Cisco Catalyst 8500 Series Edge Platforms

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The Cisco Catalyst 8500 Series Edge Platforms are high-performance cloud edge platforms designed for accelerated services, multi-layer security, cloud-native agility, and edge intelligence to accelerate your journey to cloud.



Platform details

Platforms and configurations

The C8500-20X6C platform (Figure 1) allows all ports to be enabled simultaneously. It offers:

- 20x 1/10GE ports
- 6x 40/100GE ports

The C8500-12X4QC platform (Figure 2) allows for a maximum of 240GE ports to be enabled simultaneously. It offers:

- 12x 1/10GE ports (can increase to 24x 1/10GE if using 4x10GE breakout from QSFP 40G ports when not in SD-WAN mode)
- 3x 40GE ports
- 2x 40/100GE ports

The C8500-12X platform (Figure 3) offers 12x 1/10GE ports.

The C8500L-8S4X platform (Figure 4) offers 4x 1/10GE and 8x 1GE ports.



Figure 1.
C8500-20X6C



Figure 2.
C8500-12X4QC

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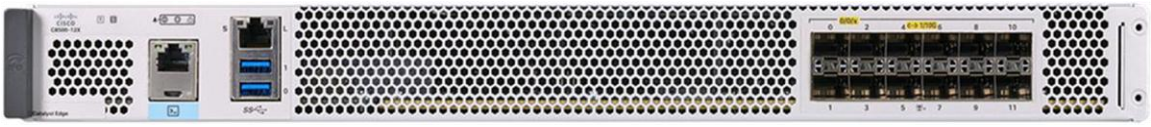


Figure 3.
C8500-12X with 12x 1/10GE ports



Figure 4.
C8500L-8S4X with 4x 1/10GE and 8x 1GE ports

Nomenclature note

Catalyst 8500 Edge Platforms refer to C8500-12X, C8500-12X4QC and C8500-20X6C.

Catalyst 8500L Edge Platform refers to C8500L-8S4X.

Catalyst 8500 Series Edge Platforms refer to Catalyst 8500 and Catalyst 8500L Edge Platforms together.

Foundation for Software-Defined WAN

Cisco Catalyst 8500 Series Edge Platforms (Catalyst 8500 and Catalyst 8500L) with Cisco IOS XE SD-WAN Software deliver Cisco's secure, cloud-scale SD-WAN solution for aggregation sites. The Catalyst 8500 Edge Platforms feature the all-new third-generation Cisco Quantum Flow Processor (QFP), the Catalyst 8500 Series Edge Platforms are built for services from the ground up. The Catalyst 8500L Edge Platform features an x86 based platform architecture that is purpose built to continue delivering the same experience as an ASR1000 platform. The Catalyst 8500 Series Edge Platforms are compact 1RU or 3RU (Catalyst C8500-20X6C) devices with flexible interface options, including 1GE, 10GE, 40GE, and 100GE ports. Powered by Cisco IOS XE, fully programmable software architecture, and API support, these platforms can facilitate automation at scale to achieve zero-touch IT capability while migrating workloads to the cloud.

Product overview

Catalyst 8500 Edge Platform Product highlights

Table 1. Catalyst 8500 Edge Platform Product highlights

Product feature	Benefits and description
All-new third-generation Quantum Flow Processor (QFP) ASIC	• Inline hardware-accelerated encryption for high-throughput IPsec and MACsec • High-performance routing and Cisco Catalyst SD-WAN with services
IPsec	• Up to 5X higher IPsec throughput than 2nd Gen QFP devices
Multicore control processor	• Intel x86 CPU with 16 GB memory default (up to 64 GB memory) for high-speed control plane processes
Interface flexibility	• Options for 1GE, 10GE, 40GE, and 100GE ports

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Product feature	Benefits and description
DRAM	• All Catalyst 8500 Edge Platforms have 16 GB default DRAM and can be upgraded to 32 GB and 64 GB for higher scale. C8500-20X6C has 64GB of DRAM by default (Maximum possible)
SSD storage	• Default 32-GB eUSB for storage with optional 480-GB SSD upgrade. C8500-20X6C has 480-GB-SSD as default (Maximum available).
Redundancy	• High-efficiency dual power supplies by default for power supply redundancy • N+1 redundancy (Option N+2 redundancy) High-efficiency power supplies by default for power supply redundancy on the C8500-20X6C • All Catalyst 8500 Edge Platforms support software redundancy with 2 Cisco IOS processes running on a single device (IOS XE routing mode)
Form factor	• Compact 1RU form factor on the C8500-12X and C8500-12X4QC • Enhanced 3RU form factor C8500-20X6C
Integrated security	• Hardware-anchored Secure Boot and Secure Unique Device Identification (SUDI) support for Plug and Play to verify the identity of the hardware and software

