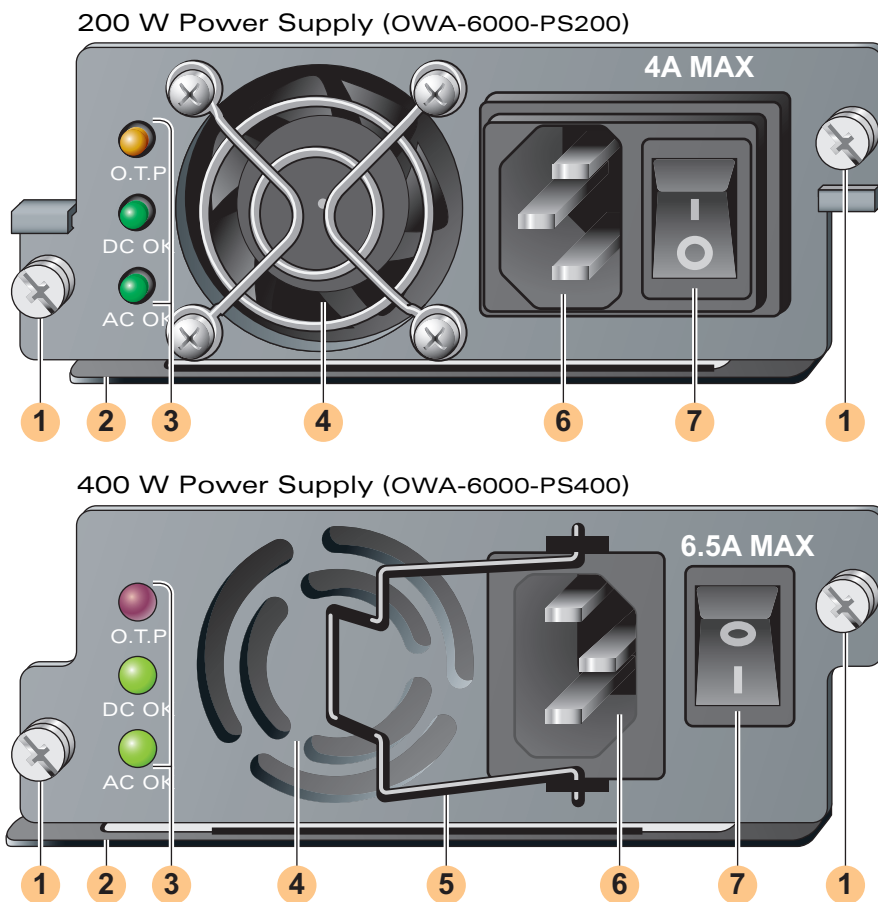


FIGURE 5-1 Alcatel 6000-series Power Supplies

1 Module Fastening Screws

These two captive fastening screws hold the power supply in place in the switch chassis.

2 Module Handle

This handle is used for removing or inserting the module into the switch chassis.



CAUTION—Do not use the power supply handle to lift or move the Alcatel Wireless LAN Switch. Serious damage could result.

3 Indicator LEDs

TABLE 5-1 200 W Power Supply LEDs

LED Name	Position	State	Description
Over Temp. Protection	Top	Off	Power supply temperature is okay.
		Amber	Power supply fan has failed or temperature is too high.
DC Okay	Middle	Green	DC power output is okay.
		Off	DC power output is not within tolerance.
AC Okay	Bottom	Green	AC power input is okay.
		Off	AC power input is not within tolerance.

TABLE 5-2 400 W Power Supply LEDs

LED Name	Position	State	Description
Over Temp. Protection	Top	Off	Power supply temperature is okay.
		Red	Power supply fan has failed or temperature is too high.
DC Okay	Middle	Green	DC power output is okay.
		Red	DC power output is not within tolerance.
AC Okay	Bottom	Green	AC power input is okay.
		Red	AC power input is not within tolerance.

4 Air Intake Vent

This air intake vent helps the internal fan cool the power supply during operation. To prevent blockage, keep all material at least 10 cm (4 inches) from the vent.

5 Power Cord Retaining Clip (optional 400 W OWA-6000-PS400 only)

This clip fits over the power cord once the plug has been inserted into the power input socket. It helps prevent the power cord from being pulled out accidentally.

6 Power Input Socket

The power input socket accepts a power cord with a standard IEC320 connector. For proper safety and performance, the power cord must be rated to 10 A and conform to grounded electrical standards in the country where the product is operated.

7 Power Switch

The power switch has two states: Off (●) and On (I).

Power Management

Power Requirements Worksheet

Use this worksheet to determine the power required by your Alcatel Wireless LAN Switch. Use a separate copy for each system deployed in your network.

Name of Alcatel Wireless LAN Switch

Location

TABLE 5-3 Alcatel 6000-series Power Requirements

Component Name	Model Number	Power Rating	x	Number of Units	=	Power Subtotal
Alcatel 6000-series Fan Tray	OWA-6000-FT	12 W	x	1	=	12 W
Alcatel 6000 Supervisor Card with Crypto Accelerator	OWA-SC-2	50 W	x		=	
Alcatel 6000 Line Card (24 FE and 2 GE ports)	OWA-LC-2G 24F	40 W	x		=	
Alcatel 6000 Line Card (24 FE+SPOE and 2 GE ports)	OWA-LC-2G 24FP	40 W	x		=	
Alcatel 2 GE Line Card with support for two GBIC uplinks.)	OWA-LC-2G	40 W	x		=	
Each Alcatel AP Drawing POE from a Line Card	AP60, AP61, AP70	10 W	x		=	
Each Cisco 1200 AP Drawing POE from a Line Card		12 W	x		=	
Each other Access Point Drawing POE from a Line Card		W	x		=	

Total power required by the switch in Watts: _____

NOTE—Recalculate these numbers whenever components are added to the system.

Required Power Supplies

Once you've calculated the total power required by your Alcatel Wireless LAN Switch, you can easily determine the type and number of power supplies required:

TABLE 5-4 Required Power Supplies

Total Power Required	Power Supplies Required	Required for Redundancy
200 W or less	One 200 W supply, or One 400 W supply	Two 200 W supplies, or Two 400 W supplies
400 W or less	Two 200 W supplies, or One 400 W supply	Two 400 W supplies
800 W or less	Two 400 W supplies	Three 400 W supplies
1200 W or less	Three 400 W supplies	Not supported
Over 1200 W	Not supported	Not supported

Verify that the switch has enough power supplies to handle the expected load.

