Cisco Catalyst 6800ia Series Switches

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Cisco® Catalyst® Instant Access is a solution to dramatically simplify the campus network operations, a game changer for business transformation creating opportunities for innovation in the campus. It simplifies operation through a single point of operation and management for campus access and backbone. The solution is composed of a Cisco Catalyst 6500 or 6800 core switch and Cisco Catalyst 6800ia Series Switches (Figure 1). The Cisco Catalyst 6800ia access switches are connected to the Cisco Catalyst 6500 or 6800, and the entire configuration works as a single extended switch with a single management domain. This allows Catalyst 6500/6800 features to be extended to network access e.g. MPLS/EVN in access. This solution is optimized for wired devices with centralized wireless. The access switches can support Power over Ethernet Plus (PoE+), and the access switches can be stacked together for higher port density and resiliency. IT has flexibility to deploy the Cisco Catalyst Instant Access solution on all or a subset of the campus network. IT can reuse existing network cabling infrastructure to deploy this solution.

Figure 1.
Cisco Catalyst 6800ia Series Switches

Product Overview

The Cisco Catalyst 6800ia solution offers network administrators the ability to look at buildings in a campus network as a single switch. The entire building can be viewed as a single management entity. The Cisco Catalyst 6800ia solution is managed by the parent Cisco Catalyst 6500/6800[*] switch. The Cisco Catalyst 6800ia solution offers feature consistency across the access and distribution layers of the campus Ethernet network. The Cisco Catalyst 6800ia is an extension of the Cisco Catalyst 6500/6800 parent switch. The Cisco Catalyst 6800ia solution is very resilient with its support of multichassis EtherChannel and stacking. The Cisco Catalyst 6800ia solution does not use Spanning Tree Protocol in the links between the Cisco Catalyst 6800ia switch and the Cisco Catalyst 6500/6800 parent switch. The Cisco Catalyst 6800ia solution supports Virtual Switching System Cisco Catalyst 6800ia switches do not perform any local packet forwarding. All traffic originating from host ports (downlink ports) of a Cisco Catalyst 6800ia switch will be sent to an Instant Access parent, which makes all the switching and forwarding decisions for the traffic to be forwarded to the destination.

[*] All the Cisco Catalyst 6800 series switches (6807-XL, 6880-X, 6840-X) supports the 6800ia switches.

The Cisco Catalyst 6800ia switch inherits the features and capabilities of its parent in an Instant Access solution. Consider the Cisco Catalyst 6500 Series Supervisor Engine 2T as an Instant Access parent switch. In this case the Cisco Catalyst 6800ia client switch will inherit all the features of the Supervisor Engine 2T, which includes Security Group Tags (SGT), Security Group Access Control List (SGACL), Enhanced Interior Gateway Routing Protocol (EIGRP), IPv6, mediatrace, Multiprotocol Label Switching (MPLS), and so on:

- 48 Gigabit Ethernet ports

- Integrated FlexStack-Plus capability, which provides up to 80 Gbps stack bandwidth

- Support of up to five members in a stack

- Two 10G Small Form-Factor Pluggable Plus (SFP+) uplinks

- External RPS power redundancy for Cisco Catalyst 6800ia

- Mini USB and Ethernet ports for versatile console management

- All ports in Cisco Catalyst 6800ia series are MACsec hardware ready

- IEEE 802.3at-compliant PoE+ for up to 30W of power per port

- Up to 740W of combined PoE/PoE+ budget

- IEEE 802.3az Energy-Efficient Ethernet (EEE) enables dynamic power savings on all switch ports

- Dynamic power mapping to scale up to 740W PoE+ power

- Limited Lifetime Warranty

- Removable redundant power supply available with C6800IA-48FPDR

Switch Configurations

The Cisco Catalyst 6800ia families of switches have two power configurations. The first two models, C6800IA-48TD, and C6800IA-48FPD, support a single built-in power supply and fan. The power redundancy for these two models is supported by an external RPS. The third model is C6800IA-48FPDR, which supports two redundant removable power supplies, each power supply with a power budget of 1025W of total system power. The 1025W power supply has an inline power budget of 740W.

