



KANSAS CITY KANSAS PUBLIC SCHOOLS / USD 500

PURCHASING OFFICE | 2010 N. 59TH STREET ROOM 370 \ KANSAS CITY, KS 66104

WEB SITE: WWW.KCKPS.ORG/PURCHASING

LAN SWITCHES (E-RATE)

CISCO C9606R-48Y24C-BN-A OR COMPATIBLE – QUANTITY 2

BID No: RFP 23-003 **ISSUE DATE:** JANUARY 10, 2023

Kansas City Kansas Public Schools will receive sealed bids, on this form at the Purchasing Office, 2010 N. 59th Street, Room 370, Kansas City, KS 66104 until **10:15 AM., January 17, 2023**, at which time bids received will be publicly opened and read, all in accordance with bid instructions, specifications and/or bid conditions attached hereto or as shown below.

Contact/Technical Contact:

Wayne C. Correll, Director of Purchasing | (913) 279-2270 | eMail: wayne.correll@kckps.org

BID INSTRUCTIONS:

NO EMAIL OR FAXED BIDS WILL NOT BE ACCEPTED.

All bids submitted must be received by the Purchasing Office by the specific bid closing date and time of 10:15 AM Central Time. If emailed, it is the responsibility of the 'bidder' to ensure the bid date and time is met. FedEx and UPS currently deliver directly to the Central Office of the Kansas City Kansas Public Schools. Bids are not considered received until they are date and time stamped in the Purchasing Office. The Purchasing Office will not be responsible for late deliveries.

For questions regarding confirmation that your bid has been received by the Purchasing Office, please email Wayne Correll at wayne.correll@kckps.org.

A bid tabulation will be provided in response to an emailed request to wayne.correll@kckps.org.

Per attached specifications listed in this invitation to bid. Bidders must specify manufacturer/model number/delivery days, and unit price on each item or bid may be determined to be non-responsive.

- Pricing shall be FOB Kansas City, KS (freight and fuel expenses included).
- Award will be to ONE vendor.
- The District reserves the right to reject any or all bids, to waive any informalities, irregularities, or technical defects in bids, and unless otherwise specified by the District to accept any item or groups of items in the bid, as may be in the best interest of the District.

- Time (days, weeks, etc.) required for delivery is a significant consideration with respect to this award process. The time required for delivery must be indicated in the space provided or your bid may be found non-responsive and may not be considered.
- Bid shall include copies of pertinent warranty information pertaining to the product offered. The bidder agrees that equipment furnished under any resultant purchase order issued by Kansas City Kansas Public Schools shall be covered by commercial warranties the contractor gives to any customer for such supplies. All warranty information and certificates shall be furnished and become the property of the District upon delivery and acceptance of said items and/or the contractor must honor services and all rights and remedies stated in the warranties.
- All items are new manufacture unless otherwise specifically stated in this bid.
- All products must have passed the first line quality standard as set by the manufacturer and no seconds, blemished articles or items having defective workmanship are included.
- Bidder shall notify the District immediately of any changes to specifications made by the manufacturer for the equipment listed.
- Bid may not be considered if a service charge, minimum dollar or minimum quantity order is applied.
- The outcome of this bid will be posted on the District's Purchasing site www.kckps.org/purchasing under Awards Section and will include a bid tabulation/summary.
- Bidder shall acknowledge all addenda for this bid and include the form acknowledgements with their bid.

INCLEMENT WEATHER/EMERGENCY POLICY

IF THERE IS A BUILDING CLOSING THE DAY OF THE OPENING OF PROPOSALS DUE TO INCLEMENT WEATHER OR AN EMERGENCY, THE OPENING OF PROPOSALS WILL OCCUR AT 2:00PM (CENTRAL) THE NEXT BUSINESS DAY THE DISTRICT IS OPEN.

Reference Attachment A for further Bid Conditions and Instructions

Specifications:

The following specifications are to serve as the minimum requirements for this solicitation and should not be construed to exclude any other make or model of comparably equipped item of the same class designation. Any substitute must be approved in advance by the District.

Kansas City Kansas Public Schools – LAN Switches (Quantity 2)

The Board of Education for the Kansas City Kansas Public Schools / Unified School District No. 500 is seeking proposals for LAN switch equipment:

Two (2) qty Cisco C9606R-48Y24C-BN-A switches with redundant Supervisor 2 Modules Part # C9600X-SUP-2-B and C9600X-SUP-2/2, two qty. C9600-LC-24C modules and two qty. C9600-LC-48YL Modules per switch.

Installation for each of the following sites:

Central Office and Training Center

2010 N. 59th Street
Kansas City, KS 66104

Carl B. Bruce Middle School

2100 N 18th Street
Kansas City, KS 66104

Request for Proposals

The District would like the equipment to last at least ten years, without needing to be replaced. Competing vendors are encouraged to include pricing just for the equipment as listed.

Kansas City Kansas Public Schools will be submitting one or more Funding Requests to the SLD based on this RFP. Submissions will be completed prior to the SLD 471 Filing deadline, estimated to be 03/28/2023. Respondents must agree to conform to all E-Rate guidelines for the billing of discounts to the SLD.

The Kansas City Kansas Public Schools / USD No. 500 is not liable for any cost incurred by proposers in replying to this RFP.

Proposal Organization and Format

Proposals should be typed and submitted on 8.5” x 11” inch paper bound in a loose-leaf notebook or report cover (no staples, glue binding, coils, or combs). Proposals should be organized and presented in the order and by the number assigned in the RFP. Proposals must be organized with the following headings and subheadings. Each heading and subheading should be separated by tabs or otherwise clearly marked. The RFP sections which should be submitted or responded to are:

(EXAMPLE)

- Cover page
- Introduction
- Response to general requirements
 - Organizational qualifications
 - Staff qualifications

- References
- Response to Technical Requirements
- Cost Proposal

The vendor must submit its Cost Proposal on the form provided in Attachment D – Bid Form according to the instructions provided. Failure to provide any requested information in the prescribed format may result in disqualification of the proposal. No mention of the cost proposal may be made in the response to the technical requirements.

An original plus three (3) copies of the Cost Proposal must be sealed and submitted as a separate part of the proposal. The outside of the envelope must be clearly labeled with the words “Cost Proposal, RFP (Name of RFP)” and name of the vendor and due date. The Cost Proposal is due to the addressee on the due date and time noted above.

Vendor to provide complete proposal on an USB Flash Drive accompanying the hard copy proposal. Files are to be in Portable Document Format (PDF).

Evaluation and Proposal Scoring

Accepted proposals will be reviewed by an evaluation committee and scored against the stated criteria. A proposer may not contact any member of an evaluation committee except at the District’s direction. The evaluation committee's scoring will be tabulated, and proposals ranked based on the numerical scores received.

The E-Rate program requires that price be the major factor, but not the only factor in awarding this proposal. The following criteria will be used:

- 30% Total E-Rate Eligible Cost
- 20% Compatibility with Existing Hardware
- 20% Vendor’s proven reliability/history within the District’s environment; Vendor References; Staff Qualifications
- 20% Technical Merits/Meeting overall requirements
- 5% Invoicing, Ease of Use and Flexibility
- 5% Vendor’s Demonstrated Ability to work with E-Rate

Award

One contract will be awarded to the respondent who submits the best overall proposal in accordance with the specifications and requirements. Failure to provide any information asked for in this RFP may result in disqualification. All proposals will be reviewed and graded by Kansas City Kansas Public Schools District personnel and its consultant.

Contract

Successful respondent shall work with the Kansas City Kansas Public Schools to develop and sign a preliminary contract that satisfies E-Rate requirements.

Technical Requirements

The competing vendor should not only bid the following hardware, but any and all necessary licensing required to work properly with the existing hardware. The District has already invested in a Cisco 5520 Wireless LAN Controller, and would like to continue to leverage this investment.

The following list of equipment has been chosen not only on the technical specifications of the equipment, but also for the following reasons:

1. Available technical support from the vendor
2. Ease of manageability by District IT Staff
3. Proven performance and reliability
4. Compatibility with existing hardware/software/management tools

The configurations set forth in this document are to serve as the minimum requirements for this solicitation and should not be construed to exclude any other make or model of comparable equipment of the same class designation.

