Cisco ME 2600X Series Ethernet Access Switches

Product Overview

The Cisco® ME 2600X Series Ethernet Access Switches are the latest members of a family of switches built specifically for Fiber to the Home (FTTH) and Fiber to the Building (FTTB) services. Expanding Cisco's residential FTTx portfolio from Ethernet and Fast Ethernet access to Gigabit Ethernet connections provides the increased speed needed for quadruple play services expansion. The Cisco ME 2600X is space and power optimized to address the ever-growing concern of maintaining or lowering network OpEx while providing higher-speed services. The ME 2600X (Figure 1) is optimized with a low carbon footprint of 1 rack unit (1RU) with forty-four Gigabit Ethernet user network interfaces (UNI) and four 10-Gigabit Ethernet network-to network interfaces (NNI) which can also be used as UNIs, and maintains a 2.5W per user power profile.

Figure 1. Cisco ME 2600X Series Ethernet Access Switches

Cisco ME 2600X Series Ethernet Access Switches provide a 1RU, fixed-form-factor platform hardware-optimized for ANSI, ETSI, and AC power configurations:

- Cisco ME 2600X ANSI DC Power with 44 10/100/1000 ports and four 10-Gigabit Ethernet SFP+ ports
- Cisco ME 2600X ETSI DC Power with 44 10/100/1000 ports and four 10-Gigabit Ethernet SFP+ ports
- Cisco ME 2600X ANSI DC Power with 44 10/100/1000 ports and four 10-Gigabit Ethernet SFP+ ports

Benefits

Created for the delivery of today's and tomorrow's access services, the Cisco ME 2600X Series Ethernet Access Switches support existing and next-generation features and technology while remaining operationally simple to deploy and manage. The series offers the following key benefits.

Powered by a High-Performance Application-Specific Integrated Circuit

Powered by a 100-Gbps power-efficient application-specific integrated circuit (ASIC), the Cisco ME 2600X is designed to provide wire-rate Layer 2 and Layer 3 performance with Ethernet Operations, Administration, and Management (EOAM), hierarchical quality of service (H-QoS), and Denial of Service (DoS) security, while maintaining a low power footprint profile with 45 nm complementary metal-oxide-semiconductor (CMOS) technology. The 100-G ASIC integrates traffic management to deliver intelligent packet switching at wire rate.

Advanced Service-Level Agreements

Service-aware quality of service (QoS) allows service providers to expand and differentiate their residential services with highly advanced and differentiating service-level agreements (SLAs). The H-QoS capabilities of the Cisco ME 2600X scale to 384 queues per system, three levels of scheduling, and dynamic buffer management to address today's most demanding residential services.

Operational Efficiency for FTTx Deployments

The Cisco ME2600X includes key features that help to ensure service provider network security and environmental hardening, lowering operational costs. This unique feature set allows the Cisco ME 2600X to be deployed in a variety of applications, including business service with 10-Gigabit Ethernet User Network Interface (UNI) and Ethernet mobile backhaul. These features enhance performance awareness, facilitate troubleshooting, and simplify service turn-up and restoration, ultimately reducing operational costs. “Dying gasp” for power indicators and four external alarm inputs to detect changes in remote sites further help service providers manage the health of network elements.

High-Performance Hardware

The Cisco ME 2600X is a nonblocking switching system providing line-rate Ethernet performance. The Cisco ME 2600X is a 1RU platform that has a hot-swappable fan tray and redundant DC power feeds to meet service provider carrier-class requirements. High availability is achieved on the Cisco ME 2600X through proactive diagnostic tools including Generic On-Line Diagnostics (GOLD) and Onboard Failure Logging (OBFL). These tools help service providers to avoid potential problems before they occur and to troubleshoot and diagnose once problems are identified.

Table 1 lists the hardware parts available for the Cisco ME 2600X.

Table 1. Cisco ME 2600X Series Ethernet Access Switches Hardware Options

Part Number	Product Name
ME2600X-44FA-D-K9=	ME2600X Ethernet Access Switch 44xGE SFP with 4x10GE SFP+ -48V Power ANSI
ME2600X-44FE-D-K9=	ME2600X Ethernet Access Switch 44xGE SFP with 4x10GE SFP+ -48V Power ETSI
ME2600X-44FA-A-K9=	ME2600X Ethernet Access Switch 44xGE SFP with 4x10GE SFP+ AC Power
ME2600X-FAN=	ME2600X Fan Tray with Filter

The Cisco ME 2600X supports a wide range of Small Form-Factor Pluggable (SFP) and Enhanced SPF (SPF+) optic modules. Table 2 lists their part numbers.

