



CHAPTER 1

Product Overview

The Cisco Metro Ethernet (ME) 3400E Ethernet Access switch—referred to as *the switch*—is an Ethernet access switch that you can connect to other network devices, such as routers, other switches, a home access gateway (HAG), or a computer.

- [Setting Up the Switch, page 1-1](#)
- [Switch Models, page 1-1](#)
- [Front Panel, page 1-2](#)
- [Rear Panel, page 1-12](#)
- [Power Supply Features, page 1-13](#)
- [Fans, page 1-14](#)
- [Management Options, page 1-14](#)

Setting Up the Switch

See the *Cisco ME 3400E Ethernet Access Switch Getting Started Guide* on the documentation CD for instructions on how to initially configure your switch. The getting started guide also covers switch management options, basic rack-mounting procedures, port and module connections, power connection procedures, and troubleshooting help.

For instructions on setting up your switch using the command-line interface (CLI), see [Appendix C, “Configuring the Switch with the CLI-Based Setup Program.”](#)

Switch Models

You can deploy the switch as a backbone switch, aggregating 10BASE-T, 100BASE-TX, 1000BASE-T, and fiber-optic Ethernet traffic from other network devices.

See the switch software configuration guide for examples that show how you might deploy the switch in your network.

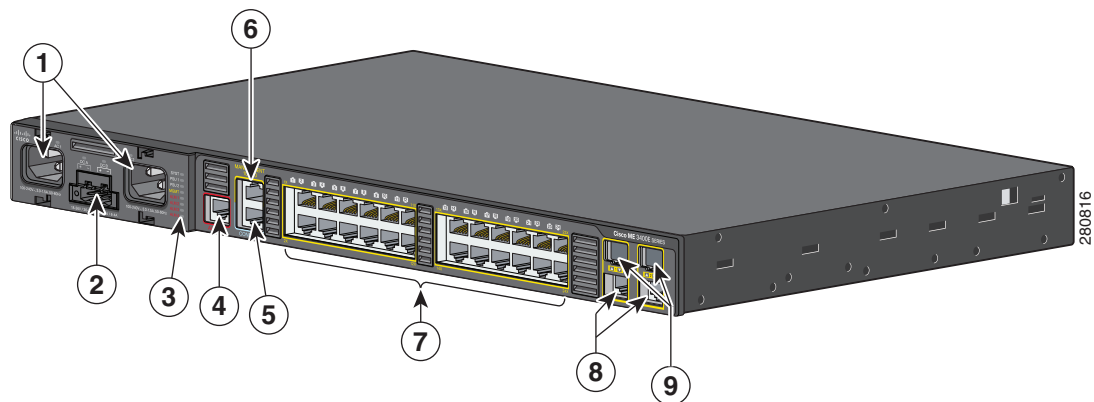
Table 1-1 Cisco ME 3400E Models and Descriptions

Switch Model	Description
Cisco ME 3400E-24TS-M	24 10/100 FastEthernet downlink ports and 2 dual-purpose ports (2 10/100/1000BASE-T copper ports and 2 SFP ¹ module slots); supports removable AC- and DC-power supplies.
Cisco ME 3400EG-12CS-M	12 dual-purpose ports and 4 SFP-module slots; supports removable AC- and DC-power supplies.
Cisco ME 3400EG-2CS-A	2 dual-purpose ports and 2 SFP-module slots, AC-power input.