Any substitute must be approved in advance by the District. Substitutes will be approved or rejected at the sole discretion of the District.

BID FORM

REQUIREMENT	EQUIPMENT	
Manufacturer:		
Model:		
	PRICING	
	Cost of Equipment	\$
	Removal of Existing Equipment, Haul Away and Disposal	\$
	Installation	\$
	Other Costs (Please Specify)	\$
	Total Cost	\$

Lead Time to Delivery	
From the date of receipt of order, what is the estimated lead time to delivery?	Days

Diversity Designation(s)	
MBE/WBE/Other Certification	Yes / No
Is your firm certified MBE/WBE or Other? (Circle One)>>	
If Certified MBE/WBE/Other, Please Identify Certification (example: "MBE")>>	

WE HEREBY AGREE TO FURNISH THE ITEMS ON WHICH PRICES ARE QUOTED ABOVE IN ACCORDANCE WITH ALL TERMS AND CONDITIONS PREVIOUSLY LISTED AND ANY ATTACHED SPECIFICATIONS.

BY: _____ DATE: _____
 TITLE: _____ FIRM: _____
 PHONE: _____ EMAIL: _____

ATTACHMENT A – USD 500 STANDARD TERMS AND CONDITIONS

1. SCOPE: The following terms and conditions shall prevail unless otherwise modified by U.S.D. 500 within this bid document. U.S.D. 500 reserves the right to reject any bid which takes exception to these terms and conditions.
2. DEFINITIONS AS USED HEREIN:
 - a. The term "bid request" means a solicitation of a formal sealed bid.
 - b. The term "bid" means the price offered by the bidder.
 - c. The term "bidder" means the offeror or Contractor.
 - d. The term "U.S.D. 500" means Unified School District No. 500.
 - e. The term "Board of Education" or "BOE" means the governing body of Unified School District No.500
3. COMPLETING BID: Bids must be submitted ONLY on the form provided in this bid document. All information must be legible. Any and all corrections and /or erasures must be initialed. Each bid sheet must be signed by the authorized bidder and required information must be provided.
4. CONFIDENTIALITY OF BID INFORMATION: Each bid must be sealed and submitted in or under cover of the enclosed envelope to provide confidentiality of the bid information prior to the bid opening. Supporting documents and/or descriptive literature may be submitted with the bid or in a separate envelope marked "Literature for Bid (Number)." Do NOT indicate bid prices on literature. All bids and supporting bid documents become public information after the bid opening and are available for inspection by the general public in accordance with the Kansas Open Records Act.
5. ACCURACY OF BID: Each bid is publicly opened and is made part of the public record of U.S.D. 500. Therefore, it is necessary that any and all information presented is accurate and/or will be that by which the bidder will complete the contract. If there is a discrepancy between the unit price and extended total, the unit price will prevail.
6. SUBMISSION OF BID: Bids are to be sealed and submitted to the Purchasing Department Office, 2010 North 59th Street, Room 370, Kansas City, Kansas, 66104, prior to the date and time indicated on the cover sheet.
7. ADDENDA: All changes in connection with this bid will be issued by the Purchasing Office in the form of a written addendum. Signed acknowledgement of receipt of each addendum must be submitted with the bid.
8. LATE BIDS AND MODIFICATION OR WITHDRAWALS: Bids received after the deadline designated in this bid document shall not be considered and shall be returned unopened.
9. BIDS BINDING: All bids submitted shall be binding upon the bidder if accepted by U.S.D. 500 within sixty (60) calendar days after the bid opening.
10. EQUIVALENT BIDS: When brand or trade names are used in the bid invitation, it is for the purpose of item identification and to establish standards for quality, style and features. Bids on equivalent items of substantially the same quality, style and features are invited unless items are marked "No Substitute." Equivalent bids must be accompanied by descriptive literature and/ or samples may be required and shall be supplied at no charge to the school district.
11. NEW MATERIALS, SUPPLIES AND EQUIPMENT: Unless otherwise specified, all materials, supplies or equipment offered by a bidder shall be new, unused, of recent manufacture, first class in every respect, and suitable for their intended purpose. All equipment shall be assembled and fully serviced, ready for operation when delivered.
12. WARRANTY: Supplies or services furnished as a result of this bid shall be covered by the most favorable commercial warranties, expressed or implied, that the bidder and/or manufacturer gives to any customer. The rights and remedies provided herein are in addition to and do not limit any rights afforded to U.S.D. 500 by any other clause of this bid reserves the right to request from bidders a separate manufacturer certification of all statements made in the Proposal.
13. METHOD OF AWARD AND NOTIFICATION: Bids will be analyzed and the award made to the lowest and best, responsive and responsible bidder(s) whose bid conforms to the specifications and whose bid is considered to be the best value in the opinion of U.S.D. 500.
14. U.S.D. 500 reserves the right to reject any or all bids and any part of a bid: to waive informalities, technical defects, and minor irregularities in bids received: and to award the bid on an item by item basis by specified groups of items or to consider bids submitted on an "all or nothing "basis if the bid is clearly designed as such or when it is determined to be in the best interest of U.S.D. 500.
15. The signed bid shall be considered an offer on the part of the bidder: such offer shall be deemed accepted upon the issuance by U.S.D. 500 of a Purchase Order or other contractual document.
16. DELIVERY TERMS: All deliveries shall be F.O.B. Destination and all freight charges shall be included in the bid price.
17. DAMAGED AND/OR LATE SHIPMENTS: U.S.D 500 has no obligation to accept damaged shipments and reserves the right to return at the Contractor's expense damaged merchandise even though the damage was not apparent or discovered until after receipt of the items. The Contractor is responsible to notify U.S.D. 500 Purchasing Office of any late or delayed shipments. U.S.D. 500 reserves the right to cancel all or any part of an order if the shipment is not made as promised.
18. CREDIT TERMS: Bidder shall indicate all discounts for full and/or prompt payment. Discounts shall be considered as a cost factor in the determination of award, except discounts offered for payment within less than ten (10) calendar days. Discounts offered shall be computed from date of receipt of correct invoice or receipt and acceptance of products, whichever is later.

19. SELLER'S INVOICE: Invoices shall be prepared and submitted in duplicate to address shown on the Purchase Order. Invoices shall contain the following information: Purchase Order number, contract number, item number, description of supplies or services, sizes, unit of measure, quantity, unit price and extended totals.
20. TAX EXEMPT: U.S.D. 500 is exempt from Federal, State and local taxes by KS-FZLEKBLQ. Sites of all transactions under the order(s) that shall be derived from this bid request shall be deemed to have been accomplished within the State of Kansas.
21. SAFETY: All practices, materials, supplies and equipment shall comply with the federal Occupational Safety and Health Act, as well as any pertinent Federal, State and/or local safety or environmental codes.
22. DISCLAIMER OR LIABILITY: U.S.D. 500 will not hold harmless or indemnify any bidder for any liability whatsoever.
23. TERMINATION RIGHTS: KCKPS shall have the right to terminate/cancel the Agreement for its convenience and without penalty upon thirty (30) days prior written notice to the Contractor.
24. HOLD HARMLESS: The Contractor agrees to protect, defend, indemnify and hold the Board of Education, its officers, employees and agents fee and harmless from and against any and all losses, penalties, damages, settlements, costs, charges, professional fees or other expenses or liabilities or every kind and character arising out of or relating to any and all claims, liens, demands, obligations, actions, proceedings or causes of action of every kind and character in connection with or arising directly or indirectly out of this agreement and/or the performance hereof. Without limiting the generality of the foregoing, any and all such claims, etc., relating to personal injury, infringement of any patent trademark, copyright (or application for any thereof) or of any other tangible or intangible personal or property right, or actual or alleged violation of any applicable statute, ordinance, administrative order, rule or regulation, or decree of any court, shall be included in the indemnity hereunder. The Contractor further agrees to investigate, handle, respond to, provide defense for and defend any such claims, etc., at his/her sole expense and agrees to bear all other costs and expenses related thereto, even if such claim is groundless, false or fraudulent.