Table 1.   Cisco Catalyst 6800ia Family Switches Configurations

Model	10/100/1000 Ethernet Ports	Uplink Interfaces	Cisco IOS Software Image	Available PoE Power	Redundant Power Supply (W)	FlexStack-Plus Capability
Cisco Catalyst C6800IA-48FPD	48	2 SFP+ 10G	Integrated with IA parent	740W	No	√
Cisco Catalyst C6800IA-48TD	48	2 SFP+ 10G	Integrated with IA parent	-	No	√
Cisco Catalyst 6800IA-48FPDR	48	2 SFP+ 10G	Integrated with IA parent	740W	Yes (1025WAC)	√

Cisco FlexStack-Plus

Cisco FlexStack-Plus provides stacking of up to five Cisco Catalyst 6800ia switches through an integrated module. The Cisco Catalyst 6800ia switches only stack with other Cisco Catalyst 6800ia switches.

Cisco FlexStack-Plus and Cisco IOS® Software provide true stacking, with all switches in a stack acting as a single switch unit. FlexStack-Plus provides a unified data plane for all Ethernet traffic for all members of the stack.

Power over Ethernet Plus

Cisco Catalyst 6800ia switches support both IEEE 802.3af PoE and IEEE 802.3at PoE+ (up to 30W per port) to deliver lower total cost of ownership for deployments that incorporate Cisco IP phones, Cisco Aironet® wireless access points, or other standards-compliant PoE/PoE+ end devices. PoE removes the need to supply wall power to PoE-enabled devices and eliminates the cost of adding electrical cabling and circuits that would otherwise be necessary in IP phone and WLAN deployments.

Table 2 shows the total PoE/PoE+ power available in Cisco Catalyst 6800ia models.

Table 2.   PoE and PoE+ Power Capacity for Cisco Catalyst 6800IA

Switch Model	Maximum Number of PoE+ (IEEE 802.3at) Ports[*]	Maximum Number of PoE (IEEE 802.3af) Ports[*]	Available PoE Power (Single PS Source)
Cisco Catalyst C6800IA-48FPD	24 ports up to 30W	48 ports up to 15.4W	740W
Cisco Catalyst C6800IA-48FPDR	24 ports up to 30W	48 ports up to 15.4W	740W

[*] Intelligent power management allows flexible power allocation across all ports.

Table 3 shows power supplies supported with C6800IA-48FPDR SKU.

Table 3.   Power Supply Capacity for Cisco Catalyst C6800IA-48FPDR

Primary Power Supply	Secondary Power Supply	Available Power for PoE+	System Power	Power Redundancy
PWR-C2-1025WAC	PWR-C2-1025WAC	740W	1025W	Yes
PWR-C2-1025WAC	-	740W	1025W	No

Power Management

IEEE 802.3az EEE is implemented in all Cisco Catalyst 6800ia Series Switches. The EEE enables all the Ethernet ports to dynamically sense idle periods between traffic bursts and quickly switch the interfaces into "low power idle" mode, reducing port power consumption. It automatically brings back full power to the port with resumption of the traffic. The EEE technology maintains the link health using "link refresh" during the "idle" periods, making sure that there is no link-status change.

Technical Specifications

Tables 4 through 9 describe Cisco Catalyst 6800ia Series hardware, mechanical specifications, connectors and interfaces, and safety and compliance, respectively.

Table 4.   Cisco Catalyst 6800ia Series Hardware

Hardware Specifications	
Flash memory	128 MB
DRAM	512 MB
CPU	APM86392 600MHz dual core
Console ports	USB (Type-B), Ethernet (RJ-45)
Network management interface	10/100 Mbps Ethernet (RJ-45)
Egress Buffers	4 MB

Table 5.   Cisco Catalyst 6800ia Series Mechanical Specifications

Models	FPS	MKS
Dimensions	Inches (H x D x W)	Centimeters (H x D x W)
C6800IA-48FPD	1.75 x 14.5 x 17.5	4.45 x 36.83 x 44.45
C6800IA-48TD	1.75 x 11.0 x 17.5	4.45 x 27.94 x 44.45
C6800IA-48FPDR	1.75 x 16.0 x 17.5	4.45 x 40.8 x 44.5
Weights	Pounds	Kilograms
C6800IA-48FPD	12.930 lbs	5.865 Kg
C6800IA-48TD	9.656 lbs	4.380 Kg
C6800IA-48FPDR	14.6 lbs	6.6 Kg

Table 6.   Predicted Reliability

Models	MTBF in Hours[**]
C6800IA-48FPD	233,370
C6800IA-48TD	445,460
C6800IA-48FPD	230,860
PWR-C2-1025WAC	1,000,000

[**] Current estimates; later will be based on Telcordia SR-332 Issue 2 Methodology.

