

NOTICE

Please note that this bid from Software Information Solutions for CRFQ DOT20*157 was received in the Purchasing Division prior to the bid opening date and time, on May 13, 2020. However the bid submitted did not get read aloud during the bid opening.



Beverly Toler

Support Services Supervisor



Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

State of West Virginia
 Request for Quotation
 21 - Info Technology

RECEIVED

2020 MAY 13 AM 8:46

WV PURCHASING
 DIVISION

Proc Folder: 691866

Doc Description: ADDENDUM 2 CISCO ROUTERS & SWITCHES OR EQUAL (63200125)

Proc Type: Central Contract - Fixed Amt

Date Issued	Solicitation Closes	Solicitation No	Version
2020-04-30	2020-05-13 13:30:00	CRFQ 0803 DOT2000000157	3

BID RECEIVING LOCATION

BID CLERK
 DEPARTMENT OF ADMINISTRATION
 PURCHASING DIVISION
 2019 WASHINGTON ST E
 CHARLESTON WV 25305
 US

VENDOR

Vendor Name, Address and Telephone Number:

Software Information Systems, LLC
 200 Association Drive, Suite 210
 Charleston, WV 25311
 304 768-1645

Bid 1

FOR INFORMATION CONTACT THE BUYER

Crystal G Husted
 (304) 558-2402
 crystal.g.husted@wv.gov

Signature X

[Handwritten Signature]
 Charles D. Atherton

FEIN #

61-1371695

DATE

5-13-2020

All offers subject to all terms and conditions contained in this solicitation

ADDITIONAL INFORMATION:

THE STATE OF WEST VIRGINIA PURCHASING DIVISION FOR THE AGENCY, WEST VIRGINIA DIVISION OF HIGHWAYS, IS SOLICITING BIDS TO ESTABLISH A CONTRACT FOR THE PURCHASE OF CISCO ROUTERS AND SWITCHES OR EQUAL PER THE ATTACHED DOCUMENTS.

QUESTIONS REGARDING THE SOLICITATION MUST BE SUBMITTED IN WRITING TO CRYSTAL.G.HUSTEAD@WV.GOV PRIOR TO THE QUESTION PERIOD DEADLINE CONTAINED IN THE INSTRUCTIONS TO VENDORS SUBMITTING BIDS

INVOICE TO		SHIP TO	
DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV25305-0430 US		DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV 25305-0430 US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	3.1.1 Cisco ISR 4321 Series Chassis Bundle or Equal-Year 1	10.00000	EA	1700.00	17,000.00

Comm Code	Manufacturer	Specification	Model #
43222612	CISCO		

Extended Description :

3.1.1 CISCO ISR 4321 Series Chassis Bundle or equal with Year 1 Smart Net Coverage

INVOICE TO		SHIP TO	
DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV25305-0430 US		DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV 25305-0430 US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
2	3.1.1 Cisco ISR 4321 Series Chassis Bundle or Equal-Year 2	10.00000	EA	1400.00	14,000.00

Comm Code	Manufacturer	Specification	Model #
43222612			

Extended Description :

3.1.1 CISCO ISR 4321 Series Chassis Bundle or equal with Year 2 Smart Net Coverage

INVOICE TO		SHIP TO	
DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV25305-0430 US		DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV 25305-0430 US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
3	3.1.1 Cisco ISR 4321 Series Chassis Bundle or Equal-Year 3	10.00000	EA	<i>included</i>	

Comm Code	Manufacturer	Specification	Model #
43222609			

Extended Description :
 3.1.1 CISCO ISR 4321 Series Chassis Bundle or equal with Year 3 Smart Net Coverage

INVOICE TO		SHIP TO	
DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV25305-0430 US		DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV 25305-0430 US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
4	3.1.1 Cisco ISR 4321 Series Chassis Bundle or Equal-Year 4	10.00000	EA	<i>included</i>	

Comm Code	Manufacturer	Specification	Model #
43222609			

Extended Description :
 3.1.1 CISCO ISR 4321 Series Chassis Bundle or equal with Year 4 Smart Net Coverage

INVOICE TO		SHIP TO	
DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV25305-0430 US		DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV 25305-0430 US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
5	3.1.2 Cisco ISR 4331 Series Chassis Bundle or Equal-Year 1	6.00000	EA	<i>3700.00</i>	<i>22,200.00</i>

Comm Code	Manufacturer	Specification	Model #
43222609	CISCO		

Extended Description :

3.1.2 CISCO ISR 4331 Series Chassis Bundle or Equal with Year 1 Smart Net Coverage.

INVOICE TO	SHIP TO
DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV25305-0430 US	DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV 25305-0430 US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
6	3.1.2 Cisco ISR 4331 Series Chassis Bundle or Equal-Year 2	6.00000	EA	included	

Comm Code	Manufacturer	Specification	Model #
43222609			

Extended Description :

3.1.2 CISCO ISR 4331 Series Chassis Bundle or Equal with Year 2 Smart Net Coverage.

INVOICE TO	SHIP TO
DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV25305-0430 US	DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV 25305-0430 US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
7	3.1.2 Cisco ISR 4331 Series Chassis Bundle or Equal-Year 3	6.00000	EA	included	

Comm Code	Manufacturer	Specification	Model #
43222612			

Extended Description :

3.1.2 CISCO ISR 4331 Series Chassis Bundle or equal with Year 3 Smart Net coverage

INVOICE TO		SHIP TO	
DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV25305-0430 US		DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV 25305-0430 US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
8	3.1.2 Cisco ISR 4331 Series Chassis Bundle or Equal-Year 4	6.00000	EA	<i>included</i>	

Comm Code	Manufacturer	Specification	Model #
43222612			

Extended Description :
 3.1.2 CISCO ISR 4331 Series Chassis Bundle or equal with Year 4 Smart Net coverage

INVOICE TO		SHIP TO	
DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV25305-0430 US		DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV 25305-0430 US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
9	3.1.3 Cisco ISR 1101 Series Port Router or Equal-Year 1	55.00000	EA	<i>1,000</i>	<i>55,000</i>

Comm Code	Manufacturer	Specification	Model #
43222609	<i>CISCO</i>		

Extended Description :
 3.1.3 Cisco ISR 1101 4 port router or equal with Year 1 Smart Net Coverage

INVOICE TO		SHIP TO	
DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV25305-0430 US		DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV 25305-0430 US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
10	3.1.3 Cisco ISR 1101 Series Port Router or Equal-Year 2	55.00000	EA	<i>included</i>	

Comm Code	Manufacturer	Specification	Model #
43222609	CIS		

Extended Description :

3.1.3 Cisco ISR 1101 4 port router or equal with Year 2 Smart Net Coverage

INVOICE TO	SHIP TO
DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV25305-0430 US	DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV 25305-0430 US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
11	3.1.3 Cisco ISR 1101 Series Port Router or Equal-Year 3	55.00000	EA	126.24	

Comm Code	Manufacturer	Specification	Model #
43222609			

Extended Description :

3.1.3 Cisco ISR 1101 4 port router or equal with Year 3 Smart Net Coverage

INVOICE TO	SHIP TO
DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV25305-0430 US	DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV 25305-0430 US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
12	3.1.3 Cisco ISR 1101 Series Port Router or Equal-Year 4	55.00000	EA	126.24	

Comm Code	Manufacturer	Specification	Model #
43222609			

Extended Description :

3.1.3 Cisco ISR 1101 4 port router or equal with Year 4 Smart Net Coverage

INVOICE TO		SHIP TO	
DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV25305-0430 US		DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV 25305-0430 US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
13	3.1.4 Cisco Extreme Networks 12 Port Switch or Equal	90.00000	EA	800.00	72000.00

Comm Code	Manufacturer	Specification	Model #
43222609	Cisco		

Extended Description :
3.1.4 Cisco Extreme Networks 12 Port Switch or Equal

INVOICE TO		SHIP TO	
DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV25305-0430 US		DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV 25305-0430 US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
17	3.1.5 Cisco Extreme Networks 48 Port Switch or Equal	70.00000	EA	1600.00	112000.00

Comm Code	Manufacturer	Specification	Model #
43222609	Cisco		

Extended Description :
3.1.5 Cisco Extreme Networks 48 Port Switch or Equal

INVOICE TO		SHIP TO	
DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV25305-0430 US		DIVISION OF HIGHWAYS INFORMATION SERVICE DIVISION 1900 KANAWHA BLVD E, BLDG 5 RM 920 CHARLESTON WV 25305-0430 US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
21	3.1.6 Cisco Extreme Networks 24 Port Switch or Equal	15.00000	EA	1100.00	16500.00

Comm Code	Manufacturer	Specification	Model #
43222609	Cisco		

Extended Description :

3.1.6 Cisco Extreme Networks 24 Port Switch or Equal

SCHEDULE OF EVENTS

<u>Line</u>	<u>Event</u>	<u>Event Date</u>
1	VENDOR QUESTION DEADLINE	2020-04-24

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

CONSTRUCTION CONTRACTS: Under W. Va. Code § 5-22-1(i), the contracting public entity shall not award a construction contract to any bidder that is known to be in default on any monetary obligation owed to the state or a political subdivision of the state, including, but not limited to, obligations related to payroll taxes, property taxes, sales and use taxes, fire service fees, or other fines or fees.