NO MUTUAL INDEMNIFICATION:

K.S.A.72-8201a: Contracts; indemnification or hold harmless provisions, void.

(a) It is the public policy of the state of Kansas that all contracts entered into by the board of education of a school district, or any officers or employees thereof acting on behalf of the board, provide that the school district and board of education shall be responsible solely for the district's or board's actions or failure to act under a contract.

(b) The board of education of a school district or any officers or employees thereof acting on behalf of the board shall not have the authority to enter into a contract under which the school district or board agrees to, or is required to, indemnify or hold harmless against damages, injury or death resulting from the actions or failure to act on the part of any party to a contract other than the board or district.

(c) The provisions of any contract entered into in violation of this section shall be contrary to the public policy of the state of Kansas and shall be void and unenforceable.

25. INSURANCE: Upon receipt of award, Contractor shall provide Certificate of Insurance as required within three (3) days after notification issued by the Purchasing Department.
 - A. The following general insurance requirements apply to any and all work under this contract by all Contractors and subcontractors of any tier.
 - (1) Any and all insurance required by this contract with each and any and all insurance required by this contract shall be maintained during the entire length of this contract, including any extensions thereto, and until all work has been completed to the satisfaction of the Kansas City Kansas Public Schools. Any and all insurance must be on an occurrence basis.
 - (2) No Contractor or subcontractor shall commence work under a contract until all insurance requirements contained within the solicitation have been complied with and until evidence of all insurance requirements in each and every contract with each and every subcontractor of any tier and shall require the same to comply with all such requirements.
 - (3) The Kansas City Kansas Public Schools shall be covered as an Additional Insured under any and all insurance required by this contract. Confirmation of this shall appear on all certificates of insurance and on any and all applicable policies. The title of the awarded contract shall also appear on any and all applicable policies.
 - (4) The Kansas City Kansas Public Schools shall be given no less than thirty (30) days' written notice of cancellation. The Kansas City Kansas Public Schools shall be given not less than thirty (30) days' prior written notice of material changes of any insurance required under this contract. The Kansas City Kansas Public Schools shall be given written notice of renewal of coverage not less than thirty (30) days prior to the expiration of any particular policy.
 - (5) Each and every agent shall warrant when signing the certificate of insurance that he is acting as an authorized representative on behalf of the companies affording insurance coverage under the contract and that he is licensed by the State of Kansas to conduct insurance business in the State of Kansas and that the companies affording insurance coverage are currently licensed by the State of Kansas and are currently in good standing with the Commissioner of Insurance for the State of Kansas.
 - (6) Any and all companies providing insurance required by this contract shall meet the minimum financial security requirements as set forth below. The rating for each company must be indicated on the certificate of insurance. For all contracts, regardless of risk, companies providing insurance under this contract must have a current:
 - (a) Best's Rating not less than A, and
 - (b) Best's Financial Size Category not less than Class VII

(7) In the event the Contractor neglects, refuses, or fails to provide insurance required by the contract documents, or if such insurance is canceled for any reason, Kansas City Kansas Public Schools shall have the right, but not the duty, to procure the same, and the cost thereof shall be deducted from monies then due or thereafter to become due to the Contractor or Kansas City Kansas Public Schools shall have the right to cancel the contract.

B. Worker's Compensation and Employer's Liability Insurance
The Contractor shall procure and maintain Worker's Compensation and Employer's Liability Insurance in the following limits. Such insurance is to cover each and every employee who is or may be engaged in work under this contract.

Worker's Compensation.....	Statutory
<u>Employer's Liability</u>	
Bodily Injury by Accident.....	\$1,000,000 each accident
Bodily Injury by Disease	\$1,000,000 each employee
Bodily Injury by Disease	\$1,000,000 policy limit

C. Comprehensive General Liability Insurance
The Contractor shall procure and maintain Comprehensive Insurance in an amount not less than \$1,000,000 for bodily injury and property damage combined single limit. The following specific extensions of coverage shall be provided and indicated on the certificate of insurance:

- (1) Comprehensive Form
- (2) Contractual Insurance
- (3) Personal Injury
- (4) Broad Form Property Damage
- (5) Premises – Operations
- (6) Completed Operations

This coverage shall cover the use of all equipment, hoists, and vehicles on the site(s) not covered by Automobile Liability under this contract. Policy coverage must be on an occurrence basis.

D. Automobile Liability Insurance
The Contractor shall procure and maintain Automobile Liability Insurance in an amount not less than \$1,000,000 for bodily injury and property damage combined single limit. The following extensions of coverage shall be provided and indicated on the certificate of insurance.

- (1) Comprehensive Form
- (2) Owned, Hired, Leased and non-owned vehicles

If the Contractor does not own any vehicles in the corporate name, non-owned vehicles coverage shall apply and must be endorsed on either the Contractor's personal automobile policy or the Comprehensive General Liability coverage required under this contract.

E. Commercial Crime insurance (when applicable)
The Contractor shall procure and maintain Commercial Crime/Fidelity insurance in an amount not less than \$1,000,000.00, including coverage for theft or loss of KCKPS property.

26. LAW GOVERNING: All contractual agreements shall be subject to, governed by, and construed according to the laws of the State of Kansas.

27. ANTI-DISCRIMINATION CLAUSE: No bidder on this request shall in any way, directly or indirectly, discriminate against any person because of age, race, color handicap, sex, national origin, or religious creed.

28. BID BOND/PERFORMANCE BOND (Applicable to Construction/Remodel/Repair Projects, Unless Waived by the District)

- A. Each proposal must be accompanied by a certified or cashier's check, or a bid bond in the amount of five percent (5%) of the Contractor's total bid.
- B. A Performance Bond and a Material and Labor Payment Bond in amounts equal to one hundred percent (100%) of the contract price shall be furnished by the successful bidder. Bonds shall be issued by a surety acceptable to the Board.

29. DISQUALIFICATION:

A. The Director of Purchasing may, at her/his sole discretion, disqualify a bidder for one or any combination of the following reasons:

- 1. Bidder's product does not meet the specifications or bid conditions of the solicitation;
- 2. Bidder's tendered bid is not received on the District's bid form;
- 3. Bidder's tendered bid is not signed;
- 4. Required bid bond is not furnished at time of bid opening;
- 5. Failure to comply with bid instructions, terms and conditions that are judged to be essential to the competitive process and in the best interests of the District.

B. Disqualification of bidders on future bids may be considered for any one or combination of the following reasons:

- 1. Refusal of the bidder to complete a contract or bid;
- 2. Bidder's past history of late deliveries or partial/incomplete shipments,
- 3. Bidder's products or services have proven unreliable, unworkable or have not accomplished the result requested in the District's specifications.

30. SUPPLIER DIVERSITY: The Kansas City Kansas Public Schools encourages supplier diversity and participation of MBE/WBE/DBE designated businesses. However, such participation will not result in any selection or scoring advantage in the bid evaluation process.
31. **INCLEMENT WEATHER / EMERGENCY:**
IF THERE IS A SCHOOL CLOSING THE DAY OF A SCHEDULED BID OPENING DUE TO INCLEMENT WEATHER OR AN EMERGENCY, THE BID OPENING WILL OCCUR AT 2:00 PM (CENTRAL) THE NEXT BUSINESS DAY THAT THE DISTRICT IS OPEN.

Cisco Catalyst 9600 Series Switches

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Introduction

Empowering Core Layer and Edge Services with Higher Speeds and Scales

Cisco Catalyst 9600 Series Switches are purpose-built for resiliency at scale with the industry's most comprehensive security and allows your business to grow at the lowest total operational cost. Built upon the foundation of the Catalyst 9000, the Catalyst 9600 Series offers scale and security when always-on is a must.

As a foundational building block for the Cisco Digital Network Architecture, the Catalyst 9600 Series switch help customers simplify complexity, optimize IT, and reduce operational costs by leveraging intelligence, automation, and human expertise that no other vendor can deliver regardless of where you are in the intent-based networking journey.

