Q&A

Catalyst® 3560-C and 2960-C Compact Switches Frequently Asked Questions

General Overview and Physical Characteristics

Q. What is the difference between the new generation of Cisco® Catalyst® 2960-C and 3560-C compact switches and the existing generation of compact switches?

A. See Table 1.

Table 1. Current and Second Generation of Compact Switches

Parameter	Current Generation of Compact Switches	Second Generation of Compact Switches
Power over Ethernet (PoE)/PoE+ powered and pass-through on downlinks	No	Yes. The 3560CPD-8PT-S and 2960CPD-8PT-L support PoE pass-through. 3560CPD-8PT-S is PoE+ powered and the 2960CPD-8PT is PoE powered
PoE+ on downlink ports	No	Yes. The 3560-C Series supports PoE+ on the downlink ports
MACSec (802.1ae) on downlink ports	No	Yes. Only on the 3560-C GE models
Dual-purpose 10/100/1000 uplinks	Yes. One dual-purpose uplink is available	Yes. Two dual-purpose uplinks are available on the 3560-C and 2960-C Series Switch models powered using the built-in AC power supply. The models that are PoE-powered capability do not support this functionality
Software feature license	2960 and 3560 Series compact switches use a nonlicensing model. That is, they either use a LAN Base or LAN Lite in case of a 2960 Series and IP Base for the 3560 Series Switch	2960-C and 3560-C Series Switches use a licensing model for software images. Both operate on a universal software image. The 2960-C model supports LAN Base and LAN Lite. 3560-C Series supports IP Base on all models. No IP Services support
External USB Flash support	Not present	Present in all the 2960-C and 3560-C switches with GE downlink ports

Q. What is the difference between the Cisco Catalyst 2960-C Series and the 3560-C Series?

A. See Table 2.

Table 2. Cisco Catalyst 2960-C and 3560-C Series Switches

Parameter	2960-C	3560-C
MACSec (802.1ae) on downlink ports	Not supported	Supported
PoE+ on downlinks	No	Yes. 3560CG-8PC-S is PoE+ capable on the downlink ports
Software feature license	LAN Base/LAN Lite	IP Base only

Q. What are the dimensions of the Cisco Catalyst 2960-C and 3560-C switches?

A. See Table 3.

Table 3. Dimensions of Cisco Catalyst 2960-C and 3560-C Series Switches

Switch Model	H x W x D (inches)
2960CPD-8TT-L	1.75 x 10.6 x 6.8
2960CPD-8PT-L	1.75 x 10.6 x 6.8
2960CG-8TC-L	1.75 x 10.6 x 8.4
2960C-8TC-L	1.75 x 10.6 x 8.4
2960C-8TC-S	1.75 x 10.6 x 8.4
2960C-8PC-L	1.75 x 10.6 x 9.4
2960C-12PC-L	1.75 x 10.6 x 8.4
3560CG-8PC-S	1.75 x 10.6 x 9.4
3560CG-8TC-S	1.75 x 10.6 x 8.4
3560C-8PC-S	1.75 x 10.6 x 9.4
3560C-12PC-S	1.75 x 10.6 x 9.4
3560CPD-8PT-S	1.75 x 10.6 x 7.7

Q. What is the weight of each of the Cisco Catalyst 2960-C and 3560-C models?

A. See Table 4.

Table 4. Weight of Cisco Catalyst 2960-C and 3560-C Series Switches

Switch Model	Weight
Cisco Catalyst 2960CPD-8TT-L	2.4 lbs (1.1 kg)
Cisco Catalyst 2960CPD-8PT-L	2.4 lbs (1.1 kg)
Cisco Catalyst 2960CG-8TC-L	3.0 lbs (1.35 kg)
Cisco Catalyst 2960C-8TC-L	2.4 lbs (1.08 kg)
Cisco Catalyst 2960C-8TC-S	2.8 lbs (1.27 kg)
Cisco Catalyst 2960C-8PC-L	4.1 lbs (1.86 kg)
Cisco Catalyst 2960C-12PC-L	4.1 lbs (1.86 kg)
Cisco Catalyst 3560CG-8PC-S	3.0 lbs (1.35 kg)
Cisco Catalyst 3560CG-8TC-S	4.3 lbs (1.92 kg)
Cisco Catalyst 3560C-8PC-S	4.1 lbs (1.86 kg)
Cisco Catalyst 3560C-12PC-S	4.1 lbs (1.86 kg)
Cisco Catalyst 3560CPD-8PT-S	3.3 lbs (1.5 kg)

