Лирекс БГ ООД
1712 София, ж.к. Младост 3, бл. 306
Телефон: 02/ 9 691 691, Факс: 02/ 9 691 692
www.lirex.bg

ЕИК: 121057952
Банка: Алианц Банк България АД
IBAN: BG46BUIN95611010007719

АЕЦ Вх. №Ф-6859 / 13.12.2019 г.

Изх. № БГ-О-579 / 13.12.2019

ИНДИКАТИВНА ОФЕРТА

за

Доставка на активно мрежово оборудване за подмяна на остаряло

Пазарни консултации № 42472

До:	**„АЕЦ Козлодуй“ ЕАД**	От:	**Лирекс БГ ООД, гр. София**
На вниманието на:	**Христо Пачев**	Направление:	**„Работа с клиенти и продажби”**
E-mail:	**commercial@npp.bg** **HPatchev@npp.bg**	E-mail:	**office@lirex.bg**
Факс #:	**0973 7 60 04**	Стр. бр:	**7**
Тел.#:	**0973 7 61 40**	Дата:	**13.12.2019 г.**

УВАЖАЕМИ ГОСПОДИН ПАЧЕВ,

В отговор на направено от Вас запитване, Лирекс БГ ООД има удоволствието да представи на Вашето внимание индикативна оферта за Доставка на активно мрежово оборудване за подмяна на остаряло. В нашето предложение ще намерите техническо предложение, цени, както и информация относно сроковете за изпълнение, гаранции и банкови реквизити.

С удоволствие ще отговорим на всички Ваши въпроси, възникнали във връзка с настоящата оферта.

Съдържание

Настоящето предложение е изготвено според изискванията на Вашето запитване и включва доставка и гаранционно обслужване на мрежово оборудване производство на Cisco Systems Inc.

1.Техническо предложение

1.1. Подробно описание и каталожна информация за мрежовото оборудване

Списък на мрежовите комутатори с изтекла поддръжка				Предложени от Лирекс БГ мрежови комутатори, заместващи комутаторите с изтекла поддръжка					
Производител	**Модел**	**Брой**	**Край на поддръжката от производителя**	**Производител**	**Модел**	**Описание**	**Брой**	**Срок на гаранционно обслужване/ Партиден номер**	**Линк към бюлетина на производителя със заместващия продукт**
Cisco Systems, Inc.	WS-C2960-24TT-L	8	31.10.2019	Cisco Systems, Inc.	WS-C2960+24TC-L	Catalyst 2960 Plus 24 10/100 + 2T/SFP LAN Base	8	36 месец/ CON-SNT-WSC296TC	https://www.cisco.com/c/en/us/products/collateral/switches/catalyst-2960-series-switches/eos-eol-notice-c51-730121.html
Cisco Systems, Inc.	WS-C2960-48TT-L	12	31.10.2019	Cisco Systems, Inc.	WS-C2960+48TC-L	Catalyst 2960 Plus 48 10/100 + 2 T/SFP LAN Base	12	36 месеца/ CON- SNT - WSC2968C	https://www.cisco.com/c/en/us/products/collateral/switches/catalyst-2960-series-switches/eos-eol-notice-c51-730121.html
Cisco Systems, Inc.	WS-C2960-24TC-L	8	31.10.2019	Cisco Systems, Inc.	WS-C2960+24TC-L	Catalyst 2960 Plus 24 10/100 + 2T/SFP LAN Base	8	36 месец/ CON- SNT - WSC296TC	https://www.cisco.com/c/en/us/products/collateral/switches/catalyst-2960-series-switches/eos-eol-notice-c51-730121.html
Cisco Systems, Inc.	WS-C2960G-24TC-L	9	31.07.2017	Cisco Systems, Inc.	WS-C2960X-24TS-L	Catalyst 2960-X 24 GigE, 4 x 1G SFP, LAN Base	9	36 месеца/ CON- SNT - WSC296XT	https://www.cisco.com/c/en/us/products/collateral/switches/catalyst-2960-series-switches/end_of_life_c51-674040.html https://www.cisco.com/c/en/us/products/collateral/switches/catalyst-2960-series-switches/eos-eol-notice-c51-733348.html

Списък на мрежовите комутатори с изтекла поддръжка				Предложени от Лирекс БГ мрежови комутатори, заместващи комутаторите с изтекла поддръжка					
Произво-дител	**Модел**	**Брой**	**Край на поддръжката от производителя**	**Производи-тел**	**Модел**	**Описание**	**Брой**	**Срок на гаранционно обслужване/ Партиден номер**	**Линк към бюлетина на производителя със заместващия продукт**
Cisco Systems, Inc.	WS-C2960-8TC-S	2	29.07.2018	Cisco Systems, Inc.	WS-C2960C-8TC-S	Catalyst 2960C Switch 8 FE, 2 x Dual Uplink, Lan Lite	2	36 месеца/ CON- SNT - C2960C8T	https://www.cisco.com/c/en/us/products/collateral/switches/catalyst-2960-series-switches/eol_C51-726504.html

1.2. Нестандартни/ специализирани елементи, резервни части и инструменти към доставката

Към оборудването ще се доставят нужните интерфейсни и захранващи кабели, монтажни елементи, инструменти, специализиран софтуер, драйвери и лицензи, необходими за монтаж и интегриране на компонентите в съответните системи.

1.3. Основни характеристики на оборудването и материалите

- Предложеното оборудване е за монтаж в 19" комуникационен шкаф.
- Предложеното оборудване съответства на съществените изисквания по отношение на генерираните електромагнитни смущения на „Наредба за съществените изисквания и оценяване съответствието на електромагнитни съвместимост", изпълнявайки приложимите изисквания на БДС EN 55022 „Устройства за обработка на информация. Характеристики на радиочестотно смущаващо въздействие. Гранични стойности и методи за измерване", както и съответства на „Наредба за съществени изисквания и оценяване на съответствието на електрически съоръжения, предназначени за използване в определени граници на напрежението", изпълнявайки всички приложими изисквания на БДС EN 60950-1 „Устройства/ съоръжения за информационни технологии. Безопасност. Част 1: Общи изисквания".
- Предложеното оборудване е с дата на производство след 01.11.2019г.
- Доставените оборудване и материали ще се доставят в складовете на „АЕЦ Козлодуй" ЕАД в оригинална опаковка на производителя и ще бъдат съхранявани според указаните от производителя параметри на околната среда.

2. Ценово предложение

Индикативно предложение по пазарна консултация № 42472

С предмет: "Доставка на активно мрежово оборудване за подмяна на остаряло"

От Лирекс БГ ООД, ЕИК: 121057952, 1712 София, ж.к. Младост 3, бл.306, вх.2, тел.: 359 2 9 691 691, ел. поща: office@lirex.com, лице за контакт: Владимир Стоев – Генерален директор

/наименование на участника, ЕИК, адрес, телефон, ел. поща, лице за контакт, длъжност/

№ по ред	Описание и технически характеристики на предлаганото изделие	М.е.	К-во	Ед. Цена лева без ДДС	Стойност в лева без ДДС
1	Cisco Systems Inc., комутатор WS-C2960+24TC-L	бр.	8	1 439.00	11 512.00
2	Cisco Systems Inc., комутатор WS-C2960+48TC-L	бр.	12	2 772.00	33 264.00
3	Cisco Systems Inc., комутатор WS-C2960+24TC-L	бр.	8	1 439.00	11 512.00
4	Cisco Systems Inc., комутатор WS-C2960X-24TS-L	бр.	9	2 780.00	25 020.00
5	Cisco Systems Inc., комутатор WS-C2960C-8TC-S	бр.	2	843.00	1 686.00
				Обща стойност в лева без ДДС:	**82 994.00**

- Срок на доставка - до 20 работни дни, след подписване на договор.
- Условие на доставка - склад на клиента, гр. Козлодуй.
- Гаранционен срок - оборудването ще се достави с 3 години оригинална (от производителя) гаранция. Ще бъде осигурена допълнителна гаранционна поддръжка от Лирекс БГ, с време за отстраняване на повреда на следващия работен ден, за същия срок като гаранцията
- Производител – Cisco Systems Inc.
- Съпроводителна документация при доставка:
  - Оригинална данъчна фактура.
  - Приемо -предавателен протокол.
  - Гаранционна карта на оборудването.
  - Декларация за произход.
  - Спецификация на доставеното оборудване и софтуер.
  - Пълен комплект документация за доставения софтуер и хардуер.
  - Лицензи – ако има такива, включително на хартиено копие
- Документ за представителство – приложени са оторизационни писма от производителя на оборудването Cisco Systems Inc.

3. Допълнителна информация

3.1. Форма и начин на плащане

- Всички посочени цени са в BGN без включен ДДС;
- Плащане чрез банков превод, по банковите реквизити, посочени в т. 3.2;
- Начин на плащане:

  100% - до 30 дни, след подписване на предавателни протоколи;
- За всички плащания се издава оригинална данъчна фактура.

3.2. Банкови реквизити и адрес за кореспонденция

Изпълнител:	"Лирекс БГ" ООД
Адрес:	1712 София, ж.к. Младост 3, бл.306, вх.2
ЕИК	121057952
IBAN:	BG46BUIN95611010007719
BIC, при банка:	BUINBGSF ТБ Алианц Банк България АД
МОЛ	Манол Илиев

3.3. Гаранционен срок

Оборудването ще се достави с **3 години** оригинална (от производителя) гаранция.

Ще бъде осигурена допълнителна гаранционна поддръжка от Лирекс БГ, с време за отстраняване на повреда на следващия работен ден, за същия срок като гаранцията.

Гаранцията на оборудването започва да тече от датата на доставка на оборудването, което се установява с приемно-предавателен протокол.

Параметри на гаранционната поддръжка:

- Часово покритие: от 09:00 до 18:00 часа , без събота, неделя и празнични дни
- Време за реакция: до 4 часа

Времето за реакция започва да тече от момента на получаване на писмената заявка за наличието на дефектирало оборудване (по факс или по електронна поща) от лица, специално оторизирани от ВЪЗЛОЖИТЕЛЯ до момента на обратното обаждане от специалист на ИЗПЪЛНИТЕЛЯ.

Наличието на резервни модули се гарантира за целия период на производство на предлаганите устройства, както и пет (5) години след това, директно от производителя.

При установена повреда от специалистите ни и невъзможност за функциониране на оборудването, дефектиралото устройство или модул се заменят чрез услугата предварителна доставка.

Поддръжката не покрива загуби на данни, приложни и системни софтуери, конфигурационни настройки на оборудването, както и изтрити или променени производствени настройки.

3.4. Валидност на офертата:

- 30 календарни дни.

3.5. Приложения

1) Оторизационни писма от производителя на оборудването Cisco Systems Inc, че Лирекс БГ ООД е оторизиран да продава предложената техника.
2) Сертификат на Лирекс БГ ООД, че прилага сертифицирана система за управление на качеството в съответствие с БДС -EN ISO 9001:2015
3) Брошури на предложеното оборудване.

За контакти:
Владимир Стоев
Генерален директор
Тел. +359 2 9 691 691
Факс: +359 2 9 691 692
e-mail: VStoev@lirex.com
office@lirex.com

Заличено на основание ЗЗЛД

13.12.2019 г.
гр. София

С уважение ....
Владимир Стоев - Генерален директор

LETTER FOR CHANNEL PURCHASING

Date:	**13 December 2019**
To:	**NPP-Kozloduj**
Bid Number or Project Name:	**Market research # 42472 - "Delivery of active network equipment for replacement of out-of-date equipment".**

Cisco International Limited, registered in England and Wales (Company Number 06640658), having a principal place of business at 9-11 New Square Park, Bedfont Lakes, Feltham, England TW14 8HA, United Kingdom ("**Cisco**") hereby confirms that, as of the date of this letter, LIREX BG LTD is a Gold certified Cisco channel partner and that Cisco and LIREX BG LTD have entered into an agreement for the purchase and resale of Cisco Products and/or Services (the "**Agreement**").

This means that LIREX BG LTD has complied with the Cisco certification procedure and is duly authorized to purchase and resell Cisco products in BULGARIA as well as negotiate the terms and conditions of support and maintenance services on Cisco products, including warranties, in accordance with the terms and conditions of such Agreement.

Furthermore, LIREX BG LTD is specialized in the following Cisco technologies:

- Advanced Collaboration Architecture Specialization;
- Advanced Data Center Architecture Specialization;
- Advanced Enterprise Networks Architecture Specialization; and
- Advanced Security Architecture Specialization

Please note that the present confirmation is not permanent, and that the status of Cisco's authorized channel is reviewed on a regular basis. This information is accurate as of the date appearing at the top of this certificate and shall be valid for six (6) weeks from such date.

If you need any additional information, please do not hesitate to contact Plamen Zhechev at +359 899 908 715.

