Cisco Catalyst 2960 and 2960-S Series Switches Q&A

Contents

Product Overview

Q. **What are the notable differences between the Cisco® Catalyst® 2960 and 2960-S Series Switches?**

A. The Cisco Catalyst 2960-S Series brings new capabilities to the Catalyst 2960 family of Layer 2 switches, including:

- Cisco FlexStack stacking capabilities

- 10 Gigabit Ethernet uplinks with SFP+

- Support for Power over Ethernet Plus (PoE+)

- Cisco Generic Online Diagnostics (GOLD) and on-board failure logging (OBFL)

- USB Type A and Type B

- 10/100 out-of-band (OOB) management

A complete Cisco Catalyst 2960 Series model selection guide is available here:
http://www.cisco.com/en/US/products/ps6406/prod_models_comparison.html.

Q. **What are the notable hardware differences between the LAN Base and LAN Lite switches?**

A. LAN Base switches support these hardware components:

- Increased number of VLANs

- Redundant power system (Cisco RPS 2300)

- SFP+ (for the Cisco Catalyst 2960-S Series)

- A wider selection of Small Form-Factor Pluggable (SFP) ports. See the Cisco Catalyst 2960 Series data sheet for a complete list of supported SFPs.

Q. **What is Cisco FlexStack stacking?**

A. Cisco FlexStack is a hot-swappable, modular stacking solution that provides a true stacking capability, with all switches acting as a single switching unit with a unified data plane, using a single IP address. Cisco FlexStack allows the stacking of up to four switches, with a throughput of 20 gigabits per second.

Q. **What are the FlexStack high availability features?**

A. The following features enhance high availability and manageability across a stack:

- Cross-stack EtherChannel
- Switched Port Analyzer (SPAN)
- FlexLink technology

Q. **Where can I find technical and product specifications and other information about the Cisco Catalyst 2960 and 2960-S Series Switches?**

A. For product literature, including data sheets and product specifications, visit http://www.cisco.com/go/catalyst2960.

Q. **What are the benefits of Power over Ethernet Plus?**

A. Switches supporting Power over Ethernet Plus (PoE+) can supply power to any IEEE 802.3af or IEEE 802.3at compliant end device. PoE+ removes the need for wall power to each PoE+ enabled device and eliminates the cost for additional electrical cabling that would otherwise be necessary in IP phone and wireless LAN deployments. PoE switches also eliminate the need for power injectors and PoE midspans for powering IP devices. The list of devices that require more than the 15.4W provided by 802.3at is growing. Devices currently requiring more than 15.4W of PoE power include Cisco video IP phones and IP video cameras. Additional devices requiring more than 15.4W of power are coming, and the Cisco Catalyst 2960-S Series is leading the way to allow these devices to be deployed in the network.

Cisco Catalyst 2960-S Series Switches support IEEE 802.3at (PoE+) devices.

Q. **How many end devices can the Cisco Catalyst 2960-S Series provide PoE and PoE+ to?**

A. The Cisco Catalyst 2960S-48FPD-L and C2960S-48FPS-L can support 48 PoE ports with full Class 3 PoE power of 15.4W each, for a total output capacity of 740W. All Cisco Catalyst 2960-S Series Switches with PoE capability support PoE+. A complete list of Catalyst 2960 and 2960-S Series Switches, with their PoE capacities, is given in Table 1.

Table 1. PoE Capacity of the Cisco Catalyst 2960 and 2960-S Series Switches

Model	Maximum Number of PoE+ Ports	Maximum Number of PoE Ports	PoE Budget
10 Gigabit Uplinks			
Cisco Catalyst 2960S-48FPD-L	24 at 30W	48 at 15.4W	740W
Cisco Catalyst 2960S-48LPD-L	12 at 30W	24 at 15.4W	370W
Cisco Catalyst 2960S-24PD-L	12 at 30W	24 at 15.4W	370W
1 Gigabit Uplinks			
Cisco Catalyst 2960S-48FPS-L	24 at 30W	48 at 15.4W	740W
Cisco Catalyst 2960S-48LPS-L	12 at 30W	24 at 15.4W	370W
Cisco Catalyst 2960S-24PS-L	12 at 30W	24 at 15.4W	370W
Cisco Catalyst 2960-48PST-L	0	24 at 15.4W	370W
Cisco Catalyst 2960-24PC-L	0	24 at 15.4W	370W
Cisco Catalyst 2960-24LT-L	0	8 at 15.4W	123W

Q. **Do the Cisco Catalyst 2960 and 2960-S Series Switches have redundant power supply (RPS) support?**

A. Yes. The following Cisco Catalyst 2960 and 2960-S Series Switches have RPS support:

- Catalyst 2960S-48FPD-L
- Catalyst 2960S-48LPD-L
- Catalyst 2960S-48TD-L
- Catalyst 2960S-24PD-L
- Catalyst 2960S-24TD-L
- Catalyst 2960S-48FPS-L
- Catalyst 2960S-48LPS-L
- Catalyst 2960S-48TS-L
- Catalyst 2960S-24PS-L
- Catalyst 2960S-24TS-L
- Catalyst 2960-24TT-L
- Catalyst 2960-24TC-L
- Catalyst 2960-24PC-L
- Catalyst 2960-48PST-L
- Catalyst 2960-24LT-L
- Catalyst 2960-48TT-L
- Catalyst 2960-48TC-L
- Catalyst 2960G-24TC-L
- Catalyst 2960G-48TC-L

A converged voice and data network has the greatest power availability when a Cisco Catalyst 2960 or 2960-S Series Switch is combined with the Cisco RPS 2300 Redundant Power System for protection against internal power supply failures and an uninterruptible power supply (UPS) to safeguard against power outages. For more information about the Cisco RPS 2300, visit http://www.cisco.com/en/US/products/hw/routers/ps2883/ps5066/index.html.

