

## Cisco ME 6500 Series Ethernet Switch

The Cisco® ME 6500 Series Ethernet Switch is a next-generation, fixed-configuration switch built around the requirements of next-generation Carrier Ethernet networks. Based on ground-breaking and industry-leading Cisco Catalyst® 6500 technology, the Cisco ME 6500 Series cost-effectively delivers on the stringent performance, reliability, and QoS requirements of triple-play services, as well as VPN services for Ethernet-to-the-Home (ETTH), Ethernet-to-the-Business (ETTB), and DSLAM Aggregation deployments in a space- and power-optimized 1.5, RU package. The Cisco ME 6500 Series completes the Cisco industry-leading Carrier Ethernet solution portfolio by extending the most advanced MPLS, QoS, multicast, and IPv6 features into Ethernet access and aggregation networks, enabling scalable and service-rich Gigabit Ethernet access for both fiber and copper deployments.

### Product Overview

The Cisco ME 6500 Series Ethernet Switch is a high-performance, fully featured, and resilient Ethernet switch. Equipped standard with the Policy Feature Card 3C (PFC3C) and Multilayer Switch Feature Card 2A (MSFC2A), the Cisco ME 6500 Series facilitates the delivery of profitable Metro Ethernet and triple-play services by providing capabilities suitable for service providers' Carrier Ethernet access and broadband aggregation networks.

The Cisco ME 6524 Ethernet Switch is the first available product of the Cisco ME 6500 Series.

The Cisco ME 6524 is available in two configurations:

- 24 Gigabit Ethernet Small Form-Factor Pluggable (SFP) downlinks and 8 Gigabit Ethernet SFP uplinks, with redundant DC power supplies (product ID ME-C6524GS-8S Figure 1).

**Figure 1.** Cisco ME 6524 with 24 Gigabit Ethernet SFP Downlinks



- 24 Ethernet 10/100/1000 downlinks and 8 Gigabit Ethernet SFP uplinks, with redundant DC power supplies (product ID ME-C6524GT-8S Figure 2).

**Figure 2.** Cisco ME 6524 with 24 Ethernet 10/100/1000 Downlinks



The Cisco ME 6524 Ethernet Switch is shipped with the IP Base Software image. The image includes the Layer 2 feature set, RIP, and EIGRP stub.

For greater service breadth and network flexibility, the Cisco ME 6524 Ethernet Switch offers the IP Services license that provides IPv4 feature set, and the Advanced IP Services Software license that provides Multiprotocol Label Switching (MPLS) and IPv6 functionality.

The Cisco ME 6524 offers:

- Optimal Gigabit Ethernet density—With up to 32 Gigabit Ethernet ports, all fiber-based, the Cisco ME 6524 can aggregate fiber-to-the-x (FTTx) customers who require Gigabit Ethernet connectivity. The uplink interfaces offer flexible connectivity options by accommodating a broad range of SFP optics, including coarse wavelength-division multiplexing (CWDM) and dense wavelength-division multiplexing (DWDM) optics.
- Flexible Metro Ethernet deployment options—The switch features highly scalable Layer 2 services with features such as intelligent 802.1Q tunneling, Layer 2 Protocol Tunneling, and VLAN Translation. The PFC3C daughter card enables in-hardware MPLS technologies for MPLS VPNs, Ethernet over MPLS (EoMPLS), and Hierarchical Virtual Private LAN Services (H-VPLSs). For service providers facing an increasing demand for IP address space, hardware-enabled IPv6 protocols provide a scalable and high-performing end-to-end IP service delivery.
- Flexible Metro Ethernet deployment options—The switch features highly scalable Layer 2 services with features such as intelligent 802.1Q tunneling, Layer 2 Protocol Tunneling, and VLAN Translation. The PFC3C daughter card enables in hardware MPLS technologies for MPLS VPNs, Ethernet over MPLS (EoMPLS), and Hierarchical Virtual Private LAN Services (H-VPLS). For service providers facing an increasing demand for IP address space, hardware-enabled IPv6 protocols provide a scalable and high-performing end-to-end IP service delivery.
- Optimal Performance and Scalability—The ME 6524 offers high performance CPU for Layer 2 and Layer 3 protocols convergence and stability. The switch features scalable Layer 2 switching, IP routing and MPLS functionalities in hardware without performance impact.
- Increased service availability—The Cisco ME 6524 helps ensure service and network uptime with its support of Cisco EtherChannel<sup>®</sup> protocols, rapid convergence protocols such as IEEE 802.1w/802.1s and Flexlink, and gateway load-balancing protocols. In order to minimize service outage due to a power supply failure, the Cisco ME 6524 can be configured with redundant DC power supplies that are field-replaceable and hot-swappable.
- Industry-leading integrated security—The Cisco ME 6524 offers a comprehensive set of security features to mitigate denial-of-service (DoS) attacks, to restrict the access to the service-provider network, and to safeguard subscribers' and network resources. Port-based and VLAN-based access control lists (ACLs) restrict the unwanted traffic based on traffic and users; CPU rate limiters and control plane policing (CoPP) limit the amount of traffic that enters the network; Port Security limits the number of MAC addresses that can be learned; DHCP Snooping and dynamic ARP inspection prevent threats from the DHCP server, default gateways, or address spoofing attacks. These integrated security features are hardware-enabled so they can be enabled concurrently without jeopardizing the system performance as the traffic level increases.