ALL CONTRACTS: Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) that: (1) for construction contracts, the vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: Software Integration Systems LLC

Authorized Signature: [Signature] Date: 5-11-2020

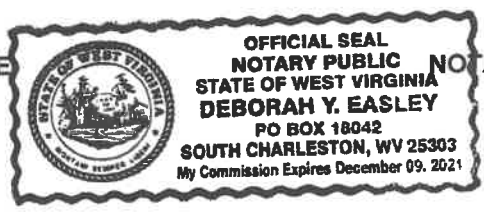
State of West Virginia

County of Kanawha, to-wit:

Taken, subscribed, and sworn to before me this 11 day of May, 2020

My Commission expires Dec 9, 2021

AFFIX SEAL HERE



NOTARY PUBLIC

[Signature]

DESIGNATED CONTACT: Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

Charles D. Arnett, Sr. Client Executive
(Name, Title)

(Printed Name and Title)

200 Association Dr. Charles, WV 25311
(Address)

304 768-1645 Fax 304 768-1671
(Phone Number) / (Fax Number)

carnett@thinksis.com
(email address)

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

Software Information Systems LLC
(Company)

Charles D. Arnett Sr. Client Executive
(Authorized Signature) (Representative Name, Title)

Charles D. Arnett Sr. Client Executive
(Printed Name and Title of Authorized Representative)

5-13-2020
(Date)

304 768-1645 Fax 304 768-1671
(Phone Number) (Fax Number)

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: DOT2000000157

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received:

(Check the box next to each addendum received)

- | | |
|--|--|
| <input checked="" type="checkbox"/> Addendum No. 1 | <input type="checkbox"/> Addendum No. 6 |
| <input checked="" type="checkbox"/> Addendum No. 2 | <input type="checkbox"/> Addendum No. 7 |
| <input type="checkbox"/> Addendum No. 3 | <input type="checkbox"/> Addendum No. 8 |
| <input type="checkbox"/> Addendum No. 4 | <input type="checkbox"/> Addendum No. 9 |
| <input type="checkbox"/> Addendum No. 5 | <input type="checkbox"/> Addendum No. 10 |

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Software Information Systems, LLC
Company
Charles D. Arr. H.
Authorized Signature
5-13-2020
Date


NOTE: This addendum acknowledgment should be submitted with the bid to expedite document processing.
Revised 6/8/2012

EXHIBIT A - PRICING PAGE

CRFQ DOT2000000157

TOTAL EQUIPMENT PRICE

LOCATION - BUILDING 5, ROOM A-920 CHARLESTON, WV 25305

Item Number	Quantity	Description	Unit Price	Smart Net Year 1	Smart Net Year 2	Smart Net Year 3	Smart Net Year 4	TOTAL COST
3.1.1	10	Cisco ISR 4321 Series Chassis Bundle item number ISR4321/K9 (Cisco ISR 4321 (2GE, 2NIM, 4G FLASH, 4G DRAM, IPB)) Router or equal with (4) years Smart Net or equal	\$1,700.00	included	included	included	included	\$17,000.00
3.1.2	6	Cisco ISR 4331 Series Chassis Bundle item number ISR4331/K9 (Cisco ISR 4331 (3GE, 2NIM, 1SM, 4G FLASH, 4G DRAM, IPB)) Router or equalwith (4) Years Smart Net or equal	\$3,700.00	included	included	included	included	\$22,200.00
3.1.3	55	Cisco ISR 1101 4 Ports GE Ethernet WAN Router, item number C1101-4P or equal. with (4) years Smart Net or equal	\$1,000.00	included	included	included	included	\$55,000.00
3.1.4	90	CISCO CATALYST 3560-CX 12 PORT POE, 10G UPLINKS IP BASE	\$800.00					\$72,000.00
3.1.5	70	CATALYST 1000 48 PORT GE, POE, 4X10G	\$1,600.00					\$112,000.00
3.1.6	15	CATALYST 1000 24 PORT GE, POE, 4 X 10G	\$1,100.00					\$16,500.00
Total Bid Amount								\$294,700.00



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

Contents

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Product Details	7
Licensing and Software Policy	9
Product Specifications	9
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Cisco Capital	20
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The Cisco® Catalyst® Compact Switches easily expand your Ethernet and Multigigabit Ethernet infrastructure outside the wiring closet to enable new workspaces, extend wireless LANs, and connect PoE devices. These fanless, small form-factor switches are ideal for space-constrained deployments where multiple cable runs would be challenging. With speeds that reach 10Gbps, the Cisco Catalyst 3560CX Multigigabit Ethernet Switches support current and next-generation wireless speeds and standards (including 802.11ac Wave 2) on existing cabling infrastructure.



Figure 1.
Cisco Catalyst 3560-CX and 2960-CX Switch Family.

Product Overview

The Cisco Catalyst 3560-CX and 2960-CX Series Compact Switches help optimize network deployments. These Gigabit Ethernet (GbE) and Multigigabit Ethernet (mGig) managed switches are ideal for high-speed data connectivity, Wi-Fi backhaul, and Power over Ethernet (PoE+) connectivity in places where space is at a premium. With a single copper or fiber cable from the wiring closet, Cisco Catalyst compact switches enable IP connectivity for devices such as IP phones, wireless access points, surveillance cameras, PCs, and video endpoints.

With their quiet, fanless design and compact footprint, these switches can come out of the data closet and be placed closer to the users. This means shorter cable runs and greater flexibility as you grow your network.

Cisco Catalyst 3560-CX and 2960-CX Series Compact Switch Highlights

- 8 or 12 Gigabit Ethernet ports with line rate forwarding performance
- 6 Gigabit Ethernet plus 2 Multigigabit Ethernet (100 Mbps/1/2.5/5/10 Gbps) ports with line rate forwarding performance (selected model)
- Gigabit and Multigigabit (100 Mbps/1/2.5/5/10 Gbps) copper, small form-factor pluggable (SFP) or 10G SFP+ uplinks
- Power over Ethernet Plus (PoE+) support with up to 240W of PoE budget
- Power over Ethernet (PoE) pass-through enables the compact switch to draw Cisco Universal PoE
- (Cisco UPOE™) power from the wiring closet and pass it to end devices (selected model) with the additional option to be powered by auxiliary AC-DC or DC-DC power adapter
- Cisco Instant Access mode to enable single point of management and simplify operation (selected models)
- Advanced Layer 2 (LAN Base) and Layer 3 (IP Base) support with an option to upgrade to IP services

- Fanless design and silent operation
- Enhanced Limited Lifetime Warranty (E-LLW)

Features and Benefits

Like the larger Cisco Catalyst switches typically used in wiring closets, the Cisco Catalyst Compact switches are a managed option for consistency across your LAN switching network. Unlike unmanaged switches and hubs, they provide advanced networking features for flexibility, security, and scale.

Table 1 lists many of the Cisco Catalyst 3560-CX and 2960-CX switch features and benefits.

Table 1. Compact Switch Features and Benefits Summary

Feature	Benefits
Hardware	
Small form factor; fanless design; silent operation	The switch can be used in open workspaces and other areas that cannot tolerate equipment noise and where multiple cable runs could be difficult, expensive, and intrusive.
Flexible mounting options	The switch can be mounted on the wall, under a desk, rack, DIN rail, or practically anywhere they are needed.
Cisco Multigigabit Ethernet	<p>With the enormous growth of 802.11ac and new wireless applications, wireless devices are driving the demand for more network bandwidth. This creates a need for a technology that supports speeds higher than 1 Gbps on all cabling infrastructure. Cisco Multigigabit Ethernet technology is a unique Cisco innovation that allows you to achieve bandwidth between speeds of 100Mbps and 10 Gbps over traditional Cat 5e cabling or above. In addition, the Multigigabit ports on the Cisco Catalyst Compact switch support PoE+, which is increasingly important for next-generation workspaces and Internet of Things (IoT) ecosystems. The Multigigabit Ethernet ports can also be used as uplinks to connect to traditional access switches such as the Cisco Catalyst 3850/4500 switches.</p> <p>Cisco Multigigabit technology offers significant benefits for a diverse range of speeds, cable types, and PoE power. The benefits can be grouped into three different areas:</p> <ul style="list-style-type: none"> • Multiple speeds: Cisco Multigigabit technology supports autonegotiation of multiple speeds on switch ports. The supported speeds are 100 Mbps, 1 Gbps, 2.5 Gbps, and 5 Gbps on Cat 5e cable and up to 10 Gbps over Cat 6a cabling. • Cable type: The technology supports a wide range of cable types, including Cat 5e, Cat 6, and Cat 6a or above. • PoE power: The technology supports PoE and PoE+ for all the supported speeds and cable types.
10-Gigabit SFP+ uplinks	Accommodates business growth and increased traffic, such as aggregate upstream gigabit traffic loads from 802.11ac Wi-Fi access points.
Increased PoE+ Scale	Provides up to 240W of PoE+ budget (twice the power per switch than previous series).
Perpetual PoE	Provides uninterrupted power to a powered-down device even when the switch is booting. This eliminates the need for a backup power source.

Feature	Benefits
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PoE pass-through	PoE pass-through gives the ability to power PoE end devices through drawing Cisco UPOE from the wiring closet. The Cisco Catalyst WS-C3560CX-8PT-S has eight downlink ports with two Cisco UPOE input ports that allow it to be powered by another switch. These switches do not need a power supply and receive power over the uplink from an upstream PoE or Cisco UPOE device, providing deployment flexibility and availability. These switches are ideal for wiring-constrained and space-constrained applications.
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Management and Operations

Cisco Instant Access Mode	Available on Cisco Catalyst 3560-CX switches with 10 G SFP+ uplinks, this optional mode enables a single point of management and operation for campus networks. Multiple Cisco Catalyst 3560-CX compact switches with 10 G SFP+ uplinks can be connected to Cisco Catalyst 6500 or 6800 core switches, and the entire configuration can then work as a single extended switch with a common management domain. In this mode, compact switches inherit all the features of the Cisco Catalyst 6500 or 6800. Advanced Cisco Catalyst 6500 and 6800 features like MPLS and EVN can be extended to the access layer, so the Cisco Catalyst Instant Access solution can be deployed on all or a subset of the campus network.
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Cisco Network Plug 'n Play (PnP)	Network Plug-n-Play (PnP) is a secure, scalable solution that accelerates network device deployments by automating the installation and configuration of Cisco IOS software. The Cisco Catalyst 3560-CX and 2960-CX switches are 'Network-PnP Ready' and can be used as part of the APIC-EM solution for automated switch deployments. This feature helps improve productivity, cut costs, reduce downtime, and enhance the user experience.
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Cisco Catalyst Smart Operations	This comprehensive set of Cisco Catalyst technologies and Cisco IOS Software features simplify LAN deployment, configuration, and troubleshooting. <ul style="list-style-type: none"> • Cisco Smart Install enables the configuration of the Cisco IOS Software image and switch without user intervention. • Cisco Auto Smartports provides automatic configuration as end devices connect to the switch port, allowing autodetection and plug-and-play of the device onto the network. Interface templates containing configurations or policies that can be applied to ports are also supported. • Cisco Smart Troubleshooting is an extensive array of debug diagnostic commands and system health checks, including Generic Online Diagnostics (GOLD) and Onboard Failure Logging (OBFL). • Embedded Event Manager (EEM), supported on the Cisco Catalyst 3560-CX, provides real-time network event detection and onboard automation. You can adapt the behavior of your network devices to align with business needs.
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Cloud and System Management	<ul style="list-style-type: none"> • Cisco Prime[®] Infrastructure provides comprehensive network lifecycle management with an extensive library of features that automate initial and day-to-day management. 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. • Cisco Network Assistant is a PC-based, centralized network management and configuration application for small and medium-sized business (SMB) with up to 250 users. An intuitive GUI lets you easily apply common services across Cisco switches, routers, and access points. • Cisco Active Advisor is a cloud-based service that provides essential lifecycle information about your network inventory. Available by itself or as a component of other Cisco network management applications, it helps you reduce your network's overall risk by keeping you up-to-date on the status of your products.
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Feature

Benefits

Operational Simplicity

- **Link Aggregation Control Protocol (LACP)** for creating Ethernet channeling with devices that conform to IEEE 802.3ad. Similar to Cisco EtherChannel technology and PAgP.
- **Dynamic Host Configuration Protocol (DHCP)** autoconfiguration of multiple switches through a boot server.
- **Multicast VLAN Registration (MVR)** continuously sends multicast streams in a multicast VLAN. Isolates streams from subscriber VLANs for bandwidth and security reasons.
- **Voice VLAN** keeps 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).

