



Cisco IOS Software Releases 12.2(17a)SX and 12.2(17a)SX1 for Cisco Catalyst 6500 Series Switches and Cisco 7600 Series Routers Equipped with the Cisco Supervisor Engine 720

Cisco IOS® Software Release 12.2(17a)SX is supported only on the Cisco® Catalyst® 6500 Series Supervisor Engine 720. Cisco IOS Software Release 12.2(17a)SX1 is supported on the Supervisor Engine 720 and the Cisco Multilayer Switch Feature Card 3 (MSFC3).

Hardware Features

Cisco IOS Software Release 12.2(17a)SX supports all modules that Cisco IOS Software Release 12.2(14)SX1 supported, and adds support for the new hardware listed in Table 1.

Table 1 New Hardware Supported with the Supervisor Engine 720 in Cisco IOS Software Release 12.2(17a)SX

Hardware	Description
WS-X6704-10GE	This 4-port, 10-Gigabit Ethernet module allows system port density of up to thirty-two 10-Gigabit Ethernet ports per chassis. There is a 40-Gbps interconnection to the Cisco Catalyst 6500 Series Supervisor Engine 720 switch fabric. The module uses “hot-swappable” industry-standard Xenpak modular optics and is fully IEEE 802.3ae standards-compliant. This module is ideal for high-performance enterprises and service providers. Field-upgradable daughter-card for distributed Cisco Express Forwarding is available for flexible, “pay-as-you-grow” scalable performance and investment protection.
WS-X6724-SFP	This 24-port mixed-media Gigabit Ethernet module with (Small Form-Factor Pluggable [SFP] connectors is ideal for high-performance distribution, core, and data center interconnects and Metro Ethernet. The module features a 20-Gbps switch fabric connection to support 24 ports. It allows up to 288 Gigabit Ethernet (fiber-based) ports per Cisco Catalyst 6500 Series 13-slot chassis, with no slot restrictions on any chassis, and it supports up to a 9000-byte Jumbo frame size. Field-upgradable forwarding daughter-card for distributed Cisco Express Forwarding is available for flexible, “pay-as-you-grow” scalable performance and investment protection. Mix-and-match SFP optics are supported to address media and distance.
WS-X6748-GE-TX	This 48-port 10/100/1000 Ethernet data center module is ideal for high-performance data center deployments. The module features a 40-Gbps switch fabric connection to support 48 ports, and supports up to a 9000-byte Jumbo frame size. A field-upgradable forwarding daughter-card distributed Cisco Express Forwarding option allows flexible, “pay-as-you-grow” scalable performance and investment protection.
WS-F6700-DFC3A	Distributed Forwarding Card (DFC) 3A field-upgradable daughter cards enable “pay-as-you-grow” performance and service enhancements when deployed with Cisco Catalyst 6500 Series switches and Cisco 7600 Series routers that are equipped with the Supervisor Engine 720. The card delivers 48 Mpps of distributed local performance, hardware-accelerating IPv6, Multiprotocol Label Switching (MPLS), generic routing encapsulation (GRE), Network Address Translation (NAT), egress policing, and more (some features may come in future releases). The card supports the WS-X6704-10GE, WS-X6724-SFP, and WS-X6748-GE-TX modules and is ideal for enterprise distribution, core, data center, and metropolitan (metro) or WAN environments.
WS-6509-NEB-A	This new Cisco Catalyst 6509 chassis is Network Equipment Building Standards (NEBS)-compliant. This 9-slot vertical chassis has 20 rack units (RUs) and comes with a fan tray (power supply is not included).



Table 1 New Hardware Supported with the Supervisor Engine 720 in Cisco IOS Software Release 12.2(17a)SX

Hardware	Description
New transceiver support	<ul style="list-style-type: none"> Gigabit interface converter (GBIC): Dense wavelength-division multiplexing (DWDM) SFP: 1000BASE-T, 1000BASE-SX, coarse wavelength-division multiplexing (CWDM) Xenpak: 10GBASE-LR & 10GBASE-ER
WS-6548-GE-TX and WS-6548V-GE-TX	This Cisco Catalyst 6500 48-port fabric-enabled 10/100/1000 module offers a “V” variant that includes inline power.
WS-6148-GE-TX and WS-6148V-GE-TX	This Cisco Catalyst 6500 48-port 10/100/1000 Gigabit Ethernet module also offers a “V” variant that includes inline power.

There is no new hardware support in Cisco IOS Software Release 12.2(17a)SX1.

