Cisco Catalyst Series Switches

Contents

Built to reimage connection, reinforce security and redefine experience

Cisco® Catalyst® Series switches are Cisco's lead stackable enterprise access switching platform and as part of the Catalyst family are build to transform your network to handle a hybrid world where the workplace is anywhere endpoints could be anything and applications are hosted all over the place

The Catalyst Series including the new Catalyst X models continues to shape the future with continued innovation that helps you reimagine connections reinforce security and redefine the experience for your hybrid workforce big and small

The many industry's first include

- **Up to 1TB of stacking bandwidth:** With Stackwise- T Catalyst switches are the industry's highest-density stacking bandwidth solution with the most flexible uplink architecture
- **Flexible and dense uplink offerings** with G G 5G Multigigabit G and G modular uplinks
- **Mixed Stacking with Backward Compatibility** – Stack your Catalyst X fiber switches with Catalyst and Catalyst X Multigigabit switches bringing stackable high-speed fiber to the access
- **Highest Multigigabit Ports:** With standalone and Stackwise- T Catalyst X models enable 8 mGig ports in standalone and 8 mGig ports with an 8-member stack
- **Highest W UPOE®+ Density:** Enable your OT IT needs with up to 6 ports of W UPOE+ for standalone or 88 ports of W UPOE+ with a 8-member stack
- **StackPower with Backward Compatibility:** Enable power resiliency with higher power budgets in mixed Catalyst and Catalyst X stack
- **1 G IPsec in hardware:** With the new Sec UADP ASIC the Catalyst X comes with G line rate IPsec to enable various options for new edge connectivity
- **Secure Tunnel connectivity:** With the new edge the C X enables secure connections to Secure Internet Gateway Cloud Service Providers and Site to Site connectivity using IPsec tunnel with AES- 56 Encryption and speeds up to G
- **Enhanced Application Hosting:** With x capacity and additional RAM QAT and x G AppGig Ports multiple Cisco Signed performance savvy applications can be hosted on Catalyst X
- **ThousandEyes Enabled:** End-to-end visualization of the path from campus branch to clouds DC with Cisco ThousandEyes Network and Application Synthetics included with Cisco DNA Advantage licenses
- **Investment Protection:** Catalyst X redundant fans and power supplies data stack and StackPower cables are backward compatible with the Catalyst

The Foundation of Software-Defined access

Advanced persistent security threats The exponential growth of Internet of Things IoT devices Mobility everywhere Cloud adoption All of these require a network fabric that integrates advanced hardware and software innovations to automate secure and simplify customer networks The goal of this network fabric is to enable customer revenue growth by accelerating the rollout of business services

The Cisco Digital Network Architecture Cisco DNA with Software-Defined Access SD-Access is the network fabric that powers business It is an open and extensible software-driven architecture that accelerates and simplifies your enterprise network operations The programmable architecture frees your IT staff from time-consuming repetitive network configuration tasks so they can focus instead on innovation that positively transforms your business SD-Access enables policy-based automation from edge to cloud with foundational capabilities These include

- Simplified device deployment
- Unified management of wired and wireless networks
- Network virtualization and segmentation
- Group-based policies
- Context-based analytics

Cisco DNA Software

Cisco DNA Software offers a valuable and flexible way to buy software for the access WAN and data center domains At each stage in the product lifecycle Cisco DNA Software helps make buying managing and upgrading your network and infrastructure software easier Cisco DNA Software provides

- Flexible licensing models to smoothly distribute customers' software spending over time
- Investment protection for software purchases through software services-enabled license portability
- Access to updates upgrades and new technology from Cisco through Cisco® Software Support Services SWSS
- Lower cost of entry with the new Cisco DNA Subscription for Switching model
- Access to end-to-end service assurance through Cisco ThousandEyes* Network and Application Synthetics included with Cisco DNA Advantage license

Cisco DNA lets you manage your entire switching structure as a single converged component With one management system and one policy for wired and wireless networks it offers an efficient way to provide more secure access

* Each Catalyst Cisco DNA Advantage subscription entitles the customer to run the equivalent of one ThousandEyes network or web test every 5 mins from a ThousandEyes enterprise agent units per month up to a maximum of units per month of ThousandEyes test capacity per customer ThousandEyes Cloud Agent access is not included in the Cisco DNA license entitlement Test capacity can be increased and Cloud Agents accessed with purchase of additional ThousandEyes Network and Application Synthetics

Product overview: Features

Product highlights

- Highest wireless scale for Wi-Fi 6 and 8 ac Wave access points supported on a single switch with select models
- Catalyst and Catalyst L models are based on the Cisco UADP Application-Specific Integrated Circuit ASIC with programmable pipeline and microengine capabilities along with template-based configurable allocation of Layer and Layer forwarding Access Control Lists ACLs and Quality of Service QoS entries
- Catalyst X models are based on UADP sec ASIC which adds line rate support for Crypto including G hardware-based IPsec
- x86 CPU complex with 8-GB memory and 6 GB of flash and external USB SSD pluggable storage slot delivering up to GB of storage with an option SSD drive to host containers C X models support 6GB of memory
- USB slot to load system images and set configurations
- Up to TBps of local stackable switching bandwidth with Catalyst X models
- Deeper buffer and higher scale model options for rich multi-media content delivery applications
- Flexible and dense uplink offerings with G G 5G Multigigabit G and G as fixed or modular uplinks
- Easy transition from G to G and G to 5G with dual-rate optics
- Flexible downlink options with 5G G and G Copper and Fiber as well as the densest Multigigabit links
- With a mix of Copper G up to G and Fiber G up to 5G supported in a single stack multiple flexible deployment scenarios are enabled including -Tier -Tier and Hybrid architectures
- Leading PoE capabilities with up to 8 ports of PoE per stack PoE+ and 88 ports high density IEEE 8 bt - W UPOE+ and 6 W Cisco UPOE®
- Intelligent Power Management with Cisco StackPower technology providing power stacking among members for power redundancy Stackpower pools the power supplies across the stack to be used redundancy and supplemental power purposes
- Line-rate hardware-based Flexible NetFlow FNF delivering flow collection of up to 8 flows with select models
- IPv6 support in hardware providing wire-rate forwarding for IPv6 networks
- Dual-stack support for IPv IPv6 and dynamic hardware forwarding table allocations for ease of IPv -to-IPv6 migration
- Support for both static and dynamic NAT and Port Address Translation PAT
- IEEE 8 ba AV Bridging AVB built in to provide a better audio and video experience through improved time synchronization and QoS

- Precision Time Protocol PTP; IEEE 588v provides accurate clock synchronization with sub-microsecond accuracy making it suitable for distribution and synchronization of time and frequency over network
- Cisco IOS XE a modern operating system for the enterprise with support for model-driven programmability including NETCONF RESTCONF YANG on-box Python scripting streaming telemetry container-based application hosting and patching for critical bug fixes The OS also has built-in defenses to protect against runtime attacks
- End-to-end visualization of the path from campus branch to clouds DC with Cisco ThousandEyes Network and Application Synthetics included with Cisco DNA Advantage license
- **SD-Access:** Cisco Catalyst Series switches form the foundational building block for SD-Access Cisco's lead enterprise architecture
  - Policy-based automation from edge to cloud
  - Simplified segmentation and micro-segmentation with predictable performance and scalability
  - Automation through Cisco DNA Center
  - Policy handled through the Cisco Identity Services Engine ISE
  - Network assurance provided through the Cisco DNA Center
  - Faster launch of new business services and significantly improved issue resolution time
- Plug and Play PnP enabled A simple secure unified and integrated offering to ease new branch or campus device rollouts or updates to an existing network
- Advanced security
  - Encrypted Traffic Analytics ETA You benefit from the power of machine learning to identify and take actions toward threats or anomalies in your network including malware detection in encrypted traffic without decryption and distributed anomaly detection
  - Support for AES- 56 with the powerful MACsec 56-bit encryption algorithm available on all models
  - Trustworthy solutions Hardware anchored Secure Boot and Secure Unique Device Identification SUDI support for Plug and Play to verify the identity of the hardware and software

Platform details

Switch models and configurations

Table 1. Product Family Configurations

Models	Modular Uplinks and Speeds	Stacking Bandwidth Support	mGig Density	Cisco StackPower	HW-Based IPSEC	App-Hosting Capacity
Catalyst X	G 5G G mGig and G	Stackwise- T 8 G when stacking with Catalyst model	8x G	✓ Larger Power Budget	Up to G IPsec*	✓ x hosting resources over Catalyst models
Catalyst	G 5G G and mGig	Stackwise- 8	8x5G and x G	✓	✗	✓
Catalyst L	✗	Stackwise-	x G	✗	✗	✓

* Need to order HSec Key for IPsec Feature

The Cisco Catalyst Series is made up of nineteen modular uplink switch models and fourteen fixed uplink switch models

Figure 1.
Cisco Catalyst Series switches

Table lists port scale and power details for the Cisco Catalyst Series models

Table 2. Cisco Catalyst Series switch configurations

Model	Total 1 /1 /1 , Multigigabit copper or SFP Fiber	Uplink Configuration	Default AC power supply
Modular uplink models			
C X-48HX	8 Cisco UPoE+ 8x G Multigigabit M G 5G 5G or Gbps w W UPOE+	Modular Uplinks	W AC
C X-48TX	8 Data 8x G Multigigabit M G 5G 5G or Gbps	Modular Uplinks	7 5W AC
C X-48HXN	8 Cisco UPOE+ 8x G Multigigabit M G 5G 5G or Gbps + x 5G Multigigabit M G 5G 5Gbps	Modular Uplinks	W AC
C X-24HX	Cisco UPOE+ x G Multigigabit M G 5G 5G or Gbps	Modular Uplinks	W AC
C X-12Y	5G G G SFP 8	Modular Uplinks	7 5W AC
C X-24Y	5G G G SFP 8	Modular Uplinks	7 5W AC
C -24T	Data	Modular Uplinks	5 W AC
C -48T	8 Data	Modular Uplinks	5 W AC
C -24P	PoE+	Modular Uplinks	7 5W AC
C -48P	8 PoE+	Modular Uplinks	7 5W AC
C -24U	Cisco UPOE	Modular Uplinks	W AC
C -48U	8 Cisco UPOE	Modular Uplinks	W AC
C -24UX	Multigigabit Cisco UPOE M G 5G 5G Gbps	Modular Uplinks	W AC
C -48UXM	8 Cisco UPOE 6x M G 5G + x Multigigabit M G 5G 5G Gbps	Modular Uplinks	W AC
C -48UN	8 5Gbps UPOE ports M G 5G 5Gbps	Modular Uplinks	W AC
C -24UB	Cisco UPOE	Modular Uplinks	W AC
C -24UXB	Multigigabit Cisco UPOE M G 5G 5G Gbps	Modular Uplinks	W AC
C -48UB	8 Cisco UPOE	Modular Uplinks	W AC
C -24H	Cisco UPOE+	Modular Uplinks	W AC
C -48H	8 Cisco UPOE+	Modular Uplinks	W AC
C -24S	G SFP	Modular Uplinks	7 5W AC

Model	Total 1 /1 /1 , Multigigabit copper or SFP Fiber	Uplink Configuration	Default AC power supply
C -48S	8 G SFP	Modular Uplinks	7 5W AC
Fixed uplink models			
C L-24T-4G	Data	x G fixed uplinks	5 W AC
C L-24T-4X	Data	x G G fixed uplinks	5 W AC
C L-48T-4G	8 Data	x G fixed uplinks	5 W AC
C L-48T-4X	8 Data	x G G fixed uplinks	5 W AC
C L-24P-4G	PoE+	x G fixed uplinks	7 5W AC
C L-24P-4X	PoE+	x G G fixed uplinks	7 5W AC
C L-48P-4G	8 PoE+	x G fixed uplinks	7 5W AC
C L-48P-4X	8 PoE+	x G G fixed uplinks	7 5W AC
C L-48PF-4G	8 PoE+	x G fixed uplinks	W AC
C L-48PF-4X	8 PoE+	x G G fixed uplinks	W AC
C L-24UXG-4X	Cisco UPOE 8 Multigigabit M G 5G 5G G + 6x M M G	x G G fixed uplinks	W AC
C L-24UXG-2Q	Cisco UPOE 8 Multigigabit M G 5G 5G G + 6x M M G	x G fixed uplinks	W AC
C L-48UXG-4X	8 Cisco UPOE Multigigabit M G 5G 5G G + 6x M M G	x G G fixed uplinks	W AC
C L-48UXG-2Q	8 Cisco UPOE Multigigabit M G 5G 5G G + 6x M M G	x G fixed uplinks	W AC

Cisco Catalyst Series switches C X and C SKUs support optional network modules for uplink ports Figure These field-replaceable network modules with 5G and G speeds in the Cisco Catalyst Series enable greater architectural flexibility and infrastructure investment protection by allowing a nondisruptive migration from G to 5G and beyond The default switch configuration does not include the network module When you purchase the switch you can choose from the network modules described in Table

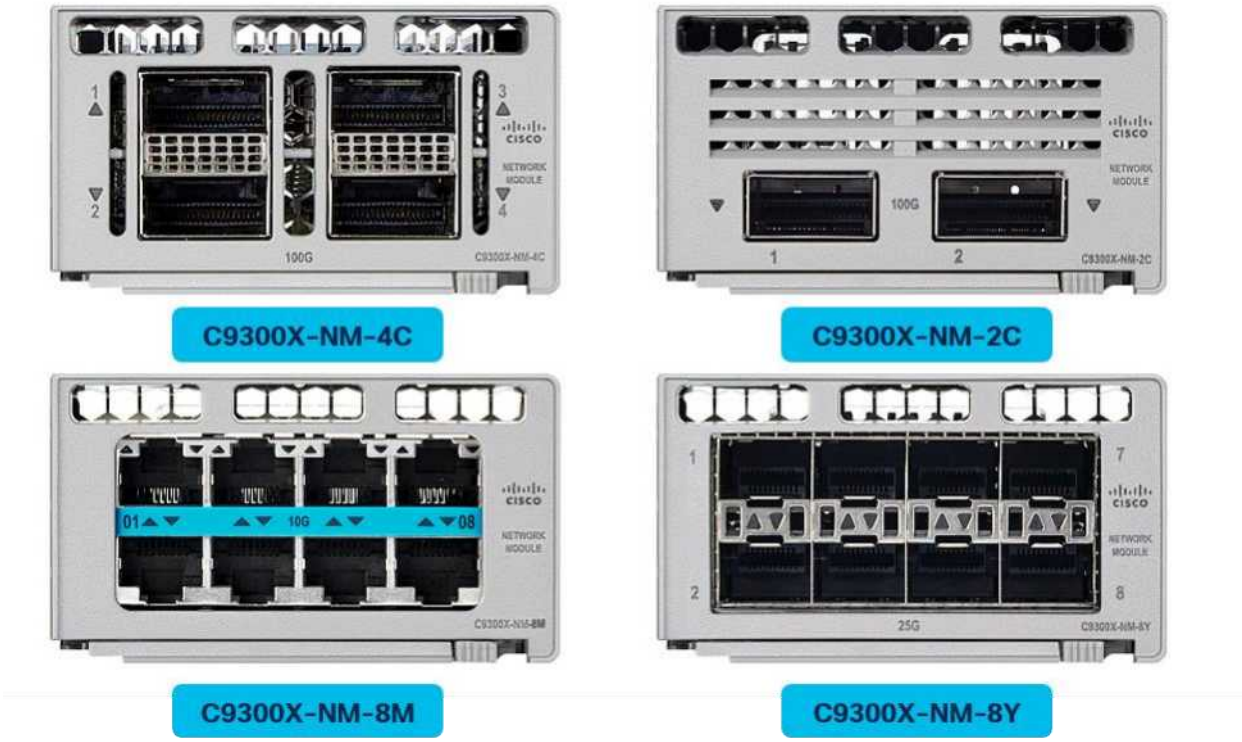

Figure 2.
Cisco Catalyst X Network Modules

Figure .
Cisco Catalyst Series Network Modules

Table . Network module numbers and descriptions

Network module	Description
C X-NM-8M	Catalyst X 8x G G Multigigabit Network Module
C X-NM-8Y	Catalyst X 8x 5G G G Network Module
C X-NM-2C	Catalyst X x G G Network Module
C X-NM-4C*	Catalyst X x G G Network Module
C -NM-4G	Catalyst Series x G Network Module
C -NM-4M	Catalyst Series x Multigigabit Network Module
C -NM-8X	Catalyst Series 8x G G Network Module
C -NM-2Q	Catalyst Series x G Network Module
C -NM-2Y	Catalyst Series x 5G G G Network Module

