

Cisco Catalyst 2960 Series Switches with LAN Base Software: Enhanced Network Security, Availability, and Manageability for Medium-Sized Businesses

The Cisco® Catalyst® 2960 Series Switches with LAN Base software are a family of fixed-configuration, standalone Ethernet switches that support enhanced switching services, IP communications, and wireless networking for medium-sized businesses. These switches provide the performance, availability, and manageability that modern office environments demand, as well as the intelligence to support state-of-the-art business applications and security services.

The Cisco Catalyst 2960 Series with LAN Base software can provide:

- Fast Ethernet and Gigabit Ethernet connectivity to the desktop to deliver superior application performance
- Power over Ethernet (PoE) to provide 15.4W simultaneously on all PoE ports
- Advanced security capabilities, including identity services and sophisticated access control to protect your critical assets
- Quality-of-service (QoS) intelligence to support delay-sensitive IP voice and video applications and optimize bandwidth in your network
- Redundancy and resiliency features to protect the availability of your critical applications at all times
- Simple, scalable management with the option to use command line interface (CLI) or the GUI-based Cisco Network Assistant with Cisco SmartPorts interfaces
- Scalability to continually accommodate new applications and services as your business evolves
- Limited lifetime warranty and free Cisco IOS® Software updates

Figure 1 shows Cisco Catalyst 2960 Series Switches with LAN Base software.

Figure 1. Cisco Catalyst 2960 Series Switches with LAN Base software



Configurations

Table 1 highlights the various configurations available in Cisco Catalyst 2960 Series Switches with LAN Base software.

Table 1. Configurations Available for Cisco Catalyst 2960 Series Switches with LAN Base Software

Product Name (SKU)	Description
Compact Switches	The Cisco Catalyst 2960 compact switches have a small form factor that makes them ideal for classrooms, conference rooms, and other deployments outside the wiring closet.
Cisco Catalyst 2960PD-8TT-L	8 Ethernet 10/100 ports and one 10/100/1000 PoE input port; compact size with no fan
Cisco Catalyst 2960-8TC-L	8 Ethernet 10/100 ports and 1 dual-purpose uplink port; compact size with no fan
Cisco Catalyst 2960G-8TC-L	7 Ethernet 10/100/1000 ports and 1 dual-purpose uplink port; compact size with no fan
Desktop Switches with Fast Ethernet Connectivity	These 24- or 48-port switches provide an outstanding wiring closet solution for delivering Fast Ethernet connectivity to the desktop. This model is ideal for medium-sized businesses that require support for features such as QoS, virtual LANs, or advanced security features.
Cisco Catalyst 2960-24TT-L	24 Ethernet 10/100 ports and 2 fixed Ethernet 10/100/1000 uplink ports
Cisco Catalyst 2960-48TT-L	48 Ethernet 10/100 ports and 2 fixed Ethernet 10/100/1000 uplink ports
Cisco Catalyst 2960-24TC-L	24 Ethernet 10/100 ports and 2 dual-purpose uplink ports
Cisco Catalyst 2960-48TC-L	48 Ethernet 10/100 ports and 2 dual-purpose uplink ports
Desktop Switches with PoE Connectivity	The 2960-24LT-L model offers an ideal solution for businesses that chiefly require scalable desktop connectivity but also need limited PoE. By integrating 8 PoE-capable ports into a 24-port Fast Ethernet switch, this model can provide desktop connectivity for a small office while supporting several wireless access points, IP phones, or IP-based closed-circuit TV cameras. The 2960-24PC-L and 2960-48PST-L provide fiber uplink connectivity and 24 or 48 ports of 10/100 PoE. This model is ideal for businesses deploying larger wireless environments and IP-based voice and video systems.
Cisco Catalyst 2960-24LT-L	24 Ethernet 10/100 ports (PoE supported on 8 ports) and 2 fixed Ethernet 10/100/1000 uplink ports
Cisco Catalyst 2960-24PC-L	24 Ethernet 10/100 PoE ports and 2 dual-purpose uplink ports
Cisco Catalyst 2960-48PST-L	48 Ethernet 10/100 PoE ports and 2 fixed Ethernet 10/100/1000 uplink and 2 SFP uplink ports
Desktop Switches with Gigabit Connectivity	These models offer 24 or 48 ports of 10/100/1000 connectivity, providing an ideal high-speed backbone for server connectivity or for desktop connectivity in environments that support high-bandwidth applications such as high-definition video and imaging systems.
Cisco Catalyst 2960G-24TC-L	24 Ethernet 10/100/1000 ports, 4 of which are dual-purpose
Cisco Catalyst 2960G-48TC-L	48 Ethernet 10/100/1000 ports, 4 of which are dual-purpose

Features and Benefits

Cisco Catalyst 2960 Series Switches with LAN Base software provide:

- **Exceptional performance:** Today's workers run multiple resource-intensive applications, placing higher demands on networks than ever before. Within the space of just a few minutes, for example, a single worker might join an online multimedia conference, send a 10-MB spreadsheet to meeting participants, broadcast a marketing video for the team to evaluate, and query a sales application for the latest real-time data. The Cisco Catalyst 2960 Series supports speeds of up to 1000 Mbps to the desktop, providing the bandwidth you need to meet rigorous application demands, alleviate bottlenecks, and boost application performance--enhancing the productivity of your employees while increasing the return on your existing infrastructure and application investments.
- **Power over Ethernet:** Cisco Catalyst 2960 Series Switches simplify the deployment of solutions such as wireless LANs, IP telephony systems, and IP video surveillance cameras by delivering simultaneously full 15.4W for up to 24 ports simultaneously. This capability eliminates the need for separate power supplies for Ethernet-powered devices, as well as the costs of running additional cable and circuits. The switches also provide intelligent, integrated PoE management features that give you greater visibility into and control over your power usage and streamline interoperability in multivendor networks.
- **Cisco Energywise Technology:** Cisco EnergyWise is an innovative architecture embedded in the Cisco Catalyst 2960 switches that enables the measurement of power consumption in the network infrastructure and network attached devices. The network discovers Cisco EnergyWise manageable devices, monitors their power consumption, and takes action based on business rules to reduce power consumption. Cisco EnergyWise helps to manage power consumption resulting in company-wide optimized power delivery and reduced energy costs. Together, Cisco EnergyWise technology and Catalyst switches help reduce Greenhouse Gas (GhG) emissions, optimize power consumption and increase energy cost savings.
- **Enhanced security:** Modern businesses face both more serious security threats and more demanding regulatory compliance requirements than ever before. The Cisco Catalyst 2960 Series with LAN Base software provides a wide range of security features to protect your business' important information, keep unauthorized users off the network, guard privacy, and protect against network downtime due to security breaches. Key features, including:
 - An enhanced version of the Cisco Identity-Based Networking Services (IBNS) solution, which employs the 802.1x standard to provide advanced authentication, access control, and security policy administration provides users access to designated privileges Access control lists (ACLs) to restrict sensitive portions of the network and guard against network attacks by keep unauthorized users off the network
 - Port-level security features, to limit access to designated addresses
 - Dynamic Host Configuration Protocol (DHCP) snooping to identify and block spoofing from untrusted sources
 - MAC address notification features to monitor the network and allow administrators to track where and when users enter the network