Table 2. SFP and SFP+ Modules Supported with Cisco ME 2600X Series Ethernet Access Switches

	Part number	
SFP	• ONS-SE-100-LX10 • ONS-SI-100-LX10 • ONS-SI-100-FX • ONS-SE-100-BX10U • ONS-SE-100-BX10D • GLC-BX-D • GLC-BX-U • GLC-FE-100BX-D • GLC-FE-100BX-U • ONS-SI-GE-SX • ONS-SC-GE-LX	• ONS-SI-GE-LX • ONS-SI-GE-ZX • ONS-SE-GE-ZX • ONS-SE-GE-BXD • ONS-SE-GE-BXU • ONS-SC-GE-BXU • ONS-SC-GE-BXD • ONS-SI-GE-EX • ONS-SE-ZE-EL • ONS-SC-2G-xx.x • ONS-SE-2G-xxxx
SFP+	• ONS-SC+-10G-SR • ONS-SC+-10G-ER • ONS-SC+-10G-LR • ONS-SE+-10G-LR • ONS-SC+-10G-LRM • ONS-SC+-10G-ZR	• ONS-SC+-10G-CU1 • ONS-SC+-10G-CU3 • ONS-SC+-10G-CU5 • ONS-SC+-10G-CU7 • ONS-SC+-10G-xx.x

Table 3 lists the key features in the Cisco IOS® Software license for the Cisco ME 2600X Series Ethernet Access Switches and Table 4 lists the software options.

Table 3. Feature Set in Cisco ME 2600X Series Ethernet Access Switches Base Feature License

License	Features	
SL-ME2600X-B	• Layer 2 (EVC, 802.1q, 802.1ad) • DHCPv4 snooping with option-82 • DHCPv4 rate limiting • Dynamic ARP inspection • IP source guard • MAC security • Supports access control list (ACL) per EFP • Supports storm control • Control plane security	• Dynamic port provisioning • ICMP rate limiting • ARP rate limiting per port • Resilient Ethernet Protocol (REP) • Link Aggregation Group and Link Aggregation • Control protocol • Multicast VLAN registration • IGMP snooping

Table 4. Cisco ME 2600X Series Ethernet Access Switches Software Options

Part Number	Product Name
License Options	
SL-ME2600X-B	ME2600X Base Features License
Software Options	
S2600UK9-15202SA	Cisco ME 2600X Series Aggregation IOS Software: Universal Release 15.2(02)SA

Key Features

Table 5 lists the features of the Cisco ME 2600X Series Ethernet Access Switches.

Table 5. Cisco ME 2600X Series Ethernet Access Switches Features

Description	Specification
Ethernet Services Ethernet Virtual Connections (EVCs)	• 802.1 • 802.1q • 802.1ad (QinQ, Selective QinQ) • Inner and outer VLAN classification
Ethernet Security	• 802.1 • 802.1q • 802.1ad (QinQ, selective QinQ) • Inner and outer VLAN classification
QoS	• Up to 416 egress queues per system • Class-Based Weighted Fair Queuing (CBWFQ) • Priority queuing • 2-rate 3-color (2R3C) ingress policing, egress policing (1R2C) for LLQ • Ingress and egress marking (class of service [CoS], DSCP) • Egress shaping per port • 3-level HQoS • Classification based on inner and outer CoS or VLAN ID • Copy inner to outer CoS
Multicast	• Multicast VLAN registration • IGMP v2 and v3 snooping

Description	Specification
Management Security	• Authentication, authorization and accounting (AAA) • TACACS+ • RADIUS • Secure Shell (SSH) Protocol • Control plane policing
Availability	• Resilient Ethernet Protocol • Flexlink • 802.3ad Link Aggregation Control Protocol
Manageability	• Simple Network Management Protocol (SNMP) • MIBs • Cisco Discovery Protocol • Cisco Prime™ Network • Cisco Prime Provisioning • OSPF, IS-IS, BGP • Dynamic Port Provisioning • Switch Database Management (SDM)

Product Specifications

Tables 6 through 8 list product, power, and environmental specifications for the Cisco ME 3600X Series. Table 9 lists standards and protocols, and Table 10 gives safety and compliance information. Table 11 provides ordering information.

