Cisco Catalyst 8300 Series Edge Platforms

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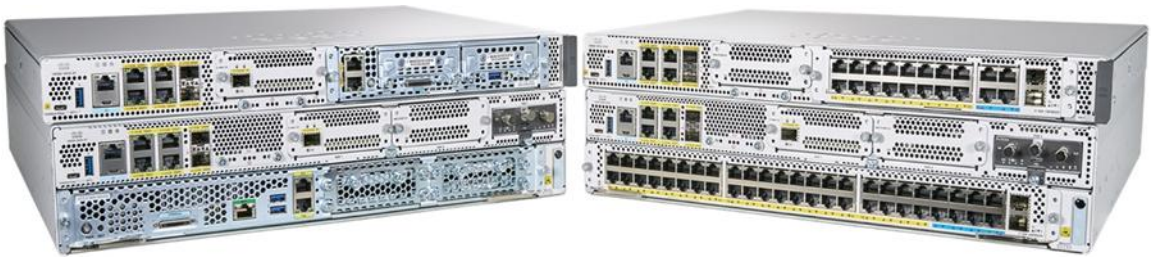
The Cisco Catalyst 8300 Series Edge Platforms are best-of-breed, 5G-ready, cloud edge platforms designed for accelerated services, multi-layer security, cloud-native agility, and edge intelligence to accelerate your journey to cloud.



Cisco Catalyst 8300 Series Edge Platforms (Catalyst 8300) with Cisco IOS XE SD-WAN Software deliver Cisco's secure, cloud-scale Catalyst SD-WAN solution for the branch. The Catalyst 8300 Series is purpose-built for high performance and integrated SD-WAN Services along with flexibility to deliver security and networking services together from the cloud or on premises. It provides higher WAN port density and a redundant power supply capability. The Catalyst 8300 Series Edge Platforms have a wide variety of interface options to choose from—ranging from lower and higher module density with backward compatibility to a variety of existing WAN, LAN, voice, and compute modules. 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. Catalyst 8300 Series Edge Platforms also come with Trustworthy Solutions 2.0 infrastructure that secures the platforms against threats and vulnerabilities with integrity verification and remediation of threats.

The Catalyst 8300 Series Edge Platforms are well suited for medium-sized and large enterprise branch offices for high WAN IPSec performance with integrated Cisco Catalyst SD-WAN services.

Product overview

Product highlights

Table 1. Product highlights

Product feature	Benefits and description
Multicore processors	• 8 or 12 core CPU with 8-GB memory default (up to 32 GB memory upgrade) • High-performance multicore processors support high-speed WAN connections. • Dynamic core allocation architecture that can leverage data plane cores for I/O and service plane as per-user configuration.
Embedded IPsec VPN hardware acceleration	• Up to 9.3 Gbps of IPSec Internet Mix (IMIX) traffic • Increases scalability for IPSec throughput needs for medium- and large-sized branches • SSL and crypto hardware acceleration
Integrated Gigabit Ethernet ports	• Provides 6 built-in Layer 3 Ethernet ports for WAN or LAN with port speeds ranging from 10Mbps, 100Mbps, 1Gbps and up to 10Gbps, depending on platform model • All platforms have at least 2 Ethernet ports that can support Small Form-Factor Pluggable (SFP or SFP+) based connectivity in addition to 4 RJ-45 connections, enabling fiber or copper connectivity.

Product feature	Benefits and description
DRAM	• All Catalyst 8300 platforms have 8GB default DRAM and can be upgraded to 16GB and 32GB for higher scale and performance.
Flash memory support	• All Catalyst 8300 platforms have an integrated on-board 8GB flash and it is not upgradeable. M.2 storage provides upgrade options for additional storage.
M.2 storage	• All the Catalyst 8300 models ship with default 16GB M.2 USB for SD-WAN logging and additional storage on the platform. It can be upgraded to 32GB M.2 USB and to 600GB or 2TB M.2 Non-Volatile Memory Express (NVMe)
Default dual power supplies	• All Catalyst 8300 platforms ship with dual power supplies for redundancy. • AC Power over Ethernet (PoE), DC and Reversed-airflow DC (NEBS) options are available on all models. • Enabling PoE ports on Network Interface Modules (NIM) or on Service Modules (SM) requires at least one PoE supporting PSU to be installed
Modularity and form factor	• 1RU and 2RU form factor • Supports SM, NIM, and Pluggable Interface Module (PIM) slots
Integrated security	• Advanced security features available on-box, including Next-Generation Firewall (NGFW) with Application Awareness, IPS/IDS, Advanced Malware Protection, URL filtering, and Cisco Umbrella® Secure Internet Gateway (SIG) (Secure Access Service Edge [SASE]) • Hardware-anchored Secure Boot and Secure Unique Device Identification (SUDI) support for Plug and Play to verify the identity of the hardware and software
Dedicated management for netops and secops	• Netops: manage routers through Catalyst SD-WAN manager or Cisco DNA Center • Secops: option to combine security policy management and visibility of the integrated NGFW with standalone Cisco Secure Firewalls as well as other security technologies through Cisco Security Cloud Control ◦ Unified security enforcement and visibility across all Cisco NGFWs-standalone and router-integrated ◦ Create objects that can be shared across Cisco security technologies as well as configure policies and push them to the desired enforcement point ◦ Visualize the router NGFW and Cisco Secure Firewall logs in the same dashboard and view

Platform details

Models and configurations

Figures 1 through 4 highlight the different models included in the Catalyst 8300 Series Edge Platforms.