Q. What are the various mounting options for the Cisco Catalyst 2960-C and 3560-C switches?

A. The 2960-C and 3560-C Series Switches can be mounted using one of the following options:

- Desk, shelf, or wall (with mounting screws and mounting trays)
- Desk, shelf, or wall (without mounting screws only)
- Rack mount (with rack mount kit)
- On a desk or shelf (without mounting screws)

Q. In what deployment scenarios can I use the Cisco Catalyst 2960-C and 3560-C Series Switches?

A. The Cisco Catalyst 2960-C and 3560-C Series Switches are best suited for retail, hospitality, education, gaming, and branch environments. Typical deployment scenarios are in classrooms, conference rooms, retail branch locations, and deployments that need secure end-to-end link and locations with no AC power outlet.

Q. Are the 2960-C and 3560-C switches line rate?

A. Yes. Both the Cisco Catalyst 2960-C and 3560-C Series Switches are line-rate switches.

PoE Powered and PoE Pass-Through

Q. What is the difference between Power over Ethernet (PoE) powered and PoE pass-through?

A. PoE powered is the capability of the switch to power using PoE, PoE+, or UPoE from its uplinks. PoE pass-through is the capability of the switch to supply PoE on the downlink ports. PoE available for PoE pass-through is the PoE drawn from the uplink port's (switch consumption) internal losses.

Q. Which switches support PoE/PoE+ powered and PoE pass-through?

A. The 2960CPD-8PT-L can be PoE powered and supply PoE pass-through on downlinks. The 3560CPD-8PT-L is PoE+ powered and provides PoE pass-through on downlinks.

Q. Are there any switches that are PoE powered but are not PoE pass-through?

A. 2960CPD-8TT-L is PoE powered, but does not support PoE pass-through on downlinks.

Q. What are the various ways of powering the 2960-C and 3560-C models of compact switches?

A. Some models of the Cisco Catalyst 2960-C and 3560-C Series Switches can be powered using the built-in AC power supply. Others can be powered using the PoE uplinks or the auxiliary input using a power adapter. Switches support either the AC power or the PoE-powered capability with auxiliary. The same switch cannot be powered using AC power and PoE power/auxiliary power. (See Table 5.)

Table 5. Power Supplies for Cisco Catalyst 2960-C and 3560-C Series Switches

Switch Model	Power
Cisco Catalyst 2960CPD-8TT-L	Using PoE(+) uplink/aux power
Cisco Catalyst 2960CPD-8PT-L	Using PoE(+)uplink/aux power
Cisco Catalyst 2960C-8TC-S	Internal AC power supply
Cisco Catalyst 2960C-8TC-L	Internal AC power supply
Cisco Catalyst 2960C-8PC-L	Internal AC power supply
Cisco Catalyst 2960C-12PC-L	Internal AC power supply
Cisco Catalyst 2960CG-8TC-L	Internal AC power supply
Cisco Catalyst 3560CG-8PC-S	Internal AC power supply
Cisco Catalyst 3560CG-8TC-S	Internal AC power supply
Cisco Catalyst 3560CPD-8PT-S	Using PoE+ only uplink/aux power
Cisco Catalyst 3560C-8PC-S	Internal AC power supply
Cisco Catalyst 3560C-12PC-S	Internal AC power supply

Q. What is PoE pass-through?

A. PoE pass-through is the capability of the PoE/PoE+-powered switch to supply PoE on the downlink ports. PoE available for PoE pass-through is the PoE drawn from the uplink port's (switch consumption) internal losses. 2960CPD-8PT-L supports PoE pass-through.