## Applications

The Cisco ME 6524 helps enable Carrier Ethernet service providers to offer hardware-accelerated VPN services for ETTB, ETTH, and DSLAM aggregation deployments.

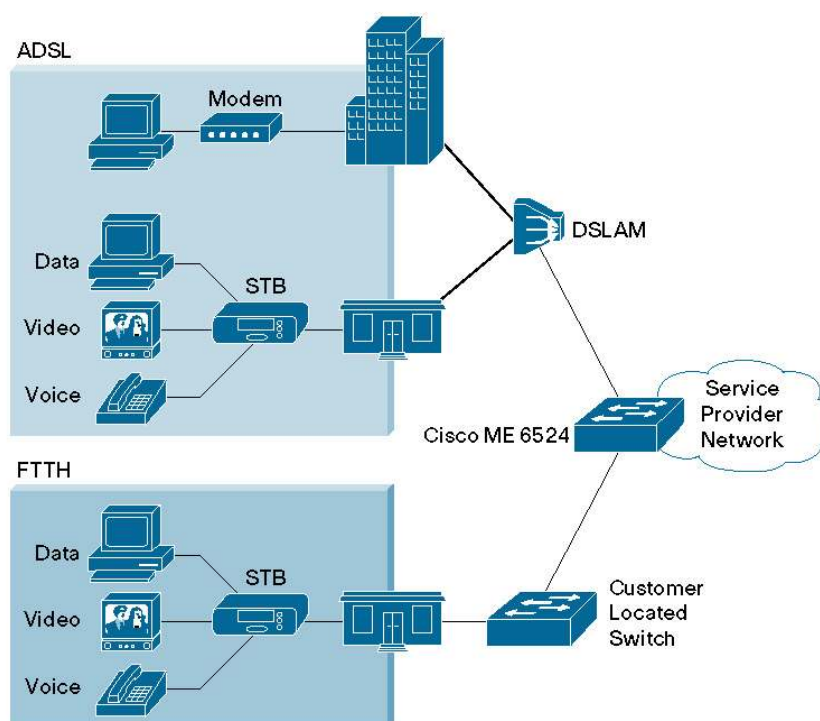
### Triple-Play Services

By using the same network infrastructure to offer data, voice, and video, service providers can reduce their operating expenses (OpEx) while increasing their revenue sources.

Key service enablers for triple-play delivery on the Cisco ME 6524 are multicast protocols for intelligent video distribution, security features to isolate subscriber traffic streams and to protect against malicious user attacks, and QoS features to concurrently support multiple classes of service and prioritize traffic that is sensitive to drops, delays, and jitter.

The Cisco ME 6524 is designed to enable triple-play services with either DSL or Ethernet in the first mile, and with an underlying architecture based on Layer 2, IPv4, IPv6, or MPLS. See Figure 3.

