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OmniSwitch 6600 Family Hardware Users Guide



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**This user guide documents OmniSwitch 6600 Family hardware, including chassis and associated components.
The specifications described in this guide are subject to change without notice.**

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This OmniSwitch product contains components which may be covered by one or more of the following U.S. Patents:

- U.S. Patent No. 6,339,830
- U.S. Patent No. 6,070,243
- U.S. Patent No. 6,061,368
- U.S. Patent No. 5,394,402
- U.S. Patent No. 6,047,024
- U.S. Patent No. 6,314,106
- U.S. Patent No. 6,542,507



A L C A T E L

**26801 West Agoura Road
Calabasas, CA 91301
(818) 880-3500 FAX (818) 880-3505
info@ind.alcatel.com**

**US Customer Support—(800) 995-2696
International Customer Support—(818) 878-4507
Internet—<http://eservice.ind.alcatel.com>**

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About This Guide

This *OmniSwitch 6600 Family Hardware Users Guide* describes your switch hardware components and basic switch hardware procedures.

Supported Platforms

This information in this guide applies to the following products:

- OmniSwitch 6624
- OmniSwitch 6600-U24
- OmniSwitch 6600-P24
- OmniSwitch 6648
- OmniSwitch 6602-24
- OmniSwitch 6602-48

OmniSwitch 6600 Family switches are next generation enterprise edge/workgroup switches. The OmniSwitch 6624 and 6602-24 offer 24 copper 10/100 ports, the 6600-P24 offers 24 copper 10/100 Power over Ethernet (PoE) ports, the 6648 and 6602-48 offer 48 copper 10/100 ports, and the 6600-U24 offers 24 fiber 100 ports.

In addition, OmniSwitch 6624/6600-U24/6648 switches have one expansion port that can be used for a Gigabit Ethernet uplink module and another expansion port that can be used for a Gigabit Ethernet uplink or a stacking module while the 6602-24/6602-48 switches offer fixed Gigabit Ethernet uplinks and fixed stacking ports. The stacking ports on all OmniSwitch 6600 Family switches allow two to eight OmniSwitch 6600 Family switches to be configured as one virtual chassis known as a *stack*.

Unsupported Platforms

The information in this guide does not apply to the following products:

- OmniSwitch (original version with no numeric model name)
- OmniSwitch 6800 Series
- OmniSwitch 7700
- OmniSwitch 7800
- OmniSwitch 8800
- Omni Switch/Router
- OmniStack
- OmniAccess

Who Should Read this Manual?

The audience for this users guide is network administrators and IT support personnel who need to configure, maintain, and monitor switches and routers in a live network. However, anyone wishing to gain knowledge on the OmniSwitch 6600 Family hardware will benefit from the material in this guide.

When Should I Read this Manual?

Read this guide as soon as you are ready to familiarize yourself with your switch hardware components. You should have already stepped through the first login procedures and read the brief hardware overviews in the *OmniSwitch 6600 Family Getting Started Guide*.

You should already be familiar with the very basics of the switch hardware, such as module LEDs and module installation procedures. This manual will help you understand your switch hardware components (chassis, cooling fans, power supplies, Gigabit uplink modules, stacking modules, backup power supplies) in greater depth.

What is in this Manual?

This users guide includes the following hardware-related information:

- Descriptions of stand-alone and stacked configurations.
- Descriptions of “Availability” features.
- Descriptions of chassis types (OS6624, OS6600-U24, OS6600-P24, OS6648, 6602-24, and OS6602-48).
- Instructions for mounting chassis.
- Descriptions of hardware components (status LEDs, Gigabit uplink modules, stacking modules, backup power supplies, MiniGBICs)
- Managing stand-alone chassis.
- Setting up stacks.
- Managing stacks.
- Hardware-related Command Line Interface (CLI) commands

What is Not in this Manual?

The descriptive and procedural information in this manual focuses on switch hardware. It includes information on some CLI commands that pertain directly to hardware configuration, but it is not intended as a software users guide. There are several OmniSwitch 6600 Family users guides that focus on switch software configuration. Consult those guides for detailed information and examples for configuring your switch software to operate in a live network environment. See [“Documentation Roadmap” on page xii](#) and [“Related Documentation” on page xiv](#) for further information on software configuration guides available for your switch.

How is the Information Organized?

This users guide provides an overview of OmniSwitch 6600 Family switches in the first chapter, an overview and procedures for setting up and managing OmniSwitch 6600 Family switches in the second chapter, and an overview and procedures for setting up and managing stacks in the third chapter.

Documentation Roadmap

The OmniSwitch user documentation suite was designed to supply you with information at several critical junctures of the configuration process. The following section outlines a roadmap of the manuals that will help you at each stage of the configuration process. Under each stage, we point you to the manual or manuals that will be most helpful to you.

Stage 1: Using the Switch for the First Time

Pertinent Documentation: *OmniSwitch 6600 Family Getting Started Guide*
Release Notes

A hard-copy *OmniSwitch 6600 Family Getting Started Guide* is included with your switch; this guide provides all the information you need to get your switch up and running the first time. This guide provides information on unpacking the switch, rack mounting the switch, installing uplink and stacking modules, unlocking access control, setting the switch's IP address, setting up a password, and setting up stacks. It also includes succinct overview information on fundamental aspects of the switch, such as hardware LEDs, the software directory structure, stacking, CLI conventions, and web-based management.

At this time you should also familiarize yourself with the Release Notes that accompanied your switch. This document includes important information on feature limitations that are not included in other user guides.

Stage 2: Gaining Familiarity with Basic Switch Functions

Pertinent Documentation: *OmniSwitch 6600 Family Hardware Users Guide*
OmniSwitch 6600 Family Switch Management Guide

Once you have your switch up and running, you will want to begin investigating basic aspects of its hardware and software. Information about switch hardware is provided in the *OmniSwitch 6600 Family Hardware Users Guide*. This guide provides specifications, illustrations, and descriptions of all hardware components—chassis, power supplies, uplink and stacking modules, and cooling fans. It also includes steps for common procedures, such as removing and installing switch modules.

The *OmniSwitch 6600 Family Switch Management Guide* is the primary user guide for the basic software features on a single switch. This guide contains information on the switch directory structure, basic file and directory utilities, switch access security, SNMP, and web-based management. It is recommended that you read this guide before connecting your switch to the network.

Note. The *OmniSwitch 6600 Family Switch Management Guide* was originally known as the “*OmniSwitch 6624/6648 Switch Management Guide*.”

Stage 3: Integrating the Switch Into a Network

Pertinent Documentation: *OmniSwitch 6600 Family Network Configuration Guide*
OmniSwitch 6600 Family Advanced Routing Configuration Guide

When you are ready to connect your switch to the network, you will need to learn how the OmniSwitch implements fundamental software features, such as 802.1Q, VLANs, and Spanning Tree. The *OmniSwitch 6600 Family Network Configuration Guide* contains overview information, procedures and examples on how standard networking technologies are configured in the OmniSwitch 6600 Family.

Note. The *OmniSwitch 6600 Family Network Configuration Guide* was originally known as the “*OmniSwitch 6624/6648 Network Configuration Guide*.”

The *OmniSwitch 6600 Family Advanced Routing Configuration Guide* includes configuration information for networks using Open Shortest Path First (OSPF).

Note. The *OmniSwitch 6600 Family Advanced Routing Configuration Guide* was originally known as the “*OmniSwitch 66/24/6648 Advanced Routing Configuration Guide*”

Anytime

The *OmniSwitch CLI Reference Guide* contains comprehensive information on all CLI commands supported by the switch. This guide includes syntax, default, usage, example, related CLI command, and CLI-to-MIB variable mapping information for all CLI commands supported by the switch. This guide can be consulted anytime during the configuration process to find detailed and specific information on each CLI command.

Related Documentation

The following are the titles and descriptions of all the OmniSwitch 6600 Family user manuals:

- *OmniSwitch 6600 Family Getting Started Guide*

Describes the hardware and software procedures for getting an OmniSwitch 6600 Family switch up and running. Also provides information on fundamental aspects of OmniSwitch software and stacking architecture.

- *OmniSwitch 6600 Family Hardware Users Guide*

Complete technical specifications and procedures for all OmniSwitch 6600 Family chassis, power supplies, fans, and uplink and stacking modules.

- *OmniSwitch CLI Reference Guide*

Complete reference to all CLI commands supported on the OmniSwitch 6624, 6600-U24, 6600-P24, 6648, 6602-24, 6602-48, 7700, 7800, and 8800. Includes syntax definitions, default values, examples, usage guidelines and CLI-to-MIB variable mappings.

- *OmniSwitch 6600 Family Switch Management Guide*

Includes procedures for readying an individual switch for integration into a network. Topics include the software directory architecture, image rollback protections, authenticated switch access, managing switch files, system configuration, using SNMP, and using web management software (WebView).

- *OmniSwitch 6600 Family Network Configuration Guide*

Includes network configuration procedures and descriptive information on all the major software features and protocols included in the base software package. Chapters cover Layer 2 information (Ethernet and VLAN configuration), Layer 3 information, security options (authenticated VLANs), Quality of Service (QoS), and link aggregation.

- *OmniSwitch 6600 Family Advanced Routing Configuration Guide*

Includes network configuration procedures and descriptive information on all the software features and protocols included in the advanced routing software package. Chapters cover the Open Shortest Path First (OSPF) Protocol.

- Technical Tips, Field Notices

Includes information published by Alcatel's Customer Support group.

- *Release Notes*

Includes critical Open Problem Reports, feature exceptions, and other important information on the features supported in the current release and any limitations to their support.

User Manual CD

All user guides for the OmniSwitch 6600 Family are included on the User Manual CD that accompanied your switch. This CD also includes user guides for other Alcatel data enterprise products. In addition, it contains a stand-alone version of the on-line help system that is embedded in the OmniVista network management application.

Besides the OmniVista documentation, all documentation on the User Manual CD is in PDF format and requires the Adobe Acrobat Reader program for viewing. Acrobat Reader freeware is available at www.adobe.com.

Note. In order to take advantage of the documentation CD's global search feature, it is recommended that you select the option for *searching PDF files* before downloading Acrobat Reader freeware.

To verify that you are using Acrobat Reader with the global search option, look for the following button in the toolbar:



Note. When printing pages from the documentation PDFs, de-select Fit to Page if it is selected in your print dialog. Otherwise pages may print with slightly smaller margins.

Technical Support

An Alcatel service agreement brings your company the assurance of 7x24 no-excuses technical support. You'll also receive regular software updates to maintain and maximize your Alcatel product's features and functionality and on-site hardware replacement through our global network of highly qualified service delivery partners. Additionally, with 24-hour-a-day access to Alcatel's Service and Support web page, you'll be able to view and update any case (open or closed) that you have reported to Alcatel's technical support, open a new case or access helpful release notes, technical bulletins, and manuals. For more information on Alcatel's Service Programs, see our web page at www.ind.alcatel.com, call us at 1-800-995-2696, or email us at support@ind.alcatel.com.

1 OmniSwitch 6600 Family

The OmniSwitch 6600 Family switches consist of the OmniSwitch 6624 (OS6624), OmniSwitch 6600-U24 (OS6600-U24), OmniSwitch 6600-P24 (OS6600-P24), OmniSwitch 6648 (OS6648), OmniSwitch 6602-24 (OS6602-24), and the OmniSwitch 6602-48 (OS6602-48). The OmniSwitch 6600 Family switches are next generation enterprise edge/workgroup switches. These switches are based on the same software architecture as OmniSwitch 7000 and 8000 Family switches (i.e., OS7700, OS7800, and OS8800) and are designed to meet the most stringent network requirements for mission-critical networks.

OmniSwitch 6600 Family switches are optimized for voice and data integration and provide non-blocking multi-Gigabit Ethernet capacity. Additional features include Carrier-class intelligence, best of breed QoS, Carrier-class resiliency, network management, and advanced policy-based VLANs and security. OmniSwitch 6600 Family switches also support wirespeed Layer 2 and Layer 3 switching, industry-based standards, and a full array of reliability, redundancy and resiliency capabilities.

Stand-Alone and Stacked Configurations

Stand-Alone

A stand-alone OmniSwitch 6600 Family switch is ideal for small and medium-sized network edge applications, offering 24 10/100 copper ports, 24 100 fiber ports, or 48 10/100 copper Power over Ethernet (PoE) ports. These switches provide support for enterprise-based devices, such as computer workstations or IP telephones.

A single OmniSwitch 6600 Family switch also supports two Gigabit Ethernet uplinks for high-bandwidth connections to a backbone or server.

Stacked Configurations

In addition to working as individual, stand-alone switches, OmniSwitch 6600 Family switches can also be linked together to form a single, high-density virtual chassis known as a *stack*.

Stacking switches provides scalability by allowing users to quickly and easily expand 10/100 port density. Twenty-four 10/100 ports are added for each OS6624 or OS6602-24 brought into the stack; twenty-four 10/100 Power over Ethernet (PoE) ports are added for each OS6600-P24 brought into the stack; twenty-four 100 ports are added for each OS6600-U24 brought into the stack; forty-eight 10/100 ports are added for each OS6648 or OS6602-48.

Up to eight switches can be stacked. OmniSwitch 6600 Family switches can be mixed and matched in *any combination* within the stack. This provides a virtual chassis with a 10/100 or 100 capacity of up to 384 ports.

As with the stand-alone configuration, a stacked virtual chassis configuration provides Gigabit Ethernet uplinks to a backbone or server.

Note. For detailed information on stacking OmniSwitch 6600 Family switches into a virtual chassis, refer to [Chapter 4, “Managing OmniSwitch 6600 Family Stacks.”](#)

Note on Terminology. In the user manuals provided with your switch, the terms *switch*, *slot* and *NI* (Network Interface) refer to individual OmniSwitch 6600 Family units in standalone mode *or* within a stacked configuration. The term *CMM* (Chassis Management Module) refers to stacked OmniSwitch 6600 Family units operating in primary or secondary CMM roles. (An OmniSwitch 6600 Family switch operating in an *idle* CMM role would normally be referred to as a switch, slot, or, NI.)

Availability Features

The switch provides a broad variety of *Availability* features. Availability features are hardware- and software-based safeguards that help prevent the loss of data flow in the unlikely event of a subsystem failure. In addition, some Availability features allow you to maintain or replace hardware components without powering off your switch or interrupting switch operations. Combined, these features provide added resiliency and help ensure that your switch is consistently available for your day-to-day network operations.

Hardware-related Availability features include:

- [Smart Continuous Switching](#)
- [Software Rollback](#)
- [Hot Swapping](#)
- [Hardware Monitoring](#)

Smart Continuous Switching

In stacked configurations, one OmniSwitch 6600 Family switch is designated as the primary “management module” for the stack. Because the stack can be thought of as a virtual chassis, the role of this primary management switch is to monitor and manage the functions of the stack.

Similar to chassis-based switches such as the OmniSwitch 7700 and Omniswitch 7800, the stack also allows users to assign an additional switch as a secondary management module. As with the OS7700 and OS7800, the stack’s secondary switch immediately takes over management functions in the event of a primary switch failure.

All other switches in the stack are considered *idle*, and act very much like Ethernet Network Interface (ENI) modules in OS7700 and OS7800 switches, in that they provide Ethernet ports for 10/100 traffic.

The stack provides support for all idle switches during primary-to-secondary failover. In other words, if the stack’s primary switch fails or goes offline for any reason, all idle switches will continue data transmission during the secondary switch’s takeover process. This Availability feature is referred to as *Smart Continuous Switching*.

Incoming Layer 2 packets will continue to be sent to the appropriate egress port during failover. Spanning Tree will continue handling BPDUs received on the switch ports, as well as port link up and down states. The Spanning Tree topology will not be disrupted.

Note. Smart Continuous Switching is designed to maintain data flow only during primary/secondary switch failover and is *not* intended to support long-term data flow. If both the primary and secondary switches in the stack go offline, switch operations (including all 10/100 support) will be disabled.

For more information on primary, secondary, and idle switches, as well as the failover process, refer to [Chapter 4, “Managing OmniSwitch 6600 Family Stacks.”](#)

Software Rollback

Software rollback (also referred to as *image rollback*) essentially allows the OmniSwitch 6600 Family switches (in both standalone and stacked configurations) to return to a prior “last known good” version of software in the event of a system software problem. The switch controls software rollback through its resilient directory structure design (i.e., **/flash/working** and **/flash/certified**).

For detailed information on the software rollback feature, as well as the switch’s **/flash/working** and **/flash/certified** directories, refer to the “Managing CMM Directory Content” chapter in the *OmniSwitch 6600 Family Switch Management Guide*.

Hot Swapping

Hot swapping refers to the action of adding, removing, or replacing back up power supplies, as well as uplink modules and MiniGBICs, without powering off your switch and disrupting other components in the switch or stack. This feature greatly facilitates hardware upgrades and maintenance and also allows you to easily replace components in the unlikely event of hardware failure. The following hardware components can be hot swapped:

- OS6600-BPS Back Up Power Supply
- OS6600-GNI-C2 Gigabit Ethernet Uplink Submodule
- OS6600-GNI-U2 Gigabit Ethernet Uplink Submodule
- MiniGBICs installed in the OS6600-GNI-U2 Gigabit Ethernet Uplink Submodule on OS6624, OS660-U24, OS6600-P24, and OS6648 switches or the built-in MiniGBIC slots on OS6602-24 and OS6602-48 switches; MiniGBICs include:
 - MiniGBIC-SX
 - MiniGBIC-LX
 - MiniGBIC-LH-70
- 100 Mbps SFPs installed in the OS6600-U24; SFPs include:
 - SFP-100-LC-MM
 - SFP-100-LC-SM15
 - SFP-100-LC-SM40
 - SFP-100-MTRJ-MM

Note. Stacking modules cannot be hot swapped at any time. For information on stacking modules, refer to [Chapter 2, “OmniSwitch 6600 Family Chassis and Hardware Components.”](#)

For instructions on hot swapping back up power supplies, uplink modules, and MiniGBICs, refer to [Chapter 2, “OmniSwitch 6600 Family Chassis and Hardware Components.”](#)

Hardware Monitoring

Automatic Monitoring

Automatic monitoring refers to the switch's built-in sensors that automatically monitor operations. If an error is detected (e.g., over-threshold temperature), the switch immediately sends a trap to the user. The trap is displayed on the console in the form of a text error message. (In the case of an over-threshold temperature condition, the chassis displays an amber TEMP LED in addition to sending a trap.)

LEDs

LEDs, which provide visual status information, are provided on the chassis front panel. LEDs are used to indicate conditions such as hardware and software status, temperature errors, link integrity, data flow, etc. For detailed LED descriptions, refer to [Chapter 2, "OmniSwitch 6600 Family Chassis and Hardware Components."](#)

User-Driven Monitoring

User-driven hardware monitoring refers to CLI commands that are entered by the user in order to access the current status of hardware components. The user enters "show" commands that output information to the console. Monitoring information for chassis components such as the optional back up power supply, chassis temperature sensor, and chassis fans is provided in [Chapter 2, "OmniSwitch 6600 Family Chassis and Hardware Components."](#) Show commands for all features are described in detail in the *OmniSwitch CLI Reference Guide*.

Port and Fabric Capacities

OmniSwitch 6600 Family switches offer 24 10/100 Ethernet ports, 24 10/100 PoE 24 ports, 24 100 Ethernet ports, or 48 10/100 Ethernet ports. The switches also offer expansion gigabit uplink and stacking ports. Refer to [Chapter 2, “OmniSwitch 6600 Family Chassis and Hardware Components”](#) for expansion port details.

OmniSwitch 6600 Family Fabric Capacities

OS6624/OS6600-U24/OS6600-P24/ OS6602-24	Up to 7.0 Gbps at full duplex; 14.0 Gbps aggregate
OS6648/OS6602-48	Up to 10.0 Gbps at full duplex; 20.0 Gbps aggregate

OS6624/6600-U24/OS6600-P24/OS6602-24 Throughput

10/100 Mbps Copper Ethernet ports (OS6624 and OS6602-24)	Approximately 3.57 Mpps
10/100 Mbps Copper Power over Ethernet (PoE) ports (OS6600-P24)	Approximately 3.57 Mpps
100 Mbps Fiber Ethernet ports (OS6600-U24 only)	Approximately 3.57 Mpps
Gigabit Ethernet uplink ports	Approximately 5.95 Mpps (stand-alone switches with four Gigabit Ethernet uplink modules installed)
Total throughput	Approximately 9.52 Mpps

OS6648/6602-48 Throughput

10/100Mbps Ethernet ports	Approximately 7.14 Mpps
Gigabit Ethernet uplink ports	Approximately 5.95 Mpps (stand-alone switches with four Gigabit Ethernet uplink modules installed)
Total throughput	Approximately 13.09 Mpps

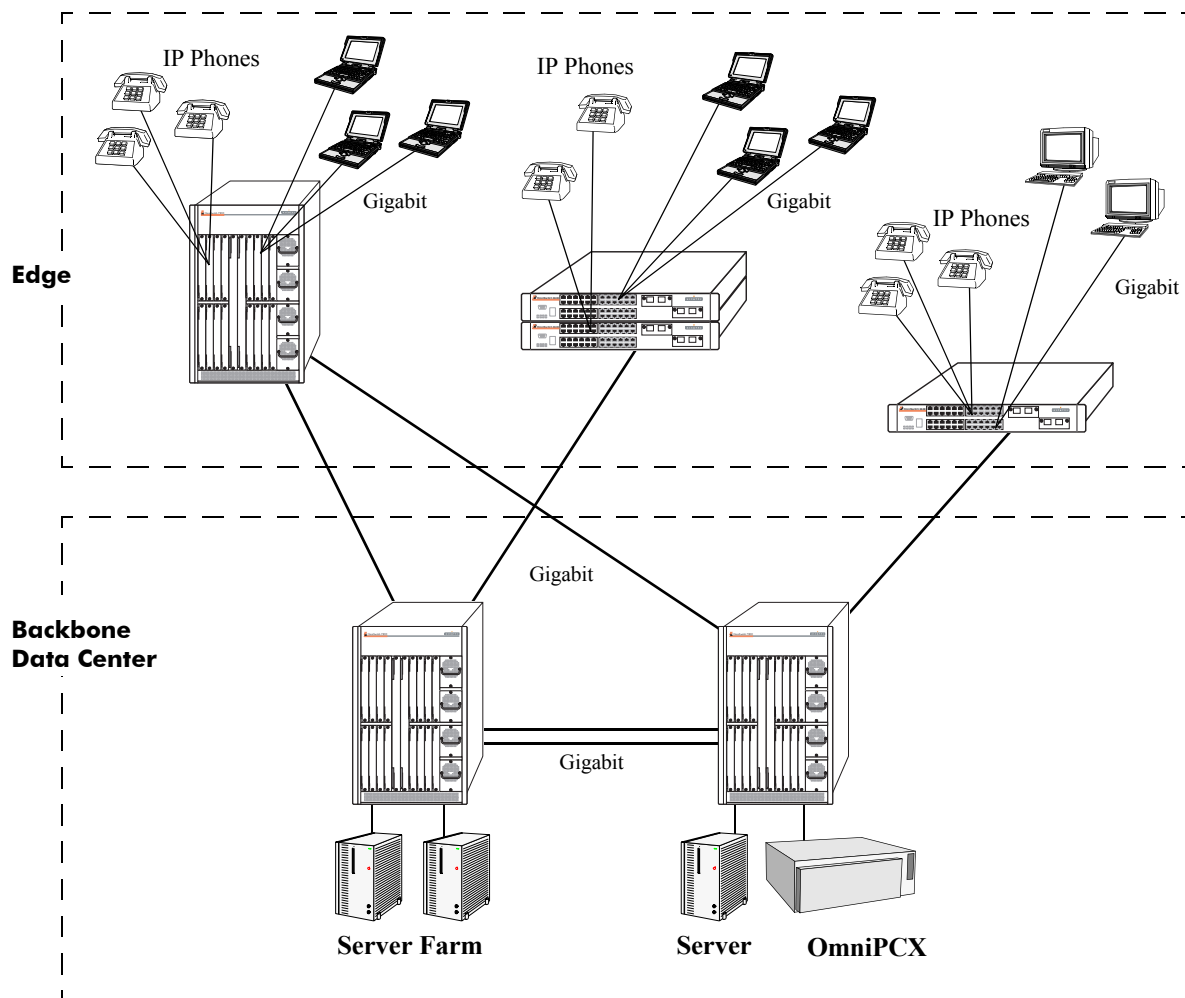
For detailed information on OmniSwitch 6600 Family features, functions, and technical specifications, refer to [Chapter 2, “OmniSwitch 6600 Family Chassis and Hardware Components”](#) and [Chapter 4, “Managing OmniSwitch 6600 Family Stacks.”](#) For additional general information, including application examples, refer to the sections below.

Application Examples

The following application examples show two of the many ways OmniSwitch 6600 Family switches can be used in an enterprise network setting.

Single Office Building with 1000 Users

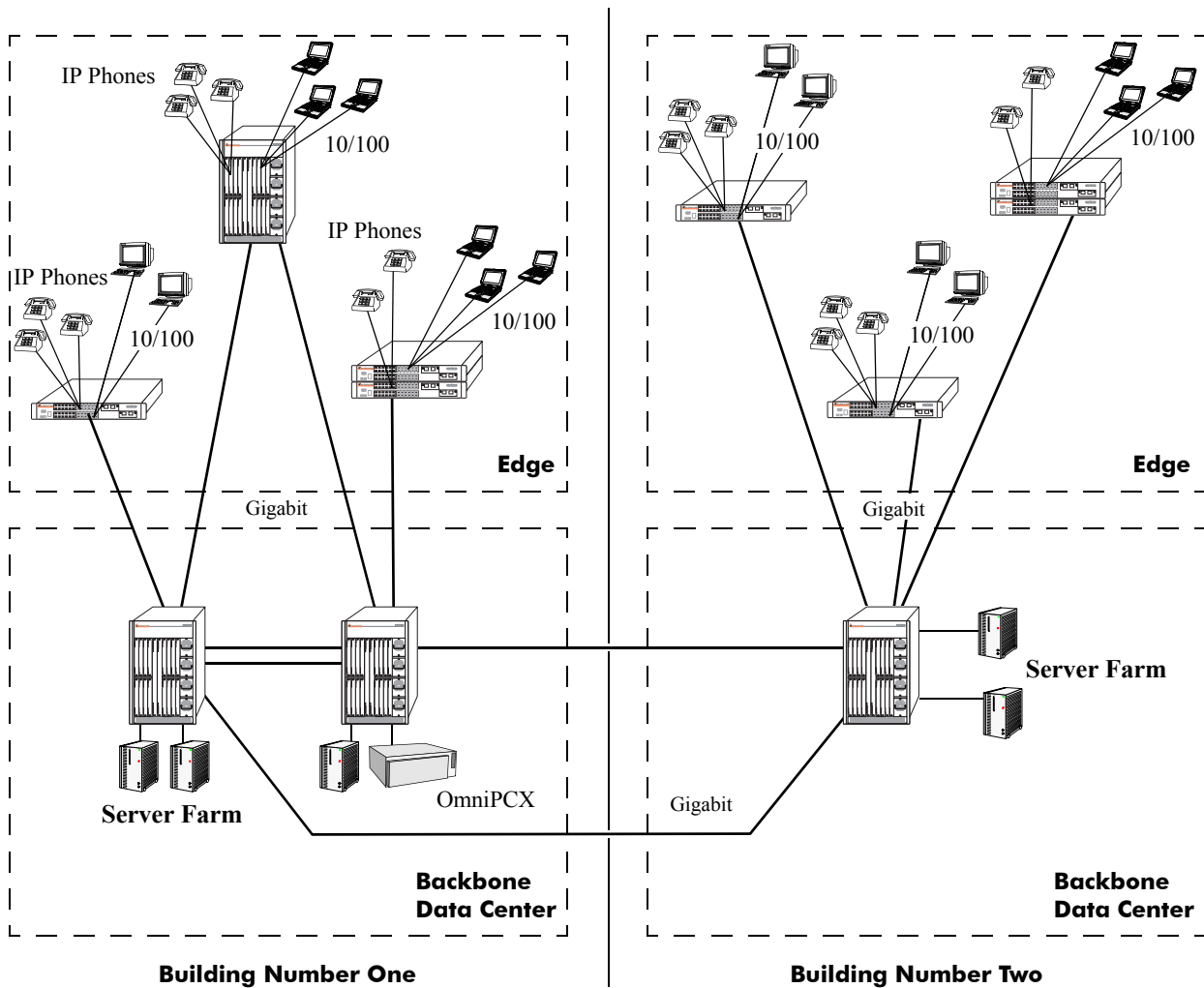
The following diagram shows converged voice and data applications, with 1000 users, in a single building enterprise environment. Edge devices consist of a mixture of PCs and IP telephones. In this example, a single OmniPCX 4400 in the core supports IP voice initiations and terminations. An OmniSwitch 7800 switch provides a port density of 1000 10/100 ports. The stackable OmniSwitch 6600 Family configurations provide redundant and dual connectivity from the edge to the redundant backbone/core, in which the OmniSwitch 7800 core switches are used.



Medium Campus with 1500 Users

This example illustrates converged voice and data applications with 1500 users spread across two buildings in an enterprise campus. Edge devices consist of a mixture of PCs and IP telephones. And, like the previous example, a single OmniPCX 4400 in the core supports IP voice initiations and terminations.

In *building number one*, an OmniSwitch 7800 switch provides a port density of 1000 10/100 ports, and the stackable OmniSwitch 6600 Family configurations provide redundant and dual connectivity from the edge to the redundant backbone/core. In *building number two*, the stackable OmniSwitch 6600 Family configurations provide 500 ports for connectivity from the edge to the backbone/core.



2 OmniSwitch 6600 Family Chassis and Hardware Components

OmniSwitch 6600 Family switches are available in six stackable chassis configurations—the 24-port OmniSwitch 6624 (OS6624), OmniSwitch 6600-U24 (OS6600-U24), OmniSwitch 6600-P24 (OS6600-P24), and OmniSwitch 6602-24 (OS6602-24) and the 48-port OmniSwitch 6648 (OS6648) and OmniSwitch 6602-48 (OS6602-48). This chapter includes detailed information on each of these chassis types. Topics include:

- OmniSwitch 6600 Family chassis descriptions
- Technical specifications
- Switch mounting
- Backup power supply
- Gigabit Ethernet uplink and stacking modules
- MiniGBICs
- 100 Mbps SFPs
- Temperature management
- Pinouts and console port specifications
- Monitoring switch status
- Base chassis MAC address

OmniSwitch 6624

The OS6624 is a stackable edge/workgroup switch offering 24 10/100 Ethernet ports. The OS6624 can also be equipped with up to four Gigabit Ethernet ports for connections to a high speed backbone or server.