- Secure encryption of administrative and network management traffic to protect against eavesdropping and tampering and comply with regulatory requirements such as the Payment Card Industry (PCI) standard
- **Improved availability and scalability:** The Cisco Catalyst 2960 Series with LAN Base software provides the redundancy and advanced QoS features you need to help ensure that your employees stay connected and productive at all times. This intelligence allows your network to more easily accommodate new technology deployments and continually deliver optimal performance, even as your business and applications evolve. Important high-availability and scalability features include:
 - Spanning Tree Protocol enhancements that support increased redundancy and improved convergence times in the event of a link outage, as well as efficiently optimizing the extra capacity inherent in a redundant design
 - Advanced QoS intelligence to classify and prioritize traffic, reducing network congestion and bottlenecks
 - Support for the Cisco Redundant Power System (RPS) 2300 solution to provide transparent power backup of redundant switches
 - Voice-aware 802.1x port security, which can block malicious data traffic on a port without affecting voice traffic
- **Advanced QoS intelligence:** The Cisco Catalyst 2960 Series with LAN Base software supports advanced QoS traffic shaping and policing features that give you optimal flexibility in classifying and prioritizing the traffic on your network. For example, you can prioritize traffic from mission-critical applications such as enterprise resource planning (ERP) and voice systems over less delay-sensitive traffic, reducing network congestion and ensuring baseline performance for the most essential applications. The switches also support rate-limiting features that allow you to allocate guaranteed bandwidth to specific applications and users in increments as small as 1 Mbps. Administrators can easily configure these features through tools such as automatic QoS (Auto QoS), which detects Cisco IP phones and automatically configures the switch for the appropriate QoS.
- **Superior manageability:** The Cisco Catalyst 2960 Series with LAN Base software provides several management options. The Express Setup feature and the Cisco Network Assistant management tool provide intuitive, scalable management features to help you easily deploy and operate your network.. Express Setup feature allows you to set up the switch with a web-based browser eliminating need for CLI. Using the Cisco Network Assistant's PC-based simple graphical interface, wizards, and Cisco SmartPorts tools, you can quickly configure all your Cisco switches, routers, and wireless access points in your network. Cisco Network Assistant includes the Cisco Troubleshooting Advisor, which identifies cabling problems, common configuration errors, and other potential problems in the network and recommends corrective action. For more extensive management, the switches also support configuration and integration with Simple Network Management Protocol (SNMP)-based network management platforms, such as the CiscoWorks LAN Management Solution (LMS).

Product Specifications

Table 2 lists the hardware specifications for the Cisco Catalyst 2960 Series Switches with LAN Base software. Table 3 lists the power specifications for the switches, Table 4 provides the management and standards support, and Table 5 gives information on the switches' safety certifications and compliance.

Table 2. Hardware Specifications for the Cisco Catalyst 2960 Series Switches

Description	Specification
Performance	<ul style="list-style-type: none"> • 16-Gbps switching fabric (Catalyst 2960PD-8TT-L, Catalyst 2960-8TC-L, Catalyst 2960-24TT-L, Catalyst 2960-24TC-L, Catalyst 2960-24LT-L, Catalyst 2960-24PC-L, Catalyst 2960-48PST-L, Catalyst 2960-48TT-L, Catalyst 2960-48TC-L) • 32-Gbps switching fabric (Catalyst 2960G-8TC-L, Catalyst 2960G-24TC-L, Catalyst 2960G-48TC-L) • Forwarding rate based on 64-byte packets: <ul style="list-style-type: none"> ◦ Cisco Catalyst 2960PD-8TT-L: 2.7 Mpps ◦ Cisco Catalyst 2960-8TC-L: 2.7 Mpps ◦ Cisco Catalyst 2960-24TT-L: 6.5 Mpps ◦ Cisco Catalyst 2960-24TC-L: 6.5 Mpps ◦ Cisco Catalyst 2960-24LT-L: 6.5 Mpps ◦ Cisco Catalyst 2960-24PC-L: 6.5 Mpps ◦ Cisco Catalyst 2960-48TT-L: 10.1 Mpps ◦ Cisco Catalyst 2960-48TC-L: 10.1 Mpps ◦ Cisco Catalyst 2960-48PST-L: 13.3 Mpps ◦ Cisco Catalyst 2960G-8TC-L: 11.9 Mpps ◦ Cisco Catalyst 2960G-24TC-L: 35.7 Mpps ◦ Cisco Catalyst 2960G-48TC-L: 39.0 Mpps • 64 MB DRAM • 32 MB flash memory • Configurable up to 8000 MAC addresses • Configurable up to 255 Internet Group Management Protocol (IGMP) groups • Configurable maximum transmission unit (MTU) of up to 9000 bytes, with a maximum Ethernet frame size of 9018 bytes (jumbo frames) for bridging on Gigabit Ethernet ports and up to 1998 bytes for bridging of Multiprotocol Label Switching (MPLS) tagged frames on both 10/100 and 10/100/1000 ports
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 Small Form-Factor Pluggable (SFP)-based ports: RJ-45 connectors, 4-pair Category 5 UTP cabling • 1000BASE-SX, -LX/LH, -ZX, -BX and CWDM SFP-based ports: LC fiber connectors (single/multimode fiber) • 100BASE-LX, -BX, -FX: LC fiber connectors (single/multimode fiber)
Power connectors	<ul style="list-style-type: none"> • Customers can provide power to a switch by using either the internal power supply or the Cisco RPS 675. The connectors are located at the back of the switch. • Note: The Catalyst 2960-8TC-L and Catalyst 2960G-8TC-L do not have RPS ports. • Internal power supply connector is an autoranging unit. that supports input voltages between 100 and 240VAC. Use the supplied AC power cord to connect the AC power connector to an AC power outlet. • Cisco RPS connector: <ul style="list-style-type: none"> ◦ Offers connection for an optional Cisco RPS 2300 (model PWR-RPS2300) that uses AC input and supplies DC output to the switch. Only the Cisco RPS 2300 should be attached to the redundant-power-system receptacle. ◦ Offers a 2300W redundant power system that supports up to 6 external network devices and provides power to 2 failed devices at a time. ◦ Automatically senses when the internal power supply of a connected device fails and provides power to the failed device, preventing loss of network traffic.
Indicators	<ul style="list-style-type: none"> • Per-port status: Link integrity, disabled, activity, speed, full duplex • System status: System, RPS, link status, link duplex, link speed

