Product Overview

The family of switches are Ethernet switches to which you can connect devices such as Cisco IP Phones, Cisco Wireless Access Points, workstations, and other network devices such as servers, routers, and other switches.

Some models of the switches support stacking through the Cisco FlexStack-Plus technology. Unless otherwise noted, the term *switch* refers to a standalone switch and to a switch stack.

This chapter contains these topics:

Switch Models

Table 1: Catalyst 6800IA Switch Models and Descriptions

Switch Model	Description
Catalyst 6800IA-48FPD	48 10/100/1000 Power over Ethernet Plus (PoE+) ports (PoE budget of 740 W) and 2 small form-factor pluggable (SFP)+[1] module slots.
Catalyst 6800IA-48TD	48 10/100/1000 ports and 2 SFP+ module slots.

[1] SFP+ = 10-Gigabit uplink.

Front Panel

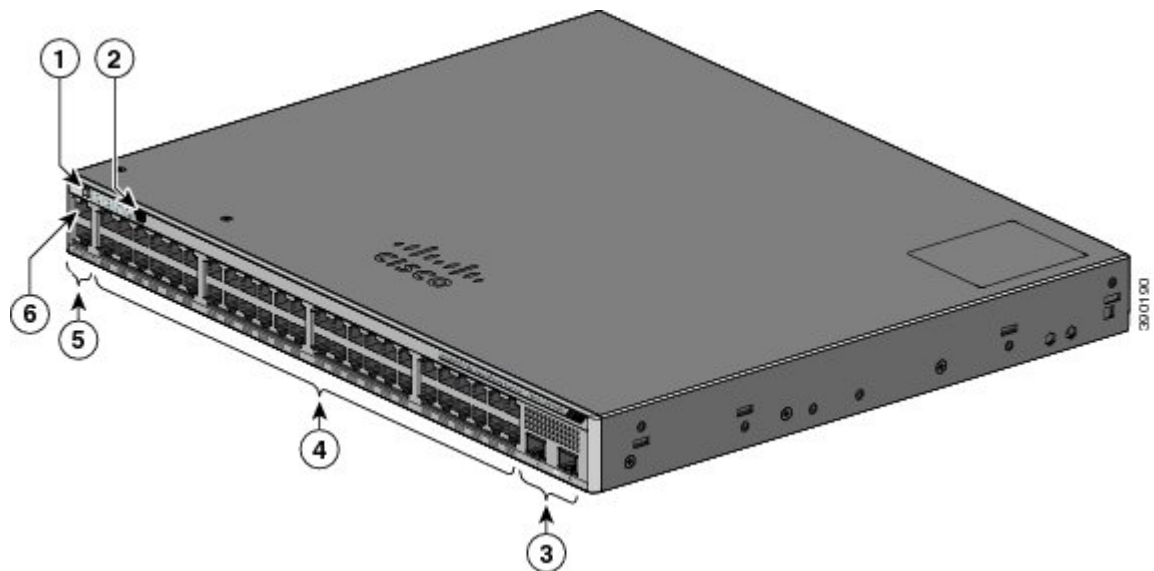This section describes the front panel components:

- 48 downlink ports of one of these types:

◦ 10/100/1000

◦ 10/100/1000 PoE+

- SFP+ ports

- USB mini-Type B (console) port

- Ethernet management port

- RJ-45 console port

- LEDs

- Mode button

The Catalyst 6800IA-48FPD switch is shown here as an example. Other switches have similar components.

Figure 1: Catalyst 6800IA-48FPD Front Panel

1	Mode button and switch LEDs	4	10/100/1000 PoE+ ports
2	USB mini-Type B (console) port	5	RJ-45 console port
3	SFP+ module slots	6	Ethernet management port

PoE and PoE+ Ports

The ports provide PoE+ support for devices compliant with IEEE 802.3af, IEEE 802.3at, and ePoE and also provide Cisco prestandard PoE support for Cisco IP Phones and Cisco Aironet Access Points.

The maximum switch power output is 740 W. Intelligent power management allows flexible power allocation across all ports.

