Cisco Catalyst 2960-X and 2960-XR Series Switches

Product Overview

Cisco® Catalyst® 2960-X and 2960-XR Series Switches are fixed-configuration, stackable Gigabit Ethernet switches that provide enterprise-class access for campus and branch applications (Figure 1). Designed for operational simplicity to lower total cost of ownership, they enable scalable, secure and energy-efficient business operations with intelligent services and a range of advanced Cisco IOS® Software features.

Figure 1. Cisco Catalyst 2960-X Series Switches

Product Highlights

Cisco Catalyst 2960-X Series Switches feature:

- 24 or 48 Gigabit Ethernet ports with line-rate forwarding performance
- Gigabit Small Form-Factor Pluggable (SFP) or 10G SFP+ uplinks
- FlexStack-Extended capabilities for out-of-the wiring-closet distance stacking of up to 8 switches with 40 Gbps of stack throughput (optional)
- FlexStack-Plus for stacking of up to 8 switches with 80 Gbps of stack throughput (optional)
- Power over Ethernet Plus (PoE+) support with up to 740W of PoE budget
- 24-port PoE fanless switch for deployment outside the wiring closet
- Reduced power consumption and advanced energy management features
- USB and Ethernet management interfaces for simplified operations
- Application visibility and capacity planning with integrated Full (Flexible) NetFlow and NetFlow-Lite
- LAN Base or LAN Lite Cisco IOS software features
- Enhanced Limited Lifetime Warranty (E-LLW) offering next-business-day hardware replacement
- Identify, classify and control of trusted internal network traffic through Domain Name System as an Authoritative Source (DNS-AS)

Cisco Catalyst 2960-XR Series Switches also offer:

- Power resiliency with optional dual field-replaceable power supplies
- IP Lite Cisco IOS software with dynamic routing and Layer 3 features

Switch Models and Configurations

Cisco Catalyst 2960-X Series Switches include a single fixed power supply and are available with either the Cisco IOS LAN Base or LAN Lite feature set. Cisco Catalyst 2960-XR Series Switches include a field-replaceable modular power supply and can accommodate a second power supply. The Cisco Catalyst 2960-XR Series is available only with the Cisco IOS IP Lite feature set.

Table 1. Cisco Catalyst 2960-X Series Configurations

Model	10/100/1000 Ethernet ports	Uplink interfaces	Cisco IOS Software image	Available PoE power	FlexStack-Plus and FlexStack-Extended capability
Cisco Catalyst 2960X-48FPD-L	48	2 SFP+	LAN Base	740W	Y
Cisco Catalyst 2960X-48LPD-L	48	2 SFP+	LAN Base	370W	Y
Cisco Catalyst 2960X-24PD-L	24	2 SFP+	LAN Base	370W	Y
Cisco Catalyst 2960X-48TD-L	48	2 SFP+	LAN Base	-	Y
Cisco Catalyst 2960X-24TD-L	24	2 SFP+	LAN Base	-	Y
Cisco Catalyst 2960X-48FPS-L	48	4 SFP	LAN Base	740W	Y
Cisco Catalyst 2960X-48LPS-L	48	4 SFP	LAN Base	370W	Y
Cisco Catalyst 2960X-24PS-L	24	4 SFP	LAN Base	370W	Y
Cisco Catalyst 2960X-24PSQ-L	24 (8 PoE)	2 SFP, 2 10/100/1000BT	LAN Base	110W	-
Cisco Catalyst 2960X-48TS-L	48	4 SFP	LAN Base	-	Y
Cisco Catalyst 2960X-24TS-L	24	4 SFP	LAN Base	-	Y
Cisco Catalyst 2960X-48TS-LL	48	2 SFP	LAN Lite	-	-
Cisco Catalyst 2960X-24TS-LL	24	2 SFP	LAN Lite	-	-

Table 2. Cisco Catalyst 2960-XR Series Configurations

Model	10/100/1000 Ethernet ports	Uplink interfaces	Cisco IOS Software image	Available PoE power	Power supply	FlexStack-Plus and FlexStack-Extended capability
Cisco Catalyst 2960XR-48FPD-I	48	2 SFP+	IP Lite	740W	1025WAC	Y
Cisco Catalyst 2960XR-48LPD-I	48	2 SFP+	IP Lite	370W	640WAC	Y
Cisco Catalyst 2960XR-24PD-I	24	2 SFP+	IP Lite	370W	640WAC	Y
Cisco Catalyst 2960XR-48TD-I	48	2 SFP+	IP Lite	-	250WAC	Y
Cisco Catalyst 2960XR-24TD-I	24	2 SFP+	IP Lite	-	250WAC	Y
Cisco Catalyst 2960XR-48FPS-I	48	4 SFP	IP Lite	740W	1025WAC	Y
Cisco Catalyst 2960XR-48LPS-I	48	4 SFP	IP Lite	370W	640WAC	Y
Cisco Catalyst 2960XR-24PS-I	24	4 SFP	IP Lite	370W	640WAC	Y
Cisco Catalyst 2960XR-48TS-I	48	4 SFP	IP Lite	-	250WAC	Y
Cisco Catalyst 2960XR-24TS-I	24	4 SFP	IP Lite	-	250WAC	Y

Catalyst 2960-X Series Software Features

All Catalyst 2960-X Series Switches use a single Universal Cisco IOS Software Image for all SKUs. Depending on the switch model, the Cisco IOS image automatically configures the LAN Lite, LAN Base, or IP Lite feature set.

LAN Lite models have reduced functionality and scalability for small deployments with basic requirements. Cisco Catalyst 2960-X Series Switches are available with the LAN Base and LAN Lite feature sets, and the Cisco Catalyst 2960-XR Series Switches are available with the IP Lite feature set.

Note that each switch model is tied to a specific feature level; LAN Lite cannot be upgraded to LAN Base and LAN Base cannot be upgraded to IP Lite.

For more information about the features included in the LAN Lite, LAN Base and IP Lite feature sets, refer to Cisco Feature Navigator: https://tools.cisco.com/ITDIT/CFN/jsp/index.jsp.

Cisco ONE Software

Cisco ONE™ Software for Access Switching is available for the Cisco Catalyst 2960-X and 2960-XR Series Switches.

Cisco ONE Software is a new way for customers to purchase and use our infrastructure software. It offers a simplified consumption model, centered on common customer scenarios in the data center, WANs, and LANs.

Cisco ONE Software and services provide customers with four primary benefits:

- Software suites that address typical customer use scenarios at an attractive price
- Investment protection of their software purchase through software services-enabled license portability
- Access to ongoing innovation and new technology with Cisco Software Support Service (SWSS)
- Flexible licensing models to smoothly distribute customer's software spend over time

For ordering information for Cisco ONE Software for the Cisco Catalyst 2960-X and 2960-XR Series Switches, go to https://www.cisco.com/c/en/us/products/software/one-access/switching-part-numbers.html.

Cisco Catalyst 2960-XR Series IP Lite High-Performance Routing

The Cisco hardware routing architecture delivers extremely high-performance IP routing in the Cisco Catalyst 2960-XR Series IP Lite Switches:

- **IP unicast routing protocols (Static, Routing Information Protocol Version 1 [RIPv1], RIPv2, RIPng, and EIGRP-Stub)** are supported for network routing applications.
- **Advanced IP unicast routing protocols (OSPF for Routed Access)** are supported for load balancing and constructing scalable LANs. IPv6 routing (OSPFv3) is supported in hardware for maximum performance.
- **EIGRPv3-Stub and PIMv6-Stub are supported as a part of the IPv6 routing suite.**
- **Equal-cost routing** facilitates Layer 3 load balancing and redundancy across the stack.
- **Policy-Based Routing (PBR)** allows superior control by facilitating flow redirection regardless of the routing protocol configured (for both IPv4 and IPv6).
- **Hot Standby Routing Protocol (HSRP) and Virtual Router Redundancy Protocol (VRRP)** provides dynamic load balancing and failover for routed links.
- **Protocol Independent Multicast (PIM)** for IP multicast is supported, including PIM Sparse Mode (PIM-SM), PIM Dense Mode (PIM-DM), PIM sparse-dense mode and Source Specific Multicast (SSM).