*C X-NM- C is compatible only with C X- 8HX C X- 8TX and C X- Y models

Please note: Catalyst 85 and Catalyst network modules are supported on the Catalyst models Catalyst X network modules are only supported on the Catalyst X models

For additional details please read our FAQs
https www cisco com c dam en us products collateral switches catalyst- -series-switches nb- -cat- k-faq-cte-en pdf

Power supplies

Cisco Catalyst Series switches support dual redundant power supplies The switches ship with one power supply by default and the second power supply can be purchased when the switch is ordered or at a later time If only one power supply is installed it should always be in power supply bay # The switches also ship with three field-replaceable fans Power Supplies are common across the Catalyst Series

Figure 4.
Cisco Catalyst Series Dual Redundant power supplies

Table lists the different power supplies available in these switches and available PoE power

Table 4. Power supply models

Model	Primary power supply	Available PoE power	Available PoE power			
			With 5 W Secondary PS	With 715W Secondary PS	With 11 W Secondary PS	With 1 W Secondary PS
C -24H	PWR-C - WAC-P	8 W	8 W	5 5W*	W*	6 W
C -48H	PWR-C - WAC-P	8 W	7 W	5 7W	W*	7 W
C -24H	PWR-C - WAC-P	6 W	8 W	6 W	6 W	6 W
C -48H	PWR-C - WAC-P	6 W	7 W	7W	7 W	88 W

Model	Default power supply	Available PoE power	With 5 W Secondary PS	With 715W Secondary PS	With 11 W Secondary PS
C X-48TX	PWR-C -7 5WAC-P	No PoE	No PoE	No PoE	No PoE
C X-48HX	PWR-C - WAC-P	5 W		5	6
C X-48HXN	PWR-C - WAC-P	6 W		5	7
C X-24HX	PWR-C - WAC-P	7 5W	85	5	8 5
C X-12Y	PWR-C -7 5WAC-P	No PoE	No PoE	No PoE	No PoE
C X-24Y	PWR-C -7 5WAC-P	No PoE	No PoE	No PoE	No PoE
C -24T	PWR-C - 5 WAC***	No PoE	No PoE	No PoE	No PoE
C -48T	PWR-C - 5 WAC***	No PoE	No PoE	No PoE	No PoE
C -24P	PWR-C -7 5WAC***	5W	7 W*	7 W*	7 W*
C -48P	PWR-C -7 5WAC***	7W	787W	5 W	W*
C -24U	PWR-C - WAC	8 W	8 W	W*	W*
C -48U	PWR-C - WAC	8 W	7 W	5 7W	8 W**
C -24UX	PWR-C - WAC-P	56 W	W	75W	W*
C -48UXM	PWR-C - WAC-P	W	8 W	5W	5 W
C -48UN	PWR-C - WAC-P	6 5W	5W	6 W	7 5W
C -24UB	PWR-C - WAC	8 W	8 W	W*	W*
C -24UXB	PWR-C - WAC-P	56 W	W	75W	W*
C -48UB	PWR-C - WAC	8 W	7 W	5 7W	8 W**

Model	Default power supply	Available PoE power	With 5 W Secondary PS	With 715W Secondary PS	With 11 W Secondary PS
C -24S	PWR-C -7 5WAC-P	No PoE	No PoE	No PoE	No PoE
C -48S	PWR-C -7 5WAC-P	No PoE	No PoE	No PoE	No PoE
C L-24T-4G	PWR-C - 5 WAC-P	No PoE	No PoE	No PoE	No PoE
C L-24T-4X	PWR-C - 5 WAC-P	No PoE	No PoE	No PoE	No PoE
C L-48T-4G	PWR-C - 5 WAC-P	No PoE	No PoE	No PoE	No PoE
C L-48T-4X	PWR-C - 5 WAC-P	No PoE	No PoE	No PoE	No PoE
C L-24P-4G	PWR-C -7 5WAC-P	5 5W	7 W*	7 W*	7 W*
C L-24P-4X	PWR-C -7 5WAC-P	5 5W	7 W*	7 W*	7 W*
C L-48P-4G	PWR-C -7 5WAC-P***	5 5W	855W	W	W*
C L-48P-4X	PWR-C -7 5WAC-P***	5 5W	855W	W	W*
C L-48PF-4G	PWR-C - WAC-P	8 W	W	W	W*
C L-48PF-4X	PWR-C - WAC-P	8 W	W	W	W*
C L-24UXG-4X	PWR-C - WAC-P	88 W	W	W	W*
C L-24UXG-2Q	PWR-C - WAC-P	7 W	7 W	W	W*
C L-48UXG-4X	PWR-C - WAC-P***	675W	5W	W	775W
C L-48UXG-2Q	PWR-C - WAC-P***	675W	5W	W	775W

* Limited by port number and port rating e g PoE+ W ports = 7 W

** Limited by design

*** Upgrade options for 7 5W and W PSU are available

Stacking

Cisco Catalyst Series switch models are designed for stacking switches as a single virtual switch enabling customers to have a single management plane and control plane for up to 8 access ports

Figure 5.
Cisco Catalyst Series modular uplink models stack C C X SKUs and fixed uplink models stack C L SKUs

Table 5 lists the supported stacking options

Table 5. Supported stacking options

Model	Stacking support	Stacking bandwidth support	Optional Stacking hardware	Number of members	Supported stack members
C X SKUs	StackWise- T	Tbps	StackWise cable	8	Stacks with other Catalyst X models at StackWise- T speeds with same license level Stacks with C SKUs at StackWise- 8 speeds with same license level
C SKUs	StackWise®- 8	8 Gbps	StackWise Cable	8	Other C SKUs with same license level C higher scale SKUs only stack with other like higher scale models
C L SKUs	StackWise-	Gbps	C L-STACK-KIT	8	Other C L SKUs with same license level

Mixed stacking between Catalyst X and Catalyst models are supported at StackWise- 8 speeds

Mixed stacking between Catalyst and Catalyst X and Catalyst higher scale models C - UB C - UXB C - 8UB is **not supported** You cannot stack fixed uplink models C L SKUs with modular uplink models C SKUs or other Catalyst switches e g Cisco Catalyst 85 and 65 Series Any combination of Catalyst models can form a stack Separately any combination of Catalyst L models can form a stack

Catalyst higher scale SKUs C - UB C - UXB C - 8UB need to be stacked with other higher scale models

StackWise cables that are available to configure stacking with Catalyst Series modular uplink models C X and C SKUs come in lengths of 5m m and m

The optional StackWise- kit for Catalyst Series fixed uplink models C L SKUs consists of two stack adapters and a stacking cable The default stacking cable is 5 m but options of m and m are also available Table 6 lists the stacking accessories

Table 6. Stacking accessories

Model	Description
STACK-T1-5 CM	Data stack 5 cm cable option with C and C X SKUs
STACK-T1-1M	Data stack m cable option with C and C X SKUs
STACK-T1- M	Data stack m cable option with C and C X SKUs
C L-STACK-KIT	Stack kit for C L SKUs only Two data stack adapters and one data stack cable
STACK-T -5 CM	Data stack 5 cm cable default cable with C L Stack Kit
STACK-T -1M	Data stack m cable cable option with C L Stack Kit
STACK T - M	Data stack m cable cable option with C L Stack Kit

Figure 6.
Cisco Catalyst Series fixed uplink models with optional stack kit

Fan

Cisco Catalyst Series switches also come with three field-replaceable fans and support N+ redundancy Table 7 lists the fan module part number

Table 7. Fan modules

Model	Description
FAN-T2=	Fan module

Performance and scalability

Performance and scalability metrics for the Cisco Catalyst Series are provided in Table 8

Table 8. Performance specifications

Description	Catalyst X modular uplink models	Catalyst modular uplink models	Catalyst higher scale, models	Catalyst L fixed uplinkmodels
Total number of MAC addresses			6	
Total number of IPv4 routes (ARP plus learned routes)	direct routes and 5 indirect routes	direct routes and 8 indirect routes	8 direct routes and 6 indirect routes	direct routes and 8 indirect routes
IPv6 routing entries	5	6	56	6
Multicast routing scale	8	8	6	8
QoS scale entries		5	8	5
ACL scale entries	8	5	8	5
Packet buffer per SKU	6 MB buffer for 8-port 5G Multigigabit -port G Multigigabit and -port Fiber MB buffer for 8-port G Multigigabit and -port Fiber	6 MB buffer for - or 8-port Gigabit Ethernet models MB buffer for and 8-port Multigigabit	MB buffer for - and 8-port Gigabit Ethernet models 6 MB buffer for -port Multigigabit model UXB	6 MB buffer for and 8 port Gigabit Ethernet models
FNF entries	6 flows on 8-port 5G Multigigabit and -port G Multigigabit and -port Fiber 8 flows on 8-port G Multigigabit and -port Fiber	6 flow on - and 8-port Gigabit Ethernet models 8 flows on -port Multigigabit	8 flow on - and 8-port Gigabit Ethernet models 56 flows on -port Multigigabit	6 flow on - and 8-port Gigabit Ethernet models
DRAM	6 GB	8 GB	8 GB	8 GB
Flash	6 GB	6 GB	6 GB	6 GB
VLAN IDs				

Description	Catalyst X modular uplink models	Catalyst modular uplink models	Catalyst higher scale, models	Catalyst L fixed uplinkmodels
Total Switched Virtual Interfaces (SVIs)				
Jumbo frames	8 bytes	8 bytes	8 bytes	8 bytes
Total routed ports per Catalyst Series stack	8	8	8	6

Table . Bandwidth specifications

SKU	Switching capacity	Switching capacity with stacking	Forwarding rate	Forwarding rate with stacking
C X-48TX	Gbps	Gbps	88 Mpps	Mpps
C X-48HX	Gbps	Gbps	88 Mpps	Mpps
C X-48HXN	Gbps	Gbps	88 Mpps	Mpps
C X-24HX	88 Gbps	88 Gbps	7 8 Mpps	8 8 Mpps
C X-12Y	Gbps	Gbps	7 Mpps	88 Mpps
C X-24Y	Gbps	Gbps	88 Mpps	Mpps
C -24T	8 Gbps	688 Gbps	5 76 Mpps	5 Mpps
C -48T	56 Gbps	7 6 Gbps	7 Mpps	5 7 6 Mpps
C -24P	8 Gbps	688 Gbps	5 76 Mpps	5 Mpps
C -48P	56 Gbps	7 6 Gbps	7 Mpps	5 7 6 Mpps
C -24U	8 Gbps	688 Gbps	5 76 Mpps	5 Mpps
C -48U	56 Gbps	7 6 Gbps	8 Mpps	5 7 6 Mpps
C -24UX	6 Gbps	Gbps	76 Mpps	8 Mpps
C -48UXM	58 Gbps	6 Gbps	5 Mpps	788 6 Mpps
C -48UN	6 Gbps	Gbps	76 Mpps	8 Mpps
C -24UB	8 Gbps	688 Gbps	5 76 Mpps	5 Mpps
C -48UB	56 Gbps	7 6 Gbps	8 Mpps	5 7 6 Mpps
C -24UXB	6 Gbps	Gbps	76 Mpps	8 Mpps
C -24H	8 Gbps	688 Gbps	5 76 Mpps	5 Mpps

SKU	Switching capacity	Switching capacity with stacking	Forwarding rate	Forwarding rate with stacking
C -48H	56 Gbps	7 6 Gbps	8 Mpps	5 7 6 Mpps
C -24S	8 Gbps	688 Gbps	5 76 Mpps	5 Mpps
C -48S	56 Gbps	7 6 Gbps	7 Mpps	5 7 6 Mpps
C X-12Y	Gbps	Gbps	7 Mpps	88 Mpps
C X-24Y	Gbps	Gbps	88 Mpps	Mpps
C L-24T-4G	56 Gbps	76 Gbps	66 Mpps	7 76 Mpps
C L-24T-4X	8 Gbps	8 Gbps	5 Mpps	Mpps
C L-48T-4G	Gbps	Gbps	77 8 Mpps	5 8 Mpps
C L-48T-4X	76 Gbps	6 Gbps	5 Mpps	6 5 Mpps
C L-24P-4G	56 Gbps	76 Gbps	66 Mpps	7 76 Mpps
C L-24P-4X	8 Gbps	8 Gbps	5 Mpps	Mpps
C L-48P-4G	Gbps	Gbps	77 8 Mpps	5 8 Mpps
C L-48P-4X	76 Gbps	6 Gbps	5 Mpps	6 5 Mpps
C L-48PF-4G	Gbps	Gbps	77 8 Mpps	5 8 Mpps
C L-48PF-4X	76 Gbps	6 Gbps	5 Mpps	6 5 Mpps
C L-24UXG-4X	7 Gbps	5 Gbps	8 Mpps	7 Mpps
C L-24UXG-2Q	5 Gbps	67 Gbps	6 Mpps	5 Mpps
C L-48UXG-4X	Gbps	7 Gbps	66 Mpps	5 76 Mpps
C L-48UXG-2Q	7 Gbps	7 Gbps	5 Mpps	58 8 Mpps

All models are at wire-speed nonblocking performance for both IPv and IPv6 The forwarding rates in the table above are measured with 6 byte IPv packet sizes

SD-Access architecture

What if you could give time back to IT? Provide network access in minutes for any user or device to any application – without compromise? SD-Access is the industry's first policy-based automation from network edge to cloud Your foundation for your digital network Cisco SD-Access Built on the principles of the Cisco DNA SD-Access provides end-to-end segmentation to keep user device and application traffic separate without a redesign of the network It automates user access policy so organizations can make sure the right policies are set for any user or device with any application across the network This is accomplished with a single network fabric across LAN and WLAN which creates a consistent user experience anywhere without compromising on security

There are many challenges today in managing the network to drive business outcomes These limitations are due to manual configuration and fragmented tool offerings SD-Access provides

- A transformational management solution that reduces operational expenses and enhances business agility
- Consistent management of wired and wireless network provisioning and policy
- Automated network segmentation and group-based policy
- Contextual insights for fast issue resolution and capacity planning
- Open and programmable interfaces for integration with third-party solutions

For an overview of key use-cases SD-Access addresses refer to SD-Access Solution Overview

Platform benefits

Cisco IOS XE 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 both turnkey solutions such as Plug and Play and off-the-shelf tools such as Zero-Touch Provisioning ZTP and Preboot Execution Environment PXE that enable an effortless and automated deployment
- **API-driven configuration** is available with modern network switches such as the Cisco Catalyst Series It supports a wide range of automation features and provides robust open APIs over NETCONF and RESTCONF and GNMI 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 Cisco IOS XE supports patching 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

Security

- **Encrypted Traffic Analytics (ETA)** is a unique capability for identifying malware in encrypted traffic coming from the access layer Since more and more traffic is becoming encrypted the visibility this feature affords for threat detection is critical for keeping your network secure at different layers
- **AES-256 MACsec encryption** is the IEEE 8 AE standard for authenticating and encrypting packets between switches The Cisco Catalyst Series switches support 56-bit and 8-bit Advanced Encryption Standard AES providing the most secure link encryption
- **IPSec encryption** delivers secure end-to-end encrypted traffic between sites and connectivity to the Cloud C X models support line rate IPSEC up to Gbps delivering uncompromised secure connectivity
- **Trustworthy solutions built with Cisco Trust Anchor Technologies** provide a highly secure foundation for Cisco products With the Catalyst Series 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:** Cryptographically signed images provide assurance that the firmware BIOS and other software are authentic and unmodified As the system boots the system's software signatures are checked for integrity
  - **Secure Boot:** Cisco Secure Boot technology anchors the boot sequence chain of trust to immutable hardware mitigating threats against a system's foundational state and the software that is to be loaded regardless of a user's privilege level It provides layered protection against the persistence of illicitly modified firmware
  - **Cisco Trust Anchor module:** A tamper-resistant strong cryptographic single-chip solution provides hardware authenticity assurance to uniquely identify the product so that its origin can be confirmed to Cisco This provides assurance that the product is genuine