Software Features

Table 2 lists the new software features in Cisco IOS Software releases 12.2(17a)SX and 12.2(17a)SX1.

Table 2 New Software Features Now Supported with the Supervisor Engine 720 in Cisco IOS Software Releases 12.2(17a)SX and 12.2(17a)SX1

Feature	Description
Secure Shell (SSH) Protocol v2	SSHv2 allows automated, remote, secure Telnet access for configuration and administration of switch and router resources. SSHv2 addresses the weaknesses and vulnerabilities that exist in SSHv1, including man-in-the-middle attacks and integrity violations.
Protocol Independent Multicast (PIM) snooping	PIM snooping is a method employed by a Layer 2 switch to constrain multicast traffic among VLAN ports that are connected to multicast routers. Although Internet Group Management Protocol (IGMP) snooping constrains traffic on host ports, it typically floods traffic on these multicast router ports. With PIM snooping, the switch snoops on PIM control messages such as “Join/Prune” to learn which routers are interested in specific traffic. PIM snooping is effective in environments where many routers are connected using a Layer 2 switch, such as in network core, Internet exchange point, and Metro Ethernet environments.
Layer 2 Tunneling Protocol (L2TP) threshold enhancements	L2TP enables Layer 2 transparency between customer sites connected across a service provider network, allowing customers to tunnel protocol data units (PDUs) such as Cisco Discovery Protocol, Spanning Tree Protocol, and VLAN Trunking Protocol (VTP). Previous software versions supported rate limiting on a per-protocol and per-port basis for the tunneled PDUs, using mechanisms implemented in software. New enhancements include supporting per-protocol rate limiting at switch level based on the current software implementation and rate limiting in hardware on a Cisco Catalyst 6500 with the Supervisor Engine 720.
Pseudorandom Binary Sequence (PRBS) test	PRBS is a cable diagnostic test for 10-Gigabit Ethernet ports on the Cisco Catalyst 6500 Series switches.
Limit speed to 10/100 on a 10/100/1000 port	This feature allows users to selectively limit auto-negotiation to 10/100 or 10/100/1000 Ethernet ports.



Table 2 New Software Features Now Supported with the Supervisor Engine 720 in Cisco IOS Software Releases 12.2(17a)SX and 12.2(17a)SX1

Feature	Description
IPv6 (supported starting in Cisco IOS Software Release 12.2(17a)SX1)	<p>IPv6 meets the demand for increased address space as a new generation of devices connect to the Internet, encouraged by the official IPv6 support from major operating systems vendors. Today, market segments such as National Research Networks (NRNs) and connected university campuses, federal and government organizations, engineering organizations working on IPv6 applications or appliances, and service providers require IPv6 capabilities in new product acquisitions.</p> <p>As part of the Cisco IPv6 strategy, the Cisco Catalyst 6500 Series now integrates IPv6 protocol support, delivering the best-in-class performances of the industry and enabling the overall Cisco Catalyst 6500 installed base to benefit from the technology when upgrading to Supervisor Engine 720.</p> <p>The following IPv6 features—in alignment with other Cisco platforms—are supported in this release:</p> <ul style="list-style-type: none"> • Base IPv6 protocol, including Internet Control Message Protocol Version 6 (ICMPv6), neighbor discovery, and stateless auto-configuration • IPv6 routing protocols—Static routes, Routing Information Protocol Next Generation (RIPng), Open Shortest Path First Version 3 (OSPFv3), Intermediate System-to-Intermediate System (IS-IS) for IPv6, and Multiprotocol Border Gateway Protocol Version 4 (MP-BGP4) • Data Link layers as supported on the Cisco Catalyst 6500 Series, including IEEE 802.1Q VLAN • IPv6 packet filtering—Standard and extended access control lists (ACLs) • Management services over an IPv6 transport—Domain Name System (DNS), Telnet, SSH, Trivial File Transfer Protocol (TFTP) client • Transition mechanisms—Configured, automatic, generic routing encapsulation (GRE), connection of IPv6 domains with IPv4 clouds (6to4), Intra-Site Automatic Tunnel Addressing Protocol (ISATAP) tunnels The Cisco Supervisor Engine 720 supports IPv6 in hardware, offering up to 200-Mpps system performance with fabric-enabled line cards such as 4-port 10 Gigabit Ethernet (part number WS-6704-10GE), 24-port Gigabit Ethernet (part number WS-6724-GE-SFP), and 48-port 10/100/1000 (part number WS-6748-GE-TX) equipped with a distributed forwarding card (DFC3). In centralized forwarding mode, a system performance of 24 Mpps can be achieved. All the classic Cisco Express Forwarding 256 and distributed Cisco Express Forwarding 256 line cards that are currently supported with Supervisor Engine 720 can now be configured for IPv6 in centralized or distributed forwarding modes. Environments such as data centers, campuses, Internet exchange point, and infrastructures can now support IPv6 using various deployment options, including: <ul style="list-style-type: none"> • IPv6 over IPv4 tunnels—Over WAN (configured, 6to4) and LAN (ISATAP) • Dual stack networks—Native IPv4 and IPv6 configured <p>For more details about IPv6 deployment strategies, refer to: http://www.cisco.com/en/US/tech/tk872/technologies_white_paper09186a00800c9907.shtml</p>