Network Security

The Cisco Catalyst 2960-X and 2960-XR Series Switches provide a range of security features to limit access to the network and mitigate threats, including:

- **MAC-based VLAN assignment enables** different users to authenticate on different VLANs. This feature enables each user to have a different data VLAN on the same interface.
- **Cisco TrustSec® uses** SXP to simplify security and policy enforcement throughout the network. For more information about Cisco TrustSec security solutions, visit cisco.com/go/TrustSec.
- **Comprehensive 802.1X** Features to control access to the network, including Flexible Authentication, 802.1x Monitor Mode, and RADIUS Change of Authorization.
- **IPv6 First-Hop Security** enhances Layer-2 and Layer-3 network access from proliferating IPv6 devices especially BYOD devices. It protects against rogue router advertisements, address spoofing, fake DHCP replies and other risks introduced by IPv6 technology.
- **Device Sensor and Device Classifier** enable seamless versatile device profiles including BYOD devices. They also enable Cisco Identity Services Engine (ISE) to provision identity based security policies. This feature is available on both the 2960-X and the 2960-XR product families.
- **Cisco Trust Anchor Technology** enables easy distribution of a single universal image for all models of 2960-X and 2960-XR Series by verifying the authenticity of IOS images. This technology allows the switch to perform IOS integrity checks at boot-up by verifying the signature, verifying the Trusted Asset under Management and authenticating the license.
- **Cisco Threat Defense** features including Port Security, Dynamic ARP Inspection, and IP Source Guard.
- **Private VLANs** restrict traffic between hosts in a common segment by segregating traffic at Layer 2, turning a broadcast segment into a nonbroadcast multi access like segment. This feature is available in the IP Lite feature set only.
  - **Private VLAN Edge** provides security and isolation between switch ports, which helps ensure that users cannot snoop on other users' traffic.
- **Unicast Reverse Path Forwarding (uRPF)** feature helps mitigate problems caused by the introduction of malformed or forged (spoofed) IP source address into a network by discarding IP packets that lack a verifiable IP source address. This feature is available in the IP Lite feature set only.
- **Multidomain Authentication** allows an IP phone and a PC to authenticate on the same switch port while placing them on appropriate voice and data VLAN.
- **Access Control Lists (ACLs)** for IPv6 and IPv4 for security and QoS ACEs.
  - **VLAN ACLs** on all VLANs prevent unauthorized data flows from being bridged within VLANs.
  - **Router ACLs** define security policies on routed interfaces for control-plane and data-plane traffic. IPv6 ACLs can be applied to filter IPv6 traffic.
  - **Port-based ACLs** for Layer 2 interfaces allow security policies to be applied on individual switch ports.
- **Secure Shell (SSH) Protocol, Kerberos, and Simple Network Management Protocol Version 3 (SNMPv3)** provide network security by encrypting administrator traffic during Telnet and SNMP sessions. SSH Protocol, Kerberos, and the cryptographic version of SNMPv3 require a special cryptographic software image because of U.S. export restrictions.

- **Switched Port Analyzer (SPAN)**, with bidirectional data support, allows Cisco Intrusion Detection System (IDS) to take action when an intruder is detected.
- **TACACS+ and RADIUS authentication** facilitates 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.
- **Multilevel security on console access** prevents unauthorized users from altering the switch configuration.
- **Bridge protocol data unit (BPDU) Guard** shuts down Spanning Tree Port Fast-enabled interfaces when BPDUs are received to avoid accidental topology loops.
- **Spanning Tree Root Guard (STRG)** prevents edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes.
- **IGMP filtering** provides multicast authentication by filtering out nonsubscribers and limits the number of concurrent multicast streams available per port.
- **Dynamic VLAN assignment** is supported through implementation of VLAN Membership Policy Server client capability to provide flexibility in assigning ports to VLANs. Dynamic VLAN facilitates the fast assignment of IP addresses.

Redundancy and Resiliency

Cisco Catalyst 2960-X and 2960-XR Series Switches offer a number of redundancy and resiliency features to prevent outages and help ensure that the network remains available:

- **Cross-stack EtherChannel** provides the ability to configure Cisco EtherChannel technology across different members of the stack for high resiliency.
- **Flexlink** provides link redundancy with convergence time less than 100 milliseconds.
- **IEEE 802.1s/w Rapid Spanning Tree Protocol (RSTP) and Multiple Spanning Tree Protocol (MSTP)** provide rapid spanning-tree convergence independent of spanning-tree timers and also offer the benefit of Layer 2 load balancing and distributed processing. Stacked units behave as a single spanning-tree node.
- **Per-VLAN Rapid Spanning Tree (PVRST+)** allows rapid spanning-tree reconvergence on a per-VLAN spanning-tree basis, without requiring the implementation of spanning-tree instances.
- **Cisco Hot Standby Router Protocol (HSRP)** is supported to create redundant, fail safe routing topologies in 2960-XR Series IP Lite SKUs.
- **Switch-port auto-recovery (Error Disable)** automatically attempts to reactivate a link that is disabled because of a network error.
- **Power redundancy** with an optional second power supply on 2960-XR Series models, or with an external RPS on 2960-X Series models.

Enhanced Quality of Service

The Cisco Catalyst 2960-X and 2960-XR Series Switches offer intelligent traffic management that keeps everything flowing smoothly. Flexible mechanisms for marking, classification, and scheduling deliver superior performance for data, voice, and video traffic, all at wire speed. Primary QoS features include:

- Up to **eight egress queues** per port and strict priority queuing so that the highest priority packets are serviced ahead of all other traffic.

- **Shaped Round Robin** (SRR) scheduling and **Weighted Tail Drop** (WTD) congestion avoidance.
- **Flow-based rate limiting** and up to 256 aggregate or individual policers per port.
- **802.1p class of service** (CoS) and **Differentiated Services Code Point** (DSCP) classification, with marking and reclassification on a per-packet basis by source and destination IP address, MAC address, or Layer 4 TCP/UDP port number.
- **Cross-stack QoS** to allow QoS to be configured across a stack of 2960-X and 2960-XR Series switches.
- **The Cisco committed information rate (CIR)** function provides bandwidth in increments as low as 8 Kbps.
- **Rate limiting** is provided based on source and destination IP address, source and destination MAC address, Layer 4 TCP/UDP information, or any combination of these fields, using QoS ACLs (IP ACLs or MAC ACLs), class maps, and policy maps.

Cisco Catalyst 2960-X and 2960-XR Series Switching Database Manager

Switching Database Manager (SDM) templates for LAN Base and IP Lite licenses allows the administrator to automatically optimize the Ternary Content-Addressable Memory (TCAM) allocation to the desired features based on deployment-specific requirements. MAC, routing, security, and QoS scalability numbers depend on the type of template used in the switch.

Please refer to the SDM template reference link for more information: https://www.cisco.com/c/en/us/td/docs/switches/lan/catalyst2960x/software/15-0_2_EX/system_manage/configuration_guide/b_sm_152ex_2960-x_cg/b_sm_152ex_2960-x_cg_chapter_0100.html.

Table 3. Cisco Catalyst 2960-X Series LAN Lite and LAN Base Scalability Numbers

Resources	LAN Lite (default)	LAN Base (default)
Unicast MAC addresses	16,000	16,000
IPv4 unicast direct routes	320	2000
IPv4 unicast indirect routes	32	1000
IPv6 unicast direct routes	256	2000
IPv6 unicast indirect routes	0	1000
IPv4 multicast routes and IGMP groups	1000	1000
IPv6 multicast groups	1000	1000
IPv4 QoS ACEs	384	500
IPv6 QoS ACEs	256	500
IPv4 security ACEs	256	600
IPv6 Security ACEs	256	600

Table 4. Cisco Catalyst 2960-XR Series IP Lite Scalability Numbers

Resources	Default (IP Lite)	VLAN (IP Lite)	IPv4 (IP Lite)
Unicast MAC addresses	16K	32K	16K
IPv4 unicast direct routes	4K	250	16K
IPv4 unicast indirect routes	1.25K	250	8K
IPv6 unicast direct routes	4K	250	0
IPv6 unicast indirect routes	1.25K	250	0
IPv4 multicast routes and IGMP groups	1K	1K	1K

Resources	Default (IP Lite)	VLAN (IP Lite)	IPv4 (IP Lite)
IPv6 multicast groups	1K	1K	0
IPv4 QoS ACEs	500	500	500
IPv6 QoS ACEs	250	500	0
IPv4 security ACEs	1K	1K	875
IPv6 security ACEs	500	500	0
IPv4 policy-based routing ACEs	500	0	375

Cisco FlexStack-Plus

Cisco FlexStack-Plus provides stacking of up to eight 2960-X or 2960-XR Series switches with the optional FlexStack-Plus module (Figure 2).

The FlexStack-Plus module is hot swappable and can be added to any Cisco Catalyst 2960-X or Catalyst 2960-XR Series Switch with a FlexStack-Plus slot. Switches connected to a stack will automatically upgrade to the stack's Cisco IOS Software version and transparently join the stack without additional intervention.

To provide investment protection, FlexStack-Plus is backward-compatible with FlexStack. Cisco Catalyst 2960-X LAN Base switches equipped with a FlexStack-Plus module can be stacked with Catalyst 2960-S and 2960-SF LAN Base switches equipped with a FlexStack module (see Table 5).

Table 5. FlexStack and FlexStack-Plus Supported Combinations

Stack member	2960-XR IP Lite	2960-X LAN Base	2960-S/SF LAN Base
2960-XR IP Lite	Yes	-	-
2960-X LAN Base	-	Yes	Yes
2960-S or 2960-SF LAN Base	-	Yes	Yes

Table 6. FlexStack-Plus Scalability and Performance

Stack member	Stack bandwidth	Stack limit	Cisco IOS feature set
2960-XR IP Lite	80G	8	IP Lite
2960-X LAN Base	80G	8	LAN Base
2960-X LAN Base mixed with 2960-S/SF LAN Base	40G	4	LAN Base

Figure 2. Cisco FlexStack-Plus Switch Stack

Cisco FlexStack-Extended

Cisco FlexStack-Extended enables a long-distance out-of-the wiring-closet stack option (floor to floor). It allows back-panel stacking of up to eight Cisco Catalyst 2960-X or Catalyst 2960-XR Series Switches. FlexStack-Extended can be added to supported Cisco Catalyst 2960-X or 2960-XR Series switch with a back stacking slot. FlexStack-Extended is supported from IOS 15.2(6)E onward and is available in two module configurations: a Fiber Module and a Hybrid Module.