The front panel of the OS6624 chassis contains the following major components:

- Console (DB-9) port
- Stack indicator LED
- 24 10/100 Ethernet ports
- One slot for OS6600-GNI-U2 (fiber) or OS6600-GNI-C2 (copper) Gigabit Ethernet uplink module
- One slot for Gigabit Ethernet uplink module as described above *or* stacking module

Note. The OmniSwitch 6624 is also known as the OmniSwitch 6600-24.

Refer to the illustration below for more front panel information. For detailed LED descriptions, refer to [page 2-18](#). For information on the chassis rear panel, refer to [page 2-20](#).

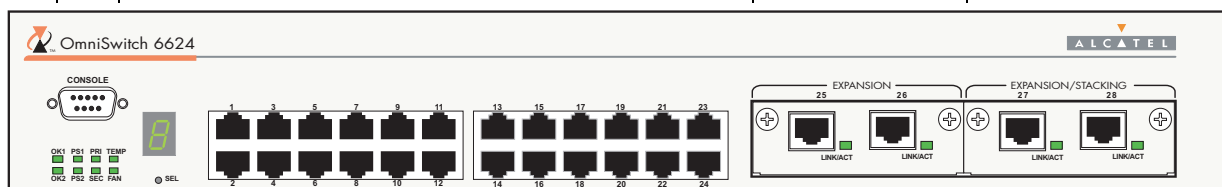
Console Port

The OS6624 front panel provides one RS232 port for console connections. Serial console connections are used by network administrators for switch management. This female DB-9 connector provides a DCE console connection.

Gigabit Ethernet Uplink Module Slot

The OS6624 provides a dedicated slot for Gigabit Ethernet uplink modules. This slot supports the following module types:

- OS6600-GNI-C2—Provides two fixed 1000BaseT copper connections (uses two RJ-45 connectors). Supports distances up to 100 meters.
- OS6600-GNI-U2—Provides two MiniGBIC bays that support hot-swappable 1000BASE-X MiniGBIC transceivers.



Status and Slot Indicator LEDs

For information on the OS6624's status and slot indicator LEDs, refer to [page 2-18](#).

Slot Selector Button

The slot selector button, located directly beneath the slot indicator LED, is used to manually assign slot numbers to switches in stacked configurations. Refer to [Chapter 4, "Managing OmniSwitch 6600 Family Stacks,"](#) for detailed information.

10/100 Ethernet Ports

The OS6624 provides 24 10/100 Ethernet ports. These ports are twisted-pair and are individually configurable as 10BaseT or 100BaseTX. The ports use RJ-45 connectors.

Stacking or Uplink Module Slot

The OS6624 provides an additional slot that can accommodate either a stacking module or a Gigabit Ethernet uplink module.

If you use a Gigabit Ethernet uplink module in this slot, the OS6624 must be used as a stand-alone switch.

A stacking module must be installed in this slot if the switch is to be used in a stack. For detailed information on stacking switches, refer to [Chapter 4, "Managing OmniSwitch 6600 Family Stacks."](#)

OmniSwitch 6624 Front Panel

OS6624 Specifications

Total number of 10/100 Mbps ports per switch	24
Total number of Gigabit Ethernet ports per switch	4 (for stand-alone switches); 2 (for stacked configurations)
Total number of 10/100 Mbps ports per stack	192 (stack of eight switches)
Total number of Gigabit Ethernet ports per stack	16 (stack of eight switches)
Fabric capacity	7.0 Gbps full duplex; 14 Gbps aggregate
Current draw	Approximately 2.3 Amps
Power	Approximately 55 Watts
Total available power supplies	2 (one factory-installed power supply and one optional backup power supply)
Flash memory size	32 MB (30 MB usable)
RAM memory size	128 MB
Overall Width (rack-mount flanges included)	19.125 inches
Chassis Width (rack-mount flanges not included)	17.2 inches
Height	2.65 inches
Height (rack units)	1.5 RU
Chassis Depth	14 inches
Chassis Weight	Approximately 12 lbs (13.5 lbs with optional backup power supply installed)
Humidity	5% to 90% Relative Humidity (Operating) 0% to 95% Relative Humidity (Storage)
Altitude	Sea level to 10,000 feet (3 km)

10/100 Ethernet Port Specifications

Connector type	RJ-45
Standards supported	IEEE 802.3u, IAB RFCs 826, 894
Data rate	10 or 100 Mbps (full or half duplex)
Maximum frame size	1518 Bytes; 1522 Bytes with IEEE 802.1Q tags
Connections supported	10BaseT hub or device; 100BaseTX hub or device
Cable supported	10BaseT: unshielded twisted-pair (UTP) 100BaseTX: unshielded twisted-pair (UTP), Category 5, EIA/TIA 568 or shielded twisted-pair (STP), Category 5, 100 ohm
Maximum cable distance	100 meters

OmniSwitch 6600-U24

The OS6600-U24 is a stackable edge/workgroup switch offering 24 fiber 100 Mbps Ethernet SFP ports. The OS6600-U24 can also be equipped with up to four Gigabit Ethernet ports for connections to a high speed backbone or server.

The front panel of the OS6600-U24 chassis contains the following major components:

- Console (RJ-45) port
- Stack indicator LED
- 24 fiber 100 Ethernet SFP ports
- One slot for OS6600-GNI-U2 (fiber) or OS6600-GNI-C2 (copper) Gigabit Ethernet uplink module
- One slot for Gigabit Ethernet uplink module as described above *or* stacking module

The following SFP transceivers are available for the OS6600-U24:

- **SFP-100-LC-MM**—100Base FX multimode 62.5/125 and 50/125 micron fiber, supports distances up to 2 km; uses LC connectors.
- **SFP-100-LC-SM15**—100Base FX single mode 9/125 micron fiber, supports distances up to 15 km; uses LC connectors.
- **SFP-100-LC-SM40**—100Base FX single mode 9/125 micron fiber, supports distances up to 40 km; uses LC connectors.
- **SFP-100-MTRJ-MM**—100Base FX multimode 62.5/125 and 50/125 micron fiber, supports distances up to 2 km; uses MTRJ connectors.

Note. See [“Installing SFPs \(OS6600-U24\)” on page 2-51](#) for information on installing SFP transceivers.

Refer to the illustration on the following page for more front panel information. For detailed LED descriptions, refer to [page 2-18](#). For information on the chassis rear panel, refer to [page 2-20](#).

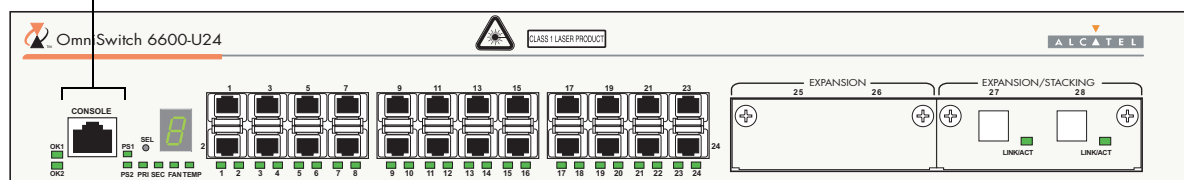
Console Port

The OS6600-U24 front panel provides one RJ-45 port for console connections. Serial console connections are used by network administrators for switch management. This female RJ-45 connector provides a DCE console connection.

Gigabit Ethernet Uplink Module Slot

The OS6600-U24 provides a dedicated slot for Gigabit Ethernet uplink modules. This slot supports the following module types:

- OS6600-GNI-C2—Provides two fixed 1000BaseT copper connections (uses two RJ-45 connectors). Supports distances up to 100 meters.
- OS6600-GNI-U2—Provides two MiniGBIC bays that support hot-swappable 1000BASE-X MiniGBIC transceivers.

**Status and Slot Indicator LEDs**

For information on the OS6600-U24's status and slot indicator LEDs, refer to [page 2-18](#).

Slot Selector Button

The slot selector button, located directly beneath the slot indicator LED, is used to manually assign slot numbers to switches in stacked configurations. Refer to [Chapter 4, "Managing OmniSwitch 6600 Family Stacks,"](#) for detailed information.

100 Fiber Ethernet SFP Ports

The OS6600-U24 provides 24 fiber 100 Ethernet SFP ports. These ports can use the SFP-100-LC-MM, SFP-100-LC-SM, and SFP-100-MTRJ-MM transceivers in any combination.

Stacking or Uplink Module Slot

The OS6600-U24 provides an additional slot that can accommodate either a stacking module or a Gigabit Ethernet uplink module.

If you use a Gigabit Ethernet uplink module in this slot, the OS6600-U24 must be used as a stand-alone switch.

A stacking module must be installed in this slot if the switch is to be used in a stack. For detailed information on stacking switches, refer to [Chapter 4, "Managing OmniSwitch 6600 Family Stacks."](#)

OmniSwitch 6600-U24 Front Panel

OS6600-U24 Specifications

Total number of 100 Mbps SFP ports per switch	24
Total number of Gigabit Ethernet ports per switch	4 (for stand-alone switches); 2 (for stacked configurations)
Total number of 100 Mbps SFP ports per stack	192 (stack of eight switches)
Total number of Gigabit Ethernet ports per stack	16 (stack of eight switches)
Fabric capacity	7.0 Gbps full duplex; 14 Gbps aggregate
Power	The OS6600-U24 power supply provides 100 W
Total available power supplies	2 (one factory-installed power supply and one optional backup power supply)
Flash memory size	32 MB (30 MB usable)
RAM memory size	128 MB
Overall Width (rack-mount flanges included)	19.125 inches
Chassis Width (rack-mount flanges not included)	17.2 inches
Height	2.65 inches
Height (rack units)	1.5 RU
Chassis Depth	14 inches
Chassis Weight	Approximately 11.56 lbs not including uplink/stacking modules or SFPs (13.06 lbs with optional backup power supply installed)
Humidity	5% to 90% Relative Humidity (Operating) 0% to 95% Relative Humidity (Storage)
Altitude	Sea level to 10,000 feet (3 km)

100 Mbps Ethernet SFP Port Specifications

Connector type	SFP
Standards supported	IEEE 802.3u, IAB RFCs 826, 894 (see data sheet for more information)
Data rate	100 Mbps (full or half duplex)
Maximum frame size	1518 Bytes; 1522 Bytes with IEEE 802.1Q tags
Connections supported	100BaseFX
Cable supported	SFP-100-LC-MM: 62.5/125 and 50/125 micron multimode fiber SFP-100-LC-SM: 9/125 micron single mode SFP-100-MTRJ-MM: 62.5/125 and 50/125 micron multimode fiber
Optical output power	SFP-100-LC-MM: -19 to -14 dBm (62.5/125 micron); -22.5 to -14 dBm (50/125 micron) SFP-100-LC-SM15: -15 to -8 dBm SFP-100-LC-SM40: -5 to 0 dBm SFP-100-MTRJ-MM: -20 to -14 dBm
Input optical power (Receiver sensitivity)	SFP-100-LC-MM: -31 to -14 dBm SFP-100-LC-SM15: -31 to 0dBm SFP-100-LC-SM40: -34 to 0 dBm SFP-100-MTRJ-MM: -31 to -14 dBm
Maximum cable distance	SFP-100-LC-MM: 2 km SFP-100-LC-SM15: 15 km SFP-100-LC-SM40: 40 km SFP-100-MTRJ-MM: 2 km

OmniSwitch 6600-P24

The OS6600-P24 is a stackable edge/workgroup switch offering 24 Power over Ethernet (PoE) 10/100 Ethernet ports. The OS6600-P24 can also be equipped with up to four Gigabit Ethernet ports for connections to a high speed backbone or server.

The front panel of the OS6600-P24 chassis contains the following major components:

- Console (RJ-45) port
- Stack indicator LED
- 24 10/100 PoE ports
- One slot for OS6600-GNI-U2 (fiber) or OS6600-GNI-C2 (copper) Gigabit Ethernet uplink module
- One slot for Gigabit Ethernet uplink module as described above *or* stacking module

Refer to the illustration below for more front panel information. For detailed LED descriptions, refer to [page 2-18](#). For information on the chassis rear panel, refer to [page 2-20](#).

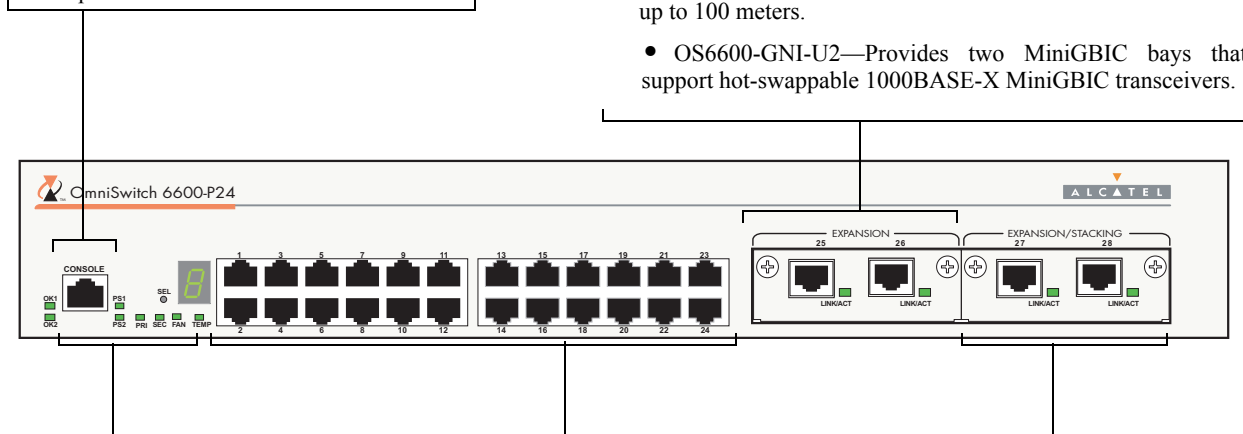
Console Port

The OS6600-P24 front panel provides one RJ-45 port for console connections. Serial console connections are used by network administrators for switch management. This female RJ-45 connector provides a DCE console connection.

Gigabit Ethernet Uplink Module Slot

The OS6600-P24 provides a dedicated slot for Gigabit Ethernet uplink modules. This slot supports the following module types:

- OS6600-GNI-C2—Provides two fixed 1000BaseT copper connections (uses two RJ-45 connectors). Supports distances up to 100 meters.
- OS6600-GNI-U2—Provides two MiniGBIC bays that support hot-swappable 1000BASE-X MiniGBIC transceivers.



Status and Slot Indicator LEDs

For information on the OS6600-P24's status and slot indicator LEDs, refer to [page 2-18](#).

Slot Selector Button

The slot selector button, located directly beneath the slot indicator LED, is used to manually assign slot numbers to switches in stacked configurations.

10/100 Ethernet Ports

The OS6600-P24 provides 24 Power over Ethernet (PoE) 10/100 Ethernet ports. These ports are twisted-pair and are individually configurable as 10BaseT or 100BaseTX. The ports use RJ-45 connectors. For information more information, refer to [page 2-18](#).

Stacking or Uplink Module Slot

The OS6600-P24 provides an additional slot that can accommodate either a stacking module or a Gigabit Ethernet uplink module.

If you use a Gigabit Ethernet uplink module in this slot, the OS6600-P24 must be used as a stand-alone switch.

A stacking module must be installed in this slot if the switch is to be used in a stack. For detailed information on stacking switches, refer to [Chapter 4, "Managing OmniSwitch 6600 Family Stacks."](#)

OmniSwitch 6600-P24 Front Panel

OS6600-P24 Specifications

Total number of PoE 10/100 Mbps ports per switch	24
Total number of Gigabit Ethernet ports per switch	4 (for stand-alone switches); 2 (for stacked configurations)
Total number of PoE 10/100 Mbps ports per stack	192 (stack of eight switches)
Total number of Gigabit Ethernet ports per stack	16 (stack of eight switches)
Fabric capacity	7.0 Gbps full duplex; 14 Gbps aggregate
Current draw	Switch functions (24 Volts max.): 2.3 Amps PoE (49 Volts max.): 4.3 Amps
Power	Switch functions (24 Volts max.): 55 Watts (100 Watts available) PoE (49 Volts max.): 210 Watts
Total available power supplies (OS6600-P24)	2: Two built-in factory-installed power supplies (one powering switch functions and the other powering PoE)
Total available power supplies (OS6600-BPS-P)	2: Two built-in factory-installed power supplies (one powering switch functions and the other powering PoE)
Flash memory size	32 MB (30 MB usable)
RAM memory size	128 MB
Overall Width (rack-mount flanges included)	19.025 inches
Chassis Width (rack-mount flanges not included)	17.1 inches
Height	2.65 inches
Height (rack units)	1.5 RU
Chassis Depth	14.5 inches (without an OS6600-BPS-P) 19.3 inches (with an OS6600-BPS-P)
Chassis Weight	Approximately 12 lbs
Humidity	5% to 90% Relative Humidity (Operating) 0% to 95% Relative Humidity (Storage)
Altitude	Sea level to 10,000 feet (3 km)

10/100 Power over Ethernet (PoE) Port Specifications

Connector type	RJ-45
Standards supported	IEEE 802.3u, 802.3af (DTE Power via MDI MIB); IAB RFCs 826, 894
Data rate	10 or 100 Mbps (full or half duplex)
Maximum frame size	1518 Bytes; 1522 Bytes with IEEE 802.1Q tags
Connections supported	10BaseT or 100BaseTX IP phones, Bluetooth Access Points, Internet cameras, and other devices requiring power over Ethernet
Cable supported	10BaseT: unshielded twisted-pair (UTP) 100BaseTX: unshielded twisted-pair (UTP), Category 5, EIA/TIA 568 or shielded twisted-pair (STP), Category 5, 100 ohm
Power supplied to port	15.4 watts per port
Maximum cable distance	100 meters

OmniSwitch 6648

The OS6648 is a stackable edge/workgroup switch offering 48 10/100 Ethernet ports. The OS6648 can also be equipped with up to four Gigabit Ethernet ports for connections to a high speed backbone or server.

The front panel of the OS6648 chassis contains the following major components:

- Console (DB-9) port
- Stack indicator LED
- 48 10/100 Ethernet ports
- One slot for OS6600-GNI-U2 (fiber) or OS6600-GNI-C2 (copper) Gigabit Ethernet uplink module
- One slot for Gigabit Ethernet uplink module as described above *or* stacking module

Note. The OmniSwitch 6648 is also known as the OmniSwitch 6600-48.

Refer to the illustration below for more front panel information. For detailed LED descriptions, refer to [page 2-18](#). For information on the chassis rear panel, refer to [page 2-20](#).

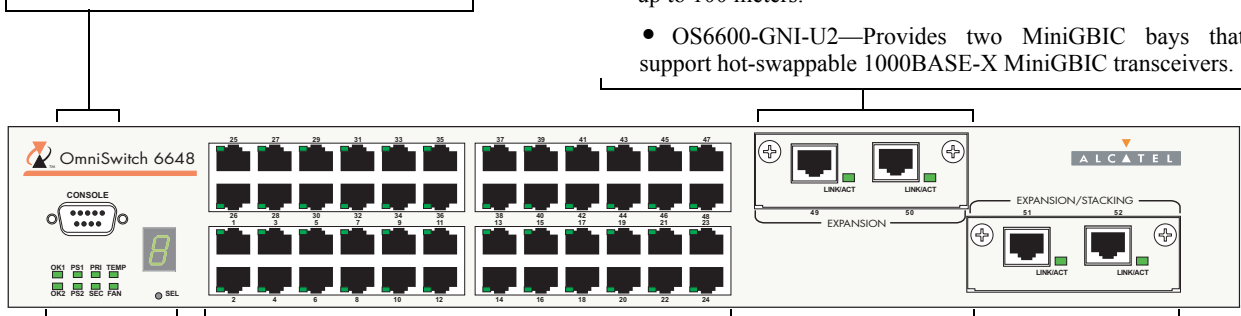
Console Port

The OS6648 front panel provides one RS232 port for console connections. Serial console connections are used by network administrators for switch management. This female DB-9 connector provides a DCE console connection.

Gigabit Ethernet Uplink Module Slot

The OS6648 provides a dedicated slot for Gigabit Ethernet uplink modules. This slot supports the following module types:

- OS6600-GNI-C2—Provides two fixed 1000BaseT copper connections (uses two RJ-45 connectors). Supports distances up to 100 meters.
- OS6600-GNI-U2—Provides two MiniGBIC bays that support hot-swappable 1000BASE-X MiniGBIC transceivers.



Status and Slot Indicator LEDs

For information on the OS6648's status and slot indicator LEDs, refer to [page 2-18](#).

Slot Selector Button

The slot selector button, located directly beneath the slot indicator LED, is used to manually assign slot numbers to switches in stacked configurations. Refer to [Chapter 4, "Managing OmniSwitch 6600 Family Stacks,"](#) for detailed information.

10/100 Ethernet Ports

The OS6648 provides 48 10/100 Ethernet ports. These ports are twisted-pair and are individually configurable as 10BaseT or 100BaseTX. The ports use RJ-45 connectors.

Stacking or Uplink Module Slot

The OS6648 provides an additional slot that can accommodate either a stacking module or a Gigabit Ethernet uplink module.

If you use a Gigabit Ethernet uplink module in this slot, the OS6648 must be used as a stand-alone switch.

A stacking module must be installed in this slot if the switch is to be used in a stack. For detailed information on stacking switches, refer to [Chapter 4, "Managing OmniSwitch 6600 Family Stacks."](#)

OmniSwitch 6648 Front Panel

OS6648 Specifications

Total number of 10/100 Mbps ports per switch	48
Total number of Gigabit Ethernet ports per switch	4 (for standalone switches); 2 (for stacked configurations)
Total number of 10/100 Mbps ports per stack	384 (stack of eight switches)
Total number of Gigabit Ethernet ports per stack	16 (stack of eight switches)
Fabric capacity	10.0 Gbps full duplex; 20.0 Gbps aggregate
Current draw	Approximately 2.3 Amps
Power	Approximately 55 Watts
Total power supplies	2 (one factory-installed power supply and one optional backup power supply)
Flash memory size	32 MB (30 MB usable)
RAM memory size	128 MB
Overall Width (rack-mount flanges included)	19.125 inches
Chassis Width (rack-mount flanges not included)	17.2 inches
Height	2.65 inches
Height (rack units)	1.5 RU
Chassis Depth	14 inches
Chassis Weight	Approximately 14 lbs (15.5 lbs with optional backup power supply installed)
Humidity	5% to 90% Relative Humidity (Operating) 0% to 95% Relative Humidity (Storage)
Altitude	Sea level to 10,000 feet (3 km)

10/100 Ethernet Port Specifications

Connector type	RJ-45
Standards supported	IEEE 802.3u, IAB RFCs 826, 894
Data rate	10 or 100 Mbps (full or half duplex)
Maximum frame size	1518 Bytes; 1522 Bytes with IEEE 802.1Q tags
Connections supported	10BaseT hub or device; 100BaseTX hub or device
Cable supported	10BaseT: unshielded twisted-pair (UTP) 100BaseTX: unshielded twisted-pair (UTP), Category 5, EIA/TIA 568 or shielded twisted-pair (STP), Category 5, 100 ohm
Maximum cable distance	100 meters

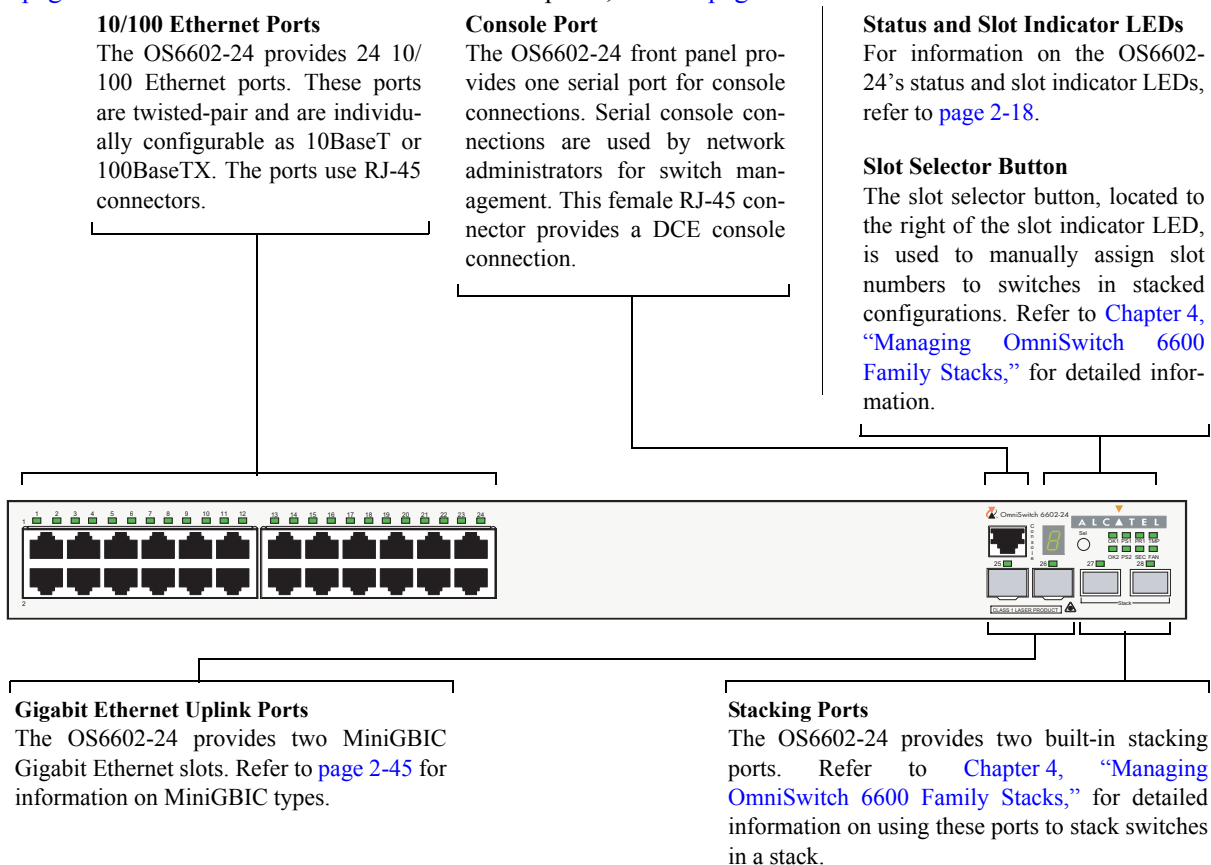
OmniSwitch 6602-24

The OS6602-24 is a stackable edge/workgroup switch offering 24 10/100 Ethernet ports. The OS6602-24 has Gigabit Ethernet ports for connections to a high speed backbone or server and two ports for stacking switches.

The front panel of the OS6602-24 chassis contains the following major components:

- Console (RJ-45) port
- Stack indicator LED
- 24 10/100 Ethernet ports
- Two MiniGBIC Gigabit Ethernet uplink ports
- Two stacking ports

Refer to the illustration below for more front panel information. For detailed LED descriptions, refer to [page 2-18](#). For information on the chassis rear panel, refer to [page 2-20](#).



OmniSwitch 6602-24 Front Panel

OS6602-24 Specifications

Total number of 10/100 Mbps ports per switch	24
Total number of Gigabit Ethernet ports per switch	2
Total number of 10/100 Mbps ports per stack	192 (stack of eight switches)
Total number of Gigabit Ethernet ports per stack	16 (stack of eight switches)
Fabric capacity	7.0 Gbps full duplex; 14 Gbps aggregate
Current draw	Approximately 0.3 Amps @ 115VAC
Power	Approximately 34 Watts @ 25C
Total available power supplies	2 (one factory-installed power supply and one optional backup power supply)
Flash memory size	32 MB (30 MB usable)
RAM memory size	128 MB
Overall Width (rack-mount flanges included)	18.95 inches
Chassis Width (rack-mount flanges not included)	17.25 inches
Height	1.75 inches
Height (rack units)	1 RU
Chassis Depth	16.95 inches
Chassis Weight	Approximately 11.9 lbs
Humidity	5% to 90% Relative Humidity (Operating) 0% to 95% Relative Humidity (Storage)
Altitude	Sea level to 10,000 feet (3 km)

10/100 Ethernet Port Specifications

Connector type	RJ-45
Standards supported	IEEE 802.3u, IAB RFCs 826, 894
Data rate	10 or 100 Mbps (full or half duplex)
Maximum frame size	1518 Bytes; 1522 Bytes with IEEE 802.1Q tags
Connections supported	10BaseT hub or device; 100BaseTX hub or device
Cable supported	10BaseT: unshielded twisted-pair (UTP) 100BaseTX: unshielded twisted-pair (UTP), Category 5, EIA/TIA 568 or shielded twisted-pair (STP), Category 5, 100 ohm
Maximum cable distance	100 meters

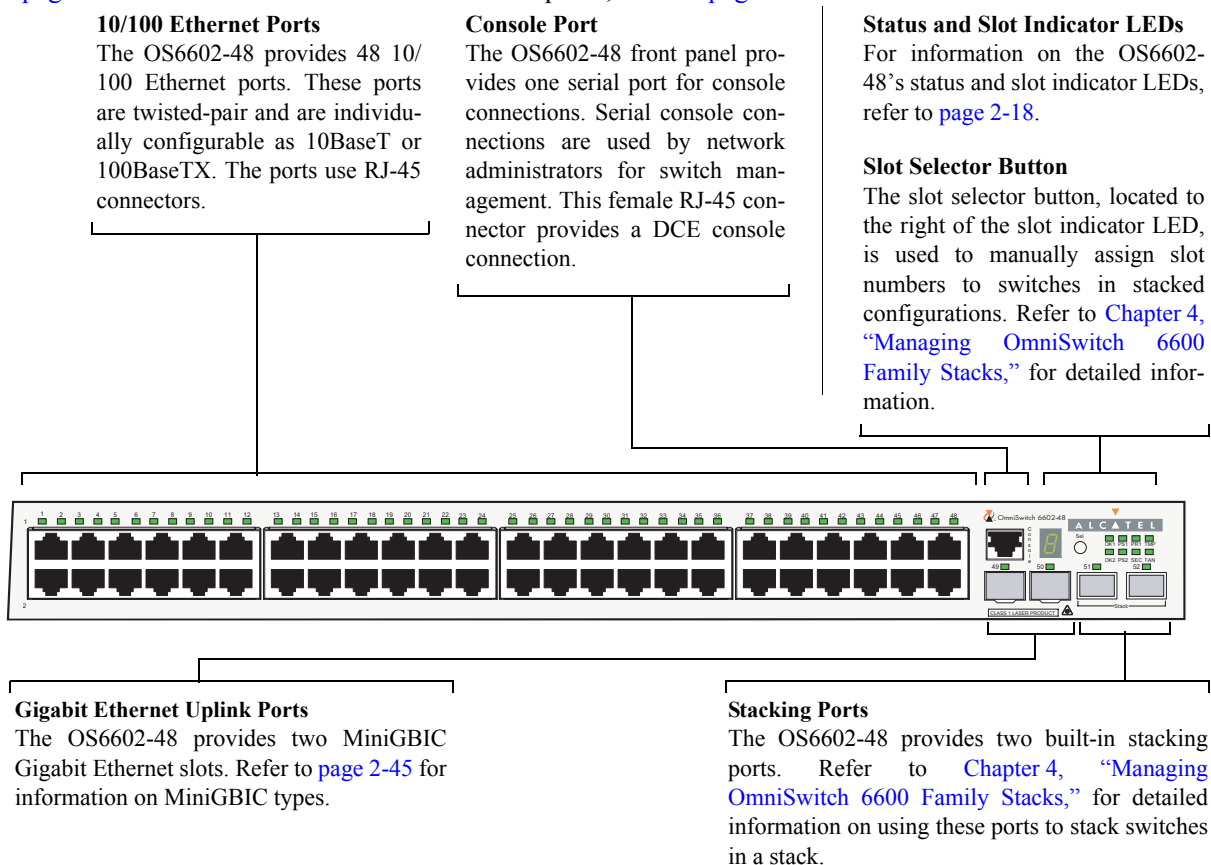
OmniSwitch 6602-48

The OS6602-48 is a stackable edge/workgroup switch offering 48 10/100 Ethernet ports. The OS6602-48 has Gigabit Ethernet ports for connections to a high speed backbone or server and two ports for stacking switches.

