

# WS-C4500X-24X-ES Datasheet

## Overview

WS-C4500X-24X-ES is one of the Catalyst 4500-X Series Switches. The Catalyst 4500-X series switch is a 1RU unit that provides either 16 or 32 10GBASE-X (SFP+) or 1GBASE-X (SFP) ports. An additional 8 ports of 1000BASE-X (SFP) or 10GBASE-X (SFP+) are available in a removable Ethernet uplink module that mounts in a bay on the front of the switch chassis.

## Quick Specs

Figure 1 shows the appearance of WS-C4500X-24X-ES.



Table 1 shows the Quick Specs.

Product Code	WS-C4500X-24X-ES
Switch type	Managed
Switch layer	L3
Basic switching RJ-45 Ethernet ports type	10G Ethernet (100/1000/10000)
SFP+ module slots quantity	24
Console port	RJ-45
Networking standards	IEEE 802.1D,IEEE 802.1p,IEEE 802.1Q,IEEE 802.1s,IEEE 802.1w,IEEE 802.1x,IEEE 802.3,IEEE 802.3ad,IEEE 802.3ae

Switching capacity	800 Gbit/s
Throughput	250 Mpps
Processor frequency	1.5 MHz
Internal memory	2000 MB
Packet buffer memory	32 MB
Mean time between failures (MTBF)	209330 h
Power consumption (typical)	750 W
ports	16 1G or 10G Ethernet ports (requires either SFP or SFP+ transceivers)

airflow	Front-to-back airflow (fan assemblies and the power supplies are color coded burgundy)
uplink module	8 port uplink module (requires either SFP or SFP+ transceivers)
Chassis dimensions	1.75 x 17.25 x 21 in. (4.4 x 43.8 x 53.3 cm) (H x W x D)
Chassis weight	·20 lb (9.07 kg) (without power supplies) ·22 lb (9.98 kg) (with one power supply installed) ·24 lb (10.89 kg) (with two power supplies installed)

The Accessories

Table 2 shows the recommended elements for the WS-C4500X-24X-ES.

Category	Model	Description
AC Power Supplies	<a href="#">C4KX-PWR-750AC-R/2</a>	Catalyst 4500X 750W AC front to back cooling 2nd PWR supply
	<a href="#">C4KX-PWR-750AC-R</a>	Catalyst 4500X 750W AC front to back cooling power supply
CARD	<a href="#">C4KX-NM-8SFP+</a>	Catalyst 4500X 8 Port 10G Network Module
CONSOLE CABLES	<a href="#">CAB-CONSOLE-RJ45</a>	Console Cable 6ft with RJ45 and DB9F
1G SFP	<a href="#">GLC-SX-MMD</a>	1000BASE-SX SFP transceiver module, MMF, 850nm, DOM
	<a href="#">GLC-BX-U</a>	1000BASE-BX SFP, 1310NM
10G SFP	<a href="#">SFP-10G-SR</a>	10GBASE-SR SFP Module
	<a href="#">SFP-H10GB-CU1M</a>	10GBASE-CU SFP+ Cable 1 Meter

Compare to Similar Items

Table 3 shows the comparison of WS-C4500X-24X-ES and WS-C4500X-F-16SFP+.

Product Code	<a href="#">WS-C4500X-24X-ES</a>	<a href="#">WS-C4500X-F-16SFP+</a>
Switching capacity	800 Gbit/s	800 Gbit/s
Internal memory	2000 MB	4096 MB
Packet buffer memory	32 MB	32 MB
Mean time between failures (MTBF)	209330 h	209330 h
Power consumption (typical)	750 W	330 W
ports	16 1G or 10G Ethernet ports (requires either SFP or SFP+ transceivers)	16 1G or 10G Ethernet ports (requires either SFP or SFP+ transceivers)
airflow	Front-to-back airflow (fan assemblies and the power supplies are color coded burgundy)	Back-to-front airflow (fan assemblies and the power supplies are color coded blue)

Specification

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WS-C4500X-24X-ES Specification	
System	
Expansion Module (Optional)	8x10 GE SFP+/SFP - C4KX-NM-8SFP+
Management Port	10/100/1000 Base-T
USB Port	Type A (storage and boot) up-to 4 GB
Dual Power Supply	Yes
Field Replaceable Fans	Yes (5 fans)
Fan Redundancy	No performance impact with single fan failure
Scalability	
System Throughput	Up to 800 Gbps
IPv4 Routing in Hardware	Up to 250 Mpps
IPv6 Routing in Hardware	Up to 125 Mpps
L2 Bridging in Hardware	Up to 250 Mpps
Media Access Control (MAC) Entries	55K
Flexible Netflow Entries	128K
Switched Port Analyzer (SPAN), Remote Switched Port Analyzer (RSPAN)	8 line rate bidirectional sessions (ingress and egress)
Total VLANs	4094
Total Switched Virtual Interfaces (SVIs)	4094
IGMP groups	32K
Dynamic Host Configuration Protocol (DHCP) Snooping Entries	12K (DHCP snooping bindings)
ARP Entries	47K
Spanning Tree Protocol Instances	10K
Jumbo Frame Support for Bridged and Routed Packets	Up to 9216 bytes
High Availability and Resiliency	
High Availability Solution	Virtual Switching System (VSS)
Number of stackable switches in VSS	Up to 2
VSS Throughput	Up to 1.6 Tbps
Virtual Switch Link	1GE or 10GE
Max number of Virtual Switch Links	8
In-Service Software Upgrade	Across the switches
Nonstop Forwarding with Stateful Switchover	Across the switches
CPU and Memory	
Onboard Memory (SRAM DDR-II)	4 GB
Port Buffers	32-MB Shared Memory