The Hybrid Module has a copper port that enables short-reach connectivity across a local stack of switches. It provides investment protection and compatibility with FlexStack-Plus through the copper port, while the SFP+ port supports distance stacking.

The Fiber Module has two SFP+ ports supporting long-reach out-of-the wiring-closet stacking.

Please refer to Table 18 for information about transceiver and cable compatibility with FlexStack-Extended.

Cisco FlexStack-Plus, FlexStack-Extended, and Cisco IOS Software offer true stacking, with all switches in a stack acting as a single switch unit. FlexStack-Plus and FlexStack-Extended provide a unified data plane, unified configuration, and single IP address for switch management. The advantages of true stacking include lower total cost of ownership and higher availability through simplified management as well as cross-stack features including EtherChannel, SPAN, and FlexLink.

Figure 3. Cisco FlexStack-Extended: Fiber Module

Figure 4. Cisco FlexStack-Extended: Hybrid Module

Table 7. FlexStack-Extended Supported Combinations

Stack member	2960-XR IP Lite	2960-X LAN Base
2960-XR IP Lite	Yes	-
2960-X LAN Base	-	Yes

Table 8. FlexStack-Extended Scalability and Performance

Stack member	Stack bandwidth	Stack limit	Cisco IOS feature set
2960-XR IP Lite	40G	8	IP Lite
2960-X LAN Base	40G	8	LAN Base

Power Supply

The Cisco Catalyst 2960-X Series Switches comes with one fixed power-supply and options for an external redundant power supply source (RPS2300).

The 2960-XR Series Switches support dual redundant power supplies. The 2960-XR Series ships with one power supply by default. The second power supply can be purchased at the time of ordering the switch or as a spare. These power supplies have in-built fans to provide cooling.

Figure 5. 2960-XR Series Power Supply

Table 9 shows the different power supplies available in these switches and the available PoE power.

Table 9. Cisco Catalyst 2960-XR Series Default Power Supply Configurations

Models	Default Power Supply	Available PoE Power
WS-C2960XR-24TS-I **WS-C2960XR-48TS-I** **WS-C2960XR-24TD-I** **WS-C2960XR-48TD-I**	PWR-C2-250WAC	-
WS-C2960XR-24PD-I **WS-C2960XR-48LPD-I** **WS-C2960XR-24PS-I** **WS-C2960XR-48LPS-I**	PWR-C2-640WAC	370W
WS-C2960XR-48FPD-I **WS-C2960XR-48FPS-I**	PWR-C2-1025WAC	740W

Intelligent Power Over Ethernet Plus

Cisco Catalyst 2960-X and 2960-XR Series Switches support both IEEE 802.3af Power over Ethernet (PoE) and IEEE 802.3at PoE+ (up to 30W per port) to deliver lower total cost of ownership for deployments that incorporate Cisco IP phones, Cisco Aironet® wireless access points, or other standards-compliant PoE/PoE+ end devices. PoE removes the need to supply wall power to PoE-enabled devices and eliminates the cost of adding electrical cabling and circuits that would otherwise be necessary in IP phone and WLAN deployments.

The Cisco Catalyst 2960-X and 2960-XR Series PoE power allocation is dynamic and power mapping scale up to a maximum of 740W PoE+ power.

The 2960-XR Series configurations offer the additional benefit of dual redundant power supplies. If both power supplies are used, the 2960-XR shares the load between the two power supplies for nonstop power.

Table 10. Cisco Catalyst 2960-X and 2960-XR Series PoE and PoE+ Power Capacity

Switch model	Maximum number of PoE+ (IEEE 802.3at) ports*	Maximum number of PoE (IEEE 802.3af) ports*	Available PoE power (single PS source)
Cisco Catalyst 2960X-48FPD-L	24 ports up to 30W	48 ports up to 15.4W	740W
Cisco Catalyst 2960X-48LPD-L	12 ports up to 30W	24 ports up to 15.4W	370W
Cisco Catalyst 2960X-24PD-L	12 ports up to 30W	24 ports up to 15.4W	370W
Cisco Catalyst 2960X-48FPS-L	24 ports up to 30W	48 ports up to 15.4W	740W
Cisco Catalyst 2960X-48LPS-L	12 ports up to 30W	24 ports up to 15.4W	370W
Cisco Catalyst 2960X-24PS-L	12 ports up to 30W	24 ports up to 15.4W	370W
Cisco Catalyst 2960X-24PSQ-L	3 ports up to 30W	7 ports up to 15.4W	110W
Cisco Catalyst 2960XR-48FPD-I	24 ports up to 30W	48 ports up to 15.4W	740W
Cisco Catalyst 2960XR-48LPD-I	12 ports up to 30W	24 ports up to 15.4W	370W
Cisco Catalyst 2960XR-24PD-I	12 ports up to 30W	24 ports up to 15.4W	370W
Cisco Catalyst 2960XR-48FPS-I	24 ports up to 30W	48 ports up to 15.4W	740W
Cisco Catalyst 2960XR-48LPS-I	12 ports up to 30W	24 ports up to 15.4W	370W
Cisco Catalyst 2960XR-24PS-I	12 ports up to 30W	24 ports up to 15.4W	370W

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

Table 11. Cisco Catalyst 2960-XR Series Available PoE and Switch Power Capabilities with Different Combinations of Power Supplies

Primary power supply	Secondary power supply	Available power for PoE+	Switch power redundancy	Available PoE power when one PS fails
PWR-C2-250WAC	-	-	No	-
PWR-C2-250WAC	PWR-C2-250WAC	-	Yes	-
PWR-C2-640WAC	-	370W	No	-
PWR-C2-640WAC	PWR-C2-640WAC	370W	Yes	370W
PWR-C2-1025WAC	-	740W	No	-
PWR-C2-1025WAC	PWR-C2-1025WAC	740W	Yes	740W

Application Visibility and Control

Cisco Catalyst 2960-X and 2960-XR Series Switches support both **Full (Flexible) NetFlow** and **NetFlow Lite**, which enable IT teams to understand the mix of traffic on their network and identify anomalies by capturing and recording specific packet flows. NetFlow Lite supports flexible sampling of the traffic, and exports flow data in the NetFlow Version 9 format for analysis on a wide range of Cisco and third-party collectors.

NetFlow Lite is included on all 2960-X and 2960-XR Series LAN Base and IP Lite models.

Flexible NetFlow is the next generation in flow visibility technology, allowing optimization of the network infrastructure, reducing operation costs, and improving capacity planning and security incident detection with increased flexibility and scalability. The 2960-X and 2960-XR Series Switches are capable of up to 8000 flow entries in hardware.

Full (Flexible) NetFlow is included on all 2960-X and 2960-XR Series Switches and requires a Cisco ONE Foundation License per switch.

More details about Flexible NetFlow are available at https://www.cisco.com/en/US/prod/collateral/iosswrel/ps6537/ps6555/ps6601/ps6965/product_data_sheet0900aecd804b590b.html.

Domain Name System as an Authoritative Source (DNS-AS) feature (AVC with DNS-AS) provides a centralized means of controlling the identification and classification of trusted network traffic in an organization. It accomplishes this by using network metadata stored in a DNS server that is authoritative to the domain in question, to identify applications, and Modular QoS CLI (MQC) to classify the corresponding traffic and apply suitable policies.

DNS-AS is included on all 2960-X and 2960-XR Series switches and requires a Cisco ONE Foundation License per switch.

Cisco Catalyst SmartOperations

Cisco Catalyst SmartOperations is a comprehensive set of capabilities that simplify LAN planning, deployment, monitoring, and troubleshooting. Deploying SmartOperations tools reduces the time and effort required to operate the network and lowers Total Cost of Ownership (TCO).

- **Cisco AutoConfig** services determine the level of network access provided to an endpoint based on the type of the endpoint device. This feature also permits hard-binding between the end device and the interface.
- **Cisco Smart Install** services enable minimal-touch deployment by providing automated Cisco IOS Software image installation and configuration when new switches are connected to the network. This enables network administrators to remotely manage Cisco IOS Software image installs and upgrades.
- **Cisco Auto SmartPorts** services enable automatic configuration of switch ports as devices connect to the switch, with settings optimized for the device type resulting in zero-touch port-policy provisioning.
- **Cisco Auto QoS** is a service that automatic configuration of QoS that allows switch to manage QoS policies based on traffic types resulting in zero-touch traffic engineering. Auto-QoS supports 8 egress queues in the 2960-X and 2960-XR Series.
- **Cisco Smart Troubleshooting** is an extensive array of diagnostic commands and system health checks within the switch, including Smart Call Home. The Cisco GOLD® (Generic Online Diagnostics) and Cisco online diagnostics on switches in live networks help predicting and detecting failures faster.