Security

Cisco TrustSec®

A suite of components that secures networks, data, and resources with policy-based access control, identity, and role-aware networking with the following elements:

- **Cisco TrustSec SXP** support to simplify security and policy enforcement throughout the network. For more information about Cisco TrustSec security solutions, visit cisco.com/go/TrustSec.
- **Hardware on the Cisco Catalyst 3560-CX for IEEE 802.1AE MACsec** for Layer 2, line-rate Ethernet data confidentiality and integrity on host-facing ports. Protects 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.
- **Monitor mode** that creates a user-friendly environment for 802.1X operations.
- **RADIUS change of authorization and downloadable ACLs** for comprehensive policy management.
- **802.1X supplicant with Network Edge Access Transport (NEAT)** for extended secure access; compact switches in the conference rooms have the same level of security as switches inside a locked wiring closet.

Threat Defense

Advanced, integrated security features that provide threat defense capabilities for mitigating man-in-the-middle attacks and protecting your critical network infrastructure.

- **Superior Layer 2 capabilities** for mitigating MAC, IP, and ARP spoofing risks. Also protects port security, guards against DHCP snooping, and supports Dynamic ARP Inspection and IP Source Guard.
- **Ipv6 first-hop security** with Binding Integrity Guard, RA Guard, and DHCP Guard.
- **Private VLAN** provides security and isolation between switch ports.
- **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.
- **Secure Shell (SSH), Kerberos, and Simple Network Management Protocol Version 3 (SNMPv3) that encrypt** administrator traffic during Telnet and SNMP sessions to keep access credentials secure.
- **Port-based Access Control List (ACL)** to let the switch automatically allow or block packets based on policies for source and destination IP addresses. Rules can be set up differently on a port-by-port basis.
- **Secure Boot** to make sure that only signed and authorized images can load on the switch.
- **Cisco AutoSecure** to simplify security configurations with a single-line CLI.

Power Management and Energy Efficiency

Switch Hibernate Mode

Innovative technology that puts the switch in an ultra-low power mode during periods of nonoperation such as nights and weekends. The switch can be configured to be in the hibernate mode using the Cisco Energy Management Suite.

IEEE 802.3az or Energy-Efficient Ethernet (EEE)

Ports dynamically sense idle periods between traffic bursts and quickly switch the interfaces into a low-power idle mode, reducing power consumption.

Perpetual PoE

Provides uninterrupted power to a powered-down device even when the switch is booting. This eliminates the need for a backup power source.

Feature	Benefits
PoE pass-through	PoE pass-through gives the ability to power PoE end devices through drawing Cisco UPOE from the wiring closet. The Cisco Catalyst 3560CX-8PT-S has eight downlink ports with two Cisco UPOE input ports that allow it to be powered by another switch. These switches do not need a power supply and receive power over the uplink from an upstream PoE or Cisco UPOE device, providing deployment flexibility and availability.
Cisco Energy Management Suite (formerly EnergyWise)	Measures power consumption of network infrastructure and network-attached devices and enforces rules to reduce energy usage.
Power Supply	80-Plus Silver Certified.

Traffic Management and QoS

Application Visibility	NetFlow Lite lets you maintain awareness of all application traffic on the network. It helps capture and record specific packet flows. Exports flow data in the NetFlow Version 9 format for analysis on a wide range of Cisco and third-party collectors.
Advanced Quality of Service	Intelligent traffic management with flexible mechanisms for marking, classifying, and scheduling traffic at wire speed. Includes: <ul style="list-style-type: none"> • 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.

Product Details

Switch Models

The Cisco Catalyst Compact Switches are available in nine switch models. They vary by whether they support both Layer 2 and Layer 3 services or Layer 2 services only; whether they support Power over Ethernet Plus (PoE+); by the number of Gigabit Ethernet and Multigigabit Ethernet ports; the aggregate power provided, and the type of cabling connections they support.

Tables 2, 3, and 4 compare the available switch models and list the software package that ships by default with each model and how much PoE power is available for the downlink ports.

Table 2. Cisco Catalyst 3560-X Compact Switch Models and Default Software

Model	Ethernet Ports	PoE Output Ports	Available PoE Power	Uplinks	Default Software
3560CX-8TC-S	8 x 10/100/1000 Gigabit Ethernet	NA		2 x 1G copper plus 2 x 1G SFP	IP Base (IP Services with RTU License)
3560CX-12TC-S	12 x 10/100/1000 Gigabit Ethernet	NA		2 x 1G copper plus 2 x 1G SFP	IP Base (IP Services with RTU License)
3560CX-8PC-S	8 x 10/100/1000 Gigabit Ethernet	8 PoE+	240W	2 x 1G copper plus 2 x 1G SFP	IP Base (IP Services with RTU License)
3560CX-12PC-S	12 x 10/100/1000 Gigabit Ethernet	12 PoE+	240W	2 x 1G copper plus 2 x 1G SFP	IP Base (IP Services with RTU License)
3560CX-12PD-S	12 x 10/100/1000 Gigabit Ethernet	12 PoE+	240W	2 x 1G copper plus 2 x 1G SFP	IP Base (IP Services with RTU License)

Model	Ethernet Ports	PoE Output Ports	Available PoE Power	Uplinks	Default Software
				10G SFP+	with RTU License)
C3560CX-8PT-S	8 x 10/100/1000 Gigabit Ethernet	8 PoE+	Up to 146W	2 x 1G copper (Cisco UPOE+ uplinks)	IP Base (IP Services with RTU License)
C3560CX-8XPD-S	6 x 10/100/1000 Gigabit Ethernet plus 2 Multigigabit Ethernet 100/2500/5000/10000	8 PoE+	240W	2 x 10G SFP+	IP Base (IP Services with RTU License)

Table 3. C3560CX-8PT-S Switch PoE and PoE+ Power Capacity

Model	Powering Option	Available PoE Power (W)	Can Switch Be Powered with Uplinks?
3560CX-8TC-S	Internal power supply	0W	No
3560CX-12TC-S	Internal power supply	0W	No
3560CX-8PC-S	Internal power supply	240W	No
3560CX-12PC-S	Internal power supply	240W	No
3560CX-12PD-S	Internal power supply	240W	No
C3560CX-8PT-S	1 PoE uplink	0W	No
	2 PoE uplinks	0W	Yes
	1 PoE+ uplink	0W	Yes
	2 PoE+ uplinks	20W	Yes
	1 Cisco UPOE uplink	22W	Yes
	2 Cisco UPOE uplinks	68W	Yes
	Auxiliary input	54W	Yes
	1 PoE uplink plus auxiliary input	65W	Yes
	2 PoE uplinks plus auxiliary input	76W	Yes
	1 PoE+ uplink plus auxiliary input	76W	Yes
	2 PoE+ uplinks plus auxiliary input	98W	Yes
	1 Cisco UPOE uplink plus auxiliary input	100W	Yes
2 Cisco UPOE uplinks plus auxiliary input	146W	Yes	
3560CX-8XPD-S	Internal power supply	240W	No

Table 4. Cisco Catalyst 2960-X Compact Switch Models and Default Software

Model	Ethernet Ports	PoE Output Ports	Available PoE Power	Uplinks	Default Software
2960CX-8TC-L	8 x 10/100/1000 Gigabit Ethernet	N/A		2 x 1G copper plus 2 x 1G SFP	LAN Base

Model	Ethernet Ports	PoE Output Ports	Available PoE Power	Uplinks	Default Software
2960CX-8PC-L	8 x 10/100/1000 Gigabit Ethernet	8 PoE+	124W	2 x 1G copper plus 2 x 1G SFP	LAN Base

Note: All four uplink ports (two copper and two fiber) can be used simultaneously and also as downlinks.

Switch Software

Cisco Catalyst 3560-CX compact switches ship with the IP Base version of Cisco IOS® Software. The 3560-CX switches can be upgraded to use the IP Services version of IOS Software with a Right-To-Use (RTU) License. The IP Base and IP Services feature set on Cisco Catalyst 3560-CX switches provides baseline enterprise services in addition to all LAN Base features. They support Layer 3 networking features, including support for routed access, Cisco TrustSec, Media Access Control security (MACsec), and other advanced network services. The IP Services feature set provides full Layer 3 routing capabilities with Open Shortest Path First (OSPF), Border Gateway Protocol (BGP), Enhanced Internal Gateway Routing Protocol (EIGRP), Policy-Based Routing (PBR), Multicast Routing, and Virtual Routing and Forwarding (VRF) Lite.

Cisco Catalyst 2960-CX Series compact switches ship with the LAN Base version of Cisco IOS Software. These 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.

Licensing and Software Policy

Customers with Cisco Catalyst LAN Base and IP Base software feature sets will receive 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 for 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.

Product Specifications

Table 5 provides hardware specifications for the Cisco Catalyst 3560-CX and 2960-CX compact switches.