Dimensions (H x W x D)	<ul style="list-style-type: none"> • Cisco Catalyst 2960PD-8TT-L: 1.73 x 10.6 x 6.2 in. (4.4 x 27 x 15.7 cm) • Cisco Catalyst 2960-8TC-L: 1.73 x 10.6 x 6.4 in. (4.4 x 27 x 16.3 cm) • Cisco Catalyst 2960-24TT-L: 1.73 x 17.5 x 9.3 in. (4.4 x 44.5 x 23.6 cm) • Cisco Catalyst 2960-48TT-L: 1.73 x 17.5 x 9.3 in. (4.4 x 44.5 x 23.6 cm) • Cisco Catalyst 2960-24TC-L: 1.73 x 17.5 x 9.3 in. (4.4 x 44.5 x 23.6 cm) • Cisco Catalyst 2960-24LT-L: 1.73 x 17.5 x 13 in. (4.4 x 44.5 x 33.2 cm) • Cisco Catalyst 2960-24PC-L: 1.73 x 17.5 x 13 in. (4.4 x 44.5 x 33.2 cm) • Cisco Catalyst 2960-48PST-L: 1.73 x 17.5 x 13 in. (4.4 x 44.5 x 33.2 cm) • Cisco Catalyst 2960-48TC-L: 1.73 x 17.5 x 9.3 in. (4.4 x 44.5 x 23.6 cm) • Cisco Catalyst 2960G-8TC-L: 1.73 x 10.6 x 8.1 in. (4.4 x 27 x 20.5 cm) • Cisco Catalyst 2960G-24TC-L: 1.73 x 17.5 x 12.9 in. (4.4 x 44.5 x 32.8 cm) • Cisco Catalyst 2960G-48TC-L: 1.73 x 17.5 x 12.9 in. (4.4 x 44.5 x 32.8 cm)
Weight	<ul style="list-style-type: none"> • Cisco Catalyst 2960PD-8TT-L: 3 lb (1.4 kg) • Cisco Catalyst 2960-8TC-L: 3 lb (1.4 kg) • Cisco Catalyst 2960-24TT-L: 8 lb (3.6 kg) • Cisco Catalyst 2960-48TT-L: 8 lb (3.6 kg) • Cisco Catalyst 2960-24TC-L: 8 lb (3.6 kg) • Cisco Catalyst 2960-24LT-L: 10 lb (4.5 kg) • Cisco Catalyst 2960-24PC-L: 12 lb (5.4 kg) • Cisco Catalyst 2960-48PST-L: 12 lb (5.4 kg) • Cisco Catalyst 2960-48TC-L: 8 lb (3.6 kg) • Cisco Catalyst 2960G-8TC-L: 3 lb (1.4 kg) • Cisco Catalyst 2960G-24TC-L: 10 lb (4.5 kg) • Cisco Catalyst 2960G-48TC-L: 12 lb (5.4 kg)
Environmental ranges	<p>Normal Operating Conditions:</p> <ul style="list-style-type: none"> • -5°C to +45°C, up to 5,000 feet (1500 m) • -5°C to +40°C, up to 10,000 feet (3000 m) • -5°C to +35°C, up to 13,000 feet (4000 m) <p>Short-Term* Exceptional Operating Conditions:</p> <ul style="list-style-type: none"> • -5°C to +55°C, at sea level • -5°C to +50°C, up to 5,000 feet (1500 m) • -5°C to +45°C, up to 10,000 feet (3000 m) • -5°C to +40°C, up to 13,000 feet (4000 m) <p>* Not more than the following in a 1-year period: 96 consecutive hours, or 360 hours total, or 15 occurrences. For the Catalyst 2960G-8TC-L, reduce the high range temperature by 5°C</p>
Acoustic noise	<ul style="list-style-type: none"> • ISO 7779: Bystander position operating to an ambient temperature of 25°C • Cisco Catalyst 2960PD-8TT-L: 0 dBa (no fan) • Cisco Catalyst 2960-8TC-L: 0 dBa (no fan) • Cisco Catalyst 2960-24TT-L: 40 dBa • Cisco Catalyst 2960-48TT-L: 40 dBa • Cisco Catalyst 2960-24TC-L: 40 dBa • Cisco Catalyst 2960-24LT-L : 48 dBa • Cisco Catalyst 2960-24PC-L : 48 dBa • Cisco Catalyst 2960-48PST-L: 48 dBa • Cisco Catalyst 2960-48TC-L: 40 dBa • Cisco Catalyst 2960G-8TC-L: 0 dBa (no fan) • Cisco Catalyst 2960G-24TC-L: 41 dBa • Cisco Catalyst 2960G-48TC-L: 43 dBa
Mean time between failures (MTBF)	<ul style="list-style-type: none"> • Cisco Catalyst 2960PD-8TT-L: 737,065 hrs • Cisco Catalyst 2960-8TC-L: 615,549 hrs • Cisco Catalyst 2960-24TT-L: 407,707 hrs • Cisco Catalyst 2960-48TT-L: 339,743 hrs • Cisco Catalyst 2960-24TC-L: 402,926 hrs • Cisco Catalyst 2960-24LT-L : 311,781 hrs • Cisco Catalyst 2960-24PC-L : 243,277 hrs • Cisco Catalyst 2960-48TC-L: 336,409 hrs • Cisco Catalyst 2960G-8TC-L: 485,576 hrs • Cisco Catalyst 2960G-24TC-L: 313,828 hrs • Cisco Catalyst 2960G-48TC-L: 221,432 hrs

Table 3. Power Specifications for the Cisco Catalyst 2960 Series Switches with LAN Base Software