Table 2. Catalyst 8500L Edge Platform Product highlights

Product feature	Benefits and description
x86 Based Platform Architecture	• Advanced flow based forwarding reduces overhead for stateful features • Dynamic core allocation architecture that can leverage data plane cores for I/O and service plane as per-user configuration • Higher performance routing and SD-WAN with services
IPsec	• Up to 2.5X higher IPsec throughput compared to ASR1001-X/ASR1002-X, 19 Gbps (1400 bytes, clear text)
High Performance Control Plane	• Intel x86 CPU with multiple cores allocated to control plane with 16 GB memory default (up to 64 GB memory) for high-speed control plane processes
Interface flexibility	• Includes 1G and flexible 1G/10G interfaces
DRAM	• All Catalyst 8500 Edge Platforms have 16 GB default DRAM and can be upgraded to 32 GB or 64 GB for higher scale
Flash storage	• Default 16G eUSB for storage and can be upgraded 32G eUSB for additional storage on the platform
SSD Storage	• Optional SSD M.2 NVMe 2TB upgrade for additional storage on the platform
Redundancy	• High-efficiency dual power supplies by default for power supply redundancy • All Catalyst 8500 Edge Platforms support software redundancy with 2 Cisco IOS processes running on a single device (IOS XE routing mode)
Form factor	• Compact 1RU form factor
Integrated security	• Hardware-anchored Secure Boot and Secure Unique Device Identification (SUDI) support for Plug and Play to verify the identity of the hardware and software

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Table 3 provides details on each platform's configurations and port density. Table 4 shows the maximum port configurations for the Cisco Catalyst C8500-20X6C and Table 5 shows the maximum port configurations for the Cisco Catalyst C8500-12X4QC platform.

Table 3. Cisco Catalyst 8500 Series configurations and port density

Platform	Description	Max 1GE ports	Max 10GE ports	Max 40GE ports	Max 100GE ports
C8500-20X6C*	20-port 1/10GE, 6-port 40/100GE	20*	20*	6*	6*
C8500-12X4QC**	12-port 1/10GE, 2-port 40/100GE, 2-port 40GE	12**	12**, ***	4**	2**
C8500-12X	12-port 1/10GE	12	12	0	0
C8500L-8S4X	4-port 1/10GE, 8-port 1GE	12	4	0	0

* All interfaces (total of 800 Gbps bandwidth) can be enabled simultaneously

** Up to 240GE of ports can be enabled simultaneously

*** By using 4x10GE breakout cables for the QSFP 40G ports, a total of 24 10GE interfaces can be configured. This is not supported in SD-WAN mode.

Table 4. Maximum ports configurations for Cisco Catalyst C8500-20X6C (All ports can be enabled)

Ports type	Configuration
Max 1 GE	20x1GE
Max 10 GE	20x10GE
Max 40 GE + 10 GE	6x40GE + 20x10GE
Max 100 GE + 10 GE	6x100GE + 20x10GE
Max 40/100 GE + 10 GE	6x40/100GE + 20x10GE
Max 40/100 GE + 10 GE	6x40/100GE + 20x1/10GE

Table 5. Maximum ports configurations for Cisco Catalyst C8500-12X4QC

Ports type	Configuration
Max 1 GE	12x1GE
Max 10 GE **	12x10GE
Max 40 GE + 10 GE	4x40GE + 8x10GE
Max 100 GE	2x100GE*
Max 100 GE + 40 GE	1x100GE + 3x40GE

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Ports type	Configuration
Max 100 GE + 40 GE + 10 GE	1x100GE + 1x40GE + 8x10GE
Max 100 GE + 10 GE	1x100GE + 12x10GE
Max 10 GE + 40 GE	12x10GE + 3x40GE

* When Bay 1 is set up in 100GE mode, no other ports available in Bay 0 or Bay 1.

** By using 4x10GE breakout cables for the QSFP 40G ports, a total of 24 10GE interfaces can be configured. This is not supported in SD-WAN mode.

Figures 5 and 6 are a series of images that highlight the Cisco Catalyst C8500-12X4QC platform's port options in each of its bays.