The Catalyst 2960-S and 2960 PoE switches use the 22-pin cable CAB-RPS2300-E=.

The Cisco Catalyst 2960 Series Compact Switches and the Cisco Catalyst 2960 Series Switches with LAN Lite Software do not have RPS support.

Q. **How can I tell the difference between the LAN Base and LAN Lite switches for the Cisco Catalyst 2960-S Series?**

A. On the front of the switch, in the top right corner, the LAN Lite switches have "Catalyst 2960-S Series SI." The LAN Base switches have "Catalyst 2960-S Series."

Figure 1 provides a sample of what the LAN Lite switches will look like (note: Replace this illustration with a better picture when available.)

Figure 1.   Cisco Catalyst 2960-S LAN Lite Switch
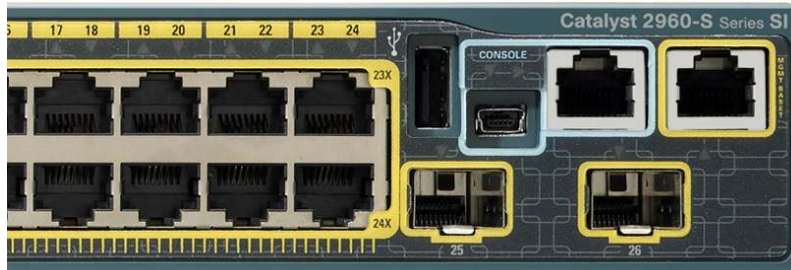
From the rear of the Cisco Catalyst 2960-S Series Switch, the LAN Lite models do not support stacking. The left side will not have a location for the FlexStack module to be inserted.

From the Cisco IOS® Software command line, there are two ways to tell which software image the switch has.

1.   The last letter in the product ID . If the last letter is "-L," it's LAN Base. If it's "-S," it's LAN Lite.

For example:

```
WS-C2960S-48LPS-L is LAN Base.
WS-C2960S-48TS-S is LAN Lite.
```

2.   The output from the "show license" Cisco IOS Software command-line interface (CLI) command. If LAN Base is being used, that will be the active license. If it's LAN Lite, that will be the active license. In the following example output, LAN Base is the active license.

```
C2960-S_Switch# show license
Index 1 Feature: lanlite
     Period left: 0 minute 0 second
Index 2 Feature: lanbase
     Period left: Life time
     License Type: Permanent
     License State: Active, In Use
     License Priority: Medium
     License Count: Non-Counted
```

Q. **Do I need a software license for Cisco Catalyst 2960-S Series Switches?**

A. No. Cisco Catalyst 2960-S Series Switches use the Universal image, but no license is required. The feature is bound to the hardware model type and cannot be changed.

For convenience, a single software image is used for all Cisco Catalyst 2960-S Series Switches, regardless of whether they are a LAN Base or LAN Lite model.

Q. **Can a Cisco Catalyst 2960-S Series LAN Lite switch be upgraded to LAN Base?**

A. No. The feature set is bound to the hardware model. To get the features and capabilities of LAN Base, you must purchase a LAN Base switch.

Software Capabilities

Q. What are the notable differences between the Cisco Catalyst 2960 and 2960-S LAN Base and LAN Lite switches?

A. Cisco Catalyst 2960 LAN Base switches have several advantages:

- Enhanced security with Layer 2 through 4 access control lists (ACLs), Dynamic Host Configuration Protocol (DHCP) snooping, and more extensive Network Admission Control (NAC) capabilities such as web authentication and 802.1X enhancements

- Additional quality of service (QoS) capabilities: The LAN Base software supports policing, class and policy maps, security ACLs, differentiated services code point (DSCP), AutoQoS, and configurable queue weights, buffers, and thresholds

- Higher network-level availability with features such as FlexLink and link state tracking

- Increased number of VLANs (256) and other enhancements, such as IPv6 host, Multicast Listener Discovery (MLD) snooping, Link Layer Discovery Protocol Media Endpoint Devices (LLDP-MED), Remote SPAN (RSPAN), multicast VLAN registration (MVR), DHCP option 82, and IP SLA (responder)

Q. What are the similarities between the Cisco Catalyst 2960 LAN Base and LAN Lite switches?

A. The Cisco Catalyst 2960 LAN Base and LAN Lite switches all support the following capabilities:

- Scalable and highly secure network management: Secure Shell (SSH), Secure Sockets Layer (SSL), Secure Copy Protocol (SCP), and Simple Network Management Protocol (SNMP) v3 crypto

- Network management tool support by CiscoWorks, Cisco Network Assistant, and Catalyst Device Manager