Table 7.   Voltage and Power Ratings

Input Voltage and Current			
Model	Voltage (Autoranging)	Current	Frequency

Input Voltage and Current			
C6800IA-48FPD	100 to 240 VAC	9A to 4A	50 to 60 Hz
C6800IA-48TD	100 to 240 VAC	1A to 0.5A	50 to 60 Hz
C6800IA-48FPDR	100 to 240 VAC	10A to 5A	50 to 60 Hz

Power Rating (Switch Maximum Consumption Values)	
Model	Consumption Values
C6800IA-48FPD	0.89 kVA
C6800IA-48TD	0.049 kVA
C6800IA-48FPDR	0.89 kVA

Table 8.   Connectors and Interfaces

Connectors and Interfaces
Ethernet Interfaces
10BASE-T ports: RJ-45 connectors, 2-pair Category 3, 4, or 5 Unshielded Twisted-Pair (UTP) cabling   100BASE-TX ports: RJ-45 connectors, 2-pair Category 5 UTP cabling   1000BASE-T ports: RJ-45 connectors, 4-pair Category 5 UTP cabling
SFP+ Interfaces
For information about supported SFP+ modules, refer to the Transceiver Compatibility matrix tables at cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html
Indicator LEDs
- Per-port status: Link integrity, disabled, activity, speed, and full duplex   - System status: System, RPS, stack link status, link duplex, PoE, and link speed
Stacking Interfaces
Cisco Catalyst 6800ia FlexStack-Plus stacking cables: - CAB-STK-E-0.5M FlexStack-Plus stacking cable with a 0.5 m length   - CAB-STK-E-1M FlexStack-Plus stacking cable with a 1.0 m length   - CAB-STK-E-3M FlexStack-Plus stacking cable with a 3.0 m length
Console
Cisco Catalyst 6800ia console cables: - CAB-CONSOLE-RJ45 Console cable 6 ft. with RJ-45   - CAB-CONSOLE-USB Console cable 6 ft. with USB mini-B connectors
Power
The internal power supply is an auto-ranging unit and supports input voltages between 100 and 240V AC

Connectors and Interfaces
● Use the supplied AC power cord to connect the AC power connector to an AC power outlet
● The Cisco RPS connector offers connection for an optional Cisco RPS 2300 that uses AC input and supplies DC output to the switch
● Only the Cisco RPS 2300 (model PWR-RPS2300) should be attached to the redundant-power-system receptacle

Table 9. Safety and Compliance

Specification	Description
Regulatory compliance	Products should comply with CE Marking per directives 2004/108/EC and 2006/95/EC
Safety	UL 60950-1 Second Edition
	CAN/CSA-C22.2 No. 60950-1 Second Edition
	EN 60950-1 Second Edition
	IEC 60950-1 Second Edition
	AS/NZS 60950-1
EMC: Emissions	47CFR Part 15 (CFR 47) Class A
	AS/NZS CISPR22 Class A
	CISPR22 Class A
	EN55022 Class A
	ICES003 Class A
	VCCI Class A
	EN61000-3-2
	EN61000-3-3
	KN22 Class A
	CNS13438 Class A
EMC: Immunity	EN55024
	CISPR24
	EN300386
	KN24
Environmental	Reduction of Hazardous Substances (RoHS) including Directive 2011/65/EU
Telco	Common Language Equipment Identifier (CLEI) code

Cisco Limited Lifetime Hardware Warranty

Cisco Catalyst 6800ia Series Switches come with a Limited Lifetime Warranty (LLW). The LLW includes 10-day advance hardware replacement for as long as the original end user owns the product. Table 10 describes the Cisco limited lifetime hardware warranty.