1. SFP = small form-factor pluggable.

Front Panel

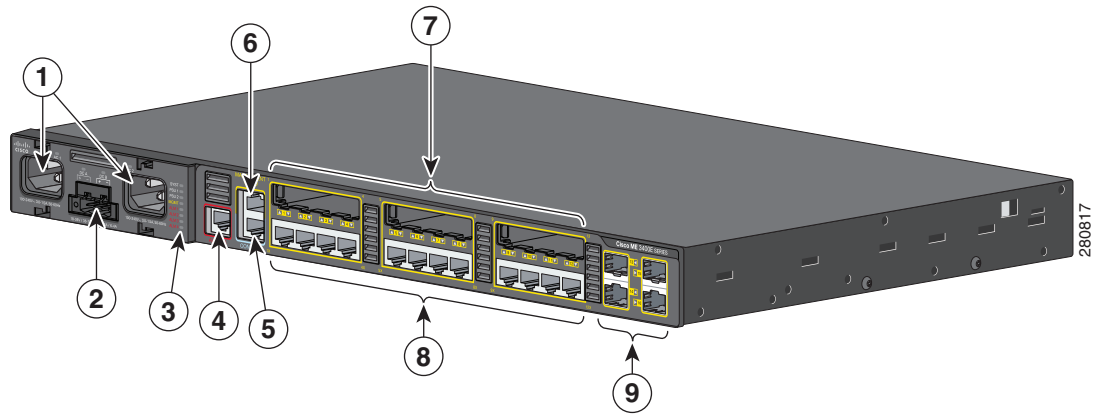
Figure 1-1 shows the Cisco ME 3400E-24TS-M front panel. The 10/100 Fast Ethernet downlink ports are grouped in pairs. The first member of the pair (port 1) is above the second member (port 2) on the left. Port 3 is above port 4, and so on. The dual-purpose ports are numbered 1 and 2. You can configure the dual-purpose ports as either copper-based 10/100/1000 ports or as fiber-optic SFP-module ports. See the “SFP Modules” section on page 1-5 for more information.

Figure 1-1 Cisco ME 3400E-24TS-M Front Panel

1	AC-power input connectors 1 and 2	6	Ethernet management port
2	DC-power input connectors (supports power feeds A and B)	7	10/100 Fast Ethernet downlink ports 1 to 24
3	LEDs	8	10/100/1000 ports
4	Alarm input port	9	SFP-module slots
5	Console port		

The Cisco ME 3400EG-12CS-M has 12 dual-purpose ports, numbered 1 to 12, and supports both AC and DC power. You can configure these as either copper-based 10/100/1000 ports or as fiber-optic SFP-module ports. The Gigabit Ethernet uplink SFP-module slots are numbered 13 to 16.

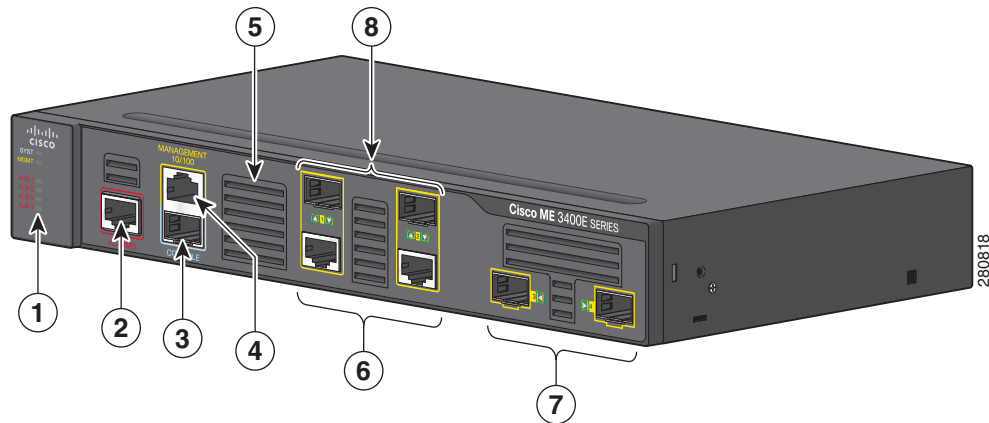
Figure 1-2 Cisco ME 3400EG-12CS-M Front Panel



1	AC-power input connectors 1 and 2	6	Ethernet management port
2	DC-power input connectors A and B	7	SFP-module slots
3	LEDs	8	10/100/1000 ports
4	Alarm input port	9	Gigabit Ethernet SFP-module slots
5	Console port		

The Cisco ME 3400EG-2CS-A has two dual-purpose ports, numbered 1 and 2. See [Figure 1-3](#). You can configure these ports as either copper-based 10/100/1000 ports or as fiber-optic SFP-module ports. The Gigabit Ethernet uplink SFP-module slots are numbered 3 and 4.