- Baseline NAC and 802.1X MAC Auth Bypass and protected port

- Voice VLAN and voice-aware port security, Bridge Protocol Data Unit (BPDU) Guard, and Root Guard

- Standard QoS with class of service (CoS) marking, shaped round robin, weighted tail drop, and strict priority scheduling

- Link aggregation using Port Aggregation Protocol (PAgP) and 802.3ad Link Aggregation Control Protocol (LACP)

- Complete Spanning Tree Protocol support via 802.1s, 802.1w, and Per-VLAN Spanning Tree Plus (PVST+)

- VLAN Trunking Protocol (VTP), Cisco Discovery Protocol v2, and LLDP

- Multicast support in hardware with Internet Group Management Protocol (IGMP) snooping, filtering, and querier

- Troubleshooting and monitoring tools such as Time Domain Reflectometry (TDR), SPAN, and unidirectional link detection (UDLD)

- Catalyst Smart Operations, including Auto Smartports and the Smart Install client

Q. Can I upgrade or downgrade a Cisco Catalyst 2960 Series Switch between the LAN Base and LAN Lite images?

A. No. Cisco Catalyst 2960 Series Switches cannot be upgraded from LAN Lite to LAN Base and cannot be downgraded from LAN Base to LAN Lite.

Q. How do I get the cryptography features, and is there an additional charge for them?

A. Cisco Catalyst 2960-S Series Switches will support Cisco IOS Software images with cryptography features by default. These are the only images available. These images with cryptography features will be loaded during manufacture. Non-K9 images will not be available for the Cisco Catalyst 2960-S Series Switches.

For other members of the Cisco Catalyst 2960 Series (non Catalyst 2960-S switches), you will need to go to the Software Download Center on Cisco.com to get the "k9" software versions and upgrade your switches. There is no additional charge for this software version.

Q. Does the Cisco Catalyst 2960 Series support IPv6?

A. Yes. Cisco Catalyst 2960 switches with LAN Base software support IPv6 host, management, and MLD snooping. The Cisco Catalyst 2960 LAN Lite switches do not support IPv6.

Q. Is there a Cisco Catalyst 2960-S model that runs the LAN Lite feature set?

A. Yes. There are two LAN Lite models available in the Cisco Catalyst 2960-S family. Each has two 1 Gigabit uplinks.

The C2960S-48TS-S and C2960S-24TS-S models have 48 and 24 Gigabit downlinks, respectively.

See the Cisco Catalyst 2960 model selection guide for all available models.

Q. Can I obtain a Cisco IOS Software updates for the Cisco Catalyst 2960 Series at no additional cost?

A. Yes. Cisco offers ongoing Cisco IOS Software updates for certain fixed-configuration and stackable Cisco Catalyst switches at no additional cost. For the life of the product, updates within the Cisco IOS Software package purchased (LAN Lite and LAN Base) will be made available.

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 are dual-purpose uplinks?

A. A dual-purpose uplink is a combination of one 10/100/1000-TX copper port and one SFP-based Gigabit Ethernet port. Only one of these two ports can be used at a time. This added uplink flexibility allows cost-effective use of high-density, fiber-uplink-based stacks. Dual-purpose uplinks also offer a full-duplex, Gigabit-speed trunk for a Cisco Catalyst 2960 Series Switch stack.

Intelligent Switching

Q. Why do I need intelligence at the edge of my network?

A. Networks have evolved to address four new developments at the network edge:

- Increase in desktop computing power
- Introduction of bandwidth-intensive applications
- Expansion of highly sensitive data on the network
- Presence of multiple device types, such as IP phones and wireless LAN access points

These new demands compete for resources with many existing mission-critical applications. As a result, IT professionals must view the edge of the network as critical to effectively manage the delivery of information and applications. As companies increasingly rely on networks as the strategic business infrastructure, it is important to help ensure high availability, security, scalability, and control. By adding intelligent functions to the wiring closet, you can deploy networkwide intelligent services that address these requirements in a consistent way, from the desktop to the core and through the WAN. Cisco Catalyst Intelligent Ethernet switches can help you realize the full benefits of adding intelligent services to your network. Deploying switches with capabilities that make the network infrastructure highly available to accommodate time-critical needs, scalable to accommodate growth, secure enough to protect confidential information, and capable of differentiating and controlling traffic flows provides the basis of further optimizing network operations.

Q. **Can you provide more details about how Cisco Catalyst Intelligent Ethernet switches will help my network?**

A. New applications are requiring higher bandwidth and the need to differentiate and control the traffic flow. Applications such as enterprise resource planning (ERP; Oracle or SAP, for example), voice (IP telephony traffic), and computer-aided design and manufacturing (CAD/CAM) require priority over less time-sensitive applications such as FTP or Simple Mail Transfer Protocol (SMTP). It is undesirable to have a large file download that is destined for one port on a switch increase latency in voice traffic destined for another port on the same switch. This condition is avoided by making sure that voice traffic is properly classified and prioritized throughout the network. Cisco Catalyst Intelligent Ethernet switches implement superior QoS to help ensure that network traffic is classified and prioritized and congestion is avoided.