The front panel of the OS6602-48 chassis contains the following major components:

- Console (RJ-45) port
- Stack indicator LED
- 48 10/100 Ethernet ports
- Two MiniGBIC Gigabit Ethernet uplink ports
- Two stacking ports

Refer to the illustration below for more front panel information. For detailed LED descriptions, refer to [page 2-18](#). For information on the chassis rear panel, refer to [page 2-20](#).



OmniSwitch 6602-48 Front Panel

OS6602-48 Specifications

Total number of 10/100 Mbps ports per switch	48
Total number of Gigabit Ethernet ports per switch	2
Total number of 10/100 Mbps ports per stack	384 (stack of eight switches)
Total number of Gigabit Ethernet ports per stack	16 (stack of eight switches)
Fabric capacity	10.0 Gbps full duplex; 20.0 Gbps aggregate
Current draw	Approximately 0.4 Amps @ 115VAC
Power	Approximately 46 Watts @ 25C
Total power supplies	2 (one factory-installed power supply and one optional backup power supply)
Flash memory size	32 MB (30 MB usable)
RAM memory size	128 MB
Overall Width (rack-mount flanges included)	18.95 inches
Chassis Width (rack-mount flanges not included)	17.25 inches
Height	1.75 inches
Height (rack units)	1 RU
Chassis Depth	16.95 inches
Chassis Weight	Approximately 12.0 lbs
Humidity	5% to 90% Relative Humidity (Operating) 0% to 95% Relative Humidity (Storage)
Altitude	Sea level to 10,000 feet (3 km)

10/100 Ethernet Port Specifications

Connector type	RJ-45
Standards supported	IEEE 802.3u, IAB RFCs 826, 894
Data rate	10 or 100 Mbps (full or half duplex)
Maximum frame size	1518 Bytes; 1522 Bytes with IEEE 802.1Q tags
Connections supported	10BaseT hub or device; 100BaseTX hub or device
Cable supported	10BaseT: unshielded twisted-pair (UTP) 100BaseTX: unshielded twisted-pair (UTP), Category 5, EIA/TIA 568 or shielded twisted-pair (STP), Category 5, 100 ohm
Maximum cable distance	100 meters

Status LEDs

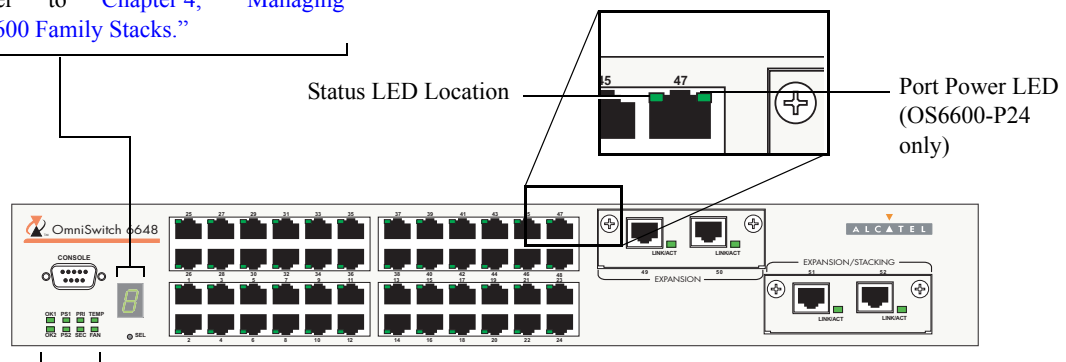
LEDs provide visual status information. These “status lights” are used to indicate conditions such as hardware and software status, primary and backup power supply status, primary and secondary status (stacked configurations), temperature and fan errors, slot number information, link integrity, and data flow. Refer to the diagram below for detailed information on OmniSwitch 6600 Family LED states.

Slot Indicator LED

The slot indicator LED is manually configurable and displays the switch’s current slot number in a stacked configuration (i.e., 1 – 8). For detailed information on manually setting the switch’s slot number, refer to [Chapter 4, “Managing OmniSwitch 6600 Family Stacks.”](#)

Ethernet Port LEDs

Each Ethernet port has a built-in corresponding status LED on the lefthand side (OS6624, OS6648, OS6600-P24), below the port (OS6600-U24), or above the port (OS6602-24 and OS6602-48). This LED indicates the link and activity status for each Ethernet port. The LED displays green when a valid Ethernet cable connection exists. Flashes green as data is transmitted or received on the port. The OS6600-P24 only has a right-hand PoE LED. This LED displays solid green when power is properly supplied to the port. Flashes green when there is an overload or short. And this LED is off if there is a power failure.



Hardware and Software Status LEDs

OK1. Hardware Status. Displays solid green when powered on and the switch has passed hardware diagnostic tests. Displays solid amber when powered on and the switch has failed hardware diagnostic tests.

OK2. Software Status. Blinks green when the switch’s system management software is operational. Displays solid amber when a system software failure occurs. Blinks amber when the software is in a transitional state (e.g., when software is being downloaded to the switch).

Power Supply LEDs

PS1. Displays solid green when the primary (i.e., factory-installed) power supply status is OK and the power supply is operating normally. Displays solid amber in the unlikely event of a power supply failure.

PS2. Displays solid green when the optional redundant power supply status is OK and the power supply is operating normally. Displays solid amber if no redundant power supply is installed or in the unlikely event of a redundant power supply failure.

Stack LEDs

PRI. Displays solid green when if the switch is either a stand-alone switch or the primary switch in a stack; otherwise, if the switch status is secondary or idle, this LED is off.

SEC. Displays solid green if the switch is the secondary switch in a stack; otherwise, this LED is off.

Temperature Management LEDs

TEMP. Displays solid green when the switch is operating within the allowed temperature range; displays solid amber if a temperature error occurs (i.e., the switch is operating outside the temperature range).

FAN. Displays solid green when all fans in the fan tray are running at normal speed. Displays solid amber if a fan error occurs (i.e., one or more fans are not running at normal speed).

Front Panel LED Descriptions (OS6648 Shown)

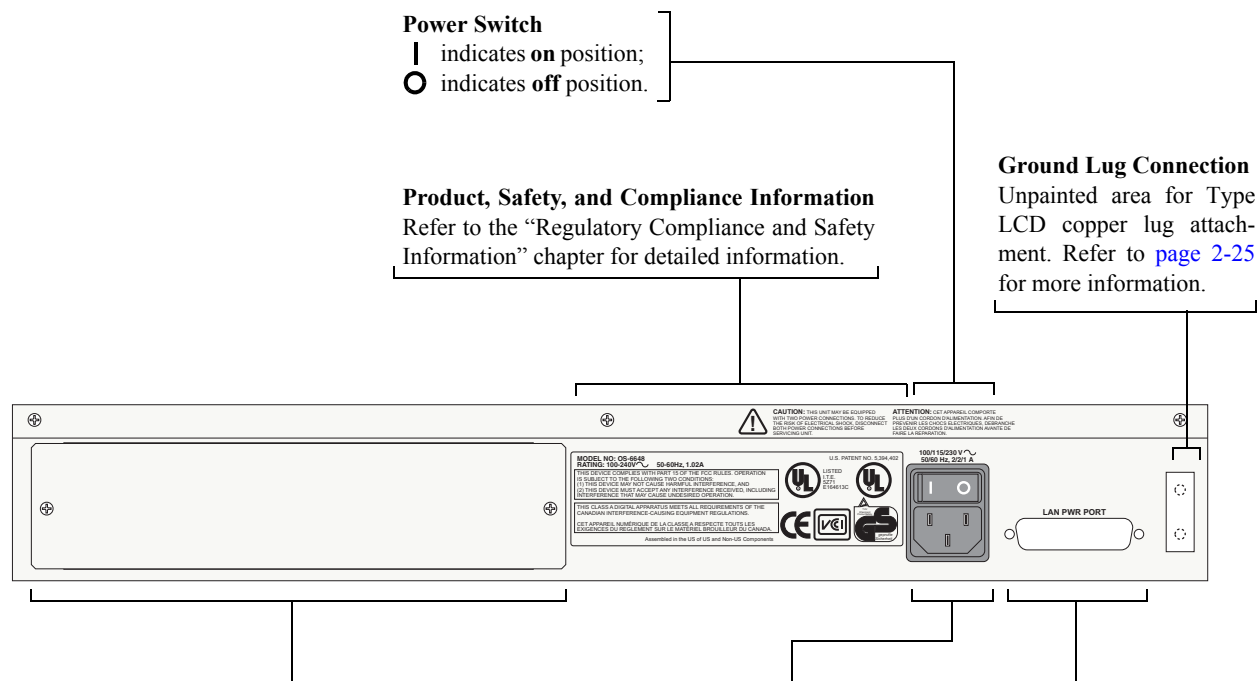
Note. For information on uplink module LEDs, refer to [page 2-36](#). For information on stacking module LEDs, refer to [page 2-39](#).

Rear Panel

The rear panel of OmniSwitch 6600 Family switches contains the following major components:

Note. Arrangement and location of components vary depending on chassis type.

- Factory-installed power supply (all OmniSwitch 6600 Family switches)
- Backup power supply bay for optional OS6600-BPS (OS6624, OS6648, OS6600-U24), OS6602-BPS (OS6602-24 and OS6602-48), or OS6602-BPS-DC (OS6602-24 and OS6602-48) power supply
- Connector for OS6600-BPS-P PoE backup power supply (OS6600-P24 only)
- Power switch (OS6624, OS6648, OS6600-U24, OS6600-P24)
- Grounding block for type LCD8-10A-L grounding lug (all OmniSwitch 6600 Family switches)



Redundant Power Supply Bay

Slot for optional user-installable OS6600-BPS (OS6624, OS6648, OS6600-U24) or OS6602-BPS (OS6602-24 and OS6602-48) backup power supply. For more information on the backup power supply, including technical specifications and installation instructions, refer to [“Backup Power Supply” on page 2-26](#).

Note: The OS6600-P24 does not have a backup power supply bay. Instead, it has a connector for the 6600-BPS-P PoE backup power supply.

Power Connector Socket

Type IEC-320-C13. Supports one 10 amp power cord.

It is recommended that you use only Alcatel-provided power cords.

PoE Power Connector

Reserved for use with the PoE backup power supply on the OS6600-P24. See [Chapter 3, “Installing and Managing Power over Ethernet \(PoE\).”](#)

OmniSwitch 6600 Family Rear Panel

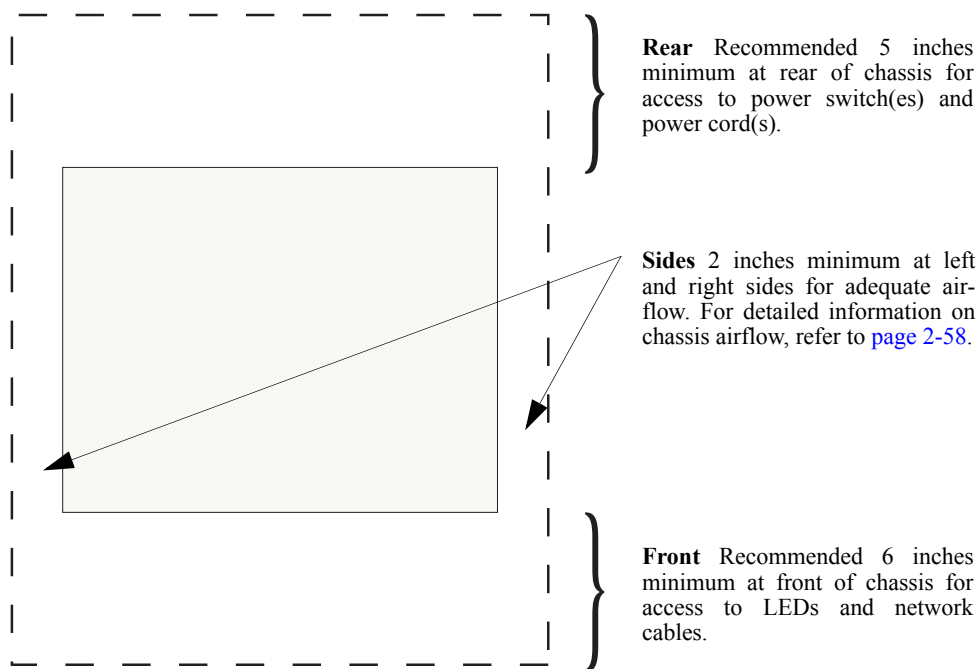
Mounting the Switch

Note. If you are relocating the switch, be sure to power it down and remove all network, stacking, and power cables before moving.

Airflow Considerations

Be sure that your switch is placed in a well-ventilated, static-free environment. Always allow adequate clearance at the front, rear, and sides of the switch.

The following diagram shows recommended minimum clearances for adequate chassis airflow and access to components at the rear of the chassis—e.g., backup power supply and power switch(es).



OmniSwitch 6600 Family Chassis Top View

Note. Never obstruct the air intake vents located at the sides of the chassis. Obstructing these vents can cause switch failure. Clearance is not required at the top and bottom of the chassis. For detailed chassis airflow diagrams, refer to “[Chassis Airflow](#)” on [page 2-58](#).

Installation Options

There are two ways in which the OmniSwitch 6600 Family switches can be installed:

- Tabletop installation
- Rack-mount installation

Installing the Switch on a Tabletop or Bench

OmniSwitch 6600 Family switches can be installed freestanding as tabletop units. Place your switch in a stable, flat, static-free surface.

Note. OmniSwitch 6600 Family switches must be placed “right side up.” Never attempt to operate a switch positioned on its side.

To install the switch as a tabletop unit, follow the steps below:

- 1** Position the chassis on the table or bench where it is to be installed.
- 2** Be sure that adequate clearance has been provided for chassis airflow and access to the front, back, and sides of the switch. For recommended clearances, refer to [page 2-21](#). Also, be sure that you have placed the chassis within reach of all required AC power sources.
- 3** If you are placing multiple switches in a stacked configuration, carefully stack the remaining switches, one on top of the other. Up to eight switches may be stacked to form a single virtual chassis. Be sure to maintain adequate clearance at the front, rear, left, and right side of all switches. Also, be sure that you have placed all switches in the stack within reach of required AC power sources.

Rack-Mounting the Switch

Refer to the important guidelines below before installing the OmniSwitch chassis in a rack.

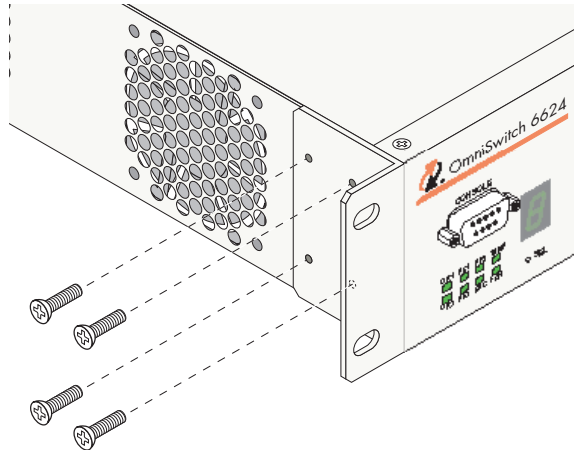
- It is recommended that two people install the switch in the rack—one person to hold the chassis and position it in the rack, and a second person to secure the chassis to the rack using attachment screws (not supplied).
- Alcatel provides two rack-mount flanges with each OmniSwitch 6600 Family switch. These flanges support standard 19-inch rack mount installations. These flanges must be attached to the chassis before the switch can be rack mounted.

Note. If you are installing the switch in a 23-inch wide rack, Alcatel offers optional 23-inch rack-mounting hardware. For more information, contact your Alcatel representative.

- Alcatel does not provide rack-mount screws. Use the screws supplied by the rack vendor.
- To prevent a rack from becoming top heavy, it is recommended that you install heavier equipment at the bottom of the rack whenever possible.
- If you are installing the switch in a relay rack, be sure to install and secure the rack per the rack manufacturer’s specifications.
- Review [page 2-21](#) for important chassis airflow and access recommendations before installing.

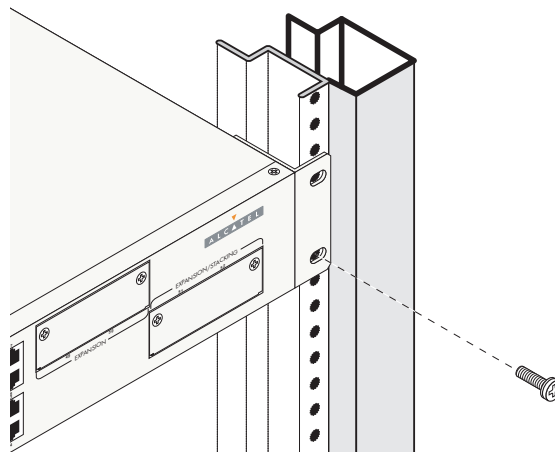
To rack-mount the switch, follow the steps below:

- 1** Align the holes in the provided rack-mount flanges with the four threaded holes in the OmniSwitch chassis. These threaded holes are located in the left and right sides of the chassis, near the front panel.
- 2** Attach the flanges to the chassis using the provided Phillips-head screws. Be sure to tighten each of the screws firmly using a Phillips screwdriver.



Attaching a Rack-Mount Flange

- 3** After the rack-mount flanges are secured to the chassis, mark the holes on the rack where the switch is to be installed.
- 4** Lift and position the switch until the rack-mount flanges are flush with the rack post.
- 5** Align the holes in the flanges with the rack holes that were marked in step 3.
- 6** Once the holes are aligned, insert a rack mount screw (not provided) through the *bottom hole* of each flange. Tighten both screws until they are secure.



Attaching the Switch to the Rack

Note. Be sure to install the screws in the *bottom hole* of each flange, as shown, before proceeding.

7 Once the screws at the bottom of each flange are secure, install the remaining two rack mount screws. Be sure that all screws are securely tightened.

Note. If you are installing multiple switches in a rack to form a stacked configuration, refer to the “[Rack Mounting Stacked Configurations](#)” section below.

Rack Mounting Stacked Configurations

If you are rack mounting multiple switches in a stacked configuration, be sure to place all switches in vertically-adjacent rack positions. This will ensure that all required stacking cables will have adequate length for the installation. For additional instructions on rack mounting a stacked configuration, follow the steps below:

- 1** Install the rack mount flanges for *all switches* that are to be included in the stacked configuration, as described on [page 2-23](#). Up to eight switches may be stacked to form a single virtual chassis.
- 2** Place the next switch in the stack directly on top of the previously installed switch.
- 3** Align the holes in the flanges with the holes in the rack’s vertical posts.
- 4** Once the holes are aligned, insert a rack mount screw through the bottom hole of each flange. Tighten both screws until they are secure. Once the screws at the bottom of each flange are secure, install the remaining two rack mount screws. Be sure that all screws are securely tightened.
- 5** Repeat steps 1 through 4 above for all remaining switches.

Power Cords

Because the power cord is the power supply's main disconnect device, it should be plugged into an easily accessible outlet. In the event that your power cord is lost or damaged, refer to the specifications below.

Specifications

The power cord to be used with 115-Volt configuration is a minimum type SJT (SVT) 18/3, rated at 250 Volts AC, 10 Amps with a maximum length of 15 feet. One end terminates in an IEC 320 attachment plug and the other end terminates in a NEMA 5-15P plug.

The power cord to be used with 230-Volt configuration is minimum type SJT (SVT) 18/3, rated 250 Volts AC, 10 Amps with a maximum length of 15 feet. One end terminates in an IEC 320 attachment plug and the other end terminates as required by the country where it will be installed.

European cords must be Harmonized (HAR) type. Refer to the information below for power plug types by region:

Power Cord Types	
North America	NEMA 5-15-P (US), C22.2, No. 42 (Canada)
United Kingdom / Ireland	BS 1,363
Europe	CEE 7/7
Japan	JIS 8,303
Australia	AS 3,112
India	BS 546
Italy	CIE 2,316
Switzerland / Liechtenstein	SEV 1011
Denmark / Greenland	SRAF 1,962 / D816 / 87
Argentina	AR1-10P

Grounding the Chassis

The switch has two threaded holes for grounding screws located on the back of the chassis. These holes use 10-32 screws and are approximately one inch apart. These holes are surrounded by a small paint-free rectangular area, which provides metal-to-metal contact for a ground connection.

Use this connector to supplement the ground provided by the AC power cord. To do so, install a Panduit Grounding Lug (type LCD8-10A-L) using 8AWG copper conductors to the paint-free rectangular area. Be sure to use a crimping tool.

Backup Power Supply

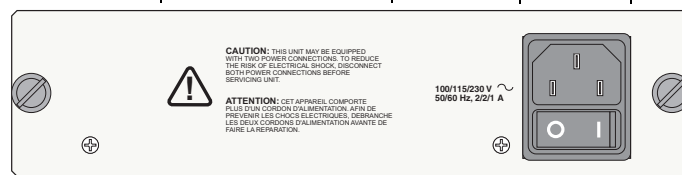
OmniSwitch 6600 Family switches provide one factory-installed power supply per chassis. OmniSwitch 6624, 6600-U24, and 6648 switches provide one bay for the optional OS6600-BPS backup power supply while OmniSwitch 6602-24 and 6602-48 switches provide one bay for the optional OS6602-BPS or OS6602-BPS-DC backup power supplies. This backup power supply bay is located on the chassis rear panel (see [page 2-20](#) for details).

Product, Safety, and Compliance Information.

Refer to the “Regulatory Compliance and Safety Information” chapter for detailed information.

Power Connector Socket. Type IEC-320-C13 (OS6600-BPS and OS6602-BPS). Supports one 10 amp power cord.

It is recommended that you use Alcatel-provided power cords.

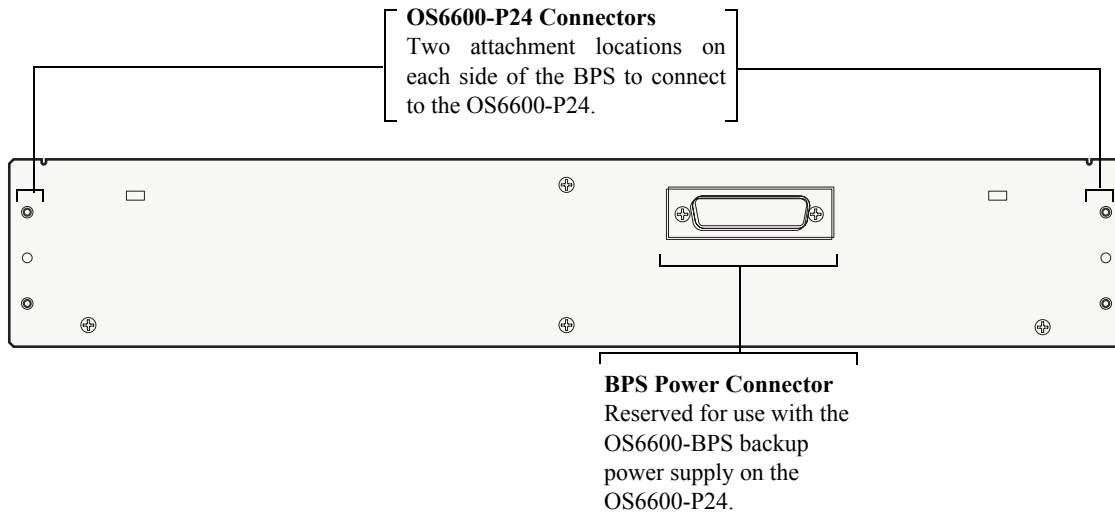


Power Switch.

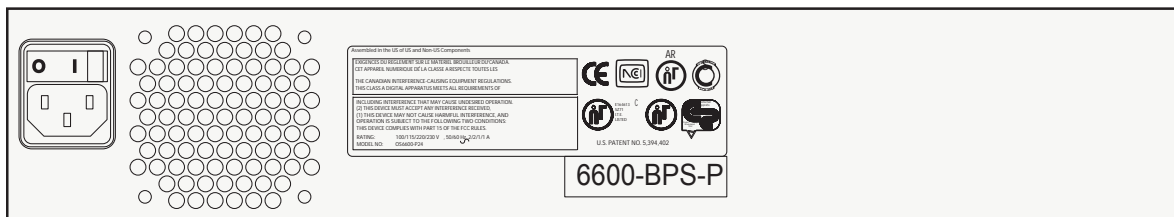
- | indicates **on** position;
- indicates **off** position.

Backup Power Supply Front Panel (OS6600-BPS Shown)

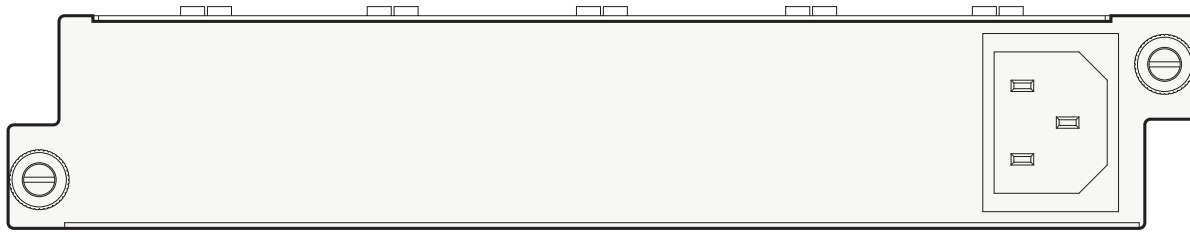
OmniSwitch 6600-P24 switches use the external OS6600-BPS-P backup power supply, which provides backup electrical current used for switch functions and PoE ports. The OS6600-BPS-P contains two built-in power supplies—one supplying 55 Watts (100 Watts maximum) for switch functions and the other supplying 210 watts for PoE functions. For information on setting up the OS6600-BPS-P, refer to [Chapter 3, “Installing and Managing Power over Ethernet \(PoE\).”](#)



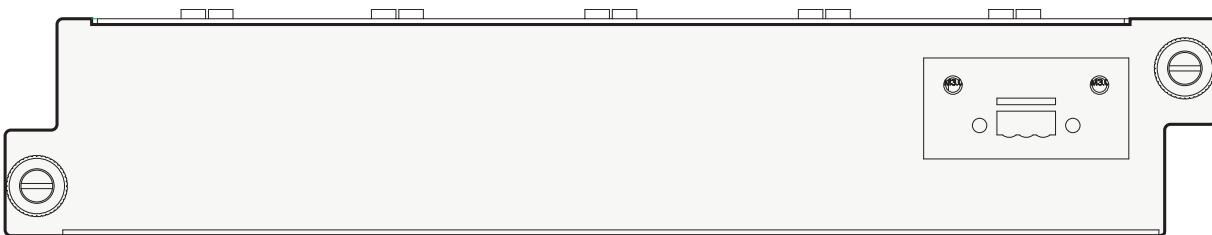
OS6600-BPS-P Backup Power Supply Front Panel



OS6600-BPS-P Backup Power Supply Back Panel



OS6602-BPS Backup Power Supply Front Panel



OS6602-BPS-DC Backup Power Supply Back Panel

For information on installing a backup power supply, refer to [page 2-31](#). For information on removing a backup power supply, refer to [page 2-33](#).