Your formal warranty statement, including the warranty applicable to Cisco software, appears in the Cisco information packet that accompanies your Cisco product. We encourage you to review carefully the warranty statement shipped with your specific product before use.

Cisco reserves the right to refund the purchase price as its exclusive warranty remedy. For further information about warranty terms, visit cisco.com/go/warranty.

Table 10.   Warranty Terms

Cisco Limited Lifetime Hardware Warranty	
Device covered	Applies to all Cisco Catalyst 6800ia Series Switches
Warranty duration	As long as the original end user continues to own or use the product
End-of-life policy	In the event of discontinuance of product manufacture, Cisco warranty support is limited to 5 years from the announcement of discontinuance
Hardware replacement	Cisco or its service center will use commercially reasonable efforts to ship a Cisco Catalyst 6800ia replacement part within 10 business days after receipt of the RMA request and confirmation that a replacement part is the appropriate response. Actual delivery times might vary depending on customer location
Effective date	Hardware warranty commences from the date of shipment to customer (and in case of resale by a Cisco reseller, not more than 90 days after original shipment by Cisco)
TAC support	None
Cisco.com access	Warranty allows guest access only to Cisco.com

Technical Support and Services

Table 11 describes available technical services.

Table 11.   Technical Services Available for Cisco Catalyst 6800ia Series Switches

Technical Services
Cisco SMARTnet Service   - Around-the-clock, global access to the Cisco TAC   - Unrestricted access to the extensive Cisco.com knowledge base and tools   - Next-business-day, 8x5x4, 24x7x4, or 24x7x2 advance hardware replacement and onsite parts replacement and installation available[1]   - Ongoing operating system software updates within the licensed feature set[2]   - Proactive diagnostics and real-time alerts on Smart Call Home enabled devices
Cisco Smart Foundation Service   - Next-business-day advance hardware replacement as available   - Access to SMB TAC during business hours (access levels vary by region)   - Access to Cisco.com SMB knowledge base   - Online technical resources through Smart Foundation Portal   - Operating system software bug fixes and patches
Cisco Smart Care Service   - Network-level coverage for the needs of small and medium-sized businesses   - Proactive health checks and periodic assessments of Cisco network foundation, voice, and security technologies   - Technical support for eligible Cisco hardware and software through Smart Care Portal   - Cisco operating system and application software updates and upgrades[2]   - Next-business-day advance hardware replacement as available, 24x7x4 option available[1]
Cisco SP Base Service   - Around-the-clock, global access to the Cisco TAC   - Registered access to Cisco.com

Technical Services
• Next-business-day, 8x5x4, 24x7x4, and 24x7x2 advance hardware replacement; return to factory option available[1]   • Ongoing operating system software updates[2]
Cisco Focused Technical Support Services   Three levels of premium, high-touch services are available: • Cisco High-Touch Operations Management Service   • Cisco High-Touch Technical Support Service   • Cisco High-Touch Engineering Service   Valid Cisco SMARTnet® or SP Base contracts are required on all network equipment

[1] Advance hardware replacement is available in various service-level combinations. For example, 8x5xNBD indicates that shipment will be initiated during the standard 8-hour business day, 5 days a week (the generally accepted business days within the relevant region), with Next-Business-Day (NBD) delivery. Where NBD is not available, same day shipping is provided. Restrictions apply; review the appropriate service descriptions for details.

[2] Cisco operating system updates include the following: maintenance releases, minor updates, and major updates within the licensed feature set.

Ordering Information

This section describes ordering information for products, accessories, redundant power supply options, power supplies, SFP+ modules, and power cords, respectively.

