



Cisco Catalyst 4900M Switch At-a-Glance

Overview

The Cisco Catalyst® 4900M Switch is a two-rack-unit (2RU) top-of-rack (ToR) data center access layer switch for use with rack-optimized servers. The Cisco Catalyst 4900M offers exceptional deployment flexibility with an expansive list of line-card modules to facilitate Gigabit Ethernet to 10 Gigabit Ethernet server access with investment protection and a pay-as-you-grow model. Customers can mix and match Gigabit Ethernet and 10 Gigabit Ethernet copper and fiber ports in a single 2RU switch (Figure 1). The Cisco Catalyst 4900M delivers extremely low latency for all packet sizes, deep buffers, and Layer 2 and 3 switching features for flexible deployments for data center server access, market data architecture, and web services experience providers. The media type flexibility and Layer 3 feature set make the Cisco Catalyst 4900M an ideal switch for compact core/distribution deployment as well.

The Cisco Catalyst 4900M is optimized for 10/100/1000 and 10 Gigabit Ethernet access devices. It is unique in the top of rack (ToR) space because it is semi-fixed. This flexibility provides a cost-effective and modular migration path from Gigabit Ethernet to 10 Gigabit Ethernet (Figure 2).

The design of the Cisco Catalyst 4900M addresses several common challenges data centers face, offering these benefits:

- Offers hot-swappable flexibility, providing high availability in a dynamic environment along with investment protection in environments with a constantly changing mix of servers
- Provides optional half-cards that can be changed when new servers require different media and port speeds, maintaining the investment in the Cisco Catalyst 4900M base unit
- Supports Gigabit Ethernet and 10 Gigabit Ethernet copper (RJ-45) and 10 Gigabit Ethernet fiber (X2) line cards that can be converted to Gigabit Ethernet fiber (Small Form-Factor Pluggable [SFP]) by using a port adaptor: X2 ports can be converted for use with 10 Gigabit Ethernet SFP+ and CX1 with the OneX adapter (Figure 3)
- Supports Layer 2 and 3 software images for deployment flexibility
- Designed with 16 MB of shared buffers to help prevent performance degradation under heavy traffic loads and help ensure that revenue-producing packets are not lost due to insufficient buffering

The switch has 8 fixed wire-speed 10 Gigabit Ethernet ports typically used to uplink to an aggregation switch. The switch also provides two half-slots that can be filled with any combination of the following:

- 20-port wire-speed 10/100/1000 (RJ-45) half-card
- 4-port wire-speed 10 Gigabit Ethernet (X2) half-card

- 8-port (2:1) 10 Gigabit Ethernet (X2) half-card (Cisco® TwinGig Converter Module compatible)
- 8-port (2:1) 10 Gigabit Ethernet (RJ-45) half-card

Figure 1. Cisco Catalyst 4900M Offers Significant Mix-and-Match Flexibility



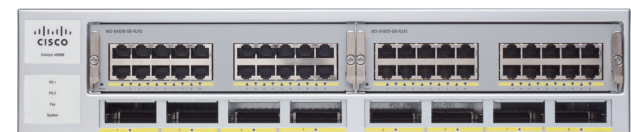
Figure 2. Cisco Catalyst 4900M Optimized for 10 Gigabit Ethernet Server (Fiber) Connectivity



Figure 3. Cisco Catalyst 4900M Optimized for 10 Gigabit Ethernet Server (RJ-45) Connectivity



Figure 4. Cisco Catalyst 4900M Can Support 40 Ports of 10/100/1000 Ethernet at Wire Speed Without Oversubscription





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Infrastructure Simplification and Flexibility

- Provides flexible 10 Gigabit Ethernet configurations ranging from 8 to 24 ports
- Offers more than nine combinations of media types, including Gigabit Ethernet copper and fiber interfaces and 10 Gigabit Ethernet copper and fiber interfaces
- Delivers investment protection with a 10GBASE-T line card that offers Gigabit Ethernet and 10 Gigabit Ethernet modes

Performance and Scalability

- Offers wire-speed Layer 2+ Ethernet switching with 320 Gbps and 250 million packets per second (mpps) of aggregate capacity in 2RU
- Eliminates access port-to-uplink port oversubscription bottlenecks with up to 40 ports of wire-speed 10/100/1000 Ethernet at the access to 8 wire-speed 10 Gigabit Ethernet uplinks (Figure 4)
- Achieves a latency of less than 5 microseconds with 64-byte packets
- Provides Cisco TwinGig Converter Module support on the 8-port X2 half-cards, allowing up to 32 Gbps over fiber optics per switch
- Allows control of transmit queue sizing; default size of transmission queue is 8000 packets (irrespective of packet size), and this can be configured into up to eight queues with different sizes and graded priorities

Continuous Operation

- Provides online hot addition and deletion of half-cards for in-service hardware upgrades
- Provides 1+1 AC or DC power supplies and hot-swappable fan tray with redundant fans for high availability for mission-critical applications

Table 1 provides a comparison of the Cisco Catalyst 4900 Series Switches.

Table 1. Comparison of Cisco Catalyst 4900 Series Switches

Feature and Description	Cisco Catalyst 4948 Switch	Cisco Catalyst 4948 10 Gigabit Ethernet Switch	Cisco Catalyst 4900M Switch
Switching capacity	96 Gbps	136 Gbps	320 Gbps
Throughput	72 mpps	102 mpps	250 mpps for IPv4 and 125 mpps for IPv6
Height	1RU	1RU	2RU
Modular half-card slots	0	0	2
Maximum 10/100/1000 ports	48	48	40

Feature and Description	Cisco Catalyst 4948 Switch	Cisco Catalyst 4948 10 Gigabit Ethernet Switch	Cisco Catalyst 4900M Switch
Maximum 10 Gigabit Ethernet (RJ-45) ports	0	0	16
Maximum 10 Gigabit Ethernet (fiber) ports	0	2	24
Maximum Gigabit Ethernet (fiber) ports	4	0	32 (Cisco TwinGig Converter Module)
Cisco TwinGig Converter Module support	No	No	Yes (half-cards only)
Uplink optic types	4 SFP optics	2 X2 (10 Gigabit Ethernet) optics	8 X2 (10 Gigabit Ethernet) optics, 8 SFP+ (using OneX)
Multilayer switching	IP Base and Enterprise services options	IP Base and Enterprise services options	IP Base and Enterprise services options
Shared buffer	16 MB	16 MB	175 MB
CPU	266 MHz	666 MHz	1.3 GHz
Synchronous Dynamic RAM (SDRAM)	256 MB	256 MB	512 MB
Active VLANs	2048	2048	4196
Multicast entries	28,000 (Layer 3) 16,000 (Layer 2)	28,000 (Layer 3) 16,000 (Layer 2)	56,000 for IPv4 28,000 for IPv6
Per VLAN Spanning Tree (PVST) and VLAN IDs	4096	4096	4096
Spanning Tree Protocol instances	1500	1500	3000
Switched virtual interfaces (SVIs)	2000	2000	4000
Security and quality-of-service (QoS) hardware entries	32,000	32,000	128,000
MAC addresses	32,000	55,000	55,000
Switched Port Analyzer (SPAN)	2 ingress and 4 egress	2 ingress and 4 egress	8 ingress and 8 egress
USB port	No	No	Yes
Compact flash memory support	No	No	Yes
System Reset button	No	No	Yes
Minimum software requirements	Cisco IOS® Software Release 12.2(20)EWA or later	Cisco IOS Software Release 12.2(25)EWA or later	Cisco IOS Software Release 12.2(44)SG or later