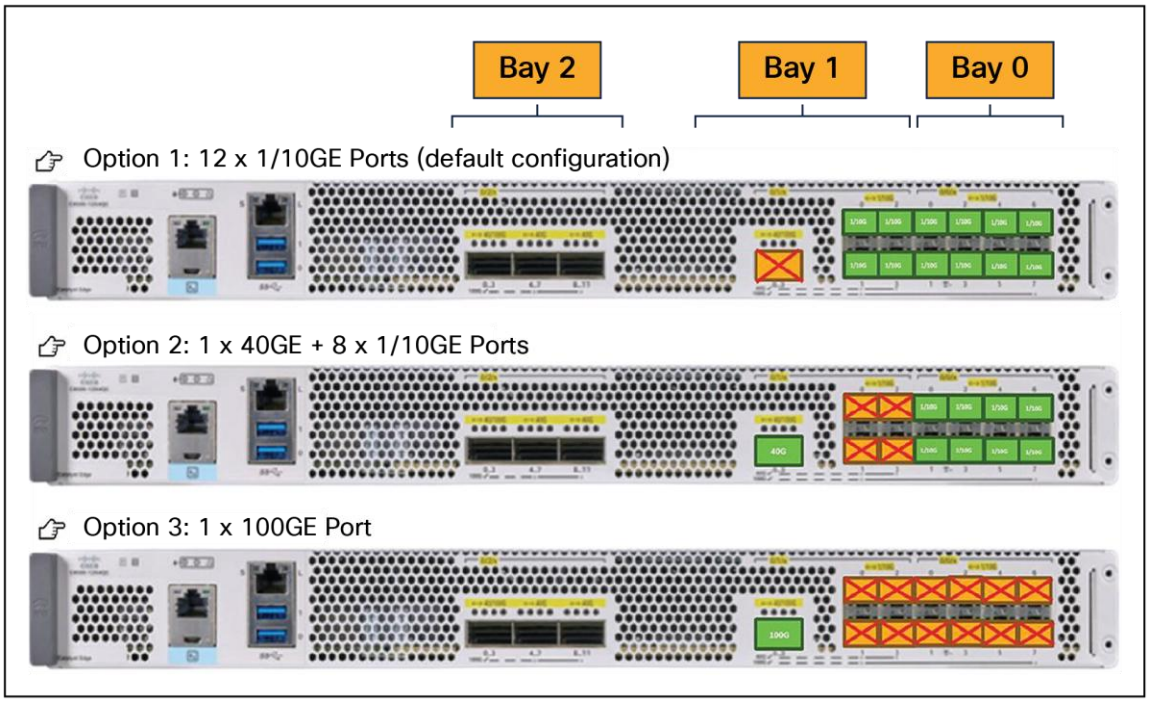


Figure 5.
Bay 0 + bay 1 port options

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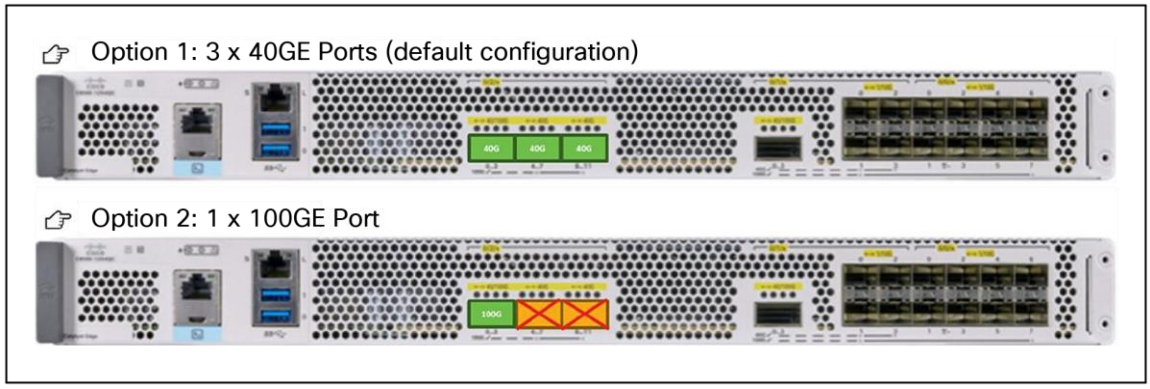


Figure 6.
Bay 2 port options

Table 5a. Cisco controller mode (Catalyst SD-WAN) performance specifications

Performance attribute	C8500-20X6C	C8500-12X4QC	C8500-12X	C8500L-8S4X
SD-WAN IPsec Throughput (1400Bytes, clear text)	Up to 350Gbps	UP to 96Gbps	Up to 51Gbps	Up to 19Gbps
SD-WAN IPsec Throughput (IMIX*, clear text)**	Up to 100Gbps	Up to 31.9Gbps	Up to 22.6Gbps	Up to 10Gbps
SD-WAN Overlay Tunnels scale	8000 (10000[2])	8000 (10000[2])	8000 (10000[2])	6000 (8000[1])

[1] IOS XE 17.12.1, 20.12.1

[2] IOS XE

SD-WAN Multi-layer security performance use cases for Catalyst 8500L Edge Platform

The Cisco Catalyst 8500L Edge platform connects to branch offices to the Internet and cloud, with industry-leading protection against major web attacks. Table 1 below provides test results for common Multi-layer Security use cases in SD-WAN.

- The first use case is with 50% of the traffic encrypted in IQDF traffic pattern (IPSec + Quality of Service (QoS) + Deep Packet Inspection (DPI) + Flexible Netflow (FNF) and another 50% of unencrypted Direct Internet Access (DIA) traffic protected by advanced security features. This protection includes NG-FW, IPS, URLF (URL-Filtering) and AMP (Advanced Malware Protection).
- The third use case is with 100% unencrypted DIA traffic protected by the same advanced security features as in the second use case.

Table 5b. Cisco Catalyst 8500L Series SD-WAN, Multi-layer security performance use cases*

Performance attribute	C8500L-8S4X
50% IQDF*+ 50% (DIA w. NAT + NGFW + IPS + URLF + AMP)	Up to 5.9 Gbps
DIA w. NAT + NGFW + IPS + URLF + AMP	Up to 4 Gbps

*Tested with IOS XE release 17.12.2. All NGFW + UTD tests with Firewall EMIX traffic profile

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Table 5c. Cisco autonomous mode (non SD-WAN) performance specifications

Performance attribute	C8500-20X6C	C8500-12X4QC	C8500-12X	C8500L-8S4X
IPv4 Forwarding Throughput (1400 bytes)	Up to 500Gbps	Up to 197Gbps	Up to 118Gbps	Up to 39Gbps
IPsec Throughput (1400 bytes, clear text)**	Up to 400Gbps	Up to 135Gbps	Up to 84Gbps	Up to 19Gbps
Number of IPsec SVTI Tunnels	4000	4000	4000	4000

Table 5d. Cisco autonomous mode (non SD-WAN) system scalability

Performance attribute	C8500-20X6C	C8500-12X4QC	C8500-12X	C8500L-8S4X
Number of ACLs per system	8000	4000	4000	4000
Number of IPv4 ACEs per system	380K	380K	47K	50K
Number of IPv4 Routes	7M w/ default 64GB (16M w/ default 64GB [1])	4M w/ default 16GB	4M w/ default 16GB	4M w/ default 16GB
Number of IPv6 Routes	7M w/ default 64GB (16M w/ default 64GB [1])	4M w/ default 16GB	4M w/ default 16GB	4M w/ default 16GB
Number of Queues	256K	256K	256K	16K
Number of NAT Sessions	32M	16M	12M	2M
Number of Firewall Sessions	32M	6M	6M	2M
Number of VRFs	8000	8000	8000	8000

*IMIX is average packet size of 352 Bytes packet size.