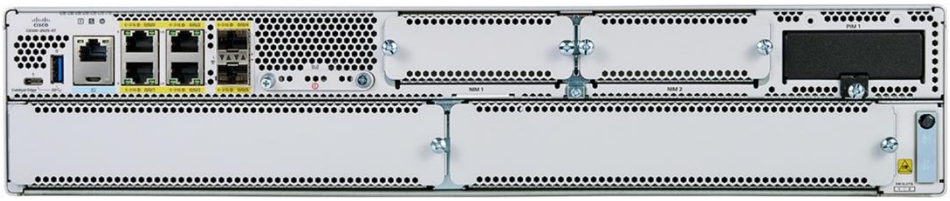


Figure 1.
C8300-2N2S-4T2X is a 2RU platform with 2 SM and 2 NIM slots plus 2 x 10Gbps and 4 x 1Gbps embedded Layer3 Ethernet ports

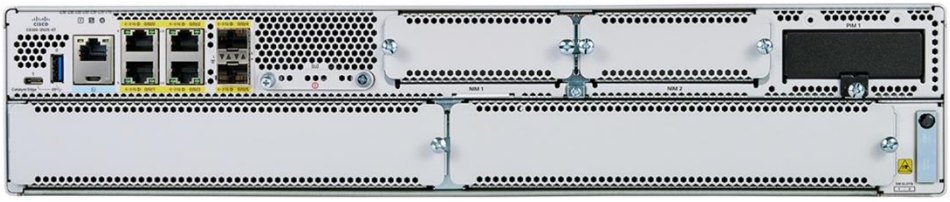


Figure 2.
C8300-2N2S-6T is a 2RU platform with 2 SM and 2 NIM slots plus 6 x 1Gbps embedded Layer3 Ethernet ports

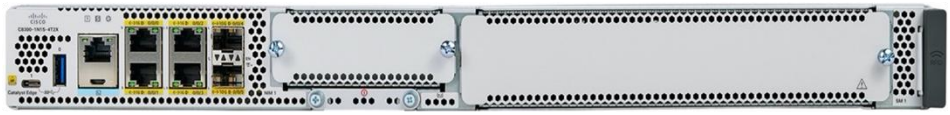


Figure 3.
C8300-1N1S-4T2X is a 1RU platform with 1 SM slot and 1 NIM slot plus 2 x 10Gbps and 4 x 1Gbps embedded Layer3 Ethernet ports

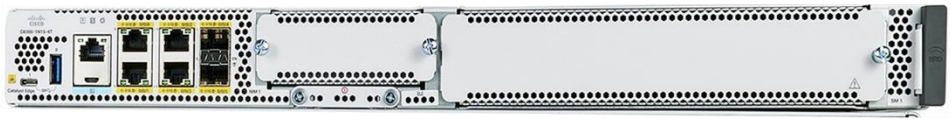


Figure 4.
C8300-1N1S-6T is a 1RU platform with 1 SM slot and 1 NIM slot plus 6 x 1Gbps embedded Layer3 Ethernet ports

Tables 2 and 3 detail platform specifications and performance, respectively.

Table 2. Cisco Catalyst 8300 Series specifications

Model	Description	10G port density	1G port density	Slots	Memory (DRAM) default	Storage (M.2 SSD) default
C8300-2N2S-4T2X	C8300 2RU w/ 10G WAN (2 SM and 2 NIM slots, and 2 x 10-Gigabit Ethernet and 4 x 1-Gigabit Ethernet ports)	2	4	2 SM 2 NIM 1 PIM	8 GB	16 GB
C8300-2N2S-6T	C8300 2RU w/ 1G WAN (2 SM and 2 NIM slots, and 6 x 1-Gigabit Ethernet ports)	-	6	2 SM 2 NIM 1 PIM	8 GB	16 GB
C8300-1N1S-4T2X	C8300 1RU w/ 10G WAN (1 SM slot and 1 NIM slot, and 2 x 10-Gigabit Ethernet and 4 x 1-Gigabit Ethernet ports)	2	4	1 SM 1 NIM 1 PIM	8 GB	16 GB
C8300-1N1S-6T	C8300 1RU w/ 1G WAN (1 SM slot and 1 NIM slot, and 6 x 1-Gigabit Ethernet ports)	-	6	1 SM 1 NIM 1 PIM	8 GB	16 GB

Platform Performance

Traffic patterns and use cases

Table 3. Cisco Catalyst 8300 Series Catalyst SD-WAN performance

Feature	C8300-2N2S-4T2X (2RU w/ 10G WAN)	C8300-1N1S-4T2X (1RU w/ 10G WAN)	C8300-2N2S-6T (2RU w/ 1G WAN)	C8300-1N1S-6T (1RU w/ 1G WAN)
SD-WAN IPsec Throughput (1400Bytes)	Up to 18.8Gbps	Up to 17Gbps	Up to 2Gbps	Up to 2Gbps
SD-WAN IPsec Throughput with IQDF (1400Bytes)**	Up to 18.8Gbps	Up to 17Gbps	Up to 2Gbps	Up to 2Gbps
SD-WAN IPsec Throughput (IMIX*)	7.6Gbps	6.3Gbps	1.8Gbps	1.8Gbps
SD-WAN IPsec Throughput with IQDF (IMIX*)**	5.6Gbps	5.5Gbps	1.7Gbps	1.7Gbps
SD-WAN Overlay Tunnels scale	6000	6000	6000	6000

* IMIX is average packet size of 352 Bytes packet size

** IQDF traffic pattern: IPSec + Quality of Service (QoS) + Deep Packet Inspection (DPI) + Flexible Netflow (FNF)

Catalyst SD-WAN Multi-layer security performance use cases

The Cisco Catalyst 8300 Series Edge platforms connect branch offices to the Internet and cloud, with industry-leading protection against major web attacks. Table 3b below provides test results for three common Multi-layer Security use cases in Catalyst 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 4. Cisco Catalyst 8300 Series Catalyst SD-WAN, Multi-layer security performance use cases*