Network Security

Q. **How do Cisco Intelligent Ethernet switches manage the security needs of a network?**

A. With the rise in internal threats to a network, Cisco Intelligent Ethernet switches enhance data security through a wide range of features, including SSH Protocol, SNMP v3, ACLs, 802.1X, port security, Private VLAN Edge, DHCP Interface Tracker, MAC address notification, and RADIUS/TACACS+. Depending on your security needs, the Cisco Catalyst 2960 Series complements devices such as firewalls, VPNs, and intrusion detection systems (IDSs).

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

A. The Cisco Catalyst 2960 Series supports the IEEE 802.1X standard, which works in conjunction with a RADIUS server to authenticate users as they access a network. The 802.1X standard is considered port-level security and is commonly used for wireless LANs. Additionally, portions of the network can be restricted by using 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.

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

A. The Cisco Catalyst 2960 Series can complement an 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 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 SSH and SNMP v3 to provide encryption of data during Telnet sessions and SNMP sessions.

Network Management

Q. **What network management applications support Cisco Catalyst 2960 and 2960-S Series Switches?**

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

- CiscoWorks LAN Management Solution bundle (LMS). More info on LMS can be found on Cisco.com here: http://www.cisco.com/en/US/products/sw/cscowork/ps2425/index.html

- 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 here: http://www.cisco.com/en/US/products/ps5931/index.html

- Device manager: An HTML-based application that is located on the switch.

Q. **Can you describe how Cisco Network Assistant manages Cisco Catalyst 2960 and 2960-S Series Switches?**

A. Cisco Catalyst 2960 Series Switches can be managed using Cisco Network Assistant software, which uses Cisco switch clustering technology. Cisco Network Assistant is a PC-based network management application optimized for LANs of small and medium-sized businesses with up to 250 users. Cisco Network Assistant offers centralized management of Cisco switches, routers, and WLAN access points. It supports a wide range of Cisco Catalyst Intelligent Ethernet switches. Through a user-friendly GUI, users can configure and manage a wide array of switch functions and start the device manager of Cisco routers and Cisco wireless access points.

Cisco Network Assistant provides an integrated management interface for delivering intelligent services, enabling users to manage their entire LAN with one robust tool. By bringing the simplicity of traditional LAN switching to intelligent services such as multilayer switching, QoS, multicast, and security ACLs, Cisco Network Assistant offers administrators benefits formerly reserved for only the most complex networks. Cisco Network Assistant's Guide mode leads you through the configuration of high-end features and provides enhanced online help for context-sensitive assistance. In addition, a solution wizard provides automated configuration of the switch for video streaming or video conferencing.

Cisco Network Assistant supports standards-based connectivity options such as Ethernet, Fast Ethernet, Cisco Fast EtherChannel technology, Gigabit Ethernet, and Gigabit EtherChannel connectivity. Because Cisco switch clustering technology is not limited by proprietary stacking modules, stacking cables, or interconnection media, Cisco Network Assistant expands the traditional cluster domain beyond a single wiring closet and lets you combine interconnections to meet specific management, performance, and cost requirements.

Cisco Catalyst 2960 and 2960-S Series Switches can be configured as either command or member switches in a Cisco switch cluster. Cisco Network Assistant also allows you to designate a standby or redundant command switch, which takes the commander duties should the primary command switch fail. Other important features include the ability to configure multiple ports and switches simultaneously, as well as to perform software updates across the entire cluster at once. Bandwidth graphs and link reports provide useful diagnostic information, and the topology map gives network administrators a quick view of the network status.

Compact Switches

Q. **What are Cisco Catalyst 2960 Compact Switches?**

A. Cisco Catalyst 2960 Compact Switches are small form-factor switches designed for deployment outside the wiring closet. They have a durable metal shell, no fan for silent operation, easy wall or under-the-desk mounting, a security lock to prevent theft, and an available cable guard to secure the Ethernet cables and switch. These compact switches enable you to deliver intelligent services such as NAC in the office workspace, micro branch office, classroom, cruise ship, and other wiring-constrained environments. Table 2 describes the Cisco Catalyst 2960 Compact Switch portfolio.

Table 2.   Cisco Catalyst 2960 Compact Switches

Product Name	Part Number	Description
Cisco Catalyst 2960-8TC-S	WS-C2960-8TC-S	8 Ethernet 10/100 ports and 1 dual-purpose uplink (each dual-purpose uplink port has one 10/100/1000 Ethernet port and one Small Form-Factor Pluggable [SFP]-based Gigabit Ethernet port, one port active). 2960 LAN Lite IOS Software support
Cisco Catalyst 2960PD-8TT-L	WS-C2960PD-8TT-L	8 Ethernet 10/100 ports and 1 10/100/1000 PoE Input port (No power supply required) 2960 LAN Base IOS Software support
Cisco Catalyst 2960-8TC-L	WS-C2960-8TC-L	8 Ethernet 10/100 ports and 1 dual-purpose uplink (each dual-purpose uplink port has one 10/100/1000 Ethernet port and one Small Form-Factor Pluggable [SFP]-based Gigabit Ethernet port, one port active) 2960 LAN Base IOS Software support
Cisco Catalyst 2960G-8TC-L	WS-C2960G-8TC-L	7 Ethernet 10/100/1000 ports and 1 dual-purpose uplink (each dual-purpose uplink port has one 10/100/1000 Ethernet port and one SFP-based Gigabit Ethernet port, one port active) 2960 LAN Base IOS Software support

Cisco Catalyst 2960 Compact Switches have a magnet included. For rack mounting, you should purchase the compact switch rack mount, RCKMNT-19-CMPCT=. The cable guard options for the Cisco Catalyst 2960 Compact Switches are CBLGRD-C2960-8TC= and CBLGRD-C2960G-8TC=.