Power Supply Specifications

The tables below list the specifications for OmniSwitch 6600 Family backup power supplies:

OS6600-BPS Backup Power Supply Specifications	
Input Voltage	85 to 250 VAC
Input Frequency	47 to 63 Hz
Efficiency	75% measured at 115 VAC
Temperature	Operating: 0 to +50 Celsius Non-Operating: - 40 to +85 Celsius
Relative Humidity	5% to 90% Relative Humidity (Operating) 0% to 95% Relative Humidity (Storage)
Altitude	10,000 feet @ +32 Celsius

OS6602-BPS Backup Power Supply Specifications

Input Voltage	85 to 150 VAC
Input Frequency	47 to 63 Hz
Efficiency	75% measured at 115 VAC
Temperature	Operating: 0 to +50 Celsius Non-Operating: - 40 to +85 Celsius
Relative Humidity	5% to 90% Relative Humidity (Operating) 0% to 95% Relative Humidity (Storage)
Altitude	10,000 feet @ +32 Celsius

OS6602-BPS-DC Backup Power Supply Specifications

Input Voltage	36 to 72 VAC
Input Frequency	N/A
Efficiency	75% measured at 115 VAC
Temperature	Operating: 0 to +50 Celsius Non-Operating: - 20 to +85 Celsius
Relative Humidity	5% to 90% Relative Humidity (Operating) 0% to 95% Relative Humidity (Storage)
Altitude	10,000 feet @ +32 Celsius

OS6600-BPS-P PoE Backup Power Supply Specifications

Width	15.50 inches, approx.
Height	2.61 inches, approx.
Height (rack units)	1.5 RU
Depth	4.53 inches, approx.
Ambient Temperature	0 to +70 deg C, operating; -40 to +85 deg C, non-operating
Humidity	5% to 90% Relative Humidity (Operating) 0% to 95% Relative Humidity (Storage)
Altitude	10000 feet at +32 deg C, operating; 50000 feet, non-operating

Power Supply Redundancy

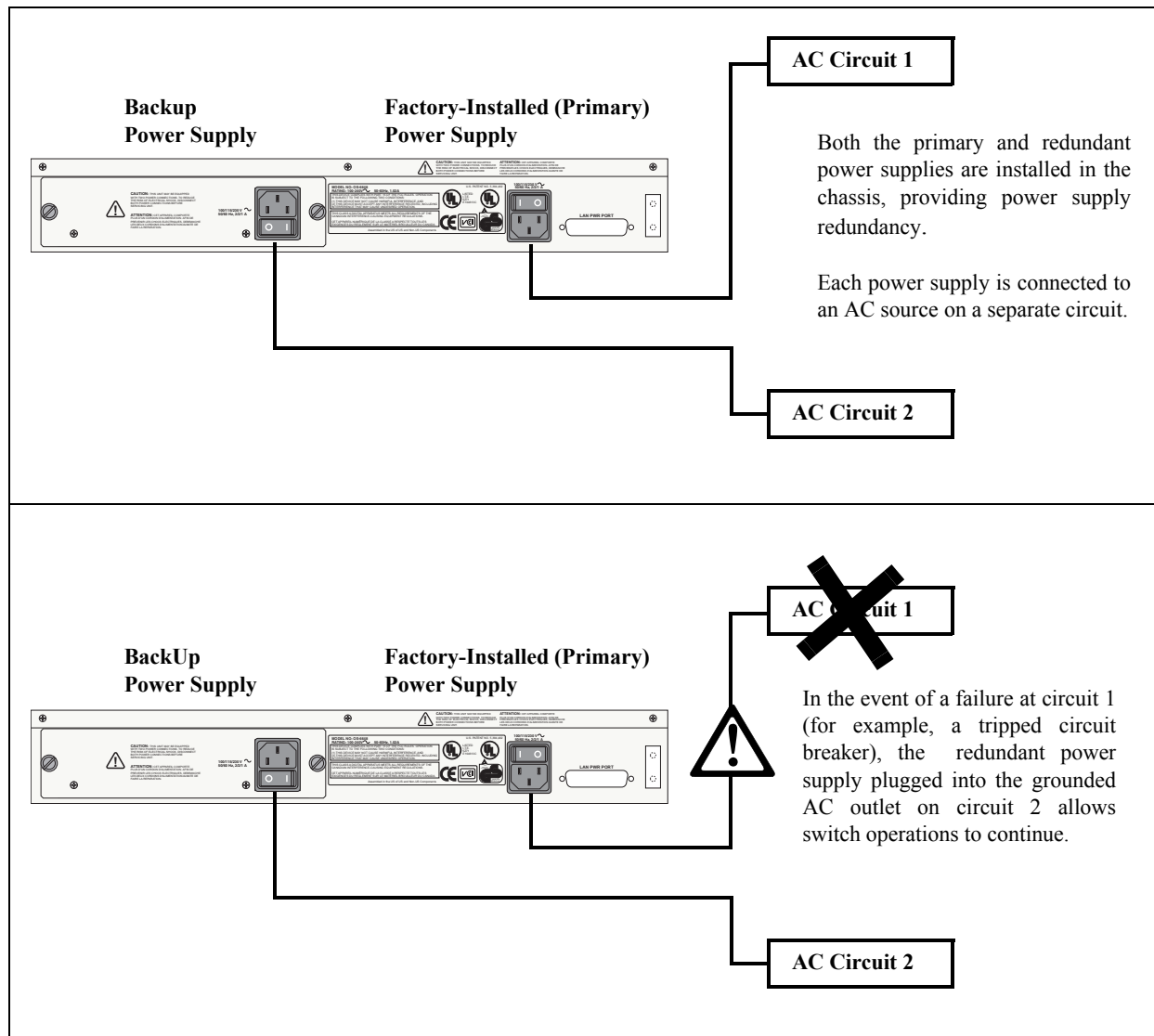
After a backup power supply is installed, the primary (factory-installed) power supply continues to take on the full power load for switch operations. Meanwhile, the backup power supply operates in *active standby* mode. If the primary power supply fails unexpectedly, the backup power supply automatically takes up the full power load without disrupting the switch.

Redundant AC Circuit Recommendation

When a backup power supply is installed, it is recommended that the AC source connected to the backup power supply resides on a separate circuit from the primary power supply. With redundant AC, if a single circuit fails, the switch's backup power supply (on a separate circuit) will likely be unaffected and the switch can continue operating.

Note. The switch must have a backup power supply installed for the redundant AC circuit recommendation to be applicable.

The diagram below shows a simple redundant AC circuit scenario for OS6600 Family switches.



OmniSwitch 6600 Family Redundant AC Circuit Example

Installing a Backup Power Supply

You can add a backup power supply to the chassis at any time without disturbing the switch's network functions. You are not required to power down the switch.

Note. This section only applies to OmniSwitch 6624, 6648, and 6600-U24 switches.

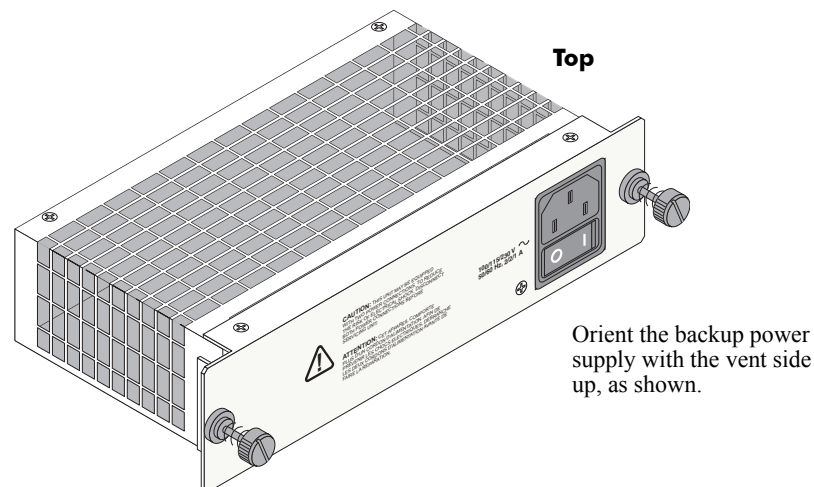
Hot Swapping

Hot swapping a backup power supply refers to the action of *replacing* the unit while the switch is operating. Again, because it is a backup (i.e., redundant component), you are not required to power off the switch's primary power source.

To add the optional backup power supply to the chassis, follow the steps below:

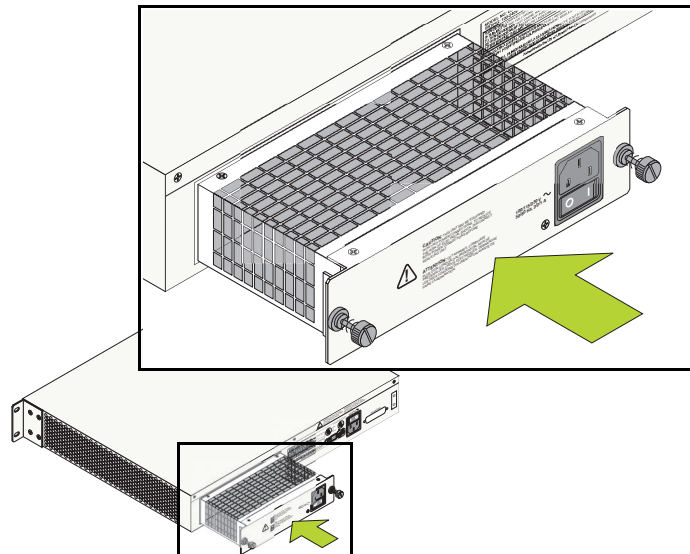
Anti-Static Warning. Before handling any components, free yourself of static by wearing a grounding strap, or by grounding yourself properly. Static discharge can damage the switch and the backup power supply.

- 1 Locate the backup power supply bay. The backup power supply bay is located at the switch's rear panel. Refer to [page 2-20](#) for a view of the chassis rear panel.
- 2 If there is a blank cover panel installed at the backup power supply bay, uninstall it by removing the two Phillips attachment screws. After the attachment screws have been removed, carefully pry the blank cover panel out and away from the chassis. Set the cover panel and attachment screws aside.
- 3 To avoid attempting to install the backup power supply upside down, orient the unit as shown in the diagram below.



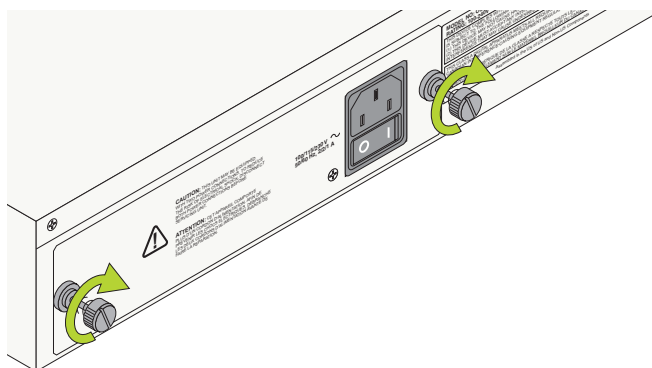
Orienting the Backup Power Supply

- 4 Grasp the front portion of the power supply and carefully insert the rear of the casing into the power supply bay. Slide the power supply back until the unit meets the connector in the chassis power supply bay.



Inserting the Backup Power Supply

- 5 Continue sliding the power supply back until the front panel is flush with the rear panel of the chassis. *Do not force the power supply into the bay. Otherwise you can damage the connectors.*
- 6 Tighten the two captive screws, located at the left and right sides of the power supply's front panel. *Be sure not to overtighten the captive screws. If you use a screwdriver, the torque used to tighten the screws must not exceed 2.3 inch pounds.*



Tightening the Captive Screws

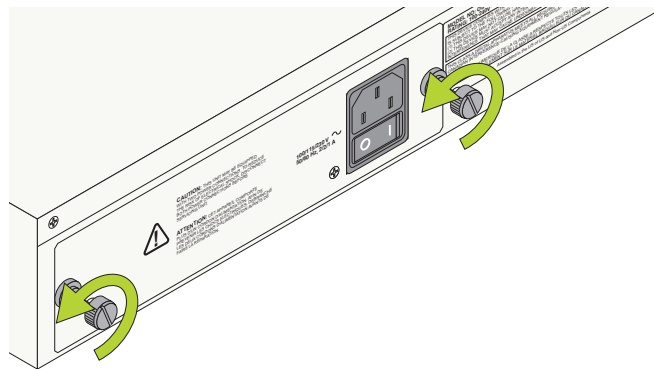
- 7 Verify that the power supply's on/off switch is in the off (O) position.
- 8 Connect the power supply cord (provided) into an easily accessible power source.

Note. If you are installing backup power supplies in a multi-chassis, stacked configuration, install all remaining units by repeating steps 1 through 8 for each chassis.

Removing a Backup Power Supply

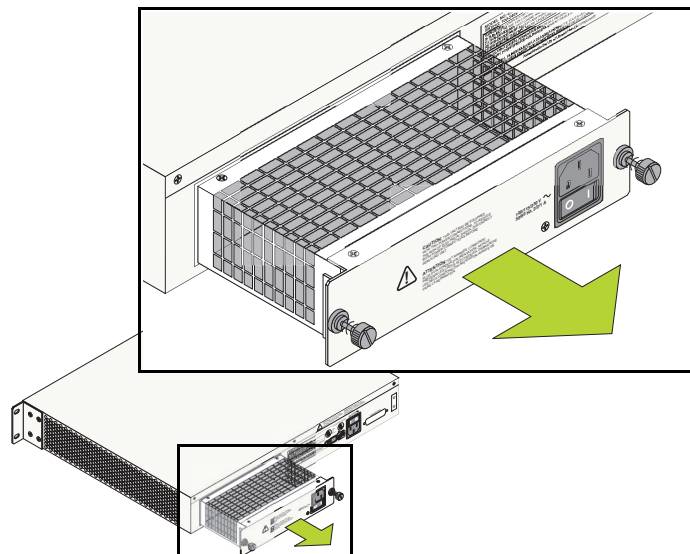
- 1 Before removing the backup power supply, make sure that the power switch is in the off (O) position.
- 2 Unplug the power cord from the AC power source, as well as from the socket located on the power supply's front panel.
- 3 Loosen the two captive screws, located at the left and right sides of the power supply's front panel. If necessary, use a flat-blade screwdriver to loosen the screws.

Note. Be sure that both captive screws are completely disengaged from the threaded holes in the chassis before continuing.



Loosening the Captive Screws

- 4 Once the captive screws are completely disengaged, grasp both captive screws and slowly pull the power supply out of the power supply bay.



Removing the Backup Power Supply

- 5 Store the power supply in a secure, static-free location. Placing the unit in an anti-static bag is recommended.

Blank Cover Panel Requirement

If you are not replacing the backup power supply being removed, be sure to install a blank cover panel (supplied with your switch) over the empty power supply bay. To install a blank cover panel, follow the steps below.

- 1 Place the blank cover panel over the empty power supply bay and insert two Phillips screws (also supplied with the switch) through the panel and into the threaded holes in the chassis.
- 2 Once the screws are inserted, fasten the panel to the chassis by tightening the screws. *Be sure not to overtighten the screws.*

Viewing Primary and Backup Power Supply Status

The switch constantly monitors primary and backup power supply operation. If either power supply unexpectedly shuts down, the switch sends out a trap to the user and the PS1 and/or PS2 LEDs on the chassis front panel turn amber.

Note. For detailed LED information, including the PS1 and PS2 LEDs, refer to [“Status LEDs” on page 2-18](#).

To check the number of power supplies currently operating, and the status of each power supply, use the **show power** command. For example:

```
-> show power
Power Supplies in chassis 8
PS   Operational Status
-----+-----
PS-1  UP
PS-2           NOT PRESENT
```

The primary (i.e., factory-installed) power supply is listed as **PS-1** in the **show power** command output. The backup power supply is listed as **PS-2**. In the example above, there is no backup power supply installed in the chassis.

Note. For information on viewing primary and backup power supply status *in a stacked configuration*, refer to [page 2-35](#).

Viewing Power Supply Status for Stacked Configurations

When entering the **show power** command on the primary switch in a stacked configuration, you can either enter only the **show power** syntax *or* you can specify a specific slot number. For more information, refer to the examples below:

A Slot Number is Specified

If you specify a *slot number* after the command syntax, power supply information for only the corresponding switch displays. For example:

```
-> show power 2
Power Supplies in chassis 2
PS    Operational Status
-----+-----
PS-1   UP
PS-2           NOT PRESENT
```

In the example above, power supply status for the switch operating in slot 2 displays. No backup power supply is installed in the slot 2 chassis (or the backup power supply is powered off).

No Slot Number is Specified

If you do not enter a slot number, power supply information for *all switches in the stack* displays. For example:

```
-> show power
Power Supplies in chassis 1
PS    Operational Status
-----+-----
PS-1   UP
PS-2   UP

Power Supplies in chassis 2
PS    Operational Status
-----+-----
PS-1   UP
PS-2           NOT PRESENT
```

The example above shows the power supply status for a stack consisting of two switches. A backup power supply is present and running in the switch operating in slot 1; no backup power supply is installed in the switch operating in slot 2 (or the unit is powered off).

More Information on Stacked Configurations. For detailed information on stacked OmniSwitch 6600 Family switches, refer to [Chapter 4, “Managing OmniSwitch 6600 Family Stacks.”](#)

Gigabit Ethernet Uplink Modules

OmniSwitch 6624, 6600-U24, 6600-P24, and 6648 switches support the following Gigabit Ethernet uplink modules:

- OS6600-GNI-C2 Copper Gigabit Ethernet Uplink Module
- OS6600-GNI-U2 Fiber Gigabit Ethernet Uplink Module

Note. OmniSwitch 6602-24 and 6602-48 switches have built-in Gigabit Ethernet MiniGBIC ports.

OS6600-GNI-U2

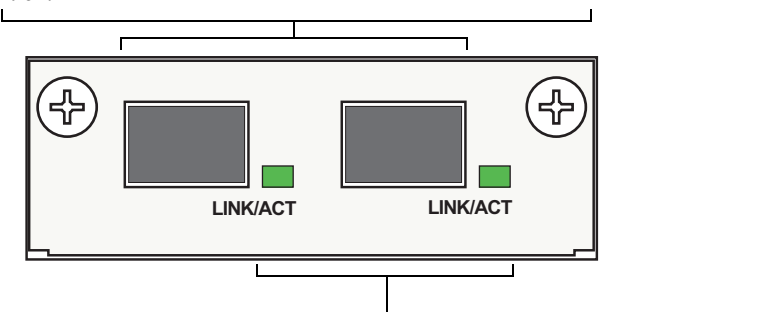
The OS6600-GNI-U2 Gigabit Ethernet uplink module provides two MiniGBIC bays that support 1000BASE-X MiniGBIC transceivers. Cable options include multimode, single mode, and long-reach single mode fiber. The OS6600-GNI-U2 supports bi-directional wire speed switching on all ports simultaneously. Also, because it supports *any combination* of the three MiniGBIC options, this module offers a flexible solution for various customer requirements.

This uplink module may be used to support multiple uplinks from the wiring closet switch to the Gigabit Ethernet backbone links in the core. With the two MiniGBIC ports provided by the OS6600-GNI-U2, up to 16 Gigabit Ethernet ports can be supported in a fully-loaded stacked configuration.

Note. For detailed information on MiniGBICs, including technical specifications and installation instructions, refer to “[Mini Gigabit Interface Converters \(MiniGBICs\)](#)” on page 2-44.

MiniGBIC Slots

The OS6600-GNI-U2 provides two universal MiniGBIC ports for hot-pluggable MiniGBIC fiber transceivers. MiniGBIC options include multimode, single mode, and long-reach single mode fiber. Refer to “[Mini Gigabit Interface Converters \(MiniGBICs\)](#)” on page 2-44 for more information.



LINK/ACT LEDs

Each MiniGBIC port has a built-in corresponding LED. This LED indicates the link and activity status for each MiniGBIC installed. The LED displays green when a valid cable connection exists. Flashes green as data is transmitted or received on the interface.

OS6600-GNI-U2 Gigabit Ethernet Uplink Front Panel

OS6600-GNI-U2 Uplink Module Specifications

Number of ports	2 (hot-pluggable)
Power	Approximately 5 Watts
Connector type	MiniGBIC
Standards supported	802.3z; 1000Base-SX, 1000Base-LX
Data rate	1 Gigabit per second (full duplex)

Note. Because specifications vary depending on the type(s) of MiniGBIC installed in the OS6600-GNI-U2 uplink module, refer to [“MiniGBIC Specifications” on page 2-45](#) for additional specifications.

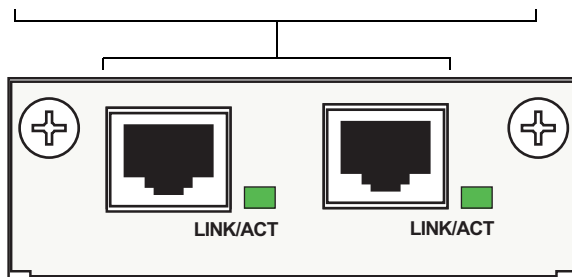
OS6600-GNI-C2

The OS6600-GNI-C2 Gigabit Ethernet uplink module provides two fixed 1000BASE-T (copper) connections. This uplink module supports bi-directional wire speed switching on all ports simultaneously and offers a flexible solution for Gigabit Ethernet-over-copper applications.

The OS6600-GNI-C2 uplink module supports multiple uplinks from the wiring closet to Gigabit Ethernet backbone links in the core. With the two RJ-45 ports on this uplink module, up to 16 Gigabit Ethernet ports can be supported in a fully loaded stackable configuration.

Copper Gigabit Ethernet Ports

The OS6600-GNI-C2 provides two fixed 1000BASE-T (copper) connections. The port type is RJ-45.



LINK/ACT LEDs

Each RJ-45 port has a built-in corresponding LED. This LED indicates the link and activity status for each Gigabit Ethernet copper port. The LED displays green when a valid cable connection exists. Flashes green as data is transmitted or received on the interface.

OS6600-GNI-C2 Gigabit Ethernet Uplink Front Panel

OS6600-GNI-C2 Uplink Module Specifications

Number of ports	2 twisted-pair
Power	Approximately 9 Watts
Connector type	RJ-45
Standards supported	802.3z, 802.3ab; 1000Base-T
Data rate	1 Gigabit per second (full duplex)
Connections supported	1000BaseT connection to backbone or server
Cable supported	1000BaseT unshielded twisted-pair (UTP), Category 5e
Maximum cable distance	100 meters, Category 5

Stacking Module

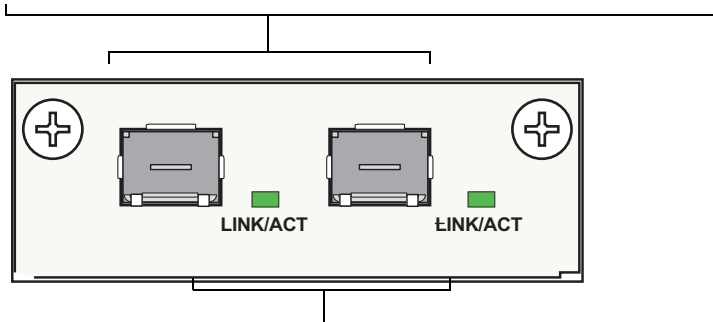
Stacking modules are used to connect OmniSwitch 6624, 6600-U24, and 6648 switches in a *stack*. (OmniSwitch 6602-24 and 6602-48 switches have built-in stacking ports.) The stack acts as a virtual chassis, with switches serving as primary and secondary management modules and Network Interface (NI) modules. For detailed information, refer to [Chapter 4, “Managing OmniSwitch 6600 Family Stacks.”](#)

For information on installing stacking modules, refer to [page 2-40](#). For information on removing stacking modules, refer to [page 2-42](#). For important installation restrictions, refer to the chassis front panel information on [pages 2-2 and 2-12](#), as well as [“Installing Uplink and Stacking Modules” on page 2-40](#).

Note. Stacking modules cannot be hot swapped at any time. For more information on hot swapping, refer to [Chapter 1, “OmniSwitch 6600 Family.”](#)

HSSDC Stacking Connectors

The stacking module provides two dedicated High Speed Serial Data Connectors (HSSDCs). These connectors are used to connect OS6624/OS6600-U24/OS6648 switches in a stack. For detailed information on stacks, refer to [Chapter 4, “Managing OmniSwitch 6600 Family Stacks.”](#)



LINK/ACT LEDs

Each stacking connector has a built-in corresponding LED. This LED indicates the link and activity status for each connector. The LED displays green when a valid cable connection exists. Flashes green as data is being transmitted to, or received from, the adjacent switch in the stack.

Stacking Module Front Panel

Stacking Module Specifications

Number of ports	2
Power	Approximately 8 Watts
Data Speed	1 Gigabit per second per stacking cable installed
Connector type	High Speed Serial Data Connector (HSSDC)
Chassis port locations	27 and 28 (OS6624, OS6600-U24, and OS6600-P24); 51 and 52 (OS6648)
Hot-swappable with other module types?	No

Installing Uplink and Stacking Modules

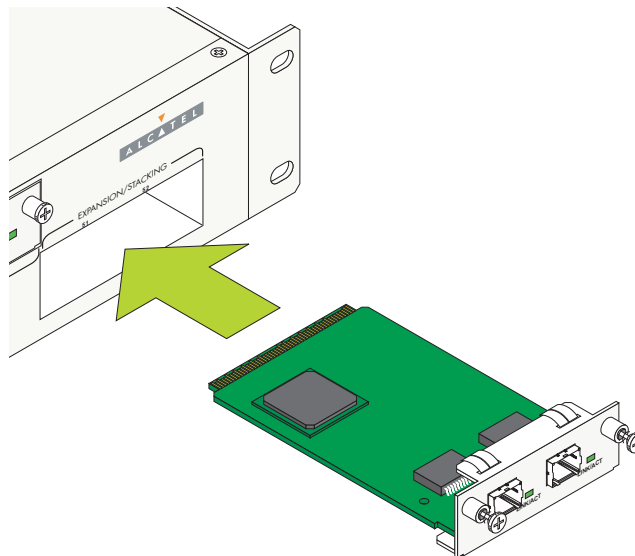
Before installing uplink or stacking modules, refer to the important guidelines listed below:

Note. These steps only apply to OmniSwitch 6624, 6600-U24, 6600-P24, and 6648 switches and not to OmniSwitch 6602-24 and 6602-48 switches.

- Stacking modules can only be installed in the far-right module slot. This slot is labeled EXPANSION/STACKING and contains port positions 27 and 28 (OS6624/6600-U24) or 51 and 52 (OS6648).
- *Do not* attempt to install stacking modules at the EXPANSION slot at port positions 25 and 26 (OS6624/OS6600-U24) or 49 and 50 (OS6648).
- OS6600-GNI-U2 and OS6600-GNI-C2 uplink modules can be installed in either slot location. However, if you install a Gigabit Ethernet uplink module in the EXPANSION/STACKING slot, the switch must be used as a stand-alone unit.
- Port numbers are clearly marked on the OS6624, OS6600-U24, and OS6648 chassis front panels.
- Stacking modules *cannot* be hot swapped at any time.

Anti-Static Warning. Before handling any components, free yourself of static by wearing a grounding strap, or by grounding yourself properly. Static discharge can damage the switch and the uplink or stacking module.

- 1** If there is a blank cover panel installed over the uplink or stacking module slot position, uninstall it by removing the two Phillips attachment screws. After the attachment screws have been removed, carefully pry the blank cover panel out and away from the chassis. Set the cover panel and attachment screws aside.
- 2** Holding the uplink or stacking module by the front panel, carefully slide the circuit board into the card guide located in the chassis slot.

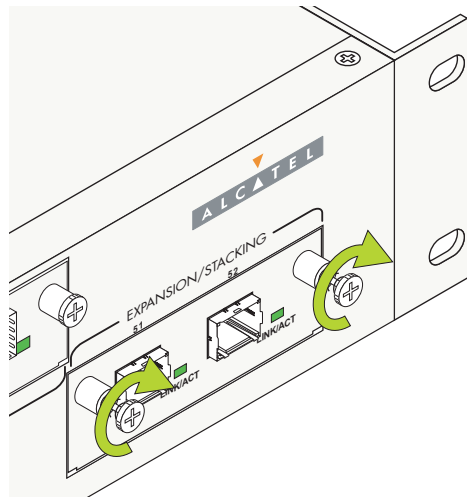


Inserting the Uplink or Stacking Module

Note. The module should slide in easily. Do not force the module into the slot. If any resistance is encountered, ensure that the module is aligned properly in the card guide and try again.

3 Slide the module back until the backplane connector is inserted in the chassis backplane; the module's front panel should be flush with the front of the chassis. *Do not force the module into the slot. Otherwise you can damage the connectors.*

4 Once the module is firmly seated and flush with the chassis front panel, secure the module by tightening the two captive screws. *Be sure not to overtighten the captive screws. If you use a screwdriver, the torque used to tighten the screws must not exceed 2.3 inch pounds.*



Tightening the Captive Screws

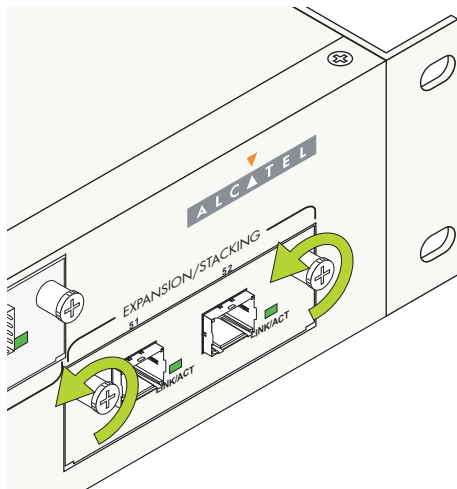
Removing Uplink and Stacking Modules

To remove an uplink or stacking module from the chassis, follow the steps below:

Anti-Static Warning. Before handling any components, free yourself of static by wearing a grounding strap, or by grounding yourself properly. Static discharge can damage the switch and the uplink or stacking module.

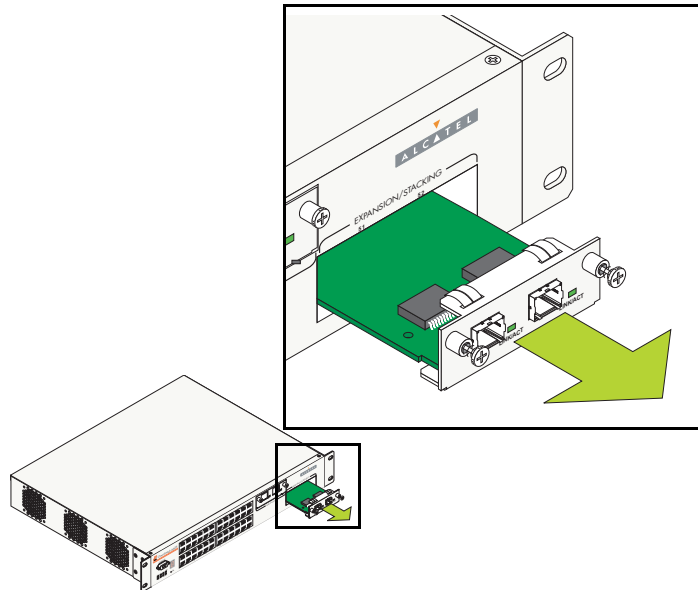
1 Loosen the two captive screws, located at the left and right sides of the module's front panel. If necessary, use a Phillips screwdriver to loosen the screws.