Figure 1-3 Cisco ME 3400EG-2CS-A Front Panel



1	LEDs	5	Air intake vents
2	Alarm input port	6	10/100/1000 ports
3	Console port	7	Gigabit Ethernet SFP-module slots
4	Ethernet management port	8	SFP-module slots

AC- and DC-Power Input Connectors

The Cisco ME 3400E-24TS-M and the Cisco ME 3400EG-12CS support combinations of power-supply modules: two AC, two DC, or one AC and one DC. The two AC- and one DC-power connectors on the front panel accommodate the mixture of AC- and DC-power-supply modules. The DC-power connector has the standard A and B feeds for DC redundancy. See [Chapter 3, “Installing and Removing AC- and DC-Power-Supply Modules.”](#)

Alarm Input Port

The switch supports four alarm inputs. The alarm input is a dry-contact alarm port. Use the CLI to define each alarm input to respond to a normally open or closed dry-contact closure and to define the alarm severity as minor, major, or critical. When a condition triggers an alarm, the console displays an alarm message, and the corresponding Alarm LED responds (see the [“Alarm LEDs”](#) section on page 1-11).

Management Port

You can connect the switch to a host such as a Windows workstation or a terminal server through the 10/100 Ethernet management port or the console port. The 10/100 Ethernet management port connection uses a standard RJ-45 crossover or straight-through Ethernet cable. The console port connection uses the supplied RJ-45-to-DB-9 female cable.

The Ethernet management port operates in any combination of half duplex, full duplex, or 10 or 100 Mb/s, and its traffic is isolated from the other ports. See [Table 1-7](#) for descriptions of the Ethernet management port LEDs. See the “[10/100 Ethernet Management Port](#)” section on [page B-3](#) for pinout information.

For console port and adapter pinout information, see the “[Console Port Adapter Pinouts](#)” section on [page B-7](#).

10/100 Fast Ethernet Ports

You can set the 10/100 ports on the switch to operate in any combination of half duplex, full duplex, or 10 or 100 Mb/s. You can set the ports for speed and duplex autonegotiation. The default setting is autonegotiate.

When set for autonegotiation, the port senses the speed and duplex settings of the attached device and advertises its own capabilities. If the connected device also supports autonegotiation, the switch port negotiates the best connection (the fastest line speed that both devices support and full-duplex transmission if the attached device supports it) and configures itself accordingly. In all cases, the attached device must be within 328 feet (100 meters).

Dual-Purpose Ports

You can configure the dual-purpose ports on the switch as either 10/100/1000 ports or as SFP-module ports. You can set the 10/100/1000 ports to autonegotiate. You can also configure them as fixed 10, 100, or 1000 Mb/s (Gigabit) Ethernet ports.

By default, the switch dynamically selects the medium for each dual-purpose port (10/100/1000BASE-T or SFP). When a link is achieved on one media type, the switch disables the other media type until the active link goes down. If links are active on both media, the SFP-module port has priority, but you can manually designate the port as an RJ-45 port or an SFP port by using the **media-type** interface configuration command.

You can configure the speed and duplex settings consistent with the selected media type. For information on configuring interfaces, see the switch software configuration guide.

SFP Modules

The switch Gigabit Ethernet SFP modules are used for connections to other devices. These transceiver modules are field-replaceable, providing the uplink interfaces when inserted in an SFP-module slot. You can use any combination of SFP modules. The SFP modules have LC connectors for fiber-optic connections or RJ-45 connectors for copper connections.

For more information on configuring interfaces, see the switch software configuration guide.