Table 5. Cisco Catalyst 3560-CX and 2960-CX Series Compact Switch Hardware

Description	Specification														
Performance	<table border="1"> <thead> <tr> <th>Cisco Catalyst 3560-CX</th> <th>Cisco Catalyst 2960-CX</th> </tr> </thead> <tbody> <tr> <td>Forwarding Bandwidth</td> <td>12 Gbps</td> </tr> <tr> <td>Switching Bandwidth (full-duplex capacity)</td> <td>24 Gbps</td> </tr> <tr> <td>Flash memory</td> <td>128 MB</td> </tr> <tr> <td>Memory DRAM</td> <td>512 MB</td> </tr> <tr> <td>Max VLANs</td> <td>255</td> </tr> <tr> <td>VLAN IDs</td> <td>4000</td> </tr> </tbody> </table>	Cisco Catalyst 3560-CX	Cisco Catalyst 2960-CX	Forwarding Bandwidth	12 Gbps	Switching Bandwidth (full-duplex capacity)	24 Gbps	Flash memory	128 MB	Memory DRAM	512 MB	Max VLANs	255	VLAN IDs	4000
	Cisco Catalyst 3560-CX	Cisco Catalyst 2960-CX													
	Forwarding Bandwidth	12 Gbps													
	Switching Bandwidth (full-duplex capacity)	24 Gbps													
	Flash memory	128 MB													
	Memory DRAM	512 MB													
	Max VLANs	255													
VLAN IDs	4000														

Description	Specification
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Maximum Transmission Unit (MTU)	Up to 9000 bytes	Up to 9000 bytes
Jumbo frames	9198 bytes	9198 bytes

Forwarding rate 64 Byte Packet Cisco Catalyst 3560-CX and 2960-CX

2960CX-8TC-L	17.9 mpps
2960CX-8PC-L	17.9 mpps
3560CX-8TC-S	17.9 mpps
3560CX-12TC-S	23.8 mpps
3560CX-8PC-S	17.9 mpps
3560CX-12PC-S	23.8 mpps
3560CX-12PD-S	50.6 mpps
3560CX-8PT-S	14.9 mpps
3560CX-8XPD-S	68.4 mpps

Resource Cisco Catalyst 3560-CX and 2960-CX

See the release notes for the SDM Templates for 3560-CX and 2960-CX:

https://www.cisco.com/c/en/us/td/docs/switches/lan/catalyst2960cx_3650cx/software/release/15-2_3_e/release_notes/rn-1523e-2960cx-3560cx.html

Connectors and cabling

Cisco Catalyst 3560-CX and 2960-CX 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

Cisco Catalyst 3560-CX and 2960-CX SFP and SFP+ interfaces:

For information about supported SFP/SFP+ modules, refer to the Transceiver Compatibility matrix tables at <https://www.cisco.com/c/en/us/support/interfaces-modules/transceiver-modules/products-device-support-tables-list.html>

Description	Specification
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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
- 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 WS-C3560CX-8PT-S has an option for an external AC-DC or DC-DC power adapter if desired.

Indicators Per-port status: Link integrity, disabled, activity, speed, full-duplex System status: System, link status, link duplex, link speed

Dimensions (H x W x D)	Cisco Catalyst 3560-CX and 2960-CX	
	Inches	Centimeters
2960CX-8TC-L	1.75 x 10.6 x 8.4	4.44 x 26.9 x 21.3
2960CX-8PC-L	1.75 x 10.6 x 9.4	4.44 x 26.9 x 23.8
3560CX-8TC-S	1.75 x 10.6 x 8.4	4.44 x 26.9 x 21.3
3560CX-12TC-S	1.75 x 10.6 x 8.4	4.44 x 26.9 x 21.3
3560CX-8PC-S	1.75 x 10.6 x 9.4	4.44 x 26.9 x 23.8
3560CX-12PC-S	1.75 x 10.6 x 9.4	4.44 x 26.9 x 23.8
3560CX-12PD-S	1.75 x 10.6 x 9.4	4.44 x 26.9 x 23.8
3560CX-8PT-S	1.75 x 10.6 x 7.0	4.44 x 26.9 x 17.7
3560CX-8XPD-S	1.75 x 10.6 x 10.4	4.44 x 26.9 x 26.4

Weight	Cisco Catalyst 3560-CX and 2960-CX	
	Pounds	Kilograms
2960CX-8TC-L	3.8	1.72
2960CX-8PC-L	5.0	2.27
3560CX-8TC-S	3.8	1.72
3560CX-12TC-S	3.9	1.77
3560CX-8PC-S	5.0	2.27
3560CX-12PC-S	5.1	2.31
3560CX-12PD-S	5.1	2.31
3560CX-8PT-S	3.5	1.58
3560CX-8XPD-S	6.0	2.72

Environmental ranges	Cisco Catalyst 3560-CX		Cisco Catalyst 2960-CX	
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

Description	Specification			
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)			
	** 10G SKUs have a maximum operating temperature of 40°C. For WS-C3560CX-8XPD-S, the max operating temperature will be 35°C when installed inverted and under fully loaded conditions (max. POE and 10G SFP+ transceivers installed)			
Mean Time Between Failure (MTBF)	Cisco Catalyst 3560-CX	MTBF	Cisco Catalyst 2960-CX	MTBF
	3560CX-8TC-S	756,260	2960CX-8TC-L	756,260
	3560CX-12TC-S	755,270	2960CX-8PC-L	569,530
	3560CX-8PC-S	569,530		
	3560CX-12PC-S	553,140		
	3560CX-12PD-S	528,480		
	3560CX-8PT-S	737,740		
	3560CX-8XPD-S	528,480		

Table 6 describes the power specifications for Cisco Catalyst 3560-CX and 2960-CX switches.

Table 6. Power Specifications for Cisco Catalyst 3560-C and 2960-C Series Compact Switches

Description	Specification			
Measured 100% throughput power consumption	Cisco Catalyst 3560-CX	Switch Power Consumption Watts	Cisco Catalyst 2960-CX	Switch Power Consumption Watts
	3560CX-8TC-S	18.8W	2960CX-8TC-L	18.8W
	3560CX-12TC-S	20.8W	2960CX-8PC-L	24.5W
	3560CX-8PC-S	24.4W		
	3560CX-12PC-S	26.3W		
	3560CX-12PD-S	29.5W		
	3560CX-8PT-S	Single uplink = 22.9W ¹ Dual uplink = 24.3W ¹		
	3560CX-8XPD-S	35.2W		
Measured 10% throughput power consumption	Cisco Catalyst 3560-CX	Switch Power Consumption Watts	Cisco Catalyst 2960-CX	Switch Power Consumption Watts
	3560CX-8TC-S	18.6W	2960CX-8TC-L	18.7W
	3560CX-12TC-S	20.6W	2960CX-8PC-L	24.3W
	3560CX-8PC-S	24.2W		
	3560CX-12PC-S	26.1W		
	3560CX-12PD-S	28.9W		

Description	Specification					
	3560CX-8PT-S	Single uplink = 22.8W ¹ Dual uplink = 24.2W ¹				
	3560CX-8XPD-S	34.5W				
Measured 0% throughput power consumption (with EEE)	Cisco Catalyst 3560-CX	Switch Power Consumption Watts	Cisco Catalyst 2960-CX	Switch Power Consumption Watts		
	3560CX-8TC-S	14.8W	2960CX-8TC-L	15W		
	3560CX-12TC-S	15.6W	2960CX-8PC-L	20.4W		
	3560CX-8PC-S	21.3W				
	3560CX-12PC-S	21.3W				
	3560CX-12PD-S	24.9W				
	3560CX-8PT-S	Single uplink = 20.1W ² Dual uplink = 21.3W ¹				
	3560CX-8XPD-S	32.7W				
Measured 100% throughput power consumption (with maximum possible PoE loads)	Cisco Catalyst 3560-CX	Switch Power Consumption Watts	Cisco Catalyst 2960-CX	Switch Power Consumption Watts		
	3560CX-8TC-S	NA	2960CX-8TC-L	NA		
	3560CX-12TC-S	NA	2960CX-8PC-L	161.4W		
	3560CX-8PC-S	269.1W				
	3560CX-12PC-S	275.2W				
	3560CX-12PD-S	278W				
	3560CX-8PT-S	180W				
	3560CX-8XPD-S	285.1W				
AC/DC input voltage and current	Cisco Catalyst 3560-CX			Cisco Catalyst 2960-CX		
		I/P Voltage	I/P Current		I/P voltage	I/P Current
	3560CX-8TC-S	100-240 VAC	0.5-0.2A	2960CX-8TC-L	100-240 VAC	0.5-0.2A
	3560CX-12TC-S	100-240 VAC	0.5-0.2A	2960CX-8PC-L	100-240 VAC	3.25-1.5A
	3560CX-8PC-S	100-240 VAC	3.25-1.5A			
	3560CX-12PC-S	100-240 VAC	3.25-1.5A			
	3560CX-12PD-S	100-240 VAC	3.25-1.5A			
	3560CX-8PT-S	18-60VDC	6.0-1.6A			
3560CX-8XPD-S	100-240 VAC	3.25-1.5A				

Description	Specification								
Power rating	Cisco Catalyst 3560-CX				Cisco Catalyst 2960-CX				
		Watts	KVA	BTU		Watts	KVA	BTU	
	3560CX-8TC-S	30	0.05	170.6	2960CX-8TC-L	30	0.05	170.6	
	3560CX-12TC-S	30	0.05	170.6	2960CX-8PC-L	170	0.19	648.3 ¹	
	3560CX-8PC-S	280	0.3	1023.6 ¹					
	3560CX-12PC-S	280	0.3	1023.6 ¹					
	3560CX-12PD-S	290	0.31	1057.7 ¹					
	3560CX-8PT-S	90	0.11	375.3 ¹					
	3560CX-8XPD-S	290	0.31	1057.7 ¹					
	¹ Switch dissipation only (excludes PoE, which is dissipated at the end device).								
	Power measurements are best and worst case. Best case is 1 PoE+ connection. Worst case is 2 PoE connections.								
PoE and PoE+	<ul style="list-style-type: none"> Maximum power supplied per Port for PoE+ is 30W Maximum power supplied per port for PoE: 15.4W 								
PoE Power Supply Characteristics	Capacity: 300W, Efficiency: 80 Plus Silver certified								
	% Load			Efficiency			Power Factor		
	• 20			• 85%			• 0.8		
	• 50			• 88%			• 0.9		
• 100			• 90%			• 0.95			

Table 7 shows switch management and standards support.