Maximum Power Load

The maximum power load depends on the type and number of power supplies installed. Use these worksheets to calculate the total power demand placed on your site's electrical circuits:

TABLE 5-5 Maximum Load using 200 W Power Supplies

Component Description	Power	x	Factor	=	Power Subtotal
Total power required (from worksheet on page 27)	W	x	1.3 safety	=	
200 W Power Supply (OWA-6000-PS200) overhead	8 W	x	units	=	

Maximum power load in Watts: _____

TABLE 5-6 Maximum Load using 400 W Power Supplies

Component Description	Power	x	Factor	=	Power Subtotal
Total power required (from worksheet on page 27)	W	x	1.25 safety	=	
400 W Power Supply (OWA-6000-PS400) overhead	26 W	x	units	=	

Maximum power load in Watts: _____

Verify that the maximum power load does not exceed the capacity of your electrical circuits.

Inserting a Power Supply



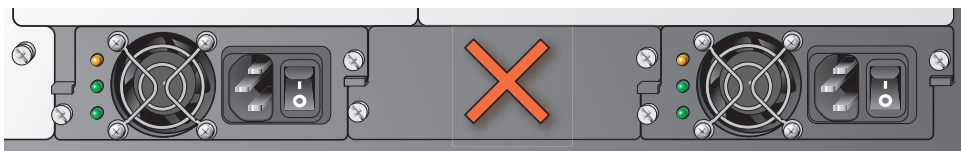
CAUTION—This procedure should be performed by a trained technician.

- 1 Verify you understand the procedure and all precautions.

Before beginning, read the entire procedure. Verify you understand all the precautions in these steps as well as those on [page 6](#).

- 2 Select a power supply slot for the power supply.

- The 200 W power supply (OWA-6000-PS200) can be installed in power supply slots 1 and 3 only.



- The 400 W power supply (OWA-6000-PS400) can be installed in any power supply slot:

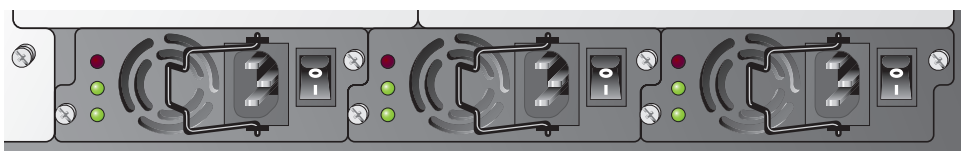


FIGURE 5-2 Alcatel 6000-series Power Supply Slots

NOTE—When using more than one power supply, verify that they are all of the same type. Do not mix 200 W and 400 W power supplies in the same chassis.

If replacing a previously installed power supply, first see [“Removing a Power Supply”](#) on [page 33](#).

If you are installing a power supply in an empty slot, you may have to remove the blank cover plate first. To do this, use a #2 Phillips or cross-head screwdriver. Turn the captive fastening screws on the faceplate counter-clockwise until they are loose (they cannot be completely removed). Remove the cover plate and store it in a safe place.

- 3 Verify the power switch on the power supply to be installed is Off (●).



CAUTION—Never insert or remove a power supply while its power switch is in the On (I) position. Verify the power switch is Off (●) first.

- 4 Insert the power supply into the chassis.

Grasp the power supply by the handle, keeping the LEDs on the left and power switch on the right. Align the back of the module with the guide-rails in the chassis power supply slot and gently slide the module toward the backplane. Do not force the module; it should slide in easily most of the way. There may be moderate resistance when the power supply meets the connectors at the back of the chassis. Press firmly to engage the connectors, but do not use excessive force.

- 5 Secure the power supply.

Use the screwdriver to push in the module’s captive fastening screws and turn them clockwise until moderate resistance is felt. Do not over-tighten.

- 6 Attach the power cord to the power supply.

Plug an appropriate power cord into the power input socket. The socket accepts a power cord with a standard IEC320 plug.



CAUTION—For proper safety and performance, the power cord must be rated to 10 A and conform to grounded electrical standards in the country where the product is operated.

NOTE—On the 400 W power supply (OWA-6000-PS400), swing the cord retaining clip to the left before attaching the power cord.

7 Secure the power cord (optional 400 W OWA-6000-PS400 only).

When the power cord is attached, swing the power cord retaining clip to the right as shown in [Figure 5-3](#). This will hold the plug in place and help prevent it from being removed accidentally.

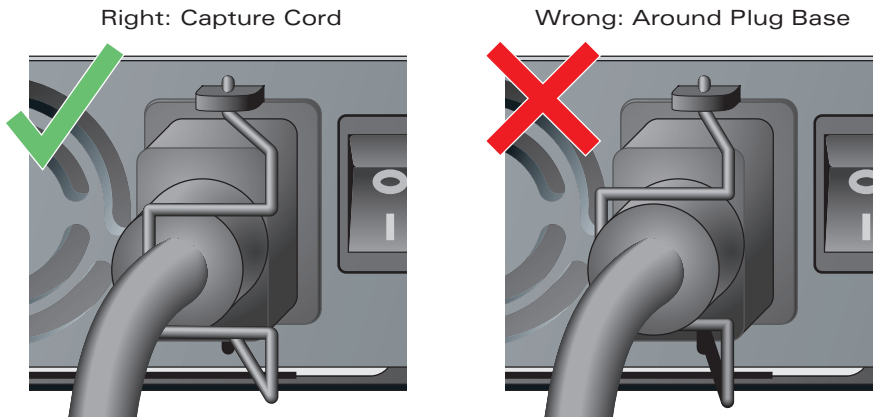


FIGURE 5-3 Using the Power Cord Retaining Clip

8 Attach the power cord to a proper electrical outlet.

Verify that your site's electrical systems can handle the switch's power load.

- Each standard power supply (OWA-6000-PS200) is rated at 200 W total and is auto-ranging to accept 90-132/ 170-264 VAC, at 50 to 60 Hz.
- Each optional power supply (OWA-6000-PS400) is rated at 400 W total and is auto-ranging to accept 85 to 264 VAC, at 50 to 60 Hz.

Depending on the switch's total power load, you may be required to increase the capacity of your site's electrical systems. See ["Maximum Power Load"](#) on [page 29](#) for details.

NOTE—Use of a power line conditioner or Uninterruptable Power Supply (UPS) can decrease or mitigate problems caused by power service fluctuations. Verify that the output of any power shaping device is compatible with the Alcatel Wireless LAN Switch power supplies.



CAUTION—For safety reasons, verify the power outlets and plugs are within easy reach of the operator and can be quickly disconnected if necessary.