Заличено на основание ЗЗЛД

...s Glenister
DIRECTOR.MGMT-FINANCE

CISCO
Cisco International Limited
9-11 New Square Park
Bedfont Lakes, Feltham
Middlesex, TW14 8HA
United Kingdom

Cisco International Limited

MANUFACTURER'S AUTHORIZATION FORM

Date: **13 December 2019**

To: **NPP-Kozloduj**

Subject: **Market research # 42472 - "Delivery of active network equipment for replacement of out-of-date equipment".**

Cisco International Limited, registered in England and Wales (Company Number 06640658), having a principal place of business at 9-11 New Square Park, Bedfont Lakes, Feltham, England TW14 8HA, United Kingdom ("**Cisco**"), who is a provider of networking products and services, hereby confirms that, as of the date of this letter, LIREX BG LTD ("**Reseller**") wishes to participate in the Bid or Project stated above and has entered into an Indirect Channel Partner Agreement which entitles Reseller to do the following:

(1) resell and/or distribute Cisco products and/or services in BULGARIA to end users within that territory;

(2) bid, negotiate and conclude a contract with you for the above products/services manufactured or supplied by Cisco. The Reseller is an independent contractor and has no authority to commit and/or bind Cisco or its affiliates in any way.

Cisco will, within the scope of its agreements with the authorized channels, provide support and product warranty services for Cisco products acquired through its authorized channels. As such, Cisco recommends that you obtain confirmation, from the Cisco contact person listed below, that the Cisco products and/or services are being procured through a Cisco authorized source.

Similarly, Cisco recommends that you validate the serial numbers of the Cisco products through the Buy Right tool located at https://www.cisco.com/c/m/en_emear/brand-protection/index.html.

Additional information regarding the importance of purchasing through Cisco authorized channels can be reviewed at the link provided above and the list of Cisco authorized channel partners can be viewed at: https://locatr.cloudapps.cisco.com/WWChannels/LOCATR/openBasicSearch.do.

The confirmation provided under this Authorization form shall be accurate as of the date appearing at the top of this letter and for six (6) weeks from such date.

If you need any additional information, please do not hesitate to contact Plamen Zhechev at +359 899 908 715. For more information about Cisco's channel partner program, please visit the following URL: http://www.cisco.com/web/partners/index.html.

Duly authorized to sign this authorization form for and on behalf of: **Cisco International Limited**

Заличено на основание ЗЗЛД

James Glenister
DIRECTOR.MGMT-FINANCE

CISCO
Cisco International Limited
9-11 New Square Park
Bedfont Lakes, Feltham
Middlesex, TW14 8HA
United Kingdom

CERTIFICATE

No. 3591318

LL-C Certification

Този сертификат се издава да удостовери, че Системата за управление на качеството на

ЛИРЕКС БГ ООД

ж.к. Младост 3, бл. 306, вх. 2
1712 гр. София
България

е оценена и е установено, че съответства на изискванията на стандарта

ISO 9001:2015

за обхват на сертификация

Системна интеграция на ИТ проекти - консултации, системен анализ, проектиране, разработка, внедряване, поддържане и управление на ИТ проекти. Мрежова интеграция - консултации, системен анализ, проектиране, разработка, внедряване, поддържане и управление на мрежови проекти. Проектиране, разработване, внедряване и поддръжка на програмни продукти. Одит на информационни системи. Аутсорсинг на ИТ бизнес процеси. Проектиране, строителство, ремонт и реконструкция на административни, обществени, промишлени обекти и инфраструктурни проекти. Търговия с ИТ и мрежови продукти, офис консумативи и копирна хартия. Технически сервиз на ИТ продукти и мрежови комуникационни системи. Провеждане на обучения. Разпространение, инсталация и поддръжка на програмни продукти. Разработване, внедряване и поддръжка на системи за управление на качеството, ИТ услуги, информационна сигурност.

Този сертификат е издаден под номер **3591318** и е валиден от 19. Април 2019 до 18. Април 2022.

Заличено на основание ЗЗЛД

Заличено на основание ЗЗЛД

Approved by

Printed by

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код за валидност на сертификата на **www.ll-c.info**

www.ll-c.net

LL-C (Certification) Czech Republic a.s. | Pobřežní 620/3, 186 00 Praha 8

Cisco Catalyst 2960-Plus Series Switches

The Cisco® Catalyst® 2960-Plus Series Switches are fixed-configuration Fast Ethernet switches (Figure 1) that provide enterprise-class Layer 2 switching for branch offices, conventional workspaces, and infrastructure applications. They enable reliable and secure operations with lower total cost of ownership through a range of Cisco IOS® software features, including Cisco Catalyst SmartOperations.

Figure 1. Cisco Catalyst 2960-Plus Series Switches

Product Highlights

Cisco Catalyst 2960-Plus switches feature:

- 24 or 48 Fast Ethernet ports
- Small Form-Factor Pluggable (SFP) and 1000BASE-T Gigabit Ethernet uplinks
- IEEE 802.3af-compliant Power over Ethernet (PoE)
- LAN Base or LAN Lite Cisco IOS® Software feature set
- SmartOperations tools that simplify deployment and reduce the cost of network administration
- Cisco EnergyWise technology to manage energy consumed by connected devices
- An enhanced limited lifetime hardware warranty (E-LLW), providing next-business-day replacement

Applications and Benefits

The Cisco Catalyst 2960-Plus Series provides cost-effective, enterprise class Ethernet switching for:

- Branch offices, remote sites, and retail locations
- Conventional desktop workspaces
- Building infrastructure, physical security, and other nontraditional access applications

Benefits of the 2960-Plus include:

- Robust quality of service (QoS) that prioritizes voice and critical business applications
- Flexible security features that can limit access to the network and mitigate threats
- Tools that reduce total cost of ownership through simplified operations and automation

Switch Configurations

Table 1 shows Cisco Catalyst 2960-Plus Series configurations.

Table 1. Cisco Catalyst 2960-Plus Series Configurations

Model	10/100 Ethernet Interfaces	Uplink Interfaces	Cisco IOS Software Feature Set	Available PoE Power
Cisco Catalyst 2960-Plus 48PST-L	48	2 SFP and 2 1000BASE-T	LAN Base	370W
Cisco Catalyst 2960-Plus 24PC-L	24	2 (SFP or 1000BASE-T)	LAN Base	370W
Cisco Catalyst 2960-Plus 24LC-L	24	2 (SFP or 1000BASE-T)	LAN Base	123W
Cisco Catalyst 2960-Plus 48TC-L	48	2 (SFP or 1000BASE-T)	LAN Base	-
Cisco Catalyst 2960-Plus 24TC-L	24	2 (SFP or 1000BASE-T)	LAN Base	-
Cisco Catalyst 2960-Plus 48PST-S	48	2 SFP and 2 1000BASE-T	LAN Lite	370W
Cisco Catalyst 2960-Plus 24PC-S	24	2 (SFP or 1000BASE-T)	LAN Lite	370W
Cisco Catalyst 2960-Plus 24LC-S	24	2 (SFP or 1000BASE-T)	LAN Lite	123W
Cisco Catalyst 2960-Plus 48TC-S	48	2 (SFP or 1000BASE-T)	LAN Lite	-
Cisco Catalyst 2960-Plus 24TC-S	24	2 (SFP or 1000BASE-T)	LAN Lite	-

Robust Security

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

- Features to control access to the network, including Flexible Authentication, 802.1x Monitor Mode, and RADIUS Change of Authorization
- Threat defense features including Port Security, Dynamic ARP Inspection, and IP Source Guard
- Private VLAN Edge to provide isolation between switch ports

For more information about Cisco security solutions, visit cisco.com/go/trustsec.

Enterprise-Class Quality of Service

The Cisco 2960-Plus 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:

- Four 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 64 aggregate or individual policers per port
- 802.1p class of service (CoS) and differentiated services code point (DSCP) field 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

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 Smart Install** enables zero-touch deployment by providing automated Cisco IOS Software image installation and configuration when new switches are connected to the network.
- **Cisco Auto Smartports** enables automatic configuration of switch ports as devices connect to the switch, with settings optimized for the device type.
- **Cisco Smart Troubleshooting** is an extensive array of diagnostic commands and system health checks within the switch, including Smart Call Home.

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

Cisco EnergyWise

Cisco EnergyWise™ empowers IT teams to measure and manage the power consumed by devices connected to the network, providing measurable energy savings and reduced greenhouse gas emissions. 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. EnergyWise technology is included on all Cisco Catalyst 2960-Plus Series Switches.

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

Power over Ethernet

Cisco Catalyst 2960-Plus switches support IEEE 802.3af Power over Ethernet (PoE) to deliver lower total cost of ownership for deployments that incorporate Cisco IP phones, Cisco Aironet® wireless access points, or other standards-compliant 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. Table 2 shows the total PoE power available with each 2960-Plus model.

Table 2. Switch PoE Power Capacity

Switch Model	Maximum Number of PoE (IEEE 802.3af) Ports*	Available PoE Power
Cisco Catalyst 2960-Plus 48PST-L	24 ports up to 15.4W	370W
Cisco Catalyst 2960-Plus 24PC-L	24 ports up to 15.4W	370W
Cisco Catalyst 2960-Plus 24LC-L	8 ports up to 15.4W	123W
Cisco Catalyst 2960-Plus 48PST-S	24 ports up to 15.4W	370W
Cisco Catalyst 2960-Plus 24PC-S	24 ports up to 15.4W	370W
Cisco Catalyst 2960-Plus 24LC-S	8 ports up to 15.4W	123W

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

Network Management

The Cisco Catalyst 2960-Plus Series Switches offer a superior CLI for detailed configuration and administration. 2960-Plus 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 PC-based network management application designed for small and medium-sized business (SMB) networks with up to 250 users, 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.

Cisco IOS Software

Cisco Catalyst 2960-Plus Series Switches are available with the LAN Base and LAN Lite feature sets. LAN Lite models provide reduced functionality and scalability for small deployments with basic requirements.

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

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

Technical Specifications

Tables 3 through 10 list information about hardware, performance, forwarding performance, mechanical and environmental specifications, connectors and interfaces, management and standards support, voltage and power ratings, and power consumption, respectively.

Table 3. Cisco Catalyst 2960-Plus Series Hardware

Hardware Specifications	
Flash memory	64 MB
DRAM	128 MB

Table 4. Cisco Catalyst 2960-Plus Series Performance

Performance and Scalability		
	LAN Base (-L) Models	**LAN Lite (-S) Models**
Forwarding bandwidth	16 Gbps	16 Gbps
Maximum active VLANs	255	64
VLAN IDs available	4K	4K
Maximum transmission unit (MTU) - L3 packet	9000 bytes	9000 bytes
Jumbo frame - Ethernet frame	9018 bytes	9018 bytes

* Switching bandwidth is full-duplex capacity.

Table 5. Cisco Catalyst 2960-Plus Series Forwarding Performance

Forwarding Rate: 64-Byte L3 Packets, Millions of packets per second	
Cisco Catalyst 2960-Plus 48PST-L	13.1
Cisco Catalyst 2960-Plus 24PC-L	6.5
Cisco Catalyst 2960-Plus 24LC-L	6.5
Cisco Catalyst 2960-Plus 48TC-L	10.1
Cisco Catalyst 2960-Plus 24TC-L	6.5
Cisco Catalyst 2960-Plus 48PST-S	13.1
Cisco Catalyst 2960-Plus 24PC-S	6.5
Cisco Catalyst 2960-Plus 24LC-S	6.5
Cisco Catalyst 2960-Plus 48TC-S	10.1
Cisco Catalyst 2960-Plus 24TC-S	6.5

Table 6. Cisco Catalyst 2960-Plus Mechanical and Environmental Specifications

Dimensions (H x W x D)		
Model	**Inches**	**Centimeters**
Cisco Catalyst 2960-Plus 48PST-L	1.73 x 17.70 x 13.07	4.4 x 45.0 x 33.2
Cisco Catalyst 2960-Plus 24PC-L		
Cisco Catalyst 2960-Plus 24LC-L		
Cisco Catalyst 2960-Plus 48TC-L	1.73 x 17.70 x 9.52	4.4 x 45.0 x 24.2
Cisco Catalyst 2960-Plus 24TC-L		
Cisco Catalyst 2960-Plus 48PST-S	1.73 x 17.70 x 13.07	4.4 x 45.0 x 33.2
Cisco Catalyst 2960-Plus 24PC-S		
Cisco Catalyst 2960-Plus 24LC-S		
Cisco Catalyst 2960-Plus 48TC-S	1.73 x 17.70 x 9.52	4.4 x 45.0 x 24.2
Cisco Catalyst 2960-Plus 24TC-S		
Weight		
Model	**Pounds**	**Kilograms**
Cisco Catalyst 2960-Plus 48PST-L	12	5.4
Cisco Catalyst 2960-Plus 24PC-L	12	5.4
Cisco Catalyst 2960-Plus 24LC-L	10	4.5
Cisco Catalyst 2960-Plus 48TC-L	8	3.6
Cisco Catalyst 2960-Plus 24TC-L	8	3.6
Cisco Catalyst 2960-Plus 48PST-S	12	5.4
Cisco Catalyst 2960-Plus 24PC-S	12	5.4
Cisco Catalyst 2960-Plus 24LC-S	10	4.5
Cisco Catalyst 2960-Plus 48TC-S	8	3.6
Cisco Catalyst 2960-Plus 24TC-S	8	3.6
Environmental Ranges		
	Fahrenheit	**Centigrade**
Operating temperature up to 5000 ft (1500 m)	23º to 113ºF	-5º to 45ºC
Operating temperature up to 10,000 ft (3000 m)	23º to 104ºF	-5º to 40ºC
Short-term exception at sea level*	23º to 131ºF	-5º to 55ºC