For switches with a 740 W power budget, you can budget the PoE and PoE+:

- 15.4 W of PoE output on 48 ports

- 30 W of PoE+ on 24 ports

On a per-port basis, you control whether or not a port automatically provides power when an IP phone or an access point is connected.

The PoE ports use RJ-45 connectors with Ethernet pinouts. The maximum cable length is 328 feet (100 meters). The 10BASE-T, 100BASE-TX, 1000BASE-T traffic requires Category 5, Category 5e, or Category 6 unshielded twisted pair (UTP) cable. The 10BASE-T traffic can use Category 3 or Category 4 UTP cable.

Cisco intelligent power management capabilities include enhanced power negotiation, power reservation, and per-port power policing. For information about configuring and monitoring PoE ports, see the switch software configuration guide on Cisco.com.

Note The output of the PoE circuit has been evaluated as a Limited Power Source (LPS) per IEC 60950-1.

10/100/1000 Ports

The 10/100/1000 ports use RJ-45 connectors with Ethernet pinouts. The maximum cable length is 328 feet (100 meters). The 100BASE-TX traffic requires Category 5, Category 5e, or Category 6 unshielded twisted pair (UTP) cable. The 10BASE-T traffic can use Category 3 or Category 4 UTP cable.

Management Ports

The management ports connect the switch to a PC running Microsoft Windows or to a terminal server.

- Ethernet management port

- RJ-45 console port (EIA/TIA-232)

- USB mini-Type B console port (5-pin connector)

The 10/100 Ethernet management port connection uses a standard RJ-45 crossover or straight-through cable. The RJ-45 console port connection uses the supplied RJ-45-to-DB-9 female cable. The USB console port connection uses a USB Type A to 5-pin mini-Type B cable. The USB console interface speeds are the same as the RJ-45 console interface speeds.

If you use the USB mini-Type B console port, the Cisco Windows USB device driver must be installed on any PC connected to the console port (for operation with Microsoft Windows). Mac OS X or Linux do not require special drivers.

The 4-pin mini-Type B connector resembles the 5-pin mini-Type B connectors. They are not compatible. Use only the 5-pin mini-Type B.

This illustration shows a 5-pin mini-Type B USB port.

Figure 2: USB Mini-Type B Port
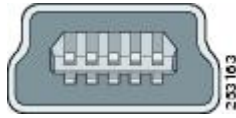
With the Cisco Windows USB device driver, you can connect and disconnect the USB cable from the console port without affecting Windows HyperTerminal operations.

The console output always goes to both the RJ-45 and the USB console connectors, but the console input is active on only one of the console connectors at any one time. The USB console takes precedence over the RJ-45 console. When a cable is connected into the USB console port, the RJ-45 console port becomes inactive. Conversely, when the USB cable is disconnected from the USB console port, the RJ-45 port becomes active.

You can use the command-line interface (CLI) to configure an inactivity timeout which reactivates the RJ-45 console if the USB console has been activated and no input activity has occurred on the USB console for a specified time.

After the USB console deactivates due to inactivity, you cannot use the CLI to reactivate it. Disconnect and reconnect the USB cable to reactivate the USB console. For information on using the CLI to configure the USB console interface, see the software guide.

SFP+ Module Slots

The switch has two 10-Gigabit SFP+ module slots that support both SFP and SFP+ modules.

For Cisco SFP and SFP+ modules documentation, including compatibility matrixes, refer to this URL: http://www.cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html

LEDs

You can use the switch LEDs to monitor switch activity and its performance.

This figure shows the switch LEDs and the Mode button that you use to select a port mode.

