Cisco ME 6524 Ethernet Switch

Product Overview

Q. What is the Cisco® ME 6524 Ethernet Switch?

A. The Cisco ME 6524 is a next-generation, fixed-configuration switch built for service providers' Carrier Ethernet and broadband aggregation networks. The Cisco ME 6524, equipped with the Policy Feature Card 3C (PFC3C) and Multilayer Switch Feature Card 2A (MSFC2A), extends the Cisco Catalyst® 6500 Series innovations to the service provider access network. Based on the industry-leading Cisco Catalyst 6500 Series Supervisor Engine 32 and Supervisor Engine 720 technology, the Cisco ME 6524 is a space- and power-optimized Ethernet access switch that cost-effectively enables hardware-based triple-play and VPN services for Ethernet-to-the-Home (EttH), Ethernet-to-the-Business (EttB), and DSLAM aggregation networks. The Cisco ME 6524 provides scalable and service-rich Gigabit Ethernet aggregation for fiber and copper deployments.

The Cisco ME 6524 is available in two models:

- 24 Gigabit Ethernet Small Form-Factor Pluggable (SFP) downlinks and 8 Gigabit Ethernet SFP uplinks
- 24 Ethernet 10/100/1000 downlinks and 8 Gigabit Ethernet SFP uplinks

Q. How does the Cisco ME 6524 help enable triple-play applications?

A. The Cisco ME 6524 helps optimize delivery of triple-play services by offering high-performance Layer 2 switching and IP routing, hardware-accelerated multicast applications and multicast control for video distribution, and advanced quality of service (QoS) techniques and traffic control schemes which allow the integration and the proper prioritization of data, voice, and video on the same platform.

Q. How does the Cisco ME 6524 enable VPN services?

A. The Cisco ME 6524 supports concurrent Layer 2 and Layer 3 VPN services by supporting IEEE 802.1Q Tunneling and Layer 2 Protocol Tunneling (L2PT) to create Layer 2 tunnels across the service provider networks. Furthermore, the Cisco ME 6524 is capable of supporting Ethernet-over-MPLS tunnels and Multiprotocol Label Switching (MPLS) VPNs by configuring hardware-enabled MPLS technologies. Traffic segregation across VPNs is enforced by a robust security solution which isolates subscribers and protects the switch and network resources.

Q. Is the Cisco ME 6524 compliant with MEF9 certification?

A. Yes, the Cisco ME 6524 is compliant with the Metro Ethernet Forum (MEF) Carrier Ethernet service definitions specified in the MEF9 certification. MEF9 defines the test suite for conformance of Ethernet services and equipment when deployed at the User-to-Network Interface (UNI).

Q. Is the Cisco ME 6524 compliant with MEF14 certification?

A. Yes, the Cisco ME 6524 is compliant with the MEF Carrier Ethernet service definitions specified in the MEF14 certification. MEF14 defines the requirements and corresponding test procedures for service performance and bandwidth profile service attributes that may be specified as part of a service level specification (SLS) for an Ethernet service. It provides the standard to enforce Carrier Ethernet that delivers residential triple play data/voice/video services.

Q. How does the Cisco ME 6524 compare with the Supervisor Engine 32, Supervisor Engine 720, and Virtual Switching Supervisor Engine 720-10G?

A. The Cisco ME 6524 offers the same forwarding-engine functionality as the PFC3 technology of the Supervisor Engine 32, Supervisor Engine 720, and Virtual Switching Supervisor Engine 720-10G, but with price and performance targeted at the service provider access and aggregation network. The feature and architecture consistency within the Cisco Catalyst 6500 Series allows customers to deploy and use their services consistently throughout their networks with the Cisco ME 6524, along with the Supervisor Engine 32 at the edge, Supervisor Engine 720 and Virtual Switching Supervisor Engine 720-10G in the aggregation layer, and a distributed forwarding Supervisor Engine 720 and Virtual Switching Supervisor Engine 720-10G in the core edge.

Q. What are the backplane and forwarding speeds for the Cisco ME 6524?

A. The Cisco ME 6524 offers 32-Gbps switching capacity and a forwarding performance of 15 million packets per second (Mpps).

Q. Does the Cisco ME 6524 support Cisco IOS Software Modularity images?

A. Yes. As of the 12.2(33)SXH release, the Cisco ME 6524 offers the Cisco IOS Software Modularity images. Software Modularity images exist in the same feature sets as Cisco IOS native images and offer full feature parity. Software Modularity images require a minimum of 512 MB DRAM on the switch processor. See Table 1.