Table 1-2 Supported Cisco SFP Modules

Part Number	Description
GLC-FE-100BX-D GLC-FE-100BX-U	100BASE-BX10
GLC-FE-100EX	100BASE-EX
GLC-FE-100FX	100BASE-FX
GLC-FE-100LX	100BASE-LX10
GLC-FE-100ZX	100BASE-ZX
GLC-BX-D GLC-BX-U	1000BASE-BX10
GLC-LH-SM SFP-GE-L	1000BASE-LX/LH
GLC-SX-MM GLC-GE-S	1000BASE-SX
GLC-T ¹ SFP-GE-T ¹	1000BASE-T and 10/100/1000BASE-T
SFP-GE-ZX-SM	1000BASE-ZX
CWDM-xxxx-SFP	CWDM
DWDM-xxxx-SFP	DWDM

1. Supported on SFP-only ports, not supported on dual-purpose ports.



Note

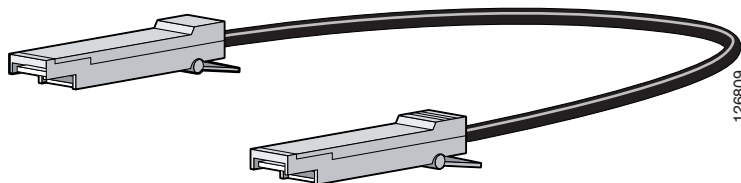
The Cisco ME 3400E-24TS-M does not support 1000BASE-T SFP modules.

For more information about SFP modules, see your SFP module documentation and the “[Installing and Removing SFP Modules](#)” section on page 2-19. For cable specifications, see [Appendix B, “SFP Module Connectors.”](#)

SFP Module Patch Cable

The switch supports the SFP-module patch cable, a 0.5-meter, copper, passive cable with SFP module connectors at each end (see [Figure 1-4](#)). The patch cable connects two switches in a cascaded configuration.

Figure 1-4 SFP-Module Patch Cable



See the [“Inserting and Removing the SFP Module Patch Cable”](#) section on page 2-21 for more information about using the SFP module patch cable.

You can order the SFP module patch cable (part number CAB-SFP-50CM=).

UNIs, NNIs, and ENIs

The switch supports user-network interfaces (UNIs), network node interfaces (NNIs), and enhanced network interfaces (ENIs). UNIs are typically connected to a host, such as customer premises equipment (CPE) or a home access gateway. NNIs are typically connected to a router or to another switch. ENIs have the same functionality as UNIs, but can be configured to support protocol control packets for Cisco Discovery Protocol (CDP), Spanning-Tree Protocol (STP), Link Layer Discovery Protocol (LLDP), EtherChannel Link Aggregation Control Protocol (LACP), or Port Aggregation Protocol (PAgP). Every port is in an UNI, ENI, or NNI mode at any time, but not all ports have to all be set the same.

By default, the dual-purpose ports on the Cisco ME 3400E-12CS-M and on the Cisco ME 3400EG-2CS-A are configured as UNIs, and the SFP-only uplink ports are configured as NNIs. You must specifically configure ports to be ENIs; no ports are ENIs by default. By default, the 10/100 ports on the Cisco ME 3400E-24TS-M are UNIs, and the dual-purpose ports are NNIs.

A port can be reconfigured from UNI to NNI or an ENI, and the reverse. When a port is reconfigured as another interface type, it inherits all the characteristics of that interface type. For information on configuring interfaces, see the switch software configuration guide.

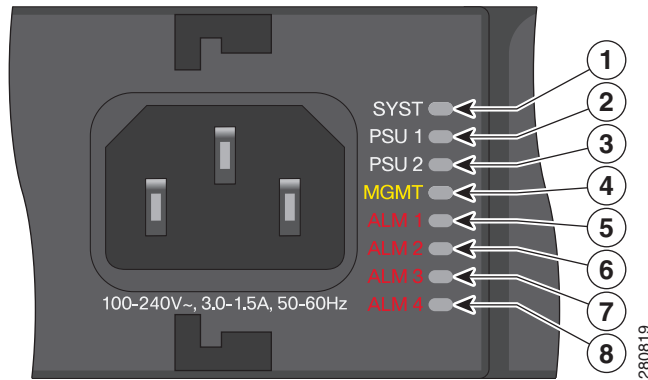
LEDs

You can use the switch system and port LEDs to monitor switch activity and performance.