Cloud Security

- **Umbrella DNS Integration:**

  Small to midsize networks reliant on managed service providers can now host Cisco Umbrella agent directly on their Catalyst series switches This allows the business to easily customize their DNS filtering policies granularly at user or group level to prevent BYOD or IoT guest or corporate users from accessing malicious or inappropriate websites without having to rely on the MSP to push the policies out It also lets them optimize use of bandwidth by allowing direct cloud access for trusted apps Requires DNA-Advantage License and Umbrella License per device

Service Assurance

- **Cisco ThousandEyes Integration:**

  Deliver superior network and service experience for your users employees and partners with groundbreaking observability from network to app Cisco ThousandEyes network tests are now integrated into Cisco Catalyst series switches with Cisco DNA Advantage licenses giving you visibility beyond your campus perimeter so you solve issues faster The Cisco ThousandEyes Network and Application Synthetics license is included by default upon the selection of a Cisco DNA Advantage option with a year 5 year or a 7 year subscription Each Catalyst Cisco DNA Advantage subscription entitles the customer to run the equivalent of one Cisco ThousandEyes network or web test every 5 mins from a Cisco ThousandEyes enterprise agent units per month up to a maximum of units per month of Cisco ThousandEyes test capacity per customer

Resiliency and high availability

- **StackWise-1T:** Cisco Catalyst Series modular uplink models C X SKUs support the industry's highest back-panel stacking bandwidth solution Tbps with StackWise- T Up to 8 Switches can be configured in a StackWise- T with the special connector at the back of the switch using dedicated stack cables
- **StackWise-48 :** Cisco Catalyst Series modular uplink models C SKUs support high-speed back-panel stacking bandwidth solution 8 Gbps with StackWise- 8 Up to 8 Switches can be configured in a StackWise- 8 with the special connector at the back of the switch using dedicated stack cables
- **StackWise- 2 :** Cisco Catalyst Series fixed uplink models C L SKUs support stacking bandwidth solution Gbps with StackWise- Up to 8 Switches can be optionally configured in a StackWise- with the special Stack Kit at the back of the switch using dedicated stack cables
- **Cisco StackPower:** Cisco StackPower is an innovative power interconnect system that allows the power supplies in a stack to be shared as a common resource among all the switches This allows you to simply add one extra power supply in any switch of the stack and either provide power redundancy for any of the stack members or simply add more power to the shared pool Up to switches can be configured in a StackPower stack with the special connector at the back of the switch However with the use of XPS- appliance up to 8 switches can be configured in the StackPower stack **Cisco StackPower is only supported on the models with modular uplink stack - C and C X SKUs. C X models support StackPower+ delivering more power over StackPower cables compared to C models.**

Figure 7.
Cisco Catalyst Series StackPower

- **High availability:** The Catalyst Series supports high-availability features including the following
  - Cross-stack EtherChannel provides the ability to configure Cisco EtherChannel technology across different members of the stack for high resiliency
  - **Flexlink+:** Flexlink+ allows the setting up of active and backup interfaces or port channels which can provide Layer failover redundancy without the use of Spanning Tree Protocol STP
  - **Extended Fast Software Upgrade** provides the ability to upgrade the platform software or to reload the system in under seconds of traffic impact; both stand-alone and stack configurations
  - IEEE 8 s Multiple Spanning Tree Protocol MSTP provides rapid spanning tree convergence independent of spanning tree timers and also offers the benefit of Layer load balancing and distributed processing
  - Per-VLAN Rapid Spanning Tree PVRST+ allows rapid spanning tree IEEE 8 w reconvergence on a per-VLAN spanning tree basis providing simpler configuration than MSTP In both MSTP and PVRST+ modes stacked units behave as a single spanning tree node
  - Switch-port auto-recovery "err-disable" recovery automatically attempts to reactivate a link that is disabled because of a network error
  - The Catalyst Series platform delivers the best NSF SSO resiliency architecture in a stackable solution with sub-5 -ms failover
  - Always-On wireless network with stateful switchover when wireless functionality is enabled on stack of Catalyst Series switches

Deep buffer Technology

Cisco Catalyst higher scale models have a deeper buffer to address the requirements of rich multi-media lossless content delivery and large routing tables in a fixed access solution with a wide range of uplink choices for deployment flexibility

Flexible Netflow

- **Flexible NetFlow (FNF):** Cisco IOS Software FNF is the next generation in flow visibility technology It enables optimization of the network infrastructure reduces operation costs and improves capacity planning and security incident detection with increased flexibility and scalability The Catalyst Series is capable of up to 6 flow entries on 8-port -port and -port models and up to 8 flow entries on Multigigabit models

Application visibility and control

- **NBAR2:** Next-Generation Network-Based Application Recognition NBAR enables advanced application classification techniques accuracy with up to predefined and well-known application signatures and up to 5 encrypted applications on the Cisco Catalyst switches The most popular applications included are Skype Office 65 Microsoft Lync Cisco WebEx® and Facebook among many others that are predefined and easy to configure NBAR provides the network administrator with an important tool to identify control and monitor end-user application usage while helping ensure a quality user experience and securing the network from malicious attacks NBAR leverages FNF to report application performance and activities within the network to any supported NetFlow collector such as Cisco Prime® Cisco Stealthwatch® or any compliant third-party tool

QoS

- **Superior QoS:** The Cisco Catalyst Series offers Gigabit Ethernet speeds with intelligent services that keep traffic flowing smoothly even at times the normal network speed Industry-leading mechanisms for cross-stack marking classification and scheduling deliver superior performance for data voice and video traffic at wire speed Superior QoS includes granular wireless bandwidth management and fair sharing 8 p Class of Service CoS and Differentiated Services Code Point DSCP field classification Shaped Round Robin SRR scheduling Committed Information Rate CIR and eight egress queues per port

Service discovery

- **Multicast DNS (mDNS) gateway:** This service discovery gateway capability facilitates sharing of services advertised using the Apple mDNS Bonjour protocol such as printers Apple TVs and file services across the network Additionally the administrator can create policies defining which services can be seen and accessed by the users in the network This capability facilitates a Bring-Your-Own-Device BYOD rollout

Smart operation

- **WebUI:** WebUI is an embedded GUI-based device-management tool that provides the ability to provision the device to simplify device deployment and manageability and to enhance the user experience It comes with the default image so there is no need to enable anything or install any license on the device You can use WebUI to build configurations and to monitor and troubleshoot the device without having CLI expertise
- **Efficient switch operation*:** Cisco Catalyst Series switches provide optimum power saving with Energy Efficient Ethernet EEE on the RJ- 5 ports and low-power operations for industry best-in-class power management and power consumption capabilities The ports support reduced power modes so that ports not in use can move into a lower power utilization state Other efficient switch operation features are as follows
  - Per-port power consumption command allows customers to specify a maximum power setting on an individual port
  - Per-port PoE power sensing measures actual power being drawn enabling more intelligent control of powered devices The PoE MIB provides proactive visibility into power usage and allows you to set different power-level thresholds
- **RFID tags:** Catalyst Series switches have an embedded RFID tag that facilitates easy asset and inventory management using commercial RFID readers
- **Blue beacon:** Catalyst Series switches support a blue beacon LED for easy identification of the switch being accessed

Open standards based fabric

The Cisco Catalyst Series Switches support modern fabric technologies such as VXLAN with BGP-EVPN control plane with open APIs This technology provides the flexibility to build open standards based fabrics to secure infrastructure users and data This fabric architecture provides rich unicast and multicast protocol support to optimally route or bridge traffic as well as support for integrated campus services all of which can be automated via open APIs to effectively configure and monitor the network

Programmability

Cisco IOS-XE provides open standards based APIs such as NETCONF RESTCONF gNMI to simplify provisioning and configuration that allows network administrators to save time when provisioning new network devices and to prevent the human errors that often are a byproduct of manual configuration Integrating Zero Touch Provisioning with various Devops toolkits allows network admins to drastically reduce the time and resources needed to onboard a device onto their network The ability to collect real-time statistics through model driven telemetry through gRPC and gNMI allows administrator to integrate to many health monitoring tools to optimize their environments and to troubleshoot and provide alerts about any potential problems

High-Performance IP routing

The Cisco Express Forwarding hardware routing architecture delivers extremely high-performance IP routing in Cisco Catalyst Series switches based on

- IP unicast routing protocols including static Routing Information Protocol Version [RIPv] RIPv RIPng and Open Shortest Path First [OSPF] Routed Access are supported for small network routing applications with the Network Essentials stack Equal-cost routing facilitates Layer load balancing and redundancy across the stack
- Advanced IP unicast routing protocols including Full [OSPF] Enhanced Interior Gateway Routing Protocol [EIGRP] Border Gateway Protocol Version [BGPv] and Intermediate System-to-Intermediate System Version [IS-ISv] are supported for load balancing and for constructing scalable LANs IPv6 routing using OSPFv and BGPv6 is supported in hardware for maximum performance
- Protocol-Independent Multicast PIM for IP multicast routing is supported including PIM Sparse Mode PIM SM and Source-Specific Multicast SSM
- IPv6 addressing is supported on interfaces with appropriate show commands for monitoring and troubleshooting

Audio Video Bridging (AVB)

Starting with Cisco IOS XE Software Release 6 8 the Cisco Catalyst Series supports the IEEE 8 AVB standard This standard provided the means for highly reliable delivery of low-latency time-synchronized audio and video streaming services through Layer Ethernet networks The standard also makes it easier to integrate new services and for AV equipment from different vendors to interoperate

Benefits

- Improves quality of experience by lowering jitter and latency for time-synchronized delivery of high-quality AV
- Provides scalability of applications across networked deployments including expansive and complex AV infrastructure
- Lowers Total Cost of Ownership TCO with reduced cabling lowers CapEx and no license fees lowers OpEx

For more details about AVB and specific models supported check https www cisco com go avb

Multigigabit Ethernet technology: Cisco Multigigabit Ethernet technology allows you to achieve bandwidth speeds from Gbps to Gbps over traditional Category 5e 6 cabling or above This technology addresses the need for exponential increases in bandwidth with the enormous growth of 8 ac Wave to be eclipsed by the growth of Wi-Fi 6 and new wireless applications without having to replace current cabling infrastructure

Multiprotocol label switching (MPLS)

The Cisco Catalyst Series Switches support Multiprotocol label switching MPLS which combines the performance and capabilities of Layer data link layer switching with the proven scalability of Layer network layer routing MPLS enables the explosive growth in network utilization while providing the opportunity to differentiate services without sacrificing the existing network infrastructure MPLS support includes

- **MPLS L VPN:** An MPLS Virtual Private Network VPN consists of a set of sites that are interconnected by means of a Multiprotocol Label Switching MPLS provider core network At each customer site one or more customer edge CE devices attach to one or more provider edge PE devices
- **VPLS:** VPLS Virtual Private LAN Service enables enterprises to link together their Ethernet-based LANs from multiple sites via the infrastructure provided by their service provider
- **EoMPLS:** EoMPLS is a category of Any Transport over MPLS AToM to transport Layer packets over an MPLS backbone
- **MPLS over GRE:** L VPN over GRE and VPLS over GRE are supported to tunnel MPLS VPLS packets over non-MPLS networks utilizing GRE tunneling

Power over ethernet leadership

Cisco Universal Power over Ethernet (Cisco UPOE® and Cisco UPOE+): PoE removes the need for wall sockets to power each PoE-enabled device and eliminates the cost of additional electrical cabling and circuits that would otherwise be necessary in IP phone and WLAN deployments Cisco UPOE extends the IEEE PoE+ standard to double the power per port to 6 watts This facilitates delivery of network power to a broad range of devices requiring higher power including virtual desktop terminals IP turrets compact switches building management gateways LED lights wireless access points and IP phones Designed for smart building and IoT applications Cisco Catalyst UPOE+ switches delivering PoE power up to W provide data and power over a single cable to power devices like wireless access points digital signage security cameras thermal cameras with PTZ features LED lighting fixtures and large display screens UPOE+ offers reduced cabling and installation costs without need for permits device daisy-chaining application that require higher power draw real-time device information centralized management and remote control faster and flexible device installation where devices can be positioned in a practical location instead of proximity to the electrical outlets

Catalyst Series modular uplink C and C X SKUs models support Cisco UPOE+ Cisco UPOE PoE+ and PoE thereby addressing the largest range of network power needs

Catalyst Series fixed uplink C L SKUs models support Cisco UPOE or PoE+ and PoE

Tables and show the power supply combinations required for different PoE needs

Table 1 . Power supply requirements for Catalyst Series modular uplink PoE PoE+ models C -xxP SKUs

	24-port PoE switch	48-port PoE switch
PoE on all ports (15.4W per port)	PWR-C -7 5WAC PWR-C - 7 5WAC-P PWR-C -7 5WDC	PWR-C - WAC PWR-C - WAC-P or PWR-C -7 5WAC PWR-C -7 5WAC-P PWR-C -7 5WDC
PoE+ on all ports (W per port)	PWR-C - WAC PWR-C - WAC-P or PWR-C - 7 5WAC PWR-C -7 5WAC-P PWR-C -7 5WDC	PWR-C - WAC PWR-C - WAC-P or PWR-C - WAC PWR-C - WAC-P and PWR-C -7 5WAC PWR-C -7 5WAC-P PWR-C -7 5WDC

Table 11. Power supply requirements for Catalyst Series UPOE models C -xxU UB UXM UN C L-xxUXG-xx SKUs

	24-port Cisco UPOE switch	48-port Cisco UPOE switch	48 and 24-port Multigigabit Cisco UPOE switch*
Cisco UPOE (6 W per port) & IEEE 8 2. bt type on all ports (24-port switch) or up to ports (48-port switch)	PWR-C - WAC PWR-C - WAC-P and PWR-C - 7 5WAC PWR-C -7 5WAC-P PWR-C -7 5WDC	PWR-C - WAC PWR-C - WAC-P	PWR-C - WAC PWR-C - WAC-P

Table 12. Power supply requirements for Catalyst Series UPOE+ models C -xxH SKUs

	24-port Cisco UPOE+ switch	48-port Cisco UPOE+ switch
Cisco UPOE+ (W per port) & IEEE 8 2. bt type4 on 21 ports (24-port and 48-port switch)	PWR-C - WAC PWR-C - WAC-P and PWR-C - 7 5WAC PWR-C -7 5WAC-P PWR-C -7 5WDC	PWR-C - WAC PWR-C - WAC-P or PWR-C - WAC-P

Table 1 . Power supply requirements for Catalyst Series fixed uplink PoE PoE+ models C L-xxP SKUs

	24-port PoE switch	48-port PoE switch
PoE on all ports (15.4W per port)	PWR-C -7 5WAC-P PWR-C - 7 5WDC	PWR-C - WAC-P or PWR-C - 7 5WAC-P
PoE+ on all ports (W per port)	PWR-C - WAC-P or PWR-C -7 5WAC-P PWR-C -7 5WDC	PWR-C - WAC-P or PWR-C - WAC-P and PWR-C -7 5WAC-P PWR-C -7 5WDC

- **Perpetual PoE:** With Perpetual PoE the PoE power is maintained during a switch reload This is important for IoT endpoints such as PoE-powered lights so that there is no disruption during switch reboot
- **Fast PoE:** When power is restored to a switch PoE starts delivering power to endpoints without waiting for the operating system to fully load thereby speeding up the time for the endpoint to start up