Q. **What is the recommended enclosure environment for compact switches?**

A. Airflow around the switch and through the vents must be unrestricted. Allow at least 3 inches (7.6 cm) of clearance on all sides and ventilation openings, particularly if you stack the switches or place them side by side. Allow at least 1.75 inches (4 cm) of clearance above each switch in the 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. Make sure that the temperature around the unit does not exceed 113°F (45°C).

Positioning

Q. **Where do I use Cisco Catalyst 2960 and 2960-S Series Switches with the LAN Base and LAN Lite software?**

A. Cisco Catalyst 2960 LAN Base switches deliver intelligent services for branch offices and wiring closets. The LAN Base software supports enhanced Layer 2+ security, QoS, availability, and scalable management to enable new converged applications. Cisco Catalyst 2960 LAN Base switches include both 10/100 Fast Ethernet and 10/100/1000 Gigabit Ethernet connectivity in 8-, 24-, and 48-port configurations.

Cisco Catalyst 2960 LAN Lite switches are for entry-level branch office and wiring closet networks. They simplify the migration from nonintelligent hubs and unmanaged switches to a fully scalable and reliable network. The LAN Lite software supports standard Layer 2 security, QoS, and availability while lowering the network total cost of ownership. Cisco Catalyst 2960 LAN Lite switches include both 10/100 Fast Ethernet and 10/100/1000 Gigabit Ethernet connectivity in 8-, 24- and 48-port configurations.

All Cisco Catalyst 2960 Series Switches have technical support service options available through Cisco SMARTnet® Service. All come with a limited lifetime hardware warranty, and LAN Base and LAN Lite software updates are provided at no additional cost.

Warranty and Service

Q. **What is the hardware warranty and return policy on the Cisco Catalyst 2960 and 2960-S Series Switches?**

A. The Cisco Catalyst 2960-S and 2960 Series Switches come with a limited lifetime warranty. The warranty for the Cisco 2960-S Series switches has the same terms as our standard limited lifetime warranty plus the addition of

next business day delivery of replacement hardware where available and 90 days of 8x5 Cisco Technical Assistance Center (TAC) support (Table 3).

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 on warranty terms, visit http://www.cisco.com/go/warranty.

Table 3.   Limited Lifetime Warranty Terms

	Cisco Limited Lifetime Hardware Warranty	Cisco Enhanced Limited Lifetime Hardware Warranty
Devices covered	Applies to Cisco Catalyst 2960 Series Switches sold on or after May 1, 2009	Applies to Cisco Catalyst 2960-S Series Switches
Warranty duration	As long as the original end user continues to own or use the product, provided that: fan and power supply warranty is limited to five (5) years.	As long as the original end user continues to own or use the product, provided that: fan and power supply warranty is limited to five (5) years.
End-of-life policy	In the event of discontinuance of product manufacture, Cisco warranty support is limited to five (5) years from the announcement of discontinuance.	In the event of discontinuance of product manufacture, Cisco warranty support is limited to five (5) years from the announcement of discontinuance.
Hardware replacement	Cisco or its service center will use commercially reasonable efforts to ship a replacement part within ten (10) working days after receipt of the return materials authorization (RMA) request. Actual delivery times may vary depending on customer location.	Cisco or its service center will use commercially reasonable efforts to ship a replacement for next business day delivery, where available. Otherwise, a replacement will be shipped within ten (10) working days after receipt of the RMA request. 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 ninety [90] days after original shipment by Cisco).	Hardware warranty commences from the date of shipment to customer (and in case of resale by a Cisco reseller, not more than ninety [90] days after original shipment by Cisco).
TAC support	Not included.	Cisco will provide, during customer's local business hours, 8 hours per day, 5 days per week, basic configuration, diagnosis, and troubleshooting of device-level problems for up to a 90-day period from the date of shipment of the originally purchased Catalyst 2960-S product. This support does not include solution- or network-level support beyond the specific device under consideration.
Cisco.com access	Warranty allows guest access only to Cisco.com.	Warranty allows guest access only to Cisco.com.

Q. **What is the software update policy for Cisco Catalyst 2960-S and 2960 Series Switches with LAN Base Software?**

A. Customers with Cisco Catalyst LAN Base software licenses will be provided with maintenance updates and bug fixes designed to maintain the compliance of the software with published specifications, release notes, and industry standards compliance as long as the original end user continues to own or use the product or up to one year from the end-of-sale date for this product, whichever occurs earlier. Customers with licenses for our premium software images, Enterprise Services or IP Services, require a service support contract such as Cisco SMARTnet Service to download updates.

This policy supersedes any previous warranty or software statement and is subject to change without notice.

Technical Questions

Q. **Why should I purchase a technical service contract for these switches when they include a limited lifetime warranty (LLW)?**

A. Cisco service and support has received numerous industry recognitions and awards for excellence in technology service and support.