**Figure 3.** Cisco ME 6524 Delivers Triple-Play Services



### Layer 2 and Layer 3 VPNs

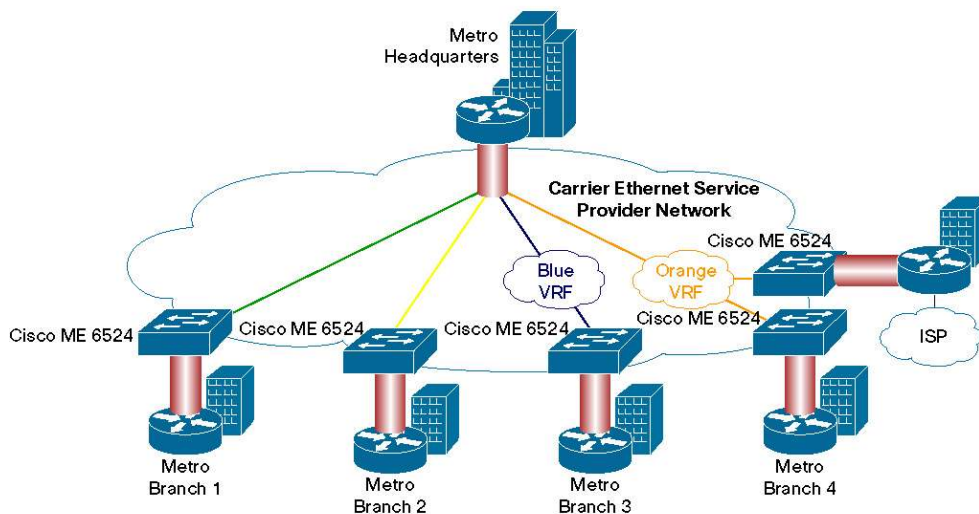
Layer 2 and Layer 3 VPNs have been widely deployed by service providers since the beginning of Metro Ethernet service adoption. VPNs are well suited for ETTB/FTTB applications such as interbranch connectivity, Internet access, intranets, and extranets.

Layer 2 VPNs can be delivered over a pure Layer 2 infrastructure. By enabling features as 802.1Q tunneling, Layer 2 Protocol Tunneling (L2PT), and VLAN translation, the Cisco ME 6524 allows the Carrier Ethernet service provider to segment and transparently transport the subscribers' traffic.

Alternatively, Layer 2 VPNs can be offered through Ethernet over MPLS. This technology provides a Layer 2 tunneling mechanism over a Layer 3 MPLS network, thus using the Layer 3 network convergence protocols without the need for Spanning Tree Protocol.

Layer 3 VPNs, often referred to as MPLS VPNs, are multipoint Layer 3 services (see Figure 4). The PFC3C complex on the Cisco ME 6524 enables MPLS in hardware and provides QoS and resiliency capabilities such as MPLS Experimental (MPLS EXP) bit marking, MPLS Traffic Engineering (MPLS TE), and MPLS Fast Reroute (MPLS FRR).

**Figure 4.** Cisco ME 6524 Supports Layer 2 and Layer 3 VPNs



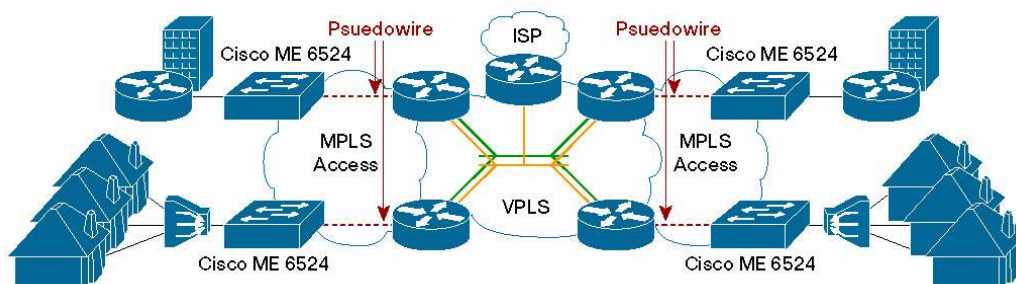
### H-VPLS Architecture

H-VPLS is an alternative mechanism to provide Layer 2 VPNs services (see Figure 5). By building two- or three-tiered hierarchical networks, H-VPLS improves the scalability of multipoint VPLS. H-VPLS features two deployment options:

- MPLS access network—The Ethernet over MPLS (EoMPLS) tunnels configured on the Cisco ME 6524 are terminated in VPLS instances at the core edge of the network
- Layer 2 access network—The Cisco ME 6524 configures VLAN-based services which are terminated in VPLS instances at the core edge of the network.