Removing a Power Supply



CAUTION—This procedure should be performed by a trained technician.

- 1 Verify you understand the procedure and all precautions.

Before beginning, read the entire procedure. Verify you understand all the precautions in these steps as well as those on [page 6](#).

- 2 Verify the power switch on the power supply to be removed is in the Off (●) position.



CAUTION—Never insert or remove a power supply while its power switch is in the On (I) position. Verify the power switch is Off (●) first.

- 3 Unplug the power supply to be removed.

If using the power cord retaining clip, first swing it to the left and free of the plug. Then remove the plug.

- 4 Remove the power supply.

Use a #2 Phillips or cross-head screwdriver to turn the power supply's captive fastening screws counter-clockwise until they are loose (they cannot be completely removed). Firmly grasp the handle of the power supply and carefully pull the module out of the switch's power supply slot.

- 5 Cover blank slots.

For safety considerations, as well as to promote proper air flow for cooling and to prevent dust from entering the switch chassis, cover any unoccupied slot with a blank cover plate.

CHAPTER 6

The Supervisor Card

The Aruba OmniAccess Supervisor Card I

The Aruba 5000 Supervisor Card (OWA-SC-1) serves as a switching hub, performs the frame processing functions, and supervises the data switching functions of all the other modules in the Alcatel Wireless LAN Switch.

This chapter describes the general features and physical description of the supervisor card, details the compatible cables and connectors, and covers the steps needed to insert and remove the module.

Features

Hot Swap

Hot swapping should be performed by a trained technician. Hot swapping allows the supervisor card to be replaced without shutting down the Alcatel Wireless LAN Switch.

External PCMCIA Drive

The supervisor card has an external interface that accepts PCMCIA type II cards. This card slot can be used to manually boot the Alcatel Wireless LAN Switch and to upgrade or replace the system software as necessary.

Upgradable Firmware

The supervisor card firmware can be easily upgraded as future software releases are made available. Upgrades can be installed locally using the built-in PCMCIA drive or console or management port, or remotely using TFTP. See the *Aruba AirOS User's Guide* for details.

Physical Description

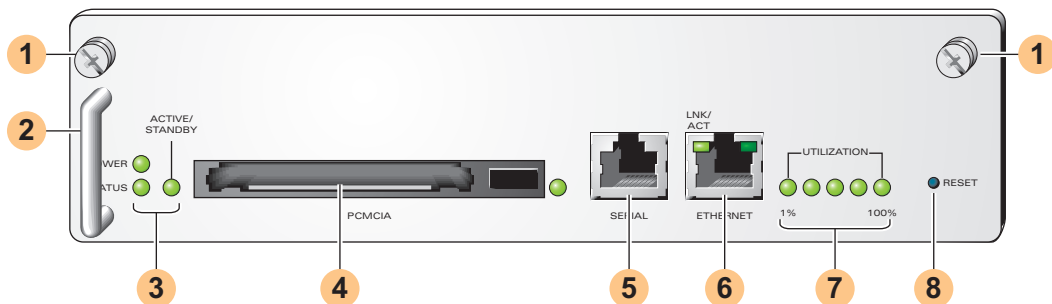


FIGURE 6-1 The Supervisor Card

1 Module Fastening Screws

These captive screws are used for securing the module into its slot in the switch chassis.

2 Module Handle

This handle is used for removing or inserting the module into the switch chassis.



CAUTION—Do not use the Supervisor Card Module handle for lifting or moving the Alcatel Wireless LAN Switch. Serious damage could result.

3 Indicator LEDs

TABLE 6-1 Supervisor Card LEDs

LED	State	Description
Power	Green	Module is receiving proper DC power.
	Off	Module is powered off.
Status	Green	Module has booted and is functioning properly.
	Off	Module is loading software.
	Amber	Module has loaded software and is initializing.
	Red	Module has failed.
Active/Standby	Green	Module is in active mode.
	Amber	Module is in standby mode.
	Off	Module has not yet determined an operating mode.

4 PCMCIA Drive

The PCMCIA drive accepts PCMCIA type II cards. The card may contain a default image and initial boot configurations. It can also be used to upgrade the software in the Alcatel Wireless LAN Switch.

The LED to the immediate right of the drive provides the following PCMCIA status information:

TABLE 6-2 PCMCIA Drive LED

Status	Description
Off	The drive is not in use or power is off.
Green	The drive is accessing an inserted PCMCIA type II card.

To eject a card, press the ejector button located at the right-hand side of the drive.

5 Serial Port

This port is for connecting a local management console. It is required to access the text-based Command-Line Interface (CLI) for initial configuration of the Alcatel Wireless LAN Switch. It can also be used for management, troubleshooting, and to enable the 10/100 Mbps Ethernet management port for higher-level management functions.

The port accepts an RS-232 serial cable with an RJ-45 male connector. See [page 39](#) for more port and cable specifications.



CAUTION—Do not connect Access Points to the serial console port. The serial port is designed to connect to RS-232-only devices. Non-RS-232 devices such as Access Points will cause the Switch to fail and can cause damage.

See the *Aruba AirOS User's Guide* for information on using the features available through this port.

6 10/100 Mbps Ethernet (FE) Management Port

When enabled, the FE management port provides 10/100 Mbps Ethernet access to the Alcatel Wireless LAN Switch CLI, SNMP, and Web interface for complete system management and troubleshooting. It can also be used to connect to a separate management network.

The management port accepts a 4- or 8-conductor Category 5 UTP Ethernet cable with an RJ-45 male connector. A straight-through cable is required for connection to a network port. A crossover cable is required for connection to a management workstation. See [page 41](#) for more port and cable specifications.

The management port has an LNK/ACT LED on its left side. During operation, the LED provides the following status information:

TABLE 6-3 Management Port LNK/ACT LED

Status	Description
Off	No link on the 10/100 Mbps Ethernet management port.
Green	Link detected on the 10/100 Mbps Ethernet management port.
Flashing	Transmitting or receiving data across the 10/100 Mbps Ethernet management port.

NOTE—Ethernet traffic on this port is *out-of-band*; this port is segmented from regular switching and routing functions and cannot be used as a network data port.

See the *Aruba AirOS User's Guide* for information on using the features available through this port.

7 Utilization LEDs

The supervisor card has a bank of five utilization LEDs. While booting, these LEDs light in sequential fashion.

During operation, these LEDs light to indicate the level of activity in a functioning module. Each LED from left to right represents an increment of 20% in the activity of the supervisor card. When all five LEDs are lit, the SCM is functioning at 100% capacity.