Adding a Cisco Technical Services contract to warranty coverage provides access to the Cisco TAC beyond the 90-day period allowed by the LLW. It also can provide a variety of hardware replacement options to meet critical

business needs, as well as updates for licensed premium Cisco IOS Software and registered access to the extensive Cisco.com knowledge base and support tools.

For information about Cisco Technical Services, visit http://www.cisco.com/go/ts.

For information about the Cisco LLW, visit http://www.cisco.com/go/warranty.

Q. **What types of services and support are available for the Cisco Catalyst 2960 and 2960-S Series?**

A. A full complement of lifecycle services and support is available for the Cisco Catalyst 2960 and 2960-S Series Switches. From implementation to operation and optimization, Cisco offers technical support service delivered either directly or through a Cisco partner.

Through a discovery process that begins with understanding your business objectives, we help you integrate the Cisco Catalyst switch into your architecture and incorporate network services onto it. Sharing knowledge and leading practices, we support your success every step of the way as you deploy, absorb, manage, and scale new technology. Choose from a flexible suite of support services designed to meet your business needs and help you maintain high-quality network performance while controlling operational costs.

For more information, visit: http://www.cisco.com/go/services.

FlexStack

Q. **What is FlexStack technology?**

A. FlexStack technology is based on Cisco StackWise® technology. FlexStack has the same operational features as the StackWise technology, allowing multiple physical switches to be managed as a single logical switch. Having multiple physical switches in a single FlexStack allows the network operator to increase network availability by using the redundancy built into FlexStack. Redundant features of FlexStack include EtherChannel uplinks and master switch failover protection.

Q. **Will management of Cisco Catalyst 2960-S Series Switches in a FlexStack be the same as management of Catalyst 3750 switches using StackWise technology?**

A. Yes. The Catalyst 2960-S switches were designed to be managed in the same way as the Catalyst 3750, 3750-E, and 3750-X switches running the StackWise solution.

Q. **What is the bandwidth of FlexStack?**

A. Each FlexStack link is a 10 Gigabit link. This is a full-duplex, bidirectional link. Thus, each switch member has 20 Gigabits of FlexStack bandwidth, because each has two FlexStack links.

Q. **Can FlexStack operate with only one stack link operational?**

A. Yes. FlexStack can operate with a single stack link. When operating in this mode, the stack is not operating in a redundant fashion. If each member in the stack connects to two separate members forming a ring, the operational loss of a single member will not break up the stack. When FlexStack is connected in a fully redundant fashion, as it is when a ring is formed with the FlexStack cables, it will continue to operate a single unit when it loses a member or a single stack link failure occurs.

Q. **Can I stack a Cisco Catalyst 2960-S switch with a Catalyst 3750, 3750-E, or 3750-X?**

A. No. FlexStack links are 10 Gigabit links. Cisco StackWise links are 16 Gigabit.

Also, FlexStack cables have different connectors than the StackWise cables.

Q. **Is FlexStack a ring topology like the StackWise and StackWise Plus solutions?**

A. No. FlexStack operates hop by hop. Because of this, FlexStack will not recover as quickly as StackWise or StackWise+ from stack link outages.

Q. **What is FlexStack's recovery time for a link outage?**

A. The recovery time for end-user traffic will be 1 to 2 seconds, depending upon the number of members in the stack. This differs significantly from the StackWise and StackWise+ solutions, where the end-user traffic outage is several milliseconds.

Q. **Do Cisco Catalyst 2960-S Series Switches use a spanning tree across the stack?**

A. No. FlexStack uses a formula based on the shortest path to ensure that packets that need to be sent to all stack members are forwarded to all members but that no member sees the same packet twice. It's not Open Shortest Path First (OSPF) but is based on the master's computation of the shortest path.

Q. **Can I insert the FlexStack module with the Cisco Catalyst 2960-S switch powered on and operational?**

A. Yes. The FlexStack module is hot swappable. However, when a switch joins an existing stack, new members are always rebooted.

Q. **What is the maximum number of members in a single FlexStack?**

A. Four.

Q. **Can I have different Cisco Catalyst 2960-S models in the same FlexStack?**

A. Yes. All Catalyst 2960-S models that run the LAN Base image can be stacked together. Cisco Catalyst 2960-S switches that run LAN Lite cannot be stacked.

Q. **Can the LAN Lite models join a FlexStack?**

A. No. LAN Lite switches do not support FlexStack capability.

Q. **What are the available FlexStack cable lengths?**

A. Three FlexStack cables lengths are supported:

- 0.5 meter
- 1.0 meter
- 3.0 meter

Q. **Is the Cisco Catalyst 2960-S line rate?**

A. Yes. All Cisco Catalyst 2960-S models are line rate for all packet sizes. This includes the two 10 Gigabit links and the two FlexStack links.

Features, Transceivers, etc.

