

Cisco Catalyst 2960 LAN Lite Series Switches Data Sheet

Product Overview

Cisco® Catalyst® 2960 Series Switches with LAN Lite software are fixed-configuration, standalone switches that provide desktop Fast Ethernet connectivity for entry-level wiring closet and small branch-office networks (Figure 1). These switches simplify the migration from non-intelligent hubs and unmanaged switches to a fully scalable managed network.

Cisco Catalyst 2960 Series Switches have lower cost of ownership with features such as intelligent switch configuration using Auto Smart Ports, installation with Auto Install and enhanced troubleshooting to facilitate ease of use. Comprehensive management tools such as Cisco Network Assistant provide ongoing management and monitoring of switches.

Services integrating voice, video, and wireless applications are possible using the Cisco Catalyst 2960 Series LAN Lite Switches. Power over Ethernet (POE) and quality of service (QoS) provide comprehensive service delivery for entry-level customers.

Security capabilities that are pervasive in the network are critical for secure operations, and end-to-end security is obtained using the Cisco Catalyst 2960 Series Switches with LAN Lite software. An array of Cisco security solutions is available, including Cisco Clean Access NAC-based solutions.

Overall, the functionality available in Cisco Catalyst 2960 Series Switches with LAN Lite software provides peace of mind when dealing with today's network operations and lowers cost of ownership for customers.

Figure 1. Cisco Catalyst 2960 LAN Lite Series Highlights



The Cisco Catalyst 2960 LAN Lite Switches offer:

- Both 24 and 48 port POE is available using 802.3af class 3 with 370 Watt power capacity.
- Dual-purpose uplinks for Gigabit Ethernet uplink flexibility, allowing use of either a copper or a fiber uplink. A dual-purpose uplink port has one 10/100/1000 Ethernet port and one Small Form-Factor Pluggable (SFP)-based Gigabit Ethernet port, with one port active at a time
- Scalable and secure ease of use functionality such as auto configuration with Auto Smart Ports and easy installation with Auto Install to lower total cost of ownership.
- Enhanced troubleshooting for problem solving including link connectivity and cable diagnostics
- QoS for traffic classification and shaping to prioritize various applications including voice, video, and multicast applications.

- Single IP address, syslog, and Simple Network Management Protocol (SNMP) management for a stack of up to 16 switches
- Baseline Network Admission Control based on users, ports, and MAC addresses
- Limited lifetime hardware warranty
- Software updates at no additional cost

Configurations

Table 1. Shows the Cisco Catalyst 2960 LAN Lite Series configurations.

Model	Access Ports	Uplinks
Cisco Catalyst 2960-8TC-S	8 10/100	1 Dual Purpose (10/100/1000BASE-T or SFP)
Cisco Catalyst 2960-24-S	24 10/100	None
Cisco Catalyst 2960-24TC-S	24 10/100	2 dual-purpose (10/100/1000BASE-T or SFP)
Cisco Catalyst 2960-24PC-S	24 10/100 PoE	2 dual-purpose (10/100/1000BASE-T or SFP)
Cisco Catalyst 2960-24LC-S	24 10/100 (8 PoE)	2 dual-purpose (10/100/1000BASE-T or SFP)
Cisco Catalyst 2960-48TT-S	48 10/100	2 fixed 10/100/1000
Cisco Catalyst 2960-48TC-S	48 10/100	2 dual-purpose (10/100/1000BASE-T or SFP)
Cisco Catalyst 2960-48PST-S	48 10/100 PoE	2 10/100/1000BASE-T ports and 2 SFP ports

Primary Features and Benefits

Easy Deployment and Network Management

The Cisco Catalyst 2960 LAN Lite Series offers several ease of use features, which enable fast and easy configuration and installation of the switches into the network. Lowering the total cost of ownership and simplifying network operation are primary reasons for using the Cisco Catalyst 2960 switches. These features include:

- **Cisco Auto SmartPorts** simplify the configuration of advanced Cisco Catalyst capabilities, encapsulating years of Cisco networking expertise. As devices connect to the switch automatic port, configuration is enabled, allowing a plug and play of the device onto the network. For example, an IP phone connecting to the switch will configure the switch port with Cisco best practices for QoS and create a voice VLAN. Cisco SmartPort macros offer a set of verified, pretested, Cisco recommended switch port configurations per connection type that are easy to apply, enabling users to consistently and reliably configure essential security, IP telephony, availability, QoS, and manageability features with minimal effort and expertise.
- **Cisco Express Setup** simplifies initial configuration with a web browser, eliminating the need for more complex terminal emulation programs and CLI knowledge.
- **Auto Install** utilizes Dynamic Host Configuration Protocol (DHCP) based auto-configuration and image upgrade. This feature automatically downloads the configuration file, Cisco IOS® Software image, allocates an IP address and hostname for the switch. This feature can be used to implement a “zero touch deployment.”
- **Cisco Network Assistant** is a no cost, Windows-based application that simplifies the administration of networks of up to 250 users. It supports a wide range of Cisco Catalyst intelligent switches from Cisco Catalyst 2960 through Cisco Catalyst 4506. With Cisco Network Assistant, users can manage Cisco Catalyst switches plus launch the device managers of Cisco integrated services routers and Cisco Aironet WLAN access points.
- **Enhanced Troubleshooting** is possible with an extensive array of debug diagnostic commands and system health checks within the switch.
- **Time Domain Reflectometry (TDR)** to diagnose and resolve cabling problems on copper Ethernet ports.