Table 12. Cisco Catalyst 6800ia Series Switches Ordering Information

Part Number	10/100/1000 Ethernet Interfaces	Uplink Interfaces	Cisco IOS Software Feature Set	Available PoE Power	Secondary FRU Power Supply	FlexStack-Plus Stacking
C6800IA-48FPD	48	2 SFP+ 10G	Inherited from IA parent	740W	Not applicable	Integrated
C6800IA-48TD	48	2 SFP+ 10G	Inherited from IA parent	-	Not applicable	Integrated
C6800IA-48FPDR	48	2 SFP+ 10G	Inherited from IA parent	740W	1025W	Integrated

Table 13. Cisco Catalyst 6800ia Accessories

Part Numbers	Description
CAB-STK-E-0.5M	FlexStack-Plus stacking cable with a 0.5 m length
CAB-STK-E-1M	FlexStack-Plus stacking cable with a 1.0 m length
CAB-STK-E-3M	FlexStack-Plus stacking cable with a 3.0 m length
CAB-CONSOLE-RJ45	Console cable 6 ft with RJ45
CAB-CONSOLE-USB	Console cable 6 ft with USB Type A and mini-B connectors
RCKMNT-1RU=	Spare rack-mount kit for Cisco Catalyst 6800ia Series for 19- and 24-inch racks
RCKMNT-REC-1RU=	1 RU recessed rack-mount kit for Cisco Catalyst 6800ia Series

Part Numbers	Description
PWR-CLP	Power cable restraining clip (not available on C6800IA-48FPDR)

Table 14. Redundant Power Supply Options for Cisco Catalyst C6800IA-48TD and C6800IA-48FPD

Part Numbers	Description
PWR-RPS2300	Cisco Redundant Power System 2300 and blower, no power supply
BLNK-RPS2300=	Spare bay insert for Cisco Redundant Power System 2300 for Cisco Catalyst 6800ia switches
CAB-RPS2300-E=	Spare RPS2300 cable for Cisco Catalyst 6800ia switches
BLWR-RPS2300=	Spare 45 CFM blower for RPS 2300
C3K-PWR-750WAC=	RPS 2300 750W AC power supply spare for Cisco Catalyst 6800ia

For more information about the RPS-2300, visit cisco.com/en/US/products/ps7130/index.html.

Table 15. Power Supply Options for C6800IA-48FPDR

Part Numbers	Description
PWR-C2-1025WAC	Second FRU power supply and fan for 740W PoE+ C6800IA-48FPDR switches, provides 1025W AC of power
PWR-C2-1025WAC=	Spare FRU power supply and fan for 740W PoE+ C6800IA-48FPDR switches, provides 1025W AC of power

Table 16. Cisco Catalyst 6800ia SFP and SFP+ Modules

SFP+ Modules	
SFP/SFP+ Module Support (Supported in Only SFP+ Uplink PIDs)	
SFP-10G-LR=	10GBASE-LR SFP+ Module, MOD, XCVR, SFP+, Ethernet, 10GbE, 10.3Gb/s, LR, 1310nm, SM, 3.3V, 0 to 70C, LC, w/DOM
SFP-10G-SR=	10GBASE-SR SFP+ Module, MOD, XCVR, SFP+, Ethernet, 10GbE, 10.3Gb/s, SR, 850nmm, MM, 3.3V, 0 to 70C, LC, w/DOM
SFP-10G-LRM=	10GBASE-LRM SFP+ Module, MOD, XCVR, SFP+, Ethernet, 10GbE, 10.3Gb/s, LRM, 1310nm, MM, 3.3V, 0 to 70C, LC, w/DOM
SFP-10G-ER=	10GBASE-ER SFP+ transceiver module for SMF, 1550-nm, LC duplex connector
SFP-H10GB-CU1M=	1-m 10G SFP+ Twinax cable assembly, passive
SFP-H10GB-CU3M=	3-m 10G SFP+ Twinax cable assembly, passive
SFP-H10GB-CU5M=	5-m 10G SFP+ Twinax cable assembly, passive
SFP-H10GB-ACU7M	7-m 10G SFP+ Twinax cable assembly, active
GLC-BX-D=	1000BASE-BX10 SFP module for single-strand SMF, 1490-nm TX/1310-nm RX wavelength, single LC/PC connector