Note. Be sure that both captive screws are completely disengaged from the threaded holes in the chassis before continuing.



Loosening the Captive Screws

- 2 Once the captive screws are completely disengaged, grasp both captive screws and slowly pull the module out of the slot.



Removing the Module

- 3 Store the module in a secure, static-free location. Placing the module in an anti-static bag is recommended.

Blank Cover Panel Requirement

If you are not replacing the uplink or stacking module being removed, be sure to install a blank cover panel (supplied with your switch) over the empty module slot. To install a blank cover panel, follow the steps below.

- 1 Place the blank cover panel over the empty slot and insert two Phillips screws (also supplied with the switch) through the panel and into the threaded holes in the chassis.
- 2 Once the screws are inserted, fasten the panel to the chassis by tightening the screws. *Be sure not to overtighten the screws.*

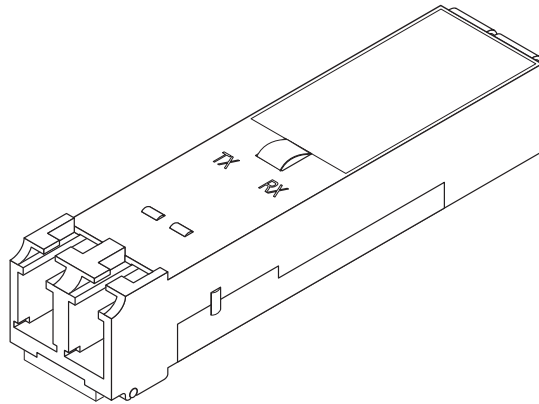
Mini Gigabit Interface Converters (MiniGBICs)

Mini Gigabit Interface Converters (MiniGBICs) are fiber-based Gigabit Ethernet transceivers for use with OS66-GNI-U2 uplink modules on OmniSwitch 6624, 6600-U24, 6600-P24, and 6648 switches and the built-in MiniGBIC ports on OmniSwitch 6602-24 and 6602-48 switches. MiniGBICs are interchangeable and hot-swappable, thus providing users an easy, flexible solution for adapting OS6600 Family switches to different physical interfaces types.

Alcatel offers three MiniGBIC options:

- MiniGBIC-SX: 1000BASE-SX short-haul
- MiniGBIC-LX: 1000BASE-LX long-haul
- MiniGBIC-LH-70: 1000BASE-LH extra long-haul

All MiniGBIC types support bi-directional wire-speed switching. For additional technical specifications on all three MiniGBIC types, refer to [page 2-45](#). For information on installing MiniGBICs, refer to [page 2-46](#).



Mini Gigabit Interface Converter (MiniGBIC)

Note. For OS6624, OS6600-U24, 6600-P24, and OS6648 switches, MiniGBICs can be used on OS6600-GNI-U2 uplink modules *only*. For detailed information on OS6600-GNI-U2 uplink modules, refer to [page 2-36](#).

MiniGBIC Specifications

MiniGBIC-SX Technical Specifications

Connector type	LC
Standards supported	802.3z, 1000Base-SX
Connections supported	1000Base-SX connection to backbone or server
Fiber optic cable supported	Multimode
Source type	850 nm
Output optical power	-9.5 to 0 dBm
Input optical power	-17 to 0 dBm
Cable distances	≈ 220 m

MiniGBIC-LX Technical Specifications

Connector types	LC
Standards supported	802.3z, 1000Base-LX
Connections supported	1000Base-LX connection to backbone or server
Fiber optic cable supported	Single mode
Source type	1310 nm
Output optical power	-11 to -3 dBm
Input optical power	-19 to -3 dBm (intermediate reach single mode)
Cable distances	≈10 km

MiniGBIC-LH-70 Technical Specifications

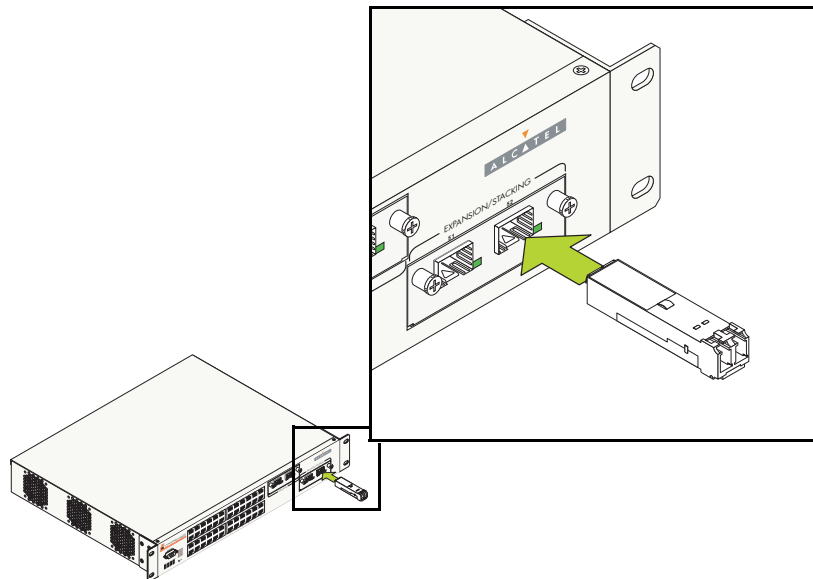
Connector types	LC
Standards supported	802.3z, 1000Base-LH70
Connections supported	1000Base-LH70 connection to backbone or server
Fiber optic cable supported	Single mode
Source type	1550 nm
Output optical power	0 to +5 dBm
Input optical power	-23 to -3 dBm
Cable distances	Long reach single mode fiber ≈ 70 km (up to 100 km using premium single mode fiber or dispersion-shifted single mode fiber)

Installing MiniGBICs

Each OS6600-GNI-U2 uplink module supports up to two MiniGBICs on OmniSwitch 6624, 6600-U24, 6600-P24, and 6648 switches. On OmniSwitch 6602-24 and 6602-48 there are two built-in MiniGBIC ports for MiniGBICs. These MiniGBICs are packaged separately and therefore *are not* factory-installed. You can install the MiniGBIC(s) by following the steps below:

Anti-Static Warning. Before handling any components, free yourself of static by wearing a grounding strap, or by grounding yourself properly. Static discharge can damage the MiniGBIC, as well as the switch and uplink module.

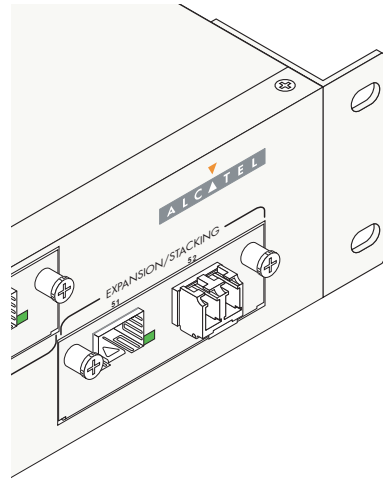
1 Holding the MiniGBIC by its sides, carefully slide it into the desired MiniGBIC slot in the OS6600-GNI-U2 module on OmniSwitch 6624, 6600-U24, 6600-P24, and 6648 switches or the built-in MiniGBIC ports on OmniSwitch 6602-24 and 6602-48 switches, as shown.



Inserting the MiniGBIC (OS6648 Shown)

Note. The MiniGBIC should slide in easily. *Do not force the MiniGBIC into the slot. Otherwise you can damage the connectors.* If any resistance is encountered, ensure the MiniGBIC is aligned and oriented properly, as shown in the diagram above.

- 2 Push the MiniGBIC into the slot until it is completely inserted and securely seated in the OS6600-GNI-U2 module on OmniSwitch 6624, 6600-U24, 6600-P24, and 6648 or the built-in MiniGBIC ports on OmniSwitch 6602-24 and 6602-48 switches, as shown.



Installed MiniGBIC (OS6648 Shown)

Removing MiniGBICs

MiniGBICs modules can be hot swapped. You are not required to power off the switch before removing a MiniGBIC from the uplink module. To remove a MiniGBIC from the uplink module, follow the steps below:

Anti-Static Warning. Before handling any components, free yourself of static by wearing a grounding strap, or by grounding yourself properly. Static discharge can damage the MiniGBIC, as well as the switch and uplink module.

- 1 On OmniSwitch 6624, 6600-U24, 6600-P24, and 6648 switches only, make sure that the captive screws on the OS6600-GNI-U2 are tightened and the module is securely installed in the chassis.
- 2 There is a small removal handle at the front of the MiniGBIC transceiver. Carefully lift this handle; then, grasp the handle and carefully pull the MiniGBIC from the module.
- 3 Store the MiniGBIC in a secure, static-free location. Placing the MiniGBIC in an anti-static bag is recommended.

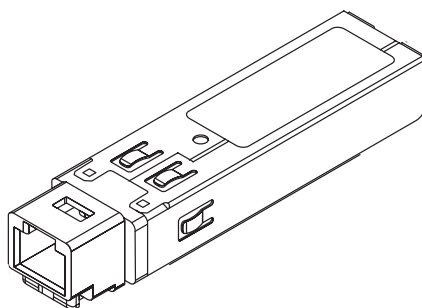
100 Mbps SFPs (OS6600-U24)

Small Form Pluggable (SFP) modules are fiber-based 100 Mbps Ethernet transceivers for use with ports 1 through 24 on OmniSwitch 6600-U24. SFPs are interchangeable and hot-swappable, thus providing users an easy, flexible solution for adapting OS6600-U24 switches to different physical interfaces types.

Alcatel offers four SFP options:

- SFP-100-LC-MM: 100BaseFM short haul, LC connector
- SFP-100-LC-SM15: 100BaseFS intermediate haul, LC connector
- SFP-100-LC-SM40: 100BaseFS long haul, LC connector
- SFP-100-MTRJ-MM: 100BaseFM short haul, MTRJ connector

All SFP types support bi-directional wire-speed switching. For additional technical specifications on all four SFP types, refer to [page 2-49](#). For information on installing SFPs, refer to [page 2-51](#).



SFP Module

Note. SFPs can be used on ports 1 through 24 on OmniSwitch 6600-U24 switches *only*.

100 Mbps SFP Specifications

SFP-100-LC-MM Technical Specifications

Connector type	LC
Standards supported	IEEE 802.3u, IAB RFCs 826, 894 (see data sheet for more information)
Connections supported	100BaseFM
Fiber optic cable supported	multimode fiber
Source type	62.5/125 and 50/125 micron
Output optical power	-19 to -14 dBm (62.5/125); -22.5 to -14 dBm (50/125)
Input optical power (Receiver sensitivity)	-31 to -14 dBm
Cable distances	2 km

SFP-100-LC-SM15 Technical Specifications

Connector types	LC
Standards supported	IEEE 802.3u, IAB RFCs 826, 894 (see data sheet for more information)
Connections supported	100BaseFS
Fiber optic cable supported	single mode fiber
Source type	9/125 micron
Output optical power	-15 to -8 dBm
Input optical power (Receiver sensitivity)	-31 to 0 dBm
Cable distances	15 km

SFP-100-LC-SM40 Technical Specifications

Connector types	LC
Standards supported	IEEE 802.3u, IAB RFCs 826, 894 (see data sheet for more information)
Connections supported	100BaseFS
Fiber optic cable supported	single mode fiber
Source type	9/125 micron
Output optical power	-5 to 0 dBm
Input optical power (Receiver sensitivity)	-34 to 0 dBm
Cable distances	40 km

SFP-100-MTRJ-MM Technical Specifications

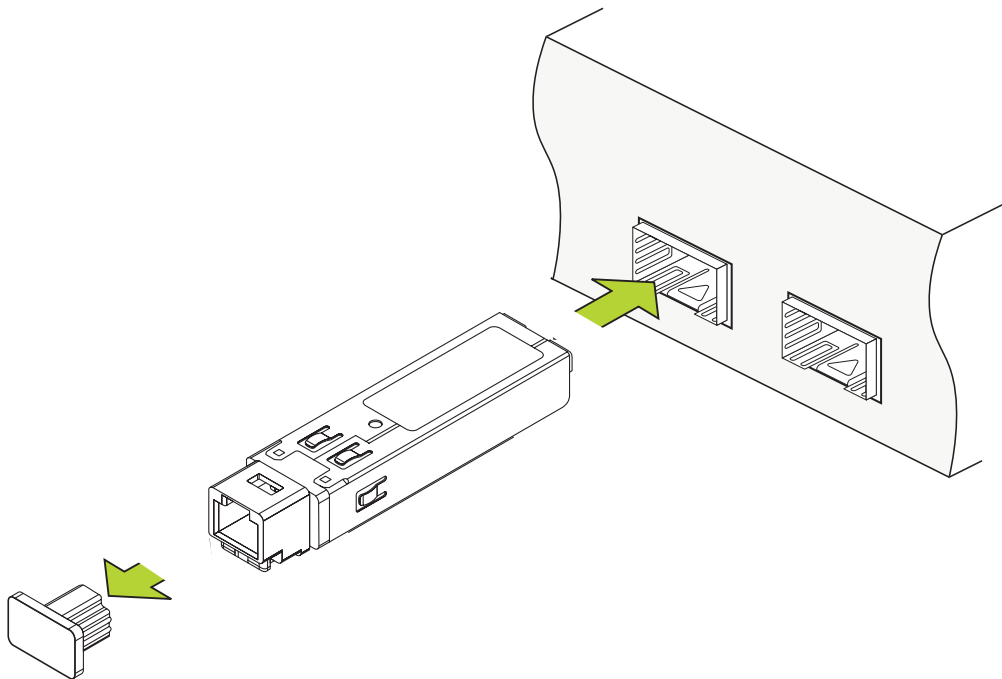
Connector types	MTRJ
Standards supported	IEEE 802.3u, IAB RFCs 826, 894 (see data sheet for more information)
Connections supported	100BaseFM
Fiber optic cable supported	multimode fiber
Source type	62.5/125 and 50/125 micron
Output optical power	-20 to -14 dBm (multimode)
Input optical power (Receiver sensitivity)	-31 to -14 dBm
Cable distances	2 km

Installing SFPs (OS6600-U24)

OmniSwitch 6600-U24 switches support up to 24 (twenty-four) 100 Mbps Small Form Pluggable (SFP) modules. These SFPs are packaged separately and therefore *are not* factory-installed. You can install the SFP(s) by following the steps below:

Anti-Static Warning. Before handling any components, free yourself of static by wearing a grounding strap, or by grounding yourself properly. Static discharge can damage the SFP, as well as the switch and uplink module.

- 1 Align the transceiver with the transceiver slot on the OS6600-U24 as shown.



Inserting the SFP

Note. The SFP should slide in easily. *Do not force the SFP into the slot. Otherwise you can damage the connectors.* If any resistance is encountered, ensure the SFP is aligned and oriented properly, as shown in the diagram above.

- 2 Holding the SFP by its sides, carefully slide it into the desired SFP slot (ports 1–24) until it clicks into place; this is an indication that the connectors are firmly seated.

Removing SFPs (OS6600-U24)

SFPs modules can be hot swapped. You are not required to power off the switch before removing a SFP from the uplink module. To remove a SFP from the uplink module, follow the steps below:

Anti-Static Warning. Before handling any components, free yourself of static by wearing a grounding strap, or by grounding yourself properly. Static discharge can damage the SFP, as well as the switch and uplink module.

1 On some SFPs there is a small removal handle at the front of the SFP transceiver. Carefully lift this handle.

On other SFPs there is an ejector button located just below the transceiver port. Push this button to disengage the SFP.

2 Grasp the SFP and carefully pull it from the OS6600-U24.

3 Store the SFP in a secure, static-free location. Placing the SFP in an anti-static bag is recommended.

Temperature Management

The operating temperature of your switch is an important factor in its overall health. In order to avoid a temperature-related system failure, your switch must always run at an operating temperature between 0 and 45 degrees Celsius (32 to 113 degrees Fahrenheit).

To avoid chassis over-temperature conditions, follow these important guidelines:

- 1** Be sure that your switch is installed in a well-ventilated environment. To ensure adequate airflow, leave at least two inches of clearance at the left and right sides.
- 2** If your switch chassis is not fully populated with uplink or stacking modules, be sure that blank cover panels are installed at empty slot positions at all times. Blank cover panels help regulate airflow and thus regulate the overall operating temperature in the switch. Refer to [page 2-59](#) for more information.

Viewing Chassis Temperature Status

As with power supply status, the switch constantly monitors the chassis temperature. If a temperature error has occurred, the switch sends out a trap to the user and the TEMP LED on the chassis front panel displays amber.

Note. For detailed LED information, including the TEMP LED, refer to “[Status LEDs](#)” on [page 2-18](#).

To check the current chassis temperature status, use the **show temperature** command. For example:

```
-> show temperature

Temperature for chassis 1
  Hardware Board Temperature (deg C)      = 39,
  Hardware Cpu Temperature (deg C)        = N/A,
  Temperature Upper Threshold Range (deg C) = 30 to 77,
  Temperature Upper Threshold (deg C)     = 57,
  Temperature Range                       = UNDER THRESHOLD,
  Temperature Danger Threshold (deg C)    = 77
```

In the example above, the switch’s current temperature is 39 degrees Celsius. The switch is operating under the upper temperature threshold, which is 57 degrees Celsius.

Viewing Temperature Status for Stacked Configurations

When entering the **show temperature** command on the primary switch *in a stacked configuration*, you can either enter only the **show temperature** syntax *or* you can specify a specific slot number. For more information, refer to the examples below:

A Slot Number is Specified

If you specify a *slot number* after the command syntax, chassis temperature information for only the corresponding switch displays. For example:

```
-> show temperature 3

Temperature for chassis 3
Hardware Board Temperature (deg C)      = 43,
Hardware Cpu Temperature (deg C)        = N/A,
Temperature Upper Threshold Range (deg C) = 30 to 77,
Temperature Upper Threshold (deg C)     = 57,
Temperature Range                        = UNDER THRESHOLD,
Temperature Danger Threshold (deg C)    = 77
```

The example above shows chassis temperature information for the switch operating in slot position 3 only. The current temperature is 43 degrees Celsius. The switch is operating under the upper temperature threshold.

No Slot Number is Specified

If you do not enter a slot number, fan status information for *all switches in the stack* displays. For example:

```
-> show temperature

Temperature for chassis 1
Hardware Board Temperature (deg C)      = 40,
Hardware Cpu Temperature (deg C)        = N/A,
Temperature Upper Threshold Range (deg C) = 30 to 77,
Temperature Upper Threshold (deg C)     = 57,
Temperature Range                        = UNDER THRESHOLD,
Temperature Danger Threshold (deg C)    = 77

Temperature for chassis 2
Hardware Board Temperature (deg C)      = 31,
Hardware Cpu Temperature (deg C)        = N/A,
Temperature Upper Threshold Range (deg C) = 30 to 77,
Temperature Upper Threshold (deg C)     = 57,
Temperature Range                        = UNDER THRESHOLD,
Temperature Danger Threshold (deg C)    = 77
```

The example above shows chassis temperature information for a stack consisting of two switches. The current temperature of the switch operating in slot position 1 is 40 degrees Celsius; the current temperature of the switch operating in slot 2 is 31 degrees Celsius. Both switches are operating under the upper temperature threshold.

More Information on Stacked Configurations. For detailed information on stacked OmniSwitch 6600 Family switches, refer to [Chapter 4, “Managing OmniSwitch 6600 Family Stacks.”](#)

Temperature Errors

The switch monitors the chassis ambient air temperature at all times via an onboard sensor. If an over-temperature condition occurs, there are two different levels of error severity:

- Warning threshold has been exceeded
- Danger threshold has been exceeded

Warning Threshold

If the temperature exceeds the switch's user-configurable *warning threshold*, the switch sends out a trap. Traps are printed to the console in the form of text error messages. The chassis TEMP LED also displays amber, indicating an error. (Refer to [page 2-18](#) for status LED locations and descriptions.)

When the warning threshold has been exceeded, switch operations remain active. However, it is recommended that immediate steps be taken to address the over-temperature condition.

Addressing warning threshold temperature conditions may include:

- Checking for a chassis air flow obstruction
- Checking the ambient room temperature
- Checking the fan status using the **show fan** command. See [page 2-56](#) for more information.
- Verifying that the warning threshold has not been manually set to an otherwise common or acceptable ambient temperature—for example, 31 degrees Centigrade. (The default warning threshold is 57 degrees Celsius. This value may be configured using the **temp-threshold** command. The current warning threshold may be viewed using the **show temperature** command.)

Note. Once the ambient air temperature is reduced to below the warning threshold, the switch's TEMP LED automatically resets to green.

Danger Threshold

If the chassis ambient air temperature rises above the switch's danger threshold of 80 degrees Centigrade, the switch will power off. The danger threshold is factory-set and cannot be configured by the user.

Addressing danger threshold temperature conditions may include:

- Checking for a chassis air flow obstruction
- Checking the ambient room temperature
- Checking the fan status using the **show fan** command. See [page 2-56](#) for more information.

Note. When the danger threshold has been exceeded, the switch's TEMP LED will not reset from amber to green until after a system boot.

Viewing Fan Status

The switch also constantly monitors fan operation. If any of the three fans unexpectedly shuts down, the switch sends out a trap to the user and the FAN LED on the chassis front panel displays amber.

Note. For detailed LED information, including the FAN LED, refer to “Status LEDs” on page 2-18.

To check the current fan status, use the **show fan** command. For example:

```
-> show fan
Chassis Fan  Status
-----+-----+-----
      1      1  Running
      1      2  Running
      1      3  Running
```

In the example above, all three fans are operating normally.

Viewing Fan Status for Stacked Configurations

When entering the **show fan** command on the primary switch *in a stacked configuration*, you can either enter only the **show fan** syntax *or* you can specify a specific slot number. For more information, refer to the examples below:

A Slot Number is Specified

If you specify a *slot number* after the command syntax, fan status information for only the corresponding switch displays. For example:

```
-> show fan
Chassis Fan  Status
-----+-----+-----
      1      1  Running
      1      2  Running
      1      3  Running
```

In the example above, fan status displays only for the switch operating in slot 3.

No Slot Number is Specified

If you do not enter a slot number, fan status information for *all switches in the stack* displays.
For example:

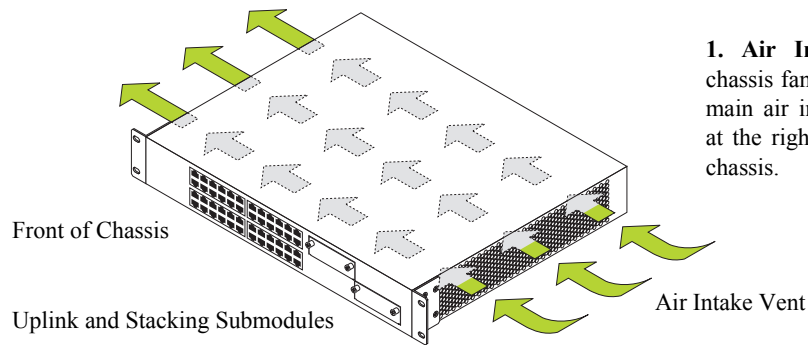
```
-> show fan
Chassis Fan  Status
-----+-----+-----
  1      1  Running
  1      2  Running
  1      3  Running
  2      1  Running
  2      2  Running
  2      3  Running
  3      1  Running
  3      2  Running
  3      3  Running
```

The example above shows the fan status for a stack consisting of three switches. All fans for those switches—operating in slots 1, 2, and 3—are operating normally.

More Information on Stacked Configurations. For detailed information on stacked OmniSwitch 6600 Family switches, refer to [Chapter 4, “Managing OmniSwitch 6600 Family Stacks.”](#)

Chassis Airflow

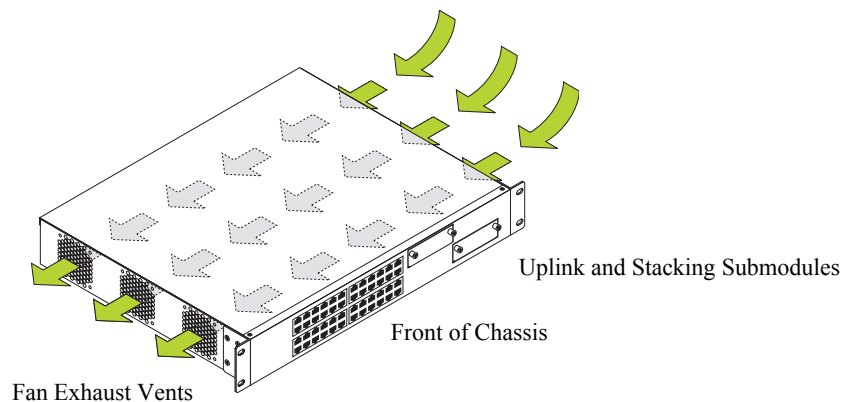
The fans pull air from the air intake vent located at the right-hand side of the chassis. The air is directed horizontally through the chassis and past the circuit board and uplink and stacking modules (if installed). Airflow is then exhausted through the fan vents at the left-hand side of the chassis. Refer to the illustrations below for more information.



1. Air Intake. The three chassis fans pull air from the main air intake vent located at the right-hand side of the chassis.

Right Side Air Intake Vent

2. Airflow. The air from the intake vent is directed through the chassis past the main circuit board and submodule daughtercards. This airflow provides required cooling for these chassis components.



3. Air Exhaust. The airflow is exhausted through the fan exhaust vents at the left-hand side of the chassis.

Left Side Fan Exhaust Vents

Important. Maintain a clearance of at least two inches at the left and right sides. Otherwise, airflow may become restricted. Restricted airflow can cause your switch to overheat; overheating can lead to switch failure.

Blank Cover Panels

Blank cover panels are provided with your switch and are used to cover empty uplink and stacking module slots, as well as empty backup power supply bays (if applicable). These cover panels play an important role in chassis airflow and temperature management. They also protect the switch's processor board and other sensitive internal switch components from physical damage by closing off a chassis that is not fully populated.

If your switch is not fully populated with submodules and a redundant power supply, and blank cover panels are *not installed* over empty slot locations, airflow is adversely affected.

When blank cover panels are missing, air does not take the direct route from the air intake vent, through the chassis, and then out through the fan exhaust vents. Instead, a portion of the airflow is allowed to be drawn in through the front and rear of the chassis. As a result, normal airflow is disrupted and an extra task is placed on the fans to cool the chassis.

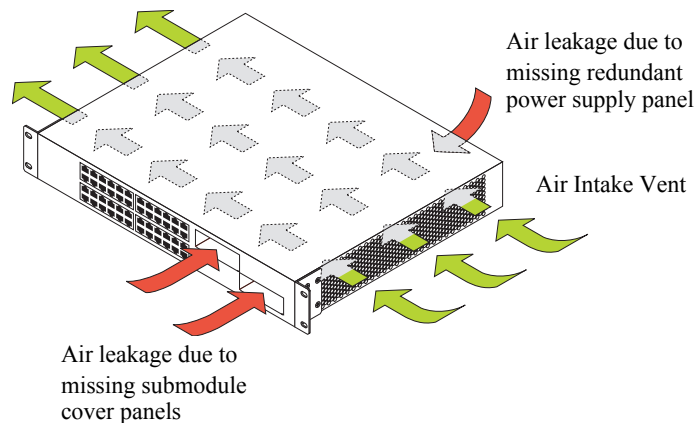
Cover panels also provide protection for module processor boards and other sensitive internal switch components by closing off a chassis that is not fully populated.

Because they regulate airflow and help protect internal chassis components, blank cover panels should remain installed over empty module slots and power supply bays at all times.

Missing Cover Panels.

Missing cover panels affect airflow by allowing air to be drawn in through the front submodule bays or rear redundant power supply bay. As a result, the direct route from the air intake vent to the fan exhaust vents is disrupted.

For optimal airflow and chassis component protection, always install blank cover panels over empty slots and power supply bays.



Effects of Missing Blank Panels on Chassis Airflow

Pinouts

10/100 Ethernet Port – RJ-45 Pinout

Pin Number	Description
1	RX+
2	RX-
3	TX+
4	not used
5	not used
6	TX-
7	not used
8	not used

Copper Gigabit Ethernet Port – RJ-45 Pinout

Pin Number	Description
1	BI_DB+
2	BI_DB-
3	BI_DA+
4	BI_DD+
5	BI_DD-
6	BI_DA-
7	BI_DC+
8	BI_DC-

10/100 Mbps Power over Ethernet Port – RJ-45 Pinout (OS6600-P24)

Pin Number	Description
1	RX+ (-VDC)
2	RX- (-VDC)
3	TX+ (+VDC)
4	
5	
6	TX- (+VDC)
7	
8	

RS232 Console Port – Female DB9 Connector Pinout

Pin Number	Signals as DCE Console Port
1	Not used
2	RXD (from the switch)
3	TXD (to the switch)
4	Not used
5	Ground
6	Not used
7	Not used
8	Not used
9	Not used
Shell	Chassis ground

RJ-45 Console Port – Connector Pinout

Pin Number	Signals as DCE Console Port
1	CTS
2	NC
3	RXD
4	Ground
5	Ground
6	TXD
7	NC
8	RTS (Request To Send)
Shell	Chassis Ground

Console Port

The console port, located on the chassis front panel, provides a serial connection to the switch and is required when logging into the switch for the first time (refer to the *OmniSwitch 6600 Family Getting Started Guide* for more information). By default, this connector (a female DB-9 on OmniSwitch 6624 and 6648 switches and an RJ-45 port on OmniSwitch 6600-U24, 6600-P24, 6602-24, and 6602-48 switches) provides a DCE console connection.

Serial Connection Default Settings

The factory default settings for the serial connection are as follows:

baud rate	9600
parity	none
data bits (word size)	8
stop bits	1
X-ON/X-OFF	enabled

Modifying the Serial Connection Settings

If you wish to modify the default serial connection settings (i.e., baud rate, parity, data bits, and stop bits), refer to the following steps.

Note. You must be connected to the switch via the console port before attempting to change serial connection settings. Otherwise, an error message will display. In addition, if you are changing console port settings for switches in a stack, console port settings must be identical on all switches. Before configuring the console port settings for a stack, make sure each switch is operating in either primary or secondary status (you may be required to disconnect switches within the stack before beginning).