- **Autosensing** on each 10/100 port detects the speed and duplex of the attached device and automatically configures the port for 10- or 100-Mbps operation, easing switch deployment in mixed 10- and 100-Mbps environments.
- **Automatic medium-dependent interface crossover** (Auto-MDIX) automatically adjusts transmit and receive pairs if an incorrect cable type (crossover or straight-through) is installed on a copper port.
- **Multifunction LEDs** per port for port status; half-duplex and full-duplex mode; and 10BASE-T, 100BASE-TX, and 1000BASE-T indication as well as switch-level status LEDs for the system and a redundant power supply provide a comprehensive and convenient visual management system.

Cisco Network Assistant is a PC-based network-management application optimized for LANs with up to 250 users. Offering centralized management of Cisco switches, routers, and wireless LAN (WLAN) access points, it supports a wide range of Cisco Catalyst intelligent switches from the Cisco Catalyst 2960 through the Cisco Catalyst 4506 Switch. Through a user-friendly GUI, you can configure and manage a wide array of switch functions and start the device manager of Cisco routers and Cisco wireless access points. You can perform tasks to configure the switch for voice, video and multicast traffic using QoS and upgrade IOS is a simple one click upgrade. The Security wizard automatically restricts unauthorized access to servers with sensitive data. Smartports and wizards save time for network administrators, reduce human errors, and help ensure that the configuration of the switch is optimized for these applications. You can download Cisco Network Assistant from the Cisco website for free <http://www.cisco.com/go/cna>. The easy-to-use graphical interface provides both a topology map and front-panel view of switches.

In addition to Cisco Network Assistant, Cisco Catalyst 2960 LAN Lite Switches provide for extensive management using SNMP network-management platforms such as the CiscoWorks LAN Management Solution (LMS). CiscoWorks LMS is a suite of powerful management tools that simplify the configuration, administration, monitoring, and troubleshooting of Cisco networks. It integrates these capabilities into a world-class solution for improving the accuracy and efficiency of your operations staff, while increasing the overall availability of your network. It supports more than 400 different device types, providing:

- Network discovery, topology views, end-station tracking, and VLAN management
- Real-time network fault analysis with easy-to-deploy device-specific best-practice templates
- Hardware and software inventory management, centralized configuration tools, and syslog monitoring
- Network response time and availability monitoring and tracking
- Real-time device, link, and port traffic management, analysis, and reporting

Intelligent Power over Ethernet (PoE) Management

The Cisco Catalyst 2960 LAN Lite Series can provide a lower total cost of ownership (TCO) for deployments that incorporate Cisco IP phones, Cisco Aironet[®] wireless LAN (WLAN) access points, or any IEEE 802.3af-compliant end device. PoE eliminates the need for wall power outlets for each PoE-enabled device and significantly reduces the cost for additional electrical cabling that would otherwise be necessary in IP phone and WLAN deployments. Taking advantage of Cisco Catalyst Intelligent Power Management, the Cisco Catalyst 2960 LAN Lite 48-port PoE configurations can deliver the necessary power to support 24 ports at 15.4W, 48 ports at 7.7W, or any combination in between. The 24 port switch models provide Class 3 PoE or 15.4W of PoE power on all 24 ports.

Key features for PoE include:

- **Cisco Discovery Protocol version 2** allows the Cisco Catalyst 2960 LAN Lite Series Switch to negotiate a more granular power setting when connecting to a Cisco powered device, such as IP phones or access points, than what is provided by IEEE classification.

- **Per Port PoE Power Sensing** measures actual power being drawn, enabling more intelligent control of powered devices.
- **PoE MIB** provides proactive visibility into power usage for monitoring and troubleshooting.
- **Link Layer Discovery Protocol (LLDP)** link layer discovery protocol for interoperability in multivendor networks. Switches exchange speed, duplex, and power settings with end devices such as IP phones.

Integrated Service Delivery with QoS and Multicast:

Prioritization of traffic is critical to many network services such as voice, video and wireless and the Catalyst Cisco Catalyst 2960 LAN Lite Switches help ensure that network traffic congestion is avoided allowing business critical applications to perform without degradation. To implement QoS, the Cisco Catalyst 2960 Series Switches first identify traffic flows or packet groups, and then classify or reclassify these groups using Class of Service (CoS). The Cisco Catalyst 2960 LAN Lite Switches support hardware based QoS with no performance degradation including four egress queues per port, giving your network administrators more control in assigning priorities for the various applications on the LAN. At egress, the switches perform congestion control and scheduling, the algorithm or process that determines the order in which queues are processed. The Cisco Catalyst 2960 LAN Lite Switches support Shaped Round Robin (SRR) and Strict Priority Queuing. The SRR algorithm helps ensure differential prioritization and helps ensure excellent network performance with line rate traffic loads.