Short-term exception up to 5000 feet (1500 m)*	23º to 122ºF	-5º to 50ºC
Short-term exception up to 10,000 feet (3000 m)*	23º to 113ºF	-5º to 45ºC
Short-term exception up to 13,000 feet (4000 m)*	23º to 104ºF	-5º to 40ºC
Storage temperature up to 15,000 feet (4573 m)	23º to 158ºF	-25º to 70ºC
	Feet	**Meters**
Operating altitude	Up to 10,000	Up to 3,000
Storage altitude	Up to 13,000	Up to 4,000
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.				
Bystander positions operating mode at 25℃ ambient.				
	Sound Pressure, dBA		**Sound Power, dbA**	
Model	**Typical, LpAm**	**Maximum, LpAD**	**Typical, LwA**	**Maximum, LwAD**
Cisco Catalyst 2960-Plus 48PST-L	41	44	51	54
Cisco Catalyst 2960-Plus 24PC-L	43	46	53	56
Cisco Catalyst 2960-Plus 24LC-L	43	46	53	56
Cisco Catalyst 2960-Plus 48TC-L	33	36	43	46
Cisco Catalyst 2960-Plus 24TC-L	33	36	43	46
Cisco Catalyst 2960-Plus 48PST-S	41	44	51	54
Cisco Catalyst 2960-Plus 24PC-S	43	46	53	56
Cisco Catalyst 2960-Plus 24LC-S	43	46	53	56
Cisco Catalyst 2960-Plus 48TC-S	33	36	43	46
Cisco Catalyst 2960-Plus 24TC-S	33	36	43	46

Predicted Reliability	
Model	**MTBF in thousands of hours****
Cisco Catalyst 2960-Plus 48PST-L	312
Cisco Catalyst 2960-Plus 24PC-L	382
Cisco Catalyst 2960-Plus 24LC-L	498
Cisco Catalyst 2960-Plus 48TC-L	623
Cisco Catalyst 2960-Plus 24TC-L	667
Cisco Catalyst 2960-Plus 48PST-S	312
Cisco Catalyst 2960-Plus 24PC-S	381
Cisco Catalyst 2960-Plus 24LC-S	498
Cisco Catalyst 2960-Plus 48TC-S	623
Cisco Catalyst 2960-Plus 24TC-S	667

* Not more than the following in a 1-year period: 96 consecutive hours, or 360 hours total, or 15 occurrences.
** Based on Telcordia SR-332 Issue 3 methodology.

Table 7. 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, Port Status, RPS, link duplex, PoE, and link speed
Console
Cisco Catalyst console cables: • CAB-CONSOLE-RJ45 Console cable 6 ft. with RJ-45
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 8. 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-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-TC-MIB • CICSO-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 • ePM MIB
	For an updated list of supported MIBs, refer to the MIB Locator at cisco.com/go/mibs.	

Category	Specification	
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 • 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
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 1493 - Bridge MIB • RFC 1542 - BOOTP extensions • RFC 1643 - Ethernet Interface MIB • RFC 1757 - RMON	• RFC 1901 - SNMP v2C • RFC 1902-1907 - SNMP v2 • RFC 1981 - Path MTU Discovery for 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 • RFC 3046 - DHCP Relay Agent Information Option • RFC 3376 - IGMP v3 • RFC 3580 - 802.1X RADIUS

Table 9. Voltage and Power Ratings

Input Voltage and Current			
Model	**Voltage (Autoranging)**	**Current (Amperes)**	**Frequency**
Cisco Catalyst 2960-Plus 48PST-L	100 to 240 VAC	4.0 - 2.0	50 to 60Hz
Cisco Catalyst 2960-Plus 24PC-L		4.0 - 2.0	
Cisco Catalyst 2960-Plus 24LC-L		1.4 - 0.8	
Cisco Catalyst 2960-Plus 48TC-L		0.6 - 0.3	
Cisco Catalyst 2960-Plus 24TC-L		0.4 - 0.2	
Cisco Catalyst 2960-Plus 48PST-S		4.0 - 2.0	
Cisco Catalyst 2960-Plus 24PC-S		4.0 - 2.0	
Cisco Catalyst 2960-Plus 24LC-S		1.4 - 0.8	
Cisco Catalyst 2960-Plus 48TC-S		0.6 - 0.3	
Cisco Catalyst 2960-Plus 24TC-S		0.4 - 0.2	
Power Rating (kVA)			
Cisco Catalyst 2960-Plus 48PST-L	0.46		
Cisco Catalyst 2960-Plus 24PC-L	0.43		
Cisco Catalyst 2960-Plus 24LC-L	0.16		

Cisco Catalyst 2960-Plus 48TC-L	0.04	
Cisco Catalyst 2960-Plus 24TC-L	0.03	
Cisco Catalyst 2960-Plus 48PST-S	0.46	
Cisco Catalyst 2960-Plus 24PC-S	0.43	
Cisco Catalyst 2960-Plus 24LC-S	0.16	
Cisco Catalyst 2960-Plus 48TC-S	0.04	
Cisco Catalyst 2960-Plus 24TC-S	0.02	
DC Input Voltages (RPS Input)		
Cisco Catalyst 2960-Plus 48PST-L	3A at 12V	7A at -52V
Cisco Catalyst 2960-Plus 24PC-L	2A at 12V	7A at -52V
Cisco Catalyst 2960-Plus 24LC-L	2A at 12V	3A at -52V
Cisco Catalyst 2960-Plus 48TC-L	3A at 12V	-
Cisco Catalyst 2960-Plus 24TC-L	2A at 12V	-
Cisco Catalyst 2960-Plus 48PST-S	3A at 12V	7A at -52V
Cisco Catalyst 2960-Plus 24PC-S	2A at 12V	7A at -52V
Cisco Catalyst 2960-Plus 24LC-S	2A at 12V	3A at -52V
Cisco Catalyst 2960-Plus 48TC-S	3A at 12V	-
Cisco Catalyst 2960-Plus 24TC-S	2A at 12V	-

Table 10. Power Consumption

Measured Power Consumption, Watts				
Model	**0% traffic**	**10% traffic**	**100% traffic**	**ATIS weighted average**
Cisco Catalyst 2960-Plus 48PST-L	51.1	50.8	51.4	50.9
Cisco Catalyst 2960-Plus 24PC-L	35.4	35.3	35.6	35.3
Cisco Catalyst 2960-Plus 24LC-L	25.9	25.7	26.1	25.8
Cisco Catalyst 2960-Plus 48TC-L	30.4	30.2	30.6	30.2
Cisco Catalyst 2960-Plus 24TC-L	18.4	18.3	18.6	18.3
Cisco Catalyst 2960-Plus 48PST-S	50.8	50.3	51.1	50.5
Cisco Catalyst 2960-Plus 24PC-S	35.0	34.8	35.2	34.9
Cisco Catalyst 2960-Plus 24LC-S	25.9	25.7	26.1	25.8
Cisco Catalyst 2960-Plus 48TC-S	29.9	29.7	30.2	29.8
Cisco Catalyst 2960-Plus 24TC-S	18.8	18.7	19.1	18.8

* Using ATIS-0600015.03.2009 methodology.

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

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 because a significant portion of the load is dissipated in the endpoints.

Table 11 provides safety and compliance information.

Table 11. Safety and Compliance

Category	Certifications
Regulatory Compliance	Products should comply with CE Marking per directives 2004/108/EC and 2006/95/EC
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	

Cisco Enhanced Limited Lifetime Hardware Warranty

Cisco Catalyst 2960-Plus 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 (Table 12), visit cisco.com/go/warranty.

Table 12. Warranty Terms

Cisco Enhanced Limited Lifetime Hardware Warranty	
Device covered	Applies to all Cisco Catalyst 2960-Plus 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-Plus 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).

Cisco Enhanced Limited Lifetime Hardware Warranty	
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-Plus 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 Update Policy

Software updates for the Cisco Catalyst 2960-Plus are available for free to registered customers at cisco.com/go/support.

For more information about the Cisco Catalyst software update policy, visit http://www.cisco.com/en/US/prod/collateral/switches/ps5718/ps4324/product_bulletin_c25-696974_ps10745_Products_Bulletin.html.

Technical Support and Services

Table 13 provides information about relevant technical services.

Table 13. Technical Services Available for Cisco Catalyst 2960-Plus Series Switches

Technical Services
Cisco SMARTnet 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
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 SMARTnet® 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; 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

Tables 14 through 18 provide information about ordering, accessories, redundant power supplies, SFP modules, and power cords, respectively.

Table 14. Cisco Catalyst 2960-Plus Series Switches Ordering Information

Part Number	10/100 Ethernet Interfaces	Uplink Interfaces	Cisco IOS Software Feature Set	Available PoE Power
WS-C2960+48PST-L	48	2 SFP and 2 1000BASE-T	LAN Base	370W
WS-C2960+24PC-L	24	2 (SFP or 1000BASE-T)	LAN Base	370W
WS-C2960+24LC-L	24	2 (SFP or 1000BASE-T)	LAN Base	123W
WS-C2960+48TC-L	48	2 (SFP or 1000BASE-T)	LAN Base	-
WS-C2960+24TC-L	24	2 (SFP or 1000BASE-T)	LAN Base	-
WS-C2960+48PST-S	48	2 SFP and 2 1000BASE-T	LAN Lite	370W
WS-C2960+24PC-S	24	2 (SFP or 1000BASE-T)	LAN Lite	370W
WS-C2960+24LC-S	24	2 (SFP or 1000BASE-T)	LAN Lite	123W
WS-C2960+48TC-S	48	2 (SFP or 1000BASE-T)	LAN Lite	-
WS-C2960+24TC-S	24	2 (SFP or 1000BASE-T)	LAN Lite	-

Table 15. Cisco Catalyst 2960-Plus Accessories

Part Numbers	Description
CAB-CONSOLE-RJ45	Console cable 6 ft with RJ45
RCKMNT-1RU=	Spare rack-mount kit for Cisco Catalyst 2960 and 2960-Plus Series for 19- and 24-inch racks
RCKMNT-REC-1RU=	1 RU recessed rack-mount kit for Cisco Catalyst 2960 and 2960-Plus Series
PWR-CLP	Power cable restraining clip

Table 16. Cisco Catalyst 2960-Plus Redundant Power Supply Options

Part Numbers	Description
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=	Spare RPS2300 cable for Cisco Catalyst 2960 switches
BLWR-RPS2300=	Spare 45 CFM blower for RPS 2300
C3K-PWR-750WAC=	RPS 2300 750W AC power supply spare for Cisco Catalyst 2960 switches
ACC-RPS2300=	Spare accessory kit for Cisco Redundant Power System 2300

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

Table 17. Cisco Catalyst 2960-Plus SFP Modules

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

Table 18. Power Cords for Cisco Catalyst 2960-Plus Series

Part Numbers	Description
CAB-AC	AC Power Cord (US, Canada), C13, NEMA 5-15P, 2.5m
CAB-ACE	AC Power Cord (Europe), C13, CEE 7, 1.5m
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	AC Power Cord (China), C13, PRC/3 GB2099/GB1002
CAB-JPN	AC Power Cord (Japan), C13, Japan 2-prong, 1.8m
CAB-IND-10A	AC Power Cord (India), C13, IS1293, 2.5m
CAB-ACBZ-10A	AC Power Cord (Brazil), C13,BR-3-20, 10A
CAB-ACSA	AC Power Cord (South Africa), C15, SABS 164-1, 1.8m

Contact Cisco

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Data Sheet

Cisco Catalyst 2960-X and 2960-XR Series Switches

Contents

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). They operate on Cisco IOS® Software and support simple device management as well as network management. The Cisco Catalyst 2960-X and 2960-XR Series provide easy device onboarding, configuration, monitoring, and troubleshooting. These fully managed switches can provide advanced Layer 2 and Layer 3 features as well as optional Power over Ethernet Plus (PoE+) power. Designed for operational simplicity to lower total cost of ownership, they enable scalable, secure, and energy-efficient business operations with intelligent services. The switches deliver enhanced application visibility, network reliability, and network resiliency.