The right-most of the lit LEDs will blink to verify the supervisor card is operating properly. No LEDs will be lit if the module is in standby mode or not functioning.

8 Reset button

Only push the reset button when directed to do so by Aruba technical support.

Port & Cable Specifications

Serial Port

The serial port is located on the front panel of the supervisor card. The port's RJ-45 female connector accepts an RS-232 serial cable with a male connector. Pin-outs are shown in [Figure 6-2](#):

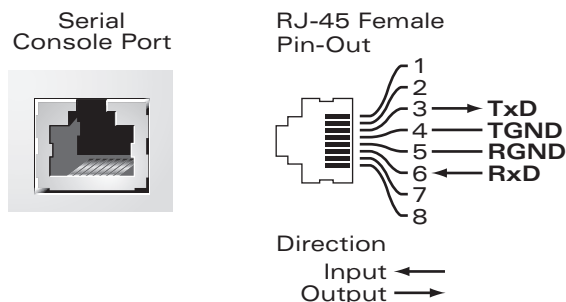


FIGURE 6-2 Serial Port

Communication settings for the console port are specified in [Table 6-4](#) :

TABLE 6-4 Console Terminal Settings

Baud Rate	Data Bits	Parity	Stop Bits	Flow Control
9600	8	None	1	None



CAUTION—Do not connect Access Points to the serial console port. The serial port is designed to connect to RS-232-only devices. Non-RS-232 devices such as Access Points will cause the Switch to fail and can cause damage.

Serial Port Adapter

You can adapt a DB-9 male terminal port for the required RS-232 serial cable using the included adapter. Pin-outs are show in [Figure 6-3](#):

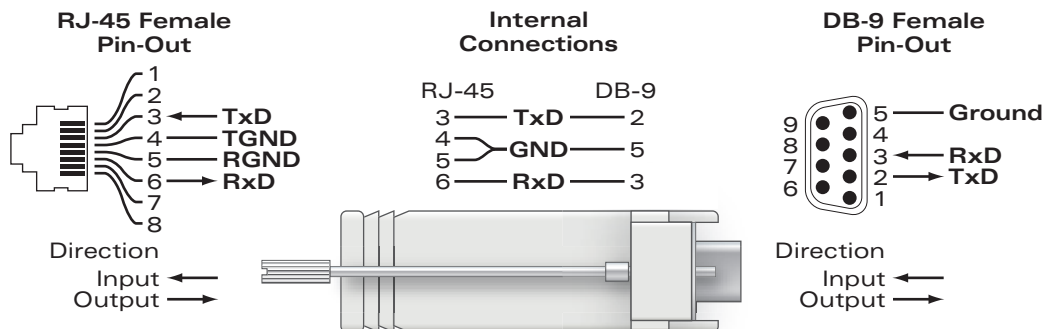


FIGURE 6-3 Serial Port Adapter

FE Management Port

The FE management port provides a 10/100 Mbps Ethernet connection to a management network. The RJ-45 female connector port pin-outs are shown in [Figure 6-4](#):

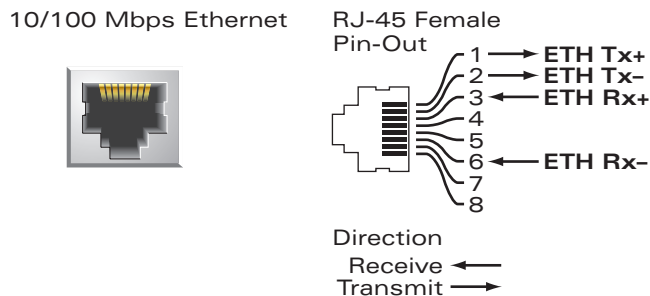


FIGURE 6-4 Management Port

The port accepts a 4- or 8-conductor Category 5 (or better) UTP Ethernet cable with an RJ-45 male connector. A straight-through cable is required for connection to a network port. A crossover cable is required for connection to a management workstation.

For cables that run through plenums or air-handling spaces as described in NEC (2002) Article 300.22(C), the cable should be suitable under NEC Article 800.50 and marked accordingly for use in plenums and air-handling spaces with regard to smoke propagation, such as CL2-P, CL3-P, MPP or CMP. Be sure to install cables in accordance with all applicable local regulations and practices.

Inserting a Supervisor Card



CAUTION—This procedure should be performed by a trained technician.

The supervisor card is hot-swappable and can be inserted into the Alcatel Wireless LAN Switch chassis while system power is on or off.

- 1 Verify you understand the procedure and all precautions.

Before beginning, read the entire procedure. Verify you understand all the precautions in these steps as well as those on [page 6](#).

2 Prepare the supervisor slot.

The first supervisor card should be installed in Slot 0 of the Alcatel Wireless LAN Switch chassis. A second optional supervisor card can be installed in Slot 1 if desired. Supervisor cards cannot be installed in Slot 2 or Slot 3.



CAUTION—Verify that the fastening screws for the module above the supervisor card slot are fully secured. If the module in Slot 2 or Slot 3 is loose, it could interfere with the new module insertion and possibly damage the components.

If replacing a previously installed module, first see [“Removing a Supervisor Card”](#) on [page 43](#).

To install a module in an empty bay, first remove the blank cover plate. To do this, use a #2 Phillips or cross-head screwdriver to loosen both of the fastening screws on the blank cover plate. The screws loosen with counter-clockwise rotation but are captive and cannot be fully removed.

3 Carefully insert the supervisor card into the chassis slot.

Hold the supervisor card by the handle. Align the rear of the card with the guide-rails in the chassis slot and gently slide the module toward the backplane. Do not force the module; it should slide in easily most of the way.

4 Engage the supervisor card.

There may be moderate resistance when the supervisor card meets the connectors in the backplane. Press firmly so that the connectors at the back of the module engage with the backplane, but do not use excessive force.

If the system is powered up, the module’s Power LED will light up green if the supervisor card is inserted properly.

5 Secure the supervisor card.

Use a #2 Phillips or cross-head screwdriver to push in the captive fastening screws and turn them clockwise until moderate resistance is felt. Do not over-tighten.

6 Connect the appropriate network cables.

Supervisor card ports are described under [“Physical Description”](#) starting on [page 36](#).

Removing a Supervisor Card



CAUTION—This procedure should be performed by a trained technician.

The supervisor card is hot-swappable and can be removed from the Alcatel Wireless LAN Switch chassis while system power is on or off.