Key features on the Cisco ME 6524 for H-VPLS deployments are EoMPLS VC Type 4 or VC Type 5, Traffic Engineering (TE) for Open Shortest Path First (OSPF) and Intermediate System-to-Intermediate System (IS-IS), Guaranteed Bandwidth Traffic-Engineered tunnels, and MPLS FRR.

**Figure 5.** Cisco ME 6524 in an H-VPLS Architecture



## Key Features and Benefits

Table 1 describes the features and benefits of the Cisco ME 6524, and Table 2 provides information about its scalability.

**Table 1.** Cisco ME 6524 Features and Benefits

Features	Benefits
<b>Layer 2 Switching</b>	
<b>IEEE 802.1Q</b> <b>802.1Q Tunneling</b> <b>Layer 2 Protocol Tunneling (L2PT)</b> <b>VLAN Translation</b>	802.1Q and L2PT are the service enablers to offer Layer 2 VPNs. By encapsulating subscribers' data frames in a service provider 802.1Q tag and by tunneling subscribers' PDU, 802.1Q tunneling offers Transparent LAN Services (TLS) to scale the number of Metro Ethernet subscribers beyond the 4096 VLAN boundary.  VLAN Translation increases the flexibility of single tagged 802.1Q service by decoupling subscribers' and service provider's VLAN IDs.
<b>IEEE 802.1D</b> <b>IEEE 802.1w</b> <b>IEEE 802.1s</b> <b>Flexlink</b> <b>Port Aggregation Protocol (PAgP)</b> <b>IEEE 802.3ad</b> <b>Unidirectional Link Detection</b>	Protocols such as IEEE 802.1D, IEEE 802.1w, and IEEE 802.1s help ensure business continuity by minimizing the network convergence time for time-sensitive applications.  Flexlink provides fast failover over point-to-point connections, without the overhead of control protocols.  PAgP and IEEE 802.3ad increase bandwidth availability and provide fast link failover within the Cisco EtherChannel bundle.  Unidirectional Link Detection (UDLD) increases the network reliability by quickly detecting unidirectional links or misplaced fiber connectors.
<b>Cisco Discovery Protocol</b> <b>VLAN Trunk Protocol (VTP)</b>	Cisco Discovery Protocol and VTP ease the network and service configuration by detecting peer capability and by propagating the VLANs information within the service-provider network.
<b>Layer 3 Routing</b>	
<b>Open Shortest Path First (OSPF)</b> <b>Enhanced Interior Gateway Routing Protocol (EIGRP)</b> <b>Intermediate System-to-Intermediate System (IS-IS) Protocol</b> <b>Border Gateway Protocol Version 4 (BGPv4)</b> <b>Hot Standby Router Protocol (HSRP)</b> <b>Virtual Router Redundancy Protocol (VRRP)</b> <b>Gateway Load Balancing Protocol (GLBP)</b> <b>Bidirectional Forwarding Detection (BFD) for OSPF and IS-IS</b> <b>Static Routing</b>	High-performance IP routing protocols form the foundation for scalable Layer 3 services.
<b>Efficient Multicast Distribution</b>	
<b>Protocol Independent Multicast (PIM, PIM-SM, PIM-SSM)</b> <b>PIM Snooping</b> <b>Bidirectional PIM</b> <b>Internet Group Management Protocol version 1, 2, 3 (IGMP v1, v2, v3)</b> <b>IGMP Snooping</b>	Enable efficient and scalable delivery of video applications. The intelligent multicast replication allows scaling the triple-play offering to multiple DSL or FTTx subscribers.
<b>Advanced Quality of Service</b>	
<b>Ingress Policing—Per Port, Per VLAN, Per Port + Per VLAN</b> <b>Per-port egress policing</b> <b>DSCP Transparency</b> <b>Class of service (CoS) Mutation</b>	Flexible Policing functions classify and rate-limit the subscribers' traffic based on port, VLAN, and port + VLAN information. Layer 3 per-port egress policing allows the delivery of multipoint services with tight service-level agreement (SLA) requirements. Customer traffic can be marked at Layer 2 or Layer 3, to fulfill differentiated QoS models.
<b>Priority Queue</b> <b>Shaped Round Robin (SRR)</b> <b>Deficit Weighted Round Robin (DWRR)</b> <b>Weighted Random Early Detection (WRED)</b>	Intelligent queuing mechanism helps ensure that the highest-priority data is serviced ahead of other traffic.  Congestion avoidance and scheduling algorithms help regulate traffic and prevent network congestion. SRR enhances the scheduling algorithm by shaping the traffic that egress each queue.