Figure 1.
Cisco Catalyst 2960-X Series Switches

Product Highlights

Cisco Catalyst 2960-X and 2960-XR Series Switches feature:

- 24 or 48 Gigabit Ethernet ports with line-rate forwarding performance
- 4 fixed 1 Gigabit Ethernet Small Form-Factor Pluggable (SFP) uplinks or 2 fixed 10 Gigabit Ethernet SFP+ uplinks
- PoE+ support with a power budget of up to 740W and Perpetual PoE
- Cisco IOS LAN Base[1] or LAN Lite[1] and Cisco IOS IP Lite[2]
- Device management with web UI, over-the-air access via Bluetooth, Command-Line Interface (CLI), Simple Network Management Protocol (SNMP), and RJ-45 or USB console access
- Network management with Cisco Prime®, Cisco Network Plug and Play, and Cisco DNA Center
- Stacking with FlexStack-Plus and FlexStack-Extended
- Layer 3 features with routed access (Open Shortest Path First [OSPF]), static routing, and Routing Information Protocol (RIP)
- Visibility with Domain Name System as an Authoritative Source (DNS-AS) and Full (Flexible) NetFlow
- Security with 802.1X, Serial Port Analyzer (SPAN) and Bridge Protocol Data Unit (BPDU) Guard
- Reliability with higher Mean Time Between Failures (MTBF) and Enhanced Limited Lifetime Warranty (E-LLW)
- Resiliency with optional dual field-replaceable power supplies[2]

[1] 2960-X Series only.

[2] 2960-XR Series only.

Power Supply

An external redundant power supply option is supported on the Cisco Catalyst 2960-X Series Switches. These switches come with one fixed power supply and an option for an external redundant power supply (Cisco Redundant Power System [RPS] 2300).

Dual redundant power supplies are supported on the Cisco Catalyst 2960-XR Series Switches. These switches ship 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 built-in fans to provide cooling (Figure 2).

Figure 2.
Cisco Catalyst 2960-XR Series power supply

Table 1 shows the different power supplies available in the 2960-XR Series switches and the available PoE power. Table 2 lists the PoE and PoE+ power capacity for the Cisco Catalyst 2960-X and 2960-XR Series. Table 3 gives the available PoE and switch power for the 2960-XR Series with different power supply combinations.

Table 1. Cisco Catalyst 2960-XR Series default power supply configurations

Product ID	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

Table 2. Cisco Catalyst 2960-X and 2960-XR Series PoE and PoE+ power capacity

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

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-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 3. 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

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 2960-XR Series is available only with the Cisco IOS IP Lite feature set. Tables 4 and 5 list the configurations of the 2960-X and 2960-XR Series, respectively.

Table 4. 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 5. 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

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-24TS-I	24	4 SFP	IP Lite	–	250WAC	Y

Software

All Cisco Catalyst 2960-X and 2960-XR 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.

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.

Switch Management

Cisco Catalyst 2960-X and 2960-XR Series Switches support the following on-device management features:

- **Web UI** via Cisco Configuration Professional. Configuration Professional provides a user interface for day-zero provisioning, which enables easy onboarding of the switch. Configuration Professional also has an intuitive dashboard for configuring, monitoring, and troubleshooting the switch (Figure 3). For more information about Cisco Configuration Professional, please refer to: https://www.cisco.com/c/en/us/products/cloud-systems-management/configuration-professional/index.html?dtid=osscdc000283.

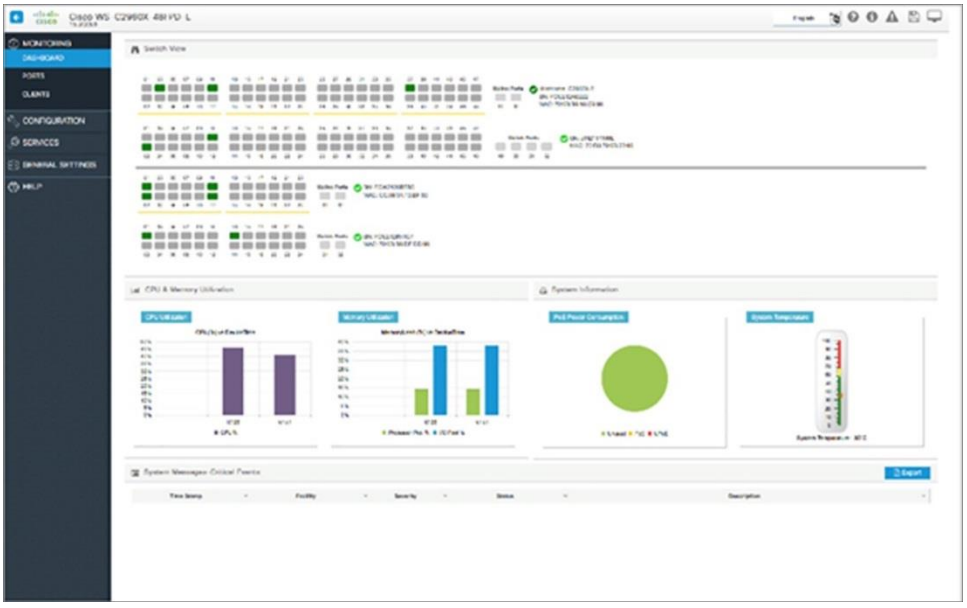

Figure 3.
Cisco Configuration Professional web UI for the Cisco Catalyst 2960-X and 2960-XR Series

- **Bluetooth** for over-the-air access. The switches support an external Bluetooth dongle that plugs into the USB port on the switch and allows a Bluetooth-based RF connection with an external laptops and tablets (Figure 4). Laptops and tablets can access the switch CLI using a Telnet or Secure Shell (SSH) client over Bluetooth. The GUI can be accessed over Bluetooth with a browser.

Figure 4.
Over-the-air switch access using Bluetooth

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 by the full range of Cisco network management solutions.

- **Cisco DNA Center** on the Cisco Catalyst 2960-X and 2960-XR Series Switches provides a simple web user interface to enterprise network customers for day-zero plug and play, switch discovery and management, topology visualization, and software image management. For details on Cisco DNA Center features, please refer to dnac.cisco.com.
- **Cisco Network Plug and Play** is supported using the Cisco Application Policy Infrastructure Enterprise Module (APIC-EM) and Cisco DNA Center on Cisco Catalyst 2960-X and 2960-XR Series Switches. This provides a simple, secure, unified, and integrated offering for enterprise network customers to ease new branch or campus device rollouts or for provisioning updates to an existing network with a near zero-touch deployment experience. For detailed information about APIC-EM-based Plug-and-Play capabilities, please refer to Cisco Network Plug and Play.

Cisco Prime Infrastructure provides comprehensive network lifecycle management, including an extensive library of easy-to-use features to automate the initial and day-to-day management of your Cisco network. Cisco Prime technology 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 https://www.cisco.com/c/en/us/products/cloud-systems-management/prime.html.

Licenses have to be purchased for using the Cisco Prime Infrastructure, Cisco Network Plug and Play, or Cisco DNA Center network management solution.

Stacking

Cisco FlexStack-Plus provides stacking of up to eight Cisco Catalyst 2960-X or 2960-XR Series Switches with the optional FlexStack-Plus module (Figure 5).

The FlexStack-Plus module is hot swappable and can be added to any Cisco Catalyst 2960-X or 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 Cisco Catalyst 2960-S and 2960-SF LAN Base

switches equipped with a FlexStack module (see Table 6). Table 7 lists the scalability and performance of FlexStack with the various software images.

Table 6. 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 7. FlexStack-Plus scalability and performance

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

Figure 5.
Cisco FlexStack-Plus switch stack

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 2960-XR Series Switches. FlexStack-Extended can be added to a Cisco Catalyst 2960-X or 2960-XR Series Switch with a back-panel stacking slot. Table 8 lists the switch combinations supported with FlexStack-Extended, and Table 9 lists the scalability and performance with the various software images. FlexStack-Extended is supported in Cisco IOS 15.2(6)E or later 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 (Figure 6). 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 (Figure 7).

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 Flex Links.

Table 8. 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 9. FlexStack-Extended scalability and performance

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

Figure 6.
Cisco FlexStack-Extended: Hybrid module

Figure 7.
Cisco FlexStack-Extended: Fiber module

Application Visibility and Control (AVC)

Full (Flexible) NetFlow and NetFlow Lite are both supported on the Cisco Catalyst 2960-X and 2960-XR Series Switches, thereby enabling 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 Cisco Catalyst 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 or a Cisco DNA Essentials 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.

The 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 Quality-of-Service (QoS) CLI (MQC) to classify the corresponding traffic and apply suitable policies.

DNS-AS is included on all Cisco Catalyst 2960-X and 2960-XR Series Switches and requires a Cisco ONE Foundation license per switch or a Cisco DNA Essentials license per switch.

Layer 3 Features

The Cisco hardware architecture delivers the following high-performance IP routing features in the Cisco Catalyst 2960-X and 2960-XR Series Switches:

- **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.
- **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).
- **Policy-Based Routing (PBR)** allows superior control by facilitating flow redirection regardless of the routing protocol configured (for both IPv4 and IPv6).
- **IP unicast routing protocols (static and RIPv1 and v2)** are supported for network routing applications.

Additionally the Cisco hardware architecture delivers the following high-performance IP routing features in the Cisco Catalyst 2960-XR Series Switches:

- **IP unicast routing protocols (RIPng and Enhanced Interior Gateway Routing Protocol [EIGRP] Stub)** are supported for network routing applications.

- **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.
- **Hot Standby Routing Protocol (HSRP) and Virtual Router Redundancy Protocol (VRRP)** provide dynamic load balancing and failover for routed links.

Intelligent PoE+

IEEE 802.3af PoE and IEEE 802.3at PoE+ (up to 30W per port) are both supported on Cisco Catalyst 2960-X and 2960-XR Series Switches to lower the total cost of ownership for deployments that incorporate Cisco IP phones, Cisco Aironet® wireless access points, or other standards-compliant PoE and 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 scales up to a maximum of 740W of PoE+ power.

Perpetual PoE is supported on the Cisco Catalyst 2960-X and 2960-XR Series. With Perpetual PoE, the PoE+ power is maintained during a switch reload. This is important for critical endpoints such as medical devices and for Internet of Things (IoT) endpoints such as PoE-powered lights, so that there is no disruption during a switch reboot.

Features and Benefits

Network Security

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,** enabling different users to authenticate on different VLANs. This feature enables each user to have a different data VLAN on the same interface.
- **Cisco TrustSec®,** which uses Security Group Exchange Protocol (SXP) to simplify security and policy enforcement throughout the network. For more information about Cisco TrustSec security solutions, visit https://www.cisco.com/c/en/us/solutions/enterprise-networks/trustsec/index.html.
- **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 for proliferating IPv6 devices, especially BYOD devices. It protects against rogue router advertisements, address spoofing, fake Dynamic Host Configuration Protocol (DHCP) replies, and other risks introduced by IPv6 technology.
- **Device sensor and device classifier,** enabling seamless versatile device profiles, including BYOD devices. They also enable the Cisco Identity Services Engine (ISE) to provision identity-based security policies. This feature is available on both the 2960-X and 2960-XR Series switches.
- **Cisco Trust Anchor Technology,** enabling easy distribution of a single universal image for all models of the 2960-X and 2960-XR Series by verifying the authenticity of Cisco IOS Software images. This technology allows the switch to perform Cisco 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 (DAI), and IP Source Guard.
- **Private VLANs** that restrict traffic between hosts in a common segment by segregating traffic at Layer 2, turning a broadcast segment into a nonbroadcast multiaccess-like segment. This feature is supported on both 2960-X and 2960-XR Series and is available in both LAN Base and IP Lite feature sets.
    - **Private VLAN Edge** to provide security and isolation between switch ports, which helps ensure that users cannot snoop on other users' traffic.