- 1 Verify you understand the procedure and all precautions.

Before beginning, read the entire procedure. Verify you understand all the precautions in these steps as well as those on [page 6](#).

- 2 Disconnect all cables attached to the supervisor card.
- 3 Loosen the module's fastening screws.

At the front of the Alcatel Wireless LAN Switch, use a #2 Phillips or cross-head screwdriver to loosen both of the fastening screws on the faceplate of the installed supervisor card. The screws loosen with counter-clockwise rotation, but are captive and cannot be fully removed.

- 4 Remove the supervisor card.



CAUTION—Verify that the fastening screws for the module above the supervisor card slot are fully secured. If a module in an upper slot (Slot 2 or 3) is loose, it could interfere with the removal of the supervisor card and possibly damage the components.

Grasp the module handle firmly and draw the supervisor card forward from its slot. There may be moderate resistance as the module comes free from its connections with the chassis backplane, but do not use excessive force. Once disengaged from the backplane, the supervisor card should easily slide out the rest of the way.

- 5 Cover blank slots.

For safety considerations, as well as to promote proper airflow for cooling and to prevent dust from entering the switch chassis, cover any unoccupied slot with a blank cover plate.

The Aruba OmniAccess Supervisor Card II

The Aruba 6000 Supervisor Card (OWA-SC-2) is the same as the Aruba 5000 Supervisor Card (OWA-SC-1) except the OWA-SC-2 crypto accelerator consists of 16 cores— compared with eight supported by the OWA-SC-1. The OWA-SC-2 supports 256 Mbytes of memory—compared with 128 Mbytes of memory for the OWA-SC-1.

CHAPTER 7

The Line Cards

Alcatel 5000 and 6000 Line Cards provide network interfaces for connecting the Alcatel 5000 and 6000 Wireless LAN Switch to Access Points (APs) and the wired LAN. The line cards aggregate and route traffic between the switch's Ethernet ports under the direction of the switch's supervisor card.

This chapter describes the general features and physical characteristics of the various Alcatel line cards. It also details the compatible cables and connectors and covers the steps required to insert or remove a line card.

OAW-LC-2G24F Features

High Port Density

Each Alcatel OAW-LC-2G24F line card has 24 10/100 Mbps Ethernet (FE) ports and 2 Gigabit Ethernet (GE) ports. Up to 3 line cards can be installed in the switch chassis, for a total of 72 FE and 6 GE ports per switch.

Hot Swap

Hot swapping should be performed by a trained technician. Hot swapping allows a line card to be replaced without shutting down the system.

Optional Serial & Power Over Ethernet

On the Alcatel SPOE Line Card (OAW-LC-2G24FP), each FE port supports RS-232 Serial communications and IEEE 802.3af Power Over Ethernet (SPOE).

When a compatible Power Over Ethernet (POE) device (such as the Alcatel Wireless Access Point) is connected to an FE+SPOE port, the port can provide operating power to that device through the connected Ethernet cable. This allows APs to be installed in areas where electrical outlets are unavailable, undesirable, or not permitted, such as in the plenum and air handling spaces. The line card automatically detects when compatible POE devices are connected and require power.

The SPOE Line Card card also provides serial connectivity over the same Ethernet cable, allowing convenient access to device console interfaces.

Special cables and adapters may be necessary to use SPOE features with some equipment. See [page 49](#) for FE cable and port specifications.

Physical Description

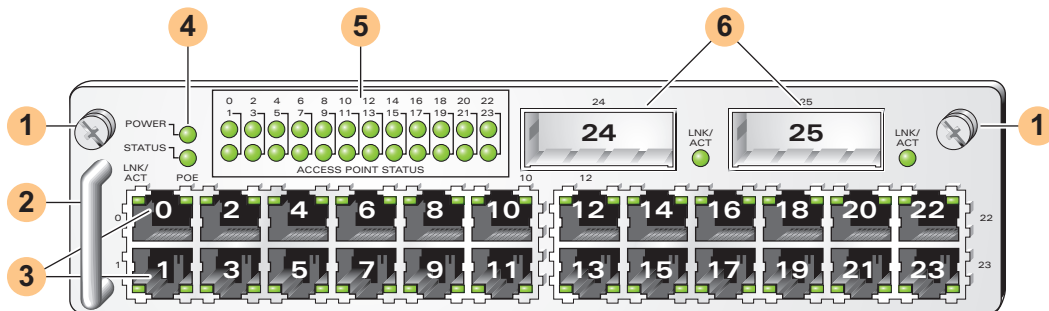


FIGURE 7-1 Alcatel Line Card Module

1 Module Fastening Screws

These captive fastening screws are used for securing the module in the switch chassis.

2 Module Handle

This handle is used for removing or inserting the module into the switch chassis.



CAUTION—Do not use the line card handle to lift or move the Alcatel Wireless LAN Switch. Serious damage could result.

3 24 FE Ports

These ports are used to connect APs and wired LAN segments to the Alcatel Wireless LAN Switch. These ports provide 10/100 Mbps Ethernet connectivity, and in some cases, power and serial connectivity as well. See [page 49](#) for port and cable specifications.

A LNK/ACT LED

Each FE port has its own LNK/ACT LED, located at the left side of the port. During operation, these LEDs provide the following status information:

TABLE 7-1 FE LNK/ACT LED

Status	Description
Off	No Ethernet link on the port.
Green	An Ethernet link has been established on the port, but no data is currently being transmitted or received.
Flashing Green	The port is transmitting or receiving data. The flashing rate is proportional to your network activity.
Amber	The Ethernet link on the port is encountering errors.

B POE LED

This LED is supported only on line cards that support POE (such as OAW-LC-2G24FP) and provides the following POE status information:

TABLE 7-2 FE POE LED

Status	Description
Off	The port is disabled or the attached device has not requested power. POE is not being provided by the port.
Green	POE is being provided to the attached device.
Amber	The attached device has requested power, but POE is not being provided by the port.

4 Module Indicator LEDs

A Power LED

This LED is green when the line card is properly installed and the system is powered up.

B Status LED

During operation, the Status LED provides the following information:

TABLE 7-3 Line Card Status LED

Status	Description
Off	The line card is powered off or initializing.
Green	The line card is operating properly.
Amber	The line card is being initialized.
Red	The line card has failed.