- [Switch LED Panels, page 1-8](#)
- [Power-Supply Module LEDs, page 1-9](#)
- [Ethernet Management Port LED, page 1-10](#)
- [Alarm LEDs, page 1-11](#)
- [Port LEDs, page 1-11](#)
- [Dual-Purpose Port LEDs, page 1-11](#)

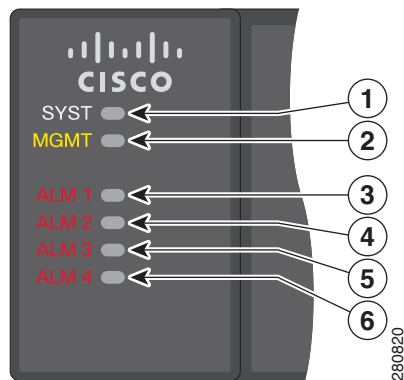
Switch LED Panels

Figure 1-5 Cisco ME 3400E-24TS-M and Cisco ME 3400EG-12CS-M System and Alarm LEDs



1	SYST (system) LED	5	ALM 1 (alarm 1) LED
2	PSU 1 (power supply 1) LED	6	ALM 2 (alarm 2) LED
3	PSU 2 (power supply 2) LED	7	ALM 3 (alarm 3) LED
4	MGMT (Ethernet management port) LED	8	ALM 4 (alarm 4) LED

Figure 1-6 Cisco ME 3400EG-2CS-A System and Alarm LEDs



1	SYST (system) LED	4	ALM 2 (alarm 2) LED
2	MGMT (Ethernet management port) LED	5	ALM 3 (alarm 3) LED
3	ALM 1 (alarm 1) LED	6	ALM 4 (alarm 4) LED

Table 1-3 System LED

Color	System Status
Off	System is not powered on.
Blinking green	POST ¹ is in progress.

Table 1-3 System LED (continued)

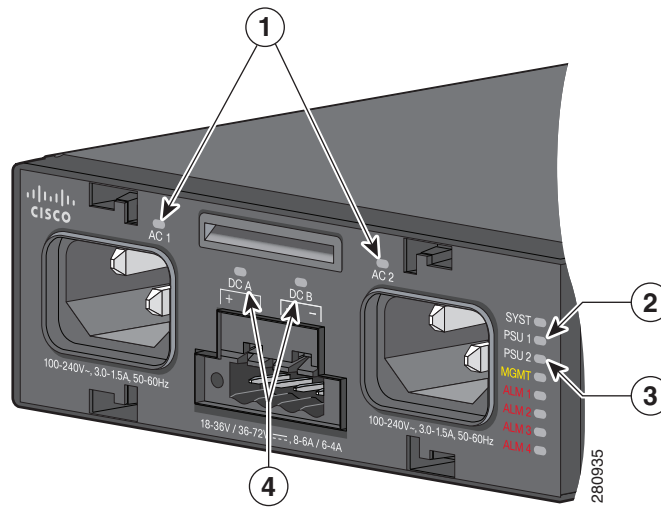
Color	System Status
Green	System is operating normally.
Amber	System is receiving power but is not functioning properly.

1. POST = power-on self-test.

Power-Supply Module LEDs

The power-supply module LEDs show whether power-supply modules 1 and 2 are receiving power.

Figure 1-7 Switch Power-Supply LEDs



1	AC-power-supply LEDs	3	PSU 2 (power supply 2) LED
2	PSU 1 (power supply 1) LED	4	DC-power-supply LEDs

The Cisco ME 3400E-24TS-M and the Cisco ME 3400EG-12CS-M have power-supply module LEDs labeled PSU 1 and PSU 2. See [Figure 1-7](#).