Q. Can the compact switches provide PoE on the downlink ports or PoE pass-through?

A. Yes. Both 2960-C and 3560-C Series Switches have models that are PoE capable and that support PoE pass-through.

Q. How much PoE power is available on the downlink ports in 2960-C and 3560-C Series Switches?

A. Available PoE power for downlink ports depends on the powering mode. If the switches are powered using a built-in AC power supply such as the 3560CG-8PC-S, then the available PoE budget is 124 watts. If the switch is PoE powered on the uplinks or uses the auxiliary power supply, the values are as shown in Tables 6, 7, and 8.

Table 6. Available Power for Cisco Catalyst 2960CPD-8PT-L

Powering Option	Power Sent from Uplink Switches (W)	Available PoE (W)
1 PoE	15.4	0
2 PoE	30.8	7
1 PoE+	30	7
1 PoE+ and 1 PoE	45.4	15.4
2 PoE+	60	22.4
Auxiliary input	-	22.4

Table 7. Available Power for Cisco Catalyst 3560CPD-8PT-S

Powering Option	Power Sent from Uplink Switches (W)	Available PoE (W)
1 PoE	15.4	0 (invalid option)
2 PoE	30.8	0 (invalid option)
1 PoE+	30	0
1 PoE+ and 1 PoE	45.4	0
2 PoE+	60	15.4
Auxiliary input	-	15.4

Table 8. Available Power for 2960-C and 3560-C Switches That Have AC Power Supply

Switch	Available PoE (W)
2960C-8PC-L	124 W
2960C-12PC-L	124 W
3560C-12PC-S	124 W
3560C-8PC-S	124 W
3560CG-8PC-S	124 W

Q. Are the 2960-C and 3560-C switches capable of providing PoE+ on the downlinks?

A. The 3560-C Series Switch is capable of providing PoE+ on the downlink ports.

Q. Can I power the switch using both the uplink PoE/PoE+ and aux power input to get a higher PoE budget?

A. No. When both auxiliary and PoE uplinks are connected, the aux power input takes precedence for redundancy purposes.

Q. Can I power the switch using any combination of PoE and PoE+ on the uplink ports? For example, can one uplink be powered using PoE and the other being powered using PoE+?

A. Yes. A PoE-powered switch can accept any combination of PoE and PoE+.

Q. To what uplink switches can the compact switch connect to get PoE/PoE+ power?

A. The compact switches can connect to any of the IEEE-compliant PoE/PoE+ switches such as the Cisco Catalyst 3750-X Series or 2960-S Series Switches. PoE+ capable switches will provide more PoE budget on the downlinks as compared to the PoE-capable switches.

Q. What happens to the PoE-powered devices on the downlink ports on the 2960CPD-8PT- L and 3560CPD-8PT-S when one of the uplinks gets disconnected?

A. If one of the uplink ports gets disconnected, the available PoE budget for the downlink ports is reduced. Under such circumstances the switch performs intelligent load shedding. Devices that need less PoE than the available PoE budget are serviced, starting from the lowest numbered port to the highest numbered port. Devices that need more PoE than the available PoE budget may/will lose power. In case of the 3560CPD-8PT-S, when one of the PoE+ uplinks is lost, the PoE budget reduces to 0. As a result any PoE devices connected on the downlink ports will stop receiving PoE from the switch.

Q. When powering a switch using uplink PoE/PoE+, what is the maximum length of the CAT5/CAT6 cable that I can use on the uplinks to help make sure that the documented PoE budget is available?

A. To make sure that the compact switch gets the desired PoE, the cable connecting the compact switch and the uplink switch should not exceed 100 meters in length as per the IEEE specification for PoE cabling.

Security and MACSec

Q. How can I keep unauthorized users from accessing my network?

A. The Cisco Catalyst 2960-C and 3560-C Series Switches support the IEEE 802.1X standard, which works in conjunction with a RADIUS server to authenticate users as they access a network. Additionally, portions of the network can be restricted by using access control lists (ACLs). Access can be denied based on MAC addresses, IP addresses, or TCP/User Datagram Protocol (UDP) ports. ACL lookups are done in hardware and do not compromise forwarding and routing performance. An additional protection method is to use port security, which helps ensure that the appropriate user is on the network by limiting access to the port based on MAC addresses.