5 Access Point Status LEDs

Each LED represents the status of APs connected to a specific port on the switch. During operation, the LEDs provide the following information:

TABLE 7-4 Line Card AP Status LED

Status	Description
Red (solid)	An AP on this port has failed (highest precedence).
Red (flashing)	An air monitor on this port has detected an unsecured AP. The AP is attached to your network but is not listed in the switch security policies. If security policies are enabled, clients are not granted access to your network through the unsecured AP.
Green (flashing)	An air monitor on this port has detected interference. The interfering device (AP or other radio source) has been detected by your valid APs, but has no wired presence on your network.
Amber (solid)	Load balancing is enabled on this port or an AP has reached the maximum number of clients it is configured to support.
Green (solid)	All detected APs on this port are operating as expected.
Off	No AP is detected on the port (lowest precedence)

The LED states in [Table 7-4](#) are listed in order of precedence (highest to lowest). If more than one AP is connected to the port, the state with the highest precedence is displayed.

6 2 GE ports

The GE ports can provide high-bandwidth uplinks between the Alcatel Wireless LAN Switch and the wired LAN. The GE port sockets accept a variety of Gigabit Interface Converters (GBICs) for versatility in selecting optical and electrical interfaces. See [page 52](#) for port and cable specifications.

Each GE port has its own LNK/ACT LED, located to the right of the port. During operation, these LEDs provide the following status information:

TABLE 7-5 GE LNK/ACT LED

Status	Description
Off	No Ethernet link on the port.
Green	An Ethernet link has been established on the port, but no data is currently being transmitted or received.
Flashing Green	The port is transmitting or receiving data. The flashing rate is proportional to your network activity.
Amber	The Ethernet link on the port is encountering errors.

Port & Cable Specifications

FE Ports

There are two models of Alcatel 6000-series Line Card, each with different port characteristics:

- The Alcatel 6000-series Line Card (OAW-LC-2G24F) has 24 FE ports. The FE ports provide 10/100 Mbps Ethernet connections to APs and wired LAN segments. No power or serial connectivity is provided by the ports on this line card.
- The Alcatel 6000-series SPOE Line Card (OAW-LC-2G24FP) has 24 FE+SPOE ports. When connected directly to an IEEE 802.3af POE compatible device, the port will provide power and data connectivity through the same cable. For devices that support compatible serial wiring or include an appropriate serial breakout adapter, such as the Alcatel Wireless Access Point, the port will provide serial connectivity as well as power and data.

NOTE—Each FE+SPOE line card increases the total power load of the Alcatel Wireless LAN Switch. See [“Power Management”](#) on [page 27](#) to verify your systems meet their power requirements.

Pin Outs

The RJ-45 female connector pin-outs for each type of line card are shown in [Figure 7-2](#):

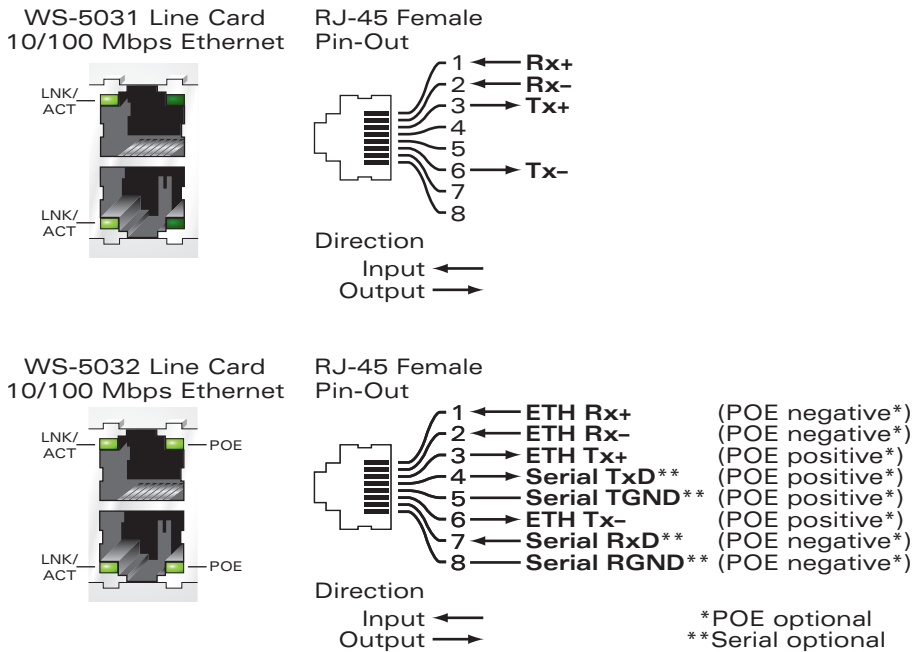


FIGURE 7-2 Line Card FE Port Pin-outs

Cables

The type of cable required for each port depends on the device being connected:

- **Direct connection to a SPOE compatible device**

On the SPOE Line Card (OAW-LC-2G24FP), all ports support SPOE. This requires an 8-conductor Category 5 UTP Ethernet cable with an RJ-45 male connector. A straight-through cable is required to preserve POE voltage polarity.

The port should be connected to the intended device either directly or using a SPOE adapter with no intervening hubs, routers, switches, or other network equipment.

Alcatel SPOE adapters separate the serial and FE portions of the cable and route them to their individual ports on the connected device. There are two adapter models:

- CA-SPOE-ADAPT-1 adapts the Ethernet cable for DB-9 serial and RJ-45 FE devices.
- CA-SPOE-ADAPT-2 adapts the Ethernet cable for RJ-45 serial and RJ-45 FE devices.

The Alcatel SPOE adapters are compatible with the following APs:

TABLE 7-6 Alcatel SPOE Adapter Compatibility

AP Make and Model	POE	Serial	Alcatel SPOE Adapter
Alcatel APs	Yes	Yes	CA-SPOE-ADAPT-1
Cisco 340	No	Yes	CA-SPOE-ADAPT-1
Cisco 350	Yes	Yes	CA-SPOE-ADAPT-1
Cisco 1100	Yes	No	CA-SPOE-ADAPT-1
Cisco 1200	Yes	Yes	CA-SPOE-ADAPT-2
SMC EZ Connect 2755W	No	Yes	CA-SPOE-ADAPT-1

- **Direct connection to a POE compatible device.**

On the SPOE Line Card (OAW-LC-2G24FP), all ports support POE. This requires a 4- or 8-conductor Category 5 UTP Ethernet cable with an RJ-45 male connector. A straight-through cable is required to preserve POE voltage polarity.

For POE, the port should be connected directly to the intended device with no intervening hubs, routers, switches, or other network equipment.