Table 6. Product Specifications

Specification	Cisco ME2600X-44FA-D-K9 Cisco ME2600X-44FE-D-K9	Cisco ME2600X-44FA-A-K9
		
Performance		
Forwarding bandwidth full duplex	88 Gbps	88 Gbps
Forwarding rate	65 Mpps	65 Mpps
Configurable maximum transmission unit (MTU)	Up to 9,600 bytes, for bridging on Gigabit and 10-Gigabit Ethernet	Up to 9,600 bytes, for bridging on Gigabit and 10-Gigabit Ethernet
Memory		
DRAM	2 GB	2 GB
Flash	256 MB	256 MB
Packet buffer	4 MB	4 MB
Connectors and Cabling		

Specification	Cisco ME2600X-44FA-D-K9 Cisco ME2600X-44FE-D-K9	Cisco ME2600X-44FA-A-K9
SFP ports	• 10/100/1000BASE-T SFP-based ports: RJ-45 connectors, 4-pair Category 5 UTP cabling • 100BASE-FX and -LX: Duplex LC receptacle fiber connectors (multimode and single-mode) • 100BASE-BX: Single-fiber LC receptacle connector (single-mode fiber) • 100BASE-EX: SFP module for 100 Mb port, 1310 nm wavelength, 40 km over single-mode fiber • 100BASE-ZX: SFP module for 100 Mb port, 1550 nm wavelength, 80 km over single-mode fiber • 1000BASE-BX: Single-fiber LC receptacle connector (single-mode fiber) • 1000BASE-SX, -LX/LH, -EX and -ZX and CWDM and DWDM: Duplex LC receptacle fiber connectors (multimode and single-mode fiber)	• 10/100/1000BASE-T SFP-based ports: RJ-45 connectors, 4-pair Category 5 UTP cabling • 100BASE-FX and -LX: Duplex LC receptacle fiber connectors (multimode and single-mode) • 100BASE-BX: Single-fiber LC receptacle connector (single-mode fiber) • 100BASE-EX: SFP module for 100 Mb port, 1310 nm wavelength, 40 km over single-mode fiber • 100BASE-ZX: SFP module for 100 Mb port, 1550 nm wavelength, 80 km over single-mode fiber • 1000BASE-BX: Single-fiber LC receptacle connector (single-mode fiber) • 1000BASE-SX, -LX/LH, -EX and -ZX and CWDM and DWDM: Duplex LC receptacle fiber connectors (multimode and single-mode fiber)
SFP+ Ports	• ONS-SC+-10G-SR • ONS-SC+-10G-ER • ONS-SC+-10G-LR • ONS-SE+-10G-LR • ONS-SC+-10G-LRM • ONS-SC+-10G-ZR • ONS-SC+-10G-xx.x • ONS-SC+-10G-CUx • ONS-SG+-CUx where x = 1, 3, or 5 meters • SFP+ port supports 1000BASE-X except 1000BASE-T • Management console port: RJ-45-to-DB9 cable for PC connections • Management 10/100/1000 Ethernet: RJ-45 connector • BITS and alarm ports: RJ-45 connector	
Indicators	• Per-port status LEDs: port enabled, disabled, and activity indicator • Unit power status LED • Alarm status LED • System-status LED	
Dimensions (HxWxL)	1.56 in. x 17.42 in. x 9.1 in. (39.62 mm x 442.39 mm x 231.01 mm)	
Weight	ME2600X-44FA-D-K9: 9.30 lbs (4.22 kg) ME2600X-44FE-D-K9: 9.30 lbs (4.22 kg) ME2600X-FAN=: 1.32 lb (600 g)	ME2600X-44FA-A-K9: 8.95 lbs (4.06 kg) ME2600X-FAN=: 1.32 lb (600 g)
Mean Time Between Failure	ME2600X-44FA-D-K9: 587,750 hours ME2600X-44FE-D-K9: 584,700 hours ME2600X-FAN=: 400,000 hours	ME2600X-44FA-A-K9: 595,950 hours ME2600X-FAN=: 400,000 hours

Table 7. Power Specifications

Description	Cisco ME2600X-44FA-D-K9 Cisco ME2600X-44FE-D-K9	Cisco ME2600X-44FA-A-K9
Power consumption (includes fan tray)	• 120W (nominal) • 170W (maximum) • 6.82 Btus per minute (nominal) • 9.67 Btus per minute (maximum) • Fan Tray (36W)	• 120W (nominal) • 170W (maximum) • 6.82 Btus per minute (nominal) • 9.67 Btus per minute (maximum) • Fan Tray (36W)
AC input voltage and frequency	100 to 240 VAC, 50 to 60Hz	
DC input voltages	–40.5 to 57.6 VDC	