Catalyst 9600 Series Switches provide security features that protects the integrity of the hardware as well as the software and all data that flows through the switch. It provides resiliency that keeps your business up and running seamlessly. Combine that with open APIs of Cisco IOS XE and programmability of the UADP and Silicon1 ASIC technologies, Catalyst 9600 Series switches give you what you need now with investment protection on future innovations.

As the industry's first purpose-built 40, 100, 200 and 400 Gigabit Ethernet line of modular switches targeted for the enterprise campus, Catalyst 9600 Series switches deliver unmatched table scale (MAC, route, and Access Control List [ACL]) and buffering for enterprise applications. The Cisco Catalyst 9606R chassis is hardware ready to support a wired switching capacity of up to 25.6 Tbps, with up to 6.4 Tbps of bandwidth per slot. Cisco Catalyst 9600 Series switches support granular port densities that fit diverse campus needs, including nonblocking 40, 100, 200 and 400 Gigabit Ethernet (GE) Quad Small Form Factor Double Density (QSFP-DD), 40 and 100 Gigabit Ethernet (GE) Quad Small Form-Factor Pluggable (QSFP+, QSFP28); 1, 10, 25, and 50 GE Small Form-Factor Pluggable Plus (SFP, SFP+, SFP28, SFP56); 10G Multigigabit Ethernet (GE) (10G/5G/2.5G/1G/100M/10M) RJ45 copper ports. The switches also support advanced routing and infrastructure services (such as Multiprotocol Label Switching [MPLS] Layer 2 and Layer 3 VPNs, Multicast VPN [MVPN], and Network Address Translation [NAT]); Cisco Software-Defined Access capabilities (such as a host tracking database, cross-domain connectivity, and VPN Routing and Forwarding [VRF]-aware Locator/ID Separation Protocol [LISP]); and network system virtualization with Cisco StackWise virtual technology that are critical for their placement in the campus core. The Cisco Catalyst 9600 Series also supports foundational high-availability capabilities such as patching, Cisco Nonstop Forwarding with Stateful Switchover (NSF/SSO), redundant platinum-rated (2KW) or titanium-rated (3KW) power supplies, and fans, while supporting a wide array of optics.

The foundation of Software-Defined Access

The enterprise network lies at the heart of digital transformation. A network that is open, programmable, integrated, and secure maximizes business agility, allowing new business opportunities to be pursued and captured. The Cisco Digital Network Architecture (Cisco DNA) with Software-Defined Access (SD-Access) is the network fabric that powers business.

Cisco SD-Access is an open and extensible, software-driven architecture that accelerates and simplifies your enterprise network operations. SD-Access enables policy-based automation from edge to cloud with foundational capabilities.

Product overview

Cisco Catalyst 9600 Series Chassis

- Hardware ready to support up to 25.6 Tbps in wired switching capacity, with up to 6.4 Tbps bandwidth per slot.
- 25.6 Tbps wired switching capacity unleashed with Cisco Catalyst 9600 Series Supervisor Engine 2. Up to 9.6 Tbps in wired switching capacity, with 3 Bpps of forwarding performance with the Cisco Catalyst 9600 Series Supervisor Engine 1.
- Capacity of up to 32 ports of 400G Gigabit Ethernet QSFP-DD ports with the Cisco Catalyst 9600 Series Supervisor Engine 2. Upto 8 non-blocking 400 Gigabit Ethernet QSFP-DD ports supported with current generation Line Cards.
- Up to 48 nonblocking 100 Gigabit Ethernet QSPF28 ports with the Cisco Catalyst 9600 Series Supervisor Engine 1, and upto 128 nonblocking 100 Gigabit Ethernet QSPF28 ports with the Cisco Catalyst 9600 Series Supervisor Engine 2.
- Up to 128 nonblocking 40 Gigabit Ethernet QSPF28 ports with the Cisco Catalyst 9600 Series Supervisor Engine 2 and up to 96 nonblocking 40 Gigabit Ethernet QSFP+ ports with the Cisco Catalyst 9600 Series Supervisor Engine 1.
- Up to 256 nonblocking 50G/25G/10G Gigabit Ethernet QSPF56 ports with the Cisco Catalyst 9600 Series Supervisor Engine 2 and upto 192 nonblocking 25 Gigabit Ethernet /10 Gigabit Ethernet SFP28/SFP+ ports with the Cisco Catalyst 9600 Series Supervisor Engine 1.
- Up to 192 non-blocking 10G multigigabit (10 Gigabit Ethernet / 5 Gigabit Ethernet / 2.5 Gigabit Ethernet / 1 Gigabit Ethernet / 100 Megabit / 10 Megabit) RJ45 copper ports with the Cisco Catalyst 9600 Series Supervisor Engine 1. Supervisor Engine 2 only supports speeds at and above 10 GBps.
- Platinum-rated (2KW) or titanium-rated (3KW) AC power supplies.
- Platinum-rated (2KW) DC power supplies.



Figure 1.
Cisco Catalyst 9606R Chassis

Cisco IOS XE

Cisco IOS XE Software opens a completely new paradigm in network configuration, operation, and monitoring through network automation. Cisco's automation solution is open, standards-based, and extensible across the entire lifecycle of a network device. The various automation mechanisms are outlined below.

- **Automated Device Provisioning** is the ability to automate the process of upgrading software images and installing configuration files on Cisco Catalyst switches when they are being deployed in the network for the first time. Cisco provides turnkey solutions such as Plug and Play and Preboot Execution Environment (PXE) that enable an effortless and automated deployment.
- **API-driven configuration** is available with modern network switches such as Cisco Catalyst 9600 Series switches. It supports a wide range of automation features and provides robust open APIs over NETCONF and RESTCONF using YANG data models for external tools, both off the shelf and custom built, to automatically provision network resources.
- **Granular visibility** enables model-driven telemetry to stream data from a switch to a destination. The data to be streamed is identified through subscription to a data set in a YANG model. The subscribed data set is streamed to the destination at specified intervals. Additionally, Cisco IOS XE enables the push model. It provides near-real-time monitoring of the network, leading to quick detection and rectification of failures.
- **Seamless software upgrades and patching** supports OS resilience. On Cisco Catalyst 9600 Series switches Cisco IOS XE supports hot patching without reboot, which provides fixes for critical bugs and security vulnerabilities between regular maintenance releases. This support lets you add patches without having to wait for the next maintenance release.
- **Trustworthy solutions built with Cisco Trust Anchor Technologies** provide a highly secure foundation for Cisco products. With Cisco Catalyst 9600 Series switches, these technologies enable hardware and software authenticity assurance for supply chain trust and strong mitigation against man-in-the-middle attacks that compromise software and firmware. Trust Anchor capabilities include image signing, Secure Boot, and Cisco Trust Anchor module.

Platform benefits

Table 1. Platform Benefits of the Cisco Catalyst 9600 and 9600X

Model	Catalyst 9600 SUP-1	Catalyst 9600X SUP-2
Resiliency and High Availability		
Software Maintenance Upgrade (SMU)	Yes	Yes
Cisco StackWise Virtual	Yes	Yes ²
Stateful Switchover (SSO)	Yes (2 SUP, SVL)	Yes (2 SUP, SVL)
In-Service Software Upgrade (ISSU)	Yes (2 SUP, SVL)	Yes (2 SUP, SVL)
Graceful Insertion and Removal (GIR)	Yes	Yes
MKA High Availability	Yes	Yes ¹
Enterprise Security		
Trustworthy Solutions	Yes	Yes
Image Signing	Yes	Yes
Secure Boot	Yes	Yes
Cisco Trust Anchor Module	Yes	Yes
MACsec Encryption (256-bit AES-GCM)	Yes	Yes
Cisco WAN MACsec (256-bit AES-GCM)	No	Yes
Object-Group ACLs (IPv4/IPv6)	Yes	Yes
Enterprise QoS		
Modular QoS CLI (MQC)	Yes	Yes
Strict Priority Queuing	Yes	Yes
Class/Color-aware Queuing	Yes (WFQ)	Yes (VoQ)
Policing/Metering	Yes	Yes
Shaping/Bandwidth	Yes	Yes
Hierarchical QoS	Yes (2-level)	Yes (2-level)