Orderable Software Images

Table 3 lists the software versions and applicable ordering information for the Cisco Supervisor Engine 720 for Cisco Catalyst 6500 Series switches and Cisco 7600 Series routers. Cisco IOS Software runs on the DFC to provide distributed Cisco Express Forwarding support. This image is bundled as part of the Supervisor Engine 720 image and is not released separately.

These are the only product IDs that will be orderable. When subsequent releases of Cisco IOS Software Release 12.2(17a)SX are available, ordering these product IDs will automatically result in shipment of the latest release. Some of the descriptions refer to MPLS and IPv6, which will be available in subsequent releases only and are not available in Cisco IOS Software Release 12.2(17a)SX1.



Caution: Always back up the switch configuration file to a TFTP server or Flash device before upgrading or downgrading the switch software, to avoid losing all or part of the configuration stored in nonvolatile RAM (NVRAM). When downgrading switch software, the configuration will be lost.

Table 3 Software Versions and Ordering Information

Product ID	Description	Image
S733AK9H-12217SX	Cisco Catalyst 6500 Supervisor Engine 720 Enterprise Firewall with MPLS, IPv6, and SSH	s72033-jk9o3sv-mz.122-17.SX.bin
S733AK9H-12217SX=	Cisco Catalyst 6500 Supervisor Engine 720 Enterprise Firewall with MPLS, IPv6, and SSH (spare)	s72033-jk9o3sv-mz.122-17.SX.bin
S733AK9-12217SX	Cisco Catalyst 6500 Supervisor Engine 720 Enterprise with IPv6 and SSH	s72033-jk9sv-mz.122-17.SX.bin
S733AK9-12217SX=	Cisco Catalyst 6500 Supervisor Engine 720 Enterprise with IPv6 and SSH (spare)	s72033-jk9sv-mz.122-17.SX.bin
S733ALK9-12217SX	Cisco Catalyst 6500 Supervisor Engine 720 Enterprise with IPv6 and SSH LAN only	s72033-jk9s-mz.122-17.SX.bin
S733ALK9-12217SX=	Cisco Catalyst 6500 Supervisor Engine 720 Enterprise with IPv6 and SSH LAN only (spare)	s72033-jk9s-mz.122-17.SX.bin
S733ZK9M-12217SX	Cisco Catalyst 6500 Supervisor Engine 720 IP with MPLS, IPv6, SSH, and BGP license	s72033-pk9sv-mz.122-17.SX.bin
S733ZK9M-12217SX=	Cisco Catalyst 6500 Supervisor Engine 720 IP with MPLS, IPv6, SSH, and BGP license (spare)	s72033-pk9sv-mz.122-17.SX.bin
S733ZK9-12217SX	Cisco Catalyst 6500 Supervisor Engine 720 IP with SSH	s72033-pk9sv-mz.122-17.SX.bin
S733ZK9-12217SX=	Cisco Catalyst 6500 Supervisor Engine 720 IP with SSH (spare)	s72033-pk9sv-mz.122-17.SX.bin
S733ZLK9-12217SX	Cisco Catalyst 6500 Supervisor Engine 720 IP with SSH LAN only	s72033-pk9s-mz.122-17.SX.bin
S733ZLK9-12217SX=	Cisco Catalyst 6500 Supervisor Engine 720 IP with SSH LAN only (spare)	s72033-pk9s-mz.122-17.SX.bin
S733Z-12217SX	Cisco Catalyst 6500 Supervisor Engine 720 IP	s72033-psv-mz.122-17.SX.bin
S733Z-12217SX=	Cisco Catalyst 6500 Supervisor Engine 720 IP (spare)	s72033-psv-mz.122-17.SX.bin
S733ZL-12217SX	Cisco Catalyst 6500 Supervisor Engine 720 IP LAN only	s72033-ps-mz.122-17.SX.bin
S733ZL-12217SX=	Cisco Catalyst 6500 Supervisor Engine 720 IP LAN only (spare)	s72033-ps-mz.122-17.SX.bin
S6M3AK9H-12217SX	Cisco Catalyst 6500 MSFC3 Enterprise Firewall with SSH	c6msfc3-jk9o3sv-mz.122-17a.SX.bin
S6M3AK9H-12217SX=	Cisco Catalyst 6500 MSFC3 Enterprise Firewall with SSH (spare)	c6msfc3-jk9o3sv-mz.122-17a.SX.bin
S6M3ALK9-12217SX	Cisco Catalyst 6500 MSFC3 Enterprise with SSH LAN only	c6msfc3-jk9s-mz.122-17a.SX.bin
S6M3ALK9-12217SX=	Cisco Catalyst 6500 MSFC3 Enterprise with SSH LAN only (spare)	c6msfc3-jk9s-mz.122-17a.SX.bin