Multicast is a key capability available in the Catalyst switches that can efficiently deliver high bandwidth applications across the network and optimize network performance saving bandwidth. It supports distributed applications and enables next generation multimedia applications including: Corporate Communications, E-learning, IP Video Surveillance, High Definition Video, and distribution of data to desktops in a scalable, reliable and efficient manner. Cisco Catalyst 2960 LAN Lite Switches support layer 2 Multicast traffic and use protocols to allow customer to deploy streaming video applications in the network and benefit from bandwidth saving provided.

Key features for integrated service delivery include:

- **Voice VLAN** simplifies telephony installations by keeping voice traffic on a separate VLAN for easier administration and troubleshooting.
- **Cisco VLAN Trunking Protocol (VTP)** supports dynamic VLANs and dynamic trunk configuration across all switches.
- **Standard 802.1p CoS and DSCP field classification** are provided, using marking and reclassification on a per-packet basis by source and destination IP address, source and destination MAC address, or Layer 4 TCP or UDP port number.
- **Four egress queues** per port enable differentiated management of up to four traffic types.
- **Shaped Round Robin (SRR)** scheduling helps ensure differential prioritization of packet flows by intelligently servicing the ingress and egress queues.
- **Weighted tail drop (WTD)** provides congestion avoidance at the ingress and egress queues before a disruption occurs.
- **Strict priority queuing** guarantees that the highest-priority packets are serviced ahead of all other traffic.
- **Internet Group Management Protocol Version 3 (IGMPv3)** snooping provides fast client joins and leaves of multicast streams and limits bandwidth-intensive video traffic.
- **IGMP filtering** provides multicast authentication by filtering out non-subscribers and limits the number of concurrent multicast streams available per port.

Security

The Cisco Catalyst 2960 LAN Lite Switches support security features that can help your business protect important information, keep unauthorized people off the network, guard privacy, and maintain uninterrupted operation.

The Cisco Identity-Based Networking Services (IBNS) solution provides authentication, access control, and security policy administration to secure network connectivity and resources. Cisco IBNS in the Cisco Catalyst 2960 LAN Lite Series prevents unauthorized access and helps ensure that users get only their designated privileges.

With Cisco IBNS you can dynamically administer granular levels of network access. Using the 802.1x standard and the Cisco Secure Access Control Server (ACS), you can assign users a VLAN upon authentication, regardless of where they connect to the network. This setup allows your IT department to enable strong security policies without compromising user mobility, and with minimal administrative overhead.

You can use port security to limit access on an Ethernet port based on the MAC address of the device to which it is connected. You also can use it to limit the total number of devices plugged into a switch port, thereby protecting the switch from a MAC flooding attack as well as reducing the risks of rogue wireless access points or hubs.

You can use the MAC Address Notification feature to monitor the network and track users by sending an alert to a management station so that your network administrators know when and where users entered the network. Secure Shell Protocol Version 2 (SSHv2) and SNMPv3 encrypt administrative and network-management information, protecting your network from tampering or eavesdropping. TACACS+ or RADIUS authentication enables centralized access control of switches and restricts unauthorized users from altering the configurations. Alternatively, you can configure a local username and password database on the switch itself. Fifteen levels of authorization on the switch console and two levels on the web-based management interface allow you to give different levels of configuration capabilities to different administrators.

Key security features include:

- **IEEE 802.1x** allows dynamic, port-based security, providing user authentication.
- **IEEE 802.1x with VLAN assignment** allows a dynamic VLAN assignment for a specific user regardless of where the user is connected.
- **IEEE 802.1x with voice VLAN** permits an IP phone to access the voice VLAN irrespective of the authorized or unauthorized state of the port.
- **IEEE 802.1x and port security** are provided to authenticate the port and manage network access for all MAC addresses, including those of the client.
- **IEEE 802.1x with Guest VLAN** allows guests without 802.1x clients to have limited network access on the guest VLAN.
- **MAC Auth Bypass (MAB)** for voice or data devices allows controlled network access without 802.1x supplicant to get authenticated using their MAC address.
- **Unicast MAC filtering** prevents the forwarding of any type of packet with a matching MAC address.
- **SSHv2 and SNMPv3** provide network security by encrypting administrator traffic during Telnet and SNMP sessions. SSHv2 and the cryptographic version of SNMPv3 require a special cryptographic software image because of U.S. export restrictions.
- **TACACS+ and RADIUS** authentication enables centralized control of the switch and restricts unauthorized users from altering the configuration.
- **MAC address notification** allows administrators to be notified of users added to or removed from the network.
- **Per-port broadcast, multicast, and unicast storm control and CPU queues** prevents faulty end stations from degrading overall systems performance and denial of service attacks.

