

Cisco IOS Software Release 12.1(13)E3 for the Cisco Catalyst 6500 Series Switch and the Cisco 7600 Series Router

This publication contains information regarding Cisco IOS® Software Release 12.1(13)E3 for:

- The Cisco Catalyst® 6500 Series Switch and the Cisco 7600 Series Router running Cisco Catalyst 6500 Series Supervisor Engine 2 with MSFC2, or
- The Cisco Catalyst 6500 Series Switch running the Cisco Catalyst 6500 Series Supervisor Engine 1A with MSFC1 or MSFC2.

Note: For information about running Cisco Catalyst Operating System Software on the Cisco Supervisor Engine and Cisco IOS Software on the Multilayer Switch Feature Card (MSFC), see the release notes for Cisco IOS Software on the MSFC at: <http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/relnotes/index.htm>

Note: Optical Services Modules (OSMs) for the Cisco 7600 Series Router and the Cisco Catalyst 6500 Series Switch are supported with Cisco Catalyst 6500 Series Supervisor Engine 2 and the Multilayer Switch Feature Card 2 (MSFC2) only.

Note: Beginning with Cisco IOS Software Release 12.1(13)E, the Cisco Catalyst 6500 Series adds three new LAN-module-only feature sets: Service Provider LAN Only, Enterprise LAN Only, and Enterprise LAN Only with Secure Shell (SSH) Protocol and Triple Data Encryption Standard (3DES).

WAN interface modules for the Cisco Catalyst 6500 Series and the Cisco 7600 Series, including the FlexWAN Module and all OSMs, are not supported in these three new feature sets. Images supporting WAN interface modules are signified in the feature set description using the qualifier “with VIP” such as “Service Provider with VIP,” “IP/IPX with VIP,” or “Enterprise SSH 3DES with VIP.”

Information about new hardware and software feature support in Cisco IOS Software Release 12.1(13)E is available at:

http://www.cisco.com/en/US/customer/products/hw/switches/ps708/prod_bulletin09186a00801124a0.html

Hardware Support

Table 1 describes the new hardware support for Cisco IOS Software Release 12.1(13)E3.

Table 1 Cisco IOS Software Release 12.1(13)E3 New Hardware Support

Hardware	Description
Cisco 7609 chassis 7609-AC-BUN 7609-DC-BUN-2500W	<p>The enhanced Cisco 7609 chassis provides the design functions that service providers demand. Following are the features provided by this chassis:</p> <ul style="list-style-type: none"> • 21 RU (36.75 in.) up to 2 chassis per 7-foot rack • 9 vertically mounted line-card slots; up to eight interface slots (a Cisco Supervisor Engine occupies the ninth) • 1+1 route processor, switch fabric, and power supply protection capability • 1+1 tiered speed fan design (standard) • Cable management tray options for fiber and coaxial cable as well as dense 10/100 cable configurations • Single-side connection management for both interface and power terminations • Front-to-back airflow • Power supply: 4000W AC or 2500W DC (a 4000W DC and upgrade option will be available after general availability)
Enhanced -port Gigabit Ethernet WAN with two LAN ports OSM-2+4GE-WAN+	<p>The Enhanced Gigabit Ethernet OSM delivers the same port configuration and functionality as the original Cisco 7600 Series Gigabit Ethernet WAN OSM. In addition, the Enhanced Gigabit Ethernet OSM provides a higher level of performance and function, including the following additional capabilities:</p> <ul style="list-style-type: none"> • A four4-port Gigabit Ethernet WAN • 2 LAN Gigabit Ethernet GBIC interfaces per module • A minimum of 8000 queues with deeper per-queue buffering for traffic shaping for GE WAN ports • Increased maximum Multiprotocol Label Switching (MPLS) Layer 3 virtual private network (VPN) routing and forwarding (VRF) support to a maximum of 1023 VRFs per system • Weighted Random Early Detection (WRED) • Future support for Layer 2 Any Transport over MPLS (AToM) network aggregation features to support traditional Layer 2 services, including Virtual Private LAN Service (VPLS)
12-port channelized T-3 to DS-0 OSM OSM-12CT3/T1	<p>The channelized T-3 OSM can accept both clear-channel T-3 traffic and multiplexed circuits from T1/E1 and DS-0. With several combinations of features and performance, Cisco provides a versatile electrical interface for sophisticated network architectures. Service features include:</p> <ul style="list-style-type: none"> • MPLS and MPLS/VPN support • Quality of service (QoS)—Class-Based Weighted Fair Queuing (CBWFQ), Low Latency Queuing (LLQ), WRED, and traffic shaping • QoS queues—8000 queues per network processor with deeper per-queue buffering for traffic shaping • Increased maximum MPLS Layer 3 VRF support to a maximum of 1023 VRFs per system • Future support for Layer 2 AToM network aggregation features to support traditional Layer 2 services, including Frame Relay and Point-to-Point Protocol/High-Level Data Link Control (PPP/HDLC) over an MPLS core network • Upgradable programmed feature sets using the Cisco Parallel Express Forwarding (PXF) IP services processor • Automatic protection switching (APS) support—1+1 protection switching, improving reliability while providing additional protection against component and transport architecture • Encapsulations—PPP, Frame Relay, and HDLC • Channel support—Up to 1023 channels per line card with per-port selection of DS-3, nxDS-1/E1, or nxDS-0 • Multilink PPP (MLPPP)—Hardware-enabled MLPPP with up to 12 T1/E1 links per bundle and up to 168 bundles • Compatibility with either a Cisco 7600 Series or a Catalyst 6500 Series chassis (requires a supported Cisco Supervisor Engine)