- **Unicast Reverse Path Forwarding (uRPF)** to help mitigate problems caused by the introduction of malformed or forged (spoofed) IP source addresses 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** to allow an IP phone and a PC to authenticate on the same switch port while being placed on appropriate voice and data VLANs.
- **Access Control Lists (ACLs)** for IPv6 and IPv4 for security and QoS ACL elements (ACEs).
  - **VLAN ACLs** on all VLANs to prevent unauthorized data flows from being bridged within VLANs.
  - **Router ACLs that** 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 to allow security policies to be applied on individual switch ports.
  - **Downloadable ACLs (dACLs)** to download ACLs from a RADIUS server during 802.1X authentication.
- **SSH, Kerberos, and SNMPv3,** providing network security by encrypting administrator traffic during Telnet and SNMP sessions. SSH, Kerberos, and the cryptographic version of SNMPv3 require a special cryptographic software image because of U.S. export restrictions.
- **SPAN,** with bidirectional data support, to allow Cisco Intrusion Detection System (IDS) to take action when an intruder is detected.
- **TACACS+ and RADIUS authentication** to facilitate centralized control of the switch and restrict unauthorized users from altering the configuration.
- **MAC address Notification** to notify administrators about users added to or removed from the network.
- **Multilevel security on console access** to prevent unauthorized users from altering the switch configuration.
- **BPDU Guard** to shut down Spanning-Tree Port Fast-enabled interfaces when BPDUs are received to avoid accidental topology loops.
- **Spanning Tree Root Guard (STRG)** to prevent edge devices that are not in the network administrator's control from becoming Spanning Tree Protocol (STP) root nodes.
- **Internet Group Management Protocol (IGMP) filtering** to provide multicast authentication by filtering out nonsubscribers and to limit the number of concurrent multicast streams available per port.
- **Dynamic VLAN assignment** 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.
- **Cisco Identity Services Engine (ISE)** support to enable the 2960-XR Series switches to offer security management for all connected devices.

Enhanced QoS

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.

- **Cisco Committed Information Rate (CIR)** function, providing bandwidth in increments as low as 8 Kbps.
- **Rate limiting** 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.

Scalability

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

Please refer to the Configuring SDM Templates page 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 10 lists the scalability for the LAN Lite and LAN Base licenses on the 2960-X Series. Table 11 lists the scalability for the IP Lite license on the 2960-XR Series.

Table 10. Cisco Catalyst 2960-X Series LAN Lite and LAN Base scalability

Resource	LAN Lite (default)	LAN Base (default)
Unicast MAC addresses	16,000	16,000
ARP Entries	8000	8000
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 11. Cisco Catalyst 2960-XR Series IP Lite scalability

Resources	Default (IP Lite)	VLAN (IP Lite)	IPv4 (IP Lite)
Unicast MAC addresses	16,000	32,000	16,000
IPv4 unicast direct routes	4000	250	16,000
IPv4 unicast indirect routes	1250	250	8000

Resources	Default (IP Lite)	VLAN (IP Lite)	IPv4 (IP Lite)
IPv6 unicast direct routes	4000	250	0
IPv6 unicast indirect routes	1250	250	0
IPv4 multicast routes and IGMP groups	1000	1000	1000
IPv6 multicast groups	1000	1000	0
IPv4 QoS ACEs	500	500	500
IPv6 QoS ACEs	250	500	0
IPv4 security ACEs	1000	1000	875
IPv6 security ACEs	500	500	0
IPv4 policy-based routing ACEs	500	0	375

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.
- **Flex Links** provide link redundancy with a convergence time of 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 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 redundant power supply (RPS) on 2960-X Series models.

Operational Efficiency

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 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, for zero-touch port-policy provisioning.
- **Cisco Auto-QoS** automatically configures QoS, allowing the switch to manage QoS policies based on traffic types, resulting in zero-touch traffic engineering. Auto-QoS supports eight 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 Generic Online Diagnostics (GOLD) and online diagnostics on switches in live networks help predict and detect failures faster.

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

Operational Simplicity

- **Cisco AutoSecure provides** a single-line CLI to enable baseline security features (Port Security, DHCP snooping, DAI). This feature simplifies security configurations.
- **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 helps 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 is 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.
- **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 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.
- **IGMP** Snooping for IPv4 and IPv6 and Multicast Listener Discovery (MLD) v1 and v2 Snooping provide fast client joins and leaves of multicast streams and limit bandwidth-intensive video traffic to only the requesters.
- **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 system 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 Time Protocol (NTP)** provides an accurate and consistent timestamp to all intranet switches.

Power Management

The Cisco Catalyst 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 nonoperation such as nights or weekends. SHM 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.

Specifications

Technical Specifications

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

Hardware specifications	
Flash memory	128 MB for LAN Base and IP Lite SKUs, 64 MB for LAN Lite SKUs
DRAM	512 MB for LAN Base and 256 MB for LAN Lite
CPU	APM86392 600 MHz 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
2960-XR models	
Cisco Catalyst 2960XR-48FPD-I	130.9 Mpps
Cisco Catalyst 2960XR-48LPD-I	130.9 Mpps

Forwarding rate: 64-byte Layer 3 packets	
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

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

Table 16. Cisco Catalyst 2960-XR Series mechanical specifications

Model	Dimensions		Weight	
	Inches (H x D x W)	Centimeters (H x D x W)	Pounds	Kilograms
WS-C2960XR-48FPD-I	1.75 x 16.0 x 17.5	4.45 x 40.8 x 44.5	14.6	6.6
WS-C2960XR-48LPD-I	1.75 x 16.0 x 17.5	4.45 x 40.8 x 44.5	14.0	6.4
WS-C2960XR-48TD-I	1.75 x 16.0 x 17.5	4.45 x 40.8 x 44.5	13.3	6.1
WS-C2960XR-24PD-I	1.75 x 16.0 x 17.5	4.45 x 40.8 x 44.5	13.6	6.2
WS-C2960XR-24TD-I	1.75 x 16.0 x 17.5	4.45 x 40.8 x 44.5	13.0	5.9
WS-C2960XR-48FPS-I	1.75 x 16.0 x 17.5	4.45 x 40.8 x 44.5	14.7	6.7
WS-C2960XR-48LPS-I	1.75 x 16.0x 17.5	4.45 x 40.8 x 44.5	14.2	6.4
WS-C2960XR-48TS-I	1.75 x 16.0 x 17.5	4.45 x 40.8 x 44.5	13.2	6.0
WS-C2960XR-24PS-I	1.75 x 16.0 x 17.5	4.45 x 40.8 x 44.5	13.7	6.2
WS-C2960XR-24TS-I	1.75 x 16.0 x 17.5	4.45 x 40.8 x 44.5	13.0	5.9

The power supplies could add up to 3.1 in. (7.9 cm) to the depth of the 2960-XR Series chassis.

Table 17. Cisco Catalyst 2960-X and 2960-XR Series environmental specifications

Environmental ranges		
	Fahrenheit	Centigrade
Operating temperature up to 5000 ft (1500 m)	23° to 113°F	-5° to 45°C
Operating temperature up to 10,000 ft (3000 m)	23° to 104°F	-5° to 40°C
Short-term exception at sea level*	23° to 131°F	-5° to 55°C
Short-term exception up to 5000 feet (1500 m)*	23° to 122°F	-5° to 50°C
Short-term exception up to 10,000 feet (3000 m)*	23° to 113°F	-5° to 45°C
Short-term exception up to 13,000 feet (4000 m)*	23° to 104°F	-5° to 40°C
Storage temperature up to 15,000 feet (4573 m)	-13° to 158°F	-25° to 70°C

Environmental ranges				
	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 77°F (25°C) ambient.				
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	40 dB	43 dB	5.2 B	5.5 B
Cisco Catalyst 2960XR-48LPD-I	40 dB	43 dB	5.2 B	5.5 B
Cisco Catalyst 2960XR-24PD-I	40 dB	43 dB	5.2 B	5.5 B
Cisco Catalyst 2960XR-48TD-I	22 dB	25 dB	3.3 B	3.6 B
Cisco Catalyst 2960XR-24TD-I	22 dB	25 dB	3.3 B	3.6 B
Cisco Catalyst 2960XR-48FPS-I	40 dB	43 dB	5.2 B	5.5 B

Environmental ranges				
Cisco Catalyst 2960XR-48LPS-I	40 dB	43 dB	5.2 B	5.5 B
Cisco Catalyst 2960XR-24PS-I	40 dB	43 dB	5.2 B	5.5 B
Cisco Catalyst 2960XR-48TS-I	22 dB	25 dB	3.3 B	3.6 B
Cisco Catalyst 2960XR-24TS-I	22 dB	25 dB	3.3 B	3.6 B
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			
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			

Environmental ranges	
Cisco Catalyst 2960XR-48TS-I	438,130
Cisco Catalyst 2960XR-24TS-I	557,320
PWR-C2-250WAC	1,000,000
PWR-C2-640WAC	1,000,000
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 and 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-ssssm 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-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-TC-MIB • CICSO-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 • ePM MIB • CISCO-STACKWISE-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 10 Gigabit Ethernet • IEEE 802.1ax

Category	Specification	
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 1493 - Bridge MIB • RFC 1542 - BOOTP extensions • RFC 1643 - Ethernet Interface MIB • RFC 1757 - RMON • RFC 1901 - SNMP v2C	• 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 • 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 to 4A	50 to 60 Hz
Cisco Catalyst 2960X-48LPD-L		5A to 2A	
Cisco Catalyst 2960X-24PD-L		5A to 2A	
Cisco Catalyst 2960X-48TD-L		1A to 0.5A	
Cisco Catalyst 2960X-24TD-L		1A to 0.5A	
Cisco Catalyst 2960X-48FPS-L		9A to 4A	
Cisco Catalyst 2960X-48LPS-L		5A to 2A	
Cisco Catalyst 2960X-24PS-L		5A to 2A	
Cisco Catalyst 2960X-24PSQ-L		2A to 4A	
Cisco Catalyst 2960X-48TS-L		1A to 0.5A	
Cisco Catalyst 2960X-24TS-L		1A to 0.5A	
Cisco Catalyst 2960X-48TS-LL		1A to 0.5A	
Cisco Catalyst 2960X-24TS-LL		1A to 0.5A	

Input voltage and current			
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	0.046KVA		
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		

Input voltage and current		
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	
	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[3]

Measured power consumption in watts[4]				
Model	**0% traffic[5]**	**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
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

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

[4] ATIS methodology.

[5] All traffic measured with EEE enabled.

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

Warranty

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.

Warranty Terms

Cisco enhanced limited lifetime hardware warranty	
Device covered	Applies to all Cisco Catalyst 2960-X and 2960-XR Series Switches.

Cisco enhanced limited lifetime hardware warranty	
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.

Technical Support and Services

Table 23. 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
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]

Technical services
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.

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 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 for 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 customers' software spending 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.

Licensing

Cisco DNA Subscription Licensing

Cisco Catalyst 2960-X and 2960-XR Series Switches support term-based Cisco DNA Essentials licenses (Cisco DNA Essentials).

Ordering and managing licenses with smart accounts: Creating smart accounts by using the Cisco Smart Software Manager (SSM) enables you to order devices and licensing packages and also to manage your software licenses from a centralized website. You can set up Cisco SSM to receive daily email alerts and to be notified of expiring add-on licenses that you want to renew.

When the license term expires, you can either renew the add-on license to continue using it or deactivate the add-on license and then reload the switch to continue operating with the base license capabilities.

Table 24. Features supported in Cisco DNA Essentials for Cisco Catalyst 2960-X and Cisco Catalyst 2960-XR Series

Category	Features
Network visibility	DNS-AS, Full Flexible NetFlow
Day-zero network bring-up automation	Cisco Network Plug-and-Play application
Cisco DNA Center	Discovery, inventory, topology, software image management
Network monitoring	Device 360

Table 25. Cisco Catalyst 2960-X product IDs for Cisco DNA Essentials licenses

Ports	Product ID	Description
24	C2960X-DNA-E-24=	C2960X Cisco DNA Essentials, 24-port term licenses
	C2960X-DNA-E-24-3Y	C2960X Cisco DNA Essentials, 24-port, 3-year term licenses
	C2960X-DNA-E-24-5Y	C2960X Cisco DNA Essentials, 24-port, 5-year term licenses
48	C2960X-DNA-E-48=	C2960X Cisco DNA Essentials, 48-port term licenses
	C2960X-DNA-E-48-3Y	C2960X Cisco DNA Essentials, 48-port, 3-year term licenses
	C2960X-DNA-E-48-5Y	C2960X Cisco DNA Essentials, 48-port, 5-year term licenses

Table 26. Cisco Catalyst 2960-XR product IDs for Cisco DNA Essentials licenses

Ports	Product ID	Description
24	C2960XR-DNA-E-24=	C2960XR Cisco DNA Essentials, 24-port term licenses
	C2960XR-DNA-E-24-3	C2960XR Cisco DNA Essentials, 24-port, 3-year term licenses
	C2960XR-DNA-E-24-5	C2960XR Cisco DNA Essentials, 24-port, 5-year term licenses
48	C2960XR-DNA-E-48=	C2960XR Cisco DNA Essentials, 48-port term licenses
	C2960XR-DNA-E-48-3	C2960XR Cisco DNA Essentials, 48-port, 3-year term licenses
	C2960XR-DNA-E-48-5	C2960XR Cisco DNA Essentials, 48-port, 5-year term licenses

Software Policy

Customers with Cisco IOS IP Lite, LAN Base, or 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 as long as the original end user continues to own or use the product or up to 1 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.