Intelligent Layer 2 Availability and Scalability

The Cisco Catalyst 2960 LAN Lite Series is equipped with a robust set of features that allow for network scalability and higher availability with a complete suite of Layer 2 protocols including Spanning Tree Protocol enhancements aimed maximizing availability in a Layer 2 network.

Enhancements to the standard Spanning Tree Protocol, such as Per-VLAN Spanning Tree Plus (PVST+), Uplink Fast, and PortFast, maximize network uptime. PVST+ allows for Layer 2 load sharing on redundant links to efficiently use the extra capacity inherent in a redundant design. Uplink Fast, PortFast, and BackboneFast all greatly reduce the standard 30- to 60-second Spanning Tree Protocol convergence time. Loop guard and bridge-protocol-data-unit (BPDU) guard provide Spanning Tree Protocol loop avoidance.

Superior redundancy features include:

- **Up to 64 VLANs** per switch and up to 64 spanning-tree instances per switch are supported.
- **Cisco Uplink Fast and BackboneFast** technologies help ensure quick failover recovery, enhancing overall network stability and reliability.
- **Per-VLAN Rapid Spanning Tree Plus (PVRST+)** allows rapid spanning-tree reconvergence on a per-VLAN spanning-tree basis, without requiring the implementation of spanning-tree instances.
- **IEEE 802.1d Spanning Tree Protocol** support for redundant backbone connections and loop-free networks simplifies network configuration and improves fault tolerance.
- **IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)** allows a spanning-tree instance per VLAN, enabling Layer 2 load sharing on redundant links.
- **IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)** provides rapid spanning-tree convergence independent of spanning-tree timers and the benefit of distributed processing.
- **Cisco EtherChannel** bandwidth aggregation enhances fault tolerance and offers higher-speed aggregated bandwidth .
- **Unidirectional Link Detection Protocol (UDLD)** and Aggressive UDLD allow unidirectional links to be detected and disabled to avoid problems such as spanning-tree loops.
- **Switch port autorecovery (errdisable)** automatically attempts to reenables a link that is disabled because of a network error.

The following tables starting with Table 2 provide both hardware and software details about the Cisco Catalyst 2960 LAN Lite Switches.

Table 2. Catalyst 2960 LAN Lite Series Switch Hardware

Description	Specification	
Performance	Forwarding Bandwidth	16 Gbps
	Flash memory	32 MB
	Memory DRAM	64MB
	Max VLANs	64
	VLAN IDs	4K
	Maximum transmission unit (MTU)	Up to 9,000 bytes
	Jumbo frames	9,016 bytes
	Forwarding rate	
	2960-8TC-S	2.7 Mpps
	2960-24-S	3.6 Mpps
	2960-24TC-S	6.5 Mpps
	2960-24PC-S	6.5 Mpps

	2960-24LC-S	6.5 Mpps	
	2960-48TT-S	10.1 Mpps	
	2960-48TC-S	10.1 Mpps	
	2960-48PST-S	13.3 Mpps	
	Default	QoS	Dual
	8000	8000	8000
	256	256	256
	128	384	0
	384	128	256
Connectors and Cabling	<ul style="list-style-type: none"> • 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 • 1000BASE-T SFP-based ports: RJ-45 connectors, 4-pair Category 5 UTP cabling • 1000BASE-SX, -LX/LH SFP-based ports: LC fiber connectors (single- and multimode fiber) • 100Base-FX: LC Fiber Connectors (single and multimode fiber) 		
Power Connectors	<ul style="list-style-type: none"> • Customers can provide power to a switch only by using the internal power supply. The connector is located at the back of the switch. These switches do not have a redundant-power-supply port. • The internal power supply is an autoranging unit. • The internal power supply supports input voltages between 100 and 240 VAC. • Use the supplied AC power cord to connect the AC power connector to an AC power outlet 		
Indicators	<ul style="list-style-type: none"> • Per-port status: Link integrity, disabled, activity, speed, and full-duplex • System status: System, link status, link duplex, PoE and link speed 		
Dimensions (H x W x D)		Inches	Centimeters
	2960-8TC-S	1.73 x 10.6 x 6.4 in.	4.4 x 27 x 16.3 cm
	2960-24-S	1.73 x 17.5 x 9.3 in	4.4 x 44.5 x 23.6 cm
	2960-24TC-S	1.73 x 17.5 x 9.3 in	4.4 x 44.5 x 23.6 cm
	2960-24PC-S	1.73 x 17.5 x 13 in	4.4 x 44.5 x 33.2 cm
	2960-24LC-S	1.73 x 17.5 x 13 in	4.4 x 44.5 x 33.2 cm
	2960-48TT-S	1.73 x 17.5 x 9.3 in	4.4 x 44.5 x 23.6 cm
	2960-48TC-S	1.73 x 17.5 x 9.3 in	4.4 x 44.5 x 23.6 cm
	2960-48PST-S	1.73 x 17.5 x 13 in	4.4 x 44.5 x 33.2 cm
Weight		Pounds	Kilograms
	2960-8TC-S	3	1.4
	2960-24-S	8	3.6
	2960-24TC-S	8	3.6
	2960-24PC-S	12	5.4
	2960-24LC-S	10	4.5
	2960-48TT-S	8	3.6
	2960-48TC-S	8	3.6
	2960-48PST-S	12	5.4