Table 1 Cisco IOS Software Release 12.1(13)E3 New Hardware Support

Hardware	Description
One-port channelized OC-12/STM-4 to DS-0 OSM OSM-1CHOC12/T1	<p>The channelized OC-12/STM-4 OSM can accept both clear-channel OC-12/STM-4 traffic and multiplexed circuits from T1/E1 and DS-0. With a large combination of features and performance, Cisco provides a versatile optical interface for sophisticated network architectures and eliminates the need for patch panels, cabling of multiple electrical circuits, and an onsite fiber multiplexer. Service features include:</p> <ul style="list-style-type: none"> • 4 LAN GE GBIC interfaces per module • MPLS and MPLS/VPN support • QoS—CBWFQ, LLQ, WRED, and traffic shaping • QoS queues—8000 queues per network processor with deeper per-queue buffering for traffic shaping • Increased maximum MPLS Layer 3 VRF support to a maximum of 1023 VRFs per system • Future support for Layer 2 AToM network aggregation features to support traditional Layer 2 services, including Frame Relay and PPP/HDLC over an MPLS core network • UpgradeCatalyst, Cisco, Cisco Systems, Cisco IOS, and the Cisco Systems logo areable programmed feature sets using the Cisco PXF IP services processor • APS/MSP support—1+1 protection switching, improving reliability while providing additional protection against component and transport architecture • Encapsulations—PPP, Frame Relay, and HDLC • Channel support—Up to 1023 channels per module with available per-port mixtures of POS OC-3/STM1, DS-3/E3, nxDS-1/E1, or nxDS-0 • Hardware-enabled MLPPP with up to 12 T1/E1 links per bundle and up to 168 bundles • Compatibility with either a Cisco 7600 Series or a Cisco Catalyst 6500 Series chassis (requires a supported Cisco Supervisor Engine)
WAN support for the Cisco Catalyst 6500 Series Network Analysis Module-1 WS-SVC-NAM-1	<p>The high-performance, fabric-enabled network analysis module (NAM) for the Cisco Catalyst 6500 Series and Cisco 7600 Series is designed to meet diverse network analysis needs in a scalable switching environment running up to gigabit speeds. NAM-1 and NAM-2 are supported by Cisco NAM Software Version 2.2, which ships with the embedded, Web-based Cisco Traffic Analyzer, to provide full-scale remote monitoring (RMON) and troubleshooting capabilities.</p> <p>Cisco IOS Software Release 12.1(13)E3 provides NAM support for traffic traversing a WAN link using either an OSM or a FlexWAN module.</p>
WAN support for the Cisco Catalyst 6500 Series NAM-2 WS-SVC-NAM-2	<p>Similar to NAM-1, NAM-2 delivers a higher level of performance by virtue of a dual-processor architecture. NAM-2 also features an additional accelerator card to boost packet-processing performance.</p> <p>Cisco IOS Software Release 12.1(13)E3 provides NAM support for traffic traversing a WAN link via either an OSM or a FlexWAN module.</p>
WAN support for the Cisco Catalyst 6500 Series Firewall Services Module WS-SVC-FWM-1-K9	<p>The Cisco Firewall Services Module delivers 5 Gbps throughput and 100,000 connections per second, with integrated stateful inspection up to Layer 7. This extends security from the edge to internal networks, helping implement end-to-end security policies for the network.</p>
WAN support for the Cisco Catalyst 6500 Series Content Services Module WS-X6066-SLB-APC	<p>The Cisco Content Switching Module (CSM) for the Cisco Catalyst® 6500 and Cisco 7600 balances client traffic to farms of servers, firewalls, Secure Sockets Layer (SSL) devices, or virtual private network (VPN) termination devices.</p> <p>The Cisco CSM provides a high-performance, cost-effective load-balancing solution for enterprise and Internet service provider (ISP) networks. The Cisco CSM meets the demands of high-speed content delivery networks, tracking network sessions and server load conditions in real time and directing each session to the most appropriate server. Fault-tolerant Cisco CSM configurations maintain full state information and provide true hitless failover required for mission-critical functions.</p> <p>Cisco IOS Software Release 12.1(13)E3 provides firewall support for traffic traversing a WAN link via either an OSM or a FlexWAN module.</p>
WAN support for the Cisco Catalyst 6500 Series SSL Services Module WS-SVC-SSL-1-K9	<p>The Cisco Catalyst 6500 Series SSL Services Module provides 2500 connections per second and 300 Mbps Secure Sockets Layer (SSL) encryption and decryption security for secure processing of Web-based applications and e-commerce Web sites.</p> <p>Cisco IOS Software Release 12.1(13)E3 provides SSL support for traffic traversing a WAN link via either an OSM or a FlexWAN module.</p>