Cisco Embedded Support for Cisco DNA Term Components

Cisco Embedded Support delivers the right support for Cisco software products and suites. It will keep your business applications performing as expected and protect your investment. Cisco Embedded Support for the Cisco DNA Essentials

and Cisco DNA Advantage term components is included. Cisco Embedded Support provides access to TAC support, major software updates, maintenance and minor software releases, and the Cisco Embedded Support site, for increased productivity with anytime access.

Ordering Information

Table 27. 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 28. 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 29. 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 RJ-45
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 30. 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 RPS 2300 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 31. Cisco Catalyst 2960-XR Series power supply options

Part number	Description
PWR-C2-250WAC[6]	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
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

[6] 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.

Table 32. Cisco Catalyst 2960-X and 2960-XR Series SFP and 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 33. 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 cord for India
CAB-C15-ISR	Power cord for Israel
CAB-ACSA	Power cord 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 Italy, right angle
CAB-ACU-RA	Power cord UK, right angle
CAB-ACC-RA	Power cord China, right angle
CAB-ACA-RA	Power cord, Australia, 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

Part number	Description
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 34. Power cords for Cisco Catalyst 2960-XR Series

Part number	Description
CAB-TA-NA=	AC power cord for Cisco Catalyst 2960-XR (North America)
CAB-TA-AP=	AC power cord for Cisco Catalyst 2960-XR (Australia)
CAB-TA-AR=	AC power cord for Cisco Catalyst 2960-XR (Argentina)
CAB-TA-SW=	AC power cord for Cisco Catalyst 2960-XR (Switzerland)
CAB-TA-UK=	AC power cord for Cisco Catalyst 2960-XR (United Kingdom)
CAB-TA-JP=	AC power cord for Cisco Catalyst 2960-XR (Japan)
CAB-TA-250V-JP=	Japan 250VAC power cord for Cisco Catalyst 2960-XR (Japan)
CAB-TA-EU=	AC power cord for Cisco Catalyst 2960-XR (Europe)
CAB-TA-IT=	AC power cord for Cisco Catalyst 2960-XR (Italy)
CAB-TA-IN=	AC power cord for Cisco Catalyst 2960-XR (India)
CAB-TA-CN=	AC power cord for Cisco Catalyst 2960-XR (China)
CAB-TA-DN=	AC power cord for Cisco Catalyst 2960-XR (Denmark)
CAB-TA-IS=	AC power cord for Cisco Catalyst 2960-XR (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

Optics Compatibility Information

The Cisco Catalyst 2960-X and 2960-XR Series Switches support a wide range of optics. Because the list of supported optics is updated on a regular basis, consult the tables available here for compatibility information: Optics Compatibility.

Contact Cisco

For more information about Cisco products, contact:

- Phone: +1 800 553-NETS (6387)
- Worldwide Product Support
- Company website: Cisco.com

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Cisco Catalyst 2960-C and 3560-C Series Compact Switches

Cisco® Catalyst® compact switches (Figure 1) easily extend an intelligent, fully managed Cisco Catalyst wired switching infrastructure, including end-to-end IP and Borderless Network services, with a single Ethernet cable or fiber from the wiring closet. These attractive, small form-factor Gigabit and Fast Ethernet switches are ideal for connecting multiple devices on the retail sales floor and in classrooms, hotels, and factories and for extending wireless LAN networks: wherever space is at a premium and multiple cable runs could be challenging.

Cisco Catalyst 2960-C and 3560-C Series Compact Switches highlights:

- Extend a highly secure, intelligent, managed Cisco Catalyst infrastructure with a single Ethernet cable or fiber from the wiring closet
- Support for advanced security and services, including voice, video, and Cisco Borderless Network services, to remote endpoints
- Power over Ethernet (PoE) pass-through enables the compact switch to draw power from the wiring closet and pass it to end devices (selected models)
- Attractive, small form factor and fanless operation fit in confined spaces where multiple cable runs could be challenging
- Easy to deploy, manage and extend the network loop free
- Enhanced limited lifetime hardware warranty

Figure 1. Cisco Catalyst Compact Switches

Cisco Catalyst 2960-C Series Compact Switches

Cisco Catalyst 3560-C Series Compact Switches

Switch Configurations

Table 1 compares switch models.

Table 1. Available Cisco Catalyst Compact Switch models

Model	Ethernet Ports	PoE Output Ports	Available PoE Power	Uplinks	MACsec
2960C-8TC-L	8 x 10/100 Fast Ethernet	N/A		2 x 1G copper or 2 x 1G SFP	N/A
2960C-8TC-S	8 x 10/100 Fast Ethernet	N/A		2 x 1G copper or 2 x 1G SFP	N/A
2960CPD-8TT-L	8 x 10/100 Fast Ethernet	N/A		2 x 1G (PoE+ input)	N/A
2960C-8PC-L	8 x 10/100 Fast Ethernet	8 PoE	124W	2 x 1G copper or 2 x 1G SFP	N/A
2960CPD-8PT-L	8 x 10/100 Fast Ethernet	8 PoE	Up to 30.8W[1]	2 x 1G (PoE+ input)	N/A
2960C-12PC-L	12 x 10/100 Fast Ethernet	12 PoE	124W	2 x 1G copper or 2 x 1G SFP	N/A
2960CG-8TC-L	8 x 10/100/1000 Gigabit Ethernet	N/A		2 x 1G copper or 2 x 1G SFP	N/A
3560C-8PC-S	8 x 10/100 Fast Ethernet	8 PoE+	124W	2 x 1G copper or 2 x 1G SFP	N/A
3560C-12PC-S	12 x 10/100 Fast Ethernet	12 PoE+	124W	2 x 1G copper or 2 x 1G SFP	N/A
3560CG-8TC-S	8 x 10/100/1000 Gigabit Ethernet	N/A		2 x 1G copper or 2 x 1G SFP	Yes
3560CG-8PC-S	8 x 10/100/1000 Gigabit Ethernet	8 PoE+	124W	2 x 1G copper or 2 x 1G SFP	Yes
3560CPD-8PT-S	8 x 10/100/1000 Gigabit Ethernet	8 PoE	Up to 23.8W[2]	2 x 1G (PoE+ input)	Yes

Cisco Catalyst 2960-C and 3560-C Series Software

Cisco Catalyst 2960-C Series compact switches ship with the LAN Base version of Cisco IOS® Software, as available on other Cisco Catalyst 2960 Series Switches. Similarly, Cisco Catalyst 3560-C compact switches ship with the IP Base version of Cisco IOS Software, as with other 3560 Series switches. Neither series of compact switches can be upgraded.

Cisco Catalyst 2960-C switches deliver advanced Layer 2 switching with intelligent Layer 2 through 4 services for the network edge, such as voice, video, and wireless LAN services. The IP Base feature set on Cisco Catalyst 3560-C switches adds baseline enterprise services, including support for routed access, Cisco TrustSec®, media access control security (MACsec), and other Cisco Borderless Network services.

The LAN Base feature set offers enhanced intelligent services that include comprehensive Layer 2 features. The IP Base feature set provides baseline enterprise services in addition to all LAN Base features. IP Base also includes the support for routed access, MACsec, and Open Shortest Path First (OSPF).

[1] Using UPOE uplinks.
[2] Using UPOE uplinks.

Applications

Cisco Borderless Networks and Access Switching

Borderless Networks, a Cisco next-generation architecture, deliver the new workspace experience, connecting anyone, anywhere, using any device, to any resource - securely, reliably, transparently. The Cisco Borderless Networks architecture addresses primary IT and business challenges to help create a truly borderless experience by bringing interactions closer to the employee and customer. Innovations in switching help organizations deliver ease of operation, green efficiency, security, and performance to accelerate the way IT delivers and scales those services on the network.

Cisco Compact Switches for Retail

Major retailers are increasingly moving customer-facing IP-based applications and services to the middle of the sales floor. A typical transaction area on the floor will often include multiple point-of-sale terminals, card readers, IP phones, and printers. Free-standing kiosks, which allow customers to access online catalogs with click-to-chat capabilities and other applications, are being deployed. Cisco Catalyst compact switches extend fully managed IP services, including end-to-end PCI-compliant solutions, to the floor with a single Ethernet cable or fiber. Because of their quiet operation, attractive appearance, and flexible mounting options, they are ideally suited for mounting in confined spaces on the floor.

Cisco Compact Switches for Education

Video and distance learning applications have become a common part of the curriculum for K-12 and higher education. Support for IP phones and secure wired and wireless connectivity in the classroom are also common requirements. Yet schools and universities must often work within limited budgets and aging facilities, making wiring runs from a central point in the building to multiple devices in the classroom cost prohibitive. Cisco Catalyst compact switches extend fully managed IP services to the classroom with a single Ethernet cable or fiber. Quiet operation and flexible mounting options make them ideally suited for classrooms or confined areas nearby.

Cisco Compact Switches Extend Enterprise Networks

Enterprises often look to extend the reach of their networks - to bring wired connectivity to more employees and to support new wireless deployments. Running additional Ethernet cables for individual devices might be impractical, but the same security, services, and management must be supported. Cisco Catalyst 2960-C and 3560-C Series compact switches extend the wired Cisco access infrastructure, 8 or 12 ports at a time, with a single Ethernet cable or fiber, all while delivering the same services as the Cisco Catalyst switches in the wiring closet. PoE, quiet operation, and flexible mounting options allow placement in confined spaces.

Cisco Networked Sustainability: Good for Business, Better for Environment

- **PoE pass-through** gives the ability to power PoE end devices through drawing PoE from the wiring closet. The Cisco Catalyst 3560CPD-8PT-S and 2960CPD-8PT-L have eight downlink ports with two PoE input ports that allow it to be powered by another switch. These switches do not need a power supply and receives power over the uplink from an upstream PoE or Cisco Universal Power over Ethernet (Cisco UPOE™) device, providing deployment flexibility and availability. These switches are ideal for wiring and space-constrained applications.

- **Cisco EnergyWise** is an innovative architecture, added to the Cisco Catalyst 3560-C and 2960-C Series compact switches, that enables the measurement of power consumption in the network infrastructure and network-attached devices. EnergyWise encompasses a highly intelligent network-based approach to communicate messages that measure and control energy between network devices and endpoints. The network discovers Cisco EnergyWise-manageable devices, monitors their power consumption, and takes action based on business rules to reduce power consumption.
- **Efficient switch operation:** Cisco Catalyst 3560-C and 2960-C Series compact switches use hardware components created by Cisco providing optimum power saving, low-power operations for industry best-in-class power management, and power consumption capabilities. The Cisco Catalyst 3560-C ports are capable of reduced power modes so that ports not in use can move into a lower power utilization state.
- **IEEE 802.3at or PoE+:** Available on the Cisco Catalyst 3560-C is the latest in PoE technology, allowing capable devices to be powered with power output up to 30W per port. Table 2 outlines switch models and power capacity for the Cisco Catalyst 3560-C and 2960-C Series compact switches.

Table 2. Switch PoE and PoE+ Power Capacity

Switch Model	Powering Options	Available PoE Power (W)
WS-C2960CPD-8PT-L	1 PoE Uplink	0W
	2 PoE Uplinks	7W
	1 PoE+ Uplinks	7W
	1 PoE+ and 1 PoE Uplinks	15.4W
	2 PoE+ Uplinks	22.4W
	1 Cisco UPOE Uplink	30.8W
	Auxiliary Input	22.4W (30.8W*)
WS-C3560CPD-8PT-S	1 PoE+	0W
	2 PoE+	15.4W
	1 Cisco UPOE Uplink	23.8W
	Auxiliary Input	15.4W (23.8W*)
WS-C2960C-8PC-L	Internal Power Supply	124W
WS-C2960C-12PC-L	Internal Power Supply	124W
WS-C3560C-12PC-S	Internal Power Supply	124W
WS-C3560C-8PC-S	Internal Power Supply	124W
WS-C3560CG-8PC-S	Internal Power Supply	124W
(*) When the Auxiliary AC input is used as a backup to a Cisco UPOE powered switch		

Cisco Operational Excellence: Reducing Operating Costs

Cisco Catalyst 3560-C and 2960-C Series compact switches make deployment easy: reduce switch installation, configuration, troubleshooting time, and operational costs.

- **Cisco Catalyst Smart Operations** is a set of features to enhance operational excellence:
  - **Cisco Smart Install** is a transparent plug-and-play technology to configure the Cisco IOS Software image and switch configuration without user intervention. Smart Install utilizes dynamic IP address allocation and the assistance of other switches to facilitate installation, providing transparent network plug and play.

- **Cisco Smart Configuration** provides a single point of management for a group of switches and in addition adds the ability to archive and back up configuration files to a file server or switch. A group of switches can be upgraded or configured from a single point in the network.
- **Cisco Auto SmartPorts** provides automatic configuration as devices connect to the switch port, allowing autodetection and plug and play of the device onto the network. It configures the port with predefined configurations encapsulating years of Cisco networking expertise, including security, IP telephony, availability, QoS, and manageability features with minimal effort and expertise.
- **USB file storage and console** for file backup, distribution, and simplified operations allow the user to back up and boot from a USB device and allow for Mini USB console access along with traditional RS-232 console connectivity.
- **Cisco Smart Troubleshooting** is an extensive array of debug diagnostic commands and system health checks within the switch, including Generic Online Diagnostics (GOLD).