Q. **What types of 10 Gigabit SFP+ modules are supported by the Cisco Catalyst 2960-S Series Switches?**

A. Table 4 lists the supported SFP+ modules.

Table 4. Supported 10 Gigabit SFP+ Modules

SFP Transceiver	Description
SFP-10G-LR=	10GBASE-LR SFP+ module
SFP-10G-SR=	10GBASE-SR SFP+ module
SFP-10G-LRM=	10GBASE-LRM SFP+ module
SFP-H10GB-CU1M	10GBASE-CU SFP+ cable 1 meter
SFP-H10GB-CU3M	10GBASE-CU SFP+ cable 3 meter
SFP-H10GB-CU5M	10GBASE-CU SFP+ cable 5 meter

Q. **What types of SFP modules are supported by the Cisco Catalyst 2960-S and 2960 Series Switches?**

A. Table 5 lists the supported SFP modules.

Table 5.   Supported SFP Modules

SFP Transceiver	Description
GLC-BX-D=	1000BASE-BX SFP, 1490 nm
GLC-BX-U=	1000BASE-BX SFP, 1310 nm
GLC-FE-100BX-D=	100BASE-BX SFP, 1490 nm
GLC-FE-100BX-U=	100BASE-BX SFP, 1310 nm
GLC-GE-100FX=	100BASE-FX SFP for Gigabit Ethernet SFP port
GLC-FE-100FX=	100BASE-FX SFP for Fast Ethernet SFP port
GLC-FE-100LX=	100BASE-LX SFP
GLC-LH-SM=	GE SFP, LC connector LX/LH transceiver
GLC-SX-MM=	GE SFP, LC connector SX transceiver
GLC-T=	1000BASE-T SFP
GLC-ZX-SM=	1000BASE-ZX SFP
CWDM-SFP-1470=	CWDM 1470 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1490=	CWDM 1490 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1510=	CWDM 1510 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1530=	CWDM 1530 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1550=	CWDM 1550 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1570=	CWDM 1570 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1590=	CWDM 1590 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1610=	CWDM 1610 nm SFP Gigabit Ethernet and 1G/2G FC

Q. **Are the 10 Gigabit SFP+ modules hot-swappable?**

A. Yes.

Q. **Does the 10 Gigabit uplink upgrade require a separate module?**

A. No. The SFP+ and SFP slots are built in.

Q. **Can the 10 Gigabit SFP+ slots on the Cisco Catalyst 2960-S model support 1 Gigabit SFP modules?**

A. Yes. The Catalyst 2960-S models that support 10 Gigabit SFP+ modules can also support SFP modules that operate at 1 Gigabit.

Q. **Can the 10 Gigabit SFP+ slots on the Cisco Catalyst 2960-S models support 100-Mb SFP modules?**

A. No. The Catalyst 2960-S models that support 10 Gigabit SFP+ modules cannot support SFP modules that operate at less than 1 Gigabit.

Q. **Can I reuse the 10 Gigabit X2 module from the Cisco Catalyst 3750-E series in the Catalyst 2960-S?**

A. No. The Catalyst 2960-S uses SFP+ modules only.

Q. **Does the Cisco Catalyst 2960-S support field-replaceable power supplies?**

A. No. All power supplies are fixed.

Q. **Does the Cisco Catalyst 2960-S support field-replaceable fans?**

A. No. All fans are fixed inside the chassis of the switch.

Q. **What is the airflow on the Cisco Catalyst 2960-S?**

A. Airflow is side to back. There is a central blower in the rear of the Catalyst 2960-S that pulls the air inside the switch and blows it out the back.

Q. **How many fans does the Cisco Catalyst 2960-S have?**

A. The Catalyst 2960-S has one blower in the center rear.

Q. **What is the Switch Database Management (SDM) template for Cisco Catalyst 2960-S models?**

A. There is a single default SDM template for the Catalyst 2960-S switches. It cannot be modified.

Q. **Is there a difference between Cisco Catalyst 2960-S LAN Base and LAN Lite SDM templates?**

A. The difference is that the LAN Lite models have no hardware resources to support IPv6 multicast groups and IPv6 security access control entries (ACEs).

Q. **What are the differences between the Cisco Catalyst 2960 and Catalyst 2960-S SDM templates?**

A. Table 6 provides a comparison of the SDM templates on the Catalyst 2960-S and C2960 models.

Table 6. Comparison of SDM Templates on the Cisco Catalyst 2960-S and 2960 Series Switches

SDM TCAM Resource	Catalyst 2960-S Default	Catalyst 2960 Default	Catalyst 2960 QoS	Catalyst 2960 Dual IPv4 IPv6
Unicast MAC addresses	8000	8000	8000	8000
IPv4 IGMP groups	0.25K	0.25K	0.25K	0.25K
IPv6 multicast groups	0.25K	0	0	0.375K
IPv4/MAC QoS ACEs	0.375K	0.125K	0.375K	0.125K
IPv4/MAC security ACEs	0.375K	0.375K	0.125K	0.375K
IPv6 QoS ACEs	0	0	0	0
IPv6 security ACEs	0.125K	0	0	0.125K

Q. **Does the Cisco Catalyst 2960-S have a front panel out-of-band (OOB) Ethernet management interface?**

A. Yes. The OOB management interface is a 10/100 Ethernet port. The OOB port is referred to as "Fa0" in the switch and is a Layer 3 interface. The Fa0 interface must have an IP address assigned in order to function.