Model	Catalyst 9600 SUP-1	Catalyst 9600X SUP-2
IP Routing		
Routing Information Protocol version 2 (RIPv2), and next generation (RIPng)	Yes	Yes
Open Shortest Path First version 2 (OSPFv2), and OSPFv3	Yes	Yes
Enhanced Interior Gateway Routing Protocol (EIGRP), and EIGRPv6	Yes	Yes
Intermediate System-to-Intermediate System Version 4 (IS-ISv4)	Yes	Yes
Border Gateway Protocol version 4 (BGPv4), and BGPv6	Yes	Yes
Protocol-Independent Multicast (PIM) Sparse-Mode (PIM- SM)	Yes	Yes
Protocol-Independent Multicast (PIM) Source- Specific Mode (PIM-SSM)	Yes	Yes
Bidirectional PIM (BIDIR-PIM)	Yes	No
IPv6 routing	Yes	Yes
L3 Routed Sub-Interfaces	Yes	Yes
Multi-Protocol Label Switching (MPLS)		
MPLS L3 VPN	Yes	Yes
Ethernet over MPLS (EoMPLS)	Yes	Yes
Virtual Private LAN Service (VPLS)	Yes	No ²
MPLS over GRE	Yes	No ²
MPLS Traffic-Engineering (MPLS-TE)	Yes	Yes ¹
Ethernet VPN (EVPN)		
Virtual eXtensible LAN (VXLAN)	Yes	No ²
L2 Virtual Network Interface (VNI)	Yes	No ²
L3 Virtual Network Interface (VNI)	Yes	No ²
Distributed Anycast Gateway	Yes	No ²
EVPN Spine	Yes	No ²

Model	Catalyst 9600 SUP-1	Catalyst 9600X SUP-2
VPN Border	Yes	No ²
EVPN Leaf	Yes	No ²
Software-Defined Access (SD-Access)		
Virtual eXtensible LAN (VXLAN)	Yes	Yes
L2 Virtual Network Interface (VNI)	Yes	Yes
L3 Virtual Network Interface (VNI)	Yes	Yes
Distributed Anycast Gateway	Yes	Yes
SDA Control-Plane	Yes	Yes
SDA Border	Yes	Yes
SDA Edge	Yes	No
Flexible NetFlow (FNF)		
FNF IPv4 flow records	Yes	Yes ¹ (software)
FNF IPv6 flow records	Yes	Yes ¹ (software)
FNF sampler	Yes	Yes ¹
FNF data export	Yes	Yes ¹
NetFlow version 9 (NFv9) export	Yes	Yes ¹
IPFIX export	Yes	Yes ¹
Programmability		
NETCONF	Yes	Yes
RESTCONF	Yes	Yes
gNMI/gNOI	Yes	Yes
YANG models	Yes	Yes
ZTP/PTP	Yes	Yes

Model	Catalyst 9600 SUP-1	Catalyst 9600X SUP-2
Smart Operations		
Bluetooth Wireless UI	Yes	Yes
RFID tags	Yes	Yes
Blue beacon	Yes	Yes
Out-of-Band Management	Yes	Yes

¹ C9600X models: minimum IOS XE software release 17.8.1

² C9600X models: feature is not available at FCS, but will be available in future software releases

Cisco Catalyst 9600 Series Chassis

Cisco Catalyst 9600 Series switches offers one chassis option, two supervisor options, and multiple line-card options. It provides a common architecture that can scale up to 192 10 Gigabit or 25 Gigabit Ethernet ports. The Cisco Catalyst 9600 Series redundant chassis offer High Availability (HA) by supporting 1 + 1 redundant supervisor engines with full-image In-Service Software Upgrades (ISSU). NSF/SSO and ISSU help ensure continuous packet forwarding during supervisor engine switchover to enable HA for business-critical applications.

The Cisco Catalyst 9600 Series chassis is enterprise optimized, with efficient side-to-side airflow and full front accessibility for all removable components, including supervisors, line cards, power supplies, and fan tray. The chassis also supports optional rear accessibility for the fan tray to enable efficient cable management. The Cisco Catalyst 9600 Series chassis, supervisor, line cards, power supply, and fan tray have embedded RFID tags that facilitate easy asset and inventory management using commercial RFID readers.

Table 2. Chassis Features

Feature	Cisco Catalyst 9606R chassis
Total number of slots	6
Line Card slots	4
Supervisor Engine slots	2
Dedicated Supervisor Engine slot numbers	3 and 4
Supervisor Engine Redundancy	Yes
Supervisor Engines Supported	C9600-SUP-1, C9600X-SUP-2
Maximum bandwidth scalability per Line Card slot	6.4 Tbps with C9600X-SUP-2 2.4 Tbps with C9600-SUP-1
Number of Power Supply bays	4
Minimum number of Power Supplies	2 ¹

Feature	Cisco Catalyst 9606R chassis
Power Supplies supported	3000W AC, 2000W AC, and 2000W DC
Number of Fan-tray bays	1

¹Fully loaded C9606R chassis, Minimum 3 power supplies required if input voltage is 110V

Supervisor configuration

Cisco Catalyst 9600 Series switches offers an industry-leading supervisor engine built for secure networks, IoT applications, next-generation mobility, and cloud adoption. Supervisor Engine 1 is built with the latest UADP ASIC, with its programmable pipeline and template-based, configurable allocation of Layer 2, Layer 3, forwarding, ACLs and QoS entries, making it ready for next-generation technologies.

The following table lists the maximum bandwidth per slot.

Table 3. Supervisor Engine 1 maximum bandwidth per slot

Feature	Cisco Catalyst 9600 Series Supervisor Engine 1	Cisco Catalyst 9600X Series Supervisor Engine 2
Cisco Catalyst C9606R Chassis	2.4 Tbps per slot	6.4 Tbps per slot

The following table lists the minimum software requirements for the Cisco Catalyst 9600 Series Supervisor Engine 1.

Table 4. Supervisor Engine 1 minimum software requirements

Chassis	Supervisor Engine	Minimum Software Requirement
Cisco 9606R	Cisco Catalyst 9600 Series Supervisor Engine 1	Cisco IOS XE Software Release 16.11.1
	Cisco Catalyst 9600X Series Supervisor Engine 2	Cisco IOS XE Software Release 17.7.1

Line Card Options

Cisco Catalyst 9600 Series switches offers the ability to mix and match a range of line cards to support numerous cores and aggregation deployments. Supported line cards are listed in the following tables by part number.

Table 5. Line Cards compatible with Catalyst 9600 Supervisor Engine 1

Product Number	Description	Minimum Software Requirement
C9600-LC-24C	Cisco Catalyst 9600 Series 24-port 40GE/12-Port 100GE	Cisco IOS XE Software Release 16.11.1
C9600-LC-48YL	Cisco Catalyst 9600 Series 48-port 25GE/10GE/1GE	Cisco IOS XE Software Release 16.11.1
C9600-LC-48TX	Cisco Catalyst 9600 Series 48-port RJ45 Copper - 10GE/5GE/2.5GE/1GE/100Mbps/10Mbps	Cisco IOX XE Software Release 17.1.1
C9600-LC-48S	Cisco Catalyst 9600 Series 48-Port 1GE	Cisco IOX XE Software Release 17.2.1

Product Number	Description	Minimum Software Requirement
C9600-LC-40YL4CD	C9600-LC-40YL4CD Cisco Catalyst 9600 Series Combo line card 40 ports 1/10/25GE SFP and 2 ports 40/100GE QSFP Uplinks	Cisco IOX XE Software Release 17.7.1

*Supported from IOX XE 16.12.2

Table 6. Line Cards compatible with Catalyst 9600 Supervisor Engine 2

Product Number	Description	Minimum Software Requirement
Cisco Catalyst 9600 Series Line Cards		
C9600-LC-24C	Cisco Catalyst 9600 Series 24-port 40GE/100GE line card	Cisco IOS XE Software Release 17.7.1
C9600-LC-48YL	Cisco Catalyst 9600 Series 48-port 25GE/10GE SFP28 line card	Cisco IOS XE Software Release 17.7.1
C9600-LC-48TX	Cisco Catalyst 9600 Series 48-port RJ45 Copper - 10GE line card	Cisco IOX XE Software Release 17.7.1
C9600-LC-40YL4CD	Cisco Catalyst 9600 Series Combo line card 40 ports 50/25/10GE SFP56 2 ports 200/100/40GE QSFP56 uplinks 2 ports 400/200/100/40GE QSFP-DD uplinks	Cisco IOX XE Software Release 17.7.1
C9600X-LC-32CD	Cisco Catalyst 9600 Series Combo line card 30 ports 100/40G QSFP28 2 ports 400/200/100G QSFP-DD	Cisco IOS XE Software Release 17.9.1

Cisco Catalyst 9600 Series switches has flexible interface types and port densities that allow you to mix and match network configurations to meet the specific needs of campus networks in the following table.