Environmental Ranges		Fahrenheit	Centigrade
	Operating temperature up to 5000 ft (1500 m)	23 to 113°F	-5 to 45°C
	Operating temperature up to 10000 ft (3000 m)	23 to 104°F	-5°C to 40°C
	*Short term exception at sea level	23 to 31°F	-5°C to +55°C
	*Short term exception up to 5,000 feet (1500 m)	23 to 122°F	-5°C to +50°C
	*Short term exception up to 10,000 feet (3000 m)	23 to 113°F	-5°C to +45°C
	*Short term exception up to 13,000 feet (4000 m)	23 to 104°F	-5°C to +40°C
	Storage temperature	Same as Above	Same as Above
		Feet	Meters
	Operating altitude	Up to 13000 ft	Up to 4,000 m
	Storage altitude	Up to 13000 ft	Up to 4,000 m
	10 to 85% noncondensing	Operating relative humidity	
10 to 85% noncondensing	Storage relative humidity		
* Not more than following in one year period: 96 consecutive hours, or 360 hours total, or 15 occurrences.			
Acoustic Noise	ISO 7779 & ISO 9296: Bystander positions operating to an ambient temperature of 25°C		
		Sound pressure	
		LpA (Typical)	
	2960-8TC-S (No Fan)	0 dB	
	2960-24-S	40 dB	
	2960-24TC-S	40 dB	
	2960-24PC-S	48 dB	
	2960-24LC-S	48 dB	
	2960-48TT-S	40 dB	
	2960-48TC-S	40 dB	
	2960-48PST-S	48 dB	
	Typical: Noise emission for a typical configuration and load at 25o C Maximum: Statistical maximum to account for variation in production		
Mean Time Between Failure (MTBF)	2960-8TC-S	615,549 hours	
	2960-24-S	429,847 hours	
	2960-24TC-S	403,745 hours	
	2960-24PC-S	242,818 hours	
	2960-24LC-S	311,007 hours	
	2960-48TT-S	339,743 hours	
	2960-48TC-S	336,983 hours	
	2960-48PST-S	181,979 hours	

Table 3. Power Specifications for Cisco Catalyst 2960 LAN Lite Series Switch

Description	Specification			
Measured 100% Throughput Power Consumption		Switch Power Consumption	Total Output BTU	
	2960-8TC-S	12W	39 BTU/hour	
	2960-24-S	22W	75 BTU/hour	
	2960-24TC-S	27W	90 BTU/hour	
	2960-24PC-S	45W	151 BTU/hour	
	2960-24LC-S	36W	121 BTU/hour	
	2960-48TT-S	42W	141 BTU/hour	
	2960-48TC-S	39W	133 BTU/hour	
	2960-48PST-S	67W	227 BTU/hour	
Measured 5% Throughput Power Consumption		Switch Power Consumption	Total Output BTU	
	2960-8TC-S	11W	37 BTU/hour	
	2960-24-S	21W	71 BTU/hour	
	2960-24TC-S	24W	82 BTU/hour	
	2960-24PC-S	43W	144 BTU/hour	
	2960-24LC-S	34W	114 BTU/hour	
	2960-48TT-S	38W	130 BTU/hour	
	2960-48TC-S	36W	122 BTU/hour	
	2960-48PST-S	63W	214 BTU/hour	
Measured 100% Throughput Power Consumption (with maximum possible PoE loads)		Switch Power Consumption	PoE Power	Total Output BTU
	2960-24PC-S	433W	357W	1471 BTU/hour
	2960-24LC-S	162W	119W	550 BTU/hour
	2960-48PST-S	460W	339W	1563 BTU/hour
Measured 5% Throughput Power Consumption (with 50% PoE loads)		Switch Power Consumption	PoE Power	Total Output BTU
	2960-24PC-S	237W	185W	814 BTU/hour
	2960-24LC-S	98W	62W	835 BTU/hour
	2960-48PST-S	262W	187W	899 BTU/hour
AC/DC Input Voltage and Current		Voltage (autoranging)	Current	Frequency
	2960-8TC-S	100-240 VAC	0.5A – 0.3A	50-60 Hz
	2960-24-S	100-240 VAC	1.3-.8A	50-60 Hz
	2960-24TC-S	100-240 VAC	1.3-.8A	50-60 Hz
	2960-24PC-S	100-240 VAC	8.0-4.0A	50-60 Hz
	2960-24LC-S	100-240 VAC	3.0-1.5A	50-60 Hz
	2960-48TT-S	100-240 VAC	1.3-.8A	50-60 Hz
	2960-48TC-S	100-240 VAC	1.3-.8A	50-60 Hz
Power Rating		Switch		
	2960-8TC-S	0.035 kVA		
	2960-24-S	0.05 kVA		
	2960-24TC-S	0.05 kVA		
	2960-24PC-S	0.470 kVA		
	2960-24LC-S	0.175 kVA		
	2960-48TT-S	0.075 kVA		
	2960-48TC-S	0.075 kVA		
	2960-48PST-S	0.5 kVA		