**Based on clear text traffic measurement from traffic generator.

[1] Starting in IOS XE 17.15.1, 20.15.1

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Overall platform benefits

Accelerated services with Cisco Catalyst Software-Defined WAN

Cisco Catalyst SD-WAN is a set of intelligent software services that allow you to connect users, devices, and branch office locations reliably and securely across a diverse set of WAN transport links. Cisco Catalyst 8000 Series Edge Platforms can dynamically route traffic across the “best” link based on up-to-the-minute application and network conditions for great application experiences. You get tight control over application performance, bandwidth usage, data privacy, and availability of your WAN links—control you need as your branches conduct greater volumes of mission-critical business with both on-premises and cloud controllers.

Application optimization

Ensure that your Cisco Catalyst SD-WAN networks meet Service-Level Agreements (SLAs) and maintain strong performance, even if network problems occur. With multi-cloud access, you can accelerate your SaaS applications with a simple template push from the SD-WAN controller.

Multi-layer security

You can now move your traditional and complex WAN networks to a more agile software-defined WAN with integrated security. The Cisco Catalyst 8500 Series Edge Platforms feature on-premises and cloud-based security options.

Application visibility

Applications and users are more distributed than ever, and the internet has effectively become the new enterprise WAN. As organizations continue to embrace internet, cloud, and SaaS, network and IT teams are challenged to deliver consistent and reliable connectivity and application performance over networks and services they don’t own or directly control.

The Catalyst 8500 Series Edge Platforms are integrated with Cisco ThousandEyes internet and cloud intelligence. IT managers now have expanded visibility, including hop-by-hop analytics, into network underlay, proactive monitoring of SD-WAN overlay, and performance measurement of SaaS applications. This granular visibility ultimately lowers the Mean Time to Identification of Issues (MTTI) and accelerates resolution time.

Cloud-native agility with programmable software architecture

Cisco continues to offer a feature-rich traditional IOS XE routing stack on the Cisco Catalyst 8000 Series Edge Platforms. IP Routing, IPSec, Quality of Service (QoS), firewall, Network Address Translation (NAT), Network-Based Application Recognition (NBAR), Flexible NetFlow (FNF), and many other features are part of Cisco IOS XE, a fully programmable software architecture with API support and a wide variety of protocols and configurations. With an integrated software image and a single binary file, you can now choose between Cisco IOS XE SD-WAN and Cisco IOS XE. And easily move from one to the other when you choose to do so.

5G-ready

The Cisco Catalyst 8500 Series Edge Platforms are built for future 5G networks. These platforms support external cellular gateway modules with LTE/5G capability for improved throughput and latency.

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Compact form factor

The Cisco Catalyst 8500 Series Edge platforms feature compact 1RU and 3RU platforms with rich interface options, including 1G, 10G, 40G, and 100G ports. Featuring the highly efficient third-generation QFP, the Cisco Catalyst 8500 Series Edge Platforms are built without compromising on performance and ports.

Memory, storage, and accessory options

Table 6. Cisco Catalyst 8500 Series C8500-20X6C memory, storage, and accessory options

Product number	Description
C8500-FILTER-ASSY	Cisco NEBs level 3 filter

Note: MEM-C8500-64GB memory, SSD-M2SATA-480G SSD M.2 SATA 480 GB and C8500-ACCKIT3R-19 Cisco Mounting Brackets/accessory kit – 19 inches come standard as a default SKU.

Table 7. Cisco Catalyst 8500 Series C8500-12X and C8500-12X4QC memory, storage, and accessory options

Product number	Description
MEM-C8500-32GB	Cisco C8500 32 GB memory
MEM-C8500-64GB	Cisco C8500 64 GB memory
SSD-M2SATA-480G	Cisco C8500 SSD M.2 SATA 480 GB
C8500-ACCKIT-19	Cisco Catalyst 8500 Edge accessory kit - 19 inches
C8500-ACCKIT-23	Cisco Catalyst 8500 Edge accessory kit - 23 inches
C8500-4PT-KIT	Cisco Catalyst 8500 Edge accessory kit – 4-post kit

Table 8. Cisco Catalyst 8500L Edge Platform memory, storage, and accessory options

Product number	Description
MEM-C8500L-32GB	Cisco C8500L 32 GB memory
MEM-C8500L-64GB	Cisco C8500L 64 GB memory
SSD-M2NVME-2T	Cisco C8500L SSD M.2 NVMe 2TB
C8500L-RM-19-1R	Cisco Catalyst 8500L Edge accessory kit - 19 inches
C8500L-RM-23-1R	Cisco Catalyst 8500L Edge accessory kit - 23 inches
C8500L-4PT-KIT	Cisco Catalyst 8500L Edge accessory kit – 4-post kit

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Optics and transceivers modules

A full list of optics and transceivers is available at: https://tmgmatrix.cisco.com/?si=C8500.

Resiliency and high availability

Platform redundancy is critical, as any downtime has direct impact to a customer's business. The Catalyst 8500 Series Edge Platforms ship with high-efficiency dual power supplies by default for power supply redundancy. All Catalyst 8500 Edge Platforms support software redundancy with two IOS XE processes running on a single device (IOS XE routing mode) for additional control-plane resiliency.