Feature	C8300-2N2S-4T2X (2RU w/ 10G WAN)	C8300-1N1S-4T2X (1RU w/ 10G WAN)	C8300-2N2S-6T (2RU w/ 1G WAN)	C8300-1N1S-6T (1RU w/ 1G WAN)
50% IQDF* + 50% (DIA w. NAT + NGFW + IPS + URLF + AMP)	5.9Gbps	3.3Gbps	2.8Gbps	2.6Gbps
DIA w. NAT + NGFW + IPS + URLF + AMP	4.9Gbps	2.9Gbps	2.3Gbps	2.1Gbps

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

Table 5. Cisco Catalyst 8300 Series autonomous mode (non SD-WAN) performance specifications

Feature	C8300-2N2S-4T2X (2RU w/ 10G WAN)	C8300-1N1S-4T2X (1RU w/ 10G WAN)	C8300-2N2S-6T (2RU w/ 1G WAN)	C8300-1N1S-6T (1RU w/ 1G WAN)
IPv4 Forwarding Throughput (1400Bytes)	Up to 19.7Gbps	Up to 19.7Gbps	Up to 19.7Gbps	Up to 19.7Gbps
IPsec Throughput (1400Bytes)	Up to 18.9Gbps	Up to 16.9Gbps	Up to 1.9Gbps	Up to 1.9Gbps
IPsec Throughput (IMIX*)	9.3Gbps	6.6Gbps	1.9Gbps	1.9Gbps

* IMIX is average packet size of 352 Bytes packet size

Table 6. Cisco Catalyst 8300 Series autonomous mode (non SD-WAN) system scalability

Feature	C8300-2N2S-4T2X (2RU w/ 10G WAN)	C8300-1N1S-4T2X (1RU w/ 10G WAN)	C8300-2N2S-6T (2RU w/ 1G WAN)	C8300-1N1S-6T (1RU w/ 1G WAN)
Number of IPsec SVTI Tunnels	4000	4000	4000	4000
Number of ACLs per system	4000	4000	4000	4000
Number of IPv4 ACEs per system	72K	72K	72K	72K
Number of IPv4 Routes	1.6M w/ default 8GB, up to 4M w/ 32GB	1.6M w/ default 8GB, up to 4M w/ 32GB	1.6M w/ default 8GB, up to 4M w/ 32GB	1.6M w/ default 8GB, up to 4M w/ 32GB

Feature	C8300-2N2S-4T2X (2RU w/ 10G WAN)	C8300-1N1S-4T2X (1RU w/ 10G WAN)	C8300-2N2S-6T (2RU w/ 1G WAN)	C8300-1N1S-6T (1RU w/ 1G WAN)
Number of IPv6 Routes	1.5M w/ default 8GB, up to 4M w/ 32GB	1.5M w/ default 8GB, up to 4M w/ 32GB	1.5M w/ default 8GB, up to 4M w/ 32GB	1.5M w/ default 8GB, up to 4M w/ 32GB
Number of Queues	8K	8K	8K	8K
Number of NAT Sessions	1.2M w/ default 8GB, up to 2M w/ 32GB	1.2M w/ default 8GB, up to 2M w/ 32GB	1.2M w/ default 8GB, up to 2M w/ 32GB	1.2M w/ default 8GB, up to 2M w/ 32GB
Number of Firewall Sessions	512K	512K	512K	512K
Number of VRFs	4000	4000	4000	4000

Overall platform benefits

Dynamic core allocation

Dynamic core allocation architecture will allow you to tailor the Cisco Catalyst 8300 Series Edge platform's multicore resources to fit your business needs. You can choose between two core allocations.

- Service-oriented core allocation has the platform's Multicore resources set to balance throughput with providing adequate resources for containerized services. Choose this if integrated, container based, services are required. It will allow for KVM and/or Docker container-based applications on up to 5 cores, depending on platform. This is the factory default core allocation with which all C8300 platforms are shipped.
- Data plane heavy core allocation has the platform's Multicore resources optimized for high traffic throughput. Choose this architecture when throughput is of higher priority, A Data plane heavy architecture will on 8-core platforms completely remove resources for containerized services, whereas on the 12-core platform, C8300-2N2S-4T2X, it will reduce service plane resources from 5 to 4 cores.In order to maximize the platforms performance and your investment, it's recommended to change into a Data plane heavy core allocation when container-based services are not being required.

Accelerated services with Cisco 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.

SD-Routing

Simplifying traditional routing deployment and workflows with Cisco Software-Defined Routing

Cisco SD-Routing enables Cisco routing devices to be managed through Cisco Catalyst™ SD-WAN Manager, bringing operational simplicity and agility to traditional routing deployments by avoiding truck rolls for routine operational tasks. It also reduces OpEx by leveraging Catalyst SD-WAN Manager as the unified management platform for Catalyst SD-WAN as well as routing deployments.

SD-Routing enables customers to manage their routing devices in a flexible manner through on-premises controllers and will also be offered through cloud-delivered controllers in the near future.

Operationally, Cisco SD-Routing provides intuitive device lifecycle orchestration workflows for secure device onboarding as well as secure device software upgrades. By leveraging the rich monitoring and troubleshooting capabilities of Catalyst SD-WAN Manager, administrators can quickly isolate and resolve network problems.

Application performance optimization

Ensure that Cisco Catalyst SD-WAN networks meet Service-Level Agreements (SLAs) and maintain strong performance, even if network problems occur. With branch multi-cloud access, you can accelerate your SaaS applications with a simple template push from the Cisco Catalyst SD-WAN controller. Features like Transmission Control Protocol (TCP) optimization, forward error correction, and packet duplication help application performance for a better user experience.