Table 1. Cisco IOS Software Release 12.2(18)ZU Feature Sets

Software Release	Description
S523IBL-12233SXH	Cisco ME 6524 IOS IP BASE LAN only
S523IBK9L-12233SXH	Cisco ME 6524 IOS IP BASE SSH LAN only
S523AIK9L-12233SXH	Cisco ME 6524 IOS Advanced IP Services

The Cisco ME 6524 IOS IP Base software image includes Layer 2, RIP, and EIGRP stub. The Cisco ME 6524 IOS Advanced IP Services images will include IPv4, IPv6, and MPLS feature sets. The Cisco ME 6524 is not planned to be supported in the Cisco Catalyst OS.

Q. What optics are supported on the Cisco ME 6524 interfaces?

The Cisco ME 6524 supports a variety of 100-Mbps and 1000-Mbps transceivers. Please refer to the transceiver support section in the release notes for a complete listing of supported pluggable transceivers:

www.cisco.com/en/US/docs/switches/lan/catalyst6500/ios/12.2SX/release/notes/ol_14271.html

Q. Will the USB ports be operational in the first software release?

A. No, the USB ports are planned to be enabled in a future release.

Q. How much DRAM comes by default on Cisco ME 6524?

A. 256 MB of DRAM comes by default on the switch processor of the Cisco ME 6524 and it is field-upgradeable to 512 MB or 1 GB. The router processor of the Cisco ME 6524 comes by default with 512 MB DRAM, field-upgradeable to 1 GB. Software Modularity images require a minimum of 512 MB DRAM on the switch processor.

Q. What is the size of the Cisco ME 6524 boot flash memory?

A. 128 MB boot flash memory is available on the Cisco ME 6524 switch processor. The size of the boot flash on the Cisco ME 6524 router processor is 64 MB. Both of them are not field upgradeable.

Q. Does the Cisco ME 6524 support compact flash removable storage?

A. Yes. The default configuration of the ME 6524 includes a single external 512-MB compact flash drive (free of charge), which is a prerequisite to install Cisco IOS Software Modularity images. If the Cisco ME 6524 runs Cisco IOS Software Modularity images without installing them, the external compact flash drive is not required. However, because patching can only be achieved with an installed Cisco IOS Software Modularity image, it is recommended to install the image, and hence the 512-MB compact drive is required. The Cisco ME 6524 is also capable of supporting a single 1-GB compact flash.

Q. Which power supplies are supported on the Cisco ME 6524?

A. The Cisco ME 6524 offers a 400W DC as well as 400W AC power supply

Q. Does the IP Solution Center (ISC) service provisioning platform support the Cisco ME 6524?

A. The ISC 4.1.2 and subsequent releases support the Cisco ME 6524.

Q. Does Cisco Active Network Abstraction (ANA) support the Cisco ME 6524?

A. Yes, Cisco ANA 3.6.0 supports the Cisco ME 6524.

Q. Does Cisco LAN Management Solution (LMS) support the Cisco ME 6524?

A. Yes. The following LMS releases added the support for the ME 6524:

- Campus Manager – releases 4.0.5, 4.0.9, 5.0, and 5.1
- Resource Manager Essentials (RME) – 4.0.4, 4.0.5, and 4.1.0
- Device Fault Manager (DFM) – 2.0.5, 2.0.9, and 3.0.1

Technology Overview

Q. What PFC3C features does the Cisco ME 6524 support?

A. The ME 6524 supports in hardware all the features listed in Table 2.

Table 2. Supported Features

Feature	Support
IPv4	Yes
PIM SM and SSM	Yes
PIM Snooping	Yes
Bidirectional PIM	Yes
IGMPv3	Yes
Control Plane Rate Limiters	Yes
NetFlow	Yes
MPLS	Yes