Description	Specification
AC input voltage and current	<ul style="list-style-type: none"> DC input, 48 VDC, 0.3A (Cisco Catalyst 2960PD-8TT-L) (For AC input, use PWR-A= sold separately) 100-240VAC (autoranging), 0.5-0.25A, 50-60 Hz (Cisco Catalyst 2960-8TC-L) 100-240VAC (autoranging), 0.8-0.4A, 50-60 Hz (Cisco Catalyst 2960G-8TC-L) 100-240 VAC (autoranging), 3.0-1.5A, 50-60 Hz (Cisco Catalyst 2960-24LT-L) 100-240 VAC (autoranging) 8.0-4.0A, 50-60 Hz (Cisco Catalyst 2960-24PC-L) 100-240 VAC (autoranging) 5.0-2.0A, 50-60 Hz (Cisco Catalyst 2960-48PST-L) 100-240VAC (autoranging), 1.3–0.8A, 50–60 Hz (Cisco Catalyst 2960-24TT-L and Catalyst 2960-24TC-L and Catalyst 2960-48TT-L and Catalyst 2960-48TC-L) 100-240VAC (autoranging), 3.0–1.5A, 50–60 Hz (Cisco Catalyst 2960G-24TC-L and Catalyst 2960G-48TC-L)
Power rating	<ul style="list-style-type: none"> Cisco Catalyst 2960PD-8TT-L: 11W Cisco Catalyst 2960-8TC-L: 0.035 kVA Cisco Catalyst 2960-24TT-L: 0.05 kVA Cisco Catalyst 2960-48TT-L: 0.075 kVA Cisco Catalyst 2960-24TC-L: 0.05 kVA Cisco Catalyst 2960-24LT-L: 0.175 kVA Cisco Catalyst 2960-24PC-L: 0.470 kVA Cisco Catalyst 2960-48PST-L: 0.5 kVA Cisco Catalyst 2960-48TC-L: 0.075 kVA Cisco Catalyst 2960G-8TC-L: 0.05 kVA Cisco Catalyst 2960G-24TC-L: 0.075 kVA Cisco Catalyst 2960G-48TC-L: 0.140 kVA
DC input voltages (RPS input)	<ul style="list-style-type: none"> (No RPS input for Cisco Catalyst 2960PD-8TT-L , Catalyst 2960-8TC-L, and Catalyst 2960G-8TC-L) Cisco Catalyst 2960-24TT-L: +12V at 5A Cisco Catalyst 2960-48TT-L: +12V at 5A Cisco Catalyst 2960-24TC-L: +12V at 5A Cisco Catalyst 2960-24LT-L: +12V at 8.3A, -48V at 2.7A Cisco Catalyst 2960-24PC-L: +12V at 11.25A, -48V at 7.8A Cisco Catalyst 2960-48PST-L: +12V at 4A, -48V at 7.8A Cisco Catalyst 2960-48TC-L: +12V at 5A Cisco Catalyst 2960G-24TC-L: +12V at 10.5A Cisco Catalyst 2960G-48TC-L: +12V at 10.5A

Table 4. Power Specifications for Cisco Catalyst 2960 LAN Base Switches

Power Consumption							
Description	WS-C2960-24T-L	WS-C2960-8TC-L	WS-C2960-24TC-L	WS-C2960-48TC-L	WS-2960PD-8TT-L	WS-C2960-24TT-L	WS-C2960-48TT-L
5% Throughput							
Measured Power Consumption	21W	11W	24W	36W	N/A	26W	38W
Measured Output BTU	71	37	82	122	N/A	86	130
100% Throughput							
Measured Power Consumption	22W	12W	27W	39W	11W	28W	42W
Measured Output BTU	75	39	90	133	38	93	141
5% Throughput (with 50% PoE loads)							
Measured Power Consumption	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Measured Output BTU	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100% Throughput (with maximum possible PoE loads)							

Measured Power Consumption	N/A						
Measured Output BTU	N/A						

Table 5. Power Specifications for Cisco Catalyst 2960 LAN Base Switches

Power Consumption						
Description	WS-C2960-24PC-L	WS-C2960-24LT-L	WS-C2960-48PST-L	WS-C2960G-8TC-L	WS-C2960G-24TC-L	WS-C2960G-48TC-L
5% Throughput						
Measured Power Consumption	43W	34W	63W	20W	65W	114W
Measured Output BTU	144	114	214	68	219	388
100% Throughput						
Measured Power Consumption	45W	36W	67W	22W	72W	123W
Measured Output BTU	151	121	227	75	244	419
5% Throughput (with 50% PoE loads)						
Measured Power Consumption	Switch Power: 237W	Switch Power: 98W	Switch Power: 262W	N/A	N/A	N/A
	PoE Power: 185W	PoE Power: 62W	PoE Power: 187W			
Measured Output BTU	Switch output:: 175	Switch output:: 122	Switch output:: 253	N/A	N/A	N/A
100% Throughput (with maximum possible PoE loads)						
Measured Power Consumption	Switch Power: 433W	Switch Power: 162W	Switch Power: 460W	N/A	N/A	N/A
Measured Output BTU	PoE Power: 357W	PoE Power: 119W	PoE Power: 339W	N/A	N/A	N/A
	Switch output:: 171	Switch output:: 66	Switch output:: 208			

Note: All power consumption numbers were measured under controlled laboratory conditions and are provided as an estimate.

The wattage rating on the power supply does not represent actual power draw. It indicates the maximum power draw possible by the power supply. This rating can be used for facility capacity planning. For PoE switches, cooling requirements are smaller than the actual power consumption as a significant portion of PoE loads are dissipated in the end points.

Non PoE Power Consumption

100% Throughput Switch Power consumption

The numbers indicate the power consumed by a typical switch under normal conditions. Normal conditions signify a temperature of 25 Degrees Celsius, atmospheric pressure in the range of 860 to 1060 mbar and relative Humidity between 30 to 75%. Typically such power draws are only seen when encountering a 100% traffic load made up entirely of 64 byte packets on the switch and the uplinks.

5% Throughput Switch Power consumption

The numbers indicate the power consumed by a typical switch under normal conditions. Normal conditions signify a temperature of 25 Degrees Celsius, atmospheric pressure in the range of 860 to 1060 mbar and relative Humidity between 30 to 75%. The numbers below indicate a 5% traffic load on the switch and its uplinks.

PoE Power Consumption**100% Throughput Switch Power consumption (no PoE loads)**

The numbers indicate the power consumed by a typical switch under normal conditions. Normal conditions signify a temperature of 25 Degrees Celsius, atmospheric pressure in the range of 860 to 1060 mbar and relative Humidity between 30 to 75%. Typically such power draws are only seen when encountering a 100% traffic load made up entirely of 64 byte packets with no PoE loads on the switch and uplinks.

Measured 5% Throughput Switch Power consumption (no PoE loads)

The numbers indicate the power consumed by a typical switch under normal conditions. Normal conditions signify a temperature of 25 Degrees Celsius, atmospheric pressure in the range of 860 to 1060 mbar and relative Humidity between 30 to 75%. The numbers below indicate a 5% traffic load on the switch and its uplinks.

100% Throughput Switch Power consumption (with maximum PoE loads)

The numbers indicate the power consumed by a typical system (the switch and the corresponding PoE loads) under normal conditions. Normal conditions signify a temperature of 25 Degrees Celsius, atmospheric pressure in the range of 860 to 1060 mbar and relative Humidity between 30 to 75%. Typically this power draw is realized when a switch is running 100% traffic load of 64 byte sized packets on all its ports and uplinks and also drawing 100% PoE load.