Table 7. Management and Standards Support for Cisco Catalyst 3560-CX and 2960-CX Series Compact Switches

Description	Specification	
Management	<ul style="list-style-type: none"> BRIDGE-MIB CISCO-CABLE-DIAG-MIB CISCO-CDP-MIB CISCO-CLUSTER-MIB CISCO-CONFIG-COPY-MIB CISCO-CONFIG-MAN-MIB CISCO-DHCP-SNOOPING-MIB CISCO-ENTITY-VENDORTYPE-OID-MIB CISCO-ENVMON-MIB CISCO-ERR-DISABLE-MIB CISCO-FLASH-MIB CISCO-FTP-CLIENT-MIB CISCO-IGMP-FILTER-MIB CISCO-IMAGE-MIB CISCO-IP-STAT-MIB CISCO-LAG-MIB 	<ul style="list-style-type: none"> CISCO-TC-MIB CISCO-TCP-MIB CISCO-UDLDP-MIB CISCO-VLAN-IFTABLE RELATIONSHIP-MIB CISCO-VLAN-MEMBERSHIP-MIB CISCO-VTP-MIB ENTITY-MIB ETHERLIKE-MIB IEEE8021-PAE-MIB IEEE8023-LAG-MIB IF-MIB INET-ADDRESS-MIB OLD-CISCO-CHASSIS-MIB OLD-CISCO-FLASH-MIB OLD-CISCO-INTERFACES-MIB

Description	Specification
	<ul style="list-style-type: none"> ● 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 ● 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	<ul style="list-style-type: none"> ● IEEE 802.1D Spanning Tree Protocol ● IEEE 802.1p CoS Prioritization ● IEEE 802.1Q VLAN ● IEEE 802.1s ● IEEE 802.1w ● IEEE 802.1x ● IEEE 802.1AB (LLDP) ● IEEE 802.3ad ● IEEE 802.3af ● IEEE 802.3ah (100BASE-X single/multimode fiber only) ● IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and 1000BASE-T ports ● IEEE 802.3 10BASE-T specification ● IEEE 802.3u 100BASE-TX specification ● IEEE 802.3ab 1000BASE-T specification ● IEEE 802.3z 1000BASE-X specification ● 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
RFC compliance	<ul style="list-style-type: none"> ● 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 1812: IP Routing ● RFC 1901: SNMPv2C ● RFC 1902-1907: SNMPv2 ● RFC 1981: MTU Path Discovery IPv6 ● RFC 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 Addr

Description	Specification
	<ul style="list-style-type: none"> • 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
	<ul style="list-style-type: none"> • 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 dependent on IOS Level.

Table 8 shows safety and compliance information.

Table 8. Safety and Compliance Support

Description	Specification
Safety standards	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • FCC Part 15, CFR 47, Class A, North America • EN/IEC 61000-4-5 • 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

Ordering Information

To place an order, consult Table 9 for ordering information and visit [Cisco Commerce Workspace](#).

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

Cisco Catalyst 3560-CX Compact Switches	
Part Number	Description
WS-C3560CX-8TC-S	3560-CX Switch 8 GE, uplinks: 2 x 1G SFP and 2 x 1G copper, IP Base
WS-C3560CX-12TC-S	3560-CX Switch 12 GE, uplinks: 2 x 1G SFP and 2 x 1G copper, IP Base
WS-C3560CX-8PC-S	3560-CX Switch 8 GE PoE+, uplinks: 2 x 1G SFP and 2 x 1G copper, IP Base
WS-C3560CX-12PC-S	3560-CX Switch 12 GE PoE+, uplinks: 2 x 1G SFP and 2 x 1G copper, IP Base
WS-C3560CX-12PD-S	3560-CX Switch 12 GE PoE+, uplinks: 2 x 10G SFP+ and 2 x 1G copper, IP Base
WS-C3560CX-8PT-S	3560-CX PD PSE Switch 8 GE PoE+, uplinks: 2 x 1G copper (Cisco UPOE powered input), IP Base
WS-C3560CX-8XPD-S	3560-CX Switch 6 GE PoE+, 2 MultiGE PoE+, uplinks: 2 x 10G SFP+, IP Base
Cisco Catalyst 2960-CX Compact Switches	
Part Number	Description
WS-C2960CX-8TC-L	2960-CX Switch 8 GE, uplinks: 2 x 1G SFP and 2 x 1G copper LAN Base
WS-C2960CX-8PC-L	2960-CX Switch, 8 GE PoE+, uplinks: 2 x 1G SFP and 2 x 1G copper LAN Base
Cisco Catalyst 3560-CX and 2960-CX Accessories	
Part Number	Description
PWR-CLP=	Power clip for the 3560-CX and 2960-CX compact switches
PWR-ADPT=	AC-DC power adapter for the WS-C3560CX-8PT-S compact switch
PWR-ADPT-DC=	DC-DC power adapter for the WS-C3560CX-8PT-S compact switch
PWR-ADPT-BRKT=	Power adapter bracket for the WS-C3560CX-8PT-S compact switch (needs either CMPCT-DIN-MNT= or CMPCT-MGNT-TRAY =) to work
CMPCT-CBLE-GRD=	Cable guard for the 3560-CX and 2960-CX compact switches
CMPCT-MGNT-TRAY =	Magnet and Mounting Tray for 3560-CX and 2960-CX compact switches
Cisco Catalyst 3560-CX and 2960-CX Accessories	
Part Number	Description
CMPCT-DIN-MNT=	DIN Rail Mount for 3560-CX and 2960-CX compact switches
RCKMNT-19-CMPCT=	19-Inch Rack Mounting Brackets for 3560-CX and 2960-CX compact switches

Cisco Catalyst 3560-CX Compact Switches

RCKMNT-23-CMPCT= 23- and 24-Inch Rack Mounting Brackets for 3560-CX and 2960-CX compact switches

Cisco Catalyst 3560-CX Software Licenses

Part Number	Description
L-C3560CX-RTU=	Cisco Catalyst 3560-CX IP Base to IP Services RTU electronic license
C3560CX-RTU=	Cisco Catalyst 3560-CX IP Base to IP Services RTU paper license

Warranty Information

Cisco Catalyst 3560-CX and 2960-CX Series Switches come with an enhanced limited lifetime hardware warranty that includes 90 days of Cisco Technical Assistance Center (TAC) support and next-business-day hardware replacement free of charge (see Table 10 for details).

Table 10. Enhanced Limited Lifetime Hardware Warranty

Cisco Enhanced Limited Lifetime Hardware Warranty	
Device covered	Applies to Cisco Catalyst 3560-CX and 2960-CX 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.

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.

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

For additional information about warranty terms, visit <https://www.cisco.com/go/warranty>.

Cisco and Partner Services

Enable the innovative, secure, intelligent edge 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 those platforms. 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 (Table 11), designed to meet your business needs and help you maintain high-quality network performance while controlling operational costs.

Table 11. Technical Services Available for Cisco Catalyst 3560-CX and 2960-CX 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

Cisco Capital

Flexible Payment Solutions to Help You Achieve Your Objectives

Cisco Capital makes it easier to get the right technology to achieve your objectives, enable business transformation and help you stay competitive. We can help you reduce the total cost of ownership, conserve capital, and accelerate growth. In more than 100 countries, our flexible payment solutions can help you acquire hardware, software, services and complementary third-party equipment in easy, predictable payments. [Learn more](#).

Learn More

For more information, contact your Cisco sales account rep or visit <https://www.cisco.com/go/compactswitches>.

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Cisco Systems (USA) Pte. Ltd.
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Europe Headquarters

Cisco Systems International BV Amsterdam,
The Netherlands

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Cisco Catalyst 1000 Series Switches

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Product overview

Cisco® Catalyst® 1000 Series Switches are fixed managed Gigabit Ethernet enterprise-class Layer 2 switches designed for small businesses and branch offices. These are simple, flexible and secure switches ideal for out-of-the-wiring-closet and critical Internet of Things (IoT) deployments. Cisco® Catalyst® 1000 operate on Cisco IOS® Software and support simple device management and network management via a Command-Line Interface (CLI) as well as an on-box web UI. These switches deliver enhanced network security, network reliability, and operational efficiency for small organizations.

Product highlights

Cisco Catalyst 1000 Series Switches feature:

- 8, 16, 24, or 48 Gigabit Ethernet data or PoE+ ports with line-rate forwarding
- 2 or 4 fixed 1 Gigabit Ethernet Small Form-Factor Pluggable (SFP)/RJ 45 Combo uplinks or 4 fixed 0 Gigabit Ethernet Enhanced SFP (SFP+) uplinks
- Perpetual PoE+ support with a power budget of up to 740W
- CLI and/or intuitive web UI manageability options
- Network monitoring through sampled flow (sFlow)
- Security with 802.1X support for connected devices, Switched Port Analyzer (SPAN), and Bridge Protocol Data Unit (BPDU) Guard
- Compact fanless models available with a depth of less than 13 inches (33 cm)
- Device management support with over-the-air access via Bluetooth, Simple Network Management Protocol (SNMP), RJ-45, or USB console access
- Reliability with a higher Mean Time Between Failures (MTBF) and an enhanced limited lifetime warranty support(E-LLW)

Switch models and configurations

Cisco Catalyst 1000 Series Switches include a single fixed power supply. Table 1 shows configuration information.

Table 1. Switch configurations

Product ID*	Gigabit Ethernet ports	Uplink interfaces	PoE+power budget	Fanless	Dimensions (WxDxH in inches)	Weight (kg)
C1000-8T-2G-L	8	2 SFP/ RJ-45 combo	-	Y	10.56 x 7.28 x 1.73	1.80
C1000-8T-E-2G-L	8	2 SFP/ RJ-45 combo	-	Y	10.56 x 7.28 x 1.73	1.55
C1000-8P-2G-L	8	2 SFP/ RJ-45 combo	67W	Y	10.56 x 12.73 x 1.73	1.55
C1000-8P-E-2G-L	8	2 SFP/ RJ-45 combo	67W	Y	10.56 x 7.28 x 1.73	1.55

Product ID*	Gigabit Ethernet ports	Uplink interfaces	PoE+power budget	Fanless	Dimensions (WxDxH in inches)	Weight (kg)
C1000-8FP-2G-L	8	2 SFP/ RJ-45 combo	120W	Y	10.56 x 12.73 x 1.73	2.70
C1000-8FP-E-2G-L	8	2 SFP/ RJ-45 combo	120W	Y	10.56 x 7.28 x 1.73	2.70
C1000-16T-2G-L	16	2 SFP	-	Y	10.56 x 10.69 x 1.73	1.78
C1000-16T-E-2G-L	16	2 SFP	-	Y	10.56 x 8.26 x 1.73	1.42
C1000-16P-2G-L	16	2 SFP	120W	Y	10.56 x 11.69 x 1.73	2.38
C1000-16P-E-2G-L	16	2 SFP	120W	Y	10.56 x 8.26x 1.73	1.42
C1000-16FP-2G-L	16	2 SFP	240W	Y	10.56 x 12.14 x 1.73	2.49
C1000-24T-4G-L	24	4 SFP	-	Y	17.5 x 9.45 x 1.73	2.63
C1000-24P-4G-L	24	4 SFP	195W	Y	17.5 x 11.76 x 1.73	3.53
C1000-24FP-4G-L	24	4 SFP	370W	N	17.5 x 13.59 x 1.73	4.6
C1000-48T-4G-L	48	4 SFP	-	N	17.5 x 10.73 x 1.73	3.95
C1000-48P-4G-L	48	4 SFP	370W	N	17.5 x 13.78 x 1.73	5.43
C1000-48FP-4G-L	48	4 SFP	740W	N	17.5 x 13.78 x 1.73	5.82
C1000-24T-4X-L	24	4 SFP+	-	Y	17.5 x 9.45 x 1.73	2.78
C1000-24P-4X-L	24	4 SFP+	195W	Y	17.5 x 11.76 x 1.73	3.68
C1000-24FP-4X-L	24	4 SFP+	370W	N	17.5 x 13.59 x 1.73	4.6
C1000-48T-4X-L	48	4 SFP+	-	N	17.5 x 10.73 x 1.73	3.95
C1000-48P-4X-L	48	4 SFP+	370W	N	17.5 x 13.78 x 1.73	5.43
C1000-48FP-4X-L	48	4 SFP+	740W	N	17.5 x 13.78 x 1.73	5.82

*Please refer to local price lists for full product SKUs.