* C - 8UN C - UX C - 8UXM are available with PWR-C - WAC-P Platinum-rated power supply Platinum-rated power supplies are more efficient lowering operating power costs

* PWR-C - WAC-UP and PWR-C -7 5WAC-UP Platinum-rated power supply upgrade options are available to upgrade the default AC power supply to W or 7 5W

Software requirements

Cisco DNA Software for Access Switching **is available for the Cisco Catalyst Series.**

Cisco DNA Software for Access Switching offers comprehensive solutions for the enterprise campus and branch offices Cisco DNA for Access Switching introduces a simpler and more economical way to deploy access aggregation and core switches across enterprise campus and branch locations

The Cisco DNA Subscription for Switching offer delivers an unbound network on an open and extensible architecture to help you navigate the digital journey This subscription offer simplifies the buying process and includes lower initiation costs and flexible terms It includes Cisco DNA Advantage with full Cisco DNA capabilities and SD-Access bundled with ISE Base ISE Plus and StealthWatch

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

Cisco Catalyst Series switches run on Cisco IOS XE 6 5 a release or later with the following exceptions Catalyst Series G fiber models C -xxS SKUs are supported on Cisco IOS XE 6 a release or later Catalyst Series fixed uplink models C L SKUs are supported on Cisco IOS XE 6 b release or later These software releases includes all the features listed earlier in the Platform Benefits section

Licensing

Packaging

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

- **The perpetual licensing** package includes the Network Essentials and Network Advantage licensing options that are tied to the hardware Between them the base licensing packages cover switching fundamentals management automation troubleshooting and advanced switching features These Network licenses are perpetual

  The subscription licensing package includes the Cisco DNA Essentials and Cisco DNA Advantage options 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 subscription licenses are mandatory at the time of configuration With Cisco DNA software licenses customers receive embedded SWSS – which covers x7x 65 Cisco Technical Assistance Center TAC support software release updates advanced support analytics and designated service management This is valid only for the Cisco DNA software subscription stacks Cisco DNA Essentials or Advantage

  Note: For full hardware support including the perpetual network stack customers will require Smart Net Total Care for x7x 65 Cisco Technical Assistance Center TAC support proactive security and product alerts and product lifecycle management An additional option for hardware support is Solution Support for your multivendor Cisco solution environment

License consumption is easily determined by the package itself While perpetual licenses are always permanent and without an expiration date subscription licenses have to be purchased for a - 5- or 7-year term and hence are also known as term-based licenses Table shows the combinations of perpetual and subscription licenses that must be purchased

Table 14. Licensing combinations

	Cisco DNA Essentials	Cisco DNA Advantage
Network Essentials	Yes**	Yes**
Network Advantage	No*	Yes

* At the time of Cisco DNA license renewal the Cisco DNA Essentials license can be purchased to be used with Network Advantage

** Network Advantage is inclusive of Network Essentials features

Managing licenses with Smart Accounts: Creating Smart Accounts by using the Cisco Smart Software Manager SSM enables you to manage your software licenses from a centralized website You can set up Cisco SSM to receive daily email alerts and to be notified of expiring subscription licenses that you want to renew

You must order a Cisco DNA subscription term 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 -day evaluation period An evaluation license is activated temporarily without purchase An expired evaluation license cannot be reactivated after reload

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

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 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

Table 5 shows the features included in the Cisco DNA Essentials and Advantage packages

Table 15. Network Essentials and Advantage package features

Features	Network Essentials	Network Advantage
Switch fundamentals Layer Routed Access RIP EIGRP Stub OSPF - routes PBR PIM Stub Multicast routes PVLAN VRRP PBR CDP QoS FHS 8 X MACsec-8 CoPP SXP IP SLA Responder SSO	✓	✓
Advanced switch capabilities and scale BGP EIGRP HSRP IS-IS BSR MSDP PIM-BIDIR * IP SLA OSPF	✗	✓
Network segmentation VRF VXLAN LISP TrustSec 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	✓	✓
High availability and resiliency Nonstop Forwarding NSF Graceful Insertion and Removal GIR Extended Fast Software Upgrade xFSU Software Patching CLI Based	✗	✓
IOT integration AVB PTP CoAP	✗	✓
Security MACsec- 56	✗	✓

Table 16. Cisco DNA Essentials and Advantage package features add a section for other software support and add Prime ISE and Stealthwatch support

Features	Cisco DNA Essentials	Cisco DNA Advantage
Switch features		
Optimized network deployments Cisco DNA Service for Bonjour	✗	✓
Advanced telemetry and visibility Full Flexible NetFlow EEM	✓	✓
Optimized telemetry and visibility ERSPAN AVC NBAR app hosting in containers VMs Wireshark	✗	✓

Features	Cisco DNA Essentials	Cisco DNA Advantage
Advanced security Encrypted Traffic Analytics ETA IPSec	✗	✓
Cisco DNA Center features		
Day- 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	✓	✓
Cisco ThousandEyes Network and Application Synthetics Network performance metrics dashboarding visibility into app and service experience end-to-end visibility across cloud and DC applications	✗	✓
SD-Access Policy-based automation and assurance for wired and wireless	✗	✓
Network assurance and analytics Global insights trends compliance custom reports; switch 6 wired client 6 ; fabric and non-fabric insights; app health app 6 app performance loss latency jitter	✗	✓

Specifications

Dimensions, Weight, Acoustic, Mean time between failures

The table below shows the dimensions weights acoustic and mean time between failures of all models of Cisco Catalyst Series switches

Table 17. Model Dimensions Weight and Mean Time between failures metrics

General Specifications			
Dimensions (H x W x D) inches			
Model	**Chassis only**	**W/ Default Power Supply**	**W/ 11 W Power Supply**
C X-48HX	7 x 75x	7 x 75x	7 x 75x
C X-48TX	7 x 75x	7 x 75x 56	7 x 75x
C X-48HXN	7 x 75x 757	7 x 75x 6	7 x 75x 6
C X-24HX	7 x 75x 757	7 x 75x 6	7 x 75x 6
C X-12Y	7 x 75x 6	7 x 75x 76	7 x 75x
C X-24Y	7 x 75x 76	7 x 75x	7 x 75x 7
C -24T	7 x 75x 6	7 x 75x 77	7 x 75x
C -24P	7 x 75x 6	7 x 75x 77	7 x 75x
C -24U	7 x 75x 6	7 x 75x	7 x 75x
C -24UX	7 x 75x 7	7 x 75x	7 x 75x
C -24UB	7 x 75x 6	7 x 75x	7 x 75x
C -24UXB	7 x 75x 7	7 x 75x	7 x 75x
C -24H	7 x 75x 6	7 x 75x	7 x 75x
C -48T	7 x 75x 6	7 x 75x 77	7 x 75x
C -48P	7 x 75x 6	7 x 75x 77	7 x 75x
C -48U	7 x 75x 6	7 x 75x	7 x 75x
C -48UXM	7 x 75x	7 x 75x	7 x 75x
C -48UN	7 x 75x	7 x 75x	7 x 75x
C -48UB	7 x 75x 6	7 x 75x	7 x 75x
C -48H	7 x 75x 6	7 x 75x	7 x 75x

General Specifications			
C -24S	7 X 75X 77	7 X 75X	7 X 75X 7
C -48S	7 X 75X 77	7 X 75X	7 X 75X 7
C L-24T-4G	7 X 75X 6	7 X 75X 77	7 X 75X
C L-24T-4X	7 X 75X 6	7 X 75X 77	7 X 75X
C L-48T-4G	7 X 75X 6	7 X 75X 77	7 X 75X
C L-48T-4X	7 X 75X 6	7 X 75X 77	7 X 75X
C L-24P-4G	7 X 75X 6	7 X 75X 77	7 X 75X
C L-24P-4X	7 X 75X 6	7 X 75X 77	7 X 75X
C L-48P-4G	7 X 75X 6	7 X 75X 77	7 X 75X
C L-48P-4X	7 X 75X 6	7 X 75X 77	7 X 75X
Dimensions (H x W x D) Cms			
C X-48HX	x 5x 8	x 5x56	x 5x56
C X-48TX	x 5x 8	x 5x5	x 5x56
C X-48HXN	x 5x 6	x 5x5	x 5x5
C X-24HX	x 5x 6	x 5x5	x 5x5
C X-12Y	x 5x	x 5x 7	x 5x 88
C X-24Y	x 5x 7	x 5x 88	x 5x5 6
C -24T	x 5x	x 5x	x 5x 88
C -24P	x 5x	x 5x	x 5x 88
C -24U	x 5x	x 5x 88	x 5x 88
C -24UX	x 5x	x 5x5	x 5x5
C -24H	x 5x	x 5x 88	x 5x 88
C -48T	x 5x	x 5x	x 5x 88
C -48P	x 5x	x 5x	x 5x 88
C -48U	x 5x	x 5x 88	x 5x 88
C -48UXM	x 5x 85	x 5x56	x 5x56
C -48UN	x 5x 85	x 5x56	x 5x56

General Specifications			
C -48H	x 5 x	x 5 x 8 8	x 5 x 8 8
C -24S	x x	x x 8 8	x x5 6
C -48S	x x	x x 8 8	x x5 6
C L-24T-4G	x 5 x	x 5 x	x 5 x 8 8
C L-24T-4X	x 5 x	x 5 x	x 5 x 8 8
C L-48T-4G	x 5 x	x 5 x	x 5 x 8 8
C L-48T-4X	x 5 x	x 5 x	x 5 x 8 8
C L-24P-4G	x 5 x	x 5 x	x 5 x 8 8
C L-24P-4X	x 5 x	x 5 x	x 5 x 8 8
C L-48P-4G	x 5 x	x 5 x	x 5 x 8 8
C L-48P-4X	x 5 x	x 5 x	x 5 x 8 8
C L-48PF-4G	x 5 x	x 5 x 8 8	x 5 x 8 8
C L-48PF-4X	x 5 x	x 5 x 8 8	x 5 x 8 8
C L-24UXG-4X	x 5 x	x 5 x 8 8	x 5 x 8 8
C L-24UXG-2Q	x 5 x	x 5 x 8 8	x 5 x 8 8
C L-48UXG-4X	x 5 x	x 5 x 8 8	x 5 x 8 8
C L-48UXG-2Q	x 5 x	x 5 x 8 8	x 5 x 8 8

Weight (with default power supply)		
Model	Pounds	Kilograms
C X-48HX	6	6 6
C X-48TX	6	6 6
C X-48HXN		6
C X-24HX	8	6 5
C X-12Y	5	6 8
C X-24Y	6	7 5
C -24T	6	7 7
C -24P	6	7

General Specifications		
C -24U	6 6	7 5
C -24UX	8 8	8 5
C -24UB	6 6	7 5
C -24UXB	8 8	8 5
C -24H	6 6	7 5
C -48T	6	7 5
C -48P	6 7	7 5
C -48U	7	7 7
C -48UXM	5	
C -48UN	5	
C -48UB	7	7 7
C -48H	7	7 7
C -24S	6 8	7 6
C -48S	7	7 86
C L-24T-4G		6 78
C L-24T-4X		6 78
C L-48T-4G	5	7
C L-48T-4X	5	7
C L-24P-4G		6 8
C L-24P-4X		6 8
C L-48P-4G	5 6	7
C L-48P-4X	5 6	7
C L-48PF-4G	5 8	7
C L-48PF-4X	5 8	7
C L-24UXG-4X	5 7	7
C L-24UXG-2Q	6	7 6
C L-48UXG-4X	6 86	7 65

General Specifications			
C	L-48UXG-2Q	6 86	7 65
Mean Time Between Failures - MTBF (hours)			
C	X-48HX	TBD	
C	X-48TX	TBD	
C	X-48HXN	TBD	
C	X-24HX	TBD	
C	X-12Y	65 65	
C	X-24Y	5	
C	-24T	7	
C	-24P		
C	-24U	8	
C	-24UX	76	
C	-24UB	5	
C	-24UXB	88 5	
C	-24H	8	
C	-48T	5 87	
C	-48P	77 77	
C	-48U	7	
C	-48UXM	6	
C	-48UN	8 6 7	
C	-48UB	7 7	
C	-48H	7	
C	-24S	8	
C	-48S	8	
C	L-24T-4G	5 8	
C	L-24T-4X	87 7	
C	L-48T-4G	87 86	

General Specifications	
C L-48T-4X	8 8
C L-24P-4G	6
C L-24P-4X	7
C L-48P-4G	
C L-48P-4X	
C L-48PF-4G	66
C L-48PF-4X	8 88
C L-24UXG-4X	6
C L-24UXG-2Q	67
C L-48UXG-4X	7 8
C L-48UXG-2Q	75
PWR-C1- 5 WAC-P	5 ranges from M to M depending on temperature input voltage and vendor
PWR-C1-715WAC-P	5 88 ranges from 5M to 6M depending on temperature input voltage and vendor
PWR-C1-11 WAC-P	7 ranges from M to 8M depending on temperature input voltage and vendor investigating an anomaly in MTBF data received from Power Supply vendor – Artesyn
PWR-C1-1 WAC-P	
PWR-C1-715WDC	8 - 8V input at C and vendor Delta
C -NM-2Q	778
C -NM-2Y	7 568 8
C -NM-4G	8 5 57
C -NM-4M	5 6
C -NM-8X	7 5
C X-NM-8Y	
C X-NM-2C	
FAN-T2	5

General Specifications	
Environmental ranges	
Acoustic noise **Measured per ISO 777 and declared per ISO 2 6** **Bystander positions operating to an ambient temperature of 25° C**	With AC power supply with PoE+ ports loaded for C SKUs • LpA 5dB typical 8 dB max • LwA 5 6B typical 5 B max With AC power supply with half the number of PoE+ ports loaded for C L SKUs • LpA dB typical 7 dB max • LwA 5 5B typical 5 8B max Typical Noise emission for a typical configuration Maximum Statistical maximum to account for variation in production

Connectors

Table 8 shows the supported connectors for the Cisco Catalyst Series

Table 18. Connectors

Connectors and cabling	• BASE-T ports RJ- 5 connectors -pair Cat 5E UTP cabling • Multigigabit-T ports RJ- 5 connectors -pair Cat 5E Cat 6 Cat 6A UTP cabling • BASE-T SFP-based ports RJ- 5 connectors -pair Cat 5E UTP cabling • SFP transceivers LC fiber connectors single-mode or multimode fiber • SFP+ transceivers LC fiber connectors single-mode or multimode fiber • QSFP+ transceivers MPO and LC fiber connectors single-mode or multimode fiber • QSFP+ connector • SFP+ connector • Cisco StackWise stacking ports copper-based Cisco StackWise cabling • Cisco StackPower Cisco proprietary power stacking cables • Ethernet management port RJ- 5 connectors -pair Cat 5 UTP cabling • Management console port RJ- 5-to-DB cable for PC connections
Power connectors	• Customers can provide power to a switch by using the internal power at the back of the switch • Internal power supply connector The internal power supply is an auto-ranging unit It supports input voltages between 5 for WAC and VAC Use the supplied AC power cord to connect the AC power connector to an AC power outlet

For the latest Cisco transceiver module compatibility information refer to https www cisco com c en us support interfaces-modules transceiver-modules products-device-support-tables-list html