Robust Security Solution	
<b>Private VLAN</b> <b>IEEE 802.1x</b> <b>Dynamic Host Configuration Protocol (DHCP) Snooping</b> <b>DHCP Option 82</b> <b>Dynamic ARP Inspection</b>	Private VLAN enforces subscribers' security by isolating the traffic flows coming from different users. IEEE 802.1x, port-based security and port-based access lists allow to grant access to network resources and privileges through identity-based networking. DHCP Snooping, DHCP Option 82, and Dynamic ARP Inspection help in identifying user's MAC and IP address and port number, hence preventing attacks from malicious users.
<b>VLAN-based and port-based ACLs</b> <b>Port Security on Access, 802.1Q trunk, and 802.1Q tunneling ports</b> <b>Per-VLAN MAC Limiting</b> <b>Control Plane Policing</b> <b>Hardware-based Rate Limiters</b> <b>Storm Control</b> <b>Unicast Flood Blocking</b>	Malicious attacks can jeopardize the functionality of the service-provider network by compromising the switch CPU, MAC table, etc. Features such as Port Security and Per-VLAN MAC Limiting restrict the number of MAC addresses that can be learned on the service-provider network. Hardware-enabled ACLs and rate limiters restrict undesired traffic in the network, while storm control features rate-limit the amount of broadcast and multicast frames injected into the switch.
MPLS	
<b>Ethernet over MPLS (EoMPLS)</b> <b>EoMPLS VC Type 4 and VC Type 5</b> <b>MPLS VPN (RFC2547)</b> <b>MPLS Traffic Engineering (MPLS TE)</b> <b>MPLS Fast Reroute (MPLS FRR)</b>	Enhance the service flexibility by allowing Layer 2 and Layer 3 services integration on the same platform.
IPv6	
<b>Native IPv6</b> <b>RIPng, MP-BGP4, OSPFv3</b> <b>IPv6 over IPv4 Tunnels</b> <b>Internet Control Message Protocol version 6 (ICMPv6)</b> <b>Configured, Automatic, GRE, 6to4, ISATAP Tunnels</b> <b>IPv6 QoS</b> <b>PIM-SM and PIM-SSM</b>	Improve the scalability of IP deployments, allowing high performing network evolution. Multicast protocols and QoS features optimize triple-play and video delivery over an end-to-end IP architecture.

**Table 2.** Cisco ME 6524 Scalability Numbers

Description	Specification
MAC Addresses	Up to 96,000
IPv4 Routes	Up to 256,000
IPv6 Routes	Up to 128,000
EoMPLS Tunnels	4096
MPLS VPNs	512
NetFlow Entries	Up to 128,000

## Product Architecture

Table 3 lists details about the Cisco ME 6524 product architecture. Table 4 and Table 5 list product specifications and standards and management information. Table 6 provides safety and compliance information.

**Table 3.** Cisco ME 6524 Product Architecture

Description	Specification
Hardware-Based Forwarding Engine	Policy Feature Card 3C (PFC3C) onboard
MSFC Daughter Card Version	MSFC2A onboard
Performance	Up to 15 mpps
Switching Capacity	32 Gbps

<b>Uplinks</b>	8 Gigabit Ethernet SFP interfaces
<b>Downlinks</b>	<ul style="list-style-type: none"> <li>• 24 Gigabit Ethernet SFP interfaces</li> <li>or</li> <li>• 24 Ethernet 10/100/1000 interfaces</li> </ul>
<b>MTU</b>	9216 bytes—Jumbo frames supported on uplink and downlink interfaces
<b>Uplink Oversubscription</b>	Not over-subscribed
<b>Downlink Oversubscription</b>	3:1 in case of 1 GE port speed
<b>Uplink Queue Structure</b>	<ul style="list-style-type: none"> <li>• TX: 1p3q8t</li> <li>• RX: 2q8t</li> <li>• Deep Buffer: 12.8 MB per port (50% TX and 50% RX)</li> </ul>
<b>Uplink Port Scheduler</b>	Strict Priority Scheduling with either Shaped Round Robin (SRR) or Deficit Weighted Round Robin (DWRR)
<b>Downlink Queue Structure</b>	<ul style="list-style-type: none"> <li>• TX: 1p3q8t</li> <li>• RX: 1q2t</li> <li>• Deep Buffer TX: 21.33 MB per port</li> <li>• Deep Buffer RX: 240 KB shared by three ports</li> </ul>
<b>Downlink Port Scheduler</b>	DWRR, Weighted Random Early Detection (WRED)
<b>USB Port</b>	Two USB ports (host and device)