Software

The software features supported on the Cisco Catalyst 1000 Series can be found on Cisco Feature Navigator: <https://cfn.cloudapps.cisco.com/ITDIT/CFN/jsp/by-feature-technology.jsp>

Switch management

Cisco Catalyst 1000 Series Switches support the following on-device management features:

- **Web UI** via Cisco Configuration Professional. Cisco Configuration Professional provides a user interface for day-zero provisioning, which enables easy onboarding of the switch. It also has an intuitive dashboard for configuring, monitoring, and troubleshooting the switch (Figure 1). For more information, about Cisco Configuration Professional, refer to <https://www.cisco.com/c/en/us/products/cloud-systems-management/configuration-professional-catalyst/index.html>.

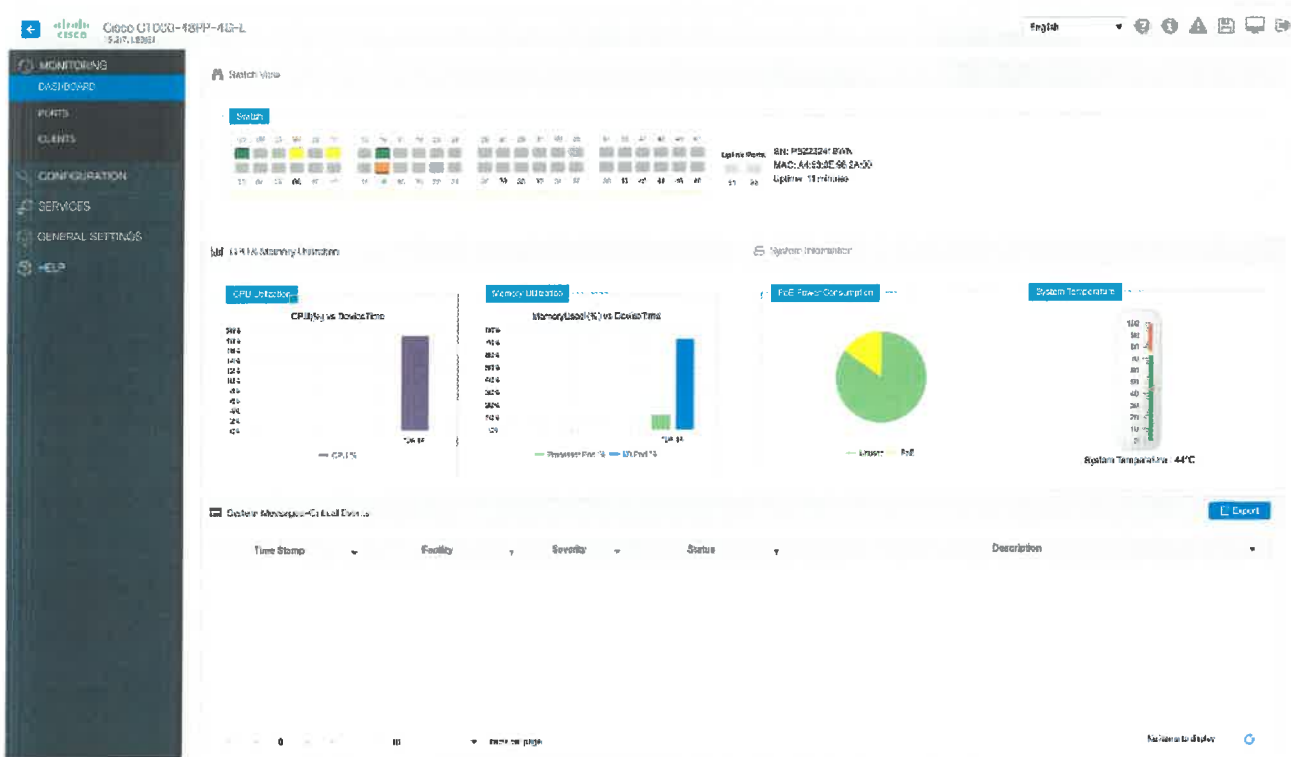


Figure 1.
Cisco Configuration Professional

- **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 external laptops and tablets (Figure 2). 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 2.
Over-the-air switch access using Bluetooth

- Single IP Management is available on the Cisco Catalyst 1000 Series switches. The uplink ports can be used to connect up to eight switches and manage them via a single IP address.

Network management

The Cisco Catalyst 1000 Series Switches offer a superior CLI for detailed configuration and administration.

Intelligent PoE+

Cisco Catalyst 1000 Series Switches support both IEEE 802.3af PoE and IEEE 802.3at PoE+ (up to 30W per port) to deliver a lower total cost of ownership for deployments that incorporate Cisco IP phones, Cisco Aironet® and Catalyst 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 PoE power allocation in the Cisco Catalyst 1000 Series Switches is dynamic, and power mapping scales up to a maximum of 740W of PoE+ power. Intelligent power management allows flexible power allocation across all ports. With Perpetual PoE, the PoE+ power is maintained during a switch reload. This is important for critical endpoints such as medical devices and for IoT endpoints such as PoE-powered lights, so that there is no disruption during a switch reboot.

Network security

Cisco Catalyst 1000 Series Switches provide a range of security features to limit access to the network and mitigate threats, including:

- **Comprehensive 802.1X** features to control access to the network, including flexible authentication, 802.1X monitor mode, and RADIUS change of authorization.
- **802.1X support with Network Edge Access Topology (NEAT)**, which extends identity authentication to areas outside the wiring closet (such as conference rooms).
- **IEEE 802.1X user distribution**, which enables you to load-balance users with the same group name across multiple different VLANs.
- **Ability to disable per-VLAN MAC learning** to allow you to manage the available MAC address table space by controlling which interface or VLANs learn MAC addresses.
- **Multidomain authentication** to allow an IP phone and a PC to authenticate on the same switch port while being placed on the appropriate voice and data VLANs.
- **Authentication, Authorization, and Accounting (AAA) command authorization** in PnP to enable seamless PnP provisioning.
- **Access Control Lists (ACLs)** for IPv6 and IPv4 security and Quality-of-Service (QoS) ACL elements (ACEs).
- **Port-based ACLs** for Layer 2 interfaces to allow security policies to be applied on individual switch ports.
- **SSH, Kerberos, and SNMP v3** to provide network security by encrypting administrator traffic during Telnet and SNMP sessions. SSH, Kerberos, and the cryptographic version of SNMP v3 require a special cryptographic software image because of U.S. export restrictions.
- **SPAN**, with bidirectional data support, to allow the 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.
- **MAC Authentication Bypass (MAB) and WebAuth with downloadable ACLs** to allow per-user ACLs to be downloaded from the Cisco Identity Services Engine (ISE) as policy enforcement after authentication using MAB or web authentication in addition to IEEE 802.1X.
- **Web authentication redirection** to enable networks to redirect guest users to the URL they had originally requested.
- **Multilevel security on console access** to prevent unauthorized users from altering the switch configuration.
- **BPDU Guard** to shut down Spanning Tree PortFast-enabled interfaces when BPDUs are received, to avoid accidental topology loops.
- **IP Source Guard** to restrict IP traffic on nonrouted Layer 2 interfaces by filtering traffic based on the Dynamic Host Configuration Protocol (DHCP) snooping binding database or by manually configuring IP source bindings.

-
- **SSH v2** to allow use of digital certificates for authentication between user and server.
 - **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.

Redundancy and resiliency

Cisco Catalyst 1000 Series Switches offer a number of redundancy and resiliency features to prevent outages and help ensure that the network remains available:

- **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 benefits of Layer 2 load balancing and distributed processing.
- **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.
- **Switch-port auto-recovery (error disable)** automatically attempts to reactivate a link that is disabled because of a network error.
- **Link state tracking** binds the link state of multiple interfaces. The server Network Interface Cards (NICs) form a group to provide redundancy in the network. When the link is lost on the primary interface, network connectivity is transparently changed to the secondary interface.

Enhanced QoS

Cisco Catalyst 1000 Series Switches offer intelligent traffic management that keeps everything flowing smoothly. Flexible mechanisms for marking, classifying, and scheduling deliver superior performance for data, voice, and video traffic, all at wire speed. Primary QoS features include:

- Up to **eight egress queues** and two thresholds per port, supporting egress bandwidth control, shaping, and priority queuing so that high-priority packets are serviced ahead of other traffic.
- **Ingress policing** to allow the analysis of IP service levels for IP applications and services using active traffic monitoring – generating traffic in a continuous, reliable, and predictable manner – for measuring network performance. The number of ingress policers available per port is 64.
- **QoS through Differentiated Services Code Point (DSCP) mapping and filtering.**
- **QoS through traffic classification.**
- **Trust boundary** to configure device-based trust.
- **AutoQoS** to simplify the deployment of QoS features.
- **Shaped Round Robin (SRR) scheduling and Weighted Tail Drop (WTD) congestion avoidance.**
- **802.1p Class of Service (CoS) classification, with marking and reclassification.**

Energy management

Cisco Catalyst 1000 Series Switches offer a range of industry-leading features for energy efficiency and management:

- **IEEE 802.3az Energy Efficient Ethernet (EEE)** enables ports to dynamically sense idle periods between traffic bursts and quickly switch the interfaces into a low-power idle mode, reducing power consumption.
- **Loop detection** is a new method to detect network loops in the absence of STP.
- **Cisco AutoConfig** determines 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 Auto SmartPorts** enables automatic configuration of switch ports as devices connect to the switch with settings optimized for the device type, resulting in zero-touch port-policy provisioning.
- **Cisco Smart Troubleshooting** is an extensive array of diagnostic commands and system health checks in 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 more quickly.