- 1 Enter **modify boot parameters** at the CLI prompt. The boot prompt displays:

```
Boot >
```

- 2 To change the baud rate, enter **boot serialbaudrate**, followed by the desired baud rate value. Options include 1200, 2400, 4800, 9600 (default), 19200, 38400, 57600, 76800, and 115200. For example:

```
Boot > boot serialbaudrate 19200
```

Note. Setting the console port to speeds above 9600 baud can cause problems with Zmodem uploads.

- 3 To change the parity value, enter **boot serialparity**, followed by the desired parity value. Options include none (default), even, and odd. For example:

```
Boot > boot serialparity even
```

4 To change the data bits (i.e., word size) value, enter **boot serialwordsize**, followed by the number of data bits. Options include 7 and 8 (default). For example:

```
Boot > boot serialwordsize 7
```

5 To change the stop bits value, enter **boot serialstopbits**, followed by the number of stop bits. Options include 1 (default) and 2. For example:

```
Boot > boot serialstopbits 2
```

6 Verify your current changes by entering **show** at the boot prompt:

```
Boot > show
Edit buffer contents:
Serial (console) baud           : 19200
Serial (console) parity        : even
Serial (console) stopbits      : 2
Serial (console) wordsize      : 7
```

(additional table output not shown)

7 You can save your changes to the **boot.params** file by entering **commit file** at the boot prompt:

```
Boot > commit file
```

Note. When the **commit file** command is used, changes will not be enabled until after the next switch reboot.

8 You can also save your changes in real time to the switch's running memory by entering **commit system** at the boot prompt:

```
Boot > commit system
```

Caution. There are two important things to consider when using the **commit system** command to save serial connection changes:

- Output to the terminal may become illegible due to incompatible serial connection settings between the switch and the terminal emulation software.
 - If you use the **commit system** command only, changes will *not* be saved to the switch's **boot.params** file and will be lost if the switch is rebooted. To save changes to the **boot.params** file, refer to step 7.
-

9 Return to the CLI prompt by entering **exit** at the boot prompt.

Configuring X-ON/X-OFF Protocol

By default, X-ON/X-OFF protocol is enabled on the console port. To enable and disable the X-ON/X-OFF protocol on a console port that you are logged into use the **session xon-xoff** command by entering **session xon-xoff** followed by either **enable** or **disable**.

For example, to disable X-ON/X-OFF on a console port enter:

```
-> session xon-xoff disable
```

Note. To enable or disable the X-ON/X-OFF protocol on secondary or idle switches in a stack you must log into those switches and then execute the **session xon-xoff** command.

Viewing Basic Chassis Information

This section covers the following basic chassis information and monitoring commands:

[show hardware info](#)
[show module](#)
[show module long](#) (and [show ni](#))
[show chassis](#)
[show cmm](#)
[show session xon-xoff](#)

Important Hardware Status Commands. Additional commands, used to view important hardware status information, are described earlier in this chapter:

- For information on viewing primary and backup power supply status, refer to [page 2-34](#).
 - For information on viewing chassis temperature status, refer to [page 2-53](#).
 - For information on viewing chassis fan status, refer to [page 2-56](#).
-

Hardware Information

To view basic hardware information about the switch, enter the [show hardware info](#) command at the CLI prompt. This command displays the following information:

- CPU type
- Flash and RAM memory information
- NVRAM battery status
- Jumper settings
- BootROM and Miniboot versions

For example:

```
-> show hardware info
CPU Type                : PowerPC 8245,
Flash Manufacturer     : SanDisk SDCFB-32
Flash size              : 32505856 bytes (31 MB),
RAM Manufacturer       : DataRam,
RAM size                : 134217728 bytes (128 MB),
NVRAM Battery OK      : YES,
Interrupt Boot Jumper  : ON,
Force UART Defaults Jumper : ON,
Run Extended Memory Diags Jumper : ON,
Spare Jumper           : ON,
BootROM Version        : 5.1.2.125,
Backup Miniboot Version : 5.1.2.125,
Default Miniboot Version : 5.1.2.125,
```

Stacked Configurations. For remote sessions (e.g., Telnet and WebView) the **show hardware info** command displays information for only the primary switch. The command may also be used while connected directly to the primary *or* secondary switch via the console port. For detailed information on stacked OS6600 Family switches, refer to [Chapter 4, “Managing OmniSwitch 6600 Family Stacks.”](#)

Slot and Component Information

To view basic slot position and component information, enter the **show module** command at the CLI prompt. This command displays the following information:

- Current slot position
- Alcatel part number
- Serial number
- Hardware revision level
- Manufacture date(s)
- Model name, also referred to as chassis type

For example:

```
-> show module
```

Slot	Part-Number	Serial #	HW Rev	Mfg Date	Model Name
CMM-1	902098-10	2313283p	210	FEB 05 2106€	OS6648
NI-1	902098-10	2313283p	210	FEB 05 2106€	OS6648

The **Slot** column lists both the main PCB (CMM) and 10/100 Ethernet bay (NI), along with the switch's current slot position. CMM-1 and NI-1 indicates that the switch and its corresponding 10/100 Ethernet bay (a virtual Network Interface card) have been assigned to slot position 1.

For complete descriptions of the command output, refer to the *OmniSwitch CLI Reference Guide*.

Stacked Configurations. You can use the **show module** command to display information for all switches in a stack, or for a specified switch only. When the **show module** syntax is entered with no specified slot number, information for all switches displays. When a slot position is specified in the command line (e.g., 3), information displays for the corresponding switch only. For detailed information on stacked OS6600 Family switches, refer to [Chapter 4, “Managing OmniSwitch 6600 Family Stacks.”](#)

Detailed Slot and Component Information

To view more detailed slot and component information, *including information on installed uplink and stacking modules*, use the **show module long** command.

Note. Because OmniSwitch 6600 Family switches can also be thought of as Network Interface modules in a virtual chassis, the **show ni** command displays the same information as the **show module long** command.

This command displays the following information:

- Model name, also referred to as chassis type
- Chassis description
- Alcatel part number
- Hardware revision level
- Serial number
- Manufacture date(s)
- Current power and operational status
- Base chassis MAC address (for more information on the base chassis MAC address, see [page 2-71](#))
- ASIC and firmware information
- Detailed information on all installed uplink and stacking modules
- Information on all installed MiniGBICs

For example:

```
-> show module long
CMM in slot 1
  Model Name:                OS6648 ,
  Description:               48PT 10/100 Stack,
  Part Number:               902098-10,
  Hardware Revision:         210,
  Serial Number:             2313283p,
  Manufacture Date:          FEB 05 2106€,
  Firmware Version:          N/A,
  Admin Status:              POWER ON,
  Operational Status:        UP,
  Power Consumption:         40,
  Power Control Checksum:    0x0,
  MAC Address:               00:d0:95:12:ed:00,
  ASIC - Physical:
```

(Screen output continued on next page.)

```
Module in slot 1
  Model Name:                OS6648 ,
  Description:               48PT 10/100 Stack,
  Part Number:               902098-10,
  Hardware Revision:         210,
  Serial Number:             2313283p,
  Manufacture Date:          FEB 05 2106€,
  Firmware Version:          N/A,
  Admin Status:              POWER ON,
  Operational Status:        UP,
  Power Consumption:         40,
  Power Control Checksum:    0x0,
  MAC Address:               00:d0:95:12:ed:02,
  ASIC - Physical:

  Daughter Board in port 1
    Model Name:               OS66MINIGBIC2 ,
    Description:              2pt Giga Fiber,
    Part Number:              902084-10,
    Hardware Revision:        201,
    Serial Number:            2263006P,
    Manufacture Date:         FEB 05 2106€,
    Firmware Version:         ,
    Admin Status:             POWER ON,
    Operational Status:       UP

  GBIC 1
    Model Name:               IBM,
    Description:              IBM,
    Part Number:              IBM42P12SNY,
    Hardware Revision:        AA10,
    Serial Number:            21P704213Z49IBM,
    Manufacture Date:         01040101,
    Firmware Version:         ,
    Admin Status:             POWER ON,
    Operational Status:       UP

  Daughter Board in port 2
    Model Name:               OS66-STK-MOD ,
    Description:              2pt Giga Stack,
    Part Number:              902086-10,
    Hardware Revision:        201,
    Serial Number:            2243041P,
    Manufacture Date:         FEB 05 2106€,
    Firmware Version:         ,
    Admin Status:             POWER ON,
    Operational Status:       UP
```

For complete descriptions of the command output, refer to the *OmniSwitch CLI Reference Guide*.

Stacked Configurations. You can use the **show module long** command to display information for all switches in a stack, or for a specified switch only. When the **show module long** syntax is entered with no specified slot number, information for all switches displays. When a slot position is specified in the command line (e.g., 3), information displays for the corresponding switch only. For detailed information on stacked OmniSwitch 6600 Family switches, refer to [Chapter 4, “Managing OmniSwitch 6600 Family Stacks.”](#)

Basic Primary Slot and Component Information

To view basic slot and component information for the base chassis only (i.e., no installed uplink or stacking modules), enter the **show cmm** command at the CLI prompt. This command displays the following information:

- Model name, also referred to as chassis type
- Chassis description
- Alcatel part number
- Hardware revision level
- Serial number
- Manufacture date(s)
- Current power and operational status
- Base chassis MAC address
- ASIC and firmware information

For example:

```
-> show cmm
CMM in slot 1
  Model Name:                OS6648 ,
  Description:               48PT 10/100 Stack,
  Part Number:               902098-10,
  Hardware Revision:         210,
  Serial Number:             2313283p,
  Manufacture Date:          FEB 05 2106€,
  Firmware Version:          N/A,
  Admin Status:              POWER ON,
  Operational Status:        UP,
  Power Consumption:          40,
  Power Control Checksum:    0x0,
  MAC Address:               00:d0:95:12:ed:00,
  ASIC - Physical:
```

For complete descriptions of the command output, refer to the *OmniSwitch CLI Reference Guide*.

Stacked Configurations. You can use the **show cmm** command to display information for all switches in a stack, or for a specified switch only. When the **show cmm** syntax is entered with no specified slot number, information for all switches displays. When a slot position is specified in the command line (e.g., 3), information displays for the corresponding switch only. For detailed information on stacked OmniSwitch 6600 Family switches, refer to [Chapter 4, “Managing OmniSwitch 6600 Family Stacks.”](#)

Basic Chassis Information

To view basic chassis information (i.e., no installed uplink or stacking modules), enter the **show chassis** command at the CLI prompt. This command displays the following information:

- Model name, also referred to as chassis type
- Chassis description
- Alcatel part number
- Hardware revision level
- Serial number
- Manufacture date(s)
- Current power and operational status
- Number of times the switch has been reset (i.e., rebooted) since it was last powered up

For example:

```
-> show chassis

Chassis 1
  Model Name:          OS6648 ,
  Description:        48PT 10/100 Stack,
  Part Number:       902098-10,
  Hardware Revision: 210,
  Serial Number:     2313283p,
  Manufacture Date:  FEB 05 2106€,
  Admin Status:      POWER ON,
  Operational Status: UP,
  Number Of Resets:  271
```

For complete descriptions of the command output, refer to the *OmniSwitch CLI Reference Guide*.

Stacked Configurations. You can use the **show chassis** command to display information for all switches in a stack, or for a specified switch only. When the **show chassis** syntax is entered with no specified slot number, information for all switches displays. When a slot position is specified in the command line (e.g., 3), information displays for the corresponding switch only. For detailed information on stacked OmniSwitch 6600 Family switches, refer to [Chapter 4, “Managing OmniSwitch 6600 Family Stacks.”](#)

X-ON/X-OFF Protocol Status

To view the administrative status of the X-ON/X-OFF protocol on a console port, enter the **show session xon-xoff** command at the CLI prompt. This command displays the following information:

```
XON-XOFF Enabled
```

Note. To view the administrative status of the X-ON/X-OFF protocol on secondary or idle switches in a stack you must log into those switches and then execute the **session xon-xoff** command.

Managing MAC Addresses on the Switch

Your OmniSwitch 6600 Family switch is shipped with thirty-two (32) factory-installed MAC addresses. These MAC addresses, which are stored on an EEPROM card in the chassis, are used by the switch as unique identifiers for the following functions:

- Base chassis MAC address
- 802.1X authentication
- VLAN router ports

Similar to IP addresses, MAC addresses are assigned by the Internet Assigned Numbers Authority (IANA) and distributed to users in sequential blocks. A sequential block of MAC addresses is referred to as a MAC address *range*.

The switch's EEPROM contains two factory-installed MAC address ranges:

MAC Range 1	Reserved for the <i>first two MAC addresses</i> in the factory installed range of 32 MAC addresses. The first—or <i>start</i> —MAC address in this range is always allocated as the base chassis MAC address. The second MAC address is allocated for 802.1X authentication.
MAC Range 3	Contains MAC addresses used for each port in the system.

MAC Range Guidelines

- You cannot edit or delete MAC range 1 or MAC range 3 at any time.
- The factory-installed 32 MAC addresses are sufficient for most network configurations. However, if you require additional MAC addresses for your network, you may purchase additional MAC addresses from Alcatel. Contact your Alcatel representative for more information.

OmniSwitch 6600 Family MAC Range Specifications

Number of Factory-installed MAC Ranges	2 (MAC Range 1; MAC Range 3)
Number of MAC Addresses in Default Range 1	2
Number of MAC Addresses in Default Range 3	30
Maximum MAC Ranges on Switch	2 (MAC Range 1; MAC Range 3)
Base chassis MAC address	Unique to each switch. The base chassis MAC address is always the first MAC address listed in the switch's default MAC range 1.
Supported MAC Router Mode	Single

Base Chassis MAC Address as Unique Identifier

The switch chassis requires a unique identifier in order to be recognized by other devices in the network. The base chassis MAC address, which is *automatically allocated by the switch*, serves as this identifier. The base chassis MAC address is always the *start MAC address* listed in the switch's default MAC range 1.

Viewing the Base Chassis MAC Address

To display the switch's base chassis MAC address, use the `show mac-range` command to display the default MAC range 1. Be sure to specify the MAC range number (`1`), as shown below:

```
-> show mac-range 1
```

The following information displays:

Mac Range	Row	Status	Local/Global	Start Mac Addr	End Mac Addr
01		ACTIVE	GLOBAL	00:d0:95:6a:79:6e	00:d0:95:6a:79:8d

Because MAC address `00:d0:95:6a:79:6e` is the first address in default MAC range 1, it is automatically allocated as the base chassis MAC address and, therefore, serves as a unique identifier for the switch as a whole.

Determining Current MAC Address Allocation on the Switch

To quickly view all allocated MAC addresses, use the `show mac-range alloc` command. For example:

```
-> show mac-range
```

Mac Range	Row	Status	Local/Global	Start Mac Addr	End Mac Addr
01		ACTIVE	GLOBAL	00:d0:95:12:db:60	00:d0:95:12:db:61
03		ACTIVE	GLOBAL	00:d0:95:12:db:62	00:d0:95:12:db:7d

Base Chassis MAC Address in Stacked Configurations

In stacked configurations of two or more OmniSwitch 6600 Family switches, the base MAC address for the stack (also referred to as the *virtual chassis*) is always provided by the *primary switch*.

If a failover occurs and another switch assumes the primary role, the stack's base MAC address changes to the address provided by the *new* primary switch.

For detailed information on stacked configurations, refer to [Chapter 4, "Managing OmniSwitch 6600 Family Stacks."](#)

3 Installing and Managing Power over Ethernet (PoE)

Power over Ethernet (PoE) is supported on OmniSwitch 6600-P24 switches and provides inline power directly from the switch's Ethernet ports. Powered Devices (PDs) such as IP phones, wireless LAN stations, Ethernet hubs, and other access points can be plugged directly into the Ethernet ports. From these RJ-45 ports the devices receive both electrical power *and* data flow.

Because the feature reduces devices' dependence on conventional power sources, PoE eliminates many restrictions that traditional electrical considerations have imposed on networks.

In a PoE configuration, power source equipment (PSE) detects the presence of a PD and provides an electrical current that is conducted along the data cable. The PD operates using the power received via the Ethernet data cable; no connection to an additional power source (e.g., an AC wall socket) is required.

Note on Terminology. There are several general terms used to describe this feature. The terms *Power over Ethernet (PoE)*, *Power over LAN (PoL)*, *Power on LAN (PoL)*, and *Inline Power* are synonymous terms used to describe the powering of attached devices via Ethernet ports. For consistency, this chapter and the *CLI Command Reference Guide* refer to the feature as *Power over Ethernet (PoE)*.

Additional terms, such as *Powered Device (PD)* and *Power Source Equipment (PSE)* are terms that are not synonymous with PoE, but are directly related to the feature:

- *PD* refers to any attached device that uses a PoE data cable as its only source of power. Examples include access points such as IP telephones, Ethernet hubs, wireless LAN stations, etc.
- *PSE* refers to power sourcing equipment which provides power to a single link section. PSE main functions include searching the PD, optionally classifying the PD, supplying power to the link section only if the PD is detected, monitoring the power on the link section, and scaling power back to detect level when power is no longer requested or required.

Because OmniSwitch 6600-P24 switches fully support 10/100 Ethernet connectivity, you may also attach non-PD equipment—such as computer workstations, printers, servers, etc.—to the PoE ports. See [Chapter 2, “OmniSwitch 6600 Family Chassis and Hardware Components,”](#) for more information on the OmniSwitch 6600-P24 chassis.

Important. Alcatel recommends that PoE-enabled switches with attached IP telephones should have operational power supply redundancy at all times for 911 emergency requirements. In addition, both the OS6600-P24 and the OS6600-BPS-P should be plugged into an Uninterruptible Power Source (UPS).

In This Chapter

This chapter provides specifications and descriptions of hardware and software used to provide PoE for attached devices.

The chapter also provides information on configuring PoE settings on the switch through the Command Line Interface (CLI). CLI commands are used in the configuration examples; for more details about the syntax of commands, see the *OmniSwitch CLI Reference Guide*. Topics and configuration procedures described in this chapter include:

- Power over Ethernet Specifications on [page 3-3](#)
- Slot Numbering on [page 3-4](#)
- Viewing Power Status on [page 3-4](#)
- Configuring Power over Ethernet Parameters on [page 3-5](#)
- Understanding Priority Disconnect on [page 3-9](#)
- Monitoring Power over Ethernet via the CLI on [page 3-12](#)
- Power over Ethernet Tutorial on [page 3-13](#)

Note. You can also monitor all chassis components and manage many chassis features, including Power over Ethernet, with WebView, Alcatel's embedded web-based device management application. WebView is an interactive and easy-to-use GUI that can be launched from OmniVista or a web browser. Please refer to WebView's online documentation for more information.

Power over Ethernet Specifications

The table below lists general specifications for Alcatel's Power over Ethernet support. For more detailed power supply and Power Source Equipment (PSE) specifications, refer to [Chapter 2, "OmniSwitch 6600 Family Chassis and Hardware Components."](#)

IEEE Standards supported	IEEE 802.3af DTE Power via MDI
Default PoE administrative status	Enabled
Default PoE operational status	Disabled (PoE must be activated on a switch-by-switch basis via the lanpower start command.)
OmniSwitch 6600 Family platforms supporting PoE	OmniSwitch 6600-P24
Backup power supply for the OS6600-P24	OS6600-BPS-P
Cable distances supported	100 meters (approx.)
Total number of PoE-capable ports per OmniSwitch 6600-P24	24
Maximum number of PoE-capable ports per stack	192
Default amount of inline power allocated for each port	15400 milliwatts
Range of inline power allowed for each port	3000–20000 milliwatts
PoE Current draw	Approximately 4.3 Amps
PoE Power	Approximately 210 watts
Range of inline power allowed for each switch in a stack	37–210 watts

Viewing OS6600-BPS-P Status

To view the current status of power supplies installed in the backup power supply, use the **show power** command as shown below.

```
-> show power 2
Power Supplies in chassis 2
PS    Operational Status
-----+-----
PS-1   UP
PS-2   UP
```

The OS6600-BPS-P will always display as “PS-2”. For detailed information on **show power** command output, refer to the *CLI Command Reference Guide*.

Configuring Power over Ethernet Parameters

Power over Ethernet Defaults

The following table lists the defaults for PoE configuration:

Parameter Description	Command(s)	Default Value/Comments
PoE operational status	lanpower start or lanpower stop	Disabled
Total power allocated to a port	lanpower power	15.4 Watts
Total power allocated to an entire OS6600-P24 chassis	lanpower maxpower	210 Watts
Power priority level for a port	lanpower priority	low
The capacitor detection method	lanpower capacitor-detection	Disabled
Priority disconnect status	lanpower priority-disconnect	Enabled

Understanding and Modifying the Default Settings

The sections below provide information on each of the key components within the Power over Ethernet software. They include information on PoE-related CLI commands. For detailed information on PoE-related commands, refer to the *OmniSwitch CLI Reference Guide*.

Setting the PoE Operational Status

Enabling PoE

By default, Power over Ethernet is *administratively enabled* in the switch's system software. However, in order to physically activate PoE, you must issue the **lanpower start** command on a slot-by-slot basis before any connected PDs will receive inline power.

To activate power to PoE-capable ports in a switch, enter the corresponding slot number only. For example:

```
lanpower start 3
```

Note. You cannot activate PoE for more than one switch in a stack at a time. Also, an OmniSwitch 6600-P24 must have the corresponding slot number.

If power to a particular port has been disconnected via the **lanpower stop** command, you can reactivate power to the port by specifying both the *slot* and *port* in the command line. For example:

```
lanpower start 3/11
```

Note. You cannot use the *slot/port* syntax to initially activate PoE on a port. This syntax is intended only to reactivate power to those ports that have been disconnected via the **lanpower stop** command. To initially activate PoE, you must use the **lanpower start slot** syntax only, as described above.

Disabling PoE

To disable PoE on a particular slot or port, use the **lanpower stop** command.

To disable PoE on a *specific PoE-capable port*, enter a *slot/port* number. For example:

```
lanpower stop 8/22
```

To disable PoE for *all PoE-capable ports in a slot*, enter the corresponding slot number only. For example:

```
lanpower stop 8
```

Configuring the Total Power Allocated to a Port

By default, PoE automatically allocates 15400 milliwatts for each port on the OmniSwitch 6600-P24 switch. In other words, each port is authorized by the system software to use up to 15400 milliwatts to power any attached device.

You can either increase or decrease this value. Values may range from 3000 to 20000 milliwatts.

Increasing the total power allocated to an individual port may provide a more demanding Powered Device (PD) with additional power required for operation. Decreasing the total power allocated to a port helps preserve inline power and assists in the overall management of the switch's power budget.

To increase or decrease the total power allocated to an individual port, use the **lanpower power** command. Because you are setting the power allowance for an individual port, you must specify a *slot/port* number in the command line. For example, the syntax

```
lanpower 3/12 power 3000
```

reduces the power allowance on port 12 of the OmniSwitch 6600-P24 switch 3 to 3000 milliwatts. This new value is now the maximum amount of power the port can use to power any attached device (until the value is modified by the user).

Configuring the Total Power Allocated to a Switch

Like the maximum port power allowance, the system software also provides a maximum *slot-wide* power allowance. By default, the switch allocates 210 watts for each OmniSwitch 6600-P24 installed in a stack. In other words, each slot is authorized by the system software to use up to 210 watts to power all devices connected to its ports.

As with the maximum port power allowance, the user can either increase or decrease this value. Values may range from 37 to 210 watts.

Increasing the total power allocated to a slot may provide more demanding Powered Devices (PDs) with additional power required for operation. Decreasing the total power allocated to a slot helps preserve inline power and assists in the overall management of the switch's power budget.

Important. Before changing the maximum slot-wide power allowance, you must disable PoE for the slot via the **lanpower stop** command. Once the new value is assigned, re-enable PoE for the slot via the **lanpower start** command.

To increase or decrease the total power allocated to a slot, use the **lanpower maxpower** command. Because you are setting the power allowance for an individual slot, you must specify a *slot* number in the command line. For example, the syntax

```
lanpower 3 maxpower 80
```

reduces the power allowance of OmniSwitch 6600-P24 slot 3 to 80 watts. This value is now the maximum amount of power the slot can use to power all attached devices (until the value is modified by the user).

Setting Port Priority Levels

Because not all Powered Devices (PDs) connected to the switch have the same priority within a customer network setting, OmniSwitch 6600-P24 switches allow the user to specify priority levels on a port-by-port basis. Priority levels include low, high, and critical. The default priority level for a port is low.

- **Low.** This default value is used for port(s) that have low-priority devices attached. In the event of a power management issue, inline power to low-priority ports is interrupted first (i.e., before critical and high-priority ports).
- **High.** This value is used for port(s) that have important, but *not* mission-critical, devices attached. If other ports in the chassis have been configured as critical, inline power to high-priority ports is given second priority.
- **Critical.** This value is used for port(s) that have mission-critical devices attached, and therefore require top (i.e., critical) priority. In the event of a power management issue, inline power to critical ports is maintained as long as possible.

To change the priority level for a particular port, use the **lanpower priority** command. Because the switch allows you to set priority levels on a port-by-port basis, be sure to specify *slot/port* information in the command line. For example, the syntax

```
lanpower 8/22 priority critical
```

changes the priority value of port 22 of OmniSwitch 6600-P24 slot 8 to the highest priority level of critical. Now that the default value has been reconfigured, this port should be reserved for those PDs that are mission critical for network operations.

Setting the Capacitor Detection Method

By default, the PowerDsine capacitor detection method is disabled on the OmniSwitch 6600-P24. To enable it use the **lanpower capacitor-detection** command by entering **lanpower capacitor-detection** followed by the slot number of the OmniSwitch 6600-P24 and **enable**.

For example, to enable the capacitor detection method on the OS6600-P24 with slot number 2 enter:

```
lanpower capacitor-detection 2 enable
```

To disable it use the **lanpower capacitor-detection** command by entering **lanpower capacitor-detection** followed by the slot number of the OS6600-P24 and **disable**.

For example, to disable the capacitor detection method on the OS6600-P24 with slot number 2 enter:

```
lanpower capacitor-detection 2 disable
```

Note. The capacitive detection method should only be enabled support legacy IP phones only—this feature is *not* compatible with IEEE specification 802.3af. Please contact your Alcatel sales engineer or Customer Support representative to find out which Alcatel IP phones models need capacitive detection enabled.

Understanding Priority Disconnect

The priority disconnect function differs from the port priority function described on [page 3-7](#) in that it applies only to *the addition of powered devices (PDs) in tight power budget conditions*. Priority disconnect is used by the system software in determining whether an incoming PD will be granted or denied power when there are too few watts remaining in the PoE power budget for an additional device. For example, if there are only 2 watts available in the current PoE power budget and a user plugs a 3.5W powered device into a PoE port, the system software must determine whether the device will be powered on. Based on priority disconnect rules, in some cases one or more existing devices may be powered down in order to accommodate the incoming device. In other cases, the incoming device will be denied power.

Priority disconnect rules involve the port priority status of an incoming device (i.e., low, high, and critical), as well as the port's physical port number (i.e., 1–24). Understanding priority disconnect rules is especially helpful in avoiding power budget deficits and the unintentional shutdown of mission-critical devices when PDs are being added in tight power budget conditions. For detailed information on how priority disconnect uses port priority and port number criteria for determining the power status of incoming PDs, refer to the illustrated examples on [pages 3-10](#) through [3-11](#).

Reminder. Priority disconnect only applies when there is inadequate power remaining in the power budget for an incoming device.

For information setting the priority disconnect status, refer to the section below. For information on setting the port priority status (a separate function from priority disconnect), refer to [“Setting Port Priority Levels” on page 3-7](#).

Setting Priority Disconnect Status

By default, priority disconnect is *enabled* in the switch's system software. For information on changing the priority disconnect status, refer to the information below.

Disabling Priority Disconnect

When priority disconnect is disabled and there is inadequate power in the budget for an additional device, power will be denied to *any* incoming PD, regardless of its port priority status (i.e., low, high, and critical) or physical port number (i.e., 1–24).

To disable priority disconnect, use the **lanpower priority-disconnect** command. Because the switch allows you to set priority disconnect status on a slot-by-slot basis, be sure to specify the slot number in the command line. For example, the syntax

```
lanpower 2 priority-disconnect disable
```

disables the priority disconnect function on OmniSwitch 6600-P24 slot 2.

Enabling Priority Disconnect

To enable priority disconnect, use the **lanpower priority-disconnect** command. Be sure to specify the slot number in the command line. For example, the syntax

```
lanpower 8 priority-disconnect enable
```

enables priority disconnect on OmniSwitch 6600-P24 slot 8.

Priority Disconnect is Enabled; Same Priority Level on All PD Ports

Reminder. Priority disconnect examples are only applicable when there is inadequate power remaining to power an incoming device.

When a PD is being connected to a port with the *same priority level* as all other ports in the slot, the physical port number is used to determine whether the incoming PD will be granted or denied power. Lower-numbered ports receive higher priority than higher-numbered ports. In other words, a PD connected to Port 1 will have a higher power priority than a PD connected to Port 2; a PD connected to Port 23 will have a higher power priority than a PD connected to Port 24. In order to avoid a power budget deficit, another port in the slot is disconnected. In determining which port to power off, the system software disconnects the port with the highest physical port number.

Priority Disconnect is Enabled; Incoming PD Port has Highest Priority Level

Reminder. Priority disconnect examples are only applicable when there is inadequate power remaining to power an incoming device.

When a PD is being connected to a port with a *higher priority level* than all other ports in the slot, the incoming PD will automatically be granted power over the other devices, regardless of its physical port number.

In order to avoid a power budget deficit, another port in the slot is disconnected. In determining which port to power off, the system software first selects the port with the lowest configured priority level. For example, if a *critical priority* device is being added to a slot in which five existing devices are attached to *high priority* ports and one device is attached to a *low priority* port, the low priority port is automatically disconnected, regardless of its physical port number.

If all existing devices are attached to ports with the same lower priority level, the system software disconnects the port with both the lowest priority level *and* the highest physical port number. For example, if a critical priority device is being added to a slot in which six existing devices are attached to high priority ports, the high priority port with the highest physical port number is automatically disconnected.

Priority Disconnect is Enabled; Incoming PD Port has Lowest Priority Level

Reminder. Priority disconnect examples are only applicable when there is inadequate power remaining to power an incoming device.

When a PD is being connected to a port with a *lower priority level* than all other ports in the slot, the incoming PD will be denied power, regardless of its physical port number. Devices connected to other higher-priority ports will continue operating without interruption.