Other Hardware Supported

Cisco IOS Software Release 12.1(13)E3 supports all line cards and hardware previously supported by Cisco IOS Software on the Cisco Supervisor Engine 2 with MSFC2 for the Cisco Catalyst 6500 Series and Cisco 7600 Series, and Cisco Supervisor Engine 1A with MSFC or MSFC2 for the Cisco Catalyst 6500 Series.

Software Support

Table 2 describes the new software support for Cisco IOS Software Release 12.1(13)E3.

Table 2 Cisco IOS Software Release 12.1(13)E3 New Software Feature Support

Software Feature	Description
Switched virtual circuits (SVCs) on the 2-port OC-12/STM-4 ATM OSM	SVCs are dynamically created asynchronous transfer mode (ATM) connections. This implementation supports up to 100 SVCs per OSM, adding to the currently available 500 permanent virtual circuits (PVCs) per port or 1000 PVCs per OSM.

Orderable Software Images

Tables 3, 4, and 5 list product numbers and applicable ordering information for Cisco IOS Software Release 12.1(13)E3. Feature sets for Cisco Supervisor Engine 2 with MSFC2 for the Cisco Catalyst 6500 Series and Cisco 7600 Series and Cisco Supervisor Engine 1A with MSFC or MSFC2 for the Cisco Catalyst 6500 Series are listed below. Cisco IOS Software runs on the Distributed Forwarding Card (DFC) to provide distributed Cisco Express Forwarding support. This image is bundled as part of the Cisco Catalyst 6000 [6500?] Series and Cisco 7600 Series Supervisor Engine 2/MSFC2 Cisco IOS image and is not released separately.