For more information about Cisco Catalyst SmartOperations, visit cisco.com/go/SmartOperations.

Operational Simplicity Features

- **Cisco AutoSecure provides** a single-line Command-Line Interface (CLI) to enable baseline security features (Port Security, DHCP snooping, DAI). This feature simplifies security configurations with a single touch.
- **Dynamic Host Configuration Protocol (DHCP)** auto configuration of multiple switches through a boot server eases switch deployment.
- **Stacking master configuration management** with Cisco FlexStack-Plus and Cisco FlexStack-Extended technology help ensure that all switches are automatically upgraded when the master switch receives a new software version. Automatic software version checking and updating help ensure that all stack members have the same software version.
- **No configuration required** to use Cisco **FlexStack-Plus** and Cisco **FlexStack-Extended** modules for stacking (Plug and Play).
- **Autonegotiation** on all ports automatically selects half- or full-duplex transmission mode to optimize bandwidth.
- **Dynamic Trunking Protocol (DTP)** facilitates dynamic trunk configuration across all switch ports.

- **Port Aggregation Protocol (PAgP)** automates the creation of Cisco Fast EtherChannel® groups or Gigabit EtherChannel groups to link to another switch, router, or server.
- **Link Aggregation Control Protocol (LACP)** allows the creation of Ethernet channeling with devices that conform to IEEE 802.3ad. This feature is similar to Cisco EtherChannel technology and PAgP.
- **Automatic Media-Dependent Interface Crossover (MDIX)** automatically adjusts transmit and receive pairs if an incorrect cable type (crossover or straight-through) is installed.
- **Unidirectional Link Detection Protocol (UDLD)** and Aggressive UDLD allow unidirectional links caused by incorrect fiber-optic wiring or port faults to be detected and disabled on fiber-optic interfaces.
- **Switching Database Manager (SDM)** templates for access, routing, and VLAN deployment allow the administrator to easily maximize memory allocation to the desired features based on deployment-specific requirements.
- **Local Proxy Address Resolution Protocol (ARP)** works in conjunction with Private VLAN Edge to minimize broadcasts and maximize available bandwidth.
- **VLAN1 minimization** allows VLAN1 to be disabled on any individual VLAN trunk.
- **Smart Multicast, with Cisco FlexStack-Plus and FlexStack-Extended technology**, allows the Cisco Catalyst 2960-X and 2960-XR Series to offer greater efficiency and support for more multicast data streams such as video by putting each data packet onto the backplane only once.
- **Internet Group Management Protocol (IGMP)** Snooping for IPv4 and IPv6 MLD v1 and v2 Snooping provide fast client joins and leaves of multicast streams and limit bandwidth-intensive video traffic to only the requestors.
- **Multicast VLAN Registration (MVR)** continuously sends multicast streams in a multicast VLAN while isolating the streams from subscriber VLANs for bandwidth and security reasons.
- **Per-port broadcast, multicast, and unicast storm control** prevents faulty end stations from degrading overall systems performance.
- **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.
- **Remote Switch Port Analyzer (RSPAN)** allows administrators to remotely monitor ports in a Layer 2 switch network from any other switch in the same network.
- For enhanced traffic management, monitoring, and analysis, the Embedded **Remote Monitoring (RMON)** software agent supports four RMON groups (history, statistics, alarms, and events).
- **Layer 2 trace route** eases troubleshooting by identifying the physical path that a packet takes from source to destination.
- **Trivial File Transfer Protocol (TFTP)** reduces the cost of administering software upgrades by downloading from a centralized location.
- **Network Timing Protocol (NTP)** provides an accurate and consistent timestamp to all intranet switches.

Power Management

The 2960-X and 2960-XR Series switches offer a range of industry-leading features for effective energy efficiency and energy management. They are the greenest switches in the industry.

Switch Hibernation Mode (SHM) is an industry first and available on all 2960-X and 2960-XR Series switches. This feature puts the switch in ultra-low power mode during periods of non-operation such as nights or weekends. Switch Hibernation Mode on the 2960-X and 2960-XR Series switches can be scheduled using Cisco EnergyWise® compliant management software.

IEEE 802.3az EEE (Energy Efficient Ethernet) enables ports to dynamically sense idle periods between traffic bursts and quickly switch the interfaces into a low power idle mode, reducing power consumption.

Cisco EnergyWise policies can be used to control the power consumed by PoE-powered endpoints, desktop and data-center IT equipment, and a wide range of building infrastructure. Cisco EnergyWise technology is included on all Cisco Catalyst 2960-X and 2960-XR Series Switches.

For more information about Cisco EnergyWise, visit cisco.com/go/energywise.

Network Management

The Cisco Catalyst 2960-X and 2960-XR Series Switches offer a superior CLI for detailed configuration and administration. The switches are also supported in the full range of Cisco network management solutions.

Cisco Prime Infrastructure

Cisco Prime® network management solutions provide comprehensive network lifecycle management. Cisco Prime Infrastructure provides an extensive library of easy-to-use features to automate the initial and day-to-day management of your Cisco network. Cisco Prime integrates hardware and software platform expertise and operational experience into a powerful set of workflow-driven configuration, monitoring, troubleshooting, reporting, and administrative tools.

For detailed information about Cisco Prime, visit cisco.com/go/prime.

Cisco Network Assistant

A Cisco network management application designed for small and Medium-Sized Business (SMB) networks with up to 250 users that runs on PCs, tablets and even smart phones, Cisco Network Assistant offers centralized network management and configuration capabilities. This application also features an intuitive GUI where users can easily apply common services across Cisco switches, routers, and access points.

For detailed information about Cisco Network Assistant, visit cisco.com/go/cna.

Security Management

Cisco Identity Services Engine (ISE) support enables the 2960-XR Series switches to offer security management for all devices connected to it.

Figure 6. Fanless, Quiet, Cool 24-Port PoE Switch

The Cisco Catalyst 2960-X Series adds a new member: the WS-C2960X-24PSQ-L (Cool). This is a 24-port 10M/100M/1000M switch that can power up to 8 ports of PoE (first eight ports only) with ability to deliver a sum total of 110W of PoE power. This switch has four Gigabit Ethernet uplinks: two of them SFP and the other two 10M/100M/1000M copper interfaces enabling choice of fiber or copper connectivity to the aggregation point. This switch ships with the Cisco IOS LAN Base image.

Some important 2960-X “cool” switch highlights are:

- Extends a highly secure, intelligent, managed Cisco Catalyst infrastructure with a single Ethernet cable or fiber from the wiring closet
- Support for advanced security and intelligent services, including NetFlow Lite and Switch Hibernation, including voice, video, AP powering, and Cisco Enterprise Network services to remote endpoints
- Less than 12-inch depth fits in user workspaces where multiple cable runs could be challenging, with very low power consumption and heat dissipation
- Higher MTBF rates due to no moving mechanical parts, no fans help ensure that 2960-X cool switch is convenient to be used for colocated applications
- Easy to deploy using smart-install, configure with auto-smart-ports and device sensors and manage using Cisco Prime or CNA

2960-X Cool Switch Use Cases

Retail

Major retailers are increasingly moving customer-facing IP-based applications and services to the middle of the sales floor or POS that is far away from their access router that connects the retail outlets to the outside network. A typical retail outlet needs to serve customers at multiple sales points, each with a POS machine, phone, printer, or video display with network and some PoE powering. Because of their quiet operation and ability to cater to up to 24 ports with flexible mounting options, these switches are ideally suited for mounting in confined spaces on the floor.

Education

The 2960-X cool switch extends access to labs, classrooms, and other training rooms from the central/floor distribution rooms, reducing cost of cabling and providing superior quality of service with enhanced security and enterprise network features. Quiet operation and shallow depth make them ideally suited for classrooms or confined areas nearby.

Defense

Defense establishments often look to an access switch that is portable in mobile units. These units require multiple network access devices, some of them residing in inconvenient locations in the mobile unit that requires being powered by the switch, reducing number of cables to that location and reducing possible failure sources. The switch is expected to be very quiet and have longer MTBF rates, which is served by the 2960-X cool switch.

Technical Specifications

Table 12. Cisco Catalyst 2960-X and 2960-XR Series Hardware

Hardware specifications	
Flash memory	128 MB for LAN Base & IP Lite SKUs, 64 MB for LAN Lite SKUs
DRAM	512 MB for LAN Base and 256 MB for LAN Lite
CPU	APM86392 600MHz dual core
Console ports	USB (Type-B), Ethernet (RJ-45)
Storage interface	USB (Type-A) for external flash storage
Network management interface	10/100 Mbps Ethernet (RJ-45)

Table 13. Cisco Catalyst 2960-X and 2960-XR Series Performance

Performance and scalability			
	2960-X LAN Lite	**2960-X LAN Base**	**2960-XR IP Lite**
Forwarding bandwidth	50 Gbps	108 Gbps	108 Gbps
Switching bandwidth*	100 Gbps	216 Gbps	216 Gbps
Maximum active VLANs	64	1023	1023
VLAN IDs available	4096	4096	4096
Maximum transmission unit (MTU)-L3 packet	9198 bytes	9198 bytes	9198 bytes
Jumbo frame - Ethernet frame	9216 bytes	9216 bytes	9216 bytes

* Switching bandwidth is full-duplex capacity.