Table 1-4 PSU 1 and PSU 2 Power-Supply LEDs

Color	System Status
Off	Power-supply module (1 or 2) is either not installed or not producing power.
Green	Power-supply module (1 or 2) is installed and producing power in an acceptable range. The fans are operating normally.
Red	Power-supply module (1 or 2) is not producing power in an acceptable range, or a fan has failed.

When an AC-power-supply module is installed, the AC 1 and AC 2 LEDs show which power supply is on (see [Figure 1-7](#)).

Table 1-5 AC-Power-Supply LEDs

Color	System Status
Off	AC-power-supply module is not installed.
Green	AC-power-supply module is installed, and AC-power input (1 or 2) is present.
Amber	AC-power-supply module is installed, and AC-power input (1 or 2) is not present.

When DC-power-supply modules are installed, the DC A and DC B LEDs show which power supply is on (see [Figure 1-7](#)).

Table 1-6 DC-Power-Supply LEDs

Color	System Status
Off	DC-power-supply module is not installed. A DC-power-supply module is installed, and a single DC-power input (A or B) is used and the CLI is configured to allow a single DC-input feed.
Green	DC-power-supply module is installed, and the DC-power input (A or B) is present and is in the operating range.
Amber	DC-power-supply module is installed, and the DC-power input (A or B) is not present or is not in the operating range.

Ethernet Management Port LED

Table 1-7 Ethernet Management Port LED

Color	System Status
Off	No link, or port was administratively shut down.
Green	Link present but not sending or receiving data.
Blinking green	Activity. Port is sending or receiving data.
Alternating green/amber	Link fault. Error frames can affect connectivity, and errors such as excessive collisions, CRC ¹ errors, and alignment and jabber errors ² are monitored for a link-fault indication.

1. CRC = cyclic redundancy check.
2. Jabber errors occur when data packets exceed the prescribed lengths.

Alarm LEDs

Table 1-8 Alarm LEDs

Color	System Status
Off	No alarm
Amber	Minor alarm
Red	Major alarm
Blinking red	Critical alarm

Port LEDs

Each RJ-45 port and SFP-module slot has a port LED. These port LEDs, as a group or individually, display information about the switch and about the individual ports.

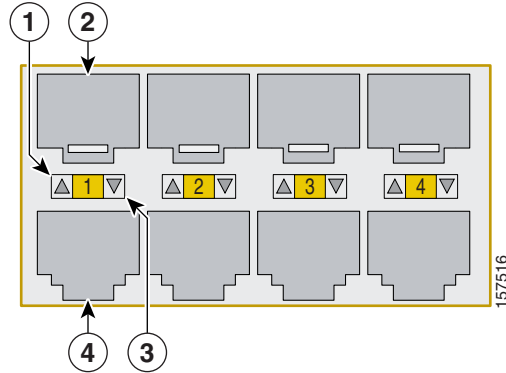
Table 1-9 Meaning of Port LED Colors

LED Color	Meaning
Off	No link, or port was administratively shut down.
Green	Link present but not sending or receiving data.
Blinking green	Activity. Port is sending or receiving data.
Alternating green-amber	Link fault. Error frames can affect connectivity, and errors such as excessive collisions, CRC errors, and alignment and jabber errors are monitored for a link-fault indication.
Amber	Port is blocked by Spanning Tree Protocol (STP) and is not forwarding data. After a port is reconfigured, the port LED can remain amber for up to 30 seconds as STP checks the switch for possible loops.

Dual-Purpose Port LEDs

The dual-purpose port LEDs on the switch show the connection of either a copper-based connector or an SFP module. See [Figure 1-8](#). The ports can autonegotiate, or you can manually configure each dual-purpose port as either an 10/100/1000 with copper connectors or as an SFP-module port, but not both types at the same time.