Caution: Always back up the switch configuration file to a Trivial File Transfer Protocol (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 Cisco Supervisor Engine 2 with MSFC2 Software Images and Ordering Information

Product Number	Description	Image
S6S22AV-12113E	Cisco Catalyst 6500 Series and Cisco 7600 Series Supervisor Engine 2/MSFC2 Cisco IOS Software Release 12.1(13)E3 for Enterprise with Versatile Interface Processor (VIP)	c6sup22-jsv-mz.121-13.E3
S6S22AV-12113E=	As above, spare; requires appropriate feature license	
S6S22ALV-12113E	Cisco Catalyst 6500 Series and Cisco 7600 Series Supervisor Engine 2/MSFC2 Cisco IOS Software Release 12.1(13)E3 for Enterprise LAN Only	c6sup22-js-mz.121-13.E3
S6S22ALV-12113E=	As above, spare; requires appropriate feature license	
S6S22AK2-12113E	Cisco Catalyst 6500 Series and Cisco 7600 Series Supervisor Engine 2/MSFC2 Cisco IOS Software Release 12.1(13)E3 for Enterprise with VIP and 3DES	c6sup22-jk2sv-mz.121-13.E3
S6S22AK2-12113E=	As above, spare; requires appropriate feature license	
S6S22ALK2-12113E	Cisco Catalyst 6500 Series and Cisco 7600 Series Supervisor Engine 2/MSFC2 Cisco IOS Software Release 12.1(13)E3 for Enterprise LAN Only with 3DES	c6sup22-jk2s-mz.121-13.E3
S6S22ALK2-12113E=	As above, spare; requires appropriate feature license	
S6S22AK2H-12113E	Cisco Catalyst 6500 Series and Cisco 7600 Series Supervisor Engine 2/MSFC2 Cisco IOS Software Release 12.1(13)E3 for Enterprise with Firewall, VIP, and 3DES	c6sup22-jk2o3sv-mz.121-13.E3
S6S22AK2H-12113E=	As above, spare; requires appropriate feature license	
S6S22ZV-12113E	Cisco Catalyst 6500 Series and Cisco 7600 Series Supervisor Engine 2/MSFC2 Cisco IOS Software Release 12.1(13)E3 for Service Provider with VIP	c6sup22-psv-mz.121-13.E3
S6S22ZV-12113E=	As above, spare; requires appropriate feature license	

Table 3 Cisco Supervisor Engine 2 with MSFC2 Software Images and Ordering Information

Product Number	Description	Image
S6S22ZLV-12113E	Cisco Catalyst 6500 Series and Cisco 7600 Series Supervisor Engine 2/MSFC2 Cisco IOS Software Release 12.1(13)E3 for Service Provider LAN Only	c6sup22-ps-mz.121-13.E3
S6S22ZLV-12113E=	As above, spare; requires appropriate feature license	
S6S22ZK2-12113E	Cisco Catalyst 6500 Series and Cisco 7600 Series Supervisor Engine 2/MSFC2 Cisco IOS Software Release 12.1(13)E3 for Service Provider with VIP, SSH, and 3DES	c6sup22-pk2sv-mz.121-13.E3
S6S22ZK2-12113E=	As above, spare; requires appropriate feature license	
S6S22ZVH-12113E	Cisco Catalyst 6500 Series and Cisco 7600 Series Supervisor Engine 2/MSFC2 Cisco IOS Software Release 12.1(13)E3 for Service Provider with Firewall and VIP	c6sup22-po3sv-mz.121-13.E3
S6S22ZVH-12113E=	As above, spare; requires appropriate feature license	
S6S22ZK2H-12113E	Cisco Catalyst 6500 Series and Cisco 7600 Series Supervisor Engine 2/MSFC2 Cisco IOS Software Release 12.1(13)E3 for Service Provider with Firewall, VIP, and 3DES	c6sup22-pk2o3sv-mz.121-13.E3
S6S22ZK2H-12113E=	As above, spare; requires appropriate feature license	

Table 4 Cisco Supervisor Engine 1A with MSFC2 Software Images and Ordering Information