PoE	<ul style="list-style-type: none"> • Maximum power supplied per port: 15.4W • Total power dedicated to PoE: 370W
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Table 4. Management and Standards Support for Cisco Catalyst 2960 LAN Lite Series Switch

Description	Specification	
Management	<ul style="list-style-type: none"> • BRIDGE-MIB • CISCO-CABLE-DIAG-MIB • CISCO-CDP-MIB • CISCO-CLUSTER-MIB • CISCO-CONFIG-COPY-MIB • CISCO-CONFIG-MAN-MIB • CISCO-ENTITY-VENDORTYPE-OID-MIB • CISCO-ENVMON-MIB • CISCO-ERR-DISABLE-MIB • CISCO-FLASH-MIB • CISCO-FTP-CLIENT-MIB • CISCO-IGMP-FILTER-MIB • CISCO-IMAGE-MIB • CISCO-IP-STAT-MIB • CISCO-LAG-MIB • CISCO-MAC-NOTIFICATION-MIB • CISCO-MEMORY-POOL-MIB • CISCO-PAGP-MIB • CISCO-PING-MIB • CISCO-PORT-QOS-MIB • CISCO-PORT-SECURITY-MIB • CISCO-PORT-STORM-CONTROL-MIB • CISCO-POWER-ETHERNET-EXT-MIB • CISCO-PRODUCTS-MIB • CISCO-PROCESS-MIB • CISCO-RTTMON-MIB • CISCO-SMI-MIB • CISCO-STP-EXTENSIONS-MIB • CISCO-SYSLOG-MIB • Cisco-UDLD-MIB 	<ul style="list-style-type: none"> • CISCO-TC-MIB • CISCO-TCP-MIB • CISCO-UDLD-MIB • CISCO-VLAN-IFTABLE-RELATIONSHIP-MIB • CISCO-VLAN-MEMBERSHIP-MIB • CISCO-VTP-MIB • ENTITY-MIB • ETHERLIKE-MIB • IEEE8021-PAE-MIB • IEEE8023-LAG-MIB • IF-MIB • INET-ADDRESS-MIB • OLD-CISCO-CHASSIS-MIB • OLD-CISCO-FLASH-MIB • OLD-CISCO-INTERFACES-MIB • OLD-CISCO-IP-MIB • OLD-CISCO-SYS-MIB • OLD-CISCO-TCP-MIB • OLD-CISCO-TS-MIB • RFC1213-MIB • RMON-MIB • RMON2-MIB • SNMP-FRAMEWORK-MIB • SNMP-MPD-MIB • SNMP-NOTIFICATION-MIB • SNMP-TARGET-MIB • SNMPV2-MIB • TCP-MIB • UDP-MIB •
Standards	<ul style="list-style-type: none"> • IEEE 802.1D Spanning Tree Protocol • IEEE 802.1p CoS Prioritization • IEEE 802.1Q VLAN • IEEE 802.1s • IEEE 802.1w • IEEE 802.1x • IEEE 802.1AB (LLDP) • IEEE 802.3ad • IEEE 802.3ah (100BASE-X single- and multimode fiber only) • IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and 1000BASE-T ports • IEEE 802.3 10BASE-T specification • IEEE 802.3u 100BASE-TX specification • IEEE 802.3ab 1000BASE-T specification • IEEE 802.3z 1000BASE-X specification 	<ul style="list-style-type: none"> • 100BASE-FX (SFP) • 1000BASE-SX (SFP) • 1000BASE-LX/LH (SFP) • RMON I and II standards • SNMPv1, SNMPv2c, and SNMPv3