Table 7. Maximum Chassis Port Densities

Cisco Catalyst 9606R Chassis	C9600-SUP-1	C9600X-SUP-2
400G	-	8
200G	-	8
100G	48	96 ¹
50G	-	256 ¹
40G	96	96 ¹
25G	192	256 ¹
10G	192	256 ¹

Cisco Catalyst 9606R Chassis	C9600-SUP-1	C9600X-SUP-2
5G**	192	-
2.5G**	192	-
1G	192	-
100M**	192	-
10M**	192	-

**Using C9600-LC-48TX

¹With Breakouts

Licensing

Introduction to Smart Licensing

Cisco Smart Licensing is a flexible licensing model that provides you with an easier, faster, and more consistent way to purchase and manage software across the Cisco portfolio and across your organization. And it's secure – you control what users can access. With Smart Licensing you get:

- **Easy Activation:** Smart Licensing establishes a pool of software licenses that can be used across the entire organization—no more PAKs (Product Activation Keys).
- **Unified Management:** My Cisco Entitlements (MCE) provides a complete view into all your Cisco products and services in an easy-to-use portal, so you always know what you have and what you are using.
- **License Flexibility:** Your software is not node-locked to your hardware, so you can easily use and transfer licenses as needed.
- To use Smart Licensing, you must first set up a Smart Account on Cisco Software Central (software.cisco.com).

For a more detailed overview on Cisco Licensing, go to cisco.com/go/licensingguide.

Software policy for Cisco Catalyst 9600 Series Switches

Packaging: Network and Cisco DNA Licensing

The Cisco Catalyst 9000 family of switches introduces a new and simplified licensing package in the form of base and add-on licenses.

- **The base licensing** package includes Network Advantage licensing options that are tied to the hardware. The base licensing packages cover switching fundamentals, management automation, troubleshooting, and advanced switching features. These base licenses are perpetual.
- **The add-on licensing** package includes the Cisco DNA Advantage option. In addition to on-box capabilities, the features available with this package provide Cisco innovations on the switch, as well as on Cisco DNA Center. The Cisco DNA add-on licenses are available as a subscription.

License consumption is easily determined by the package itself. While base licenses are always permanent and without an expiration date, add-on licenses have to be purchased for a 3-, 5-, or 7- year term (and hence are also known as term- based licenses).

Cisco DNA Advantage Subscription

Cisco DNA Advantage subscriptions offer a flexible way to buy software for the access domain. At each stage in the product lifecycle, Cisco DNA Advantage subscriptions help make buying, managing, and upgrading your network and infrastructure software easier. Cisco DNA Advantage subscriptions provide:

- Flexible licensing models to smoothly distribute customers' software spending over time
- Investment protection for software purchases through software services-enabled license portability
- Lower cost of entry with the new Cisco DNA Advantage Subscription for Switching model

Cisco Catalyst 9600 Series Supervisor 1 based switches run on Cisco IOS XE Release 16.11.1 or later. Catalyst 9600 Series Supervisor 2 based switches run on Cisco IOS XE Release 17.7.1 or later. This software release includes all the features listed earlier in the Platform Software Benefits section.

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

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

Both the base and add-on licenses are also available for a 90-day evaluation period. An evaluation license is activated temporarily, without purchase. An expired evaluation license cannot be reactivated after reloading.

Note: It is not required to deploy Cisco DNA Center, just to use one of the above packages.

For ordering information for Cisco DNA Software for the Cisco Catalyst 9600 Series, go to <https://www.cisco.com/c/en/us/products/software/one-access/switching-part-numbers.html>.

Software Policy for Network Stack components

Customers with the Network Advantage Stack software feature sets will be provided with maintenance updates and bug fixes. These are designed to maintain compliance of the software with published specifications, release notes, and industry standards if the original end user continues to own or use the product or for up to one year from the end-of-sale date for the product, whichever occurs earlier.

Cisco Embedded Support for Cisco DNA Term Components

Cisco Embedded Support delivers the right support for Cisco software products and suites. It will keep your business applications performing as expected and protect your investment. Cisco Embedded Support for the Cisco DNA Advantage term components is included as part of the switch value.

Embedded Support provides access to TAC support, major software updates, maintenance and minor software releases, and the Cisco Software Support site, for increased productivity with anytime access.

Network Licensing

Table 8. Network advantage package features

Features on Cisco Catalyst uplink switches	Network Advantage
Switch Fundamentals Layer 2, Routed Access (RIP, EIGRP Stub, OSPF), PBR, PIM Stub Multicast, PVLAN, VRRP, PBR, Cisco Discovery Protocol, QoS, FHS, 802.1X, CoPP, SXP, IP SLA Responder, SSO	✓
Advanced Switch Capabilities and Scale BGP, EIGRP, HSRP, IS-IS, BSR, MSDP, PIM SM, PIM SSM, BIDIR-PIM, IP SLA, OSPF	✓
Network Segmentation VRF, Software-Defined Access (VXLAN, LISP, SGT), MPLS, mVPN*	✓
Automation NETCONF, RESTCONF, gRPC, YANG, PnP Agent, ZTP/Open PnP, GuestShell (on-box Python)	✓
Telemetry and Visibility Model-driven telemetry, sampled NetFlow, SPAN, RSPAN*	✓
Security MACsec-256	✓

*Sup-2: FCS+

Cisco DNA Licensing

Table 9. Cisco DNA Advantage package features

Features	Cisco DNA Advantage
Switch Features	
Advanced telemetry and visibility Full Flexible NetFlow, EEM	✓
Cisco DNA Center Features	
Day-0 network bring-up automation Cisco Network Plug-and-Play application, network settings, device credentials, LAN automation, host onboarding	✓
Element Management Discovery, inventory, topology, software image, licensing, and configuration management	✓
Element Management Patch management	✓
Basic Assurance Health dashboards – Network, Client, Application; switch and wired client health monitoring	✓
SD-Access Policy-based automation and assurance for wired and wireless	✓

For a full list of features, please see the Cisco DNA Software for Switching feature matrix:

https://www.cisco.com/c/m/en_us/products/software/dna-subscription-switching/en-sw-sub-matrix-switching.html?OID=otren019471

Cisco IOS XE

- This modern operating system for the enterprise provides support for model-driven programmability, on-box Python scripting, streaming telemetry, container-based application hosting, and patching for critical bug fixes. Cisco IOS XE also has built-in defenses to protect against runtime attacks.
- Plug and Play enabled: A simple, secure, unified, and integrated offering eases new branch or campus device rollouts and can also be used to provide updates to an existing network.

Advanced Security

- Advanced Encryption Standard 256 (AES-256) support with the powerful MACsec-256 encryption algorithm is available in hardware.
- Trustworthy solutions: Secure Unique Device Identification (SUDI) support for Plug and Play (PnP) tamper-proof device identity capability secures zero-touch provisioning by allowing your device to show a certificate to the server to be able to get on your network.

SD-Access

- SD-Access is Cisco's leading enterprise architecture. It includes:
 - Policy-based automation from edge to cloud
 - Macro-segmentation and micro-segmentation made easy, with predictable performance and scalability
 - Automation through the Cisco DNA Center Appliance
 - Policy through the Cisco Identity Services Engine (ISE)
 - Network assurance through the Network Data Platform

Physical specifications

Catalyst 9600 chassis

The following table lists physical specifications of the Cisco Catalyst 9606 chassis.