Product Number	Description	Image
S6S12AV-12113E	Cisco Catalyst 6500 Series Supervisor 1/MSFC2 Cisco IOS Software Release 12.1(13)E3 for Enterprise with VIP	c6sup12-jsv-mz.121-13.E3
S6S12AV-12113E=	As above, spare; requires appropriate feature license	
S6S12ALV-12113E	Cisco Catalyst 6500 Series Supervisor 1/MSFC2 Cisco IOS Software Release 12.1(13)E3 for Enterprise LAN Only	c6sup12-js-mz.121-13.E3
S6S12ALV-12113E=	As above, spare; requires appropriate feature license	
S6S12AK2-12113E	Cisco Catalyst 6500 Series Supervisor 1/MSFC2 Cisco IOS Software Release 12.1(13)E3 for Enterprise with VIP, SSH, and 3DES	c6sup12-jk2sv-mz.121-13.E3
S6S12AK2-12113E=	As above, spare; requires appropriate feature license	
S6S12ALK2-12113E	Cisco Catalyst 6500 Series Supervisor 1/MSFC2 Cisco IOS Software Release 12.1(13)E3 for SSH and 3DES LAN Only	c6sup12-jk2s-mz.121-13.E3
S6S12ALK2-12113E=	As above, spare; requires appropriate feature license	
S6S12AVH-12113E	Cisco Catalyst 6500 Series Supervisor 1/MSFC2 Cisco IOS Software Release 12.1(13)E3 for Enterprise with Firewall and VIP	c6sup12-jo3sv-mz.121-13.E3
S6S12AVH-12113E=	As above, spare; requires appropriate feature license	
S6S12AK2H-12113E	Cisco Catalyst 6500 Series Supervisor 1/MSFC2 Cisco IOS Software Release 12.1(13)E3 for Enterprise with Firewall, VIP, and 3DES	c6sup12-jk2o3sv-mz.121-13.E3
S6S12AK2H-12113E=	As above, spare; requires appropriate feature license	
S6S12BV-12113E	Cisco Catalyst 6500 Series Supervisor 1/MSFC2 Cisco IOS Software Release 12.1(13)E3 for Desktop with VIP	c6sup12-dsv-mz.121-13.E3
S6S12BV-12113E=	As above, spare; requires appropriate feature license	
S6S12DV-12113E	Cisco Catalyst 6500 Series Supervisor 1/MSFC2 Cisco IOS Software Release 12.1(13)E3 for IP/Internetwork Packet Exchange (IPX) with VIP	c6sup12-dsv-mz.121-13.E3
S6S12DV-12113E=	As above, spare; requires appropriate feature license	

Table 4 Cisco Supervisor Engine 1A with MSFC2 Software Images and Ordering Information

Product Number	Description	Image
S6S12ZV-12113E	Cisco Catalyst 6500 Series Supervisor 1/MSFC2 Cisco IOS Software Release 12.1(13)E3 for Service Provider with VIP	c6sup12-psv-mz.121-13.E3
S6S12ZV-12113E=	As above, spare; requires appropriate feature license	
S6S12ZLV-12113E	Cisco Catalyst 6500 Series Supervisor 1/MSFC2 Cisco IOS Software Release 12.1(13)E3 for Service Provider LAN Only	c6sup12-ps-mz.121-13.E3
S6S12ZLV-12113E=	As above, spare; requires appropriate feature license	
S6S12ZK2-12113E	Cisco Catalyst 6500 Series Supervisor 1/MSFC2 Cisco IOS Software Release 12.1(13)E3 for Service Provider with VIP, SSH, and 3DES	c6sup12-pk2sv-mz.121-13.E3
S6S12ZK2-12113E=	As above, spare; requires appropriate feature license	
S6S12ZVH-12113E	Cisco Catalyst 6500 Series Supervisor 1/MSFC2 Cisco IOS Software Release 12.1(13)E3 for Service Provider with Firewall and VIP	c6sup12-po3sv-mz.121-13.E3
S6S12ZVH-12113E=	As above, spare; requires appropriate feature license	
S6S12ZK2H-12113E	Cisco Catalyst 6500 Series Supervisor Engine 1/MSFC2 Cisco IOS Software Release 12.1(13)E3 for Service Provider with Firewall, VIP, and 3DES	c6sup12-pk2o3sv-mz.121-13.E3
S6S12ZK2H-12113E=	As above, spare; requires appropriate feature license	