Table 5. Safety and Compliance

Description	Specification
Safety Certifications	<ul style="list-style-type: none"> • UL 60950-1, First Edition • CUL to CAN/CSA 22.2 No. 60950-1, First Edition • TUV/GS to EN 60950-1, First Edition • CB to IEC 60950-1 with all country deviations • CE Marking • NOM (through partners and distributors)
Electromagnetic Emissions Certifications	<ul style="list-style-type: none"> • FCC Part 15 Class A • EN 55022 Class A (CISPR22) • EN 55024 (CISPR24) • AS/NZS CISPR22 Class A • CE • CNS13438 Class A • MIC • GOST • China EMC Certifications
Environmental	Reduction of Hazardous Substances (ROHS) 5
Telco	Common Language Equipment Identifier (CLEI) code
Warranty	Limited Lifetime Warranty
Description	Specification
Safety Certifications	UL 60950-1, First Edition CUL to CAN/CSA 22.2 No. 60950-1, First Edition TUV/GS to EN 60950-1, First Edition CB to IEC 60950-1 with all country deviations CE Marking NOM (through partners and distributors)

Cisco Limited Lifetime Hardware Warranty Terms

The following are special terms applicable to your hardware warranty. Your formal Warranty Statement, including the warranty applicable to Cisco software, appears in the Cisco Information Packet that accompanies your Cisco product.

Duration of Hardware Warranty: 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. In the event of discontinuance of product manufacture, Cisco warranty support is limited to five (5) years from the announcement of discontinuance.

Replacement, Repair or Refund Procedure for Hardware: Cisco or its service center will use commercially reasonable efforts to ship a replacement part within ten (10) working days after receipt of the RMA request. Actual delivery times may vary depending on Customer location.

Cisco reserves the right to refund the purchase price as its exclusive warranty remedy.

To Receive a Return Materials Authorization (RMA) Number: Please contact the party from whom you purchased the product. If you purchased the product directly from Cisco, contact your Cisco Sales and Service Representative.

Complete the form below and keep for ready reference.

Product purchased from:	
Their telephone number:	
Product Model and Serial number:	

Maintenance Contract number:	
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For further information on warranty terms, visit

http://www.cisco.com/en/US/docs/general/warranty/English/LH2DEN_.html.

Safety Compliance and Product Approval Status

For further information on safety and compliance documentation, visit the Product Approval Status tool at

http://tools.cisco.com/cse/prdapp/jsp/externalsearch.do?action=externalsearch&page=EXTERNAL_SEARCH.

Service and Support

Cisco is committed to minimizing TCO. The company offers a portfolio of technical support services to help ensure that its products operate efficiently, remain highly available, and benefit from the most up-to-date system software. The services and support programs described in Table 6 are available as part of the Cisco Desktop Switching Service and Support solution, and are available directly from Cisco and through resellers.

Table 6. Cisco Services and Support Programs

Service and Support	Features	Benefits
Advanced Services		
<ul style="list-style-type: none"> • Cisco Total Implementation Solutions (TIS), available direct from Cisco • Cisco Packaged TIS, available through resellers • Cisco SMARTnet[®] and SMARTnet Onsite support, available direct from Cisco • Cisco Packaged SMARTnet support program, available through resellers 	<ul style="list-style-type: none"> • Project management • Site survey, configuration, and deployment • Installation, test, and cutover • Training • Major moves, adds, and changes • Design review and product staging • Access to software updates 24 hours • Web access to technical repositories • Telephone support through the Cisco Technical Assistance Center (TAC) • Advance Replacement of hardware parts 	<ul style="list-style-type: none"> • Supplements existing staff • Helps ensure that functions meet needs • Mitigates risk • Helps enable proactive or expedited issue resolution • Lowers TCO by taking advantage of Cisco expertise and knowledge • Minimizes network downtime

Ordering Information

Table 7 gives ordering information for the Cisco Catalyst 2960 LAN Lite Series switches.

Table 7. Ordering Information for Cisco Catalyst 2960 LAN Lite Series Switches

Part Numbers	Description
WS-C2960-8TC-S	<ul style="list-style-type: none"> • 8 Ethernet 10/100 ports and 1 dual-purpose uplink (dual-purpose uplink port has one 10/100/1000 Ethernet port and 1 SFP-based Gigabit Ethernet port, 1 port active) • Compact size with no fan; magnet included • LAN Lite Image installed
WS-C2960-24-S	<ul style="list-style-type: none"> • 24 Ethernet 10/100 ports • 1 RU fixed-configuration • LAN Lite Image installed
WS-C2960-24TC-S	<ul style="list-style-type: none"> • 24 Ethernet 10/100 ports and 2 dual-purpose uplinks (each dual-purpose uplink port has one 10/100/1000 Ethernet port and 1 SFP-based Gigabit Ethernet port, 1 port active) • 1 RU fixed-configuration • LAN Lite Image installed
WS-C2960-24PC-S	<ul style="list-style-type: none"> • 24 Ethernet 10/100 ports and 2 dual-purpose uplinks (each dual-purpose uplink port has one 10/100/1000 Ethernet port and 1 SFP-based Gigabit Ethernet port, 1 port active) • 24 PoE Ports • 1 RU fixed-configuration • LAN Lite Image installed