In addition to this, the authenticated users on a 3560-C switch can also establish an encrypted session with the switch using MACSec (IEEE 802.1ae) if the user device is MACSec capable.

Q. How can I monitor or track activities in my network?

A. The Cisco Catalyst 2960-C and the 3560-C Series Switches can complement an intrusion detection system (IDS) or firewall with features such as MAC address notification, which sends an alert to a management station, so that network administrators know when and where users come onto the network and can take appropriate action. The Dynamic Host Configuration Protocol (DHCP) Interface Tracker (option 82) feature tracks where a user is physically connected on a network by providing both switch and port ID to a DHCP server. DHCP snooping enables the administrator to keep track of both dynamic and static IP/MAC mapping tables.

Q. How can I protect administration passwords and traffic going to the switch during configuration or troubleshooting?

A. To protect administration traffic during the configuration or troubleshooting of a switch (such as passwords or device configuration settings), the best approach is to encrypt the data using both Secure Shell Protocol (SSH) and Simple Network Management Protocol (SNMP) v3 to provide encryption of data during Telnet sessions and SNMP sessions.

Q. Is MACSec supported on the 2960-C and the 3560-C switch models?

A. Yes. MACSec (IEEE 802.1ae) is supported on the 3560-C Series Switches on the downlinks to MACSec-capable clients. MACSec is not supported on the 2960-C Series.

Q. What infrastructure do I need to set up MACSec with the compact switches?

A. A MACSec-capable Cisco Catalyst switches (Cisco Catalyst 3560-C Series, ACS server) version 5.1 and AnyConnect version 3.0 supplicant on end-user workstations (laptops, desktops) are needed.

Network Management

Q. What network management applications support Cisco Catalyst 2960-C and 3560-C Series Switches?

A. The following Cisco network management applications can be used to manage the Cisco Catalyst 2960-C and 3560-C Series Switches.

- CiscoWorks LAN Management Solution bundle (LMS) 4.1: More information on LMS can be found on Cisco.com at http://www.cisco.com/go/lms.
- Cisco Network Assistant: An application from Cisco used for managing small networks. This application can be downloaded from Cisco.com. More information on Cisco Network Assistant can be found on Cisco.com at http://www.cisco.com/go/cna.
- Device manager: An HTML-based application that is located on the switch.

Q. Can you describe how CiscoWorks LAN Management System (LMS) manages Cisco Catalyst 2960-C and 3560-C Series Switches?

A. CiscoWorks LAN Management Solution (LMS) is an integrated suite of management functions that simplify the configuration, administration, monitoring, and troubleshooting of Cisco networks. CiscoWorks LMS allows network operators to manage the network through a browser-based interface that can be accessed any time from anywhere within the network.

Once installed, “out-of-the-box” monitoring and troubleshooting dashboards provide actionable information to quickly isolate and fix network problems before they affect services. Configuring and deploying updates to the network can be accomplished using the Template Center, which incorporates Cisco Validated Designs and links to download the latest configuration templates from Cisco.com, simplifying platform and technology deployment and reducing the chance for errors. “Work Centers” provide a single area where guided workflows give step-by-step instructions to help operators quickly provision, monitor, and manage new Cisco value-added technologies and solutions, such as EnergyWise, TrustSec/Identity, Auto Smartports, and Smart Install.

Software

Q. What are the various software license levels in the 2960-C and 3560-C models?

A. The supported license levels for each of the compact switch platforms are explained in Table 9.

Table 9. Compact Switch License Level

Platform	Default License	Upgrade/Downgrade Option
Cisco Catalyst 2960CPD-8TT-L	LAN Base	No
Cisco Catalyst 2960CPD-8PT-L	LAN Base	No
Cisco Catalyst 2960C-8TC-S	LAN Lite	No
Cisco Catalyst 2960C-8TC-L	LAN Base	No
Cisco Catalyst 2960C-8PC-L	LAN Base	No