Table 10. Physical Specifications of Cisco Catalyst 9606 Chassis

Description	Specifications
SKU	C9606R
Dimensions (H x W x D)	35.43 x 44.2 x 40.9 cm 13.95 x 17.4 x 16.1"
Rack Units (RU)	8
Chassis Weight with 2 Power Supplies (AC) and Fan tray	31.31 kg (69.03 lbs)
Input Voltage	AC: 90V to 264V, 47 to 63 Hz DC: -40V to -72V
Operating Temperature	-5° to 45° C (23° to 113° F) up to 6000 feet -5° to 40° C (23° to 104° F) up to 10,000 feet
Storage Temperature	-40° to 75° C (40° to 167° F)
Relative Humidity, Operating and Non-operating, Non-condensing	10% to 95%, Non-condensing
Altitude	-60 to 3000 m (-197 to 9843 feet)
Mean Time Between Failures (MTBF) (hours)	C9606R chassis: 4,113,900 C9606 fan tray: 452,570 C9600-PWR-3KWAC: 300,000 C9600-PWR-2KWAC: 300,000 C9600-PWR-2KWDC: 300,000

Description	Specifications
Chassis Weight (without Fan tray, without PSU)	25.36 kg (55.90 lbs)
Weight of Fan-tray	3.56 kg (7.85 lbs)
Weight of individual PSUs	AC PSU (3000W): 1.4 kg (3.09 lbs) AC PSU (2000W): 1.2 kg (2.65 lbs) DC PSU (2000W): 1.28 kg (2.82 lbs)

Power supply

The Cisco Catalyst 9600 Series power supplies support two modes of operation.

Combined Mode

In combined mode, the power available for the entire chassis is equal to the sum of the output power of all of the power supplies multiplied by the share ratio. Additional power supply units operate at ~90% capacity. In combined mode, the power supplies need to be of equal wattage. The power supplies can be AC and DC mixed provided AC input voltage is 220V.

P = Power output of one PSU

Total combined mode power = $P + (N-1) * P * (\text{share ratio})$

N = 1, 2, 3, or 4

Redundant N+1 Mode

The Cisco Catalyst 9600 Series chassis also supports N+1 redundancy, with N independent input circuits and safeguards against the failure of one (+1) of the circuits during a PSU failure. Additional PSUs operate at ~90% capacity. In redundant mode, the power supplies need to be of equal wattage. The power supplies can be AC and DC mixed provided AC input voltage is 220V.

Power supply specifications

The following table gives the power supply specifications for Cisco Catalyst 9600 Series switches.

Table 11. Power Supply Specifications

Power Supply Feature	C9600-PWR-3KWAC	C9600-PWR-2KWAC	C9600-PWR-2KWDC
Max power rating	3000W	2000W	2000W
Input voltage range and frequency	90VAC to 140VAC and 180VAC to 264VAC 47 to 63 Hz	90VAC to 140VAC and 180VAC to 264VAC 47 to 63 Hz	-40VDC to -72VDC frequency
Power supply efficiency	94% (typical)	94% (typical)	92% (typical)
Input current	17.6A max at 115VAC (1500W) 17.6A max at 230VAC (3000W)	10.5A max at 115VAC (1050W) 10.5 A max at 230VAC (2000W)	Maximum: 60A per DC input at -40VDC input (when full PSU loading)
Output ratings	12Vmain at 125A (15000W) 12Vmain at 250A (3000W)	12Vmain at 88A 12Vmain at 167A	12Vmain at 167A
Output holdup time	AC = 20 ms minimum for system	AC = 20 ms minimum for system	AC = 5 ms minimum for system
Power-supply input receptacles	AC IEC 60320 C20	AC IEC 60320 C16	Amphenol C10-638976-000
Power cord rating	AC 20A	AC 15A	DC 70A

The power listed is the absolute maximum. Typically, the power would be 70% of absolute maximum

BTU output

The following table shows the BTU (British Thermal Unit) output.

Table 12. BTU details for 9606R chassis with Fan tray

Total output BTU	BTU
C9606R + C9606-FAN	1,621 (max)

Table 13. Cisco Catalyst 9600 Series Power Cord Options

Power Supply	Product Number	Power Cable Options by Country
C9600-PWR-3KWAC	CAB-9K2A-NA	North America/Japan 20A, 125VAC
	CAB-9K16A-US2	US/Japan 16A, 250VAC
	CAB-9K16A-AUS	Australia 16A, 250VAC
	CAB-9K16A-CH	China 16A, 250VAC
	CAB-9K16A-INT	International 16A, 250VAC
	CAB-9K16A-SW	Switzerland 16A, 250VAC
	CAB-9K16A-EU	Continental Europe 16A, 250VAC
	CAB-C19-CBN	Cabinet Jumper 16A, 250VAC
C9600-PWR-2KWAC	CAB-TA-CN	China AC Type A Power Cable
	CAB-TA-IS	Israel AC Type A Power Cable
	CAB-TA-AP	Australia AC Type A Power Cable
	CAB-TA-AR	Argentina AC Type A Power Cable
	CAB-TA-DN	Denmark AC Type A Power Cable
	CAB-TA-EU	Europe AC Type A Power Cable
	CAB-TA-IN	India AC Type A Power Cable
	CAB-TA-IT	Italy AC Type A Power Cable
	CAB-TA-SW	Switzerland AC Type A Power Cable
	CAB-TA-UK	United Kingdom AC Type A Power Cable
	CAB-TA-NA	North America AC Type A Power Cable
	CAB-C15-CBN	Cabinet Jumper Power Cord, 250 VAC 13A, C14-C15 Connectors
	CAB-TA-JP	Japan AC Type A Power Cable
	CAB-C15-CBN-JP	Japan Cabinet Jumper Power Cord, 250 VAC 12A, C14-C15
	CAB-TA-250V-JP	Japan 250V AC Type A Power Cable
	CAB-ACBZ-12A	AC Power Cord (Brazil) 12A/125V BR-3-20 plug up to 12A
C9600-PWR-2KWDC	PWR-2KW-DC-CBL	Power Cord - 2KW DC

Fan tray

Each Cisco Catalyst 9600 Series switch uses a single serviceable fan tray for cooling. The switches can optionally be accessed from the rear for flexible cable management. The chassis is optimized for enterprise closets, with side-to-side airflow. All fan trays are composed of multiple independently controlled fans. If any single fan fails, the system will continue to operate without a significant degradation in cooling. Fan speeds change dynamically to compensate for fan failure. Cisco Catalyst 9600 Series fans have a barometric sensor, which allows slower fan speed curves at lower altitudes. The fans also have individual Pulse-Wide Modulation (PWM) fine-tuning to reduce variability in fan revolutions per minute (rpm) under throttled conditions. The measured acoustic noise in a formal NEBS test environment is 77.7 Lwad (dB). The chassis are designed to accommodate fanless operation of up to 90 seconds to enable serviceability.



Figure 2.
Cisco Catalyst 9606R Chassis with Fan Tray

Regulatory standards compliance

The following table lists the regulatory standards compliance for Cisco Catalyst 9600 Series switches.

Table 14. Safety and Compliance Information

Description	Specification
Safety certifications	C9606R <ul style="list-style-type: none"> • IEC 60950-1 plus Am1, Am2, Am9, Am10, Am11, Am12 and all deviations and differences • AS/NZS 60950.1.2011 • CAN/CSA-C22.2 No. 60950-1-07 • GB 4943-95 • EN 60950-1; 2006 plus Am1, Am 2, Am9, Am10, Am11, Am12 and all deviations and differences • NOM-019-SCFI-1998 • UL 60950-1, Second Edition
EMI and EMC Compliance	47 CFR Part 15 Class A CNS13438: 2006 Class A EN 300 386 V1.6.1 EN61000-3-2: 2014 EN61000-3-3: 2013 ICES-003 Issue 6: 2016 Class A KN 32: 2015 Class A TCVN 7189: 2009 Class A EN 55032:2012/ AC:2013 Class A EN 55032:2015 Class A CISPR 32 Edition 2 Class A V-2/2015.04 Class A V-3/2015.04 Class A CISPR24: 2010 + A1: 2015 EN 300 386 V1.6.1 EN55024: 2010 + A1: 2015 KN35: 2015 TCVN 7317: 2003

Ordering information

The following table lists the ordering information for chassis, power supplies, supervisor engines, and memory that are commonly used with the Cisco Catalyst 9600 Series, as well as the Cisco DNA term licenses.