WS-C2960-24LC-S	<ul style="list-style-type: none"> • 24 Ethernet 10/100 ports and 2 dual-purpose uplinks (each dual-purpose uplink port has one 10/100/1000 Ethernet port and 1 SFP-based Gigabit Ethernet port, 1 port active) • 8 PoE Ports • 1 RU fixed-configuration • LAN Lite Image installed
WS-C2960-48TT-S	<ul style="list-style-type: none"> • 48 Ethernet 10/100 ports and two 10/100/1000TX uplinks • 1 RU fixed-configuration • LAN Lite Image installed
WS-C2960-48TC-S	<ul style="list-style-type: none"> • 48 Ethernet 10/100 ports and 2 dual-purpose uplinks (each dual-purpose uplink port has one 10/100/1000 Ethernet port and 1 SFP-based Gigabit Ethernet port, 1 port active) • 1 RU fixed-configuration • LAN Lite Image installed
WS-C2960-48PST-S	<ul style="list-style-type: none"> • 48 Ethernet 10/100 ports and 2 10/100/1000 uplinks and 2 SFP uplinks • 48 PoE Ports • 1 RU fixed-configuration • LAN Lite Image installed
Spare rack mount kits for the Cisco Catalyst 2960 LAN Lite Series	
RCKMNT-1RU=	Spare rack-mount kit for the Cisco Catalyst 2960 Series
RCKMNT-REC-1RU=	1 RU recessed rack-mount kit for the Cisco Catalyst 2960 Series
Optical Transceivers for the Cisco Catalyst 2960 LAN Lite Series	
GLC-LH-SM=	1000BASE-LX/LH SFP transceiver module for MMF and SMF, 1300-nm wavelength
GLC-SX-MM=	1000BASE-SX SFP transceiver module for MMF, 850-nm wavelength
GLC-T=	1000BASE-T SFP transceiver module for Category 5 copper wire
GLC-GE-100FX=	100BASE-FX SFP module for Gigabit Ethernet ports, 1310-nm wavelength, 2 km over MMF
GLC-FE-100FX=	100BASE-FX SFP module for 100-Mb ports, 1310-nm wavelength, 2 km over MMF
CAB-SM-LCSC-1M	1m fiber single-mode LC-to-SC connectors
CAB-SM-LCSC-5M	5m fiber single-mode LC-to-SC connectors

Feature Information

Table 8 provides information on software features for the Cisco Catalyst 2960 LAN Lite Series switches.

Table 8. Software Features for Cisco Catalyst 2960 LAN Lite Series Switches

Description	Feature Name	Feature Name
Management	Auto Smart Ports	LLDP MIB
	Auto-MDIX	Network Time Protocol (NTP)
	Cisco Discovery Protocol v1, v2	Power Over Ethernet MIB
	Cisco Device Manager	RMON 1 events and alarms
	Cisco MAC Notification MIB	Secure Copy (SCP)
	Configuration Logging	Show Interface Capabilities
	Configuration Replace	SNMP v1, v2, v3
	Crash File Support	SPAN
	DHCP Auto Install	SysLog
	DHCP Port Based Allocation	TDR
	DHCP Server	UDI - Unique Device Identifier
	Express Setup	User configurable management VLAN
	HTTP Software Upgrade	VLAN 1 Minimization
L2 Trace Route		
PoE	802.3af Power Classification	Cisco Power over Ethernet
	Bidirectional Cisco Discovery Protocol v2 Power Negotiation	IEEE 802.3af PoE

Security	802.1x - Auth Fail VLAN	Port Security MAC Aging
	802.1x - VLAN assignment	Private VLAN Edge (Protected Port)
	802.1x with Port Security	RADIUS
	802.1x Guest VLAN	Secure Copy Protocol (SCP)
	802.1x MAC-Auth-Bypass	Secure Shell SSH v 1.5, v2
	802.1x RADIUS Accounting	SNMPv3 crypto
	802.1x with Guest VLAN enhancements	SPAN
	802.1x with VVID/PVID	Static Access Ports
	HTTP(s)	STP - Portfast BPDU Guard
	IEEE 802.1x	STP - Root Guard
	MAC address notification	STP- BPDU Filtering
	Multilevel Console Security	TACACS+
	Port Security	Trunk Port Security
	Port Security for Voice VLANs	
Quality of Service	802.1p Priority	Packet Based Storm Control
	Egress Shaped Queues	Priority Queue
	Global QoS (enable QoS)	Shaped Round Robin (SRR)
	Ingress/egress Shared Queues	Storm Control
	Ingress/Egress Strict Priority Queuing	Weighted Tail Drop (WTD)
Multicast	Configurable IGMP Leave Timer	IGMP Throttling
	IGMP Querier	IGMP v1, v2 Filtering
	IGMP Snooping Timer	IGMP v3,v2,v1 Snooping

For more information about Cisco products, contact:

- United States and Canada: (toll free) 800 553-NETS (6387)
- Europe: 32 2 778 4242
- Australia: 612 9935 4107
- Other: 408 526-7209
- World Wide Web URL: <http://www.cisco.com>



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