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 8300 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 the Cisco Catalyst 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.

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 8300 Series Edge platforms connect branch offices to the Internet and cloud, with industry-leading protection against major web attacks. Secure Direct Internet Access (DIA) to the branches helps optimize branch workloads for improved performance, specifically for cloud-hosted applications. At the same time, DIA ensures your branch is protected from external threats.

Unified communications

The Cisco Catalyst 8300 Edge platforms offer rich voice services in both Cisco Catalyst SD-WAN and traditional IOS-XE software feature stacks. Cisco is the only SDWAN vendor to natively integrate analog/digital IP directly into single CPE reducing Capex and Opex costs. In SD-WAN mode, the Catalyst 8300 Series also prevent internal and external outages using SRST enabling Branch router to assume role of call control PBX for Telephony survivability. They also continue to support the long list of traditional IOS-XE voice use cases like Cisco Unified Border Element (CUBE) Session Border Controller (SBC), Cisco

Unified Communications Manager Express (CUCME), Survivable Remote Site Telephony (SRST), ISDN and Voice over IP.

Cloud-native agility with a programmable software architecture

Cisco continues to offer a feature-rich traditional IOS-XE routing stack on the Cisco Catalyst 8300 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 IOS XE. And easily move from one to the other when you choose to do so.

LTE and 5G Wireless WAN

The Cisco Catalyst 8300 Series Edge Platforms are built 5G networks. With the higher throughputs provided by CAT18 LTE and 5G, wireless WAN connections become feasible as primary transports for different use cases. These platforms support both integrated pluggable modules as well as external cellular gateways with LTE or 5G capability for improved throughputs that address all those use cases. Based on a specific branch's direct line of sight and cellular coverage, this solution provides the flexibility of either using integrated PIM module or an external gateway. The integrated module can work in tandem with a cellular gateway for Active-Active redundancy.

Interface flexibility

Layer 2 LAN (Switched) and Layer 3 WAN (Routed) ports

The Catalyst 8300 Series continues Cisco's support for a flexible single-box solution with both switching and routing. The NIM based Layer 2 LAN modules provide 4 and 8-port switching with optional PoE capability for up to 1Gbps. The NIM based Layer 3 WAN modules provides extended Layer 3 port density for up to 10Gbps with full Layer 3 feature parity to the six embedded Layer 3 ports.

LANWAN – Flexible Layer 2 Switching and Layer 3 Routing

In addition to a wide range of NIM based Ethernet modules for a flexible and scalable combination of switched L2 ports and routed L3 ports, the Cisco Catalyst 8300 Series Edge Platforms also offer a new LANWAN module series which combines both capabilities. These new NIM based modules offer combined Layer 2 & Layer 3 connectivity with full Layer 3 feature parity to the embedded Layer 3 ports. LANWAN modules are offered as 8-port RJ45 modules ranging from 100Mbps up to 2.5Gbps mGig with 90 PoE capacity, plus a 4-port SFP+ NIM module with capacity for up to 10Gbps. In addition, LANWAN modules also support LAN MACsec for all ports operating in Layer 2 mode and WAN MACsec for all ports operating in Layer 3 mode. The introduction of LANWAN series modules offer unprecedented flexibility for the branch through higher density of Layer 3 ports, with options for higher PoE capacity and with HW-based MACsec for secure connections.

High-density Switching

The Cisco Catalyst 8300 Series Edge Platforms support high-density Unified Access Data Plane (UADP)-based 22-port and 50-port Layer 2 switch modules. This allows the edge platform to operate as a branch-in-a-box solution with 1G, Cisco Multigigabit Technology (mGig), and 10G ports for downstream switches and devices. The 22-port Layer-2 module is a single-wide module that can be used on both the 1RU and 2RU platforms. The 50-port Layer-2 module is a double-wide module that can be used on the 2RU platforms.

Cisco UCS-E compute

The Cisco Catalyst 8300 Series Edge Platforms will support the Cisco UCS-E M3 modules as well as the new Cisco UCS-E M6 module for branch compute needs. We support both Cisco and third-party Virtual Network Functions (VNFs) on the Cisco Enterprise NFV Infrastructure Software (NFVIS) hypervisor running on the UCS-E compute blade server. Cisco UCS-E M3 modules have 6-, 8-, and 12-core options to choose from based on the number of VNFs that need to be run at the branch. The Cisco UCS-E M6 module is a new, fully up-to-date, compute module built for today's more demanding compute applications. It comes with 3GHz clocked 10-core architecture and 2x 10Gbps connections both internally as well as externally. This will support very effective compute operations while also eliminating any bottlenecks for traffic flowing between the module and the host router.

Voice modules

The Cisco Catalyst 8300 Series Edge Platforms will continue to support a variety of voice modules for the different voice needs at the branch. Voice module examples include Foreign Exchange Station (FXS), Foreign Exchange Office (FXO), Digital Signal Processor (DSP), etc.

NEBS (Network Equipment-Building System)

The Cisco Catalyst 8300 Series Edge Platforms 2RU versions can be made NEBS compliant by choosing the optional PWR-CC1-650WDCR power supplies with reverse airflow. This will automatically include C8300-FAN-2R-R, the NEBS compliant fan assembly, which will make the C8300 system NEBS compliant.

Sustainability

The Cisco Catalyst 8300 Series Edge Platforms are designed ground-up with sustainability in mind. These platforms are standardized on highly efficient power supplies and common form factors for sharing tooling & accessories. We have eliminated use of plastic bezels as well as the need for wet paint, thereby reducing hazardous chemicals, and facilitating recyclability.