Management and standards support

Table shows management and standards support for the Cisco Catalyst Series

Table 1 . Management and standards support*

Description	Specification	
Management	BRIDGE-MIB	CISCO-PORT-STORM-CONTROL-MIB
	CISCO-BRIDGE-EXT-MIB	CISCO-POWER-ETHERNET-EXT-MIB
	CISCO-BULK-FILE-MIB	CISCO-PRIVATE-VLAN-MIB
	CISCO-CABLE-DIAG-MIB	CISCO-PROCESS-MIB
	CISCO-CALLHOME-MIB	CISCO-PRODUCTS-MIB
	CISCO-CEF-MIB	CISCO-RF-MIB
	CISCO-CIRCUIT-INTERFACE-MIB	CISCO-RTP-METRICS-MIB
	CISCO-CONFIG-COPY-MIB	CISCO-RTTMON-ICMP-MIB
	CISCO-CONFIG-MAN-MIB	CISCO-STACKWISE-MIB
	CISCO-DEVICE-LOCATION-MIB	CISCO-STP-EXTENSIONS-MIB
	CISCO-DHCP-SNOOPING-MIB	CISCO-SYSLOG-MIB
	CISCO-EIGRP-MIB	CISCO-TCP-MIB
	CISCO-EMBEDDED-EVENT-MGR-MIB	CISCO-UDLDP-MIB
	CISCO-ENTITY-FRU-CONTROL-MIB	CISCO-VLAN-IFTABLE-RELATIONSHIP-MIB
	CISCO-ENTITY-SENSOR-MIB	ENTITY-MIB
	CISCO-ENTITY-VENDORTYPE-OID-MIB	HC-ALARM-MIB
	CISCO-ERR-DISABLE-MIB	HC-RMON-MIB
	CISCO-FLASH-MIB	IEEE8 -LAG-MIB
	CISCO-FLOW-MONITOR-MIB	IF-MIB
	CISCO-FTP-CLIENT-MIB	IP-FORWARD-MIB
	CISCO-HSRP-EXT-MIB	IP-MIB
	CISCO-HSRP-MIB	LLDP-EXT-MED-MIB
	CISCO-IETF-BFD-MIB	LLDP-MIB
	CISCO-IETF-PPVPN-MPLS-VPN-MIB	MAU-MIB
	CISCO-IETF-PW-MPLS-MIB	MPLS-L VPN-STD-MIB
	CISCO-IF-EXTENSION-MIB	MPLS-LSR-STD-MIB
	CISCO-IGMP-FILTER-MIB	MPLS-VPN-MIB
	CISCO-IMAGE-LICENSE-MGMT-MIB	OLD-CISCO-CHASSIS-MIB
	CISCO-IMAGE-MIB	OLD-CISCO-CPU-MIB
	CISCO-IP-CBR-METRICS-MIB	OLD-CISCO-INTERFACES-MIB
	CISCO-IP-STAT-MIB	OLD-CISCO-IP-MIB
	CISCO-IP-TAP-MIB	OLD-CISCO-MEMORY-MIB
	CISCO-IP-URPF-MIB	OLD-CISCO-SYS-MIB

Description	Specification	
	CISCO-IPSEC-FLOW-MONITOR-MIB CISCO-IPSEC-MIB CISCO-IPSEC-PROVISIONING-MIB CISCO-IPSLA-AUTOMEASURE-MIB CISCO-IPSLA-ECHO-MIB CISCO-IPSLA-JITTER-MIB CISCO-L -CONTROL-MIB CISCO-L L -INTERFACE-CONFIG-MIB CISCO-LAG-MIB CISCO-LICENSE-MGMT-MIB CISCO-LOCAL-AUTH-USER-MIB CISCO-MAC-NOTIFICATION-MIB CISCO-MDI-METRICS-MIB CISCO-MEDIA-METRICS-MIB CISCO-MEMORY-POOL-MIB CISCO-MPLS-LSR-EXT-STD-MIB CISCO-NBAR-PROTOCOL-DISCOVERY-MIB CISCO-NHRP-EXT-MIB CISCO-NTP-MIB CISCO-PAGP-MIB CISCO-PORT-SECURITY-MIB	OLD-CISCO-TCP-MIB OLD-CISCO-TS-MIB POWER-ETHERNET-MIB RFC -MIB RMON-MIB RMON -MIB SMON-MIB SNMPv -MIB SONET-MIB TCP-MIB UDP-MIB
Standards	IEEE 8 s IEEE 8 w IEEE 8 x IEEE 8 x-Rev IEEE 8 ad IEEE 8 ae IEEE 8 af IEEE 8 at IEEE 8 x full duplex on BASE-T BASE-TX and BASE-T ports IEEE 8 D Spanning Tree Protocol IEEE 8 p CoS prioritization IEEE 8 Q VLAN IEEE 8 BASE-T specification IEEE 8 u BASE-TX specification IEEE 8 ab BASE-T specification IEEE 8 z BASE-X specification IEEE 8 bz Multirate 5G 5G specification	RMON I and II standards SNMPv v c and v

Description	Specification	
	IEEE 8 an G BASE-T specification	

Power supply specifications

Table lists the power specifications for the Cisco Catalyst Series based on the kind of power supply used

Table 2 . Power specifications

Description	Specification			
	PWR-C1-11 WAC**	**PWR-C1-715WAC****	**PWR-C1- 5 WAC****	**PWR-C1-715WDC**
Power supply rated maximum	W	7 5W	5 W	7 5W
Total output BTU (note: 1 BTU/hr = 2 W)	7 BTU hr W	65 BTU hr 7 5W	7 BTU hr 5 W	BTU hr
Input-voltage range and frequency	5V to VAC 5 to 6 Hz	to VAC 5 to 6 Hz	to VAC 5 to 6 Hz	- 6V to -7 VDC
Input current	-6A	-5A	- A	- A
Output ratings	-56V at 6 A	-56V at 8A	-56V at 6 5A	-56V at 8A
Output holdup time	ms minimum at VAC	6 7 ms minimum at VAC	6 7 ms minimum at VAC	ms minimum at - 8Vdc
Power-supply input receptacles	IEC -C 6 IEC6 -C 6	IEC -C 6 IEC6 -C 6	IEC -C IEC6 -C	Right angle barrier style terminal block
Power cord rating	5A	5A	A	5A@ VDC
Physical specifications	H x W x D 58 x 5 x 7 in Weight lb kg	H x W x D 58 x 5 x in Weight 6 lb kg	H x W x D 58 x 5 x in Weight lb kg	H x W x D 58 x 5 x in Weight lb kg

** These Power Supply options will not be available as options for purchase with C in CCW starting Q FY

Table 21. Power specifications – platinum rated power supplies

Description	Specification				
	*PWR-C1-1 WAC-P		*PWR-C1-11 WAC-P	*PWR-C1-715WAC-P	PWR-C1- 5 WAC-P
Power supply rated maximum output power	5 W With 5V	W With V	W	7 5W	5 W
Total output BTU (note: 1 BTU/hr = 2 W)	5 8 BTU hr with 5V	6 8 BTU hr With V	75 BTU hr W	BTU hr 7 5W	BTU hr 5 W
Input-voltage range and frequency	5V to 7 VAC 5 to 6 Hz	V to VAC 55 to 6 Hz	5V to VAC 5 to 6 Hz	to VAC 5 to 6 Hz	to VAC 5 to 6 Hz
Input current	6A maximum	A maximum	-6A	-5A	- A
Output ratings	-56V at 6 78A	-56V at A	-56V at 6 A	-56V at 8A	-56V at 6 5A
Output holdup time	ms minimum at VAC	ms minimum at VAC	ms minimum at VAC	ms minimum at VAC	ms minimum at VAC
Power-supply input receptacles	IEC -C	IEC -C	IEC -C 6 IEC6 -C 6	IEC -C 6 IEC6 -C 6	IEC -C IEC6 -C
Power cord rating	A	6A	5A	5A	A
Physical specifications	H x W x D 58 x 5 s 7 in Weight xxx lb x x kg		H x W x D 58 x 5 s 7 in Weight lb kg	H x W x D 58 x 5 x in Weight 6 lb kg	H x W x D 58 x 5 x in Weight lb kg

Description	Specification	
Operating temperature	Normal operating temperature* and altitudes -5°C to + 5°C up to 5 feet 5 m -5°C to + °C up to feet m -5°C to + 5°C up to 5 feet 5 m * Minimum ambient temperature for cold start is °F °C Short-term* exceptional conditions -5°C to +55°C at sea level -5°C to +5 °C up to 5 feet 5 m -5°C to + 5°C up to feet m -5°C to + 5°C up to 5 feet 5 m * Not more than following in one year period 6 consecutive hours or 6 hours total or 5 occurrences	Normal operating temperature* and altitudes • -5°C to + 5°C up to 5 feet 5 m • -5°C to + °C up to feet m *Minimum ambient temperature for cold start is °F °C Short-term* exceptional conditions • -5°C to +5 °C up to 5 feet 5 m • -5°C to + 5°C up to feet m • -5°C to + 5°C at sea level with single fan failure * Not more than following in one-year period 6 consecutive hours or 6 hours total or 5 occurrences
Storage temperature	° to 58°F - ° to 7 °C	- ° to 58°F - ° to 7 °C
Relative humidity operating and nonoperating noncondensing	5% to % noncondensing	5% to % noncondensing
Altitude	ft meters up to 5°C	ft meters up to 5°C

Description	Specification	
EMI and EMC compliance	FCC Part 5 CFR 7 Class A ICES- Class A EN 55 Class A CISPR Class A AS NZS 5 8 Class A BSMI Class A AC input models only VCCI Class A EN 55 EN 86 EN 6 - - EN 6 - - EN6 - - EN6 - - EN6 - - EN6 - -5 EN6 - -6	FCC Part 5 CFR 7 Class A ICES- Class A EN 55 Class A CISPR Class A AS NZS 5 8 Class A BSMI Class A AC input models only VCCI Class A EN 55 EN 86 EN 6 - - EN 6 - - EN6 - - EN6 - - EN6 - - EN6 - -5 EN6 - -6
Safety compliance		
LED indicators	“AC OK” Input power to the power supply is OK “PS OK” Output power from the power supply is OK	“AC OK” Input power to the power supply is OK “PS OK” Output power from the power supply is OK

* PWR-C - WAC-UP is available as an PSU upgrade option to W primary PSU

* PWR-C - WAC-UP is available as an PSU upgrade option to W primary PSU

* PWR-C -7 5WAC-UP is available as an PSU upgrade option to 7 5W primary PSU

Power consumption of standalone 9300 Series Switches

Table shows the power consumption of standalone Cisco Catalyst Series Switches based on Alliance for Telecommunications Industry Solutions ATIS testing using Internet Mix IMIX distribution stream traffic with input voltage of 5VAC at 6 Hz and no PoE loading The values given are the maximum possible power consumption numbers under the respective test scenarios

Table 22. Power Consumption of Standalone Series Switches tested on IOS XE 6 5

				Measured P(W)															
				Half port traffic					Full port traffic					Weighted average Pw	No link	PoE test (no traffic)			
SKU	FEP	Uplink	Input	. 1%/EEE	1 %	%	5 %	1 %	. 1%/EEE	1 %	%	5 %	1 %			25%	5 %	%	1 %
C -24P	7 5W	Not Installed	5Vac	8 6			7		8	8	5	6	6 6	7	8		5 8	5 7 5	57
			Vac	8 6	8 8			6	8 7	7	6	7	5	6	8		8	5 6	55
		C - NM- G	5Vac	87 5		6 5	7 7	8 5	8 8	5				8	85		5	5 7 8	585 7
			Vac	86			5 8	6 6	88	8 5	5			7	8 6	7	8	5	568
		C - NM- M	5Vac			6				6 8	7 8	8		5 7	8		7	5	5 8
			Vac	8			5	7	8	6	6 5	6	7 8		8 6		7	5	57
		C - NM- Q	5Vac	88	8 6	5	6				5	5 6	6 5		88		5	5 6	586 5
			Vac	87	7	8	8	8 8					5		87 5	8	6 8	5	567 6
		C - NM-8X	5Vac					6		7	7	8		6	88 7	5	6	5	5
			Vac	8	7	8		5		5 8	6 7	7	8	8	87 8	7		5	57
C -24S	7 5W	C - NM- G	5Vac			5		5	6	7 7		5	8	7 76	7				
			Vac	8	8	7	6	6		5 8	6 7	7	7 7	5 85					
		C - NM- Q	5Vac		8	5	5	6	7 6	5		7		7	85				
			Vac			5	7		5 7	8 7		5	7	8 6	8				
		C - NM-8X	5Vac	6	7	8	8 5				8	5	6	5	85				
			Vac		5 7	6	6 7	7		5				7	8 6				
		C - NM- M	5Vac	5	8	5	7		6 6	7				6	8				
			Vac	7 6		8		6	5	8	8			8	8				
		C - NM- Y	5Vac		8	75	8	5	6			58		8 8	85				
			Vac	7	6	6	85	57		7	8	8 6	6	7	8				

				Measured P(W)															
				Half port traffic					Full port traffic					Weighted average Pw	No link	PoE test (no traffic)			
SKU	FEP	Uplink	Input	. 1%/EEE	1 %	%	5 %	1 %	. 1%/EEE	1 %	%	5 %	1 %			25%	5 %	%	1 %
C -24T	5 W	Not Installed	5Vac	77 7	86	8	8 5	8 7	77 5		7		5	8 8	78				
			Vac	77	85	88 5	88 7	88 8	77	8 8	7			88 7	77 7				
		C - NM- G	5Vac	8 5	88				85	6	8	7		5	8				
			Vac	8 8	87 6				8		6	7	8	7	8 5				
		C - NM- M	5Vac	86	6	8	8	8 7		7	5		5	6	87				
			Vac	85	5	6 6	6 8	7	8						86				
		C - NM- Q	5Vac	8	7	5 7	5	6	87		7				8				
			Vac	8	6		6	5	86			5		8	8				
		C - NM-8X	5Vac	86	5 6	7 5	7 8	8	7		7	5	6	8	85				
			Vac	85	5	6	6	7	8 7			6	5		8				
C -24U	W	Not Installed	5Vac	87	5				87	8	5	8		6	87 8	7	5 7		
			Vac	85	7	7	7 6	7 8	85 5	8	6	8		6	86	6	5	8 5 6	88 7
		C - NM- G	5Vac		7 8		7	6	5	5	8			6			55	5	5 5
			Vac	6	6			7	7		6	7	7 6	8		5	5 6 6	5	6
		C - NM- M	5Vac	6	6	7 6	7 8	8	7			6	5 6		6	5 7	55	5 6	5
			Vac		5	5 8	6	6 6	7		8			8		8	5	6	7 8
		C - NM- Q	5Vac			8	5	5 5	6 5			5					555 8	6 7	8 6
			Vac	8				7	8	8 7		8	6	7 5	8		5 8		5
		C - NM-8X	5Vac	5 8	5	7	7 6	8			8	5	6	8			557 7	6 6	
			Vac			5	5	6	8			5	5			7 8	5 8	7 7	

				Measured P(W)														
				Half port traffic					Full port traffic					Weighted average Pw	No link	PoE test (no traffic)			
SKU	FEP	Uplink	Input	. 1%/EEE	1 %	%	5 %	1 %	. 1%/EEE	1 %	%	5 %	1 %			25%	5 %	%	1 %
C - 24UB	W	Not Installed	5Vac	87	5				87	8	5	8		6	87 8	7	5 7		
			Vac	85	7	7	7 6	7 8	85 5	8	6	8		6	86	6	5	8 5 6	88 7
		C - NM- G	5Vac		7 8		7	6	5	5	8			6			55	5	5 5
			Vac	6	6			7	7		6	7	7 6	8		5	5 6 6	5	6
		C - NM- M	5Vac	6	6	7 6	7 8	8	7			6	5 6		6	5 7	55	5 6	5
			Vac		5	5 8	6	6 6	7		8			8		8	5	6	7 8
		C - NM- Q	5Vac			8	5	5 5	6 5			5					555 8	6 7	8 6
			Vac	8				7	8	8 7		8	6	7 5	8		5 8		5
		C - NM-8X	5Vac	5 8	5	7	7 6	8			8	5	6	8			557 7	6 6	
			Vac			5	5	6	8			5	5			7 8	5 8	7 7	
C - 24UX	W	C - NM-8X	5Vac	88	5 7	6 8	7	8	8 8	6	7	8 6		8	68 6	6	5 6	78	85
			Vac	8			5	5	6			5	6		65	5	5 5	7 7	8 6
C - 24UXB	W	C - NM-8X	5Vac	88	5 7	6 8	7	8	8 8	6	7	8 6		8	68 6	6	5 6	78	85
			Vac	8			5	5	6			5	6		65	5	5 5	7 7	8 6
C -24H	W	Not Installed	5Vac	87	5				87	8	5	8		6	87 8	7	5 7		
			Vac	85	7	7	7 6	7 8	85 5	8	6	8		6	86	6	5	8 5 6	88 7
		C - NM- G	5Vac		7 8		7	6	5	5	8			6			55	5	5 5
			Vac	6	6			7	7		6	7	7 6	8		5	5 6 6	5	6
		C - NM- M	5Vac	6	6	7 6	7 8	8	7			6	5 6		6	5 7	55	5 6	5
			Vac		5	5 8	6	6 6	7		8			8		8	5	6	7 8
		C - NM- Q	5Vac			8	5	5 5	6 5			5					555 8	6 7	8 6
			Vac	8				7	8	8 7		8	6	7 5	8		5 8		5
		C - NM-8X	5Vac	5 8	5	7	7 6	8			8	5	6	8			557 7	6 6	
			Vac			5	5	6	8			5	5			7 8	5 8	7 7	