5% Throughput Switch Power consumption (with 50% PoE loads)

The numbers indicate the power consumed by a typical system (the switch and the corresponding PoE loads) under normal conditions. Normal conditions signify a temperature of 25 Degrees Celsius, atmospheric pressure in the range of 860 to 1060 mbar and relative Humidity between 30 to 75%. The numbers below indicate a 5% traffic load and 50% PoE load on the switch and its uplinks.

Table 6. Management and Standards Support for the Cisco Catalyst 2960 Series Switches with LAN Base Software

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-DHCP-SNOOPING-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-POE-EXTENSIONS-MIB • CISCO-PORT-QOS-MIB • CISCO-PORT-SECURITY-MIB • CISCO-PORT-STORM-CONTROL- MIB • CISCO-PRODUCTS-MIB • CISCO-PROCESS-MIB • CISCO-RTTMON-MIB • CISCO-SMI-MIB • CISCO-STP-EXTENSIONS-MIB • CISCO-SYSLOG-MIB 	<ul style="list-style-type: none"> • CISCO-TC-MIB • CISCO-TCP-MIB • CISCO-UDLDP-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 802.3af • IEEE 802.3ah (100BASE-X single/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-BX (SFP) • 100BASE-FX (SFP) • 100BASE-LX (SFP) • 1000BASE-BX (SFP) • 1000BASE-SX (SFP) • 1000BASE-LX/LH (SFP) • 1000BASE-ZX (SFP) • 1000BASE-CWDM SFP 1470 nm • 1000BASE-CWDM SFP 1490 nm • 1000BASE-CWDM SFP 1510 nm • 1000BASE-CWDM SFP 1530 nm • 1000BASE-CWDM SFP 1550 nm • 1000BASE-CWDM SFP 1570 nm • 1000BASE-CWDM SFP 1590 nm • 1000BASE-CWDM SFP 1610 nm • RMON I and II standards • SNMPv1, SNMPv2c, and SNMPv3

Table 7. Safety Certifications and Compliance for Cisco Catalyst 2960 Series Switches with LAN Base Software

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 • AS/NZS 60950-1, First Edition • CE Marking • NOM (through partners and distributors)
Electromagnetic Compatibility 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

Ordering Information

Table 6 gives ordering information for the Cisco Catalyst 2960 Series Switches.

Table 8. Ordering Information for the Cisco Catalyst 2960 Series Switches with LAN Base Software

Description	Specification
WS-C2960PD-8TT-L	<ul style="list-style-type: none"> • 8 Ethernet 10/100 ports and one 10/100/1000 PoE input port • Power adapter (PWR-A=) and power cord sold separately • Compact size with no fan; magnet included • LAN Base image installed
WS-C2960-8TC-L	<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 Base image installed
WS-C2960-24TT-L	<ul style="list-style-type: none"> • 24 Ethernet 10/100 ports and two 10/100/1000TX uplinks • 1 RU fixed-configuration • LAN Base image installed
WS-C2960-48TT-L	<ul style="list-style-type: none"> • 48 Ethernet 10/100 ports and two 10/100/1000TX uplinks • 1 RU fixed-configuration • LAN Base image installed
WS-C2960-24LT-L	<ul style="list-style-type: none"> • 24 Ethernet 10/100 ports with 8 PoE ports and two 10/100/1000TX uplinks • 1 RU fixed-configuration • LAN Base image installed
WS-C2960-24PC-L	<ul style="list-style-type: none"> • 24 Ethernet 10/100 PoE ports and 2 dual-purpose uplinks • 1 RU fixed-configuration • LAN Base image installed
WS-C2960-48PST-L	<ul style="list-style-type: none"> • 48 Ethernet 10/100 PoE ports and 2 10/100/1000 uplinks and 2 SFP uplinks • 1 RU fixed-configuration • LAN Base image installed

WS-C2960-24TC-L	<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 Base image installed
WS-C2960-48TC-L	<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 Base image installed
WS-C2960G-8TC-L	<ul style="list-style-type: none"> • 7 Ethernet 10/100/1000 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 Base image installed
WS-C2960G-24TC-L	<ul style="list-style-type: none"> • 20 Ethernet 10/100/1000 ports and 4 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 Base image installed
WS-C2960G-48TC-L	<ul style="list-style-type: none"> • 44 Ethernet 10/100/1000 ports and 4 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 Base image installed
PWR-RPS2300	Cisco Redundant Power System 2300 and blower, no power supply
BLNK-RPS2300=	Spare bay insert for Cisco Redundant Power System 2300
CAB-RPS2300-E=	Spare RPS2300 cable for Cisco Catalyst 2960-24PC-L and 2960-24LT-L switches
CAB-RPS2300=	Spare RPS2300 cable for Cisco Catalyst 2960 switches except Catalyst 2960-24PC-L and 2960-24LT-L switches
BLWR-RPS2300=	Spare 45CFM blower for Cisco Redundant Power System 2300
C3K-PWR-750WAC=	Cisco Catalyst 3750-E/3560-E/RPS 2300 750WAC power supply spare
PWR-A=	Power adapter for Cisco Catalyst 2960PD-8TT-L compact switch
CBLGRD-C2960-8TC=	Cable guard for Cisco Catalyst 2960-8TC compact switch
CBLGRD-C2960G-8TC=	Cable guard for Cisco Catalyst 2960G-8TC compact switch
RCKMNT-19-CMPCT=	Rack-mount kit for Cisco Catalyst 2960-8TC and Catalyst 2960G-8TC compact switches
RCKMNT-1RU=	Spare rack-mount kit for Cisco Catalyst 2960 Series
RCKMNT-REC-1RU=	1 RU recessed rack-mount kit for Cisco Catalyst 2960 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-ZX-SM=	1000BASE-ZX SFP transceiver module for SMF, 1550-nm wavelength
GLC-T=	1000BASE-T SFP transceiver module for Category 5 copper wire Not supported on the Cisco Catalyst 2960-8TC and Catalyst 2960G-8TC compact switches
GLC-BX-D=	1000BASE-BX10 SFP transceiver module for single-strand SMF, 1490-nm TX / 1310-nm RX wavelength
GLC-BX-U=	1000BASE-BX10 SFP transceiver module for single-strand SMF, 1310-nm TX / 1490-nm RX wavelength
GLC-GE-100FX=	100BASE-FX SFP module for Gigabit Ethernet ports, 1310-nm wavelength, 2 km over MMF Not supported on the Cisco Catalyst 2960-8TC and Catalyst 2960G-8TC compact switches
GLC-FE-100FX=	100BASE-FX SFP module for 100-Mb ports, 1310-nm wavelength, 2 km over MMF
GLC-FE-100LX=	100BASE-LX10 SFP module for 100-Mb ports, 1310-nm wavelength, 10 km over SMF
GLC-FE-100BX-D=	100BASE-BX10-D SFP module for 100-Mb ports, 1550-nm TX / 1310-nm RX wavelength, 10 km over single-strand SMF
GLC-FE-100BX-U=	100BASE-BX10-U SFP module for 100-Mb ports, 1310-nm TX / 1550-nm RX wavelength, 10 km over single-strand SMF
CWDM-SFP-1470=	Cisco CWDM SFP 1470 nm; Gigabit Ethernet and 1G/2G FC (gray)
CWDM-SFP-1490=	Cisco CWDM SFP, 1490 nm; Gigabit Ethernet and 1G/2G FC (violet)
CWDM-SFP-1510=	Cisco CWDM SFP, 1510 nm; Gigabit Ethernet and 1G/2G FC (blue)
CWDM-SFP-1530=	Cisco CWDM SFP, 1530 nm; Gigabit Ethernet and 1G/2G FC (green)