- **Connection to a regular 10/100 Mbps Ethernet segment**

This requires a 4- or 8-conductor Category 5 UTP Ethernet cable with an RJ-45 male connector. The port detects MDI/MDX and automatically adjusts for straight-through or crossover cables.

The maximum length for FE cables is 100 meters (325 feet).

For cables that run through plenums or air-handling spaces as described in NEC (2002) Article 300.22(C), the cable should be suitable under NEC Article 800.50 and marked accordingly for use in plenums and air-handling spaces with regard to smoke propagation, such as CL2-P, CL3-P, MPP or CMP.

Be sure to install cables in accordance with all applicable local regulations and practices.

Gigabit Ethernet Ports

The GE ports provide high-bandwidth uplinks between the Alcatel Wireless LAN Switch and the wired LAN. The GE port sockets accept a variety of Gigabit Interface Converters (GBICs) for versatility in selecting optical and electrical interfaces.

Approved GBICs

Approved GBICs are typically selected when the line card is purchased. Although the modules are user-replaceable, for continued safety and reliability only approved modules from approved vendors should be used.

The following Class 1 GBICs have been tested with this product:

TABLE 7-7 Approved GBICs

GBIC Type	Vendor	Module ID
1000BASE-T (copper)	Alcatel	OWA-GBIC-T
	Molex	74740-0001
1000BASE-SX (optical)	Alcatel	OWA-GBIC-SX
	Delta	GBIC-1250A3FS
	OCP	DTR-1250-MM-GB
	Agilent	HFBR-5601
1000BASE-LX (optical)	Alcatel	OWA-GBIC-LX
	OCP	DTR-1250-SM-GB-L1

For more current information on modules of other types and from other vendors, visit our Web site or contact customer support (see [page vii](#)).

Replacing a GBIC

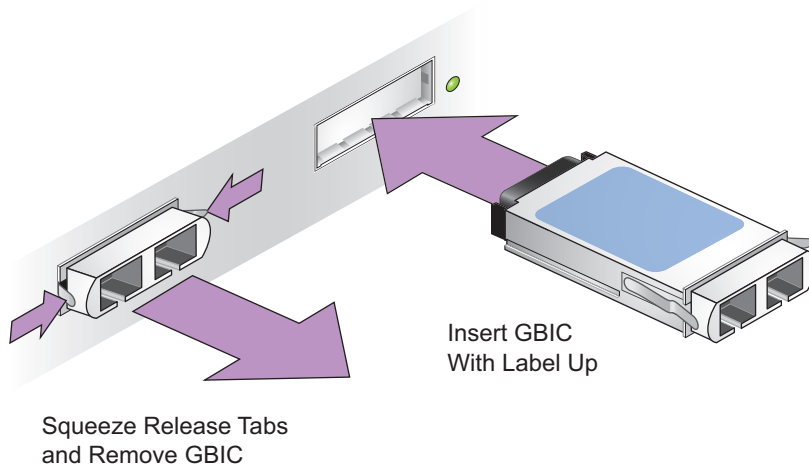


FIGURE 7-3 GBIC Removal and Insertion

Cables

The following table lists the cable characteristics for approved GBICs:

TABLE 7-8 GE Cable Characteristics

GBIC Type	Characteristics	
1000BASE-T (copper)	Cable:	Category 5 UTP
	Connect or:	RJ-45
	Range:	Up to 100 m (325 feet)
1000BASE-SX (optical) Shortwave 850 nm	Cable:	62.5 μ m multimode fiber
	Connect or:	SC-type fiber optic
	Range:	Up to 260 m (850 feet)

TABLE 7-8 GE Cable Characteristics

GBIC Type	Characteristics
1000BASE-LX	Cable: 50 μ m multimode fiber
	Connect or: SC-type fiber optic
	Up to 550 m (1800 feet)
	Range:
1000BASE-LX	Cable: 9-10 μ m singlemode fiber
	Connect or: SC-type fiber optic
	Up to 10km (6.21 miles)
	Range:
1000BASE-LX	Cable: 62.5 μ m multimode fiber
	Connect or: SC-type fiber optic
	Up to 550 m (1800 feet)
	Range:



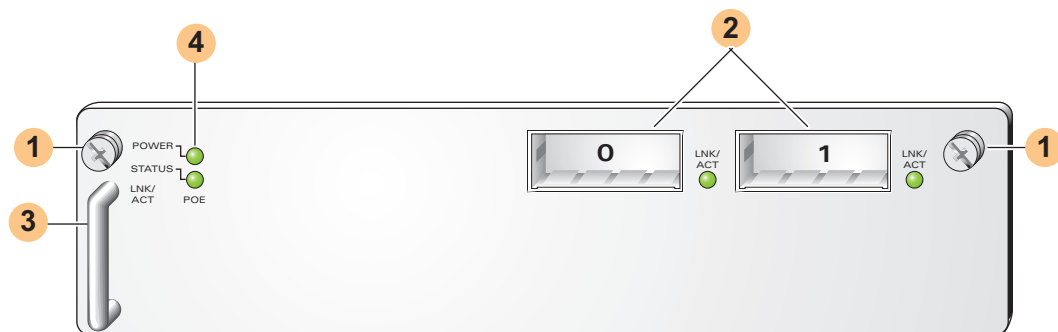
CAUTION—Be sure to follow the instructions and notifications in “Laser Notice” on page iv.

OAW-LC-2G Features

These instructions explain how to install an Alcatel OAW-LC-2G Wireless LAN switch line card. This Alcatel 6000-series Line Card has two Gigabit Ethernet (GE) ports.

No power or serial connectivity is provided by the ports on this line card.

Physical Description



Alcatel Line Card II Module

- 1 Module Fastening Screws
- 2 2 GE ports

Each GE port has its own LNK/ACT LED, located to the right of the port. During operation, these LEDs provide the following status information:

TABLE 8 GE LNK/ACT LED

Status	Description
Off	No Ethernet link on the port.
Green	An Ethernet link has been established on the port, but no data is currently being transmitted or received.
Flashing Green	The port is transmitting or receiving data. The flashing rate is proportional to your network activity.
Amber	The Ethernet link on the port is encountering errors.

For information on connecting the GE ports, see [“Gigabit Ethernet Ports”](#).

- 3 Module Handle

This handle is used for removing or inserting the module into the switch chassis.



CAUTION—Do not use the line card handle to lift or move the Alcatel Wireless LAN Switch. Serious damage could result.

4 Module Indicator LEDs

A Power LED

This LED lights green when the line card is properly installed and the system is powered up.