Figure 3: Switch LEDs and Mode Button for the Catalyst 6800IA Switches
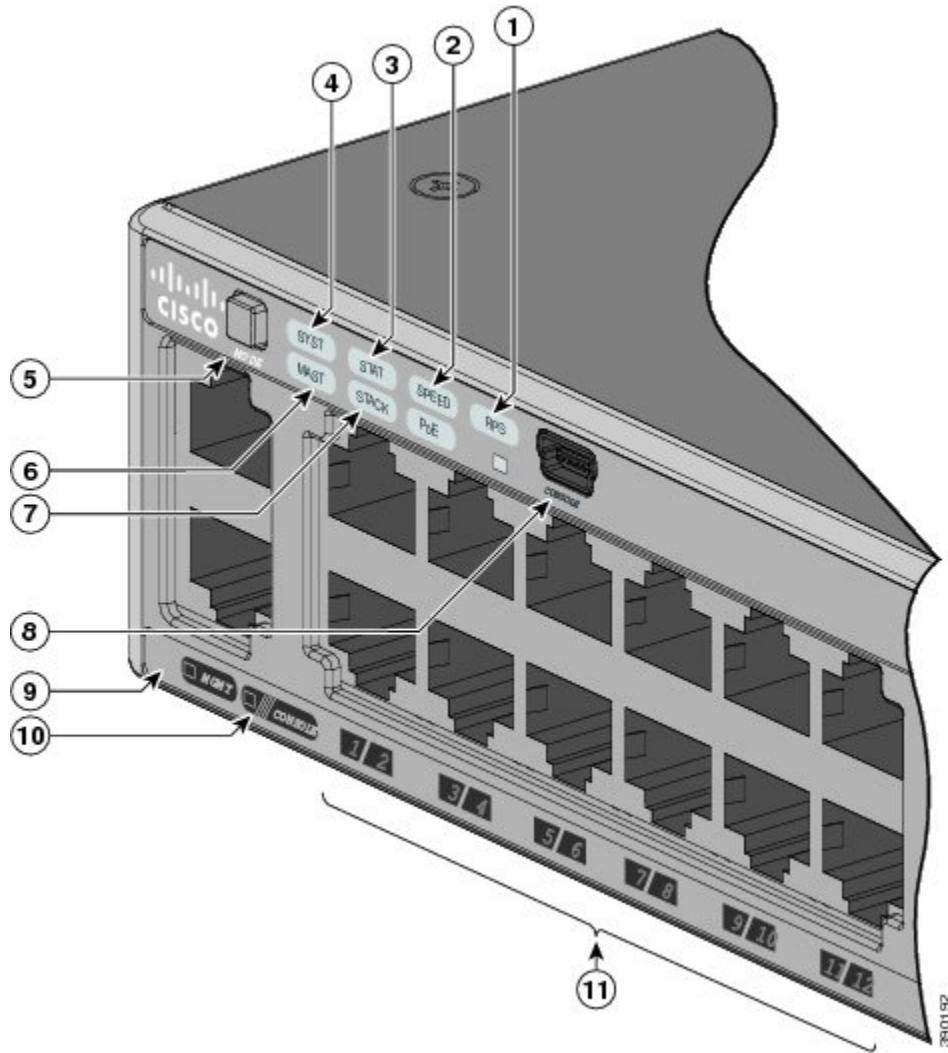
1	RPS LED[2]	7	STACK LED
2	SPEED LED	8	PoE LED[3]
3	STAT LED	9	USB mini-Type B console port LED
4	SYS LED	10	MGMT LED
5	Mode button	11	CONSOLE LED
6	Master LED	12	Port LEDs

[2] RPS = redundant power system—only on switch models that support RPS.

[3] only on switch models that support PoE.

System LED

Table 2: System LED

Color	System Status
Off	System is not powered on.
Green	System is operating normally.
Blinking green	POST in progress.
Amber	System is receiving power but is not functioning properly.
Blinking amber	System is sleep mode.

RPS LED

The RPS LED is only available on switch models that have an RPS port.

Table 3: RPS LED

Color	RPS Status
Off	RPS is off or not properly connected.
Green	RPS is connected and can provide back-up power.
Blinking green	RPS is connected but is unavailable. It is providing power to another device (redundancy has been allocated to the other device).
Amber	The RPS is in standby mode or in a fault condition. See the RPS documentation.
Blinking amber	The power supply in a switch has failed, and the RPS is providing power to the switch (redundancy has been allocated to this device).

Master LED

This table describes the master LEDs.

Table 4: Master LED

Port Mode	Description
Off	Switch is not the stack master.
Green	Switch is the stack master or a standalone switch.
Amber	An error occurred when the stack was electing the stack master switch, or another type of stack error occurred.