CWDM-SFP-1550=	Cisco CWDM SFP, 1550 nm; Gigabit Ethernet and 1G/2G FC (yellow)
CWDM-SFP-1570=	Cisco CWDM SFP, 1570 nm; Gigabit Ethernet and 1G/2G FC (orange)
CWDM-SFP-1590=	Cisco CWDM SFP, 1590 nm; Gigabit Ethernet and 1G/2G FC (red)
CWDM-SFP-1610=	Cisco CWDM SFP, 1610 nm; Gigabit Ethernet and 1G/2G FC (brown)
CAB-SM-LCSC-1M	1m fiber single-mode LC-to-SC connectors
CAB-SM-LCSC-5M	5m fiber single-mode LC-to-SC connectors

Service and Support

To help you realize the most value from your Cisco network investments, Cisco provides award-winning technical support services. With a Cisco technical services contract, you can gain access to Cisco technical experts, as well as industry-leading Cisco tools and resources to help you increase your operational efficiency, control costs, and maintain optimal network performance and reliability.

To support your Cisco Catalyst 2960 Series Switches, you can choose from the following options:

- **Cisco SMARTnet[®] Service:** Cisco SMARTnet Service is an award-winning technical support service that provides direct, anytime access to Cisco engineers, as well as extensive technical resources. The service provides rapid issue resolution, flexible device-by-device coverage, and premium service options to help you improve your operational efficiency and get the most from your Cisco investment.
- **Cisco Smart Care Service:** The Cisco Smart Care Service combines technical support and maintenance for your entire Cisco network with ongoing network monitoring and proactive network assessments. These proactive monitoring and assessment capabilities increase your visibility into the health and security of your network, protect the availability of your critical applications, and reduce the time and effort required to ensure your network is running optimally. Delivered by your local Cisco certified partner, the service combines the complementary strengths of Cisco and its certified partners to provide you with a superior service experience.
- **Cisco Smart Foundation Service:** Designed specifically for small and medium-sized businesses, the Cisco Smart Foundation Service provides easy, cost-effective network support to improve operational reliability, contain costs, and protect investments in Cisco networking solutions. The technical service offering provides access to Cisco technical engineers who are specially trained to assist small businesses that do not have a dedicated networking staff. The service also includes advance hardware replacement, operating system software maintenance, and access to the Cisco Smart Foundation Service client and Web portal.

A Superior Foundation for Your Business Network

As your employees, your customers, and your overall business profitability increasingly depend on the availability of your network applications, you need a secure, scalable network foundation that can meet continually evolving demands. The Cisco Catalyst 2960 Series Switches with LAN Base software provide the security, availability, and intelligent feature set to support even the most demanding medium-sized businesses, both today and in the future.

For More Information

For more information about the Cisco Catalyst Express 2960 Series Switches with LAN Base software, visit: <http://www.cisco.com/go/catalyst2960>.

For more information about Cisco products, contact:

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



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Cisco Catalyst 2960 Series Switches with LAN Lite Software

Scalable Network Management and Enhanced Security for Growing Medium-Sized Businesses

Cisco offers a family of reliable, high-performance managed switches designed specifically for your medium-sized business. The Cisco® Catalyst® 2960 Series Switches with LAN Lite software provide the security and performance that your business applications demand and are scalable to support your continually evolving network environment. By providing these capabilities in your network foundation, you can improve the availability of your critical applications, protect your business information, more easily accommodate expanding services, and optimize your network bandwidth to more effectively deliver information and applications.

The Cisco Catalyst 2960 Series with LAN Lite software is a family of fixed-configuration, standalone switches that provide Fast Ethernet connectivity and support essential security, quality of service (QoS), and high availability for growing medium-sized companies. These switches deliver the reliability and performance you need to provide a fully scalable managed network environment for your business.

The Cisco Catalyst 2960 Series with LAN Lite software provides:

- Fast Ethernet connectivity to deliver superior application performance
- Robust security capabilities, including identity services to protect your critical assets and help you comply with regulatory requirements
- Power over Ethernet (PoE) to provide 15.4 Watts simultaneously on all PoE ports
- QoS intelligence to prioritize traffic from different applications and optimize bandwidth in your network
- Redundancy and resiliency features to protect the availability of your critical applications at all times
- Simple, scalable management
- Scalability to continually accommodate new applications and services as your business evolves
- Long-term investment protection with a limited lifetime hardware warranty and ongoing software updates at no additional cost

Figure 1 shows the Cisco Catalyst 2960 Series switches.

Figure 1. Cisco Catalyst 2960 Series Switches with LAN Lite



Configurations

Table 1 highlights the various configurations available in the Cisco Catalyst 2960 Series Switches with LAN Lite software.

Table 1. Configurations Available for Cisco Catalyst 2960 Series Switches with LAN Lite Software

Product Name	Description
Cisco Catalyst 2960-8TC-S	8 Ethernet 10/100 ports and 1 dual-purpose uplink port (10/100/1000BASE-T or Small Form-Factor Pluggable [SFP]*)
Cisco Catalyst 2960-24-S	24 Ethernet 10/100 ports
Cisco Catalyst 2960-24TC-S	24 Ethernet 10/100 ports and 2 dual-purpose uplink ports
Cisco Catalyst 2960-24LC-S	24 10/100 ports with 8 ports of PoE and 2 dual-purpose uplink ports
Cisco Catalyst 2960-24PC-S	24 10/100 ports with PoE and 2 dual-purpose uplink ports
Cisco Catalyst 2960-48TT-S	48 Ethernet 10/100 ports and 2 fixed 10/100/1000 uplink ports
Cisco Catalyst 2960-48TC-S	48 Ethernet 10/100 ports and 2 dual-purpose uplink ports
Cisco Catalyst 2960-48PST-S	48 10/100 ports with PoE and 2 10/100/1000BASE-T ports and 2 SFP ports

* The SFP-based Gigabit Ethernet ports accommodate Cisco 1000BASE-SX, 1000BASE-LX, and 1000BASE-FX SFP transceivers.