Table 3 Software Versions and Ordering Information

Product ID	Description	Image
S6M3AK9-12217SX	Cisco Catalyst 6500 MSFC3 Enterprise with SSH	c6msfc3-jk9sv-mz.122-17a.SX.bin
S6M3AK9-12217SX=	Cisco Catalyst 6500 MSFC3 Enterprise with SSH (spare)	c6msfc3-jk9sv-mz.122-17a.SX.bin
S6M3ZLK9-12217SX	Cisco Catalyst 6500 MSFC3 IP with SSH LAN only	c6msfc3-pk9s-mz.122-17a.SX.bin
S6M3ZLK9-12217SX=	Cisco Catalyst 6500 MSFC3 IP with SSH LAN only (spare)	c6msfc3-pk9s-mz.122-17a.SX.bin
S6M3ZK9-12217SX	Cisco Catalyst 6500 MSFC3 IP with SSH	c6msfc3-pk9sv-mz.122-17a.SX.bin
S6M3ZK9-12217SX=	Cisco Catalyst 6500 MSFC3 IP with SSH (spare)	c6msfc3-pk9sv-mz.122-17a.SX.bin
S6M3ZL-12217SX	Cisco Catalyst 6500 MSFC3 IP LAN only	c6msfc3-ps-mz.122-17a.SX.bin
S6M3ZL-12217SX=	Cisco Catalyst 6500 MSFC3 IP LAN only (spare)	c6msfc3-ps-mz.122-17a.SX.bin
S6M3Z-12217SX	Cisco Catalyst 6500 MSFC3 IP	c6msfc3-psv-mz.122-17a.SX.bin
S6M3Z-12217SX=	Cisco Catalyst 6500 MSFC3 IP (spare)	c6msfc3-psv-mz.122-17a.SX.bin
S763AK9H-12217SX	Cisco 7600 Supervisor Engine 720 Enterprise Firewall with MPLS, IPv6, and SSH	s72033-jk9o3sv-mz.122-17.SX.bin
S763AK9H-12217SX=	Cisco 7600 Supervisor Engine 720 Enterprise Firewall with MPLS, IPv6, and SSH (spare)	s72033-jk9o3sv-mz.122-17.SX.bin
S763ZK9M-12217SX	Cisco 7600 Supervisor Engine 720 IP with MPLS, IPv6, SSH, and BGP	s72033-pk9sv-mz.122-17.SX.bin
S763ZK9M-12217SX=	Cisco 7600 Supervisor Engine 720 IP with MPLS, IPv6, SSH, and BGP (spare)	s72033-pk9sv-mz.122-17.SX.bin
S763ZK9-12217SX	Cisco 7600 Supervisor Engine 720 IP with SSH	s72033-pk9sv-mz.122-17.SX.bin
S763ZK9-12217SX=	Cisco 7600 Supervisor Engine 720 IP with SSH (spare)	s72033-pk9sv-mz.122-17.SX.bin
S763Z-12217SX	Cisco 7600 Supervisor Engine 720 IP	s72033-psv-mz.122-17.SX.bin
S763Z-12217SX=	Cisco 7600 Supervisor Engine 720 IP (spare)	s72033-psv-mz.122-17.SX.bin



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