- **Easy-to-Use Deployment and Control Features**
  - **Automatic QoS (AutoQoS)** simplifies QoS configuration in voice over IP (VoIP) networks by issuing interface and global switch commands to detect Cisco IP phones, classify traffic, and help enable egress queue configuration.
  - **Dynamic Host Configuration Protocol (DHCP)** autoconfiguration of multiple switches through a boot server eases switch deployment.
  - **Auto-Negotiation** 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.
  - **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 Traceroute** 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.

Network Management

The Cisco Catalyst 3560-C and 2960-C Series Switches offer a superior CLI for detailed configuration and administration. These 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, including:

- Support for new technologies and services from initial deployment to day-to-day administration and management, such as EnergyWise, identity, Cisco Auto Smartports, Cisco Smart Install, and much more
- Configuration management tools built from Cisco experience and Cisco Validated Design recommendations
- Monitoring and troubleshooting capabilities that incorporate Cisco hardware best practices and diagnostics features
- Automation in managing hardware inventories, security vulnerabilities (PSIRTS), and platform end-of-life and support cycles

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

Cisco Network Assistant

A PC-based network management application designed for small and medium-sized business (SMB) networks with up to 250 users, 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 http://www.cisco.com/go/cna.

Enhanced Work Space Experience for End Users

Borderless Security

The Cisco Catalyst compact switches provide superior Layer 2 threat defense capabilities for mitigating man-in-the-middle attacks (such as MAC, IP, and ARP spoofing). TrustSec, a primary element of Borderless Security Architecture, helps enterprise customers secure their networks, data and resources with policy-based access control, identity and role-aware networking, pervasive integrity, and confidentiality.

The borderless security is enabled by the following feature sets in the Cisco Catalyst 3560-C and 2960-C Series compact switches:

- Threat defense
- Cisco TrustSec
- Other advanced security features

Threat Defense

Cisco Integrated Security Features are an industry-leading solution available on Cisco Catalyst switches that proactively protects your critical network infrastructure. Delivering powerful, easy-to-use tools to effectively prevent the most common and potentially damaging Layer 2 security threats, Cisco Integrated Security Features provide robust security throughout the network. Cisco Integrated Security Features include Port Security, DHCP Snooping, Dynamic ARP Inspection, and IP Source guard.

- **Port Security** secures the access to an access or trunk port based on MAC address. It limits the number of learned MAC addresses to deny MAC address flooding.
- **DHCP Snooping** prevents malicious users from spoofing a DHCP server and sending out bogus addresses. This feature is used by other primary security features to prevent a number of other attacks such as ARP poisoning.
- **Dynamic ARP Inspection (DAI)** helps ensure user integrity by preventing malicious users from exploiting the insecure nature of the ARP protocol.
- **IP source guard** prevents a malicious user from spoofing or taking over another user's IP address by creating a binding table between the client's IP and MAC address, port, and VLAN.

Cisco TrustSec

TrustSec secures access to the network, enforces security policies, and delivers standard-based security solutions such as 802.1X enabling secure collaboration and policy compliance. TrustSec capabilities reflect Cisco thought leadership, innovations, and commitment to customer success. These new capabilities include:

- **IEEE 802.1AE MACsec** with prestandard 802.1X-REV Key management: industry's first fixed switches with prestandard 802.1X-Rev key management. Available on Cisco Catalyst 3560-C Series Switches, MACsec provides Layer 2, line rate Ethernet data confidentiality and integrity on host facing ports, protecting against man-in-the-middle attacks (snooping, tampering, and replay).
- **Flexible authentication** that supports multiple authentication mechanisms including 802.1X, MAC Authentication Bypass, and web authentication using a single, consistent configuration.
- **Open mode** that creates a user friendly environment for 802.1X operations.
- **Integration of device profiling technology and guest access** handling with Cisco switching to significantly improve security while reducing deployment and operational challenges.

- **RADIUS Change of Authorization and Downloadable ACLs** for comprehensive policy management capabilities.
- **802.1X Supplicant with Network Edge Access Transport (NEAT)** enables extended secure access where compact switches in the conference rooms have the same level of security as switches inside the locked wiring closet.

Other Advanced Security Features

Other Advanced Security features include but are not limited to:

- **Private VLAN Edge** provides security and isolation between switch ports, which helps ensure that users cannot snoop on other users' traffic.
- **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.
- **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.
- Bidirectional data support on the **Switched Port Analyzer (SPAN)** port 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 PortFast-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.

Table 3 shows switch hardware information.

Table 3. Cisco Catalyst 3560-C and 2960-C Series Compact Switch Hardware

Description	Specification		
Performance		**Cisco Catalyst 3560-C**	**Cisco Catalyst 2960-C**
	Forwarding Bandwidth	10 Gbps	10 Gbps
	Flash memory	64 MB	64 MB
	Memory DRAM	128 MB	128 MB
	Max VLANs	1005	255*
	VLAN IDs	4000	4000
	Maximum transmission unit (MTU)	Up to 9000 bytes	Up to 9000 bytes
	Jumbo frames	9018 bytes	9018 bytes
	Forwarding rate 64 Byte Packet Cisco Catalyst 3560-C		
	WS-C3560CG-8PC-S	14.9 mpps	
	WS-C3560CPD-8PT-S	14.9 mpps	
	WS-C3560CG-8TC-S	14.9 mpps	
	WS-C3560C-8PC-S	4.2 mpps	
	WS-C3560C-12PC-S	4.8 mpps	
	Forwarding rate 64 Byte Packet Cisco Catalyst 2960-C		
	WS-C2960CG-8TC-L	14.9 mpps	
	WS-C2960CPD-8PT-L	4.2 mpps	
	WS-C2960CPD-8TT-L	4.2 mpps	
	WS-C2960C-8PC-L	4.2 mpps	
	WS-C2960C-8TC-L	4.2 mpps	
	WS-C2960C-8TC-S	4.2 mpps	
	WS-C2960C-8PT-L	4.2 mpps	
	WS-C2960C-12PT-L	4.8 mpps	
	Resource Cisco Catalyst 3560-C, 2960-C		
	See the release notes for the SDM Templates for 3560-C and 2960-C. • 2960-C: http://www.cisco.com/en/US/docs/switches/lan/catalyst2960c_3560c/software/release/12.2_55_ex/release/notes/ol23942.html. • 3560-C: http://www.cisco.com/en/US/docs/switches/lan/catalyst2960c_3560c/software/release/12.2_55_ex/release/notes/ol24071.html.		
Connectors and cabling	**Cisco Catalyst 3560-C and 2960-C with SFP-based ports:** • 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, -ZX, -BX, -T*, -FX*, and CWDM SFP-based ports: LC fiber connectors (single/multimode fiber) • 100BASE-LX, -BX, -FX: SFP-based ports: LC fiber connectors (single/multimode fiber) *GLC-T and GLC-GE-100FX are not supported For the complete list of SFPs supported, see http://www.cisco.com/en/US/docs/interfaces_modules/transceiver_modules/compatibility/matrix/OL_6981.html.		

Description	Specification		
Power connectors	• Customers can provide power to a switch by using the internal power supply. The connector is located at the back of the switch. The internal power supply is an autoranging unit (3560CPD-8PT-S, 2960CPD-8TT-L, 2960CPD-8PT-L do not require a power supply). • 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. **Note:** The Cisco Catalyst 3560CPD-8PT-S, 2960CPD-8PT-L and 2960CPD-8TT-L have an option for an external power adapter if desired.		
Indicators	• 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)	**Cisco Catalyst 2960-C**	**Inches**	**Centimeters**
	WS-C2960CPD-8TT-L	1.75x10.6x6.8	4.44x26.9x17.2
	WS-C2960CPD-8PT-L	1.75x10.6x6.8	4.44x26.9x17.2
	WS-C2960CG-8TC-L	1.75x10.6x8.4	4.44x26.9x21.3
	WS-C2960C-8TC-L	1.75x10.6x8.4	4.44x26.9x21.3
	WS-C2960C-8TC-S	1.75x10.6x8.4	4.44x26.9x21.3
	WS-C2960C-8PC-L	1.75x10.6x9.4	4.44x26.9x23.8
	WS-C2960C-12PC-L	1.75x10.6x9.4	4.44x26.9x23.8
	Cisco Catalyst 3560-C	**Inches**	**Centimeters**
	WS-C3560CG-8TC-S	1.75x10.6x8.4	4.44x26.9x21.3
	WS-C3560CG-8PC-S	1.75x10.6x9.4	4.44x26.9x23.8
	WS-C3560CPD-8PT-S	1.75x10.6x7.6	4.44x26.9x19.4
	WS-C3560C-8PC-S	1.75x10.6x9.4	4.44x26.9x21.3
	WS-C3560C-12PC-S	1.75x10.6x9.4	4.44x26.9x21.3
Weight	**Cisco Catalyst 2960-C**	**Pounds**	**Kilograms**
	WS-C2960CPD-8TT-L	2.4	1.08
	WS-C2960CPD-8PT-L	2.4	1.08
	WS-C2960C-8TC-L	2.8	1.27
	WS-C2960C-8TC-S	2.8	1.27
	WS-C2960CG-8TC-L	3.0	1.35
	WS-C2960C-8PC-L	4.1	1.86
	WS-C2960C-12PC-L	4.1	1.86
	Cisco Catalyst 3560-C	**Pounds**	**Kilograms**
	WS-C3560CG-8TC-S	3.0	1.35
	WS-C3560CPD-8PT-S	3.3	1.50
	WS-C3560C-8PC-S	4.1	1.86
	WS-C3560C-12PC-S	4.1	1.86
	WS-C3560CG-8PC-S	4.3	1.92

Description	Specification				
Environmental ranges		**Cisco Catalyst 3560-C**		**Cisco Catalyst 2960-C**	
	Operating* temperature up to 5000 ft (1524 m)	-5°C to +45°C**	+23°F to +113°F	-5°C to +45°C**	+23°F to +113°F
	Operating* temperature up to 10,000 ft (3048 m)	-5°C to +45°C	+23°F to +113°F	-5°C to +45°C	+23°F to +113°F
	Storage temperature up to 15,000 ft (4572 m)	-25°C to +70°C	-13°F to +158°F	-25°C to +70°C	-13°F to +158°F
	Operating altitude	Up to 3048 m	Up to 10,000 ft	Up to 3048 m	Up to 10,000 ft
	Storage altitude	Up to 4000 m	Up to 15,000 ft	Up to 4000 m	Up to 15,000 ft
	Operating relative humidity	5% to 95% noncondensing		5% to 95% noncondensing	
	Storage relative humidity	5% to 95% noncondensing		5% to 95% noncondensing	
	* Minimum ambient temperature for cold start is 0°C (+32°F). ** FE SKUs only GE SKU have a max operation temp of 40C.				
Acoustic noise	ISO 7779 and ISO 9296: Bystander positions operating to an ambient temperature of 25°C.				
	Model	**Sound pressure LpA (Typical)**	**Model**	**Sound pressure LpA (Typical)**	
	Cisco Catalyst 3560-C	0dB (fanless)	Cisco Catalyst 2960-C	0dB (fanless)	
Mean time between failure (MTBF)	**Cisco Catalyst 3560-C**	**MTBF**	**Cisco Catalyst 2960-C**	**MTBF**	
	3560CG-8PC-S	355,830	2960CPD-8PT-L	346,590	
	3560CG-8TC-S	488,549	2960CPD-8TT-L	471,888	
	3560CPD-8PT-S	333,354	2960CG-8TC-L	542,482	
	3560C-8PC-S	373,635	2960C-8TC-L	516,980	
	3560C-12PC-S	357,027	2960C-8TC-S	516,980	
			2960C-8PC-L	373,635	
			2960C-12PC-L	357,027	

* The 2960-C LAN Lite only supports 64 VLANs.

Table 4 shows switch power specifications.