All platforms are designed for maximizing efficient use of PCBs and material in motherboard designs and for employing common modules across platforms. Over 70% of the ISR4000 platform family's modules are being reused by the Cisco Catalyst 8300 Series Edge Platforms.

We standardize on integration of features to a single, very power effective, System on a Chip (SoC) architecture across the platform portfolio with dynamic power management plus added power and thermal management capabilities on modules. All platforms furthermore include a barometer to sense atmospheric pressure and estimate installation altitude. Fan speeds can thereby be reduced in installations at lower altitudes, yielding significant energy savings.

Throughput Efficiency (Gbps per Watt)

The use of a single, effective, SoC architecture in the he Cisco Catalyst 8300 Series Edge family provides significantly higher performance per consumed wattage than its predecessors with up to 75% reduction in power per Gbps compared to equivalent ISR4k platform.

Supported modules

Table 7. Modules supported on Cisco Catalyst 8300 Series Edge Platforms

Product number	Description
Ethernet Layer 3 modules	
C-NIM-1X	1-port 10Gbps SFP/SFP+ NIM with WAN MACSec
C-NIM-1M	1-port 2.5/1Gbps RJ-45 WAN, 90W Poe 802.3 af/at/bt NIM
C-NIM-2T	2-port 100Mbps/1Gbps dual-mode RJ45/SFP, NIM with WAN MACSec
LAN modules	
C-NIM-4X	4-port 1/10Gbps SFP/SFP+ switch NIM, LAN/WAN MACSec & Optional L3
C-NIM-8T	8-port 100Mbps/1Gbps switch NIM, LAN/WAN MACSec & Optional L3
C-NIM-8M*	8-port 100M/1/2.5Gbps switch NIM, UPoE, LAN/WAN MACSec & Optional L3
NIM-ES2-4	Cisco 4-port Gigabit Ethernet switch NIM
NIM-ES2-8	Cisco 8-port Gigabit Ethernet switch NIM
NIM-ES2-8-P	Cisco 8-port Gigabit Ethernet switch NIM with PoE support
C-SM-16P4M2X	Cisco 22-port Catalyst L2 switch module with UADP ASIC
C-SM-40P8M2X	Cisco 50-port Catalyst L2 switch module with UADP ASIC
Compute modules	
UCS-E160S-M3/K9	UCS-E, single-wide, Intel Broadwell 6-core CPU; up to 64 GB RAM, 1-2 HDD
UCS-E180D-M3/K9	UCS-E, double-wide, Intel Broadwell 8-core CPU; up to 128 GB RAM, 1-4 HDD
UCS-E1120D-M3/K9	UCS-E, double-wide, Intel Broadwell 12-core CPU; up to 128 GB RAM, 1-4 HDD
UCS-E1100D-M6/K9	UCS-E, double-wide, Intel Icelake 10-core CPU; up to 128 GB RAM, 1-4 SSD
Voice modules	
NIM-2FXO	2-port FXO NIM
NIM-4FXO	4-port FXO NIM
NIM-2FXSP	2-port FXS NIM
NIM-4FXSP	4-port FXS NIM
NIM-2FXSP/4FXOP	2-port FXS and 4-port FXO NIM
NIM-4E/M	4-port E/M NIM

Product number	Description
NIM-2BRI-NT/TE	2-port BRI (NT and TE) NIM
NIM-4BRI-NT/TE	4-port BRI (NT and TE) NIM
SM-X-8FXS/12FXO	8-port FXS and 12-port FXO single-wide service module
SM-X-16FXS/2FXO	16-port FXS and 2-port FXO single-wide service module
SM-X-24FXS/4FXO	24-port FXS and 4-port FXO single-wide service module
SM-X-72FXS	72-port FXS double-wide service module
NIM-PVDM-32	32-channel Voice DSP NIM Module
NIM-PVDM-64	64-channel Voice DSP NIM Module
NIM-PVDM-128	128-channel Voice DSP NIM Module
NIM-PVDM-256	256-channel Voice DSP NIM Module
SM-X-PVDM-3000	3080-channel high-density voice DSP module
SM-X-PVDM-2000	2048-channel high-density voice DSP module
SM-X-PVDM-1000	1024-channel high-density voice DSP module
SM-X-PVDM-500	768-channel high-density voice DSP module
NIM-1MFT-T1/E1	1-port multiflex trunk voice/clear-channel data T1/E1 module
NIM-2MFT-T1/E1	2-port multiflex trunk voice/clear-channel data T1/E1 module
NIM-4MFT-T1/E1	4-port multiflex trunk voice/clear-channel data T1/E1 module
NIM-8MFT-T1/E1	8-port multiflex trunk voice/clear-channel data T1/E1 module
DSL/broadband	
NIM-VAB-A	Multi-mode VDSL2/ADSL/2/2+ NIM Annex A
NIM-VA-B	Multi-mode VDSL2/ADSL/2/2+ NIM Annex B
NIM-VAB-M	Multi-mode VDSL2/ADSL/2/2+ NIM Annex M
NIM-4SHDSL-EA	Multi-mode G.SHDSL NIM
ISDN BRI for Data	
NIM-2BRI-S/T	2-port ISDN BRI WAN interface card for data
NIM-4BRI-S/T	4-port ISDN BRI WAN interface card for data
Channelized T1/E1 and ISDN PRI	