Q. **What are high level differences between Cisco Catalyst 2960, 2960-S, 3750, and 3750-E models.**

A. See table below

Table 7. Differences between Cisco Catalyst 2960, 2960-S, 3750, and 3750-E models

Feature	2960	2960-S	3750	3750-E
IPv4 and IPv6 routing	No	No	Yes	Yes
Support for Inter-Switch Link (ISL)	Yes	No	Yes	Yes
Support for MACsec (802.1ae)	No	No	No	yes
Support for Catalyst integrated security	Yes	Yes	Yes	yes
Support for EnergyWise	Yes	Yes	Yes	yes
Support for Smart Install with Director Role	No	No	Yes	yes
Support for Smart Install Client role	Yes	Yes	Yes	Yes
Support for IPv6 QoS	No	No	Yes	yes
Support for IPv6 host	Yes	Yes	Yes	yes
Number of egress queues per port	4	4	4	4
Maximum MTU	9000	9198	9000	9198

Q. **Does the Cisco Catalyst 2960-S OOB Ethernet management interface support IPv6 addressing?**

A. Yes. It supports static and DHCP IPv6 addressing.

Q. **What is the difference between the Cisco Catalyst 2960-S and the Catalyst 2960G?**

A. The primary difference is that the Catalyst 2960-S is a single application-specific integrated circuit (ASIC) architecture, and the Catalyst 2906G has multiple ASICs. Other differences include the following:

- The Catalyst 2960-S uses much less power to operate (see the data sheet for power numbers).

- The Catalyst 2960-S supports FlexStack, allowing multiple switches to be stacked together to form one logical switch.
- The Catalyst 2960-S supports 10 Gigabit interfaces (on certain models).
- The Catalyst 2960-S is full line rate on all interfaces; the Catalyst 2960G Series is line rate on the 24-port models only.
- The Catalyst 2960-S supports PoE and PoE+ on Gigabit interfaces.

Q. **What IPv6 features are available on the Cisco Catalyst 2960-S switches?**

A. The Catalyst 2960-S LAN Base models support the following IPv6 features:

- IPv6 host
- IPv6 MLD v1 and v2 snooping
- IPv6 security ACLs
- IPv6 DHCP client

Q. **Does the Cisco Catalyst 2960-S support IPv6 hostname?**

A. Yes

Q. **How can I manage the Cisco Catalyst 2960-S Series switch with IPv6?**

A. The Catalyst 2960-S supports the IPv6 host feature. An IPv6 address can be assigned to a VLAN interface either statically or via DHCP.

The following IPv6 management protocols are supported:

- HTTP, HTTP(s) over IPv6
- SNMP over IPv6
- Syslog over IPv6
- DHCP-based auto config (Auto Install) and image download
- telnet and ssh

Q. **What multicast protocols do the Cisco Catalyst 2960 and 2960-S Series Switches support?**

A. All Catalyst 2960 switches running the LAN Base software support the following multicast protocols (as of Cisco IOS Software version 12.2(53)SE).

- IGMP v1, v2, and v3 snooping
- IGMP v1 and v2 filtering
- IGMP snooping timer
- IGMP throttle
- IGMP querier
- Configurable IGMP leave timer
- MVR

Q. **How much power do the Cisco Catalyst 2960-S Series Switches consume?**

A. The Catalyst 2960-S can consume as little as 25W for the entire switch. The power used varies depending on the specific model. See the data sheet for more details on power usage for each switch model.

Q. **What software images do the Cisco Catalyst 2960-S Series Switches support?**

A. All Catalyst 2960-S switches (including the LAN Lite models) use the Universal image.

The tar file will be named c2960s-universal-tar.12.2.53.SE.

The name will change over time as new Cisco IOS Software releases are made available.

Q. **Do I have to install a license to use the Cisco Catalyst 2960-S Universal image?**

A. No. All Catalyst 2960-S models use the Universal image. The license associated with the switch at manufacturing is the only license needed. The feature set is fixed during manufacture.

Q. **Does the Cisco Catalyst 2960-S have a K9 and non-K9 Cisco IOS Software image?**

A. No. The only image is the K9 image. The K9 image is loaded during manufacture.

Q. **Does the Cisco Catalyst 2960-S support Cisco GOLD for in-field hardware debugging?**

A. Yes. The Catalyst 2960-S supports the following GOLD tests:

```
TestPortAsicStackPortLoopback
TestPortAsicLoopback
TestPortAsicCam
TestPortAsicMem
TestInlinePwrCtlr
```

The following GOLD tests are not supported by the Catalyst 2960-S:

```
TestPortAsicRingLoopback
TestMicRingLoopback
```

Q. **Do the Cisco Catalyst 2960-S Series Switches support MACsec (802.1ae)?**

A. No. The MACsec feature is available on the Cisco Catalyst 3750-X models. (insert URL here to data sheet).

Q. **Do the Cisco Catalyst 2960-S Series Switches support Catalyst Integrated Security Features (ISF)?**

A. Yes. Certain models of the Catalyst 2960-S switches support the LAN Base software. LAN Base supports the Layer 2 security features in Catalyst ISF.

Q. **Do the Cisco Catalyst 2960-S Series Switches support Cisco EnergyWise?**

A. Yes.

Q. **Do the Cisco Catalyst 2960-S Series Switches support Smart Install?**

A. Only in Client mode. The Catalyst 2960-S cannot act as Director (IBD).