Power supplies

Table 9. Cisco Catalyst 8500-20X6C Series power supply specifications

Power supply feature	PWR-CH1-1100WAC	PWR-CH1-950WDC
Power maximum rating	1100W	950W
Input-voltage range and frequency	90-264 V AC 50-60 Hz	DC: -40 to -72V; -48V nominal
Power supply efficiency (nominal)	80 Plus Platinum 90% 90% @ 20% load 92% @ 50% load 89% @ 100% load	86%
Power Factor (min)	0.90	N/A
AC Line Inrush (peak)	50A	N/A
Input current	13 A (at 100V AC) 7 A (at 200V AC)	27.6 A to 15.3 A (23 A)
Output ratings	12 V 90A	12 V 79 A
Output holdup time	16 ms	4 ms
Power supply input receptacles	IEC 320 C14	Amphenol FXTH series 2 terminal block
Power cord rating	10 A	#10 wire 30 A

Note: The 8500-20X6C has 4 Power Supply slots maximum and a minimum of 2 power supplies must be populated/powered.

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Table 10. Cisco Catalyst 8500 Series power supply specifications for C8500-12X and C850012X4QC

Power supply feature	PWR-CH1-750WACR	PWR-CH1-950WDCR
Power maximum rating	750W	950W
Input-voltage range and frequency	85 to 264 VAC 47 to 63 Hz	DC: -40 to -72V; -48V nominal
Power supply efficiency (nominal)	80 Plus Platinum 90% @ 20% load 92% @ 50% load 89% @ 100% load	86%
Power Factor (min)	0.90	N/A
AC Line Inrush (peak)	50A	N/A
Input current	9.4 A to 3.0 A	27.6 A to 15.3 A (23 A)
Output ratings	12 V 63 A	12 V 79 A
Output holdup time	20 ms	4 ms
Power supply input receptacles	IEC 320 C14	Amphenol FXTH series 2 terminal block
Power cord rating	10 A	#10 wire 30 A

Table 11. Cisco Catalyst 8500L Edge Platform power supply specifications

Power supply feature	PWR-CH1-400WAC	PWR-CH1-400WDC	PWR-CC1-400WHV
Power maximum rating	424W	400W	500W (12V at 42A) output
Input-voltage range and frequency	85 to 264 Vac 47 to 63 Hz	DC: -40 to -72V; -48V nominal	85 to 305 Vac 47 to 63 Hz 192 to 400 Vdc
Power supply efficiency (nominal)	80 Plus Silver 85% @ 20% load 89% @ 50% load 85% @ 100% load	85% @ 20% load 88% @ 50% load 85% @ 100% load	80 Plus Platinum 90% @ 20% load 94% @ 50% load 91% @ 100% load
Input current	<3A @ 200 Vac <6A @ 100 Vac	<8A @ -60 Vdc <15A @ -48 Vdc	<7A @ 100 Vac <2.1A @ 277 Vac <3A @ 240 Vdc <1.5A @ 380 Vdc
Output ratings	400W	400W	500W

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Power supply feature	PWR-CH1-400WAC	PWR-CH1-400WDC	PWR-CC1-400WHV
Output holdup time	T,vout_holdup = 20 ms T,pw_ok_holdup = 5 ms	T,vout_holdup = 8 ms T,pw_ok_holdup = 2 ms	T,vout_holdup = 20 ms T,pw_ok_holdup = 20 ms
Power supply input receptacles	IEC 320 Style	TBD	Saf-D-Grid, 2006 series

Table 12. Cisco Catalyst 8500 Edge Platform acoustics sound power and pressure specifications

Power supply feature	C8500-20X6C	C8500-12X and C8500-12X4QC	C8500L-8S4X
Sound Pressure	Typical: 63.3 dBA Maximum: 79.3 dBA	Typical: 61.1 dBA Maximum 69.8 dBA	Typical: 57 dBA Maximum 76 dBA
Sound Power	Typical: 77.4 dBA Maximum 93.3 dBA	Typical: 75.1 dBA Maximum 83.8 dBA	Typical: 64 dBA Maximum 82 dBA

RFID tags: Catalyst 8500 Series Edge Platforms have an embedded RFID tag that holds Serial Number and Product ID for easy asset and inventory management using commercial RFID readers.

The RFID tag is external and can be easily removed if needed or can be unselected at the time of ordering.

Software requirements

Table 13. Minimum software requirements for Cisco Catalyst 8500 Series Edge Platforms

Part number	Description	Minimum software requirement
C8500-20X6C	Cisco Catalyst 8500 Series 20-port SFP+, 6-port QSFP+	Cisco IOS XE Software Release 17.10.1
C8500-12X4QC	Cisco Catalyst 8500 Series 12-port SFP+, 2-port QSFP+, 2-port QSPF28	Cisco IOS XE Software Release 17.3.2
C8500-12X	Cisco Catalyst 8500 Series 12-port SFP+	Cisco IOS XE Software Release 17.3.2
C8500L-8S4X	Cisco Catalyst 8500 Series 4 port SFP+, 8 port SFP -port SFP+, 8x1GE,4x10GE	Cisco IOS XE Software Release 17.4.1a

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Table 14. ThousandEyes requirements

Feature	Description
Cisco ThousandEyes	ThousandEyes is natively integrated with eligible Catalyst 8500 Series Edge Platforms having greater than 8 GB DRAM and 8 GB bootflash/storage. Additional memory and storage may be necessary for concurrently running the ThousandEyes agent with containerized SD-WAN security services.