Product number	Description
NIM-1CE1T1-PRI	1-port Multiflex trunk voice/channelized data T1/E1 module
NIM-2CE1T1-PRI	2-port Multiflex trunk voice/channelized data T1/E1 module
NIM-8CE1T1-PRI	8-port Multiflex trunk voice/channelized data T1/E1 module
Serial WAN interface	
SM-X-1T3/E3	1-port clear-channel T3/E3 service module
NIM-1T	1-port serial high-speed WAN interface card
NIM-2T	2-port serial high-speed WAN interface card
NIM-4T	4-port serial high-speed WAN interface card
Async WAN interface	
NIM-16A	16-port Asynchronous Module
NIM-24A	24-port Asynchronous Module
Wireless WAN (LTE)	
P-5GS6-R16SA-GL*	5G Sub-6 GHz Pluggable – 5G SA Global
P-5GS6-GL	5G Sub-6 GHz Pluggable – Global
P-LTEAP18-GL	CAT18 LTE Advanced Pro Pluggable - Global
P-LTEA7-NA*	CAT7 LTE Advanced Pluggable - North America
P-LTEA7-EAL*	CAT7 LTE Advanced Pluggable - EMEA, APAC, and LATAM
P-LTEA7-JP*	CAT7 LTE Advanced Pluggable - Japan
P-LTEA-EA	CAT6 LTE Advanced Pluggable - North America and EMEA
P-LTEA-LA	CAT6 LTE Advanced Pluggable - APAC, ANZ, and LATAM
NIM-LTEA-EA	CAT6 LTE Advanced - North America and EMEA
NIM-LTEA-LA	CAT6 LTE Advanced - APAC, ANZ, and LATAM
NIM Carrier Adapter Card	
C-SM-NIM-ADPT	Single-wide 2x NIM carrier module in SM-X form factor

* Supported with IOS XE release 17.12.2.

Memory, storage, and accessory options

Table 8. Cisco Catalyst 8300 Series memory, storage, and accessory options

Product number	Description
MEM-C8300-8GB	Cisco C8300 Edge Platform - 8 GB Memory
MEM-C8300-16GB	Cisco C8300 Edge Platform - 16GB Memory
MEM-C8300-32GB	Cisco C8300 Edge Platform - 32GB Memory
M2USB-16G	Cisco C8000 Edge Platform - 16G M.2 USB SSD Storage
M2USB-32G	Cisco C8000 Edge Platform - 32G M.2 USB SSD Storage
SSD-M2SED-600G	Cisco C8000 Edge Platform - 600GB M.2 NVMe Self-Encrypted Drive (SED) Storage
SSD-M2NVME-2T	Cisco C8000 Edge Platform – 2TB M.2 NVMe Self-Encrypted Drive (SED) Storage
C8300-RM-19-1R	Cisco C8300 1RU Edge Platform - Rack Mount kit - 19"
C8300-RM-23-1R	Cisco C8300 1RU Edge Platform - Rack Mount kit - 23"
C8300-RM-19-2R	Cisco C8300 2RU Edge Platform - Rack Mount kit - 19"
C8300-RM-23-2R	Cisco C8300 2RU Edge Platform - Rack Mount kit - 23"
C8300-RM-4PT-1R	Cisco C8300 1RU Edge Platform – 4-post Rack Mount kit - 19"
C8300-RM-4PT-2R	Cisco C8300 2RU Edge Platform - 4-post Rack Mount kit - 19"
C8300-FAN-1R	Cisco C8300 1RU Edge Platform - Fan Tray Assembly
C8300-FAN-2R	Cisco C8300 2RU Edge Platform Fan Tray Assembly
C8300-FAN-2R-R	Cisco C8300 2RU Edge Platform Reverse Airflow Fan Tray Assembly for NEBS
C-RFID-1R	Cisco C8300 1RU Edge Platform - RFID
C-RFID-2R	Cisco C8300 2RU Edge Platform - RFID
C8300-SM-BLANK	Cisco C8300 SM Blank
C8300-NIM-BLANK	Cisco C8300 NIM Blank
C8300-PIM-BLANK	Cisco C8300 PIM Blank

The fan tray is shipped default with the Cisco Catalyst 8300 Edge Series Platforms.

Optics and transceivers modules

Find a full list of optics and transceivers here.

Resiliency and high availability

Platform redundancy is critical for branch operations, as any downtime has direct impact to a customer's business. To address that priority, Cisco makes a dual power supply default on all the Catalyst 8300 platforms to ensure that there is always a backup power supply module in case the primary power supply fails.

Power supplies

Important notice:

To address the precarious component situation during the pandemics, Cisco shipped PWR-CC1-400WAC as a temporary substitute power supply in place of the current 250-watt power supply, PWR-CC1-250WAC, used on our Catalyst 8300 1RU platforms. PWR-CC1-400WAC is no longer shipped with our Catalyst 8300 1RU platforms but retains the same support as the PWR-CC1-250WAC power supply.

For more information this, previous, temporary measure, please visit https://www.cisco.com/c/en/us/products/collateral/routers/catalyst-8300-series-edge-platforms/catalyst-8300-series-pb.html.

Table 9. Cisco Catalyst 8300 1RU edge platform power supply specifications

Power supply feature	PWR-CC1-250WAC	PWR-CC1-400WAC*	PWR-CC1-500WAC	PWR-CC1-400WDC	PWR-CC1-400WHV
Power maximum rating	250W	250W	500W PoE (Yes) PoE Budget: 250W	400W	400W
Input-voltage range and frequency	100 to 240 VAC 50 – 60 Hz	100 to 240 VAC 50 – 60 Hz	100 to 240 VAC 50 – 60 Hz	DC: -40 to -72V	DC: 240 – 380V
Power supply efficiency	80 Plus Silver	80 Plus Silver	80 Plus Silver	85 %	80 Plus Platinum
Input current	3A – 1.25A	6A – 3A	6 A – 2.5A	13 A – 7.25 A	1.75 A – 1.1 A
Output ratings	12V 21A	12V 33A	12V 21A 54 V – 4.5 A	12 V 33.5 A	12V 54A
Output holdup time	20ms	20ms	20ms	2 ms	20ms
Power supply input receptacles	IEC 320 C14	IEC 320 C14	IEC 320 C14	Terminal block	Saf-D-Grid
Power cord rating	5A	10A	10A	15 A # 14 wire	5A