Features and Benefits

Cisco Catalyst 2960 Series Switches with LAN Lite software provide:

- **High performance:** Today's workers and business applications place higher demands on networks than ever before. The Cisco Catalyst 2960 Series supports 100 Mbps to the desktop and Gigabit Ethernet uplink connectivity, providing the bandwidth you need to meet rigorous application demands, alleviate bottlenecks, and boost application performance -- enhancing the productivity of your employees while increasing the return on your existing infrastructure and application investments.
- **Enhanced security:** Modern businesses face both more serious security threats and more demanding regulatory compliance requirements than ever before. The Cisco Catalyst 2960 Series with LAN Lite software provides a wide range of security features to protect your important business information, keep unauthorized users off the network, and protect against security breaches. Key features include:
 - Cisco Identity-Based Networking Services (IBNS), which employ the 802.1x standard and the Cisco Secure Access Control Server (ACS) to provide advanced authentication and security policy administration, helping prevent unauthorized users from accessing the network
 - MAC address notification features to allow administrators to monitor the network and track where and when users enter the network
 - Port-level security features to limit access to identified MAC addresses
 - Secure encryption of administrative and network management traffic to protect against eavesdropping and tampering, and comply with regulatory requirements such as the Payment Card Industry (PCI) standard
- **Improved availability and scalability:** The Cisco Catalyst 2960 Series with LAN Lite software provides the reliability you need to help ensure that your employees stay connected and productive at all times. The Cisco switches are also scalable, allowing your network to more easily accommodate new technology deployments and continually deliver optimal performance as your business and applications evolve. Important high-availability and scalability features include Spanning Tree Protocol enhancements that support increased redundancy and improved convergence times in the event of a link outage, as well as the ability to efficiently optimize the extra capacity inherent in a redundant design.

- **PoE:** These Switches are available with up to 48 PoE ports, allowing you to power network attached devices such as IP phones, wireless access points, video cameras, and other devices directly over the Ethernet connection, without an external power supply. This simplifies deployments and eliminates the need and cost of installing separate power supplies for connected endpoints.
- **QoS intelligence:** The Cisco Catalyst 2960 Series with LAN Lite software supports QoS features that give you the flexibility to classify and prioritize the traffic on your network. For example, you can give traffic from mission-critical applications such as enterprise resource planning (ERP) and point-of-sale (POS) systems a higher priority than less delay-sensitive traffic such as large file downloads and videos, reducing network congestion and ensuring baseline performance for the most essential applications. The Cisco switches dynamically identify and classify groups of traffic, allowing you to assign up to four different priority levels. Once configured, these intelligent QoS capabilities perform scheduling and congestion control functions to preserve bandwidth and improve the performance of critical applications.
- **Superior manageability:** The Cisco Catalyst 2960 Series with LAN Lite software provides several intuitive, scalable management features to help you easily deploy and operate your network. The Express Setup feature allows you to set up the switch with a web-based browser eliminating need for CLI. The Cisco Network Assistant, with its PC-based graphical interface, and wizards, lets you quickly configure all of the Cisco switches, routers, and wireless access points in your network. It features Cisco Auto Smartports which simplifies configuration of your switch by suggesting recommended settings for the port based on the type of device connected. The Cisco Network Assistant also includes the Cisco Troubleshooting Advisor, which identifies cabling problems, common configuration errors, and other potential problems in the network and recommends corrective action. For more extensive management, the Cisco Catalyst 2960 Series also supports command-line configuration and integration with Simple Network Management Protocol (SNMP)-based network management platforms, such as the CiscoWorks LAN Management Solution (LMS).

Product Specifications

Table 2 lists the hardware specifications for the Cisco Catalyst 2960 Series Switches with LAN Lite Software. Table 3 lists the power specifications for the switches, Table 4 provides the management and standards support, and Table 5 gives information on the switches' safety certifications and compliance.

Table 2. Hardware Specifications for the Cisco Catalyst 2960 Series Switches with LAN Lite Software

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	

	Resource	Default	QoS	Dual
	Unicast MAC addresses	8000	8000	8000
	IPv4 IGMP groups	256	256	256
	IPv4 MAC QoS ACEs	128	384	0
	IPv4 MAC Security ACEs	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 240VAC. • 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, and link speed 			
Dimensions (H x W x D)	<ul style="list-style-type: none"> • Cisco Catalyst 2960-8TC-S: 1.73 x 10.6 x 6.4 in. (4.4 x 27 x 16.3 cm) • Cisco Catalyst 2960-24-S: 1.73 x 17.5 x 9.3 in. (4.4 x 44.5 x 23.6 cm) • Cisco Catalyst 2960-24TC-S: 1.73 x 17.5 x 9.3 in. (4.4 x 44.5 x 23.6 cm) • Cisco Catalyst 2960-24PC-S: 1.73 x 17.5 x 9.3 in. (4.4 x 44.5 x 23.6 cm) • Cisco Catalyst 2960-24LC-S: 1.73 x 17.5 x 9.3 in. (4.4 x 44.5 x 23.6 cm) • Cisco Catalyst 2960-48TT-S: 1.73 x 17.5 x 9.3 in. (4.4 x 44.5 x 23.6 cm) • Cisco Catalyst 2960-48TC-S: 1.73 x 17.5 x 9.3 in. (4.4 x 44.5 x 23.6 cm) • Cisco Catalyst 2960-48PST-P: 1.73 x 17.5 x 13 in. (4.4 x 44.5 x 33.2 cm) 			
Weight	<ul style="list-style-type: none"> • Cisco Catalyst 2960-8TC-S: 3 lb (1.4 kg) • Cisco Catalyst 2960-24-S: 8 lb (3.6 kg) • Cisco Catalyst 2960-24TC-S: 8 lb (3.6 kg) • Cisco Catalyst 2960-24PC-S: 12 lb (5.4 kg) • Cisco Catalyst 2960-24LC-S: 10 lb (4.5 kg) • Cisco Catalyst 2960-48TT-S: 8 lb (3.6 kg) • Cisco Catalyst 2960-48TC-S: 8 lb (3.6 kg) • Cisco Catalyst 2960-48PST-P: 12 lb (5.4 kg) 			
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	
	Operating temperature up to 13000 ft (4000 m)	23 to 95°F	-5°C to 35°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	
	Operating relative humidity	10 to 85% noncondensing		
Storage relative humidity	10 to 85% noncondensing			