Table 4. Power Specifications for Cisco Catalyst 3560-C and 2960-C Series Compact Switch

Description	Specification			
Measured 100% throughput power consumption	**Cisco Catalyst 3560-C**	**Switch Power Consumption Watts**	**Cisco Catalyst 2960-C**	**Switch Power Consumption Watts**
	3560CPD-8PT-S	Single Uplink = 21W[1] Dual Uplink = 22W[1]	2960CPD-8PT-L	Single Uplink = 12W[1] Dual Uplink = 15W[1]
	3560CG-8PC-S	24W	2960CPD-8TT-L	Single Uplink = 12W[1] Dual Uplink = 15W[1]
	3560CG-8TC-S	20W	2960CG-8TC-L	18W
	3560C-8PC-S	17W	2960C-8TC-L	11W
	3560C-12PC-S	19W	2960C-8TC-S	11W
			2960C-8PC-L	17W
			2960C-12PC-L	19W

Description	Specification			
Measured 5% throughput power consumption	**Cisco Catalyst 3560-C**	**Switch Power Consumption Watts**	**Cisco Catalyst 2960-C**	**Switch Power Consumption Watts**
	3560CPD-8PT-S	Single Uplink = 20W[1] Dual Uplink = 21W[1]	2960CPD-8PT-L	Single Uplink = 12W[1] Dual Uplink = 15W[1]
	3560CG-8PC-S	24W	2960CPD-8TT-L	Single Uplink = 12W[1] Dual Uplink = 15W[1]
	3560CG-8TC-S	18W	2960CG-8TC-L	18W
	3560C-8PC-S	17W	2960C-8TC-L	11W
	3560C-12PC-S	19W	2960C-8TC-S	11W
			2960C-8PC-L	17W
			2960C-12PC-L	18W
Measured 100% throughput power consumption (with maximum possible PoE loads)	**Cisco Catalyst 3560-C**	**Switch Power Consumption Watts**	**Cisco Catalyst 2960-C**	**Switch Power Consumption Watts**
	3560CPD-8PC-S	40W	2960CPD-8PT-L	43W
	3560CG-8PC-S	165W	2960C-8PC-L	157W
	3560C-8PC-S	158W	2960C-12PC-L	158W
	3560C-12PC-S	159W		
AC/DC input voltage and current	**Cisco Catalyst 3560-C**			**Cisco Catalyst 2960-C**		
		I/P Voltage	I/P Current		I/P voltage	I/P Current
	3560CPD-8PT-S	37-57VDC	.01-.6A	2960CPD-8PT-L	37-57VDC	.01-.6A
	3560CG-8PC-S	100-240 VAC	1.7-.8A	2960CPD-8TT-L	37-57VDC	.01-.3A
	3560CG-8TC-S	100-240 VAC	.37-.2A	2960CG-8TC-L	100-240 VAC	.34-.2A
	3560C-8PC-S	100-240 VAC	1.6-.8A	2960C-8TC-L	100-240 VAC	.21-.1A
	3560C-12PC-S	100-240 VAC	1.6-.8A	2960C-8TC-S	100-240 VAC	.21-.1A
				2960C-8PC-L	100-240 VAC	1.6-.8A
				2960C-12PC-L	100-240 VAC	1.6-.8A
	Note: For the AC values of the 3560CPD and 2960CPD SKUs see Hardware Installation Guide.					
Power rating	**Cisco Catalyst 3560-C**				**Cisco Catalyst 2960-C**			
		Watts	KVA	BTU		Watts	KVA	BTU
	3560CPD-8PT-S	51	.05	170.6	2960CPD-8PT-L	15	0.04	136
	3560CG-8PC-S	165	.17	580[1]	2960CPD-8TT-L	15	0.04	136
	3560CG-8TC-S	20	.05	170.6	2960CG-8TC-L	18	0.04	136
	3560C-8PC-S	158	.16	546[1]	2960C-8TC-L	11	.03	102
	3560C-12PC-S	159	.16	546[1]	2960C-8TC-S	11	.03	102
					2960C-8PC-L	157	.16	546[1]
					2960C-12PC-L	158	.16	546[1]
	[1] Switch dissipation only (excludes PoE which is dissipated at the end device). Power measurement are best and worst case. Best Case is 1 PoE Connection. Worst case is 2 PoE+ connections.							
PoE and PoE+	• Maximum power supplied per Port for PoE+ is 30W • Maximum power supplied per port for PoE: 15.4W							

Table 5 shows switch management and standards support.

Table 5. Management and Standards Support for Cisco Catalyst 3560-C and 2960-C Series Compact Switch

Description	Specification	
Management	• 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	• 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 • ePM MIB
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 • 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	• 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

Description	Specification	
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 • RFC 1542: BOOTP Extensions • RFC 959: FTP • RFC 1058: RIP Routing • RFC 1112: IP Multicast and IGMP • RFC 1157: SNMPv1 • RFC 1166: IP Addresses • RFC 1253: OSPF Routing • RFC 1256: ICMP Router Discovery • RFC 1305: NTP • RFC 1492: TACACS+ • RFC 1493: Bridge MIB • RFC 1542: Bootstrap Protocol • RFC 1583: OSPFv2 • RFC 1643: Ethernet Interface MIB • RFC 1723: RIPv2 Routing • RFC 1757: RMON	• RFC 1812: IP Routing • RFC 1901: SNMPv2C • RFC 1902-1907: SNMPv2 • RFC 1981: MTU Path Discovery IPv6 • FRC 2068: HTTP • RFC 2080: RIP for IPv6 • RFC 2131: DHCP • RFC 2138: RADIUS • RFC 2233: IF MIB • RFC 2236: IP Multicast • RFC 2328: OSPFv2 • RFC 2273-2275: SNMPv3 • RFC 2373: IPv6 Aggregatable Addrs • RFC 2453: RIPv2 Routing • RFC 2460: IPv6 protocol • RFC 2461: IPv6 Neighbor Discovery • RFC 2462: IPv6 Autoconfiguration • RFC 2463: ICMP IPv6 • RFC 2474: DiffServ Precedence • RFC 2597: Assured Forwarding • RFC 2598: Expedited Forwarding • RFC 2571: SNMP Management • RFC 2740: OSPF for IPv6 • RFC 3046: DHCP Relay Agent Information Option • RFC 3101, 1587: NSSAs • RFC 3376: IGMPv3 • RFC 3580: 802.1x RADIUS
Note: RFC, MIB and Standards compliance is dependant on IOS Level		

Table 6 shows switch safety and compliance information.

Table 6. Safety and Compliance

Description	Specification
Safety standards	• UL 60950-1 • CAN/CSA 22.2 No. 60950-1 • EN 60950-1 • IEC 60950-1 • CE Marking • GB 4943 • IEC 60825
Electromagnetic emissions certifications	• FCC Part 15, CFR 47, Class A, North America • EN 55022 (CISPR22) and EN 55024 (CISPR24), CE marking, European Union • AS/NZS, Class A, CISPR22:2004 or EN55022, Australia and New Zealand • VCCI Class A, V-3/2007.04, Japan • KCC (Formerly MIC, GB17625.1-1998) Class A, KN24/KN22, Korea • ANATEL, Brazil • CCC, China • GOST, Russia
Environmental	Reduction of Hazardous Substances (ROHS) 6
Telco	Common Language Equipment Identifier (CLEI) code

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.

Cisco Enhanced Limited Lifetime Hardware Warranty

Cisco Catalyst 2960-C and 3560-C Series Switches come with an enhanced limited lifetime hardware warranty (E-LLW) that includes 90 days of Cisco Technical Assistance Center (TAC) support and next-business-day hardware replacement free of change. (See Table 7.)

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

Adding a Cisco technical services contract to your device coverage provides access to the Cisco TAC beyond the 90-day period allowed by the E-LLW. It also can provide a variety of hardware replacement options to meet critical business needs, as well as updates for licensed premium Cisco IOS Software, and registered access to the extensive Cisco.com knowledge base and support tools.

Footnotes

1. Cisco operating system updates include the following: maintenance releases, minor updates, and major updates within the licensed feature set.
2. 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 ship is provided. Restrictions apply; review the appropriate service descriptions for details.

Table 7. Enhanced Limited Lifetime Hardware Warranty

	Cisco Enhanced Limited Lifetime Hardware Warranty
Device covered	Applies to Cisco Catalyst 2960-C and 3560-C Series compact switches.
Warranty duration	As long as the original customer owns the product.
EoL policy	In the event of discontinuance of product manufacture, Cisco warranty support is limited to 5 years from the announcement of discontinuance.
Hardware replacement	Cisco or its service center will use commercially reasonable efforts to ship a replacement for next business day delivery, where available. Otherwise, a replacement will be shipped within 10 working days after receipt of the RMA request. Actual delivery times might vary depending on customer location.
Effective date	Hardware warranty commences from the date of shipment to customer (and in case of resale by a Cisco reseller, not more than 90 days after original shipment by Cisco).
TAC support	Cisco will provide during business hours, 8 hours per day, 5 days per week basic configuration, diagnosis, and troubleshooting of device-level problems for up to a 90-day period from the date of shipment of the originally purchased Cisco Catalyst 2960 and 3560 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 for Cisco Catalyst 3560-C and 2960-C Series Compact Switches

Customers with Cisco Catalyst LAN Base and IP Base software feature sets will be provided with 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.

Cisco and Partner Services for Next-Generation Cisco Catalyst Compact Switches

Enable the innovative, secure, intelligent edge in the Borderless Network Architecture using personalized services from Cisco and our partners. Through a discovery process that begins with understanding your business objectives, we help you integrate the next-generation Cisco Catalyst fixed switches into your architecture and incorporate network services onto that platform. Sharing knowledge and leading practices, we support your success every step of the way as you deploy, absorb, manage, and scale new technology. Choose from a flexible suite of support services designed to meet your business needs and help you maintain high-quality network performance while controlling operational costs. (See Table 8.)

Table 8. Technical Services Available for Cisco Catalyst 3560-C and 2960-C Series Compact Switches

Technical Services
Cisco SMARTnet® Service • Around-the-clock, global access to the Cisco Technical Assistance Center (TAC) • Unrestricted access to the extensive Cisco.com knowledge base and tools • Next-business-day, 8x5x4, 24x7x4, and 24x7x2 advance hardware replacement and onsite parts replacement and installation available • Ongoing operating system software updates within the licensed feature set • Proactive diagnostics and real-time alerts on Smart Call Home enabled devices
Cisco Smart Foundation Service • Next business day advance hardware replacement as available • Business hours access to SMB TAC (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 Focused Technical Support Services • 3 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 SMARTnet or SP Base contracts on all network equipment are required

Ordering Information

Tables 9 and 10 give ordering information for the Cisco Catalyst 3560-C and 2960-C Series compact switches and accessories.

To place an order, visit the Cisco Ordering homepage at http://www.cisco.com/en/US/ordering/or13/or8/order_customer_help_how_to_order_listing.html.

Table 9. Ordering Information for Cisco Catalyst 3560-C and 2960-C Series Compact Switches

Cisco Catalyst 3560-C Compact Switches	
WS-C3560CG-8TC-S	3560C Switch 8 GE, 2 x Dual Purpose Uplink, IP Base
WS-C3560CG-8PC-S	3560C Switch 8 GE PoE+, 2 x Dual Purpose, IP Base
WS-C3560CPD-8PT-S	3560C PD PSE Switch 8 GE PoE, 2 x 1G Copper Uplink, IP Base
WS-C3560C-8PC-S	3560C Switch 8 FE PoE+, 2 x Dual Purpose Uplink, IP Base
WS-C3560C-12PC-S	3560C Switch 12 FE PoE+, 2 x Dual Purpose Uplink, IP Base
Cisco Catalyst 2960-C Compact Switches	
WS-C2960CPD-8TT-L	2960C PD Switch 8 FE, 2 x 1G, PoE+ LAN Base
WS-C2960CPD-8PT-L	2960C PD PSE Switch 8 FE PoE, 2 x 1G, PoE+ LAN Base
WS-C2960CG-8TC-L	2960C Switch 8 GE, 2 x Dual Purpose Uplink, LAN Base
WS-C2960C-8TC-L	2960C Switch 8 FE, 2 x Dual Purpose Uplink, LAN Base
WS-C2960C-8TC-S	2960C Switch 8 FE, 2 x Dual Purpose Uplink, LAN Lite
WS-C2960C-8PC-L	2960C PoE Switch 8 FE PoE, 2 x Dual Purpose Uplink, LAN Base
WS-C2960C-12PC-L	2960C PoE Switch 12 FE PoE, 2 x Dual Purpose Uplink, LAN Base

Table 10. Ordering Information for Cisco Catalyst 3560-C and 2960-C Series Compact Switch Accessories

Part Number	Description
CMP-CBLE-GRD=	Cable guard for the 3560-C and 2960-C compact switches
CMP-MGNT-TRAY =	Magnet and Mounting Tray for 3560-C and 2960-C compact switches
PWR-ADPT=	Power Adapter for the 3560-C and 2960-C compact switches
PWR-CLP	Power Clip for the 3560-C and 2960-C compact switches
CMP-DIN-MNT=	DIN Rail Mount for 3560-C and 2960-C compact switches
RCKMNT-19-CMPCT=	19-Inch Rack Mounting Brackets
RCKMNT-23-CMPCT=	23- and 24-Inch Rack Mounting Brackets

For more information about Cisco products, contact:

- United States and Canada: (toll free) 800 553-NETS (6387)
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- Australia: 612 9935 4107
- Other: 408 526-7209
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