*See Important Notice above

Table 10. Cisco Catalyst 8300 2RU edge platform power supply specifications

Power supply feature	PWR-CC1-650WAC	PWR-CC1-1000WAC	PWR-CC1-650WDC	PWR-CC1-650WDCR (NEBS)
Power maximum rating	650W	1000W PoE (Yes) PoE Budget: 500W	650W	650W
Input-voltage range and frequency	100 to 240 VAC 50 – 60 Hz	100 to 240 VAC 50 – 60 Hz	DC: -40 to -72V	DC: -40 to -72V
Power supply efficiency	80 Plus Gold	80 Plus Gold	80 Plus Gold	80 Plus Gold
Input current	7.2 A – 3 A	11.5 A – 4.63 A	18 A – 10 A	18 A – 10 A
Output ratings	12V 54A	12V 83A	12 V54 A	12 V 54 A
Output holdup time	20ms	20ms	4 ms	4 ms
Power supply input receptacles	IEC 320 C14	IEC 320 C14	Terminal block	Terminal block
Power cord rating	10A	12A	20 A # 14 wire	20 A # 14 wire

Table 11. Cisco Catalyst 8300 Edge platform Typical power consumption

Power consumption, no modules, single PSU	C8300-2N2S-4T2X	C8300-1N1S-4T2X	C8300-2N2S-6T	C8300-1N1S-6T
Typical power (watts)	275W	245W	89W	82W

RFID tags: Catalyst 8300 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

Cisco DNA Software for the Catalyst 8300 Series offers comprehensive solutions for enterprise branch networks.

Table 12. Catalyst 8300 Series minimum software requirements

Platform Product ID (PID)	Description	Minimum software requirement
C8300-2N2S-4T2X **C8300-1N1S-4T2X** **C8300-2N2S-6T** **C8300-1N1S-6T**	Cisco Catalyst 8300 Series Edge Platforms	Cisco IOS XE Software Release 17.3.2

Software features

Catalyst 8300 Series features for autonomous mode and for Catalyst SD-WAN.

Table 13. Catalyst 8300 Series 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, Layer 2 Tunneling Protocol Version 3 (L2TPv3), Bidirectional Forwarding Detection (BFD), IEEE 802.1ag, and IEEE 802.3ah
Encapsulations	Generic Routing Encapsulation (GRE), Ethernet, 802.1q VLAN, Point-to-Point Protocol (PPP), Multilink Point-to-Point Protocol (MLPPP), Frame Relay, Multilink Frame Relay (MLFR) (FR.15 and FR.16), High-Level Data Link Control (HDLC), Serial (RS-232, RS-449, X.21, V.35, and EIA-530), 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
Unified Communication	Call Admission Control (CAC), Cisco Unified Border Element (CUBE) Session Border Controller(SBC), Cisco Unified Communications Manager Express (CUCME), ISDN, RADIUS, RFC4040 based Clear Channel codec signaling with SIP, Resource Reservation Protocol (RSVP), RTP Control Protocol (RTCP), Session Initiation Protocol for VoIP(SIP), Survivable Remote Site Telephony (SRST), Secure Real-time Transport Protocol(SRTP), and Voice modules

Table 14. Catalyst 8300 Series Software features and protocols for controller (Catalyst SD-WAN) mode

Feature	Description
Core Features	IPv4, IPv6, static routes, Open Shortest Path First (OSPF), Enhanced Interior Gateway Routing Protocol (EIGRP), BoGateway Protocol (BGP), Overlay Management Protocol (OMP), Application Aware Routing (AAR), Traffic EngineerinService Insertion, zero-trust, whitelisting, tamper-proof module, DTLS/TLS, IPsec, classification, prioritization, low latequeuing, remarking, shaping, scheduling, policing, mirroring, Multicast IPv4 Support, Service advertisement and inserpolicy, SNMP, NTP, DNS client, Dynamic Host Configuration Protocol (DHCP), DHCP client, DHCP server, DHCP relaarchival, syslog, SSH, SCP, Cflowd v10 IPFIX export, IPv6 for transport-side, VRRP, MPLS, NAT (DIA, Service-side, soverload/PAT, NAT64, etc), NAT pools, split DNS, Access Control Lists (ACL), Bidirectional Forwarding Detection (BFNetconf over SSH, CLI, NTP server support, BFD with service-side BGP, BGP community propagation to OMP, 6 SLA for AAR, Trustsec/SDA (Inline SGT propagation), custom app with SD-AVC, multicast AAR, dynamic on-demand tunnSM, 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 A Visibility and Control (SD-AVC), per tunnel QoS, Cloud onRamp for SaaS, Enhanced Office 365 traffic steering, DirecAccess, 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, Cisco DNA Layer Security, Snort IPS/IDS, URL Filtering, Advanced Protection (AMP), ThreatGrid (TG), ALG for ZBFW
Unified Communication	Cisco Unified Border Element (CUBE), Survivable Remote Site Telephony (SRST), Cisco Unified Communications Manager Express (CUCME) and Voice Modules

Licensing

The Catalyst 8300 Series Edge Platforms are offered only with a Cisco DNA Software subscription, Enterprise Agreement, and Managed Service Licensing Agreement (MSLA). For more details, refer to this licensing guide.

Cisco DNA Subscriptions offered with the Catalyst 8300 Series

- Catalyst Routing Essentials
- Cisco DNA Essentials
- Cisco DNA Advantage

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

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:** My Cisco Entitlements (MCE) 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 Software Central (software.cisco.com).