Table 15. Software features and protocols for autonomous mode

Feature	Description
Protocols	IPv4, Ipv6, static routes, Routing Information Protocol Versions 1 and 2 (RIP and RIPv2), Open Shortest Path First (OSPF), Enhanced Interior Gateway Routing Protocol (EIGRP), Border Gateway Protocol (BGP), BGP Router Reflector, Intermediate System-to-Intermediate System (IS-IS), Multicast Internet Group Management Protocol Version 3 (IGMPv3), Protocol Independent Multicast Sparse Mode (PIM SM), PIM Source-Specific Multicast (SSM), Resource Reservation Protocol (RSVP), Cisco Discovery Protocol, Encapsulated Remote Switched Port Analyzer (ERSPAN), Cisco IOS IP Service-Level Agreements (IPSLA), Call Home, Cisco IOS Embedded Event Manager (EEM), Internet Key Exchange (IKE), Access Control Lists (ACL), Ethernet Virtual Connections (EVC), Dynamic Host Configuration Protocol (DHCP), Frame Relay, DNS, Locator ID Separation Protocol (LISP), Hot Standby Router Protocol (HSRP), RADIUS, Authentication, Authorization, and Accounting (AAA), Application Visibility and Control (AVC), Distance Vector Multicast Routing Protocol (DVMRP), Ipv4-to-Ipv6 Multicast, Multiprotocol Label Switching (MPLS), Layer 2 and Layer 3 VPN, Ipsec, WAN MACsec, Layer 2 Tunneling Protocol Version 3 (L2TPv3), Bidirectional Forwarding Detection (BFD), IEEE 802.1ag, and IEEE 802.3ah, *Broadband (BNG, LNS, LAC, and IWAG – L2/IpoE, EoGRE, L3/Routed), EVPN, Segment Routing (MPLS and Ipv6 underlay), VxLAN
High Availability	Software redundancy with dual IOS, Box-to-Box application-level redundancy
Encapsulations	Generic Routing Encapsulation (GRE), Ethernet, 802.1q VLAN, Point-to-Point Protocol (PPP), Multilink Point-to-Point Protocol (MLPPP), High-Level Data Link Control (HDLC), and PPP over Ethernet (PPPoE)
Traffic management	Quality of Service (QoS), Class-Based Weighted Fair Queuing (CBWFQ), Weighted Random Early Detection (WRED), Hierarchical QoS, Policy-Based Routing (PBR), and Network-Based Application Recognition (NBAR)
Cryptographic algorithms	Encryption: DES, 3DES, AES-128, or AES-256 (in CBC and GCM modes) Authentication: RSA (748/1024/2048 bit), ECDSA (256/384 bit) Integrity: MD5, SHA, SHA-256, SHA-384, SHA-512

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Table 16. Software features and protocols for controller mode

Feature	Description
Core Features	Ipv4, Ipv6, static routes, Open Shortest Path First (OSPF), Enhanced Interior Gateway Routing Protocol (EIGRP), Border Gateway Protocol (BGP), Overlay Management Protocol (OMP), Application Aware Routing (AAR), Traffic Engineering, Service Insertion, zero-trust, whitelisting, tamper-proof module, DTLS/TLS, Ipsec, classification, prioritization, low latency queuing, remarking, shaping, scheduling, policing, mirroring, Multicast Ipv4 Support, Service advertisement and insertion policy, SNMP, NTP, DNS client, Dynamic Host Configuration Protocol (DHCP), DHCP client, DHCP server, DHCP relay, config archival, syslog, SSH, SCP, Cflowd v10 IPFIX export, Ipv6 for transport-side, VRRP, MPLS, NAT (DIA, Service-side, static, overload/PAT, NAT64, etc), NAT pools, split DNS, Access Control Lists (ACL), Bidirectional Forwarding Detection (BFD), Netconf over SSH, CLI, NTP server support, BFD with service-side BGP, BGP community propagation to OMP, 6 SLA classes for AAR, Trustsec/SDA (Inline SGT propagation), custom app with SD-AVC, multicast AAR, dynamic on-demand tunnels, PIM-SM, OSPFv3, route policies, Multi-VRF support
Encapsulations	Generic Routing Encapsulation (GRE), Ethernet, 802.1q VLAN
Application Experience	Quality of Service (QoS), Forward Error Correction (FEC), COS Marking, Weighted Random Early Detection (WRED), Hierarchical QoS, Policy-Based Routing (PBR), Network-Based Application Recognition (NBAR), Software Defined Application Visibility and Control (SD-AVC), per tunnel QoS, Cloud nramp for SaaS, Enhanced Office 365 traffic steering, Direct Internet Access, Flexible Netflow (FnF)
Cryptographic Algorithms	Encryption: AES-256 (in CBC and GCM modes), Internet Key Exchange (IKE), Cisco PKI Authentication: AAA, RSA (2048 bit), ESP-256-CBC, HMAC-SHA1, ECDSA (256/384 bit) Integrity: SHA-1, SHA-2
Security	Built-in end-to-end Segmentation (VPNs), ZBFW, PKI, DNS Layer Security, Security Internet Gateway (Umbrella, Zscaler), ALG for ZBFW

* Support for C8500-12X and C8500-12X4QC only starting in IOS XE 17.9.3., with support for the C8500-20X6C starting in IOS XE 17.12. All future release support will only be based on long-lived releases with the next supported release continuing in 17.12.x. IOS XE software releases 17.7, 17.8. 17.10 17.11 17.13 and 17.14 will not support broadband features.