Table 15. Ordering information

Product Number	Description
C9606R (=)	Cisco Catalyst 9600 Series 6 Slot Chassis
C9600-SUP-1 (=)	Cisco Catalyst 9600 Series Supervisor 1 Module
C9600-SUP-1/2	Cisco Catalyst 9600 Series Redundant Supervisor 1 Module
C9600X-SUP-2 (=)	Cisco Catalyst 9600 Series Supervisor 2 Module
C9600X-SUP-2/2	Cisco Catalyst 9600 Series Redundant Supervisor 2 Module
C9600-LC-24C (=)	Cisco Catalyst 9600 Series 24-Port 40GE/12-Port 100GE line card
C9600-LC-48YL (=)	Cisco Catalyst 9600 Series 48-Port 25GE/10GE/1GE line card
C9600-LC-48TX (=)	Cisco Catalyst 9600 Series 48-port RJ45 Copper - 10GE/5GE/2.5GE/1GE/100Mbps/10Mbps line card
C9600-LC-48S (=)	Cisco Catalyst 9600 Series 48-Port 1GE line card
C9600-LC-40YL4CD (=)	Cisco Catalyst 9600 Series Combo line card 40 ports 50/25/10GE SFP56 2 ports 200/100/40QSFP56 uplinks 2 ports 400/200/100GE QSFP-DD uplinks
C9600X-LC-32CD (=)	Cisco Catalyst 9600 Series Combo line card 30 ports 100/40G QSFP28 2 ports 400/200/100G QSFP-DD
C9606-FAN (=)	Cisco Catalyst 9600 Series C9606 Chassis Fan Tray
C9K-F2-SSD-240GB (=)	Cisco Catalyst 9600 Series 240GB SSD Storage
C9K-F2-SSD-480GB (=)	Cisco Catalyst 9600 Series 480GB SSD Storage
C9K-F2-SSD-960GB (=)	Cisco Catalyst 9600 Series 960GB SSD Storage

Product Number	Description
Cisco DNA Term Licenses	Description
C9600-DNA-A	C9600 Cisco DNA Advantage Term License
C9600-DNA-A-3Y	C9600 Cisco DNA Advantage 3 Year License
C9600-DNA-A-5Y	C9600 Cisco DNA Advantage 5 Year License
C9600-DNA-A-7Y	C9600 Cisco DNA Advantage 7 Year License
Power Supplies	Description
C9600-PWR-3KWAC (=)	Cisco Catalyst 9600 Series 3000W AC Power Supply
C9600-PWR-2KWAC (=)	Cisco Catalyst 9600 Series 2000W AC Power Supply
C9600-PWR-2KWDC (=)	Cisco Catalyst 9600 Series 2000W DC Power Supply
Spare Accessories and Kits	Description
C9606-SLOT-BLANK (=)	Cisco Catalyst 9600 Series Blank for Chassis Module Slot
C9606-PWR-BLANK (=)	Cisco Catalyst 9600 Series Blank for Chassis Power Supply Slot
CAB-CONSOLE-USB	Console Cable 6ft with USB Type A and mini-B
CAB-CONSOLE-RJ45	Console Cable 6ft with RJ45 and DB9F
C9606-RACK-KIT=	Cisco Catalyst 9600 Series 6 slot chassis Rack Mount
C9606-ACC-KIT=	Cisco Catalyst 9600 Series 6 slot chassis Accessory Kit
C9606-SHELF-KIT=	Cisco Catalyst 9600 Series 6 slot chassis Shelf Install Kit
C9606-FB-23-KIT=	Cisco Catalyst 9600 Series 6 slot chassis Front to Back Kit

Cisco environmental sustainability

Information about Cisco Environmental, Social and Governance (ESG) initiatives, performance, and policies for our products, solutions, operations, and extended operations or supply chain is provided in the [Cisco ESG Reporting Hub](#) website, including the [Cisco Purpose Report](#).

Referenced links to information about key environmental sustainability topics are provided in the following table:

Table 16. Product Sustainability

Sustainability Topic	Reference	Resource
General	Information on product-material-content laws and regulations	Materials
	Information on electronic waste laws and regulations, including our products, batteries and packaging	WEEE Compliance
	Sustainability Inquiries	Contact: csr_inquiries@cisco.com
	Information on product takeback and reuse program	Cisco Takeback and Reuse Program
	Safety and compliance	Safety and Compliance Information
	Mean Time Between Failures - MTBF (hours)	Physical Specifications
Power	Default AC power supply	Platform Benefits
	Power supplies	Power Supply Specifications
	Fan	Fan Tray
Material	Weight	Physical Specifications
	Elimination of wet paint	Environment Circular Economy Commitment to Net Zero
	Product packaging weight and materials	Contact: environment@cisco.com
	Dimensions	Physical Specifications

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.

Warranty

Cisco Enhanced Limited Lifetime Hardware Warranty

Cisco Catalyst 9600 Series switches come with an Enhanced Limited Lifetime Warranty (E-LLW) that includes Next-Business-Day (NBD) 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 carefully review the warranty statement shipped with your specific product before use. Cisco reserves the right to refund the purchase price as its exclusive warranty remedy. For further information about warranty terms, visit <https://www.cisco.com/go/warranty>.

The following table provides information about the E-LLW.

Table 17. Enhanced Limited Lifetime Warranty (E-LLW) Details

Description	Cisco E-LLW
Devices Covered	Applies to Cisco Catalyst 9600 Series switches.
Warranty Duration	As long as the original customer owns 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 replacement for NBD delivery, where available. Otherwise, a replacement will be shipped within 10 working days after receipt of the Return Materials Authorization (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 9600 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 services

Successfully deploy, manage, and support Cisco Catalyst 9000 switches with a full life cycle of Cisco Services including implementation, optimization, technical, managed and training services. Our team of experts can help you speed deployment, reduce costs and minimize risk as you introduce new hardware, software and protocols into the network. As your trusted advisor, we help you achieve extraordinary business outcomes, minimize risk and disruption so you can anticipate change and pivot quickly, securely, and confidently.

Table 18. Technical Services

Cisco Technical Services
Cisco Smart Net Total Care Service <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• NBD, 8x5x4, 24x7x4, and 24x7x2 advance hardware replacement and onsite parts replacement and installation available• Ongoing operating system software updates within the licensed feature set¹• Proactive diagnostics and real-time alerts on Smart Call Home-enabled devices
Cisco Solution Support Service <ul style="list-style-type: none">• Provides a team of experts who act as primary point of contact to deliver centralized support, including in multivendor network environments• Speed is paramount when problems arise, so we deliver on a 30-minute service level objective and prioritize Solution Support cases• Expert guidance helps to enhance IT operations with fewer outages and faster problem resolution while maximizing performance and reliability of Catalyst 9600 Series switches• We even look beyond identified problems and provide the necessary guidance needed to help you avoid any pitfalls before they can disrupt IT or your business

¹Cisco operating system updates include the following: maintenance releases, minor updates, and major updates within the licensed feature set

[Learn more about available services.](#)

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Document history

New or Revised Topic	Described In	Date
Added 3000W AC power supply and updated Cisco environmental sustainability section	All applicable areas	November 24 th , 2022
Added C9600X-LC-32CD	All applicable tables	June 14 th , 2022
Added C9600X-SUP-2, C9600-LC-40YL4CD sections	All applicable tables	February 03 rd , 2022
Added C9600-LC-48TX sections	All applicable tables	November 25 th , 2019
Original version of C9600 Switches data sheet	Data sheet	March 25 th , 2019

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