Table 5 Table 5: Cisco Supervisor Engine 1A with MSFC1 Software Images and Ordering Information

Product Number	Description	Image
S6S11AV-12113E	Cisco Catalyst 6500 Series Supervisor Engine 1/MSFC Cisco IOS Software Release 12.1(13)E3 for Enterprise with VIP	c6sup11-jsv-mz.121-13.E3
S6S11AV-12113E=	As above, spare; requires appropriate feature license	
S6S11ALV-12113E	Cisco Catalyst 6500 Series Supervisor Engine 1/MSFC Cisco IOS Software Release 12.1(13)E3 for Enterprise LAN Only	c6sup11-js-mz.121-13.E3
S6S11ALV-12113E=	As above, spare; requires appropriate feature license	
S6S11AK2-12113E	Cisco Catalyst 6500 Series Supervisor Engine 1/MSFC Cisco IOS Software Release 12.1(13)E3 for Enterprise with VIP, SSH, and 3DES	c6sup11-jk2sv-mz.121-13.E3
S6S11AK2-12113E=	As above, spare; requires appropriate feature license	
S6S11ALK2-12113E	Cisco Catalyst 6500 Series Supervisor Engine 1/MSFC Cisco IOS Software Release 12.1(13)E3 for Enterprise, SSH, and 3DES LAN Only	c6sup11-jk2s-mz.121-13.E3
S6S11ALK2-12113E=	As above, spare; requires appropriate feature license	
S6S11BV-12113E	Cisco Catalyst 6500 Series Supervisor Engine 1/MSFC Cisco IOS Software Release 12.1(13)E3 for Desktop with VIP	c6sup11-dsv-mz.121-13.E3
S6S11BV-12113E=	As above, spare; requires appropriate feature license	
S6S11DV-12113E	Cisco Catalyst 6500 Series Supervisor Engine 1/MSFC Cisco IOS Software Release 12.1(13)E3 for IP/IPX with VIP	c6sup11-dsv-mz.121-13.E3
S6S11DV-12113E=	As above, spare; requires appropriate feature license	
S6S11ZV-12113E	Cisco Catalyst 6500 Series Supervisor Engine 1/MSFC Cisco IOS Software Release 12.1(13)E3 for Service Provider with VIP	c6sup11-psv-mz.121-13.E3
S6S11ZV-12113E=	As above, spare; requires appropriate feature license	
S6S11ZLV-12113E	Cisco Catalyst 6500 Series Supervisor Engine 1/MSFC Cisco IOS Software Release for 12.1(13)E3 for Service Provider LAN Only	c6sup11-ps-mz.121-13.E3

Table 5 Table 5: Cisco Supervisor Engine 1A with MSFC1 Software Images and Ordering Information

Product Number	Description	Image
S6S11ZLV-12113E=	As above, spare; requires appropriate feature license	
S6S11ZK2-12113E	Cisco Catalyst 6500 Series Supervisor Engine 1/MSFC Cisco IOS Software Release 12.1(13)E3 for Service Provider with VIP, SSH, and 3DES	c6sup11-pk2sv-mz.121-13.E3
S6S11ZK2-12113E=	As above, spare; requires appropriate feature license	

Additional Information

More information about Cisco IOS Software Release 12.1(13)E3 is available in the Cisco Catalyst 6500 Series and Cisco 7600 Series release notes, available at:

http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/12_1e/ol_2310.htm

Cisco Catalyst 6500 Series documentation is available at:

<http://www.cisco.com/en/US/partner/products/hw/switches/ps708/index.html>

and

<http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/>

Cisco 7600 Series Router documentation is available at:

<http://www.cisco.com/en/US/partner/products/hw/routers/ps368/index.html>

and

<http://www.cisco.com/univercd/cc/td/doc/product/core/cis7600/index.htm>



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