Table 14. Cisco Catalyst 2960-X and 2960-XR Series Forwarding Performance

Forwarding rate: 64-Byte Layer 3 packets	
2960-X models	
Cisco Catalyst 2960X-48FPD-L	130.9 Mpps
Cisco Catalyst 2960X-48LPD-L	130.9 Mpps
Cisco Catalyst 2960X-24PD-L	95.2 Mpps
Cisco Catalyst 2960X-48TD-L	130.9 Mpps
Cisco Catalyst 2960X-24TD-L	95.2 Mpps
Cisco Catalyst 2960X-48FPS-L	107.1 Mpps
Cisco Catalyst 2960X-48LPS-L	107.1 Mpps
Cisco Catalyst 2960X-24PS-L	71.4 Mpps
Cisco Catalyst 2960X-24PSQ-L	71.4 Mpps
Cisco Catalyst 2960X-48TS-L	107.1 Mpps
Cisco Catalyst 2960X-24TS-L	71.4 Mpps
Cisco Catalyst 2960X-48TS-LL	104.2 Mpps
Cisco Catalyst 2960X-24TS-LL	68.5 Mpps

Forwarding rate: 64-Byte Layer 3 packets	
2960-XR models	
Cisco Catalyst 2960XR-48FPD-I	130.9 Mpps
Cisco Catalyst 2960XR-48LPD-I	130.9 Mpps
Cisco Catalyst 2960XR-24PD-I	95.2 Mpps
Cisco Catalyst 2960XR-48TD-I	130.9 Mpps
Cisco Catalyst 2960XR-24TD-I	95.2 Mpps
Cisco Catalyst 2960XR-48FPS-I	107.1 Mpps
Cisco Catalyst 2960XR-48LPS-I	107.1 Mpps
Cisco Catalyst 2960XR-24PS-I	71.4 Mpps
Cisco Catalyst 2960XR-48TS-I	107.1 Mpps
Cisco Catalyst 2960XR-24TS-I	71.4 Mpps

Table 15. Cisco Catalyst 2960-X Series Mechanical Specifications

Models		
Dimensions	**Inches (H x D x W)**	**Centimeters (H x D x W)**
WS-C2960X-48FPD-L	1.75 x 14.5 x 17.5	4.5 x 36.8 x 44.5
WS-C2960X-48LPD-L	1.75 x 14.5 x 17.5	4.5 x 36.8 x 44.5
WS-C2960X-48TD-L	1.75 x 11.0 x 17.5	4.5 x 27.9 x 44.5
WS-C2960X-24PD-L	1.75 x 14.5 x 17.5	4.5 x 36.8 x 44.5
WS-C2960X-24TD-L	1.75 x 11.0 x 17.5	4.5 x 27.9 x 44.5
WS-C2960X-48FPS-L	1.75 x 14.5 x 17.5	4.5 x 36.8 x 44.5
WS-C2960X-48LPS-L	1.75 x 14.5 x 17.5	4.5 x 36.8 x 44.5
WS-C2960X-48TS-L	1.75 x 11.0 x 17.5	4.5 x 27.9 x 44.5
WS-C2960X-24PS-L	1.75 x 14.5 x 17.5	4.5 x 36.8 x 44.5
WS-C2960X-24PSQ-L	1.73 x 11.03 x 17.5	4.45 x 28.0 x 44.5
WS-C2960X-24TS-L	1.75 x 11.0 x 17.5	4.5 x 27.9 x 44.5
WS-C2960X-48TS-LL	1.75 x 11.0 x 17.5	4.5 x 27.9 x 44.5
WS-C2960X-24TS-LL	1.75 x 11.0 x 17.5	4.5 x 27.9 x 44.5
Weight	**Pounds**	**Kilograms**
WS-C2960X-48FPD-L	12.9 lb	5.8 Kg
WS-C2960X-48LPD-L	12.9 lb	5.8 Kg
WS-C2960X-48TD-L	9.6 lb	4.3 Kg
WS-C2960X-24PD-L	12.7 lb	5.7 Kg
WS-C2960X-24TD-L	8.9 lb	4.0 Kg
WS-C2960X-48FPS-L	12.9 lb	5.8 Kg
WS-C2960X-48LPS-L	12.9 lb	5.8 Kg
WS-C2960X-48TS-L	9.4 lb	4.2 Kg
WS-C2960X-24PS-L	12.8 lb	5.8 kg
WS-C2960X-24PSQ-L	12.8 lb	5.8 kg
WS-C2960X-24TS-L	8.9 lb	4.0 kg
WS-C2960X-48TS-LL	8.9 lb	4.0 kg
WS-C2960X-24TS-LL	8.2 lb	3.7 kg

Table 16. Cisco Catalyst 2960-XR Series Mechanical Specifications

Models (the power supplies could add up to 3.1 in. to the depth of the 2960XR chassis)		
Dimensions	**Inches (H x D x W)**	**Centimeters (H x D x W)**
WS-C2960XR-48FPD-I	1.75 x 16.0 x 17.5	4.45 x 40.8 x 44.5
WS-C2960XR-48LPD-I	1.75 x 16.0 x 17.5	4.45 x 40.8 x 44.5
WS-C2960XR-48TD-I	1.75 x 16.0 x 17.5	4.45 x 40.8 x 44.5
WS-C2960XR-24PD-I	1.75 x 16.0 x 17.5	4.45 x 40.8 x 44.5
WS-C2960XR-24TD-I	1.75 x 16.0 x 17.5	4.45 x 40.8 x 44.5
WS-C2960XR-48FPS-I	1.75 x 16.0 x 17.5	4.45 x 40.8 x 44.5
WS-C2960XR-48LPS-I	1.75 x 16.0x 17.5	4.45 x 40.8 x 44.5
WS-C2960XR-48TS-I	1.75 x 16.0 x 17.5	4.45 x 40.8 x 44.5
WS-C2960XR-24PS-I	1.75 x 16.0 x 17.5	4.45 x 40.8 x 44.5
WS-C2960XR-24TS-I	1.75 x 16.0 x 17.5	4.45 x 40.8 x 44.5
Weight	**Pounds**	**Kilograms**
WS-C2960XR-48FPD-I	14.6	6.6
WS-C2960XR-48LPD-	14.0	6.4
WS-C2960XR-48TD-I	13.3	6.1
WS-C2960XR-24PD-I	13.6	6.2
WS-C2960XR-24TD-I	13.0	5.9
WS-C2960XR-48FPS-I	14.7	6.7
WS-C2960XR-48LPS-I	14.2	6.4
WS-C2960XR-48TS-I	13.2	6.0
WS-C2960XR-24PS-I	13.7	6.2
WS-C2960XR-24TS-I	13.0	5.9

Table 17. Cisco Catalyst 2960-X and 2960-XR Series Environmental Specifications

Environmental ranges		
	Fahrenheit	**Centigrade**
Operating temperature up to 5000 ft (1500 m)	23ºF to 113ºF	-5ºC to 45ºC
Operating temperature up to 10,000 ft (3000 m)	23ºF to 104ºF	-5ºC to 40ºC
Short-term exception at sea level*	23ºF to 131ºF	-5ºC to 55ºC
Short-term exception up to 5000 feet (1500 m)*	23ºF to 122ºF	-5ºC to 50ºC
Short-term exception up to 10,000 feet (3000 m)*	23ºF to 113ºF	-5ºC to 45ºC
Short-term exception up to 13,000 feet (4000 m)*	23º to 104ºF	-5ºC to 40ºC
Storage temperature up to 15,000 feet (4573 m)	-13º to 158ºF	-25º to 70ºC
	Feet	**Meters**
Operating altitude	Up to 10,000	Up to 3000
Storage altitude	Up to 13,000	Up to 4000
Operating relative humidity	10% to 95% noncondensing	
Storage relative humidity	10% to 95% noncondensing	
Acoustic noise		
Measured per ISO 7779 and declared per ISO 9296. PoE output of 185W or less where applicable.		
Bystander positions operating mode at 25°C ambient.		