## Product Specifications

**Table 4.** Product Specifications

Description	Specification
<b>Software compatibility</b>	Cisco IOS® Software Release 12.2(18)ZU
<b>Protocols</b>	Layer 2 switching protocols Layer 3 routing protocols Multicast protocols Comprehensive MPLS support IPv6
<b>USB Port</b>	Two USB ports (host and device)
<b>Connectors and Cabling</b>	Management Console Port: RS232 (RJ-45) 1000BASE-SX, 1000BASE-LX, 1000BASE-ZX, 1000BASE-BX supported at FCS 100BASE-BX, 100BASE-FX, and 1000BASE-TX supported after FCS CDWM SFPs DWDM SFPs supported are: <ul style="list-style-type: none"> <li>• DWDM-SFP-30.33</li> <li>• DWDM-SFP-31.12</li> <li>• DWDM-SFP-31.90</li> <li>• DWDM-SFP-32.68</li> <li>• DWDM-SFP-34.25</li> <li>• DWDM-SFP-36.61</li> <li>• DWDM-SFP-38.19</li> <li>• DWDM-SFP-40.56</li> <li>• DWDM-SFP-42.94</li> <li>• DWDM-SFP-44.53</li> <li>• DWDM-SFP-47.72</li> <li>• DWDM-SFP-48.51</li> <li>• DWDM-SFP-50.92</li> <li>• DWDM-SFP-54.13</li> <li>• DWDM-SFP-54.94</li> <li>• DWDM-SFP-56.55</li> <li>• DWDM-SFP-58.98</li> <li>• DWDM-SFP-59.79</li> <li>• DWDM-SFP-60.61</li> </ul> The support for the remaining DWDM wavelengths is targeted for the second quarter of 2007 (Q2CY07).

<b>Memory</b>	256 MB of default DRAM for the switch processor, upgradeable to 512 MB or 1 GB 512 MB of default DRAM for the router processor, upgradeable to 1 GB 128-MB boot flash for the switch processor 64-MB boot flash for the route processor
<b>Options</b>	Removable storage: 512 MB and 1 GB(compact flash)
<b>Reliability and Availability</b>	Dual field-replaceable and hot-swappable redundant DC power supplies Field-replaceable and hot-swappable fan unit Mean Time Between Failure (MTBF): <ul style="list-style-type: none"> <li>• 58481 hours for ME-C6524GS-8S</li> <li>• 59172 hours for ME-C6524GT-8S</li> </ul> Mean Time Between Critical Failure (MTBCF): <ul style="list-style-type: none"> <li>• 69155 hours for ME-C6524GS-8S</li> <li>• 70983 hours for ME-C6524GT-8S</li> </ul>
<b>Physical Dimensions (H x W x D)</b>	1.5 RU 2.625 x 17.45 x 19 in. (6.7 x 44.3 x 48.3 cm)
<b>Weight</b>	29.13 lb (13.21 Kg)
<b>Power</b>	Power consumption: 400W DC input voltage: <ul style="list-style-type: none"> <li>• Domestic, -40.5 VDC to -56 VDC continuous</li> <li>• International, -55 VDC to -72 VDC continuous</li> </ul> DC input current: <ul style="list-style-type: none"> <li>• 13A @ -48 VDC</li> <li>• 10.4A @ -60 VDC</li> </ul>