Priority Disconnect is Disabled

Reminder. Priority disconnect examples are only applicable when there is inadequate power remaining to power an incoming device.

When priority disconnect is disabled, power will be denied to *any* incoming PD, regardless of its port priority status (i.e., low, high, and critical) or physical port number (i.e., 1–24).

Monitoring Power over Ethernet via the CLI

To monitor current PoE statistics and settings, use the **show lanpower** command. The command output displays a list of all current PoE-capable ports, along with the following information for each port:

- Maximum power allocated to the port, in milliwatts
- Actual power used by the port
- Current port status
- Power priority status
- Power on/off status

Aggregate slot and chassis management information also displays. This information includes:

- Maximum watts allocated to the corresponding slot
- Amount of power budget remaining that can be allocated for PoE modules
- Total amount of power remaining that can be allocated for additional switch functions

When entering the **show lanpower** command, you must include a valid slot number in the command line syntax. For example:

```
-> show lanpower 1
Port Maximum(mW) Actual Used(mW) Status Priority On/Off
-----+-----+-----+-----+-----+-----+
 1      15400           0    Powered Off    Low    ON
 2      15400           0    Powered Off    Low    ON
 3      15400           0    Powered Off    Low    ON
 4      15400           0    Powered Off    Low    ON
 5      15400           0    Powered Off    Low    ON
 6      15400           0    Powered Off    Low    ON
 7      15400           0    Powered Off    Low    ON
 8      15400           0    Powered Off    Low    ON
 9      15400           0    Powered Off    Low    ON
10      15400           0    Powered Off    Low    ON
11      15400           0    Powered Off    Low    ON
12      15400           0    Powered Off    Low    ON
13      15400           0    Powered Off    Low    ON
14      15400           0    Powered Off    Low    ON
15      15400           0    Powered Off    Low    ON
16      15400           0    Powered Off    Low    ON
17      15400           0    Powered Off    Low    ON
18      15400           0    Powered Off    Low    ON
19      15400           0    Powered Off    Low    ON
20      15400           0    Powered Off    Low    ON
21      15400           0    Powered Off    Low    ON
22      15400           0    Powered Off    Low    ON
23      15400           0    Powered Off    Low    ON
24      15400           0    Powered Off    Low    ON
```

```
Slot 1 Max Watts 210
0 Watts Total Power Budget Remaining
210 Watts Total Power Budget Available
1 Power Supplies Available
```

Note. For detailed information on **show lanpower** command output, refer to the *OmniSwitch CLI Reference Guide*.

4 Managing OmniSwitch 6600 Family Stacks

In addition to working as individual stand-alone switches, OmniSwitch 6600 Family switches can also be linked together to work as a single virtual switch known as a *stack*. With stacks you can easily expand your switching capacity simply by adding additional switches. In addition, stacks provide enhanced resiliency and redundancy features.

Note. See [Chapter 2, “OmniSwitch 6600 Family Chassis and Hardware Components,”](#) for information on managing OmniSwitch 6600 Family switches in a stand-alone configuration.

In This Chapter

The chapter describes basic steps to configure up to eight (8) OmniSwitch 6600 Family switches into a stack. In addition, procedures using Command Line Interface (CLI) commands to monitor the status of stacks are also provided.

Procedures described in this chapter include:

- Setting up a stacked configuration on [page 4-8](#).
- Managing switches on a stack on [page 4-16](#).
- Monitoring stacks with CLI commands on [page 4-19](#).

Note. You can also monitor the status and configuration of stacks with WebView, Alcatel’s embedded web-based device management application. WebView is an interactive and easy-to-use GUI that can be launched from OmniVista or a web browser. Please refer to WebView’s online documentation for more information.

Specifications and Default Values

The table below lists specifications for OmniSwitch 6600 Family stacks.

Minimum number of switches in a stack.	2
Maximum number of switches in a stack.	8
Stacking module kits (which include stacking module and cables) model number (OmniSwitch 6624, 6600-U24, 6600-P24, and 6648 only)	OS66-STK-KIT (30 cm cable) and OS66-RST-KIT (1 meter cable)
Stacking port locations on an OmniSwitch 6624, 6600-U24, 6600-P24, and 6602-24	Ports 25 and 26
Stacking port locations on an OmniSwitch 6648 and 6602-48	Ports 51 and 52

The table below lists default values for OmniSwitch 6600 Family stacks.

Parameter Description	Configuration Steps	Default Value
Switch slot number	See “Assigning Slot Numbers” on page 4-8.	8

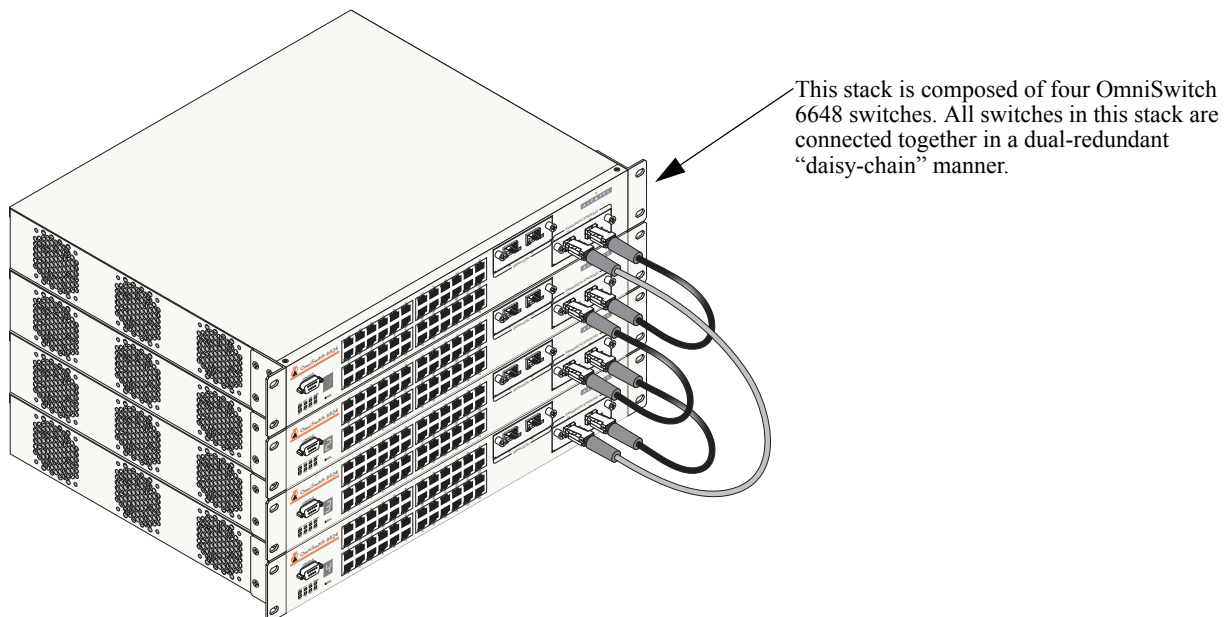
Stack Overview

By default, OmniSwitch 6600 Family switches operate in stand-alone mode. You can also configure two to eight OmniSwitch 6600 Family switches (in any combination of OmniSwitch 6624, 6600-U24, 6600-P24, 6648, 6602-24, and 6602-48 switches) into one large virtual chassis known as a *stack*. With stacks, you can easily expand your switching capacity simply by adding additional switches. For example, you can start with a stack composed of two switches and add switches (up to eight) as network demands increase.

Note on Terminology. In the user guides provided with your OmniSwitch 6600 Family switch, the terms *switch*, *slot* and *NI* (Network Interface) refer to individual OmniSwitch 6600 Family units in stand-alone mode or within a stack. The term *CMM* (Chassis Management Module) refers to OmniSwitch 6600 Family units operating in a stack in a primary or secondary CMM role. (OmniSwitch 6600 Family switches operating in an idle CMM role would normally be referred to as a switch, slot, or, NI.)

Stacks also provide enhanced resiliency and redundancy features. If a switch in a stack goes down or is offline, the stack will continue to operate without user intervention. In addition, when a switch auto-synchronizes at boot-up or if you manually synchronize the switches (see [“Synchronizing Switches in a Stack” on page 4-17](#) for more information) switch operating software and configuration parameters are backed up on all switches in the stack. Therefore if software is corrupted or damaged the original operating software and parameters can be recovered.

Switches are connected to each other in a stack with stacking modules. (See [Chapter 2, “OmniSwitch 6600 Family Chassis and Hardware Components,”](#) in this manual for more information.) These stacking modules provide high-speed, dual-redundant links between switches in a stack. The figure below shows an example of a stack composed of four switches. Every switch in a stack is connected to other switches in a stack in a dual-redundant “daisy-chain” manner.



A Stack Composed of Four OmniSwitch 6648 Switches

Stacking Resiliency and Redundancy

The figure on [page 4-3](#) shows a sample way to connect switches in a four-switch stack to ensure dual-redundant connections. Except for the bottommost switch in the stack, Port 52 is connected to Port 51 on the switch below it with a 30 centimeter stacking cable. On the bottommost switch Port 52 is connected to Port 51 on the topmost switch in the stack with a 1 meter redundant stacking cable. If a stacking connection goes down data can still flow between all the switches in the stack. In addition, if a switch goes down traffic can still flow between the switches that are still operating.

Note. See “[Redundant Stack Connection](#)” on [page 4-13](#) for more information.

Slot Numbers within a Stack

By default, the slot number for OmniSwitch 6600 Family switches is 8. In a stand-alone configuration you would enter 8 when a Command Line Interface (CLI) command requires a slot number. For example, to create VLAN 10 on port 1 on an OmniSwitch 6600 Family with the default slot number you would enter

```
vlan 10 port default 8/1
```

In a stack, each switch must have a unique slot number, which is configured by the user. (See “[Managing Switches in a Stack](#)” on [page 4-16](#) for more information.) This slot number can be any whole number between 1 and 8.

For example, if you have assigned slot number 2 to a switch you would enter

```
vlan 10 port default 2/1
```

The slot number for each switch is stored in the root /flash directory in the **boot.slot.cfg** file. This file *must* exist on every switch in a stack or the stack will not be able to operate correctly. If you accidentally delete this file the switch will revert to the default slot number of 8 and will operate in standby mode. To restore the slot number and rejoin the switch to the stack you must physically change the slot by following the steps described in [Chapter 2, “OmniSwitch 6600 Family Chassis and Hardware Components,”](#) and reboot the switch.

Note. In a stack consisting of three or more switches a switch that had a primary or secondary CMM role will rejoin the stack in an idle mode.

CMM Roles in a Stack

When OmniSwitch 6600 Family switches operate in a stack, one switch in the stack will always have a primary *CMM* (Chassis Management Module) software role within the stack. This switch will be responsible for functions such as software and configuration management, web-based management (i.e., WebView), SNMP management, switch diagnostics, and software rollback.

Another switch will have a secondary CMM role. This switch acts as a backup, which is always ready to assume the primary CMM role in the stack if the switch with the primary CMM role fails or goes offline. Any additional switches will have an idle CMM role in the stack. These switches operate similarly to Network Interfaces (NIs) in a chassis-based switch.

By default, the primary—or management—role will be given to the switch with the lowest chassis MAC address. All other switches in the stack will be in non-operational status until slot numbers are assigned by the user and the stack is manually rebooted.

Once unique slot numbers are assigned to switches in a stack, the switch with the lowest slot number will assume the primary CMM role while the switch with the next lowest slot number will assume the secondary CMM role when the stack firsts boots up. Any other switches in the stack will assume an idle CMM role. For example, in a stack with switches numbered 2, 5, 7, and 8, Switch 2 will assume the primary role, Switch 5 will assume the secondary role while switches 7 and 8 will assume idle roles.

In a stack, if the switch with the primary CMM role fails or goes offline for any reason, all the other switches in the stack are instantly notified. The switch with the secondary CMM role automatically assumes the primary role. In a stack consisting of two switches, the switch that had the primary role will assume the secondary role if it comes back online. In a stack consisting of three or more switches the switch with the next lowest slot number will be assigned the secondary CMM role while the switch that was originally primary will have an idle CMM role if it comes back online.

Note. If a primary switch goes down in a stack consisting of three or more switches and then comes back online again, it will assume an *idle* CMM role, not the secondary role. If you want a switch with an idle role and the lowest slot number in a stack to regain the primary CMM role you must reboot all the switches in the stack. (See [“Resetting All Switches in a Stack”](#) on page 4-18 for more information.)

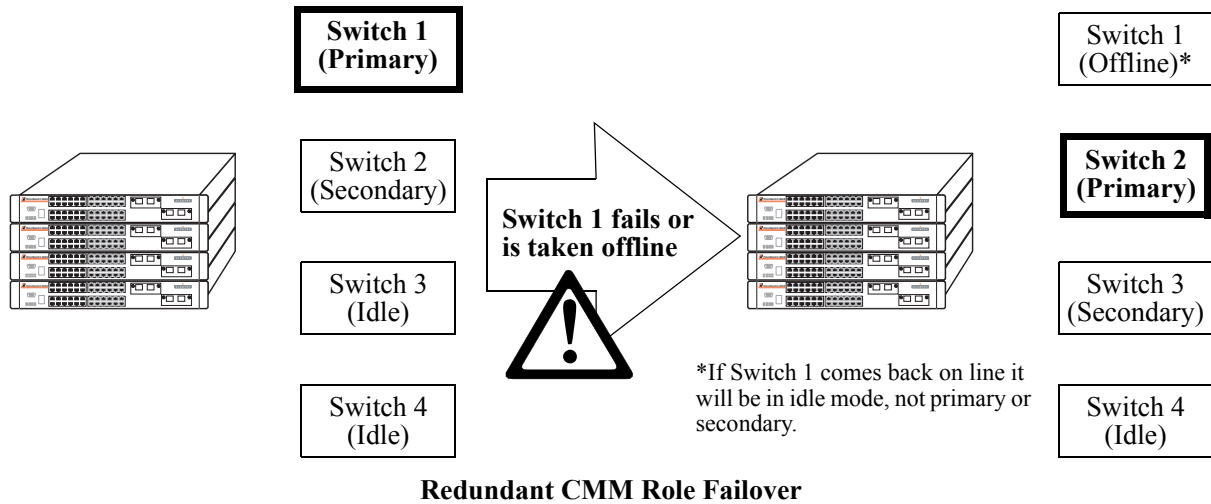
CMM Role Redundancy

CMM role redundancy is one of the stack’s most important failover features. The switch with the primary CMM role manages the current switch operations, the switch with the secondary CMM role provides backup (also referred to as “failover”), and any remaining switches in the stack are in an idle CMM role. For CMM redundancy, the software on all the switches in the stack must be synchronized. (Refer to [“Synchronizing Switches in a Stack”](#) on page 4-17 for more information.)

The figure on the following page illustrates the CMM failover sequence:

- 1 Switch 1 is operating in the primary CMM mode. Switch 2 is operating in the secondary mode—i.e., it is functioning with the standby CMM role and is ready to take over chassis management functions in the event of a failure of the switch with the primary CMM role.
- 2 Switch 1 fails or is taken offline (e.g., the switch is physically removed from the stack).
- 3 Switch 2 automatically assumes the primary CMM role.
- 4 Switch 3 automatically assumes the secondary CMM role.
- 5 Switch 4 remains in the Idle CMM role.

Please note that in this example Switch 1 will assume an idle CMM role if it comes back on line.



CLI Commands Supported on Both the Primary and Secondary Role Switches

Although most CLI commands are executed when logged into the switch with primary CMM role, there is a group of commands that is supported when logged in to either the switch with primary role or the switch with the secondary CMM role. For a list of these commands, refer to the tables below. The tables are grouped by chapter according to the *OmniSwitch CLI Reference Guide*.

CMM Commands

reload	debug chassis auto-reboot	show microcode
takeover	show running-directory	show stack topology
install	show reload	

Chassis Management and Monitoring Commands

show system	show module	show cmm
show hardware info	show module long	show ni
show chassis	show module status	

File Management Commands

cd	delete	ed
pwd	cp	vi
mkdir	mv	view
rmdir	move	tty
ls	chmod	show tty
dir	attrib	rz
rename	fsck	more
rm	newfs	install

Switch Logging and Monitoring Commands

swlog	debug ktrace	debug systrace show
swlog appid level	debug ktrace appid level	debug systrace show log
swlog output	debug ktrace show	debug memory monitor
show log swlog	debug systrace	debug memory monitor show log
show swlog	debug systrace appid level	

Memory Monitoring Commands

show log pmd

Session Management Commands

session timeout

Setting Up a Stacked Configuration

In order to set up a new stacked OmniSwitch 6600 Family configuration, you must complete the following steps, *in the order they are listed*:

- 1 Individually assign slot numbers to all switches
- 2 Attach all required stacking cables
- 3 Boot the newly-configured stack

For OmniSwitch 6600 Family switches, the term “slot” refers to the priority status of the switch within the stacked configuration. Slot numbers may range from 1 to 8. For detailed instructions on setting up a stack, refer to the sections below.

Assigning Slot Numbers

Before assigning slot numbers to switches in a stacked configuration, note the following important guidelines:

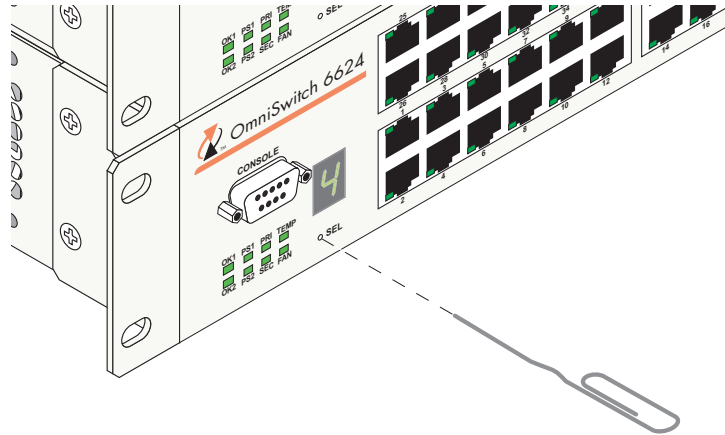
- The slot number is displayed by the slot indicator LED located on the left side of the chassis front panel (refer to “[Status LEDs](#)” on [page 2-18](#) for more information).
- Slot numbers do not need to be sequential. However, each switch in a stack *must have a unique slot number*. If duplicate slot numbers are encountered, an error will occur and the stack will be disabled.
- The top switch in the stack *does not* have to be designated as slot 1.
- By default, the *primary*—or management—role will be given to the switch with the *lowest* chassis MAC address. All other switches in the stack will be in non-operational status until slot numbers are assigned by the user and the stack is manually rebooted.
- After manually assigning the slot assignments for all switches and rebooting the stack, the primary role will be given to the switch with the lowest slot number. The *secondary* role will be given to the switch with the next-lowest number. All additional switches with higher numbers will be given *idle* status.
- Changing the slot number of a chassis does not immediately change its management role (i.e., primary, secondary, or idle). *You must reboot all the switches in the stack before these changes will take effect.*
- Refer to the illustration on [page 4-10](#) for one of many valid slot numbering possibilities.

To assign a new slot number to one or more switches in a stack, follow the steps below:

- 1 To change the slot number, gently insert a pointed item, such as the open, pointed end of a paper clip, into the small hole (labeled **SEL**) below the slot number LED on the switch’s front panel. The LED display will begin to flash. You can manually change the slot number as long as the LED continues to flash.

Note. The LED may also advance by one number when the SEL button is initially pressed.

- 2 Change the slot number by *gently* pressing the pointed item into the SEL hole again. Each time the SEL button is pressed, the LED display increases or decreases in increments of one.

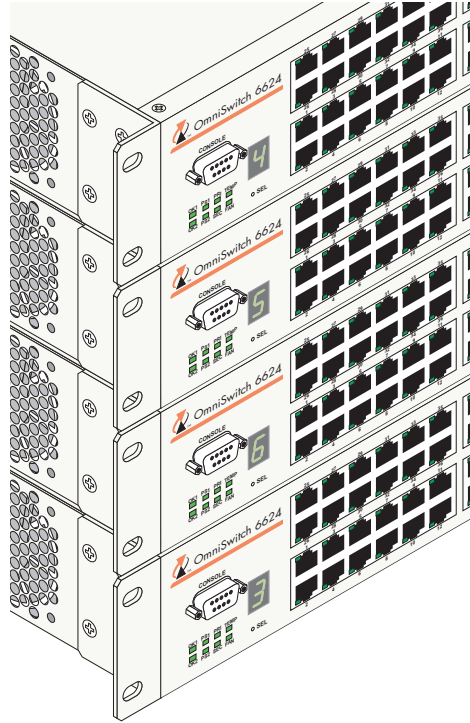


SEL Button Location

- 3 Continue pressing the SEL button until you reach the number that is *one increment higher* than the desired slot number, then *hold in* the SEL button until the LED decreases one increment (to your desired number) and stops flashing.
- 4 Power off the switch.
- 5 Continue steps 1 through 4 for any additional switches that are being assigned new slot numbers.
- 6 Continue to [“Connecting Cables to Stacking Ports” on page 4-11](#).

Note. Refer to the illustration on [page 4-10](#) for one of many valid slot numbering possibilities.

Slot Numbering Example



Stack of Four Switches with Unique Slot Numbers

Valid Slot Assignments.

The illustration at left (showing a stacked configuration with four switches) shows one of many valid slot numbering possibilities.

- Although the slot numbers are not sequential (4, 5, 6, and 3), all switches in the stack have a *unique slot number*.
- The top switch in the stack does not have to be designated as slot 1; for this example, the top switch has been designated slot number 4.
- Because it has the lowest user-assigned slot number, switch number 3 will be given the stack's primary management role in this example. Switch number 4 will be given the secondary role. Switches 5 and 6 will be given idle status.

Connecting Cables to Stacking Ports

On OmniSwitch 6624, 6600-U24, 6600-P24, and 6648 switches only, note the following important guidelines before connecting stacking cables to stacking modules:

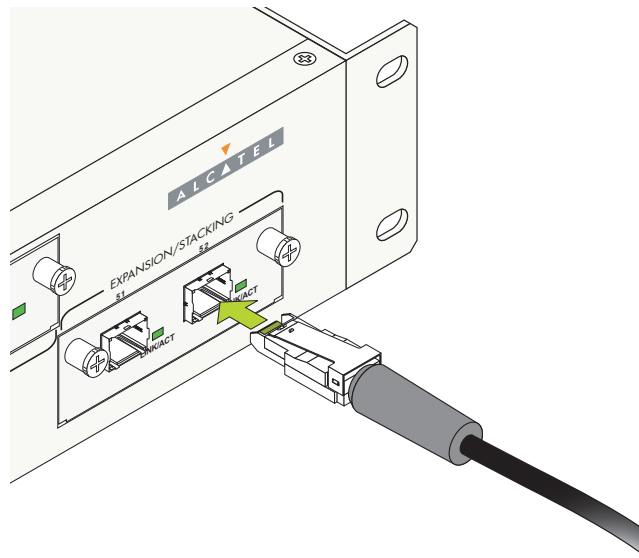
- Before attempting to connect OS6624, OS6600-U24, OS6600-P24, and OS6648 switches in a stacked configuration, be sure that stacking modules are installed in the EXPANSION/STACKING slots of all switches. The stacking module provides two dedicated High Speed Serial Data Connectors (HSSDCs) at ports 27 and 28 (OS6624, OS6600-U24, and 6600-P24) or 51 and 52 (OS6648). For detailed information on installing stacking modules, refer to [“Installing Uplink and Stacking Modules” on page 2-40](#).
- Stacking modules can only be installed in the far-right module slot. This slot is labeled EXPANSION/STACKING and contains port positions 27 and 28 (OS6624, OS6600-U24, and 6600-P24) or 51 and 52 (OS6648).
- *Do not* attempt to install the stacking module at the EXPANSION slot at port positions 25 and 26 (OS6624, OS6600-U24, and 6600-P24) or 49 and 50 (OS6648).

On all OmniSwitch 6600 Family switches, note the following important guidelines before connecting stacking cables to stacking modules:

- If you have not already individually assigned slot numbers and powered off each switch, do not connect stacking cables to the stacking ports. Instead, refer to [“Assigning Slot Numbers” on page 4-8](#) and follow the instructions for assigning slot numbers to each switch.
- Port numbers are clearly marked on the chassis front panel.
- For information on setting up stack redundancy, refer to [“Redundant Stack Connection” on page 4-13](#).

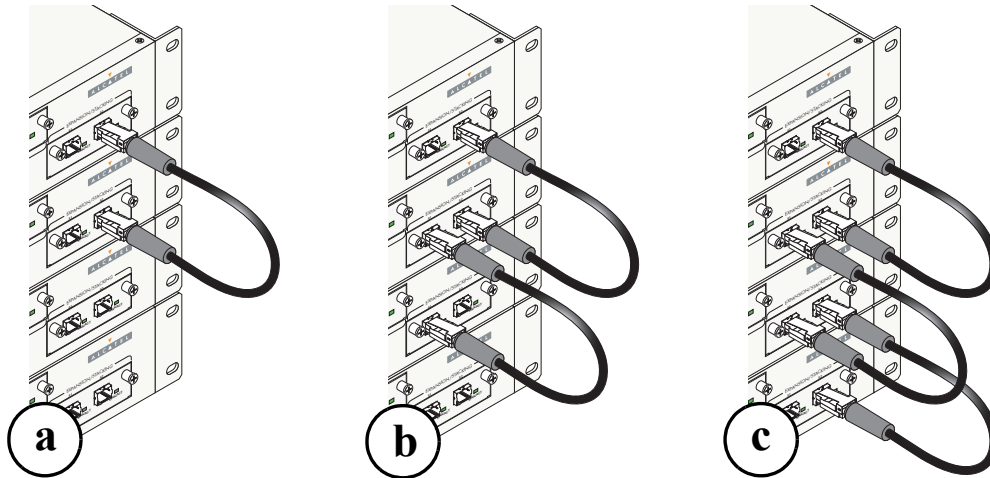
To connect stacking cables to stacking modules and link your OmniSwitch 6600 Family switch into a virtual chassis, follow the steps below:

- 1 Starting from the top of the stack, attach one end of a 30 cm stacking cable to a High Speed Serial Data Connector (HSSDC) port, as shown.



Attaching the Stacking Cable to a Stacking Port

2 Next, attach the other end of the cable to a HSSDC connector on the switch immediately below. Repeat this procedure until all switches in the stack are connected (see illustrations a, b, and c below).

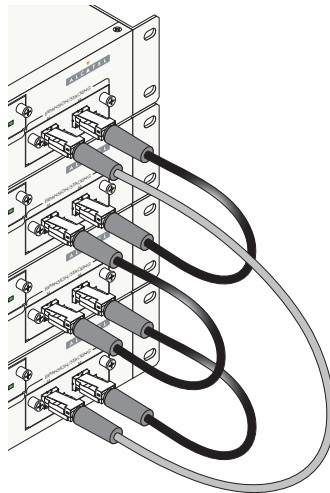


Connecting the Switches in the Stack

Note. There are no restrictions on which HSSDC stacking ports must be connected. For example, a stacking cable connected to port 51 on an OS6648 may be connected to *either* port 51 or port 52 on the OS6648 immediately below. However, for easier management, it is recommended that you keep a consistent pattern for all switches in the stack.

3 To provide added resiliency and redundancy, it is strongly recommended that you install the optional one-meter stacking cable to connect the top switch in the stack to the bottom switch in the stack. Use the unused HSSDC stacking connectors located at ports 27 and 28 (OS6624, OS6600-U24, OS6600-P24, and OS6602-24) or 51 and 52 (OS6648 and OS6602-48) of each switch, as shown. For more information on stack redundancy and the one-meter stacking cable, refer to [“Redundant Stack Connection” on page 4-13](#).

Note. The one-meter stacking cable is available with Alcatel’s optional Redundant Stacking Kit.



Recommended Redundant Connection Between Switches

4 Now that all switches in the stack are connected, continue to [“Booting the Stack” on page 4-14](#).

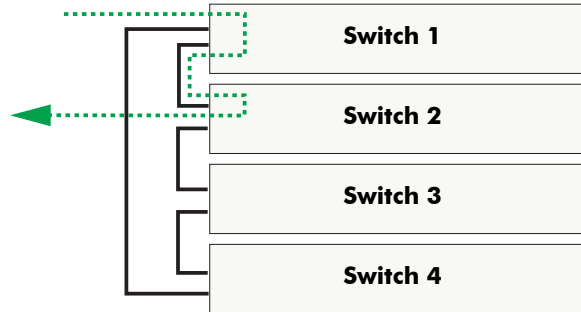
Redundant Stack Connection

The figure below shows how the redundant connection (provided by the OS66STK-CBL1M cable) between the top and bottom switches in the stack ensures that data will continue to flow throughout the stack, even in the unlikely event of a connection failure between two switches.

No Connection Failure

In this example, there is a VLAN with an ingress port on switch 1 and an egress port on switch 2.

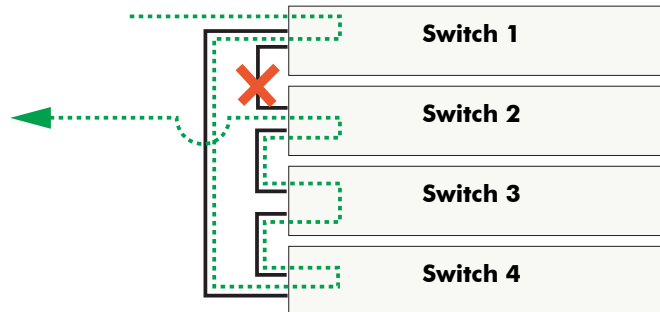
Data enters switch 1 via a 10/100 Ethernet port, then is passed to switch 2 over the OS66STK-CBL30 stacking cable connection, then exits switch 2 via a 10/100 Ethernet port.



Connection Failure Between Switches 1 and 2

Here, the stacking connection between switches 1 and 2 has gone down unexpectedly. Data can no longer travel directly between switches 1 and 2.

However, because there is a redundant connection (the OS66STK-CBL1M cable between switches 1 and 4), data is passed to switch 4, then quickly traverses switch 3 and exits switch 2 to its destination.



Stacking Cable Redundancy Example

Booting the Stack

In order for the switches in the stack to operate using their newly-assigned slot numbers, all switches in the stack must be manually booted.