Platform	Default License	Upgrade/Downgrade Option
Cisco Catalyst 2960C-12PC-L	LAN Base	No
Cisco Catalyst 2960CG-8TC-L	LAN Base	No
Cisco Catalyst 3560CG-8PC-S	IP Base	No
Cisco Catalyst 3560CG-8TC-S	IP Base	No
Cisco Catalyst 3560CPD-8PT-S	IP Base	No
Cisco Catalyst 3560C-8PC-S	IP Base	No
Cisco Catalyst 3560C-12PC-S	IP Base	No

Q. Do any 3560-C Series Switches support the IP services feature set?
A. No.

Q. Is IPV6 supported on the 2960-C and 3560-C switches?
A. Yes. The 2960-C and 3560-C Series Switches except 2960C-8TC-S (LAN Lite license level) support IPv6 features. For more details, refer to the 2960-C and 3560-C release notes.

Q. Are cryptographic features available on the 2960-C and 3560-C switches?
A. Yes. 2960-C Series and 3560-C Series Switches support the cryptographic features by default.

Q. How do I get an update for the Cisco IOS® Software for the Cisco Catalyst 2960 Series at no additional cost?
A. Visit http://www.cisco.com, click “Downloads,” and select “Switch Software.” Downloading software requires a Cisco.com username and password. If you do not have a Cisco.com username, you can obtain one by clicking “Register” at the top of any page on Cisco.com.

Q. What multicast protocols do the Cisco Catalyst 2960-C Series and 3560-C Series Switches support?
A. Both 2960-C and 3560-C support IGMP v1, v2, and v3 snooping.

- IGMP v1 and v2 filtering
- IGMP snooping timer
- IGMP throttle
- IGMP querier
- Configurable IGMP leave timer
- MVR
- PIM

Q. Do the Cisco Catalyst 2960-C and 3560-C Series Switches have a K9 and non-K9 Cisco IOS Software image?
A. The Cisco Catalyst 2960-C and 3560-C Series support the K9 image only. Non-K9 is not available for these switch models.

Power

Q. What is the inrush current for the compact switches powered using AC power supply?
A. 31A/62A for the PoE powered and PoE pass-through models: 2960CPD-8PT-L, 2960CPD-8TT-L, 3560CPD-8PT-S, and 30A/60A for all the other models.

Q. What is the input voltage range for the AC-powered compact switches?
A. 100V-240V is the input voltage range on the AC-powered switches.

Q. What input receptacle is used on the AC-powered compact switch?
A. IEC C14 is the standard input receptacle on the AC-powered compact switches.

Q. Do the 2960-C and 3560-C switches support both aux and AC input on the same switch?
A. No. The switches either have the aux input or the AC input, but not both on the same switch.

Q. How does cooling work in the 2960-C and 3560-C switches?
A. The 2960-C and the 3560-C Series Switches do not have any fans, and hence cooling is by convection.

Q. How many fans do the Cisco Catalyst 2960-C and 3560-C switches have?
A. Zero. The Cisco Catalyst 2960-C and 3560-C switches are fanless.

Q. What is the noise level on the 2960-C and 3560-C switch models?
A. 0 dB as the compact switches are fanless.

Q. Can I power the 2960-C and 3560-C switches using RPS/XPS?
A. No.

Q. Are the AC power supplies on the 3560-C switches field replaceable?
A. No. The power supplies are built in and are not field replaceable.

Q. Is it safe to touch the switch when it is operational?
A. Yes.

Q. Is the compact switch surface hot to the touch when it is operational?
A. The compact switch is warm when operational but not hot. Hence it is safe to touch the switch.

Q. Do the compact switches support power injectors to power the switch?
A. Yes. The compact switches support any IEEE-compliant PoE or PoE+ power injector.

Features

Q. Does the Cisco Catalyst 2960-C or 3560-C have a front panel out-of-band (OOB) Ethernet management interface?
A. No. The Cisco Catalyst 2960-C and 3560-C Series do not support the OOB Ethernet management interface.

Q. What is the function of the reset button on the rear of the compact switch?
A. Pressing the reset button power cycles the switch, saving the startup configuration.