Port LEDs and Modes

The port and module slots each has a port LED. As a group or individually, the LEDs show information about the switch and about the ports.

Table 5: Port Mode LEDs

Mode LED	Port Mode	Description
STAT	Port status	The port status. This is the default mode.
SPEED	Port speed	The port operating speed: 10, 100, 1000 Mb/s, or 10 Gb/s.
STACK	Stack member status Stack port status	The stack member status. The stack port status.
PoE	PoE port power	The PoE status.

To select or change a mode, press the Mode button until the desired mode is highlighted. When you change port modes, the meanings of the port LED colors also change.

Table 6: Meanings of LED Colors in Different Modes

Port Mode	Port LED Color	Meaning
PoE	Off	PoE is off. If the powered device is receiving power from an AC power source, the port LED is off even if the powered device is connected to the switch port.
	Green	PoE is on. The port LED is green only when the switch port is providing power.
	Alternating green and amber	PoE is denied because providing power to the powered device will exceed the switch power capacity.
	Blinking amber	PoE is off due to a fault. Noncompliant cabling or powered devices can cause a PoE port fault. Use only standard-compliant cabling to connect Cisco prestandard IP Phones and wireless access points or IEEE 802.3af-compliant devices. You must remove any cable or device that causes a PoE fault.
	Amber	PoE for the port is disabled. (PoE is enabled by default.)
STAT (port status)	Off	No link or port was administratively shut down.
	Green	Link present.
	Blinking green	Activity. Interface is sending or receiving data.
	Alternating green-amber	Link fault. Error frames can affect connectivity, and errors such as excessive collisions, cyclic redundancy check (CRC) errors, and alignment and jabber errors are monitored for a link-fault indication.
	Amber	Port is blocked by Spanning Tree Protocol (STP) and is not forwarding data. After a port is reconfigured, the port LED can remain amber for up to 30 seconds as STP searches the switch for possible loops.
	Blinking amber	Port is blocked by STP and is sending and receiving packets.

Port Mode	Port LED Color	Meaning
SPEED	**10/100/1000 ports**	
	Off	Port is operating at 10 Mb/s.
	Green	Port is operating at 100 Mb/s.
	Blinking green	Port is operating at 1000 Mb/s.
	SFP+ module ports	
	Off	Port is not operating.
	Blinking green	Port is operating at 10 Gb/s.
	Green	Port is operating at 1 Gb/s.
STACK (stack member)	Off	No stack member has that member number.
	Blinking green	Stack member number.
	Green	Member numbers of other stack member switches.

If your switches are stacked and you press the Mode button on any switch, all the switches display the same selected mode. For example, if you press the Mode button on the stack master to display SPEED, all the other stack members display SPEED.

Even if PoE mode is not selected, this LED still shows PoE problems if they are detected.

STACK LED

The STACK LED shows the sequence of member switches in a stack. Up to eight switches can be members of a stack. The first eight port LEDs show the switch member number. For example, if you press the Mode button and select Stack, the port LED 1 blinks green. The LEDs for port 2 and 3 are solid green, as these represent the member numbers of other stack members. The other port LEDs are off because there are no more members in the stack.

This figure shows the LEDs on the first switch, which is stack member number 1.