Environmental ranges				
Model	**Sound pressure**		**Sound power**	
	LpA (typical)	**LpAD (maximum)**	**LwA (typical)**	**LwAD (maximum)**
Cisco Catalyst 2960X-48FPD-L **Cisco Catalyst 2960X-48LPD-L** **Cisco Catalyst 2960X-24PD-L**	39 dB	43 dB	4.9 B	5.3 B
Cisco Catalyst 2960X-48TD-L **Cisco Catalyst 2960X-24TD-L**	42 dB	46 dB	5.1 B	5.5 B
Cisco Catalyst 2960X-48FPS-L **Cisco Catalyst 2960X-48LPS-L** **Cisco Catalyst 2960X-24PS-L**	39 dB	43 dB	4.9 B	5.3 B
Cisco Catalyst 2960X-24PSQ-L	N/A	N/A	N/A	N/A
Cisco Catalyst 2960X-48TS-L **Cisco Catalyst 2960X-24TS-L**	42 dB	46 dB	5.1 B	5.5 B
Cisco Catalyst 2960X-48TS-LL **Cisco Catalyst 2960X-24TS-LL**	42 dB	46 dB	5.1 B	5.5 B
Cisco Catalyst 2960XR-48FPD-I	40dB	43dB	5.2B	5.5B
Cisco Catalyst 2960XR-48LPD-I	40dB	43dB	5.2B	5.5B
Cisco Catalyst 2960XR-24PD-I	40dB	43dB	5.2B	5.5B
Cisco Catalyst 2960XR-48TD-I	22dB	25dB	3.3B	3.6B
Cisco Catalyst 2960XR-24TD-I	22dB	25dB	3.3B	3.6B
Cisco Catalyst 2960XR-48FPS-I	40dB	43dB	5.2B	5.5B
Cisco Catalyst 2960XR-48LPS-I	40dB	43dB	5.2B	5.5B
Cisco Catalyst 2960XR-24PS-I	40dB	43dB	5.2B	5.5B
Cisco Catalyst 2960XR-48TS-I	22dB	25dB	3.3B	3.6B
Cisco Catalyst 2960XR-24TS-I	22dB	25dB	3.3B	3.6B
Predicted reliability				
Model	**MTBF in hours****			
Cisco Catalyst 2960X-48FPD-L	233,370			
Cisco Catalyst 2960X-48LPD-L	277,960			
Cisco Catalyst 2960X-24PD-L	325,780			
Cisco Catalyst 2960X-48TD-L	445,460			
Cisco Catalyst 2960X-24TD-L	569,520			
Cisco Catalyst 2960X-48FPS-L	232,610			
Cisco Catalyst 2960X-48LPS-L	276,870			
Cisco Catalyst 2960X-24PS-L	324,280			
Cisco Catalyst 2960X-24PSQ-L	462,680			
Cisco Catalyst 2960X-48TS-L	442,690			
Cisco Catalyst 2960X-24TS-L	564,910			
Cisco Catalyst 2960X-48TS-LL	476,560			
Cisco Catalyst 2960X-24TS-LL	622,350			
Cisco Catalyst 2960X-STACK	17,128,090			
Cisco Catalyst 2960XR-48FPD-I	231,590			
Cisco Catalyst 2960XR-48LPD-I	275,430			
Cisco Catalyst 2960XR-24PD-I	322,740			
Cisco Catalyst 2960XR-48TD-I	440,880			

Environmental ranges	
Cisco Catalyst 2960XR-24TD-I	561,890
Cisco Catalyst 2960XR-48FPS-I	230,860
Cisco Catalyst 2960XR-48LPS-I	274,380
Cisco Catalyst 2960XR-24PS-I	321,290
Cisco Catalyst 2960XR-48TS-I	438,130
Cisco Catalyst 2960XR-24TS-I	557,320
Cisco PWR-C2-250WAC	1,000,000
Cisco PWR-C2-640WAC	1,000,000
Cisco PWR-C2-1025WAC	1,000,000

* Not more than the following in a 1-year period: 96 consecutive hours, or 360 hours total, or 15 occurrences.

** Currently estimates; Later will be Based on Telcordia SR-332 Issue 2 methodology.

Table 18. Connectors and Interfaces

Connectors and interfaces
Ethernet interfaces
• 10BASE-T ports: RJ-45 connectors, 2-pair Category 3, 4, or 5 Unshielded Twisted-Pair (UTP) cabling • 100BASE-TX ports: RJ-45 connectors, 2-pair Category 5 UTP cabling • 1000BASE-T ports: RJ-45 connectors, 4-pair Category 5 UTP cabling • 1000BASE-T SFP-based ports: RJ-45 connectors, 4-pair Category 5 UTP cabling
SFP and SFP+ interfaces
For information about supported SFP/SFP+ modules, refer to the Transceiver Compatibility matrix tables at cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html.
Indicator LEDs
• Per-port status: Link integrity, disabled, activity, speed, and full duplex • System status: System, RPS, Stack link status, link duplex, PoE, and link speed
Stacking interfaces
Cisco Catalyst 2960-X and 2960-XR Series FlexStack-Plus and FlexStack-Extended (hybrid module only) stacking cables: • CAB-STK-E-0.5M stacking cable with a 0.5 m length • CAB-STK-E-1M stacking cable with a 1.0 m length • CAB-STK-E-3M stacking cable with a 3.0 m length
Console
Cisco Catalyst 2960-X and 2960-XR Series console cables: • CAB-CONSOLE-RJ45 Console cable 6 ft. with RJ-45 • CAB-CONSOLE-USB Console cable 6 ft. with USB Type A and mini-B connectors
Power
• The internal power supply is an auto-ranging unit and supports input voltages between 100 and 240V AC • Use the supplied AC power cord to connect the AC power connector to an AC power outlet • The Cisco RPS connector offers connection for an optional Cisco RPS 2300 that uses AC input and supplies DC output to the switch • Only the Cisco RPS 2300 (model PWR-RPS2300) should be attached to the redundant-power-system receptacle

Table 19. Management and Standards Support

Category	Specification	
Management	• BRIDGE-MIB • CISCO-CABLE-DIAG-MIB • CISCO-CDP-MIB • CISCO-CLUSTER-MIB • CISCO-CONFIG-COPY-MIB • CISCO-CONFIG-MAN-MIB	• CISCO-TC-MIB • CICSO-TCP-MIB • CISCO-UDLDP-MIB • CISCO-VLAN-IFTABLE • RELATIONSHIP-MIB • CISCO-VLAN-MEMBERSHIP-MIB

Category	Specification	
	• 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	• 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 • ePM MIB • CISCO-FLEXSTACK-PLUS-MIB (2960-X)
	For an updated list of supported MIBs, refer to the MIB Locator at cisco.com/go/mibs.	
Standards	• 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 and IEEE 802.3at • 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 • IEEE 802.3u 100BASE-TX • IEEE 802.3ab 1000BASE-T • IEEE 802.3z 1000BASE-X • RMON I and II standards • SNMP v1, v2c, and v3 • IEEE 802.3az • IEEE 802.3ae 10Gigabit Ethernet • IEEE 802.1ax
RFC compliance	• RFC 768 - UDP • RFC 783 - TFTP • RFC 791 - IP • RFC 792 - ICMP • RFC 793 - TCP • RFC 826 - ARP • RFC 854 - Telnet • RFC 951 - Bootstrap Protocol (BOOTP) • RFC 959 - FTP • RFC 1112 - IP Multicast and IGMP • RFC 1157 - SNMP v1 • RFC 1166 - IP Addresses • RFC 1256 - Internet Control Message Protocol (ICMP) Router Discovery • RFC 1305 - NTP • RFC 1492 - TACACS+	• RFC 1902-1907 - SNMP v2 • RFC 1981 - Maximum Transmission Unit (MTU) Path Discovery IPv6 • FRC 2068 - HTTP • RFC 2131 - DHCP • RFC 2138 - RADIUS • RFC 2233 - IF MIB v3 • RFC 2373 - IPv6 Aggregatable Addrs • RFC 2460 - IPv6 • RFC 2461 - IPv6 Neighbor Discovery • RFC 2462 - IPv6 Autoconfiguration • RFC 2463 - ICMP IPv6 • RFC 2474 - Differentiated Services (DiffServ) Precedence • RFC 2597 - Assured Forwarding • RFC 2598 - Expedited Forwarding • RFC 2571 - SNMP Management

Category	Specification	
	• RFC 1493 - Bridge MIB • RFC 1542 - BOOTP extensions • RFC 1643 - Ethernet Interface MIB • RFC 1757 - RMON • RFC 1901 - SNMP v2C	• RFC 2865 - RADIUS • RFC 3046 - DHCP Relay Agent Information Option • RFC 3376 - IGMP v3 • RFC 3580 - 802.1X RADIUS