Acoustic noise	<ul style="list-style-type: none"> • ISO 7779 and ISO 9296: Bystander position operating to an ambient temperature of 25°C • Cisco Catalyst 2960-8TC-S: 0 dBa (No fan) • Cisco Catalyst 2960-24-S: 40 dBa • Cisco Catalyst 2960-24TC-S: 40 dBa • Cisco Catalyst 2960-24PC-S: 48 dBa • Cisco Catalyst 2960-24LC-S: 48 dBa • Cisco Catalyst 2960-48TT-S: 40 dBa • Cisco Catalyst 2960-48TC-S: 40 dBa • Cisco Catalyst 2960-48PST-S: 48 dBa <p>Typical: Noise emission for a typical configuration and load at 25 (degree mark) C Maximum: Statistical maximum to account for variation in production</p>
Mean time between failures (MTBF)	<ul style="list-style-type: none"> • Cisco Catalyst 2960-8TC-S: 615,549 hrs • Cisco Catalyst 2960-24-S: 429,847 hrs • Cisco Catalyst 2960-24TC-S: 403,745 hrs • Cisco Catalyst 2960-24PC-S: 242,818 hrs • Cisco Catalyst 2960-24LC-S: 311,007 hrs • Cisco Catalyst 2960-48TT-S: 339,743 hrs • Cisco Catalyst 2960-48TC-S: 336,983 hrs • Cisco Catalyst 2960-48PST-S: 181,979 hrs

* Not more than following in one year period: 96 consecutive hours, or 360 hours total, or 15 occurrences.

Table 3. Power Specifications for the Cisco Catalyst 2960 Series Switches with LAN Lite Software

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
	2960-48PST-S	100-240 VAC	5.0-2.0A	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 			

Table 4. Management and Standards Support for the Cisco Catalyst 2960 Series Switches with LAN Lite Software

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 • 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
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Table 5. Safety Certifications and Compliance for the Cisco Catalyst 2960 Series Switches with LAN Lite Software

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 • AS/NZS 60950-1, First Edition • CE Marking • NOM (through partners and distributors)
Electromagnetic compatibility 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 hardware warranty

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.

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.

Ordering Information

Table 6 gives ordering information for the Cisco Catalyst 2960 Series Switches with LAN Lite software.

Table 6. Ordering Information for the Cisco Catalyst 2960 Series Switches with LAN Lite Software

Part Numbers	Description
WS-C2960-8TC-L	<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-2960-24PC-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-2960-24LC-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-L	<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-2960-48PST-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
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
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 7 provides information on software features for the Cisco Catalyst 2960 LAN Lite Series switches.

Table 7. 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)
	CDP 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	
	Express Setup	UDI - Unique Device Identifier
	HTTP Software Upgrade	User configurable management VLAN
	L2 Trace Route	VLAN 1 Minimization
PoE	802.3af Power Classification	Cisco Power over Ethernet
	Bidirectional CDP 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	Unicast MAC Filtering
	Quality of Service	802.1p Priority
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

Service and Support

Table 8 lists the features of the Cisco services and support programs.

Table 8. Cisco Services and Support Programs

Service	Cisco Smart Care Service	Cisco SMARTnet Service	Cisco Smart Foundation Service
Type of Service	Proactive networkwide monitoring, assessments, and notifications	Responsive device coverage	Responsive device coverage
Advanced Hardware Replacement	<ul style="list-style-type: none"> • 8 x 5 x next business day (NBD) • 8 x 5 x 4 	<ul style="list-style-type: none"> • 8 x 5 x NBD • 8 x 5 x 4 • 24 x 7 x 4 and/or 24 x 7 x 2 (onsite parts replacement and installation) 	<ul style="list-style-type: none"> • 8 x 5 x NBD
Onsite Engineer		Only with onsite option	
Cisco Technical Assistance Center (TAC) Hotline	24 x 7 access	24 x 7 access	Business hours (8 a.m.–5 p.m.) access to special SMB TAC (access levels vary by region)
Cisco.com Knowledge Base and Tools	Smart Care portal	Full access	Cisco.com SMB knowledge base
Operating System and Application Software	Ongoing updates	Ongoing updates and upgrades	Operating system software updates
Eligible Devices	SMB-class products	All	Select SMB-class data products
Delivered By	Delivered by Cisco certified partner and Cisco collaboratively	Cisco	Cisco

To help you realize the most value from your Cisco network investments, Cisco provides award-winning technical support services. With a Cisco technical services contract, you can gain access to Cisco technical experts, as well as industry-leading Cisco tools and resources to help you increase your operational efficiency, control costs, and maintain optimal network performance and reliability.

To support your Cisco Catalyst 2960 Series switches, you can choose from the following options:

- **Cisco SMARTnet Service:** Cisco SMARTnet Service is an award-winning technical support service that provides direct, anytime access to Cisco engineers, as well as extensive technical resources. The service provides rapid issue resolution, flexible device-by-device coverage, and premium service options to help you improve your operational efficiency and get the most from your Cisco investment.
- **Cisco Smart Care Service:** The Cisco Smart Care Service combines technical support and maintenance for your entire Cisco network with ongoing network monitoring and proactive network assessments. These monitoring and assessment capabilities increase your ability to view the current health and security of your network, protect the availability of your critical applications, and reduce the time and effort required to ensure that your network is running optimally. Delivered by your local Cisco Certified Partner, the service combines the complementary strengths of Cisco and its partners to provide you with a superior service experience.
- **Cisco Smart Foundation Service:** Designed specifically for small and medium-sized businesses, the Cisco Smart Foundation Service provides easy, cost-effective network support to improve operational reliability, contain costs, and protect investments in Cisco networking solutions. The technical service offering provides access to Cisco technical engineers who are specially trained to assist small businesses that do not have a dedicated networking staff. The service also includes advance hardware replacement, operating system software maintenance, and access to the Cisco Smart Foundation Service client and web portal.

For more information on Cisco Services, visit:

http://www.cisco.com/en/US/products/ps6888/serv_category_home.html.

A Scalable Foundation for Your Business Network

As your employees, your customers, and your overall business profitability increasingly depend on your network applications, you need a high-performance network foundation that can meet continually evolving demands. The Cisco Catalyst 2960 Series Switches with LAN Lite software provide the security, availability, and scalable manageability to support your growing business, both today and in the future.

For More Information

For more information about the Cisco Catalyst Express 2960 Series Switches with LAN Lite software, visit: <http://www.cisco.com/go/catalyst2960>.



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