				Measured P(W)															
				Half port traffic					Full port traffic					Weighted average Pw	No link	PoE test (no traffic)			
SKU	FEP	Uplink	Input	. 1%/EEE	1 %	%	5 %	1 %	. 1%/EEE	1 %	%	5 %	1 %			25%	5 %	%	1 %
C -48P	7 5W	Not Installed	5Vac	5		5	7	5	8		7 8					6		5	56
			Vac	8			6		88	7	6	8		7	8		6	5 6	5 7 5
		C - NM- G	5Vac	5	5	6	8	8 8	8			5	6			5	6	5	57
			Vac			5	6	7 8	6			5	5 5				8	5	555 8
		C - NM- M	5Vac	8 7	5		7	5	5	7	5		8	8			6 5	5 8 8	576 6
			Vac	7	7	5		7	6			7		7 6	7	5 5	5	5	56 5
		C - NM- Q	5Vac	6		7				8		7	5	6 7	7 6	7	5	5 7	577 8
			Vac	5 6		7			8	7 5	8		6	5 8	6		6	5	558 8
		C - NM-8X	5Vac	5			6	5 5	6	5	5	6	8		5	5	7	5 8	568 8
			Vac		8	5			5			5 6	7	5	8		7	5 7	55
C -48S	7 5W	C - NM- G	5Vac	6	7	8		6		5	5	5	5 5	5 7	5				
			Vac		5 6	6 7	7 6	8	7	8 8	5	5	5 7	8 8					
		C - NM- Q	5Vac	7 7		8			5 6	5	55	56	58 6	5	88				
			Vac	6	7		8		7 7	5	5 7	5 8	56	5	87 6				
		C - NM-8X	5Vac	5	6		5	6	5 8	56	57 6	58 6	6 8	56	87				
			Vac						5	5	5	55 8	58	5 7	88				
		C - NM- M	5Vac	8	6	6	78		5 8	57 5	58 7	5 8	6	57 5	87 5				
			Vac	7 5	6	8		5	5	5 6	5 6	55 58	57 86	5 6	86 8				
		C - NM- Y	5Vac			7		5		5	5 8	5	56	5 65	85 8				
			Vac		8	8 6	8				5	5	5	8	8				

				Measured P(W)															
				Half port traffic					Full port traffic					Weighted average Pw	No link	PoE test (no traffic)			
SKU	FEP	Uplink	Input	. 1%/EEE	1 %	%	5 %	1 %	. 1%/EEE	1 %	%	5 %	1 %			25%	5 %	%	1 %
C -48T	5 W	Not Installed	5Vac	8 5		5 7	5	6	8 8	8 6				7	8				
			Vac	8 5	7	6	8	5	8	7	5		8	6	8 5				
		C - NM- G	5Vac	86		7 8			8	6	7 6	8 6	8	5	85 7				
			Vac	85	8	6 6	8		88		6	6	7		8 8				
		C - NM- M	5Vac	8 6			6	5		7	5		5 7		6				
			Vac	8		8					8				8				
		C - NM- Q	5Vac	88						5				8	88 6				
			Vac	87			8	7	8	8 8	6			7	87 6				
		C - NM-8X	5Vac		5	6	6 5	7	8 6	7 6	8			6					
			Vac			7	5	6	7	5 8	6 6	7							
C -48U	W	Not Installed	5Vac	6				7	5 6	5		5	6		7	5	5	5	
			Vac	8	8 5						5		5	8	5 6	8 6	5	88	78 8
		C - NM- G	5Vac	7	5 8		7			5	7 8	8			6		5 7	8	6
			Vac	5		7	8 7		8 8		6	7	7				5 5 6	8 6	8
		C - NM- M	5Vac		8 5		5		7	6 8	7 6	8		5		6	556	8 6	5 6
			Vac	8	6	7	7 5	8	6	8	5 5	6	7 7		6		5		6
		C - NM- Q	5Vac		7	7 6	8		8	8	6	5	7		5		55		6
			Vac			5 5	5	7			7		6		7	6	5 7	8 8	88
		C - NM-8X	5Vac	6 7			5		7	5			8		5 7		56 7	8	
			Vac	5	8 5		6						6	7		5	5	8	8

				Measured P(W)															
				Half port traffic					Full port traffic					Weighted average Pw	No link	PoE test (no traffic)			
SKU	FEP	Uplink	Input	. 1%/EEE	1 %	%	5 %	1 %	. 1%/EEE	1 %	%	5 %	1 %			25%	5 %	%	1 %
C -48H	W	Not Installed	5Vac	6				7	5 6	5		5	6		7	5	5	5	
			Vac	8	8 5						5		5	8	5 6	8 6	5	88	78 8
		C - NM- G	5Vac	7	5 8		7			5	7 8	8			6		5 7	8	6
			Vac	5		7	8 7		8 8		6	7	7				5 5 6	8 6	8
		C - NM- M	5Vac		8 5		5		7	6 8	7 6	8		5		6	556	8 6	5 6
			Vac	8	6	7	7 5	8	6	8	5 5	6	7 7		6		5		6
		C - NM- Q	5Vac		7	7 6	8		8	8	6	5	7		5		55		6
			Vac			5 5	5	7			7		6		7	6	5 7	8 8	88
		C - NM-8X	5Vac	6 7			5		7	5			8		5 7		56 7	8	
			Vac	5	8 5		6						6	7		5	5	8	8
C - 48UB	W	C - NM-8X	5Vac	6 7			5		7	5			8		5 7		56 7	8	
			Vac	5	8 5		6						6	7		5	5	8	8
C - 48UN	W	C - NM-8X	5Vac	7	76 7	78 7	7 8	8 8	8	8	5		6		5	57	5 5	8	875
			Vac	7	7 8	76 8	78	7	7	7 8			7	7	57	5 5	5	777	8 8
C - 48UXM	W	C - NM-8X	5Vac	6		6 6	7 8	6	5	6 5	7	78 5	8	6 8			5 8 7	75 8	8
			Vac		7	5	7	5 6		56 7	67 6	7	77	58	5 7	8 8	5 5	7 8	78 7
C L-24P-4G	7 5W	Integrated	5Vac	6	68	6	7	7	6 7	7 8	76 5	76	77 7	7	6	5	7	56 6	6 7 5
			Vac	6	67 7	68 8	68	6 68	6	7 88	7	75 8	76 58	7 8	6 6	6	6	55 6	6 6 5
			5Vac	6	68	6	7	7	6 7	7 8	76 5	76	77 7	7	6	5	7	56 6	6 7 5
			Vac	6	67 7	68 8	68	6 68	6	7 88	7	75 8	76 58	7 8	6 6	6	6	55 6	6 6 5
C L-24P-4X	7 5W	Integrated	5Vac	6	7 7	7 6	7	7 6	6 7	76 6	7 5	7 85	8	76 5	6	7 7		56	6 6 5
			Vac	6	6	7 75	7 8	7	67 8	76	78	78 78	7	75 67	6 7		6	55 5	6 7
			5Vac	6	7 7	7 6	7	7 6	6 7	76 6	7 5	7 85	8	76 5	6	7 7		56	6 6 5
			Vac	6	6	7 75	7 8	7	67 8	76	78	78 78	7	75 67	6 7		6	55 5	6 7

				Measured P(W)															
				Half port traffic					Full port traffic					Weighted average Pw	No link	PoE test (no traffic)			
SKU	FEP	Uplink	Input	. 1%/EEE	1 %	%	5 %	1 %	. 1%/EEE	1 %	%	5 %	1 %			25%	5 %	%	1 %
C L-24T-4G	5 W	Integrated	5Vac	57 75	6 7	6 67	65 7	66	58	6 87	7	7 7	7 7	68 7	57				
			Vac	56 6	6 65	6 6	6 8	65	57 6	68 55	6 5	7 8	7	67 65	56				
			5Vac	57 75	6 7	6 67	65 7	66	58	6 87	7	7 7	7 7	68 7	57				
			Vac	56 6	6 65	6 6	6 8	65	57 6	68 55	6 5	7 8	7	67 65	56				
C L-24T-4X	5 W	Integrated	5Vac	58 6	65 6	67	67 5	68	5	7 55	7	7 6	75	7 66	58				
			Vac	57 6	6	65 7	65	66	57 85	7	7 6	7	7 5	6 7	56 85				
			5Vac	58 6	65 6	67	67 5	68	5	7 55	7	7 6	75	7 66	58				
			Vac	57 6	6	65 7	65	66	57 85	7	7 6	7	7 5	6 7	56 85				
C L-48P-4G	7 5W	Integrated	5Vac	6	77 7	78	78 8	7 86	7 6	86 76	87 7	88 7		85	68	65	5 5	575 5	6 6
			Vac	67	76	76 5	77 76	78 78	68 7	85 6	86 7	87 6	88 6	8	67 6	87	56	556 8	6 8
			5Vac	6	77 7	78	78 8	7 86	7 6	86 76	87 7	88		85	68	65	5 5	575 5	6 6
			Vac	67	76	76 5	77 76	78 78	68 7	85 6	86 7	87 6	88 6	8	67 6	87	56	556 8	6 8
C L-48P-4X	7 5W	Integrated	5Vac	68 5	78 8	8 5	8 7	8 8	6 8		5	67		88 5	68 5		7	55	6 6 7
			Vac	66 8	77 5	7	7 5	8 5	67 76	88 8		7	67	86 58	67		5	5 5	5 8 6
			5Vac	68 5	78 8	8 5	8 7	8 8	6 8		5	67		88 5	68 5		7	55	6 6 7
			Vac	66 8	77 5	7	7 5	8 5	67 76	88 8		7	67	86 58	67		5	5 5	5 8 6
C L-48PF-4G	W	Integrated	5Vac	7	7 7	8	8 58	8 6	7 6	7				88 57	6 5		558 56	7 6	8
			Vac	68 66	77 5	78 87	7 6	8 56	6 5	87 7	88 87	8 7	7	86 7	67 8	6 85	5 7	8	7 8
C L-48PF-4X	W	Integrated	5Vac	6 68	8 5	8 8	8 5	8 7	7 8			7	6 7	8 5	6 5	7	55	65 7	7
			Vac	68	78 8	8	8 7	8 6	6	88 8	7	8	6	87 8	67 8	5 6	5 6		56
C L-48T-4G	5 W	Integrated	5Vac	6	6 5	7	7 6	7	6 57	7 6	8 6	8	8	78 8	5 7				
			Vac	5 75	68 5	6	7 5	7 8	6 58	78 5	7 6	7 8	8 67	76 56	5				
			5Vac	6	6 5	7	7 6	7	6 57	7 6	8 6	8	8	78 8	5 7				
			Vac	5 75	68 5	6	7 5	7 8	6 58	78 5	7 6	7 8	8 67	76 56	5				

				Measured P(W)															
				Half port traffic					Full port traffic					Weighted average Pw	No link	PoE test (no traffic)			
SKU	FEP	Uplink	Input	. 1%/EEE	1 %	%	5 %	1 %	. 1%/EEE	1 %	%	5 %	1 %			25%	5 %	%	1 %
C L-48T-4X	5 W	Integrated	5Vac	6 8	7 75	75 8	75 85	76 86	6 5	8 8	85 5	86 68	88 7	8	6 7				
			Vac	6	7	7 7	7	75 6	6 8	8	8 7	8 7	86 77	8 7	6 7				
			5Vac	6 8	7 75	75 8	75 85	76 86	6 5	8 8	85 5	86 68	88 7	8	6 7				
			Vac	6	7	7 7	7	75 6	6 8	8	8 7	8 7	86 77	8 7	6 7				

ATIS Testing - 1 %				Measured P(W)															
				Half Port Traffic					Full Port Traffic					Weighted Average Pw	No Link	PoE Test (No Traffic)			
SKU	Archer FEP	Uplink	Input	. 1%/ EEE	1 %	%	5 %	1 %	. 1%/ EEE	1 %	%	5 %	1 %			25%	5 %	%	1 %
C L-48UXG-4X	W	Integrated	5Vac	7 7	6	5 5	6 8	7 7	8 8	56	5 76	6 6	6	5	7	8	5	8 5 6	8
			Vac	5 6	55	5		5 7	6	5 5	57	58	6 7		56	6	5 5 7	8	875
C L-24UXG-4X	W	Integrated	5Vac	7	87 8	88 8	8		7 6		5 6	5 8	7 58	7	7 87	5 6	57 5	6 6	8 5
			Vac	6	85	87	87 5	88	6 6	8		6		7 8	68 8	6 6	56 7	5 5	7
C L-48UXG-2Q	W	Integrated	5Vac	7	8	8	7		5	6	6	65 5	68 68	57		5 7	5 76	8 5	
			Vac	5	5 6	7 6	7 8	68		58	6 5	6	65 66	5	8 86	8 7	5 7 5	8 77	876
C L-24UXG-2Q	W	Integrated	5Vac	7	7	67		5 5			7	77	5	6	78	5 8	5 6 58	86 7	66
			Vac	88	8 7	6			6	5	7 68	6		5	5	7 8	5 67	8 6	

Table 2 . Power consumption of standalone Series Switches with platinum rated power supply tested on Cisco IOS XE 6 8

				Measured P(W)														
				Half port traffic					Full port traffic					Weighted average Pw	No link	PoE test (no traffic)			
SKU	FEP	Uplink	Input	. 1%/ EEE	1 %	%	5 %	1 %	. 1%/ EEE	1 %	%	5 %	1 %			25%	5 %	%	1 %
C -24P	7 5W-P	C -NM-8X	5Vac	8				7		8	5	5	7		85 8	5 6	7	5 8	568
			Vac	86 7	8	6	7 5	8	8	7		6	5	7	8		8 7	5 7	55
C -24T	5 W-P	C -NM-8X	5Vac	8	88			5	85 8		7	6			8 5				
			Vac	8	86 8				8	6	5	8		6	7				
C -24U	W-P	C -NM-8X	5Vac	5	5	5	6			6		7	8	6	87		5 5	5	
			Vac	88		7 7	8 8		8	8		6	5 5	8	85		5 5 5	8 7	
C - 24UX	W-P	C -NM-8X	5Vac	86 8			7	8		5	7			6 6	65	67 5	5	776	8
			Vac	8 8	86	6			5		7	5 5	8	5	6 7	6	5	75	8
C -24H	W-P	C -NM-8X	5Vac	5	5	5	6			6		7	8	6	87		5 5	5	
			Vac	88		7 7	8 8		8	8		6	5 5	8	85		5 5 5	8 7	
C -48P	7 5W-P	C -NM-8X	5Vac		5 5	8			6	5	8				7	7	6	5 5	56
			Vac	7	7	8					5 8	8	5		6			5	555
C -48T	5 W-P	C -NM-8X	5Vac	8 8	5						7 5	8	8		85				
			Vac	88 7	5				88 7		6	8		8	8				
C -48U	W-P	C -NM-8X	5Vac	68	7 6	7	76 6	78 5	8		8			6	7	55	5	8 6	875
			Vac	65 7	67	6	6	7 5	86 5	8 6		5 7	8		5	8 8	5 7	777 7	8
C - 48UN	W-P	C -NM-8X	5Vac	7	76 7	78 7	7 8	8 8	8	8	5		6		5	57	5 5	8	875
			Vac	7	7 8	76 8	78	7	7	7 8			7	7	57	5 5	5	777	8 8
C - 48UXM	W-P	C -NM-8X	5Vac		8	5 8	56	58	6	6	8 6	86 5	6	7 7	5	8	5	755	8 5
			Vac	7 5			5	5	5	6 8	7	7	8 6	6	8 5	86 8	5 8	7	785 5
C -48H	W-P	C -NM-8X	5Vac	68	7 6	7	76 6	78 5	8		8			6	7	55	5	8 6	875
			Vac	65 7	67	6	6	7 5	86 5	8 6		5 7	8		5	8 8	5 7	777 7	8