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Specifications

Mechanical specifications

Table 17. Mechanical specifications for the Cisco Catalyst Series 8500 Edge Platforms

Part number	C8500-20X6C	C8500-12X4QC	C8500-12X	C8500L-8S4X
Dimensions (H x W x D)	26.85 in. L x 17.25 in. W x 5.22 in. H	1.73 in. x 17.50 in. x 18.46 in.	1.73 in. x 17.50 in. x 18.46 in.	1.73 in.x 17.50 in. x 16.25 in.
Rack Units (RU)	3RU	1RU	1RU	1RU
Chassis weight with 2x AC power supplies and fan tray	77.5 lbs (4x AC) 75 lbs. (3x AC)	20.75 lbs	20.25 lbs	17 lbs
Heat Dissipation	3753 BTU/hr and Max 5118 BTU/hr	1023.6 BTU/hr and Max 1706.1 BTU/hr	682.4 BTU/hr and Max 1023.6 BTU/hr	511 BTU/hr and Max 1057 BTU/hr
Input voltage	AC: 90 to 264 VAC DC: -40 to -72VDC	AC: 85 to 264 VAC DC: -40 to -72VDC		AC: 85 to 264 VAC DC: -40 to -72 VDC HVAC: 100 to 277 VAC HVDC: 240 to 380 VDC
Operating temperature	32 to 104°F (0 to 40°C)	32 to 104°F (0 to 40°C)		
Storage temperature	-40 to 150°F (-40 to 70°C)	-40 to 150°F (-40 to 70°C)		
Heat Distribution				
Relative humidity operating and nonoperating noncondensing	Ambient (noncondensing) operating: 10 to 85% Ambient (noncondensing) nonoperating and storage: 5 to 95%	Ambient (noncondensing) operating: 10 to 85% Ambient (noncondensing) nonoperating and storage: 5 to 95%		
NEBS criteria levels	GR-1089 and GR-63	GR-1089 and GR-63		
Altitude	-500 to 10,000 feet (-152 to 3048 meters)	-500 to 10,000 feet (-152 to 3048 meters)		
Mean Time Between Failures (MTBF)	241,225 hours	146,700 hours	156,200 hours	240,200 hours

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Safety and compliance

Table 18. Safety and compliance specifications for the Cisco Catalyst Series 8500 Edge Platforms

Description	Specification
Safety certifications	UL 60950-1 CAN/CSA-C22.2 No. 60950-1 EN 60950-1 IEC 60950-1 AS/NZS 60950-1 GB4943
EMC (Emissions)	47 CFR Part 15 Class A ICES 003 Class A AS/NZS CISPR 32 Class A CISPR 22/CISPR 32 Class A EN55022/EN55032 Class A VCCI Class A CNS-13438 Class A KN32 Class A IEC/EN 61000-3-2: Power Line Harmonics IEC/EN 61000-3-3: Voltage Fluctuations and Flicker
EMC (Immunity)	IEC/EN-61000-4-2: Electrostatic Discharge Immunity IEC/EN-61000-4-3: Radiated Immunity IEC/EN-61000-4-4: Electrical Fast Transient Immunity IEC/EN-61000-4-5: Surge AC, DC, and Signal Ports IEC/EN-61000-4-6: Immunity to Conducted Disturbances IEC/EN-61000-4-11: Voltage DIPS, Short Interruptions, and Voltage Variations KN35
EMC (ETSI/EN)	EN300 386: Telecommunications Network Equipment (EMC) EN55022: Information Technology Equipment (Emissions) EN55032: Multimedia Equipment (Emissions) EN55024: Information Technology Equipment (Immunity) EN55035: Multimedia Equipment (Immunity) EN50082-1/EN-61000-6-1: Generic Immunity Standard

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Licensing

All Cisco Catalyst 8500 Series Edge Platforms initially require a Cisco DNA Advantage Software subscription.

For more details, refer to this C8500 ordering guide.

Cisco 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:** Cisco License Central (CLC) provides a complete view into all of 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 License Central.

For a more detailed overview on Cisco Licensing, visit the Licensing Hub.

Cisco ThousandEyes

A valid ThousandEyes agent license is required to activate the ThousandEyes agent. Existing ThousandEyes subscriptions can be leveraged on eligible Catalyst 8500 Series platforms. Additional ThousandEyes subscription information can be found here.

Ordering information

Table 19. Orderable SKUs for the Cisco Catalyst 8500 Series Edge Platforms

Product number	Product description
L-DNA-C8500	Cisco C8500 subscription
C8500-20X6C	Cisco C8500-20X6C Edge Platform
C8500-12X4QC	Cisco C8500-12X4QC Edge Platform
C8500-12X	Cisco C8500-12X Edge Platform
PWR-CH1-1100WAC	Cisco C8500 1100W AC Power
PWR-CH1-1100WAC=	Cisco C8500 1100W AC Power, Spare
PWR-CH1-750WACR	Cisco C8500 750W AC Power
PWR-CH1-750WACR=	Cisco C8500 750W AC Power, Spare