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, Dynamic Address Resolution Protocol [ARP] Inspection). This feature simplifies security configurations with a single touch.
- **DHCP** auto configuration 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.
- **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.
- **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.

- **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.
- **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.

Specifications

Product specifications (Table 2) apply to both PoE and non-PoE models.

Table 2. Specifications

	8-port models	16-port models	24-port models (1/10G uplinks)	48-port models (1/10G uplinks)
Console ports				
RJ-45 Ethernet	1	1	1	1
USB mini-B	1	1	1	1
USB-A port for storage and Bluetooth console	1	1	1	1
Memory and processor				
CPU	ARM v7 800 MHz	ARM v7 800 MHz	ARM v7 800 MHz	ARM v7 800 MHz
DRAM	512 MB	512 MB	512 MB	512 MB
Flash memory	256 MB	256 MB	256 MB	256 MB
Performance				
Forwarding bandwidth	10 Gbps	18 Gbps	1G: 28 Gbps 10G: 64 Gbps	1G: 52 Gbps 10G: 88Gbps
Switching bandwidth	20 Gbps	36 Gbps	1G: 56 Gbps 10G: 128 Gbps	1G: 104 Gbps 10G: 176 Gbps
Forwarding rate (64-byte L3 packets)	14.88 Mpps	26.78 Mpps	41.67 Mpps	77.38 Mpps

	8-port models	16-port models	24-port models (1/10G uplinks)	48-port models (1/10G uplinks)
Unicast MAC addresses	16000	16000	16000	16000
IPv4 unicast direct routes	542	542	542	542
IPv4 unicast indirect routes	256	256	256	256
IPv6 unicast direct routes	414	414	414	414
IPv6 unicast indirect routes	128	128	128	128
IPv4 multicast routes and IGMP groups	1024	1024	1024	1024
IPv6 multicast groups	1024	1024	1024	1024
IPv4/MAC security ACEs	600	600	600	600
IPv6 security ACEs	600	600	600	600
Maximum active VLANs	256	256	256	256
VLAN IDs available	4094	4094	4094	4094
Maximum STP instances	64	64	64	64
Maximum SPAN sessions	4	4	4	4
MTU-L3 packet	9198 bytes	9198 bytes	9198 bytes	9198 bytes
Jumbo Ethernet frame	10,240 bytes	10,240 bytes	10,240 bytes	10,240 bytes
Dying Gasp	Yes	Yes	Yes	Yes
MTBF in hours (data)	2,171,669	2,165,105	2,026,793	1,452,667
MTBF in hours (PoE)	1,786,412, 1,706,649 (External PS)	706,983	698,220	856,329

	8-port models	16-port models	24-port models (1/10G uplinks)	48-port models (1/10G uplinks)
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MTBF in hours (Full PoE)	1,706,649	-	698,220	856,329
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Environmental

Operating temperature	-5 to 50 deg C*
Seal level	
Up to 5,000ft (1500 m)	-5 to 45 deg C
Upto 10,000 (3000 m)	-5 to 40 deg C
Operating altitude	10,000 ft (3,000m)
Operating relative humidity	5% to 90% at 40C
Storage temperature	-13 to 158F (-25 to 70C)
Storage altitude	15,000 ft (4500m)
Storage relative humidit	5% to 95% at 65C

***Note:** 50C operation is supported for short term operation only; GLC-BX-D/U and CWDM optics cannot support 50C operation; Minimum ambient temperature for cold start is at 0C (32F)

Electrical	Data	Data Ext. PS	Data	Data Ext. PS	Data	Data
Voltage (auto ranging)	110 to 220V AC in	110 to 220V AC in	110 to 220V AC in	110 to 220V AC in	110 to 220V AC in	110 to 220V AC in
Frequency	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz
Current	0.13A to 0.22A	0.16A to 0.26A	0.16A to 0.26A	0.19A to 0.31A	0.20A to 0.33A	0.29A to 0.48A
Power rating (maximum consumption)	0.04 kVA	0.017 kVA	0.05 kVA	0.05 kVA	0.06 kVA	0.09 kVA

Electrical	PoE	PoE Ext. PS	PoE	PoE Ext. PS	PoE	PoE
Voltage (auto ranging)	110 to 220V AC in	110 to 220V AC in	110 to 220V AC in	110 to 220V AC in	110 to 220V AC in	110 to 220V AC in
Frequency	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz
Current	0.22A to 0.27A	0.22A to 0.37A	0.24A to 0.28A	0.14A to 0.24A	0.37A to 0.64A	0.37A to 0.64A

	8-port models		16-port models		24-port models (1/10G uplinks)	48-port models (1/10G uplinks)
Power rating (maximum consumption)	0.11 kVA	0.087 kVA	0.19 kVA	0.20 kVA	0.48 kVA	0.48 kVA
Electrical	Full PoE	Full PoE Ext. PS	Full PoE		Full PoE	Full PoE
Voltage (auto ranging)	110 to 220V AC in	110 to 220V AC in	110 to 220V AC in		110 to 220V AC in	110 to 220V AC in
Frequency	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz		50 to 60 Hz	50 to 60 Hz
Current	0.23A to 0.28A	0.15A to 0.2A	0.35A to 0.37A		0.29A to 0.48A	0.45A to 0.94A
Power rating (maximum consumption)	0.15 kVA	0.15 kVA	0.45 kVA		0.8 kVA	0.95 kVA
Power consumption (watts)	Data	Data Ext. PS	Data	Data Ext. PS	Data	Data
0% traffic	14.04	13.15	14.52	14.4	1G: 15.84 10G: 18	1G: 27.37 10G: 29.4
10% traffic	14.06	13.76	16.44	16.44	1G: 22.08 10G: 24.48	1G: 41.57 10G: 42.28
100% traffic	14.26	14	16.68	16.68	1G: 22.8 10G: 25.68	1G: 53.66 10G: 54.73
Weighted average	14.12	13.64	15.88	15.84	1G: 20.2 10G: 22.7	1G: 40.87 10G: 42.1
Power consumption (watts)	PoE	PoE Ext. PS	PoE	PoE Ext. PS	PoE	PoE
0% traffic	10.22	9.13	14.64	13.68	1G: 15.84 10G: 18	1G: 27.9 10G: 28.0
10% traffic	12.02	15.39	16.56	15.48	1G: 22.44 10G: 24.72	1G: 42.77 10G: 42.73
100% traffic	12.19	15.71	16.92	16.32	1G: 23.16 10G: 25.68	1G: 54.25 10G: 54.49

	8-port models		16-port models		24-port models (1/10G uplinks)	48-port models (1/10G uplinks)
Weighted average	11.48	13.41	16.04	15.16	1G: 20.48 10G: 22.8	1G: 41.64 10G: 41.74
Power consumption (watts)	Full PoE	Full PoE Ext. PS	Full PoE		Full PoE	Full PoE
0% traffic	13.44	14.3	14.4		1G: 18.36 10G: 19.68	1G: 30.61 10G: 30.91
10% traffic	14.4	14.9	16.68		1G: 26.16 10G: 26.28	1G: 45.16 10G: 45.78
100% traffic	14.52	15.7	16.8		1G: 35.4 10G: 36	1G: 61.66 10G: 62.26
Weighted average	14.12	14.97	15.96		1G: 26.68 10G: 27.32	1G: 45.81 10G: 46.31

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.

Acoustic noise (48-port PoE models only)

Sound pressure	LpA (typical)	35 dB
	LpAD (maximum)	39 dB
Sound power	LwA (typical)	4.8 B
	LwAD (maximum)	5.2 B

Note: Bystander positions operating mode at 77°F (25°C) ambient.

Safety and compliance

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, IEC 62368-1, UL 62368-1 GB 4943.1-2011
EMC: Emissions	47CFR Part 15 Class A, AS/NZS CISPR32 Class A, CISPR32 Class A, EN55032 Class A, ICES-003 Class A, VCCI-CISPR32 Class A, EN61000-3-2, EN61000-3-3, KN32 Class A, CNS13438 Class A
EMC: Immunity	EN55024 (including EN 61000-4-5), EN300386, KN35
Environmental	Reduction of Hazardous Substances (RoHS) including Directive 2011/65/EU

	8-port models	16-port models	24-port models (1/10G uplinks)	48-port models (1/10G uplinks)
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Telco Common Language Equipment Identifier (CLEI) code

U.S. government certifications USGv6 and IPv6 Ready Logo

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

Indicator LEDs Per-port status: link integrity, disabled, activity

System status: System

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 Use the supplied AC power cord to connect the AC power connector to an AC power outlet
Models have external power supply

Management

BRIDGE-MIB	CISCO-PORT-QOS-MIB	IF-MIB
CISCO-CABLE-DIAG-MIB	CISCO-PORT-SECURITY-MIB	INET-ADDRESS-MIB
CISCO-CDP-MIB	CISCO-PORT-STORM-CONTROL-MIB	OLD-CISCO-CHASSIS-MIB
CISCO-CLUSTER-MIB	CISCO-PRODUCTS-MIB	OLD-CISCO-FLASH-MIB
CISCO-CONFIG-COPY-MIB	CISCO-PROCESS-MIB	OLD-CISCO-INTERFACES-MIB
CISCO-CONFIG-MAN-MIB	CISCO-RTTMON-MIB	OLD-CISCO-IP-MIB
CISCO-DHCP-SNOOPING-MIB	CISCO-SMI-MIB	OLD-CISCO-SYS-MIB
CISCO-ENTITY-VENDORTYPE-OID-MIB	CISCO-STP-EXTENSIONS-MIB	OLD-CISCO-TCP-MIB
CISCO-ENVMON-MIB	CISCO-SYSLOG-MIB	OLD-CISCO-TS-MIB
CISCO-ERR-DISABLE-MIB	CISCO-TC-MIB	RFC1213-MIB
CISCO-FLASH-MIB	CISCO-TCP-MIB	RMON-MIB
CISCO-FTP-CLIENT-MIB	CISCO-UDLD-MIB	RMON2-MIB
CISCO-IGMP-FILTER-MIB	CISCO-VLAN-IFTABLE	SNMP-FRAMEWORK-MIB
CISCO-IMAGE-MIB	CISCO-VLAN-MEMBERSHIP-MIB	SNMP-MPD-MIB
CISCO-IP-STAT-MIB	CISCO-VTP-MIB	SNMP-NOTIFICATION-MIB
CISCO-LAG-MIB		

8-port models	16-port models	24-port models (1/10G uplinks)	48-port models (1/10G uplinks)
CISCO-MAC-NOTIFICATION-MIB	ENTITY-MIB		SNMP-TARGET-MIB
CISCO-MEMORY-POOL-MIB	ETHERLIKE-MIB		SNMPv2-MIB
CISCO-PAGP-MIB	IEEE8021-PAE-MIB		TCP-MIB
CISCO-POE-EXTENSIONS-MIB	IEEE8023-LAG-MIB		UDP-MIB

For an updated list of supported MIBs, refer to the MIB Locator at cisco.com/go/mibs.