				Measured P(W)															
				Half port traffic					Full port traffic					Weighted average Pw	No link	PoE test (no traffic)			
SKU	FEP	Uplink	Input	. 1%/EEE	1 %	%	5 %	1 %	. 1%/EEE	1 %	%	5 %	1 %			25%	5 %	%	1 %
C X-12Y	7 5W	C X-NM-8Y	5Vac																
			Vac																
C X-12Y	7 5W	C X-NM- C	5Vac																
			Vac																
C X-12Y	W	C X-NM-8Y	5Vac																
			Vac																
C X-12Y	W	C X-NM- C	5Vac																
			Vac																
C X-12Y	W	C X-NM-8Y	5Vac																
			Vac																
C X-12Y	W	C X-NM- C	5Vac																
			Vac																
C X-24Y	7 5W	C X-NM-8Y	5Vac																
			Vac																
C X-24Y	7 5W	C X-NM- C	5Vac																
			Vac																
C X-24Y	W	C X-NM-8Y	5Vac																
			Vac																
C X-24Y	W	C X-NM- C	5Vac																
			Vac																
C X-24Y	W	C X-NM-8Y	5Vac																
			Vac																
C X-24Y	W	C X-NM- C	5Vac																
			Vac																

				Measured P(W)															
				Half port traffic					Full port traffic					Weighted average Pw	No link	PoE test (no traffic)			
SKU	FEP	Uplink	Input	. 1%/EEE	1 %	%	5 %	1 %	. 1%/EEE	1 %	%	5 %	1 %			25%	5 %	%	1 %
C X-12Y	7 5W-P	C X-NM-8Y	5Vac																
			Vac																
C X-12Y	7 5W-P	C X-NM- C	5Vac																
			Vac																
C X-12Y	W-P	C X-NM-8Y	5Vac																
			Vac																
C X-12Y	W-P	C X-NM- C	5Vac																
			Vac																
C X-24Y	7 5W-P	C X-NM-8Y	5Vac																
			Vac																
C X-24Y	7 5W-P	C X-NM- C	5Vac																
			Vac																
C X-24Y	W-P	C X-NM-8Y	5Vac																
			Vac																
C X-24Y	W-P	C X-NM- C	5Vac																
			Vac																

ATIS Testing -1 %				Measured P(W)															
				Half port traffic					Full port traffic					Weighted average Pw	No link	PoE test (no traffic)			
SKU	Archer FEP	Uplink	Input	. 1% /EEE	1 %	%	5 %	1 %	. 1% /EEE	1 %	%	5 %	1 %			25%	5 %	%	1 %
C -48H	W	C -NM- G	5Vac	5	6 8	8 7	6 6		85		67	5 5	5 7	58	7		75	6	
			Vac	8	5 57	6 7	7	7 75		55		5	6	7	8 5	5 7		6 7 6	8 6 5
C -48H	W	C -NM- Q	5Vac	5	87		56		6	8 6	8 6	7	58	7 6	5	7	7 8		8
			Vac	7		5	6	5	8	6 7	7 5	8 5		5 8	66	5 6		6 5	8 6
C -48H	W	C -NM-8X	5Vac	8	7		6		7 7	5		75	7				75	6	6
			Vac			6		8	6	8 8	65	5	55	8		5	8	6 5	8
C -48H	W	C -NM- M	5Vac		7	5	6		6 78	6	5	8	77	8 5		8	7	7 5	
			Vac	8	78	6	5		5	8	8 6	7	6	7		5 8 5	8	6 5	8
C -48H	W	C -NM- Y	5Vac		6	7		6	65	8 7	8	7		7	5	5	7 8	5 7	6
			Vac	57		55	5			6 7	7 56	8	5	5 8	76	5 7		6 5	8 6
C -48H	W	Not Installed	5Vac	85 65	7	5	6		8 6	7 7	8	8	5	6	85 76		7 6	88 7	7
			Vac	8 8		5	68	7	8	6 5	7	7 6	8 7	5	85	5 6 8	8 8	6	7
C -24H	W	Not Installed	5Vac	8 6	8 5	85 7	85	85 65	8 7	86	87 6	87 8	88	86	8	7 5	7	7	8
			Vac	7 55	8	8 7	8	85 5	7 7	86	87	87 6	87	85 6	7	5 6	8	6 5	8
C -24H	W	C -NM- G	5Vac	86 8	88 78	8 8	5		87		5 57	6 6	6 6	68	85 58	5 5	7 6	88	7
			Vac	85 8	88 7	8 66	6	77	86 8	7	7 7	5 7	5 7		8	5 5	8	6 5	8 8
C -24H	W	C -NM- Q	5Vac	87 6		5	6	7	8	8	8			7 5	85 7	7	75		8
			Vac	86 66	6	5	8	6	88	6 56	6 5	7 8	8	5	8 5	5 7		6 6	8 8
C -24H	W	C -NM-8X	5Vac	88 85	8	8	5 8	5 6	7	5	5			8	85 5		75 5	7 5	5
			Vac	88	6	8		7		8		7	6	7 8	85	5 5	7	6	8
C -24H	W	C -NM- M	5Vac	88 57			5	6	7				5	8 7	85 8	8	7	8	
			Vac	88			55	7		8 67	7	65	8	8	85 65	5 5 8		6	8
C -24H	W	C -NM- M	5Vac	87 8	7	7	7	5	8 8	8 7		8		7 7	86 65	8 6	7 8		8 7
			Vac	87 6	5	86			88	7	7 58	7 7		6	85 8	5		6	8

Safety and compliance

Table lists the safety and compliance information for the Cisco Catalyst Series

Table 24. Safety and compliance information

Description	Specification
Safety certifications	• UL 6 5 - • CAN CSA-C No 6 5 - • EN 6 5 - • IEC 6 5 - • AS NZS 6 5 • IEEE 8
Electromagnetic compatibility certifications	• 7 CFR Part 5 • EN 86 V 6 • EN 55 Class A • CISPR Class A • EN6 - - • EN6 - - • ICES- Class A • TCVN 7 8 Class A • V- Class A • CISPR 5 • EN 86 • EN 55 5 • TCVN 7 7 • V- 5 • V- 5 • CNS 8 • KN • KN 5 **Additional Certifications for C L SKUs:** • QCVN 8 8 BTTTT • VCCI-CISPR Class A
Environmental	Reduction of Hazardous Substances ROHS 5

Warranty

Cisco enhanced limited lifetime hardware warranty

The Cisco Catalyst Series Switches come with a Cisco Enhanced Limited Lifetime hardware Warranty E-LLW that includes Next-Business-Day NBD delivery of replacement hardware where available and days of 8x5 Cisco Technical Assistance Center TAC support

Your formal warranty statement including the warranty applicable to Cisco software appears in the information packet that accompanies your Cisco product We encourage you to review the warranty statement shipped with your specific product carefully 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 Table provides information about the E-LLW

Table 25. E-LLW details

	Cisco E-LLW
Devices covered	Applies to Cisco Catalyst 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 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 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 -day period from the date of shipment of the originally purchased Cisco Catalyst 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

Product sustainability

Information about Cisco's environmental Social and Governance ESG initiatives and performance is provided in Cisco's CSR and sustainability reporting

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
	Sustainability Inquiries	Contact csr_inquiries@cisco com
	Information on product takeback and reuse program	Cisco Takeback and Reuse Program
	Safety and compliance	Table Safety and compliance information
	Mean Time Between Failures – MTBF hours	Table 6 Model Dimensions Weight and Mean Time between failures metrics
Power	Default AC power supply	Table Cisco Catalyst Series switch configurations
	Power supplies	Table Power supply models Table Power specifications Table Power specifications – platinum rated power supplies
	Fan	Table 6 Fan modules
	Energy Efficient Ethernet	Smart operation
	Power over ethernet Cisco UPOE and UPOE+	Power over ethernet leadership
	Power connectors	Table 7 Power connectors
	Power consumption ATIS	Table Power Consumption of Standalone Series Switches Table Power consumption of Standalone Series Switches with platinum rated power supply
Material	Product packaging weight and materials	Contact environment@cisco com
	Dimensions	Table 6 Model Dimensions Weight and Mean Time between failures metrics
	Weight	Table 6 Model Dimensions Weight and Mean Time between failures metrics
	Elimination of wet paint on plastic bezel	Cisco Corporate Social Responsibility Report Pg Stepping up our work on circularity

Cisco Services

Cisco Services for next-generation Cisco Catalyst 9000 Switches

Achieve infrastructure excellence faster and with less risk Cisco Catalyst Services provide expert guidance to help you successfully deploy manage and support the new Cisco Catalyst switching family With unmatched networking expertise best practices and innovative tools we can help you reduce overall upgrade refresh and migration costs as you introduce new hardware software and protocols into the network Offering a comprehensive lifecycle of services – from implementation optimization technical and managed services – Cisco experts help you reduce disruption and achieve operational excellence to extract maximum value from your Cisco DNA ready infrastructure

Learn more about Cisco Services for Enterprise Networks

Software policy for Cisco Catalyst 9300 Series Switches

Software policy for network stack components

Customers with the Network Essentials Stack and Network Advantage Stack software feature sets are provided with maintenance updates and bug fixes designed to maintain compliance of the software This includes compliance with published specifications release notes and industry standards as long as the original end user continues to own or use the product or up to one year from the end-of-sale date for 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 Essentials and Cisco DNA Advantage term components is included Cisco Embedded Support provides access to TAC support major software updates maintenance and minor software releases and the Cisco Embedded Support site for increased productivity with anytime access

Ordering information

Table 6 lists ordering information for the Cisco Catalyst Series To place an order visit the Cisco Ordering home page at
https www cisco com en US ordering or or8 order customer help how to order listing html

Table 26. Ordering information

Switches	
Product number	**Product description**
C X-48HX-E	Catalyst 8-port G mGig with modular uplink UPOE+ Network Essentials
C X-48HX-A	Catalyst 8-port G mGig with modular uplink UPOE+ Network Advantage
C X-48TX-E	Catalyst 8-port G mGig with modular uplink data only Network Essentials
C X-48TX-A	Catalyst 8-port G mGig with modular uplink data only Network Advantage
C X-48HXN-E	Catalyst Essentials 6-port 5G mGig -port G with modular uplink UPOE+ Network
C X-48HXN-A	Catalyst Advantage 6-port 5G mGig -port G with modular uplink UPOE+ Network
C X-24HX-E	Catalyst -port G mGig with modular uplink UPOE+ Network Essentials
C X-24HX-A	Catalyst -port G mGig with modular uplink UPOE+ Network Advantage
C X-12Y-E	Catalyst -port 5G G G SFP 8 with modular uplinks Network Essentials
C X-12Y-A	Catalyst -port 5G G G SFP 8 with modular uplinks Network Advantage
C X-24Y-E	Catalyst -port 5G G G SFP 8 with modular uplinks Network Essentials
C X-24Y-A	Catalyst -port 5G G G SFP 8 with modular uplinks Network Advantage
C -24T-E	Catalyst -port G copper with modular uplinks data only Network Essentials
C -24T-A	Catalyst -port G copper with modular uplinks data only Network Advantage
C -24P-E	Catalyst -port G copper with modular uplinks PoE+ Network Essentials
C -24P-A	Catalyst -port G copper with modular uplinks PoE+ Network Advantage
C -24U-E	Catalyst -port G copper with modular uplinks UPOE Network Essentials
C -24U-A	Catalyst -port G copper with modular uplinks UPOE Network Advantage
C -24UB-E	Catalyst Essentials higher scale -port G copper with modular uplinks UPOE Network
C -24UB-A	Catalyst Advantage higher scale -port G copper with modular uplinks UPOE Network

Switches	
C -24U-E-UL	Catalyst -port G copper with modular uplinks UPOE Network Advantage Compatible with UL 6 Standard*
C -24U-A-UL	Catalyst -port G copper with modular uplinks UPOE Network Advantage Compatible with UL 6 Standard*
C -24H-E	Catalyst -port G copper with modular uplinks UPOE+ Network Essentials
C -24H-A	Catalyst -port G copper with modular uplinks UPOE+ Network Advantage
C -24UX-E	Catalyst -port G mGig with modular uplink UPOE Network Essentials
C -24UX-A	Catalyst -port G mGig with modular uplink UPOE Network Advantage
C -24UXB-E	Catalyst higher scale -port G mGig with modular uplink UPOE Network Essentials
C -24UXB-A	Catalyst higher scale -port G mGig with modular uplink UPOE Network Advantage
C -48T-E	Catalyst 8-port G copper with modular uplinks data only Network Essentials
C -48T-A	Catalyst 8-port G copper with modular uplinks data only Network Advantage
C -48P-E	Catalyst 8-port G copper with modular uplinks PoE+ Network Essentials
C -48P-A	Catalyst 8-port G copper with modular uplinks PoE+ Network Advantage
C -48U-E	Catalyst 8-port G copper with modular uplinks UPOE Network Essentials
C -48U-A	Catalyst 8-port G copper with modular uplinks UPOE Network Advantage
C -48UB-E	Catalyst higher scale 8-port G copper with modular uplinks UPOE Network Essentials
C -48UB-A	Catalyst higher scale 8-port G copper with modular uplinks UPOE Network Advantage
C -48U-E-UL	Catalyst 8-port G copper with modular uplinks UPOE Network Essentials Compatible with UL 6 Standard*
C -48U-A-UL	Catalyst 8-port G copper with modular uplinks UPOE Network Advantage Compatible with UL 6 Standard*
C -48H-E	Catalyst 8-port G copper with modular uplinks UPOE+ Network Essentials
C -48H-A	Catalyst 8-port G copper with modular uplinks UPOE+ Network Advantage
C -48UXM-E	Catalyst 8-port 5G G mGig copper with modular uplinks UPOE Network Essentials
C -48UXM-A	Catalyst 8-port 5G G mGig copper with modular uplinks UPOE Network Advantage

Switches			
C	-48UN-E	Catalyst	8-port 5G copper with modular uplinks UPOE Network Essentials
C	-48UN-A	Catalyst	8-port 5G copper with modular uplinks UPOE Network Advantage
C	-24S-E	Catalyst	-port G SFP with modular uplinks Network Essentials
C	-24S-A	Catalyst	-port G SFP with modular uplinks Network Advantage
C	-48S-E	Catalyst	8-port G SFP with modular uplinks Network Essentials
C	-48S-A	Catalyst	8-port G SFP with modular uplinks Network Advantage
C	L-24T-4G-E	Catalyst	-port G copper with fixed x G SFP uplinks data only Network Essentials
C	L-24T-4G-A	Catalyst Advantage	-port G copper with fixed x G SFP uplinks data only Network
C	L-24P-4G-E	Catalyst	-port G copper with fixed x G SFP uplinks PoE+ Network Essentials
C	L-24P-4G-A	Catalyst	-port G copper with fixed x G SFP uplinks PoE+ Network Advantage
C	L-48T-4G-E	Catalyst	8-port G copper with fixed x G SFP uplinks data only Network Essentials
C	L-48T-4G-A	Catalyst Advantage	8-port G copper with fixed x G SFP uplinks data only Network
C	L-48P-4G-E	Catalyst	8-port G copper with fixed x G SFP uplinks PoE+ Network Essentials
C	L-48P-4G-A	Catalyst	8-port G copper with fixed x G SFP uplinks PoE+ Network Advantage
C	L-48PF-4G-E	Catalyst	8-port G copper with fixed x G SFP uplinks PoE+ Network Essentials
C	L-48PF-4G-A	Catalyst	8-port G copper with fixed x G SFP uplinks PoE+ Network Advantage
C	L-24T-4X-E	Catalyst Essentials	-port G copper with fixed x G G SFP+ uplinks data only Network
C	L-24T-4X-A	Catalyst Advantage	-port G copper with fixed x G G SFP+ uplinks data only Network
C	L-24P-4X-E	Catalyst Essentials	-port G copper with fixed x G G SFP+ uplinks PoE+ Network
C	L-24P-4X-A	Catalyst Advantage	-port G copper with fixed x G G SFP+ uplinks PoE+ Network
C	L-24UXG-4X-E	Catalyst	-port 8XmGig M G 5G 5G G + 6x M M G copper with fixed x G G SFP+ uplinks UPOE Network Essentials
C	L-24UXG-4X-A	Catalyst	-port 8XmGig M G 5G 5G G + 6x M M G copper with fixed x G G SFP+ uplinks UPOE Network Advantage
C	L-48T-4X-E	Catalyst Essentials	8-port G copper with fixed x G G SFP+ uplinks data only Network
C	L-48T-4X-A	Catalyst	8-port G copper with fixed x G G SFP+ uplinks data only Network