Table 8. Environmental Specifications

Network Equipment Building Standards (NEBS)	
Operating environment and altitude	Temperature: –40 to 149°F (–40 to +65°C) Altitude: 13,123 ft (4000m)
Relative humidity	5% to 95%, noncondensing
Acoustic noise	LpA: 60.9 dB typical, 64.7 dB maximum LwA: 14.1 @ 100 Hz Bel typical, 71.7 @ 1600 Hz Bel maximum
Storage environment	Temperature: –40 to 158°F (–40 to +70°C) Altitude: 13,123.36 ft (4000m)

Table 9. Standards and Protocols

Standards and Protocols	
• IEEE 802.1s • IEEE 802.1w • IEEE 802.3ad • IEEE 802.3ah • IEEE 802.1ag • IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and 1000BASE-T ports • IEEE 802.1p CoS classification	• IEEE 802.1Q VLAN • IEEE 802.3 10BASE-T • IEEE 802.3u 100BASE-T • IEEE 802.3ab 1000BASE-T • IEEE 802.3z 1000BASE-X • OSPF, IS-IS, BGP, HSRP, EIGRP • Management: SNMP versions 1, 2, and 3

Table 10. Safety and Compliance

Type	Standards
Electromagnetic	FCC Part 15 Class
Emissions compliance	• EN 60950-1 with all amendments • CE Marking
Safety	• CAN/CSA 22.2 NO. 60950-1, 2nd edition Amendment 1 • CSA to UL 60950-1 2nd edition • CB to IEC 60950-1 with all country deviations • CE Marking
NEBS	GR-63-CORE, GR-1089-CORE: Level 3, Type 2
ETSI	EN 300 019: Storage Class 1.2, Transportation Class 2.3, In-Use Class 3.2

Table 11. Ordering Information

Product Name	Part Number
ME2600X-44FA-D-K9=	ME2600X Ethernet Access Switch 44xGE SFP with 4x10GE SFP+ -48V Power ANSI
ME2600X-44FE-D-K9=	ME2600X Ethernet Access Switch 44xGE SFP with 4x10GE SFP+ -48V Power ETSI
ME2600X-44FA-A-K9=	ME2600X Ethernet Access Switch 44xGE SFP with 4x10GE SFP+ AC Power
ME2600X-FAN=	ME2600X Fan Tray with Filter
S2600UK9-15202SA	Cisco ME 2600X Series Aggregation IOS Software Universal Release 15.2(02)SA
SL-ME2600X-B	ME2600X Base Features License

Service and Support

Cisco offers a wide range of services programs to accelerate customer success. These innovative services programs are delivered through a unique combination of people, processes, tools, and partners, resulting in high levels of customer satisfaction. Cisco services help you protect your network investment, optimize network operations, and

prepare your network for new applications to extend network intelligence and the power of your business. For more information about Cisco services, refer to Cisco Technical Support Services or Cisco Advanced Services.

Cisco is committed to minimizing your total cost of ownership. Cisco offers a portfolio of technical support services to help ensure that Cisco products operate efficiently, remain highly available, and benefit from the most up-to-date system software. The services and support programs described in Table 12 are available as part of the Cisco Carrier Ethernet Switching Service and Support solution, and are available directly from Cisco and through resellers.

Table 12. Service and Support

Service and Support	Features	Benefits
Advanced Services		
Cisco Total Implementation Solutions (TIS), available directly from Cisco Cisco Packaged TIS, available through resellers	• Project management • Site survey, configuration, and deployment • Installation, text, and cutover • Training • Major moves, adds, and changes • Design review and product staging	• Supplement existing staff • Help ensure functions meet needs • Mitigate risk
Cisco SP Base Support and Service Provider-Based Onsite Support, available directly from Cisco Cisco Packaged Service Provider-Based Support, available through resellers	• 24-hour access to software updates • Web access to technical repositories • Telephone support through the Cisco Technical Assistance Center (TAC) • Advance replacement of hardware parts	• Facilitate proactive or expedited problem resolution • Lower total cost of ownership by taking advantage of Cisco expertise and knowledge • Minimize network downtime

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV Amsterdam,
The Netherlands

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