Standards

IEEE 802.1D STP	IEEE 802.3ad	IEEE 802.3ab 1000BASE-T
IEEE 802.1p CoS Prioritization	IEEE 802.3af and IEEE 802.3at	IEEE 802.3z 1000BASE-X
IEEE 802.1Q VLAN	IEEE 802.3ah (100BASE-X single/multimode fiber only)	RMON I and II standards
IEEE 802.1s	IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and 1000BASE-T ports	SNMP v1, v2c, and v3
IEEE 802.1w	IEEE 802.3 10BASE-T	IEEE 802.3az
IEEE 802.1X	IEEE 802.3u 100BASE-TX	IEEE 802.3ae 10 Gigabit Ethernet
IEEE 802.1ab LLDP		IEEE 802.1ax
Bluetooth v4.0		

RFC compliance

RFC 768 - UDP	RFC 1256 - ICMP Router Discovery
RFC 783 - TFTP	RFC 1305 - NTP
RFC 791 - IP	RFC 1492 - TACACS+
RFC 792 - ICMP	RFC 1493 - Bridge MIB
RFC 793 - TCP	RFC 1542 - BOOTP extensions
RFC 826 - ARP	RFC 1901 - SNMP v2C
RFC 854 - Telnet	RFC 1902-1907 - SNMP v2
RFC 951 - Bootstrap Protocol (BOOTP)	RFC 1981 - Maximum Transmission Unit (MTU) Path Discovery IPv6
RFC 959 - FTP	RFC 2068 - HTTP
RFC 1112 - IP Multicast and IGMP	RFC 2131 - DHCP
RFC 1157 - SNMP v1	RFC 2138 - RADIUS
RFC 1166 - IP Addresses	RFC 2233 - IF MIB v3

Warranty

Cisco Catalyst 1000 Series Switches come with an enhanced limited lifetime warranty (E-LLW). The E-LLW provides the same terms as the Cisco 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 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 more information about warranty terms, visit <https://www.cisco.com/go/warranty> and see Table 3 below.

Table 3. Warranty information

Cisco enhanced limited lifetime hardware warranty	
Device covered	Applies to all Cisco Catalyst 1000 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 5 years from the announcement of discontinuance.
Hardware replacement	Cisco or its service center will use commercially reasonable efforts to ship a Cisco Catalyst 1000 Series replacement part for next-business-day delivery, where available. Otherwise, a replacement will be shipped within 10 working days after the 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 the 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 the 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 1000 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.

Cisco environmental sustainability

Information about Cisco's environmental sustainability policies and initiatives for our products, solutions, operations, and extended operations or supply chain is provided in the "Environment Sustainability" section of Cisco's [Corporate Social Responsibility](#) (CSR) Report.

Reference links to information about key environmental sustainability topics (mentioned in the "Environment Sustainability" section of the CSR Report) are provided in the following table:

Sustainability topic	Reference
Information on product material content laws and regulations	Materials
Information on electronic waste laws and regulations, including products, batteries, and packaging	WEEE compliance

Cisco makes the packaging data available for informational purposes only. It may not reflect the most current legal developments, and Cisco does not represent, warrant, or guarantee that it is complete, accurate, or up to date. This information is subject to change without notice.

Software policy

Customers are 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 one year from the end-of-sale date for this product, whichever occurs earlier.

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

Technical support and services

Table 4 describes available technical services.

Table 4. Technical services available

Technical services
<p>Cisco Smart Net Total Care® Service</p> <ul style="list-style-type: none">• 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 available¹• Ongoing operating system software updates within the licensed feature set²• Proactive diagnostics and real-time alerts on Smart Call Home-enabled devices
<p>Cisco Smart Foundation Service</p> <ul style="list-style-type: none">• 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
<p>Cisco Smart Care Service</p> <ul style="list-style-type: none">• 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 Net Total Care portal• Cisco operating system and application software updates and upgrades²• Next-business-day advance hardware replacement as available, 24x7x4 option available¹
<p>Cisco SP Base Service</p> <ul style="list-style-type: none">• 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 available¹• Ongoing operating system software updates²

Technical services

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 is 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; for details, review the appropriate service descriptions.

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

Accessories

Table 5 describes the available accessories.

Table 5. Accessories

Part number	Description	Compatibility
CAB-CONSOLE-RJ45	Console Cable 6 Feet with RJ-45	All models
CAB-CONSOLE-USB	Console Cable 6 Feet with USB Type A and mini-B Connectors	All models
PWR-CLP	Power Cable Restraining Clip	All models
Cisco Catalyst 1000 Series rack mounting kit		
RCKMNT-1RU-2KX=	Rackmount kit for 1 RU for 2960-X and 2960-XR (19/23/24/etsi)	All 24/48 port models
RCKMNT-19-CMPCT=	19" Rack Mount bracket for 3560-CX and 2960CX	All 8/16 port models
RCKMNT-23-CMPCT=	23" and 24" Rack Mount bracket for 3560-CX and 2960-CX	All 8/16 port models

Ordering information

Tables 6 and 7 list ordering information for the Cisco Catalyst 1000 Series Switches. To place an order, visit the Cisco Ordering homepage at

https://www.cisco.com/en/US/ordering/or13/or8/order_customer_help_how_to_order_listing.html.

Table 6. Cisco Catalyst 1000 Series Switches ordering information

Product number	Description
Cisco Catalyst 1000 Series Switches with 2x 1GSFP and RJ-45 combo uplinks	
C1000-8T-2G-L	8x 10/100/1000 Ethernet ports, 2x 1G SFP and RJ-45 combo uplinks

Product number	Description
C1000-8T-E-2G-L	8x 10/100/1000 Ethernet ports, 2x 1G SFP and RJ-45 combo uplinks, with external PS
C1000-8P-2G-L	8x 10/100/1000 Ethernet PoE+ ports and 67W PoE budget, 2x 1G SFP and RJ-45 combo uplinks
C1000-8P-E-2G-L	8x 10/100/1000 Ethernet PoE+ ports and 67W PoE budget, 2x 1G SFP and RJ-45 combo uplinks, with external PS
C1000-8FP-2G-L	8x 10/100/1000 Ethernet PoE+ ports and 120W PoE budget, 2x 1G SFP and RJ-45 combo uplinks
C1000-8FP-E-2G-L	8x 10/100/1000 Ethernet PoE+ ports and 120W PoE budget, 2x 1G SFP and RJ-45 combo uplinks, with external PS

Cisco Catalyst 1000 Series Switches with 2x 1G SFP uplinks

C1000-16T-2G-L	16x 10/100/1000 Ethernet ports, 2x 1G SFP uplinks
C1000-16T-E-2G-L	16x 10/100/1000 Ethernet ports, 2x 1G SFP uplinks with external PS
C1000-16P-2G-L	16x 10/100/1000 Ethernet PoE+ ports and 120W PoE budget, 2x 1G SFP uplinks
C1000-16P-E-2G-L	16x 10/100/1000 Ethernet PoE+ ports and 120W PoE budget, 2x 1G SFP uplinks with external PS
C1000-16FP-2G-L	16x 10/100/1000 Ethernet PoE+ ports and 240W PoE budget, 2x 1G SFP uplinks

Cisco Catalyst 1000 Series Switches with 4x 1G SFP uplinks

C1000-24T-4G-L	24x 10/100/1000 Ethernet ports, 4x 1G SFP uplinks
C1000-24P-4G-L	24x 10/100/1000 Ethernet PoE+ ports and 195W PoE budget, 4x 1G SFP uplinks
C1000-24FP-4G-L	24x 10/100/1000 Ethernet PoE+ ports and 370W PoE budget, 4x 1G SFP uplinks
C1000-48T-4G-L	48x 10/100/1000 Ethernet ports, 4x 1G SFP uplinks
C1000-48P-4G-L	48x 10/100/1000 Ethernet PoE+ and 370W PoE budget ports, 4x 1G SFP uplinks
C1000-48FP-4G-L	48x 10/100/1000 Ethernet PoE+ ports and 740W PoE budget, 4x 1G SFP uplinks

Cisco Catalyst 1000 Series Switches with 4x 10G SFP+ uplinks

C1000-24T-4X-L	24x 10/100/1000 Ethernet ports, 4x 10G SFP+ uplinks
C1000-24P-4X-L	24x 10/100/1000 Ethernet PoE+ ports and 195W PoE budget, 4x 10G SFP+ uplinks
C1000-24FP-4X-L	24x 10/100/1000 Ethernet PoE+ ports and 370W PoE budget, 4x 10G SFP+ uplinks
C1000-48T-4X-L	48x 10/100/1000 Ethernet ports, 4x 10G SFP+ uplinks
C1000-48P-4X-L	48x 10/100/1000 Ethernet PoE+ ports and 370W PoE budget, 4x 10G SFP+ uplinks
C1000-48FP-4X-L	48x 10/100/1000 Ethernet PoE+ ports and 740W PoE budget, 4x 10G SFP+ uplinks

Optics compatibility information

The Cisco Catalyst 1000 Series Switches support a wide range of optics. Because the list of supported optics is updated on a regular basis, consult the [Optics Compatibility](#) tables for compatibility information.

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