Switches		
		Advantage
C	L-48P-4X-E	Catalyst 8-port G copper with fixed x G G SFP+ uplinks PoE+ Network Essentials
C	L-48P-4X-A	Catalyst 8-port G copper with fixed x G G SFP+ uplinks PoE+ Network Advantage
C	L-48PF-4X-E	Catalyst 8-port G copper with fixed x G G SFP+ uplinks full PoE+ Network Essentials
C	L-48PF-4X-A	Catalyst 8-port G copper with fixed x G G SFP+ uplinks full PoE+ Network Advantage
C	L-48UXG-4X-E	Catalyst 8-port fixed uplinks UPoE XmGig M G 5G 5G G + 6x M M G X G uplinks Network Essentials
C	L-48UXG-4X-A	Catalyst 8-port XmGig M G 5G 5G G + 6x M M G copper with fixed x G G SFP+ uplinks UPOE Network Advantage
C	L-24UXG-2Q-E	Catalyst -port 8XmGig M G 5G 5G G + 6x M M G copper with fixed x G QSFP uplinks UPOE Network Essentials
C	L-24UXG-2Q-A	Catalyst -port 8XmGig M G 5G 5G G + 6x M M G copper with fixed x G QSFP uplinks UPOE Network Advantage
C	L-48UXG-2Q-E	Catalyst 8-port XmGig M G 5G 5G G + 6x M M G copper with fixed x G QSFP uplinks UPOE Network Essentials
C	L-48UXG-2Q-A	Catalyst 8-port XmGig M G 5G 5G G + 6x M M G copper with fixed x G QSFP uplinks UPOE Network Advantage
Network modules		
Product number		**Product description**
C	X-NM-8M	Catalyst X 8 x G mGig Network Module
C	X-NM-8M=	Catalyst X 8 x G mGig Network Module spare
C	X-NM-8Y	Catalyst 8 x 5G G G multi-rate SFP Network Module
C	X-NM-8Y=	Catalyst 8 x 5G G G multi-rate SFP Network Module spare
C	X-NM-2C	Catalyst x G G dual rate QSFP Network Module
C	X-NM-2C=	Catalyst x G G dual rate QSFP Network Module spare
C	X-NM-4C	Catalyst x G G dual rate QSFP Network Module
C	X-NM-4C=	Catalyst x G G dual rate QSFP Network Module spare
C	-NM-4G	Catalyst x GE SFP Network Module
C	-NM-4G=	Catalyst x GE SFP Network Module spare

Switches	
C -NM-8X	Catalyst 8 x G G SFP+ Network Module
C -NM-8X=	Catalyst 8 x G G SFP+ Network Module spare
C -NM-2Q	Catalyst x GE QSFP Network Module
C -NM-2Q=	Catalyst x GE QSFP Network Module spare
C -NM-2Y	Catalyst x 5G G G SFP 8 Network Module
C -NM-2Y=	Catalyst x 5G G G SFP 8 Network Module spare
C -NM-4M	Catalyst x G mGig Network Module
C -NM-4M=	Catalyst x G mGig Network Module spare
NM-BLANK-T1=	Cisco Catalyst Type Network Module Blank spare
Storage Module	
Product number	**Product description**
SSD-12 G	Cisco pluggable USB G SSD storage
SSD-12 G=	Cisco pluggable USB G SSD storage spare
SSD-24 G	Cisco pluggable USB G SSD storage
SSD-24 G=	Cisco pluggable USB G SSD storage spare
Software licenses for C	**SKUs**
Product number	**Product description**
C -DNA-E-24- Y	C Cisco DNA Essentials -port Year Term license
C -DNA-E-24-5Y	C Cisco DNA Essentials -port 5 Year Term license
C -DNA-E-24-7Y	C Cisco DNA Essentials -port 7 Year Term license
C -DNA-A-24- Y	C Cisco DNA Advantage -port Year Term license
C -DNA-A-24-5Y	C Cisco DNA Advantage -port 5 Year Term license
C -DNA-A-24-7Y	C Cisco DNA Advantage -port 7 Year Term license
C -DNA-E-48- Y	C Cisco DNA Essentials 8-port Year Term license
C -DNA-E-48-5Y	C Cisco DNA Essentials 8-port 5 Year Term license
C -DNA-E-48-7Y	C Cisco DNA Essentials 8-port 7 Year Term license
C -DNA-A-48- Y	C Cisco DNA Advantage 8-port Year Term license

Switches		
C	-DNA-A-48-5Y	C Cisco DNA Advantage 8-port 5 Year Term license
C	-DNA-A-48-7Y	C Cisco DNA Advantage 8-port 7 Year Term license
C	-DNA-E-24S- Y	C G Fiber Cisco DNA Essentials -port Year Term license
C	-DNA-E-24S-5Y	C G Fiber Cisco DNA Essentials -port 5 Year Term license
C	-DNA-E-24S-7Y	C G Fiber Cisco DNA Essentials -port 7 Year Term license
C	-DNA-A-24S- Y	C G Fiber Cisco DNA Advantage -port Year Term license
C	-DNA-A-24S-5Y	C G Fiber Cisco DNA Advantage -port 5 Year Term license
C	-DNA-A-24S-7Y	C G Fiber Cisco DNA Advantage -port 7 Year Term license
C	-DNA-E-48S- Y	C G Fiber Cisco DNA Essentials 8-port Year Term license
C	-DNA-E-48S-5Y	C G Fiber Cisco DNA Essentials 8-port 5 Year Term license
C	-DNA-E-48S-7Y	C Cisco DNA Essentials 8-port 7 Year Term license
C	-DNA-A-48S- Y	C G Fiber Cisco DNA Advantage 8-port Year Term license
C	-DNA-A-48S-5Y	C G Fiber Cisco DNA Advantage 8-port 5 Year Term license
C	-DNA-A-48S-7Y	C G Fiber Cisco DNA Advantage 8-port 7 Year Term license
C	-DNA-L-E- Y	C Cisco DNA Essentials license Y for Y Y SKU
C	-DNA-L-E-5Y	C Cisco DNA Essentials license 5Y for Y Y SKU
C	-DNA-L-E-7Y	C Cisco DNA Essentials license 7Y for Y Y SKU
C	-DNA-L-A- Y	C Cisco DNA Advantage license Y for Y Y SKU
C	-DNA-L-A-5Y	C Cisco DNA Advantage license 5Y for Y Y SKU
C	-DNA-L-A-7Y	C Cisco DNA Advantage license 7Y for Y Y SKU
C	-LIC=	Electronic Cisco DNA Upgrade License for C switches Note when upgrading from Cisco DNA Essentials to Cisco DNA Advantage Network Essentials is also upgraded to Network Advantage

Switches	
Software licenses for C L SKUs	
Product number	**Product number**
C L-DNA-E-24- Y	C L Cisco DNA Essentials -port Year Term license
C L-DNA-E-24-5Y	C L Cisco DNA Essentials -port 5 Year Term license
C L-DNA-E-24-7Y	C L Cisco DNA Essentials -port 7 Year Term license
C L-DNA-A-24- Y	C L Cisco DNA Advantage -port Year Term license
C L-DNA-A-24-5Y	C L Cisco DNA Advantage -port 5 Year Term license
C L-DNA-A-24-7Y	C L Cisco DNA Advantage -port 7 Year Term license
C L-DNA-E-48- Y	C L Cisco DNA Essentials 8-port Year Term license
C L-DNA-E-48-5Y	C L Cisco DNA Essentials 8-port 5 Year Term license
C L-DNA-E-48-7Y	C L Cisco DNA Essentials 8-port 7 Year Term license
C L-DNA-A-48- Y	C L Cisco DNA Advantage 8-port Year Term license
C L-DNA-A-48-5Y	C L Cisco DNA Advantage 8-port 5 Year Term license
C L-DNA-A-48-7Y	C L Cisco DNA Advantage 8-port 7 Year Term license
C L-LIC=	Electronic Cisco DNA Upgrade License for C L switches Note when upgrading from Cisco DNA Essentials to Cisco DNA Advantage Network Essentials is also upgraded to Network Advantage
Power supplies	
Product number	**Product description**
PWR-C1- 5 WAC=	5 WAC power supply spare
PWR-C1-715WAC=	7 5WAC power supply spare
PWR-C1-715WDC=	7 5WDC power supply spare
PWR-C1-11 WAC=	WAC power supply spare
PWR-C1-1 WAC=	WAC Power supply spare
PWR-C1- 5 WAC-P=	5 WAC Platinum-rated power supply spare
PWR-C1-715WAC-P=	7 5WAC Platinum-rated power supply spare
PWR-C1-11 WAC-P=	WAC Platinum-rated power supply spare
PWR-C1-715WAC-UP	Upgrade to 7 5WAC Platinum-rated power supply
PWR-C1-11 WAC-UP	Upgrade to WAC Platinum-rated power supply

Switches	
PWR-C1-1 WAC-UP	Upgrade to WAC Platinum-rated power supply
Cisco StackWise-48 /1T and StackPower cables	
Product number	**Product description**
STACK-T1-5 CM=	Cisco StackWise- 8 T 5 cm stacking cable spare
STACK-T1-1M=	Cisco StackWise- 8 T m stacking cable spare
STACK-T1- M=	Cisco StackWise- 8 T m stacking cable spare
CAB-SPWR- CM=	Cisco Catalyst 85 StackPower cable cm spare
CAB-SPWR-15 CM=	Cisco Catalyst 85 StackPower cable 5 cm spare
Cisco StackWise- 2 Accessories	
Product number	**Product description**
C L-STACK-KIT	Stack Kit for C L SKUs – includes Stack Adaptors and Stack Cable
C L-STACK-KIT=	Stack Kit for C L SKUs – includes Stack Adaptors and Stack Cable spare
STACK-T -5 CM	5 CM Type Stacking Cable – default with Stack Kit for C L SKUs
STACK-T -5 CM=	5 CM Type Stacking Cable spare for C L SKUs
STACK-T -1M	M Type Stacking Cable for C L SKUs
STACK-T -1M=	M Type Stacking Cable spare for C L SKUs
STACK-T - M	M Type Stacking Cable for C L SKUs
STACK-T - M=	M Type Stacking Cable spare for C L SKUs
Spare power cords	
CAB-TA-NA=	AC power cord for Cisco Catalyst North America
CAB-TA-AP=	AC power cord for Cisco Catalyst Australia
CAB-TA-AR=	AC power cord for Cisco Catalyst Argentina
CAB-TA-SW=	AC power cord for Cisco Catalyst Switzerland
CAB-TA-UK=	AC power cord for Cisco Catalyst United Kingdom
CAB-TA-JP=	AC power cord for Cisco Catalyst Japan
CAB-TA-25 VAC-JP=	Japan 5 VAC power cord for Cisco Catalyst Japan
CAB-TA-EU=	AC power cord for Cisco Catalyst Europe

Switches	
CAB-TA-IT=	AC power cord for Cisco Catalyst Italy
CAB-TA-IN=	AC power cord for Cisco Catalyst India
CAB-TA-CN=	AC power cord for Cisco Catalyst China
CAB-TA-DN=	AC power cord for Cisco Catalyst Denmark
CAB-TA-IS=	AC power cord for Cisco Catalyst Israel
CAB-ACBZ-12A=	AC power cord for Cisco Catalyst Brazil A 5V BR- - plug up to A
CAB-ACBZ-1 A=	AC power cord for Cisco Catalyst Brazil A 5 V BR- - plug up to A
CAB-C15-CBN	Cabinet jumper power cord 5 VAC A C -C 5 connectors

Optics online reference

The Cisco Catalyst Series supports a wide range of optics Because the list of supported optics is updated on a regular basis consult the tables available here for the latest QSFP 8 QSFP+ SFP+ and SFP compatibility information

https www cisco com en US products hw modules ps5 55 products device support tables list html

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Document history

New or revised topic	Described In	Date
Added Information about X, copper models	All relevant sections	February
Added Information about X fiber models	All relevant sections	March
Added information about the 1G W UPOE+ SKUs	Across different sections	February
Added new SKUs for C L – Full PoE+ and mGig SKUs	Content added to all the tables	December
Updates for C – large buffer/scale SKUs	All relevant sections	October
Adding Primary PSU upgrade option for	Table Power supply models	June
Product name change: Cisco ONE to Cisco DNA	Introduction	May
Wi-Fi 6 addition	Product Overview Features	May
Add: Features	Product Overview Features	May
Add: Modular uplink models table	Platform Details	May
Edit: Cisco Catalyst Series modular uplink	Platform Details	May
Edit: Table 1: Cisco Catalyst Series Switch configurations; uplink configuration add	Platform Details	May
Edit: Table 2: Name change to "Catalyst ..."	Platform Details	May
Add: Figure : picture for C L	Platform Details	May
Edit: Table : Power supply models	Platform Details	May

New or revised topic	Described In	Date
Add: Stacking, Table 4	Platform Details	May
Add: Stacking Accessories, Table 5	Platform Details	May
Edit: Replaced C 85 stack picture with C stack picture	Platform Details	May
Add: Fan, Table 6	Platform Details	May
Edit: Table 7	Performance and Scalability	May
Add: Bandwidth Specifications	Performance and Scalability	May
Add: StackWise- 2	Resiliency and High Availability	May
Edit: name change from Cisco One to Cisco DNA Software	Software Requirements	May
Edit: text edits	Licensing	May
Edit: Table 1	Licensing	May
Edit: Table 14	Specifications	May
Edit: Table 15	Connectors	May
Edit: Table 17	Power Supply Specifications	May
Edit: Table 21	Safety and Compliance	May
Edit: Table 2	Ordering Information	May
Added support for SD-Access Embedded Wireless	Added support for SD-Access Embedded Wireless Controller functionality	Nov 8
Updated Platinum Power Supply specifications	Platinum rated power supplies available on the C switches	Oct 5 8
Updated availability of SSD card	Availability of G storage module for the C	Oct 5 8

New or revised topic	Described In	Date
Updated Product overview	Added Catalyst 5 high density platforms and updated associated speeds and densities e g Up to 6 -Tbps switching capacity with up to Bpps of forwarding performance from “ Tbps Bpps” a port G b port G c 8 port 5G Added Catalyst 5 mid density platform a port 5G b 6 port G Added new optical interfaces - QSFP 8 SFP 8 Added new power supply options - 65 W 6 W Added RESCONF support Stackwise Virtual extended to all Catalyst 5 platforms	Mar 8
Updated Audio Video Bridging	AVB support noted for certain platforms Corrected references to Catalyst switches rather than Catalyst Series switches Corrected references to Cisco IOS XE rather than IOS-XE	Dec 5 7

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Printed in USA C78-7 8 77-