WS-C4500X-24X-ES Specification	
CPU	Dual Core 1.5 GHz
NVRAM	2 GB
Optional External Memory (SD Card)	2 GB
QoS Features	
Port Queues	8 Queues/Port
CPU Queues	64
QoS Entries	128K (64K ingress and 64K in egress) Shared with ACL
Aggregate Rate-Limiting	Ingress port or VLAN and egress VLAN or Layer 3 port
Rate-Limiting Level Types	Committed Information Rate (CIR), Peak Information Rate (PIR)
Aggregate Traffic Rate-Limiting Policers (1K=1024)	16K
Flow-Based Rate-Limiting Method; Number of Rates	Supported using flow-records in the classification criteria and policing action
Qos Policy Enforcement	Per Port or Per Vlan or Per Port, Per VLAN Granularity
Class of Service (CoS)	Yes
Differentiated Services Code Point (DSCP)	Yes
Security Features	
Port Security	Yes
IEEE 802.1x and 802.1x Extensions	Yes
VLAN, Router, and Port ACLs	Yes
Security ACL Entries (1K=1024)	128K (64K ingress and 64K in egress) Shared with QoS
Unicast Reverse Path Forwarding (uRPF) Check in Hardware	Yes
CPU Rate Limiters (DoS Protection) Includes Control Plane Policing	Yes
Private VLANs	Yes
Micro Flow Policer	Yes. Supported using flow records in the class-map
CPU HW Rate Limiters by Packet Per Second (pps) and Bit Rate Policers (bps)	Supported in hardware control-plane policing (CoPP)
Control Plane Policing (CoPP) for Multicast	Yes
ACL Labels	Yes
Port ACL	Yes
Traffic Storm Control (formally known as Broadcast/Multicast Suppression)	Yes
Virtualization Features	
VRF-Lite Scalability	64
Easy Virtual Network (EVN) Scalability	32
Environmental Conditions	
Operating Temperature	0°C to 40°C (RH to 90%)

WS-C4500X-24X-ES Specification	
Storage Temperature	-40°C to 70°C (RH 93%)
Operating Altitude	60m below sea level to 3000m above sea level
Relative Humidity	Nonoperating Humidity: 95% RH
Acoustic Noise Measured per ISO 7779 and Declared per ISO 9296 Bystander Positions Operating to an Ambient Temperature of 25°C	Industrial Product: 65 dBA maximum
RoHS	Reduction of Hazardous Substances (ROHS) 5
Power Supply	
AC Power Max Rating	750W
System Power Consumption	330W nominal/400W max
Input-Voltage Range and Frequency	AC 100 to 240 VAC 50-60 Hz/DC -72 VDC to -40 VDC
DC Power Max Rating	750W
AC to DC failover and vice versa	Yes
Total Output BTU (Note: 1000 BTU/hr = 293W)	1122 BTU/hr (330 W) nominal/1365 BTU/hr (400 W) max
Input Current	AC 11A @ 110VAC, 6 A @ 200VAC/DC 25A Max
Output Ratings	12V @ 62A & 3.3V @ 3A
Output Holdup Time	AC = 16 ms; DC = 4 ms @ maximum load
Power-Supply Input Receptacles	AC IEC 60320 C15/DC Custom detachable screw terminal (supplied)
Power Cord Rating	AC 15A/DC 25A
MTBF Information	
WS-C4500X-24X-ES	209,330
WS-C4500X-40X-ES	199,720
WS-C4500X-F-16SFP+	209,330
WS-C4500X-F-32SFP+	199,720
C4KX-FAN-R	L10 Life 60,000 at 40C
Regulatory Standards Compliance	
Regulatory Compliance	CE marking
EMI and EMC Compliance	47CFR Part 15 (CFR 47) Class A AS/NZS CISPR22 Class A CISPR22 Class A EN55022 Class A ICES003 Class A VCCI Class A EN61000-3-2 EN61000-3-3 KN22 Class A CNS13438 Class A EN55024 CISPR24 EN300386 KN24

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## WS-C4500X-24X-ES Specification

Safety Certifications	UL 60950-1 Second Edition CAN/CSA-C22.2 No. 60950-1 Second Edition EN 60950-1 Second Edition IEC 60950-1 Second Edition AS/NZS 60950-1
Industry EMC, Safety, and Environmental Standards	GR-63-Core Network Equipment Building Systems (NEBS) Level 3 GR-1089-Core Level 3

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