## Standards and Management

**Table 5.** Cisco ME 6524 Standards and Management

Description	Specification
<b>Standards and Protocols</b>	<ul style="list-style-type: none"> <li>• IEEE 802.3</li> <li>• IEEE 802.3u</li> <li>• IEEE 802.3z</li> <li>• IEEE 802.3x</li> <li>• IEEE 802.3ab</li> <li>• IEEE 802.1t</li> <li>• IEEE 802.1u</li> <li>• IEEE 802.1Q</li> <li>• IEEE 802.1p</li> <li>• IEEE 802.1D</li> <li>• IEEE 802.1w</li> <li>• IEEE 802.1s</li> <li>• IEEE 802.1x</li> <li>• IEEE 802.3ad</li> <li>• IEEE 802.3x</li> <li>• RIPv2</li> <li>• EIGRP</li> <li>• OSPF</li> <li>• IS-IS</li> <li>• BGPv4</li> <li>• Policy Based Routing (PBR)</li> <li>• HSRP (RFC2281)</li> <li>• Virtual Router Redundancy Protocol (VRRP)</li> <li>• Bidirectional Forwarding Detection (BFD) for OSPF and IS-IS</li> <li>• Internet Group Management Protocol (IGMP) v1, v2, v3</li> <li>• IGMP Proxy reporting for IGMPv2 and MLDv1</li> <li>• PIM</li> <li>• PIM-SM, PIM-SSM, Bidirectional PIM</li> </ul>

- WCCPv2
- MPLS VPN (RFC2547)
- Ethernet over MPLS (EoMPLS Martini draft)
- Generic Routing Encapsulation (GRE)

<p><b>Management</b></p>	<ul style="list-style-type: none"> <li>• Simple Network Management Protocol Version 1, 2, and 3 (SNMPv1, v2, v3)</li> <li>• Telnet Interface</li> <li>• VTP</li> <li>• CDP</li> <li>• IGMP Snooping</li> <li>• DHCP Snooping</li> <li>• Remote Switch Port Analyzer (RSPAN), Encapsulated Remote SPAN (ERSPAN)</li> <li>• Embedded Remote Monitoring (RMON) software agent</li> <li>• Domain Name System (DNS)</li> <li>• Trivial File Transfer Protocol (TFTP)</li> <li>• Network Timing Protocol (NTP)</li> <li>• Multifunctional LEDs per port, and multifunction LEDs for power supplies</li> </ul>
<p><b>MIBs</b></p>	<ul style="list-style-type: none"> <li>• BRIDGE-MIB (RFC1493)</li> <li>• BGP4-MIB (RFC1657)</li> <li>• CISCO-ACCESS-ENVMON-MIB</li> <li>• CISCO-BGP-POLICY-ACCOUNTING-MIB</li> <li>• CISCO-BGP4-MIB</li> <li>• CISCO-CDP-MIB</li> <li>• CISCO-CLASS-BASED-QOS-MIB</li> <li>• CISCO-CONFIG-COPY-MIB</li> <li>• CISCO-CONFIG-MAN-MIB</li> <li>• CISCO-ENTITY-ALARM-MIB</li> <li>• CISCO-ENTITY-EXT-MIB</li> <li>• CISCO-ENTITY-VENDORTYPE-OID-MIB</li> <li>• CISCO-FLEX-LINKS-MIB</li> <li>• CISCO-FTP-CLIENT-MIB</li> <li>• CISCO-HSRP-EXT-MIB</li> <li>• CISCO-HSRP-MIB</li> <li>• CISCO-IETF-IP-FORWARD-MIB</li> <li>• CISCO-IETF-IP-MIB</li> </ul>

- CISCO-IF-EXTENSION-MIB
- CISCO-IMAGE-MIB
- CISCO-IP-STAT-MIB
- CISCO-IPMROUTE-MIB
- CISCO-L2-CONTROL-MIB
- CISCO-L2-TUNNEL-CONFIG-MIB
- CISCO-MAC-NOTIFICATION-MIB
- CISCO-MEMORY-POOL-MIB

	<ul style="list-style-type: none"> <li>• OLD-CISCO-CHASSIS-MIB</li> <li>• OLD-CISCO-CPU-MIB</li> <li>• OLD-CISCO-INTERFACES-MIB</li> <li>• OLD-CISCO-IP-MIB</li> <li>• OLD-CISCO-MEMORY-MIB</li> <li>• OLD-CISCO-TCP-MIB</li> <li>• OSPF-MIB</li> <li>• OSPF-TRAP-MIB</li> <li>• PIM-MIB</li> <li>• RFC1213-MIB</li> <li>• RMON-MIB</li> <li>• RMON2-Mib</li> <li>• RSVP-MIB</li> <li>• SMON-MIB</li> <li>• SNMP-FRAMEWORK-MIB</li> <li>• SNMP-NOTIFICATION-MIB</li> <li>• SNMP-PROXY-MIB</li> <li>• SNMP-TARGET-MIB</li> <li>• SNMP-USM-MIB</li> <li>• SNMP-VACM-MIB</li> <li>• SNMPv2-MIB</li> <li>• SOURCE-ROUTING-MIB</li> <li>• TCP-MIB</li> <li>• UDP-MIB</li> </ul>
<b>Metro Ethernet Forum</b>	MEF9 and MEF14 certified