Q. What are the enhancements to the light-emitting diodes (LEDs) on the front panel?
A. There is a new LED called PD. This LED applies to 3560CPD-8PT-S, 2960CPD-8PT-L, and 2960CPD-8TT-L. Solid green on the PD LED indicates that uplink PoE is applied and is sufficient to power the system. Solid amber indicates that the uplink PoE is applied and is insufficient to power the system. Unlike other LEDs, the PD LED is not under the control of the mode button. It is controlled by the PoE subsystem in the switch and is always representative of the current power sources.

Q. Is a USB miniconsole available for switch CLI access on the 2960-C and 3560-C Series Switches?
A. Yes.

Q. Because the compact switches do not have a fan for cooling, what are the best practices for mounting the switch in a closet/under the table/other closed environments?

A. Airflow around the switch should be unrestricted. Best practices allow for at least 3 inches (7.6 cm) of clearance on all sides and ventilation openings. Allow at least 1.75 inches (4 cm) of clearance above each switch if placed in a rack. Clearance to the front and rear panels should allow you to easily read the front-panel indicators. Access to ports should be sufficient for unrestricted cabling. The rear-panel power connector should be within reach of an AC power receptacle. The 2960-C is rated to 113℉ (45℃), and therefore i t is important to make sure that the temperature around the unit does not exceed 113℉ (45℃).

It is recommended that when wall-mounting the switch, it be oriented with the ports facing either left, right, or down.

Q. What types of Small Form-Factor Pluggable (SFP) modules are supported by the Cisco Catalyst 2960-C and 3560-C Series Switches?

A. Cisco Catalyst 3560-C and 2960-C Series Switches support the same set of SFPs. There are limitations to the SFP types supported. (See Table 10.)

Table 10. SFP for Cisco Catalyst 3560-C and 2960-C Series Switches

SFP	Support on Cisco Catalyst 2960-C and 3560-C Platforms
GLC-LH-SM=	Yes
GLC-SX-MM=	Yes
GLC-ZX-SM=	Yes
GLC-GE-100FX, GLC-T=	No
GLC-BX-D=, GLC-BX-U=	Yes
GLC-FE-100FX=	Yes
GLC-FE-100LX=	Yes
GLC-FE-100BX-D=, GLC-FE-100BX-U=	Yes
CWDM SFPs	Yes

Q. Is there SFP support on the downlinks of the Cisco Catalyst 2960-C and 3560-C Series Switches?

A. No. All 2960-C and 3560-C Series Switches only support fixed copper interfaces on downlinks.

Q. What are dual-purpose uplinks?

A. Dual-purpose uplink is the ability to use either fiber or copper uplinks. Both media types cannot be used at the same time.

Q. Which of the C-Series compact switches have dual media uplinks?

A. The following compact switches have dual media uplinks:

- 2960C-8TC-S
- 2960C-8TC-L
- 2960C-8PC-L
- 2960C-12PC-L
- 2960CG-8TC-L
- 3560CG-8PC-S
- 3560CG-8TC-S
- 3560C-8PC-S
- 3560C-12PC-S

The 3560CPD-8PT, 2690CPD-8PT, and 2960CPD-8TT only have copper uplink ports.

Q. What is the difference between the 3560CPD-8PT-S, 2960CPD-8PT-, and 2960CPD-8TT-L?

A. All switches are PoE powered; however, the 2960CPD-8TT-L does pass the surplus PoE on the downlink ports, whereas the 3560CPD-8PT-S and 2960CPD-8PT-L support PoE pass-through on the downlink ports.

Q. Do the Cisco Catalyst 2960-C and 3560-C Series Switches support Cisco EnergyWise?

A. Yes.

Q. Do the Cisco Catalyst 2960-C and 3560-C Series Switches support Smart Install?

A. Yes. The 2960-C Series Switches can behave as the Smart Install client, whereas the 3560-C Series Switch can behave as the Smart Install director and client. At FCS, there is no built-in group support for the 2960-C and 3560-C Series. Hence client groups will have to be configured using custom groups of type product ID, MAC address, or connectivity. Built-in group support will be available in the summer 2011 release. Software release notes at that time will confirm the same.

Q. Do the Cisco Catalyst 2960-C and 3560-C Series Switches support Auto Smartports?

A. Yes.

Q. Is FlexStack supported on the Cisco Catalyst 2960-C models?

A. No.

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