Figure 4: STACK LED
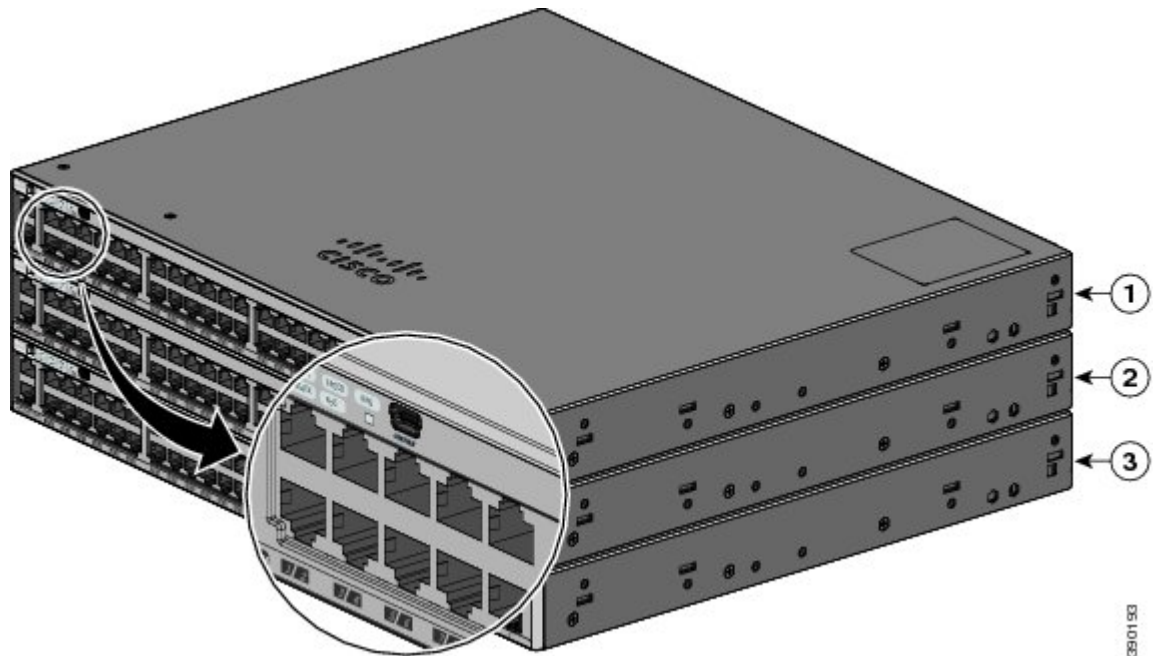
1	Stack member 1	3	Stack member 3
2	Stack member 2		

When you select the STACK LED, the respective STACK LEDs are green when the stack ports (on the switch rear panel) are up, and the respective Stack LEDs are amber when the ports are down. SFP+ module port LEDs 1 and 2 on the switch show the status for stack ports 1 and 2, respectively.

If the port LEDs are green on all the switches in the stack, the stack is operating at full bandwidth. If any port LED is not green, the stack is not operating at full bandwidth.

Console LEDs

The console LEDs show which console port is in use. If you connect a cable to a console port, the switch automatically uses that port for console communication. If you connect two console cables, the USB console port has priority.

Table 7: RJ-45 and USB Console LEDs

LED	Color	Description
RJ-45 console port	Green	RJ-45 console port is active. When this LED is on, the USB console port LED is off.
	Off	The port is not active, and the USB console port is active.

| LED	Color	Description
USB console port	Green	USB console port is active. When this LED is on, the RJ-45 console port LED is off.
	Off	The port is not active, and the RJ-45 console port is active.

Ethernet Management Port LED

Table 8: Ethernet Management Port LED

Color	Description
Green	Active link to PC.
Off	Inactive link.
Amber	POST failure.