Important. Whenever booting a stacked configuration, note that the primary switch will automatically distribute its system and configuration software to all switches in the stack *whenever the virtual chassis boots*. During this automatic software synchronization, system and configuration software on the secondary and idle switches is overwritten. Because the primary switch's "last known good" software is propagated to all switches, the synchronization process helps ensure effective redundancy across the stack.

To manually boot the stack, follow the steps below.

- 1 Power on all switches by moving the on/off switch for each switch to the on (|) position.

Important. Be sure to power on all switches in the stack in *rapid succession*. If you do not power up all switches within approximately three seconds, switches may take unintended stack management roles.

- 2 If back up power supplies are installed in one or more switches in the stack, power on all back up power supplies at this time.

Verifying Slot Number Assignments

After the stack is completely booted, all switches in the stack operate using the user-assigned slot numbers. To verify the slot numbers for each switch, refer to the slot indicator LED on the front panel of each switch. For more information, refer to "[Status LEDs](#)" on page 2-18.

Verifying Primary and Secondary Status for the Stack

Primary, Secondary and Idle switch status is indicated by the PRI and SEC LEDs. *The PRI and SEC LEDs on the switch's front panel are the most accurate and reliable method for determining the current role of a switch within a stacked configuration.*

PRI LED

Now that the stack has been configured and booted, the *primary*—or management—role should be assigned to the switch with the lowest assigned slot number. In other words, if you assigned a switch in the stack as slot 1, this switch should have the primary role.

To verify this, check the PRI LED on the front panel of the switch with the lowest assigned slot number. The PRI LED should be illuminated solid green.

SEC LED

The secondary role is given to the switch with the *next-lowest* number.

To verify this, check the SEC LED on the front panel of the switch with the next-lowest assigned slot number. The SEC LED should be illuminated solid green.

Idle Status

All additional switches with higher numbers will be given idle status. The PRI and SEC LEDs for these switches will be off.

Additional LED Descriptions. For complete descriptions of OmniSwitch 6600 Family LED states, see [“Status LEDs” on page 2-18](#).

Managing Switches in a Stack

Most Command Line Interface (CLI) commands can be used to configure OmniSwitch 6600 Family switches operating in either stand-alone or stack configuration. This section describes how to use CLI commands to manage switches operating in a stack.

Note. You must be logged into a switch in a stack with either the primary Chassis Management Module (CMM) or secondary CMM role to use CLI commands. You cannot log into a switch in an idle role.

These functions include reloading switches with a primary or secondary CMM role (see [“Reloading a Switch with a Primary or Secondary CMM Role” on page 4-16](#)), synchronizing flash memory in the stack (see [“Synchronizing Switches in a Stack” on page 4-17](#)), managing the Chassis Management Module (CMM) roles in a stack ([“Changing the Secondary CMM Role to Primary” on page 4-17](#)), and resetting all switches in a stack ([“Resetting All Switches in a Stack” on page 4-18](#)).

Note. See [Chapter 2, “OmniSwitch 6600 Family Chassis and Hardware Components,”](#) chapter in this manual for more information on managing individual switches.

Reloading a Switch with a Primary or Secondary CMM Role

You can reload a switch with either the primary or secondary CMM role using the CLI’s **reload** command. For information on using this command, refer to the “Managing CMM Directory Content” chapter in the *OmniSwitch 6600 Family Switch Management Guide*. A CMM reload is essentially a soft boot of the switch. Note that you can reload only one switch at a time with this command.

Note. See [“Resetting All Switches in a Stack” on page 4-18](#) for information on reloading all switches in a stack.

Reloading the Switch with the Primary CMM Role

If the switch with the primary CMM role is reloaded, the switch with the secondary CMM role automatically takes over primary management functions. In other words, the switch with the secondary CMM role assumes the primary CMM role as soon as the reload is initiated.

If there are only two switches in the stack then the reloaded switch will assume the secondary—or *redundant*—CMM role. If there are three or more switches in the stack then the reloaded switch will assume an idle role when the reload sequence is complete. The idle switch with the lowest slot number will assume the secondary CMM role.

Reloading the Switch with the Secondary CMM Role

If the switch with secondary CMM role is reloaded, then the idle switch with the lowest slot number will become secondary. The reloaded switch (i.e., the former secondary) will assume an idle role. The switch with the primary CMM role continues all operations without interruption.

Synchronizing Switches in a Stack

“CMM” synchronization refers to the process of copying all files in the `/flash/working` and `/flash/certified` directories of the switch with the primary Chassis Management Module (CMM) role to the `/flash/working` and `/flash/certified` directories of all the other switches in the stack. (This includes the switch with the secondary CMM role and all the switches with an idle CMM role.)

This synchronization process ensures that these directories match exactly for all switches in the stack. Synchronization prevents any switch in the stack from assuming the primary role with incorrect or outdated software or configuration files.

Important. In order to have effective redundancy, switches in the stack must be synchronized at all times.

To synchronize the switches in the stack, enter the following command at the CLI prompt:

```
-> copy working certified flash-syncro
```

For more information on CMM synchronization and managing the `/flash/working` and `/flash/certified` directories, refer to the “Managing CMM Directory Content” chapter in the *OmniSwitch 6600 Family Switch Management Guide*.

Changing the Secondary CMM Role to Primary

To change a switch with a secondary role to primary use the `takeover` command. For example, while logged into either the primary or secondary switch enter:

```
-> takeover
```

at the CLI prompt. In a stack consisting of two switches the primary switch will become secondary. In a stack consisting of three or more switches the secondary switch will become primary, the idle switch with lowest slot number will become secondary, and the switch that was primary will become idle.

You can determine the current CMM role of a switch by examining the PRI and SEC LEDs on the switch’s front panel. Refer to [Chapter 2, “OmniSwitch 6600 Family Chassis and Hardware Components,”](#) for more information. You can also use the `show running-directory` command to display whether the switch into which you are currently logged is primary or secondary. For example:

```
-> show running-directory

CONFIGURATION STATUS
Running CMM           : PRIMARY,
CMM Mode             : DUAL CMMs,
Current CMM Slot     : 1,
Running configuration : WORKING,
Certify/Restore Status : CERTIFY NEEDED

SYNCHRONIZATION STATUS
Flash Between CMMs   : SYNCHRONIZED,
Running Configuration : NOT AVAILABLE,
Stacks Reload on Takeover: ALL STACKS (SW Activation)
```

In this example, the user is currently logged in to the switch with the primary CMM role.

Note. Before using the **takeover** command, verify that the switches in the stack are synchronized. Otherwise, data flow and switch management functions may be interrupted due to incorrect or outdated software when a switch takes over the primary CMM role. For more information, refer to [“Synchronizing Switches in a Stack” on page 4-17](#).

Stack Behavior During Takeover

If there are no unsaved configuration changes and the flash directories on both the primary and secondary switches in a stack have been synchronized via the **copy flash-synchro** command, no modules will be reloaded if a takeover occurs. As a result, data flow is not interrupted on the modules during the takeover.

If a configuration change is made to one or more modules (e.g., a VLAN is configured on several different interfaces), and the changes are not saved via the **write memory** command, the corresponding modules will automatically reload if a takeover occurs. Data flow on the affected modules will be interrupted until the reload is complete. Note that the modules will reload whether or not the flash synchronization status shows SYNCHRONIZED. This is because the unsaved changes have occurred in the running configuration (i.e., RAM), and have not been written to the flash directory's configuration file. In this case, a list of only the affected modules displays in the table output (e.g., 1 6).

If the flash directories on the primary and secondary management modules are not synchronized (e.g., a **copy flash-synchro** command has not been issued recently), all modules will be reloaded automatically if a management module takeover occurs. Data flow will be interrupted on all modules until the reload is complete.

Resetting All Switches in a Stack

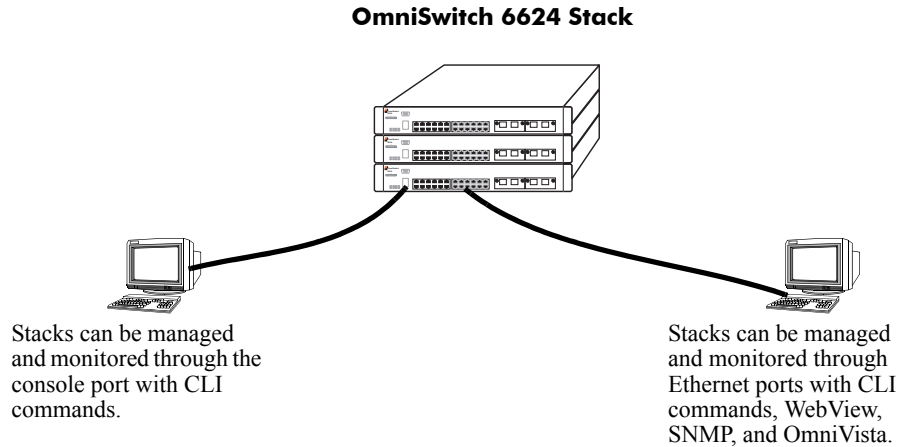
To reset all switches in a stack you use the **reload all** command by entering

```
-> reload all
```

at the CLI prompt. This command can be helpful in restoring the original CMM roles in a stack (see [“CMM Role Redundancy” on page 4-5](#)).

Monitoring Stacks

As shown in the figure below, OmniSwitch 6600 Family stacks can be managed and monitored with Command Line Interface (CLI) commands, WebView, SNMP, and OmniVista. See “[Monitoring Stack Topology](#)” on page 4-19 for information on monitoring stack configurations and see [Chapter 2](#), “[OmniSwitch 6600 Family Chassis and Hardware Components](#),” for information on monitoring and monitoring stack temperature and chassis configurations.



Managing and Monitoring OmniSwitch 6600 Family Stacks

Note. See the *OmniSwitch CLI Reference Guide* for complete descriptions of CLI commands.

Monitoring Stack Topology

To monitor the topology of individual switches within a stack or all switches within a stack use the [show stack topology](#) command by entering

```
-> show stack topology
```

at the CLI prompt. A screen similar to the following will be displayed:

NI	Role	Link A State	Link A RemoteNI	Link A RemoteLink	Link B State	Link B RemoteNI	Link B RemoteLink
1	PRIMARY	ACTIVE	2	27	ACTIVE	2	28
2	SECONDARY	ACTIVE	1	51	ACTIVE	1	52

The **Role** field displays the Chassis Management Module (CMM) role of the switch. The “RemoteNI and “RemoteLink” fields display how the stacking ports are connected to each other within this stack. “Link A” refers to the left-hand stacking port (Port 27 on OS6624, OS6600-U24, OS6600-P24, and OS6602-24 switches and Port 51 on OS6648 and 6602-48 switches) and “Link B” refers to the right-hand stacking port (Port 28 on OS6624, OS6600-U24, OS6600-P24, and OS6602-24 switches and Port 52 on OS6648 and OS6602-48 switches).

In the example on the previous page there are two switches in this stack. Switch 1, which is an OS6648, has the primary CMM role and Switch 2, which is an OS6624, has the secondary CMM role. Switch 1's left-hand stacking port (Port 51) is connected to Switch 2's left-hand stacking port (Port 27). Switch 1's right-hand stacking port (Port 52) is connected to Switch 2's right-hand stacking port (Port 28). The **Link A State** and **Link B State** fields indicate that the links between the switches are currently active and running.

As an option you can display the topology of a single switch in a stack by entering **show stack topology** followed by the slot number of the switch. For example, to display the topology of switch (slot) you would enter

```
-> show stack topology 2
```

at the prompt. A screen similar to the following would be display:

NI	Role	Link A State	Link A RemoteNI	Link A RemoteLink	Link B State	Link B RemoteNI	Link B RemoteLink
2	SECONDARY	ACTIVE	1	51	ACTIVE	1	52

A Regulatory Compliance and Safety Information

This appendix provides information on regulatory agency compliance and safety for the OmniSwitch 6600 Family.

Declaration of Conformity: CE Mark

This equipment is in compliance with the essential requirements and other provisions of Directive 73/23/EEC and 89/336/EEC as amended by Directive 93/68/EEC.

Français: Ce matériel est conformément aux conditions essentielles et à d'autres dispositions de 73/23/EEC et de 89/336/EEC directifs comme modifié par Directive 93/68/EEC.

Deutsch: Diese Ausrüstung ist gemäß den wesentlichen Anforderungen und anderen Bestimmungen richtungweisenden 73/23/EEC und des 89/336/EEC, wie von Directive 93/68/EEC geändert.

Español: Este directivo equipo está en conformidad con los requisitos esenciales y otras provisiones 73/23/EEC y 89/336/EEC según la enmienda prevista por Directive 93/68/EEC.

Standards Compliance

The product bears the CE mark. In addition it is in compliance with the following other safety and EMC standards:

Safety Standards

- UL 60950
- CAN/CSA-C22.2 No. 60950-00
- EN 60950
- IEC 60950
- TS 001
- AS/NZS 3260
- CB Certification PBR IEC 950

EMC Standards

- FCC Part 15 (CFR 47) Class A/Class B
- ICES-003 Class A/Class B
- EN 55022 Class A/Class B
- CISPR 22 Class A/Class B
- AS/NZS 3548 Class A/Class B
- VCCI Class A/Class B
- EN 55024
- EN 50082-1
- EN 61000-3-2
- EN 61000-3-3
- EN 61000-4-2
- EN 61000-4-3
- EN 61000-4-4
- EN 61000-4-5
- EN 61000-4-6
- EN 61000-4-8
- EN 1000-4-11

Safety and Environmental Standards

- ETS 300 019 Storage Class 1.1
- ETS 300 019 Transportation Class 2.3
- ETS 300 019 Stationary Use Class 3.1

OmniSwitch 6624, OmniSwitch 6648, OmniSwitch 6600-U24, and OmniSwitch 6600-P24 switches comply with Class A and Class B standards for digital devices per the FCC Part 15, ICES-003, EN 55022, CISPR 22, AS/NZS 3548, and VCCI standards. Modules with copper connectors meet Class A requirements using unshielded (UTP) cables, but meet Class B requirements using shielded (STP) cables.

OmniSwitch 6602-24 and OmniSwitch 6602-48 switches comply with Class A standards for digital devices per the FCC Part 15, ICES-003, EN 55022, CISPR 22, AS/NZS 3548, and VCCI standards.

FCC Class A, Part 15

This equipment has been tested and found to comply with the limits for Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions in this guide, may cause interference to radio communications. Operation of this equipment in a residential area is likely to cause interference, in which case the user will be required to correct the interference at his own expense.

The user is cautioned that changes and modifications made to the equipment without approval of the manufacturer could void the user's authority to operate this equipment. It is suggested that the user use only shielded and grounded cables to ensure compliance with FCC Rules.

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

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

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

Canada Class A Statement

This equipment does not exceed Class A limits per radio noise emissions for digital apparatus, set out in the Radio Interference Regulation of the Canadian Department of Communications.

Avis de conformité aux normes du ministère des Communications du Canada

Cet équipement ne dépasse pas les limites de Classe A d'émission de bruits radioélectriques pour les appareils numériques, telles que prescrites par le Règlement sur le brouillage radioélectrique établi par le ministère des Communications du Canada.

JATE

This equipment meets the requirements of the Japan Approvals Institute of Telecommunications Equipment (JATE).

CISPR22 Class A warning

This is a Class A product. In a domestic environment, this product may cause radio interference. Under such circumstances, the user may be requested to take appropriate countermeasures.

VCCI

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Class A Warning for Taiwan and Other Chinese Markets

This is a Class A Information Product. When used in a residential environment, it may cause radio frequency interference. Under such circumstances, the user may be requested to take appropriate counter-measure.

警告使用者：
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Translated Safety Warnings

Chassis Lifting Warning

Two people are required when lifting the chassis. Due to its weight, lifting the chassis unassisted can cause personal injury. Also be sure to bend your knees and keep your back straight when assisting with the lifting of the chassis.

Français: Le châssis doit être soulevé par deux personnes au minimum. Pour éviter tout risque d'accident, maintenez le dos droit et poussez sur vos jambes. Ne soulevez pas l'unité avec votre dos.

Deutsch: Zum Anheben des Chassis werden zwei Personen benötigt. Aufgrund des Gewichts kann das Anheben ohne Unterstützung zu Personenschäden führen. Heben Sie das Chassis aus den Knien und halten Sie den Rücken gerade wenn Sie beim Anheben des Chassis assistieren.

Español: Se requieren dos personas para elevar el chasis. Para evitar lesiones, mantenga su espalda en posición recta y levante con sus piernas, no con su espalda.

Blank Panels Warning

Because they regulate airflow and help protect internal chassis components, blank cover plates should remain installed at empty module slots and power supply bays at all times.

Français: Les caches blancs remplissent trois fonctions importantes : ils évitent tout risque de choc électrique à l'intérieur du châssis, ils font barrage aux interférences électromagnétiques susceptibles d'altérer le fonctionnement des autres équipements et ils dirigent le flux d'air de refroidissement dans le châssis. Il est vivement recommandé de vérifier que tous les caches, modules d'alimentation et plaques de protection sont en place avant d'utiliser le système.

Deutsch: Die leeren Modulblenden schützen interne Komponenten und leiten den Luftstrom. Deshalb müssen in allen unbelegten Slots die Modulblenden immer installiert bleiben.

Español: Las tapaderas blancas regulan la circulación de aire y ayudan a proteger componentes internos del chasis y siempre deben estar instaladas en las ranuras vacías del chasis y fuentes de alimentación.

Electrical Storm Warning

To avoid a shock hazard, do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.

Français: Ne pas travailler sur le système ni brancher ou débrancher les câbles pendant un orage.

Deutsch: Um elektrische Schläge zu vermeiden dürfen während eines Gewitters and diesem Gerät keine Kabel angeschlossen oder gelöst werden, sowie keinerlei Installationen, Wartungen oder Konfigurationen vorgenommen werden.

Español: Para evitar peligro de descargas, no conecte o desconecte ningún cable, ni realice ninguna instalación, mantenimiento o reconfiguración de este producto durante una tormenta eléctrica.

Installation Warning

Only personnel knowledgeable in basic electrical and mechanical procedures should install or maintain this equipment.

Français: Toute installation ou remplacement de l'appareil doit être réalisée par du personnel qualifié et compétent.

Deutsch: Dieses Gerät soll nur von Personal installiert oder gewartet werden, welches in elektrischen und mechanischen Grundlagen ausgebildet ist.

Español: Estos equipos deben ser instalados y atendidos exclusivamente por personal adecuadamente formado y capacitado en técnicas eléctricas y mecánicas.

Invisible Laser Radiation Warning

Lasers emit invisible radiation from the aperture opening when no fiber-optic cable is connected. When removing cables do not stare into the open apertures. In addition, install protective aperture covers to fiber ports with no cable connected.

Français: Des radiations invisibles à l'œil nu pouvant traverser l'ouverture du port lorsque aucun câble en fibre optique n'y est connecté, il est recommandé de ne pas regarder fixement l'intérieur de ces ouvertures. Installez les caches connecteurs prévus à cet effet.

Deutsch: Die Laser strahlen an der Blendenöffnung unsichtbares Licht ab, wenn keine Glasfaserkabel angeschlossen sind. Blicken Sie nicht in die Öffnungen und installieren Sie unverzüglich die Abdeckungen über den Glasfaseranschlüssen.

Español: Debido a que la apertura del puerto puede emitir radiación invisible cuando no hay un cable de fibra conectado, procurar no mirar directamente a las aperturas para no exponerse a la radiación.

Lithium Battery Warning

There is a danger of explosion if the Lithium battery in your chassis is incorrectly replaced. Replace the battery only with the same or equivalent type of battery recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions. The manufacturer's instructions are as follows: Return the module with the Lithium battery to Alcatel. The Lithium battery will be replaced at Alcatel's factory.

Français: Il y a un danger d'explosion si la batterie de lithium dans votre châssis est remplacée avec une autre ne correspondant pas aux préconisations constructeur. Il faut donc renvoyer le module en réparation chez Alcatel qui se chargera de remplacer la batterie.

Deutsch: Es gibt eine Gefahr der Explosion, wenn die Lithiumbatterie in Ihrem Chassis falsch ersetzt wird. Ersetzen Sie die Batterie nur mit gleichen oder dem gleichwertigen Typen der Batterie empfohlen durch den Hersteller. Entledigen Sie sich benutzte Batterien entsprechend den Anweisungen des Herstellers. Die Anweisungen des Herstellers sind, wie folgt: Bringen Sie das Modul mit der Lithiumbatterie zu Alcatel zurück. Die Lithiumbatterie wird an der Fabrik Alcatels ersetzt.

Español: Si substituye las pilas de litio en su chasis, siempre utilice el mismo modelo o el tipo equivalente de pila recomendada por el fabricante. Deshágase de las pilas usadas según las instrucciones del fabricante. Devuelva el módulo con la pila de litio a Alcatel. La pila de litio será substituida en la fábrica de Alcatel.

Dansk: ADVARSEL! Lithiumbatteri--Eksplodingsfare ved fejlagtig handling. Udskiftning ma kun ske batteri af samme fabrikat og type. Lever det brugte batteri tilbage tilleverandoren.

Operating Voltage Warning

To reduce the risk of electrical shock, keep your hands and fingers out of power supply bays and do not touch the backplane while the switch is operating.

Français: Pour réduire tout risque électrique, gardez vos mains et doigts hors des alimentations et ne touchez pas au fond de panier pendant que le commutateur fonctionne.

Deutsch: Um die Gefahr des elektrischen Schlages zu verringern, halten Sie Ihre Hände und Finger aus Spg.Versorgungsteilbuchten heraus und berühren Sie nicht die Rückwandplatine während der Schalter steuert.

Español: Para reducir el riesgo de descargas eléctricas, no meta sus manos y dedos dentro del chasis de la fuente de alimentación y no toque componentes internos mientras que el interruptor está conectado.

Power Disconnection Warning

Your switch is equipped with multiple power supplies. To reduce the risk of electrical shock, be sure to disconnect all power connections before servicing or moving the unit.

Français: Il se peut que cette unité soit équipée de plusieurs raccordements d'alimentation. Pour supprimer tout courant électrique de l'unité, tous les cordons d'alimentation doivent être débranchés.

Deutsch: Ihr Schalter wird mit mehrfachen Spg.Versorgungsteilen ausgerüstet. Um die Gefahr des elektrischen Schlages zu verringern, seien Sie sicher alle Stromanschlüsse zu trennen bevor Sie die Maßeinheit instandhalten oder verschieben.

Español: Antes de empezar a trabajar con un sistema, asegúrese que el interruptor está cerrado y el cable eléctrico desconectado.

Proper Earthing Requirement Warning

To avoid shock hazard:

- The power cord must be connected to a properly wired and earth receptacle.
- Any equipment to which this product will attached must also be connected to properly wired receptacles.

Français: Pour éviter tout risque de choc électrique:

- Ne jamais rendre inopérant le conducteur de masse ni utiliser l'équipement sans un conducteur de masse adéquatement installé.
- En cas de doute sur la mise à la masse appropriée disponible, s'adresser à l'organisme responsable de la sécurité électrique ou à un électricien.

Deutsch: Aus Sicherheitsgründen:

- darf das Netzkabel nur an eine Schutzkontaktsteckdose angeschlossen werden.
- dürfen für den Anschluß anderer Geräte an den Drucker auch nur Schutzkontaktsteckdosen verwendet werden.

Español: Para evitar peligro de descargas:

- Para evitar peligro de descargas asegúrese de que el cable de alimentación está conectado a una toma de alimentación adecuadamente cableada y con toma de tierra.
- Cualquier otro equipo a cual se conecte este producto también debe estar conectado a tomas de alimentación adecuadamente cableadas.

Read Important Safety Information Warning

The *Getting Started Guide* that accompanied this equipment contains important safety information about which you should be aware when working with hardware components in this system. You should read this guide before installing, using, or servicing this equipment.

Français: Avant de brancher le système sur la source d'alimentation, consultez les directives d'installation disponibles dans le "Getting Started Guide".

Deutsch: Die *Getting Started Guide*, die diese Ausrüstung begleitete, enthält wichtige Sicherheit Informationen, über die Sie beim Arbeiten bewußt sein sollten mit Hardwareeinheiten in diesem System. Sie sollten diese Anleitung lesen, bevor Sie installieren, verwenden, oder instandhalten diese Ausrüstung.

Español: La 'Getting Started Guide' que acompañó este equipo contiene información importante de seguridad sobre la cual usted debe estar enterado al trabajar con los componentes de dotación física en este sistema. Usted debe leer esta guía antes de instalar, usar o mantener este equipo.

Restricted Access Location Warning

This equipment should be installed in a location that restricts access. A restricted access location is one where access is secure and limited to service personnel who have a special key, or other means of security.

Français: Le matériel doit être installé dans un local avec accès limité ou seules les personnes habilitées peuvent entrer.

Deutsch: Diese Ausrüstung sollte in einen Standort installiert werden, der Zugriff einschränkt. Ein eingeschränkter Zugriff Standort ist einer, wo Zugriff befestigen und an Service-Personal, das eine spezielle Taste haben, oder an andere Mittel der Sicherheit begrenzt ist.

Español: Este equipo se debe instalar en un sitio con acceso restringido. Un sitio con el acceso restringido es uno seguro y con acceso limitado al personal de servicio que tiene una clave especial u otros medios de seguridad.

Wrist Strap Warning

Because electrostatic discharge (ESD) can damage switch components, you must ground yourself properly before continuing with the hardware installation. For this purpose, Alcatel provides a grounding wrist strap and a grounding lug located near the top-right of the chassis. For the grounding wrist strap to be effective in eliminating ESD, the power supplies must be installed in the chassis and plugged into grounded AC outlets.

Français: L'électricité statique (ESD) peut endommager les composants du commutateur. Pour cette raison Alcatel joint à l'envoi du châssis un bracelet antistatique à brancher sur la prise mise à la terre située en bas à droite du commutateur. Vous devrez mettre ce bracelet avant toute intervention hardware.

Deutsch: Weil elektrostatische Entladung (ESD) Schalterbestandteile beschädigen kann, müssen Sie richtig sich reiben, bevor Sie mit der Hardwareinstallation fortfahren. Zu diesem Zweck stellt Alcatel eine erdenhandgelenkbrücke und eine Erdungsöse zur Verfügung, die nahe dem Oberseite-rechten des Chassis gelegen sind. Damit die erdenhandgelenkbrücke wirkungsvoll ist, wenn man ESD beseitigt, die Spg. Versorgungsteile muß in das Chassis installiert werden und eingesteckt werden in geerdete Wechselstrom Anschlüsse.

Español: La descarga electrostática (ESD) puede dañar componentes electrónicos. Usted debe asegurarse que está en contacto con tierra antes de hacer la instalación del equipo. Con este fin, Alcatel proporciona una pulsera de muñeca para conectar al chasis en la toma de tierra situada en la parte superior derecha del chasis. Para que la correa de muñeca sea eficaz en la eliminación de ESD, las fuentes de alimentación deben estar instaladas en el chasis y conectadas a enchufes CA con tierra adecuada.

Instrucciones de seguridad en español

Advertencia sobre el levantamiento del chasis

Se requieren dos personas para levantar el chasis. Debido a su peso, la elevación del chasis sin ayuda puede causar daños corporales. También es seguro doblar sus rodillas y guardar su espalda derecho al ayudar a levantar el chasis.

Advertencia de las tapaderas en blanco

Porque regulan la circulación de aire y ayudan a proteger componentes internos del chasis, las tapaderas en blanco deben seguir instaladas en las ranuras vacías del módulo y la fuente de alimentación siempre.

Advertencia en caso de tormenta eléctrica

Para evitar peligro de descargas, no conecte o desconecte ningún cable, ni realice ninguna instalación, mantenimiento o reconfiguración de este producto durante una tormenta eléctrica.

Advertencia de instalación

Solamente el personal bien informado en procedimientos eléctricos y mecánicos básicos debe instalar o mantener este equipo.

Advertencia de radiación láser invisible

Los lasers emiten radiación invisible de la apertura abierta cuando no se conecta ningún cable de fibra óptica. Al quitar los cables no mire fijamente en las aberturas abiertas. Además, instale las cubiertas protectoras de la apertura a las salidas de la fibra sin el cable conectado.

Advertencia de la batería de litio

Hay un peligro de la explosión si la batería del litio en su chasis se substituye incorrectamente. Substituya la batería solamente por el mismo o el equivalente de tipo de batería recomendado por el fabricante. Deseche las baterías usadas según las instrucciones del fabricante. Las instrucciones del fabricante son como sigue: Devuelva el módulo con la batería del litio a Alcatel. La batería del litio será substituida en la fábrica de Alcatel.

Advertencia sobre la tensión de operación

Para reducir el riesgo del choque eléctrico, mantenga sus manos y dedos fuera de la fuente de alimentación y no toque la placa madre mientras que el interruptor está funcionando.

Advertencia sobre la desconexión de la fuente

Su interruptor esta equipado por fuentes de alimentación múltiples. Para reducir el riesgo de choque eléctrico, asegúrese desconectar todas las conexiones de alimentación antes de mantener o de mover la unidad.

Advertencia sobre una apropiada conexión a tierra

Para evitar peligro de descargas:

- El cable de alimentación debe estar conectado a una toma de alimentación adecuadamente cableada y con toma de tierra.

Cualquier equipo al cual se conecte este producto debe estar también conectado a tomas de alimentación adecuadamente cableadas.

Leer “información importante de seguridad”

La *Guía de “Comenzando a Usar”* que acompaña este equipo contiene información importante de seguridad sobre la cual usted debe saber al trabajar con los componentes de dotación física en este sistema. Usted debe leer esta guía antes de instalar, de usar, o de mantener este equipo.

Advertencia de acceso restringido

Este equipo se debe instalar en una ubicación que restrinja el acceso. Una ubicación con acceso restringido es una donde está seguro y limitado el acceso al personal de servicio que tiene un clave especial, u otros medios de la seguridad.

Advertencia de pulsera antiestática

Debido a que la descarga electrostática (ESD) puede dañar componentes del interruptor, usted debe conectarse a tierra correctamente antes de continuar con la instalación del equipo. Para este propósito, Alcatel proporciona una pulsera antiestática y un terminal que pone a tierra situados cerca de la parte superior derecha del chasis. Para que la pulsera antiestática sea eficaz en la eliminación de ESD, las fuentes de alimentación se deben instalar en el chasis y enchufar en las salidas de CA con descarga a tierra.

Clase de seguridad

Cumple con 21CFR 1040.10 y 1040.11 ó sus equivalentes.

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