Table 20. Voltage and Power Ratings

Input voltage and current			
Model	**Voltage (auto ranging)**	**Current**	**Frequency**
Cisco Catalyst 2960X-48FPD-L	100 to 240 VAC	9A-4A	50 to 60 Hz
Cisco Catalyst 2960X-48LPD-L		5A-2A	
Cisco Catalyst 2960X-24PD-L		5A-2A	
Cisco Catalyst 2960X-48TD-L		1A - 0.5A	
Cisco Catalyst 2960X-24TD-L		1A to 0.5A	
Cisco Catalyst 2960X-48FPS-L		9A - 4A	
Cisco Catalyst 2960X-48LPS-L		5A - 2A	
Cisco Catalyst 2960X-24PS-L		5A - 2A	
Cisco Catalyst 2960X-24PSQ-L		2A - 4A	
Cisco Catalyst 2960X-48TS-L		1A-0.5A	
Cisco Catalyst 2960X-24TS-L		1A - 0.5A	
Cisco Catalyst 2960X-48TS-LL		1A - 0.5A	
Cisco Catalyst 2960X-24TS-LL		1A - 0.5A	
Cisco Catalyst 2960XR-48FPD-I	100 to 264 VAC	10A to 5A	50 to 60 Hz
Cisco Catalyst 2960XR-48FPS-I		10A to 5 A	
Cisco Catalyst 2960XR-48LPD-I	90 to 264 VAC	6A to 3 A	50 to 60 Hz
Cisco Catalyst 2960XR-24PD-I		6A to 3 A	
Cisco Catalyst 2960XR-48TD-I		1A to 0.5 A	
Cisco Catalyst 2960XR-24TD-I		1A to 0.5 A	
Cisco Catalyst 2960XR-48LPS-I		6A to 3 A	
Cisco Catalyst 2960XR-24PS-I		6A to 3 A	
Cisco Catalyst 2960XR-48TS-I		1A to 0.5 A	
Cisco Catalyst 2960XR-24TS-I		1A to 0.5 A	
Power rating (switch maximum consumption values)			
Cisco Catalyst 2960X-48FPD-L	0.89 kVA		
Cisco Catalyst 2960X-48LPD-L	0.48 kVA		
Cisco Catalyst 2960X-24PD-L	0.47 kVA		
Cisco Catalyst 2960X-48TD-L	0.049 kVA		
Cisco Catalyst 2960X-24TD-L	0.034 kVA		
Cisco Catalyst 2960X-48FPS-L	0.89 kVA		
Cisco Catalyst 2960X-48LPS-L	0.49 kVA		
Cisco Catalyst 2960X-24PS-L	0.49 kVA		
Cisco Catalyst 2960X-24PSQ-L	0.16 kVA		
Cisco Catalyst 2960X-48TS-L	0.051 kVA		
Cisco Catalyst 2960X-24TS-L	0.039 kVA		
Cisco Catalyst 2960X-48TS-LL	0.46KVA		

Input voltage and current	
Cisco Catalyst 2960X-24TS-LL	0.035KVA
Cisco Catalyst 2960XR-48FPD-I	0.89KVA
Cisco Catalyst 2960XR-48LPD-I	0.48KVA
Cisco Catalyst 2960XR-24PD-I	0.46KVA
Cisco Catalyst 2960XR-48TD-I	0.047KVA
Cisco Catalyst 2960XR-24TD-I	0.039KVA
Cisco Catalyst 2960XR-48FPS-I	0.89KVA
Cisco Catalyst 2960XR-48LPS-I	0.47KVA
Cisco Catalyst 2960XR-24PS-I	0.46KVA
Cisco Catalyst 2960XR-48TS-I	0.046KVA
Cisco Catalyst 2960XR-24TS-I	0.038KVA

DC input voltages (RPS input) – only for 2960-X LAN Base switches		
	12V	**53V**
Cisco Catalyst 2960X-48FPD-L	4A	15A
Cisco Catalyst 2960X-48LPD-L	4A	8A
Cisco Catalyst 2960X-24PD-L	3A	8A
Cisco Catalyst 2960X-48TD-L	4A	N/A
Cisco Catalyst 2960X-24TD-L	3A	N/A
Cisco Catalyst 2960X-48FPS-L	4A	15A
Cisco Catalyst 2960X-48LPS-L	4A	8A
Cisco Catalyst 2960X-24PS-L	3A	8A
Cisco Catalyst 2960X-24PSQ-L	N/A	N/A
Cisco Catalyst 2960X-48TS-L	5A	N/A
Cisco Catalyst 2960X-24TS-L	4A	N/A

Note: 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 total power draw as a significant portion of the load is dissipated in the endpoints.

Table 21. Power Consumption[1]

Measured power consumption in watts[2]				
Model	**0% traffic[3]**	**10% traffic**	**100% traffic**	**Weighted average**
Cisco Catalyst 2960X-48FPD-L	50.8	65.9	66.7	66.0
Cisco Catalyst 2960X-48LPD-L	45.7	61.1	62.0	61.2
Cisco Catalyst 2960X-24PD-L	44.7	52.3	53.1	52.3
Cisco Catalyst 2960X-48TD-L	32.9	47.0	47.8	47.1
Cisco Catalyst 2960X-24TD-L	24.9	32.2	33.1	32.3
Cisco Catalyst 2960X-48FPS-L	51.9	66.6	66.8	66.6

[1] Disclaimer: All power consumption numbers were measured under controlled laboratory conditions and are provided as estimates.

[2] ATIS methodology.

[3] All traffic measured with EEE enabled.

Measured power consumption in watts[2]				
Cisco Catalyst 2960X-48LPS-L	46.7	60.8	61.1	60.9
Cisco Catalyst 2960X-24PS-L	41.4	49.0	49.2	49.0
Cisco Catalyst 2960X-24PSQ-L	28.5	32.8	34.8	33.0
Cisco Catalyst 2960X-48TS-L	34.9	49.5	49.7	49.5
Cisco Catalyst 2960X-24TS-L	28.0	36.8	37.1	36.9
Cisco Catalyst 2960X-48TS-LL	31.4	44.3	44.5	44.4
Cisco Catalyst 2960X-24TS-LL	25.2	32.0	32.0	32.0
Cisco Catalyst 2960XR-48FPD-I	46.7	61.8	62.5	61.9
Cisco Catalyst 2960XR-48LPD-I	40.7	54.6	55.9	54.8
Cisco Catalyst 2960XR-24PD-I	36.1	42.9	43.7	43.0
Cisco Catalyst 2960XR-48TD-I	29.7	44.7	45.6	44.8
Cisco Catalyst 2960XR-24TD-I	29.3	37.2	38.1	37.3
Cisco Catalyst 2960XR-48FPS-I	44.8	58.5	58.8	58.5
Cisco Catalyst 2960XR-48LPS-I	37.9	52.8	53.0	52.9
Cisco Catalyst 2960XR-24PS-I	36.5	43.2	43.4	43.2
Cisco Catalyst 2960XR-48TS-I	30.0	44.8	45.0	44.8
Cisco Catalyst 2960XR-24TS-I	28.8	36.0	36.2	36.0

Table 22. Safety and Compliance

Specification	Description
Safety	UL 60950-1 Second Edition CAN/CSA-C22.2 No. 60950-1 Second Edition EN 60950-1 Second Edition IEC 60950-1 Second Edition AS/NZS 60950-1
EMC – emissions	47CFR Part 15 (CFR 47) Class A AS/NZS CISPR22 Class A CISPR22 Class A EN55022 Class A ICES003 Class A VCCI Class A EN61000-3-2 EN61000-3-3 KN22 Class A CNS13438 Class A
EMC – immunity	EN55024 CISPR24 EN300386 KN24
Environmental	Reduction of Hazardous Substances (RoHS) including Directive 2011/65/EU
Telco	Common Language Equipment Identifier (CLEI) code
US government certifications	USGv6 and IPv6 Ready Logo

Cisco Enhanced Limited Lifetime Hardware Warranty

Cisco Catalyst 2960-X and 2960-XR Series Switches come with an Enhanced Limited Lifetime Warranty (E-LLW). The E-LLW provides the same terms as Cisco's standard limited lifetime warranty but adds next business day delivery of replacement hardware, where available, and 90 days of 8X5 Cisco Technical Assistance Center (TAC) support.

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

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

Table 23. Warranty Terms

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

Software Policy

Customers with Cisco Catalyst IP Lite, LAN Base and LAN Lite software feature sets will be provided with maintenance updates and bug fixes designed to maintain the compliance of the software with published specifications, release notes, and industry standards compliance as long as the original end user continues to own or use the product or up to one year from the end-of-sale date for this product, whichever occurs earlier.

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

Technical Support and Services

Table 24. Technical Services Available for Cisco Catalyst 2960-X and 2960-XR Series Switches

Technical services
Cisco Smart Net Total Care Service ● Around-the-clock, global access to the Cisco TAC ● Unrestricted access to the extensive Cisco.com knowledge base and tools ● Next-business-day, 8x5x4, 24x7x4, or 24x7x2 advance hardware replacement and onsite parts replacement and installation available[1] ● Ongoing operating system software updates within the licensed feature set[2] ● Proactive diagnostics and real-time alerts on Smart Call Home enabled devices

Technical services
Cisco Smart Foundation Service ● Next-business-day advance hardware replacement as available ● Access to SMB TAC during business hours (access levels vary by region) ● Access to Cisco.com SMB knowledge base ● Online technical resources through Smart Foundation Portal ● Operating system software bug fixes and patches
Cisco Smart Care Service ● Network-level coverage for the needs of small and medium-sized businesses ● Proactive health checks and periodic assessments of Cisco network foundation, voice, and security technologies ● Technical support for eligible Cisco hardware and software through Smart Care Portal ● Cisco operating system and application software updates and upgrades[2] ● Next-business-day advance hardware replacement as available, 24x7x4 option available[1]
Cisco SP Base Service ● Around-the-clock, global access to the Cisco TAC ● Registered access to Cisco.com ● Next-business-day, 8x5x4, 24x7x4, and 24x7x2 advance hardware replacement. Return to factory option available[1] ● Ongoing operating system software updates[2]
Cisco Focused Technical Support Services Three levels of premium, high-touch services are available: ● Cisco High-Touch Operations Management Service ● Cisco High-Touch Technical Support Service ● Cisco High-Touch Engineering Service Valid Cisco Smart Net Total Care or SP Base contracts are required on all network equipment