## Safety and Compliance

**Table 6.** Safety and Compliance

Description	Specification
<b>Electromagnetic Emission Compliance (EMC)</b>	<ul style="list-style-type: none"> <li>• CE marking</li> <li>• FCC Part 15</li> <li>• VCCI Class A</li> <li>• EN55022 Class A</li> <li>• CISPR 22 Class A</li> <li>• AS/NZS CISPR22 Class A</li> <li>• ETS300 386</li> <li>• EN55024</li> <li>• EN61000-3-2</li> <li>• EN61000-3-3</li> </ul>
<b>Safety</b>	<ul style="list-style-type: none"> <li>• UL 60950</li> <li>• CSA-C22.2 No. 60950</li> <li>• EN 60950</li> <li>• IEC 60950</li> </ul>
<b>NEBS</b>	<ul style="list-style-type: none"> <li>• GR-63-CORE NEBS Level 3</li> <li>• GR-1089-CORE NEBS Level 3</li> </ul>
<b>ETSI</b>	<ul style="list-style-type: none"> <li>• ETS 300 019 Storage Class 1.1</li> <li>• ETS 300 019 Transportation Class 2.3</li> <li>• ETS 300 019 Stationary Use Class 3.1</li> </ul>
<b>Noise Specifications</b>	<ul style="list-style-type: none"> <li>• Central Office (CO) Specification: 60 dBA</li> </ul>
<b>Operating Environment</b>	<ul style="list-style-type: none"> <li>• Temperature: 32°F (0°C) to 104°F (+40°C)</li> <li>• Altitude: Up to 10,000 ft (3000m)</li> <li>• Relative humidity: 10% to 85% (noncondensing)</li> </ul>
<b>Storage Environment</b>	<ul style="list-style-type: none"> <li>• Temperature: -4°F (-20°C) to 149°F (+65°C)</li> <li>• Altitude: 15,000 ft (4570m)</li> <li>• Relative humidity: 5% to 95% (noncondensing)</li> </ul>

## Ordering Information

Table 7 lists the ordering information for Cisco ME 6524.

To place an order, visit the [Cisco Ordering Home Page](#).

**Table 7.** Ordering Information

Part Number	Description
<b>ME-C6524GS-8S</b>	24 Gigabit Ethernet SFP interfaces + 8 Gigabit Ethernet SFP uplinks, 1 Fan Tray
<b>ME-C6524GT-8S</b>	24 Ethernet 10/100/1000 interfaces + 8 Gigabit Ethernet SFP uplinks, 1 Fan Tray
<b>PWR-400W-DC</b>	400W DC Power Supply for the Cisco ME 6524
<b>MEM-XCEF720-256M</b>	Default Memory on the Cisco ME 6524 Switch Processor
<b>MEM-XCEF720-512M</b>	512-MB Memory Upgrade Option for the Switch Processor on the Cisco ME 6524
<b>MEM-XCEF720-1GB</b>	1-GB Memory Upgrade Option for the Switch Processor on the Cisco ME 6524
<b>MEM-MSFC2-512MB</b>	Default Memory on the Cisco ME 6524 Router Processor
<b>MEM-MSFC3-1GB</b>	1-GB Memory Upgrade Option for the Router Processor on the Cisco ME 6524
<b>MEM-C6K-CPTFL512M</b>	Optional External Compact Flash memory 512 MB
<b>S523IBL-12218ZU</b>	Cisco ME 6524 IOS IP BASE LAN only
<b>S523IBK9L-12218ZU</b>	Cisco ME 6524 IOS IP BASE SSH LAN only
<b>S523AIK9L-12218ZU</b>	Cisco IOS Advanced IP Services

## Service and Support

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