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

Specifications

Table 15. Mechanical specifications

Description	Specification	
Part number	C8300-2N2S-4T2X C8300-2N2S-6T	C8300-1N1S-4T2X C8300-1N1S-6T
Dimensions (H x W x D)	3.5 in. x 17.25 in. x 18.52 in.	1.73 in. x 17.50 in. x 16.25 in.
Rack Units (RU)	2RU	1RU
Chassis weight with 2X AC power supplies and fan tray	40 lbs	20 lbs
Acoustics: **Sound pressure** **(Typical/maximum)**	59 dBa/73 dBa (Non-NEBS) 63 dBa/75 dBa (NEBS)	49 dBa/71 dBa
Acoustics: **Sound power** **(Typical/maximum)**	74 dBa/87 dBa (Non-NEBS) 77 dBa/89 dBa (NEBS)	60 dBa/82 dBa
Input voltage	AC: 85 to 264 VAC DC: -40 to 72V; 48V nominal	
Operating temperature	32 to 104° F (0 to 40° C)	

Description	Specification	
Storage temperature	-40 to 150° F (-40 to 70° C)	
Relative humidity operating and nonoperating noncondensing	Ambient (noncondensing) operating: 5 to 85% Ambient (noncondensing) nonoperating and storage: 5 to 95%	
Altitude	0 to 10,000 feet (0 to 3050 meters)	
Mean Time Between Failures (MTBF)	710,300 hours	536,060 hours

Table 16. Safety and compliance

Description	Specification
Safety certifications	UL 60950-1 CAN/CSA-C22.2 No. 60950-1 EN 60950-1 IEC 60950-1 AS/NZS 60950-1 IEC/EN 60825 Laser Safety FDA: Code of Federal Regulations Laser Safety
EMC (Emissions)	47 CFR Part 15 Class A ICES 003 Class A AS/NZS CISPR 32 Class A CISPR 32 Class A EN55032 Class A VCCI-CISPR 32 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

Description	Specification
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-61000-4-8: Power Frequency Magnetic Field Immunity IEC/EN-61000-4-11: Voltage DIPS, Short Interruptions, and Voltage Variations KN35
EMC (ETSI/EN)	EN300 386: Telecommunications Network Equipment (EMC) EN55032: Multimedia Equipment (Emissions) EN55024: Information Technology Equipment (Immunity) EN55035: Multimedia Equipment (Immunity) EN61000-6-1: Generic Immunity Standard

Ordering information

To place an order, visit the Cisco Ordering Home Page. To download software, visit the Cisco Software Center.

Services

Cisco Customer Experience Support Services for Catalyst 8000 platforms and Cisco DNA Software for SD-WAN and Routing

This section discusses the Cisco Support Services available for Catalyst 8000 platforms and associated Cisco DNA Software for SD-WAN and Routing, as well as optional Support Service offers.

- **Catalyst 8000 platforms:** Cisco Solution Support is the default and recommended Cisco Support Service. However, Cisco Solution Support is not mandatory; it can be removed or replaced with another Cisco support service or partner service per the customer's preference.
- **Cisco DNA Software for SD-WAN and Routing:** Cisco Solution Support is the default Cisco support service. However, Cisco Solution Support is not mandatory; the customer may choose to use the Cisco Subscription Embedded Software Support included with the purchase of this software.

Note:

- When Solution Support is selected, it must be ordered on both the Catalyst 8000 platform and Cisco DNA Software for SD-WAN and Routing for complete customer entitlement to this premium support service.
- SD-WAN and Routing, with both Solution Support or Cisco Subscription Embedded Software Support, customers are entitled to maintenance releases and software updates for **Cisco DNA SD-WAN and Routing software only**. The support for the Catalyst 8000 platform's OS and network stack, along with OS updates, is covered by the support contract on the Catalyst 8000 platform.

Cisco Solution Support is a premium support purpose-built for today's multiproduct, multivendor network environments and provides:

- A primary point of contact centralizing support across a solution deployment
- Solution, product, and interoperability expertise
- No requirement for customers to isolate their issue to a product to open a case
- 30-minute service response objective for Severity 1 and 2 cases
- Prioritized case handling over product support cases
- Product support team coordination (Cisco and Solution Support Alliance Partners)
- Accountability for multiproduct, multivendor issue management from first call to resolution, no matter where the issue resides

Learn more about Cisco Solution Support at www.cisco.com/go/solutionsupport.

Cisco Subscription Embedded Software Support includes:

- Access to support and troubleshooting via online tools and web case submission. Case severity or escalation guidelines are not applicable.
- Cisco Technical Assistance Center (TAC) access 24 hours per day, 7 days per week to assist by telephone, or web case submission and online tools with application software use and troubleshooting issues.
- Access to www.cisco.com, providing helpful technical and general information on Cisco products, as well as access to Cisco's online Software Center library.

Note: No additional products or fees are required to receive embedded support for Cisco DNA Software for SD-WAN and Routing. However, if using embedded support for this software, hardware support for the Catalyst 8000 platforms must be purchased separately, as Cisco Subscription Embedded Software Support does not cover hardware. In this case, Cisco Smart Net Total Care Service is recommended for Catalyst 8000 platforms.

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For more information

For more information about the Cisco Catalyst 8300 Series Edge Platforms, visit https://www.cisco.com/go/C8300 or contact your local Cisco account representative.

Document history

New or revised topic	Described In	Date
General Updates to document, including SD-Routing, licensing and performance characteristics.	Product Overview, Platform Performance, Overall Platform Benefits and Licensing	August 2024
Describing why a new 400W PSU is added toC8300	Power supplies	September 21, 2022
Added column with technical specs for new400W PSU	Power supplies, Table 6	September 21, 2022

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