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Product number	Product description
PWR-CH1-950WDCR	Cisco C8500 950W DC Power
PWR-CH1-950WDCR=	Cisco C8500 950W DC Power, Spare
SSD-M2SATA-480G	Cisco C8500 SSD M.2 SATA 480GB
SSD-M2SATA-480G=	Cisco C8500 SSD M.2 SATA 480GB, Spare
MEM-C8500-16GB=	Cisco C8500 16GB Memory, Spare
MEM-C8500-32GB	Cisco C8500 32GB Memory
MEM-C8500-32GB=	Cisco C8500 32GB Memory, Spare
MEM-C8500-64GB	Cisco C8500 64GB Memory
MEM-C8500-64GB=	Cisco C8500 64GB Memory, Spare
C8500-FAN-3R=	Cisco C8500 Fan Tray, 3RU, Spare
C8500-FAN-1R=	Cisco C8500 Fan Tray, 1RU, Spare
C8500-ACCKIT3R-19	Cisco C8500 Accessory Kit – 19”
C8500-ACCKIT3R-19=	Cisco C8500 Accessory Kit – 19”, Spare
C8500-ACCKIT-19	Cisco C8500 Accessory Kit – 19”
C8500-ACCKIT-19=	Cisco C8500 Accessory Kit – 19”, Spare
C8500-ACCKIT-23	Cisco C8500 Accessory Kit – 23”
C8500-ACCKIT-23=	Cisco C8500 Accessory Kit – 23”, Spare
C8500-4PT-KIT	Cisco C8500 Accessory Kit – 4 Post Kit
C8500-4PT-KIT=	Cisco C8500 Accessory Kit – 4 Post Kit, Spare
C8500-FILTER-ASSY	Cisco C8500 NEBs Level 3 Filter and assembly
C8500-NEB3-FILTER=	Cisco C8500 NEBs Level 3 Filter replacement, Spare
C8500-RFID-3R	Cisco C8500 RFID – 3RU
C8500-RFID-1R	Cisco C8500 RFID – 1RU

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Table 20. Orderable SKUs for the Cisco Catalyst 8500L Edge Platform

Product number	Product description
L-DNA-C8500	Cisco C8500 subscription
C8500L-8S4X	Cisco C8500L-8S4X Edge Platform
PWR-CH1-400WAC	Cisco C8500L 400W AC Power
PWR-CH1-400WAC=	Cisco C8500L 400W AC Power, Spare
PWR-CH1-400WDCR	Cisco C8500L 400W DC Power
PWR-CH1-400WDC=	Cisco C8500L 400W DC Power, Spare
PWR-CC1-400WHV	Cisco C8500L 400W HVDC Power
PWR-CC1-400WHV=	Cisco C8500L 400W HVDC Power, Spare
MEM-C8500L-16GB=	Cisco C8500L 16GB Memory, Spare
MEM-C8500L-32GB	Cisco C8500L 32GB Memory
MEM-C8500L-32GB=	Cisco C8500L 32GB Memory, Spare
MEM-C8500L-64GB	Cisco C8500L 64GB Memory
MEM-C8500L-64GB=	Cisco C8500L 64GB Memory, Spare
SSD-M2NVME-2T	Cisco C8500L SSD M.2 NVMe 2TB
SSD-M2NVME-2T=	Cisco C8500L SSD M.2 NVMe 2TB, Spare
C8500L-FAN-1R=	Cisco C8500L Fan Tray, 1RU, Spare
C8500L-RM-19-1R	Cisco C8500L Accessory Kit – 19”
C8500L-RM-19-1R=	Cisco C8500L Accessory Kit – 19”, Spare
C8500L-RM-23-1R	Cisco C8500L Accessory Kit – 23”
C8500L-RM-23-1R=	Cisco C8500L Accessory Kit – 23”, Spare
C8500L-4PT-KIT	Cisco C8500L Accessory Kit – 4 Post Kit
C8500L-4PT-KIT=	Cisco C8500L Accessory Kit – 4 Post Kit, Spare
C-RFID-1R	Cisco Catalyst 8000 Edge RFID – 1RU

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Warranty

Cisco Catalyst 8500 Series Edge Platform come standard with a Cisco Limited 1-Year Return To Factory Hardware Warranty. For more information, refer to: https://www.cisco.com/c/en/us/products/warranties/warranty-c99-744450.html.

Cisco Services

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Explore Cisco Services

Product sustainability

Table 21. Cisco Environmental Sustainability Information

Sustainability Topic		Reference
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
	Information on product takeback and resuse program	Cisco Takeback and Reuse Program
	Sustainability Inquiries	Contact: csr_inquiries@cisco.com
Material	Product packaging weight and materials	Contact: environment@cisco.com

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Document history

Table 22. Document history

New or Revised Topic	Described In	Date
Added Cisco C8500L SSD M.2 NVMe 2TB	Table 2, 8 and 18	December 7, 2021
Added Document History	Table 21	December 7, 2021
Added Product Sustainability	Table 18	December 7, 2021
Removed MEM-C8500L-16GB as an option, default memory	Table 8 and Table 20	December 7, 2021
Added reference for ThousandEyes agent hosting support	Platform benefits, Software, Licensing	December 4, 2022
Added C8500-20X6C product	Throughout document	November 30, 2022
Updates to data sheet including Table 12	Throughout document and Table 12	March 4, 2023
Updated IPSec performance for Catalyst 8500L. Updated system scalability for IPv4 and IPv6. Added power efficiency data. Added sound acoustics specifications	Tables 2, 5d, 9–10 and 12 respectively	April 24, 2024
General Updates to document, including licensing and performance characteristics.	Product Overview, Licensing	August 2024

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