SFP+ Modules	
GLC-BX-U=	1000BASE-BX10 SFP module for single-strand SMF, 1310-nm TX/1490-nm RX wavelength, single LC/PC connector
GLC-LH-SMD	1000BASE-LX/LH SFP transceiver module for MMF and SMF, 1300-nm wavelength, extended operating temperature range and DOM support, dual LC/PC connector
GLC-SX-MMD	1000BASE-SX SFP transceiver module for MMF, 850-nm wavelength, extended operating temperature range and DOM support, dual LC/PC connector
GLC-T=	1000BASE-T SFP transceiver module for Category 5 copper wire, RJ-45 connector
GLC-SX-MM=	1000BASE-SX SFP transceiver module for MMF, 850-nm wavelength, dual LC/PC connector

Table 17.   Power Cords for Cisco Catalyst C6800IA-48TD and C6800IA-48FPD

Part Numbers	Description
CAB-16AWG-AC	AC Power cord, 16AWG
CAB-ACE	AC Power Cord (Europe), C13, CEE 7, 1.5M
CAB-L620P-C13-US	Power Cord, 250VAC, 15A, NEMA L6-20 to C13, US
CAB-ACI	AC Power Cord (Italy), C13, CEI 23-16, 2.5m
CAB-ACU	AC Power Cord (UK), C13, BS 1363, 2.5m
CAB-ACA	AC Power Cord (China/Australia), C13, AS 3112, 2.5m
CAB-ACS	AC Power Cord (Switzerland), C13, IEC 60884-1, 2.5m
CAB-ACR	AC Power Cord (Argentina), C13, EL 219 (IRAM 2073), 2.5m
CAB-ACC	CORD, PWR, CHINA, 10A, IEC 320, C13(APN=CS-PWR-CH)
CAB-JPN-12A	CABASY, POWER CORD, JAPAN 2P, PSE, 12A @125VAC
CAB-L620P-C13-JPN	Power Cord, 250VAC, 15A, NEMA L6-20 to C13, JAPAN
CAB-IND	Power cable for India
CAB-C15-ISR	Power cable for Israel
CAB-ACSA	Power cable for South Africa
CAB-AC15A-90L-US	15A AC Pwr Cord, left-angle (United States)
CAB-ACE-RA	Power Cord Europe, Right Angle
CAB-ACI-RA	Power Cord-Italian, Right Angle
CAB-ACU-RA	Power Cord UK, Right Angle
CAB-ACC-RA	Power Cord China, Right Angle

Part Numbers	Description
CAB-ACA-RA	Power Cord, Australian, Right Angle
CAB-ACS-RA	Power Cord for Switzerland, Right Angle
CAB-ACR-RA	Power Cord, Argentina, Right Angle
CAB-JPN-RA	Power Cord, Japan, Right Angle
CAB-C15-CBN	Cabinet Jumper Power Cord, 250 VAC 13A, C14-C15 Connectors

Table 18.   Power Cords for Cisco Catalyst C6800IA-48FPDR

Part Numbers	Description
CAB-TA-NA	North America AC Type A Power Cable
CAB-TA-NA-RA	United States AC Right Angled Power Cable
CAB-TA-AP	Australia AC Type A Power Cable
CAB-TA-AR	Argentina AC Type A Power Cable
CAB-TA-SW	Switzerland AC Type A Power Cable
CAB-TA-UK	United Kingdom AC Type A Power Cable
CAB-TA-JP	Japan AC Type A Power Cable
CAB-TA-JP-RA	Japan AC Right Angled Power Cable
CAB-TA-250V-JP	Japan 250V AC Type A Power Cable
CAB-TA-EU	Europe AC Type A Power Cable
CAB-TA-IT	Italy AC Type A Power Cable
CAB-TA-IN	India AC Type A Power Cable
CAB-TA-CN	China AC Type A Power Cable
CAB-TA-DN	Denmark AC Type A Power Cable
CAB-TA-IS	Israel AC Type A Power Cable
CAB-C15-CBN	Cabinet Jumper Power Cord, 250 VAC 13A, C14-C15 Connectors

Part Numbers	Description
CAB-C15-CBN-JP	Japan Cabinet Jumper Power Cord, 250 VAC 13A, C14-C15
CAB-ACBZ-10A	AC Power Cord (Brazil) 10A/250V BR-3-10 plug for <10A device
CAB-ACBZ-12A	AC Power Cord (Brazil) 12A/125V BR-3-20 plug for <12A device

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