Feature	Support
IPv6	Yes
NAT/PAT	Yes
GRE Tunneling	Yes

Q. Which high-availability features are supported on the Cisco ME 6524?

A. Being a fixed-configuration platform, the high-availability protocols for redundant supervisor configurations, such as Stateful Switchover (SSO) and Route Processor Redundancy (RPR) and RPR+, are not applicable to the Cisco ME 6524. The support for Software Modularity ensures maximum high availability by offering memory protection, fault containment, stateful process restart, and subsystem In Service Software Upgrade (ISSU), all key benefits necessary for Carrier Ethernet deployments. The fact that the routing process can be restarted without affecting data plane forwarding, Nonstop Forwarding (NSF) capability (in context of BGP also known as Graceful Restart) is supported. Robust reliability and redundancy feature sets allow Layer 2 and Layer 3 fast network convergence; key features are IEEE 802.1w Rapid Spanning Tree, IEEE 802.1s Multiple Spanning Tree, Flexlink, IEEE 802.3ad Link Aggregation, Hot Standby Router Protocol (HSRP), Gateway Load Balancing Protocol (GLBP), Virtual Router Redundancy Protocol (VRRP), Bidirectional Forwarding Detection (BFD) for Open Shortest Path First (OSPF), Intermediate System-to-Intermediate System (IS-IS), and Border Gateway Protocol (BGP). The Cisco ME 6524 is equipped with dual field-replaceable and hot-swappable redundant DC or AC power supplies, and a field-replaceable and hot-swappable fan unit.

Q. Does the Cisco ME 6524 support Ethernet Operations, Administration, and Maintenance (E-OAM) protocols?

A. Yes. Starting from 12.2(33)SXH, the Cisco ME 6524 supports the IEEE 802.1ag and IEEE 802.3ah E-OAM protocols. The 802.1ag Connectivity Fault Management (CFM) provides end-to-end per service (VLAN or Ethernet Virtual Circuit) connectivity management and fault isolation. 802.3ah Ethernet Link OAM operates on point-to-point and offers OAM discovery, link monitoring, and remote failure indication. IEEE 802.1ag and 802.3ah on the Cisco ME 6524 complement the E-OAM protocols offered by the Cisco Catalyst 6500 Series, thus providing an end-to-end management and monitoring solution for Carrier Ethernet services.

Q. What security features are available on the Cisco ME 6524?

A. The Cisco ME 6524 offers a comprehensive security solution for Ethernet access switches. By providing multiple levels of security – subscriber security, switch security, and network security – the Cisco ME 6524 delivers a highly secure solution at the access layer. Subscribers' data is protected through features such as private VLAN and Private Host for traffic isolation across different users, and DHCP Snooping and Dynamic ARP Inspection for subscribers' identification. IP Source Guard helps mitigating IP spoofing attacks at the edge of the Carrier Ethernet networks. In order to protect the switch from external attacks, CPU hardware rate limiters, Control Plane Policing, and Storm Control help prevent CPU denial-of-service (DoS) attacks. Port security and per-VLAN MAC limiting protect the MAC table from being overwhelmed by a MAC storm attack. Features such as hardware VLAN-based and port-based access lists, and IEEE 802.1x safeguard network security by allowing only authorized traffic to enter the network.

Q. Which multicast protocols are supported on the Cisco ME 6524?

A. The Cisco ME 6524 offers a robust multicast solution to enable triple-play services. The PFC3C offers scalable support for multicast applications with protocols such as Internet Group Management Protocol version 3 (IGMPv3), Protocol Independent Multicast (PIM), PIM Sparse Mode (PIM SM), PIM Source Specific Multicast (PIM SSM), and PIM Snooping, which optimize triple-play and video delivery at the network edge.

Q. What type of congestion-avoidance mechanism is supported on Cisco ME 6524 interfaces?

A. The Cisco ME 6524 downlink interfaces support Deficit Weighted Round Robin (DWRR) and Weighted Random Early Detection (WRED), while the uplinks support DWRR and a Shaped Round Robin (SRR) scheduling mechanism to provide smoother traffic scheduling and intelligent servicing of the queues.

Q. Is Multiprotocol Label Switching (MPLS) supported on the Cisco ME 6524?

A. Yes. The Cisco ME 6524 supports hardware-accelerated MPLS, Ethernet over MPLS ("Martini tunnels"), and Multicast VPN. Features such as MPLS Traffic Engineering and Fast Reroute (FRR) optimize the network convergence time, allowing fast path switchover and tunnel protection.

Q. Does the Cisco ME 6524 support an H-VPLS architecture?

A. Yes. The Cisco ME 6524 is hardware-ready for Ethernet over MPLS in hardware; therefore, it can act as a service provider access device (spoke) in an H-VPLS architecture.

For More Information

For more information about the Cisco ME 6524, refer to the product data sheets at: www.cisco.com/en/US/products/ps6845/products_data_sheets_list.html.

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