B Status LED

During operation, the Status LED provides the following information:

TABLE 9 Line Card Status LED

Status	Description
Off	The line card is powered off or initializing.
Green	The line card is operating properly.
Amber	The line card is being initialized.
Red	The line card has failed.

5 Access Point Status LEDs

Each LED represents the status of APs connected to a specific port on the switch. During operation, the LEDs provide the following information:

TABLE 10 Line Card AP Status LED

Status	Description
Red (solid)	An AP on this port has failed (highest precedence).
Red (flashing)	An air monitor on this port has detected an unsecured AP. The AP is attached to your network but is not listed in the switch security policies. If security policies are enabled, clients are not granted access to your network through the unsecured AP.
Green (flashing)	An air monitor on this port has detected interference. The interfering device (AP or other radio source) has been detected by your valid APs, but has no wired presence on your network.
Amber (solid)	Load balancing is enabled on this port or an AP has reached the maximum number of clients it is configured to support.
Green (solid)	All detected APs on this port are operating as expected.
Off	No AP is detected on the port (lowest precedence)

The LED states listed above are listed in order of precedence (highest to lowest). If more than one AP is connected to the port, the state with the highest precedence is displayed.

Inserting a Line Card



CAUTION—This procedure should be performed by a trained technician.

The line card is hot-swappable and can be inserted into the Alcatel Wireless LAN Switch chassis while system power is on or off. However, removing a line card on a live switch is service affecting and all traffic processing will stop until the replacement line card is installed and operating.

1 Verify you understand the procedure and all precautions.

Before beginning, read the entire procedure. Verify you understand all the precautions in these steps as well as those on [page 6](#).

2 Prepare the slot.

The first line card should be installed in Slot 2 of the Alcatel Wireless LAN Switch chassis. A second optional line card can be installed in Slot 3, and a third in Slot 1. A line card cannot be installed in Slot 0.



CAUTION—If installing a line card in Slot 1, verify that the fastening screws for the module in the slot above it are fully secured. If the module in Slot 3 is loose, it could interfere with the new module insertion and possibly damage the components.

If you are replacing a previously installed module, first see “[Removing a Line Card](#)” on page [page 59](#).

To install a module in a previously empty bay, remove the blank cover plate first. To do this, use a #2 Phillips or cross-head screwdriver to loosen both of the fastening screws on the blank cover plate. The screws loosen with counter-clockwise rotation, but are captive and cannot be fully removed.

3 Carefully insert the line card into the chassis slot.

Hold the line card by the handle. Align the rear of the card with the guide-rails in the chassis slot and gently slide the module toward the backplane. Do not force the module; it should slide in easily most of the way.

4 Engage the line card.

There may be moderate resistance when the line card meets the connectors in the backplane. Press firmly so that the connectors at the back of the module engage with the backplane, but do not use excessive force.

If the system is powered up, the module's Power LED will light up green if the line card is inserted properly.

5 Secure the line card.

Use a #2 Phillips or cross-head screwdriver to push in the captive fastening screws and turn them clockwise until moderate resistance is felt. Do not over-tighten.

6 Connect the appropriate network cables.

Line card ports are described under ["Physical Description"](#) starting on [page 46](#).

Removing a Line Card



CAUTION—This procedure should be performed by a trained technician.

The line card is hot-swappable and can be inserted into the Alcatel Wireless LAN Switch chassis while system power is on or off. However, removing a line card on a live switch is service affecting and all traffic processing will stop until the replacement line card is installed and operating.

- 1 Verify you understand the procedure and all precautions.

Before beginning, read the entire procedure. Verify you understand all the precautions in these steps as well as those on [page 6](#).

- 2 Disconnect all cables attached to the line card.
- 3 Loosen the module's fastening screws.

At the front of the Alcatel Wireless LAN Switch, use a #2 Phillips or cross-head screwdriver to loosen both of the fastening screws on the faceplate of the installed line card. The screws loosen with counter-clockwise rotation, but are captive and cannot be fully removed.

- 4 Remove the line card.



CAUTION—If removing a line card from Slot 1, verify that the fastening screws for the module in the slot above it are fully secured. If the module in Slot 3 is loose, it could interfere with the module removal and possibly damage the components.

Grasp the module handle firmly and draw the line card forward from its slot. There may be moderate resistance as the module comes free from its connections with the chassis backplane, but do not use excessive force. Once disengaged from the backplane, the line card should easily slide out the rest of the way.

- 5 Cover blank slots.

For safety considerations, as well as to promote proper airflow for cooling and to prevent dust from entering the switch chassis, cover any unoccupied slot with a blank cover plate.

APPENDIX A

Specifications

Physical

TABLE A-1 Physical Specifications

Item	Measurement
Size	Height 14.9 cm (5.85 inches) Width 44.2 cm (17.4 inches) Depth 31.8 cm (12.5 inches)
Weight	26.5 KG (58 lbs.) maximum 6.3 KG (13.9 lbs.) chassis and fan tray 4.4 KG (9.6 lbs.) each power supply 1.8 KG (4 lbs.) each supervisor or line card

Environment

TABLE A-2 Environmental Specifications

Item	Measurement
Temperature	Operating: 0 to 40 °C (32 to 104 °F) Storage: 0 to 50 °C (32 to 122 °F)
Humidity	5% to 95% (non-condensing)


Operation

TABLE A-3 Operational Specifications

Item	Measurement
Power Supplies	Model OWA-6000-PS200— Input: 90-132/170-264 VAC, 50-60 Hz Output: 48 V, 8 A
	Model OWA-6000-PS400— Input: 85-264 VAC, 50-60 Hz Output: 48 V, 8 A
Network Management	HTML Web-browser interface
Standards	IEEE 802.1x, IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX, IEEE 802.3ab 1000BASE-T, IEEE 802.3z 1000BASE-SX

Certifications

TABLE A-4 Certifications

Item	Measurement
Electromagnetic Compatibility	FCC Part 15 Class A CE ICES-003 Class A VCCI Class A (Japan)
	 The CE approval mark on back of the product indicates that it meets European Directive 89/336/EEC
	EN 55022 Class A (CISPR 22 Class A), EN55024, EN 61000-3-2, EN 61000-3-3 AS/NZS 3548 Class A
Safety	UL60950, CAN/CSA C22.2 No 60950, IEC/EN60950 Low Voltage Directive (LVD) 73/23/EEC 21 CFR Chapter 1, Subchapter J, Part 1040.10 (Laser Safety), IEC/EN 60825-1, EN 60825-2 (Laser Safety)