Rear Panel

The rear panel of the Catalyst 6800IA switches have FlexStack-Plus ports, a fan exhaust, an RPS connector, and an AC power connector.
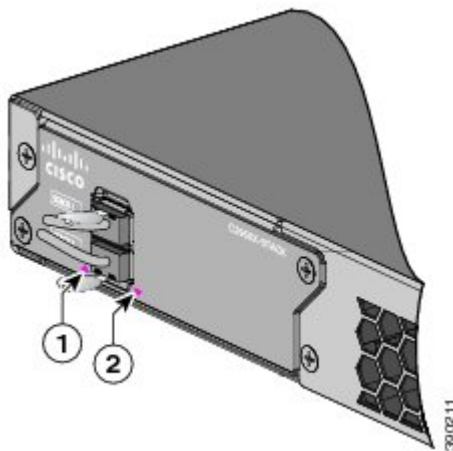
Figure 5: Catalyst 6800IA Switch Rear Panel
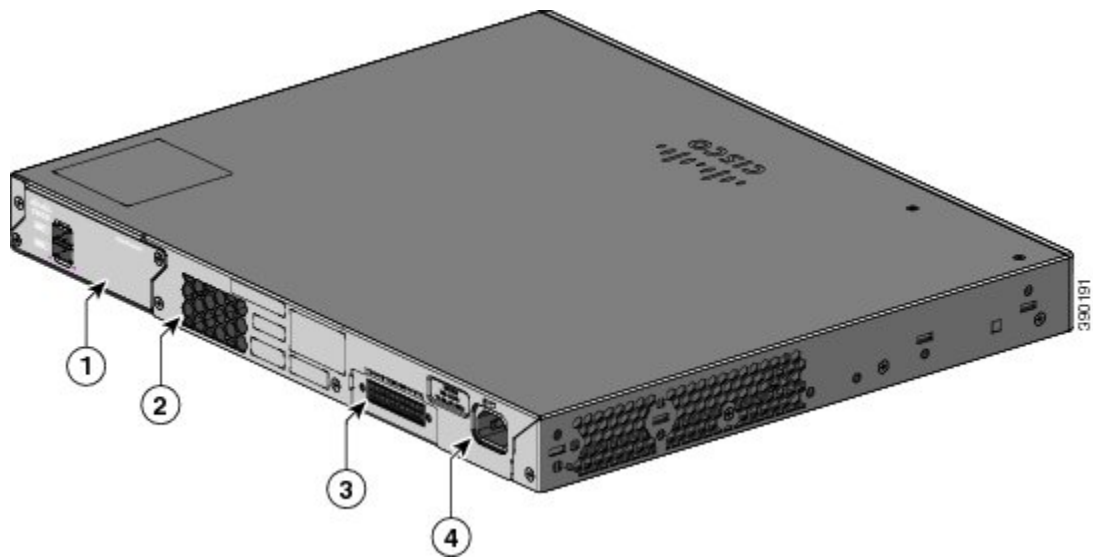
1	FlexStack-Plus ports	3	RPS Connector
2	Fan Exhaust	4	AC power connector

FlexStack-Plus Ports and LEDs

The Catalyst 6800IA switches support stacking with the FlexStack-Plus ports on the switch rear panel and a 0.5-meter FlexStack cable.

Figure 6: FlexStack-Plus Ports

1	LED for Stack port 1	2	LED for Stack port 2

Table 9: FlexStack-Plus Port LEDs

Color	Description
Green	Port is active, cable is attached.
Off	The port is not active, no cable is attached.

Table 10: Stack Configurations

Switch	Number of Switches in the Stack	Bandwidth
Stack with Catalyst 6800IA switches	3	80 G

RPS Connector

The Cisco RPS 2300 (model PWR-RPS2300) supports the Catalyst 6800IA switch.

Warning   Attach only the following Cisco RPS model to the RPS receptacle: RPS2300. Statement 370

Connect the switch and the redundant power system to different AC power sources.

Use this cable for the RPS: CAB-RPS2300-E.

Cisco RPS 2300

The Cisco RPS 2300 is a redundant power system that can support six external network devices and provide power to one or two failed devices at a time. It senses when the internal power supply of a connected device fails and provides power to the failed device, preventing loss of network traffic. For more information, see the *Cisco Redundant Power System 2300 Hardware Installation Guide* on Cisco.com at this URL: http://www.cisco.com/en/US/products/ps7148/prod_installation_guides_list.html

The Cisco RPS 2300 has two output levels: −52 V and 12 V with a total maximum output power of 2300 W.

All supported and connected switches can simultaneously communicate with the RPS 2300. You can configure these RPS 2300 features through the switch software:

- Enable RPS active or standby mode for each connected switch

- Configure switch priority for RPS support

- List the connected switches and the power-supply module sizes

- Obtain reports when a switch is powered by the RPS

- Obtain status reports for the RPS power-supply module

- Read and monitor backup, failure, and exception history

AC Power Connector

The switch is powered through the internal power supply. The internal power supply is an autoranging unit that supports input voltages between 100 and 240 VAC. Use the supplied AC power cord to plug it into an AC power outlet.

AC Power Connector