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

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

Ordering Information

Table 25. Cisco Catalyst 2960-X Series Switches Ordering Information

Part number	10/100/1000 Ethernet interfaces	Uplink interfaces	Cisco IOS Software feature set	Available PoE power	FlexStack-Plus, FlexStack-Extended
WS-C2960X-48FPD-L	48	2 SFP+	LAN Base	740W	Optional
WS-C2960X-48LPD-L	48	2 SFP+	LAN Base	370W	Optional
WS-C2960X-24PD-L	24	2 SFP+	LAN Base	370W	Optional
WS-C2960X-48TD-L	48	2 SFP+	LAN Base	-	Optional
WS-C2960X-24TD-L	24	2 SFP+	LAN Base	-	Optional
WS-C2960X-48FPS-L	48	4 SFP	LAN Base	740W	Optional
WS-C2960X-48LPS-L	48	4 SFP	LAN Base	370W	Optional
WS-C2960X-24PS-L	24	4 SFP	LAN Base	370W	Optional
WS-C2960X-24PSQ-L	24	2 SFP, 2 10/100/1000BT	LAN Base	110W	No
WS-C2960X-48TS-L	48	4 SFP	LAN Base	-	Optional
WS-C2960X-24TS-L	24	4 SFP	LAN Base	-	Optional
WS-C2960X-48TS-LL	48	2 SFP	LAN Lite	-	No
WS-C2960X-24TS-LL	24	2 SFP	LAN Lite	-	No

Table 26. Cisco Catalyst 2960-XR Series Switches Ordering Information

Part number	10/100/1000 Ethernet interfaces	Uplink interfaces	Cisco IOS Software feature set	Available PoE power	Second FRU power supply option	FlexStack-Plus, FlexStack-Extended
WS-C2960XR-48FPD-I	48	2 SFP+	IP Lite	740W	1025W	Optional
WS-C2960XR-48LPD-I	48	2 SFP+	IP Lite	370W	640W	Optional
WS-C2960XR-24PD-I	24	2 SFP+	IP Lite	370W	640W	Optional
WS-C2960XR-48TD-I	48	2 SFP+	IP Lite	-	250W	Optional
WS-C2960XR-24TD-I	24	2 SFP+	IP Lite	-	250W	Optional
WS-C2960XR-48FPS-I	48	4 SFP	IP Lite	740W	1025W	Optional
WS-C2960XR-48LPS-I	48	4 SFP	IP Lite	370W	640W	Optional
WS-C2960XR-24PS-I	24	4 SFP	IP Lite	370W	640W	Optional
WS-C2960XR-48TS-I	48	4 SFP	IP Lite	-	250W	Optional
WS-C2960XR-24TS-I	24	4 SFP	IP Lite	-	250W	Optional

Table 27. Accessories

Part number	Description
C2960X-STACK	FlexStack-Plus hot-swappable stacking module
C2960X-FIBER-STK	FlexStack-Extended Fiber stacking module
C2960X-HYBRID-STK	FlexStack-Extended Hybrid module, with one copper and one fiber port
CAB-STK-E-0.5M	Stacking cable with a 0.5 m length
CAB-STK-E-1M	Stacking cable with a 1.0 m length
CAB-STK-E-3M	Stacking cable with a 3.0 m length
CAB-CONSOLE-RJ45	Console cable 6 feet with RJ45
CAB-CONSOLE-USB	Console cable 6 feet with USB Type A and mini-B connectors
PWR-CLP	Power cable restraining clip
RCKMNT-1RU-2KX=	Spare rack-mount kit for Cisco Catalyst 2960-X and 2960-XR Series for 19-inch racks
RCKMNT-REC-2KX=	1 RU recessed rack-mount kit for Cisco Catalyst 2960-X and 2960-XR Series

Table 28. Cisco Catalyst 2960-X Series Redundant Power Supply Options

Part number	Description
PWR-RPS2300	Cisco Redundant Power System 2300 and blower, no power supply
BLNK-RPS2300=	Spare bay insert for Cisco Redundant Power System 2300 for Cisco Catalyst 2960-X Series Switches
CAB-RPS2300-E=	Spare RPS2300 cable for Cisco Catalyst 2960-X Series Switches
BLWR-RPS2300=	Spare 45 CFM blower for RPS 2300
C3K-PWR-750WAC=	RPS 2300 750W AC power supply spare for Cisco Catalyst 2960-X Series

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

Table 29. Cisco Catalyst 2960-XR Series Power Supply Options

Part number	Description
PWR-C2-250WAC[4]	Second FRU power supply and fan for all non-PoE 2960-XR switches, provides 250W AC of power
PWR-C2-640WAC[4]	Second FRU power supply and fan for all 370W PoE+ 2960-XR switches, provides 640W AC of power

[4] The first FRU power supply and fan module is configured automatically when the switch is ordered. The second redundant FRU power supply and fan module is an option while configuring the order.

Part number	Description
PWR-C2-1025WAC[4]	Second FRU power supply and fan for all 740W PoE+ 2960-XR switches, provides 1025W AC of power
PWR-C2-250WAC=	Spare FRU power supply and fan for all non-PoE 2960-XR switches, provides 250W AC of power
PWR-C2-640WAC=	Spare FRU power supply and fan for all 370W PoE+ 2960-XR switches, provides 640W AC of power
PWR-C2-1025WAC=	Spare FRU power supply and fan for all 740W PoE+ 2960-XR switches, provides 1025W AC of power

Table 30. Cisco Catalyst 2960-X and 2960-XR Series SFP/SFP+ Modules

SFP and SFP+ modules
For the list of supported SFP and SFP+ modules, visit https://www.cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html.

Table 31. Power Cords for Cisco Catalyst 2960-X Series

Part number	Description
CAB-16AWG-AC	AC power cord, 16AWG
CAB-ACE	AC power cord (Europe), C13, CEE 7, 1.5M
CAB-L620P-C13-US	Power cord, 250VAC, 15A, NEMA L6-20 to C13, US
CAB-ACI	AC power cord (Italy), C13, CEI 23-16, 2.5m
CAB-ACU	AC power cord (UK), C13, BS 1363, 2.5m
CAB-ACA	AC power cord (China/Australia), C13, AS 3112, 2.5m
CAB-ACS	AC power cord (Switzerland), C13, IEC 60884-1, 2.5m
CAB-ACR	AC power cord (Argentina), C13, EL 219 (IRAM 2073), 2.5m
CAB-ACC	CORD, PWR, CHINA, 10A, IEC 320, C13 (APN=CS-PWR-CH)
CAB-JPN-12A	CABASY, POWER CORD, JAPAN 2P, PSE, 12A @125VAC
CAB-L620P-C13-JPN	Power cord, 250VAC, 15A, NEMA L6-20 to C13, JAPAN
CAB-IND	Power cable for India
CAB-C15-ISR	Power cable for Israel
CAB-ACSA	Power cable for South Africa
CAB-AC15A-90L-USA	15A AC power cord, right angle (United States)
CAB-ACE-RA	Power cord Europe, right angle
CAB-ACI-RA	Power cord Italian, right angle
CAB-ACU-RA	Power cord UK, right angle
CAB-ACC-RA	Power cord China, right angle
CAB-ACA-RA	Power cord, Australian, right angle
CAB-ACS-RA	Power cord for Switzerland, right angle
CAB-ACR-RA	Power cord, Argentina, right angle
CAB-JPN-RA	Power cord, Japan, right angle
CAB-C15-CBN	Cabinet jumper power cord, 250 VAC 13A, C14-C15 connectors
CAB-ACBZ-12A	AC power cord (Brazil) 12A/125V BR-3-20 plug for less than 12A device

Table 32. Power Cords for Cisco Catalyst 2960-XR Series

Part number	Description
CAB-TA-NA=	AC power cord for Cisco Catalyst 2960XR (North America)
CAB-TA-AP=	AC power cord for Cisco Catalyst 2960XR (Australia)
CAB-TA-AR=	AC power cord for Cisco Catalyst 2960XR (Argentina)
CAB-TA-SW=	AC power cord for Cisco Catalyst 2960XR (Switzerland)

Part number	Description
CAB-TA-UK=	AC power cord for Cisco Catalyst 2960XR (United Kingdom)
CAB-TA-JP=	AC power cord for Cisco Catalyst 2960XR (Japan)
CAB-TA-250V-JP=	Japan 250VAC power cord for Cisco Catalyst 2960XR (Japan)
CAB-TA-EU=	AC power cord for Cisco Catalyst 2960XR (Europe)
CAB-TA-IT=	AC power cord for Cisco Catalyst 2960XR (Italy)
CAB-TA-IN=	AC power cord for Cisco Catalyst 2960XR (India)
CAB-TA-CN=	AC power cord for Cisco Catalyst 2960XR (China)
CAB-TA-DN=	AC power cord for Cisco Catalyst 2960XR (Denmark)
CAB-TA-IS=	AC power cord for Cisco Catalyst 2960XR (Israel)
CAB-C15-CBN=	Cabinet jumper power cord, 250 VAC 13A, C14-C15 connectors
CAB-C15-CBN-JP=	Japan Cabinet Jumper Power Cord, 250 VAC 13A, C14-C15
CAB-TA-JP-RA=	Japan AC Right Angled Power Cord for Cisco Catalyst 2960XR

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