Figure 1-8 Example of the Switch Dual-Purpose Port LEDs



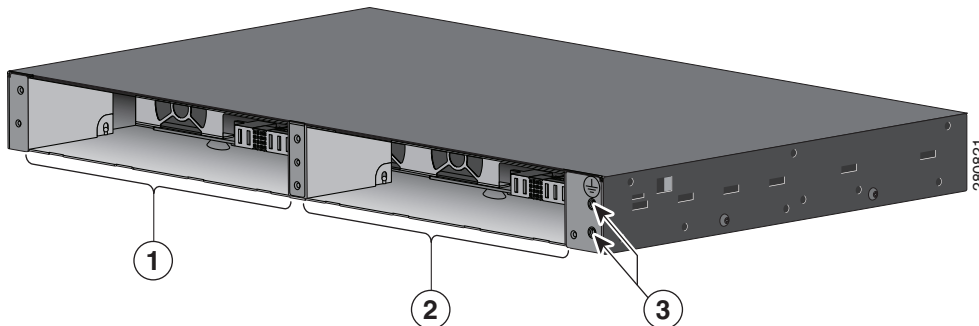
1	SFP-module port in-use LED	3	Copper-based port in-use LED
2	SFP-module slot	4	Copper-based connector

Rear Panel

The rear panel on the Cisco ME 3400E-24TS-M and the Cisco ME 3400EG-12CS-M has two power-supply slots for installing the removable power supplies and a ground connector. See [Figure 1-9](#).

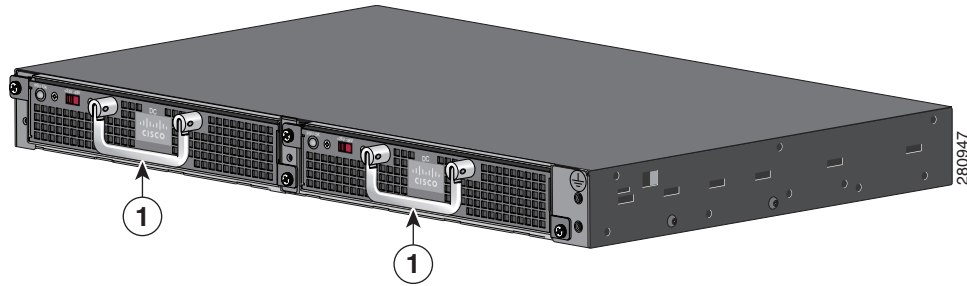
The rear panel on the Cisco ME 3400EG-2CS-A has a fan exhaust, a ground connection, and an AC-power connector ([Figure 1-11](#)).

Figure 1-9 Cisco ME 3400E-24TS-M and Cisco ME 3400EG-12CS-M Rear Panels



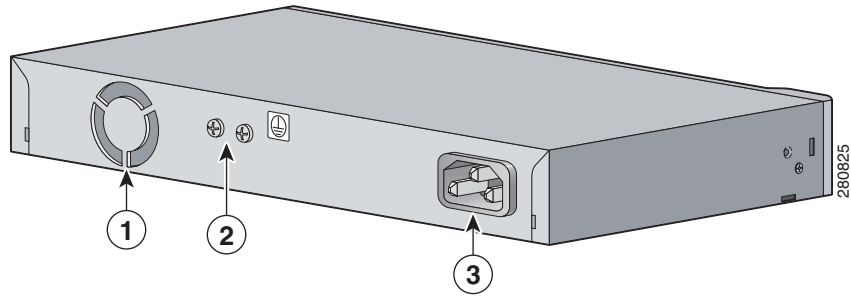
1	Power-supply slot 1	3	Ground connection
2	Power-supply slot 2		

Figure 1-10 Cisco ME 3400E-24TS-M and Cisco ME3400EG-12CS-M Rear Panels



1	Extraction handle
----------	-------------------

Figure 1-11 Cisco ME 3400EG-2CS-A Rear Panel



1	Fan exhaust	3	AC-power connector
2	Ground connection		

Power Supply Features

The Cisco ME 3400E-24TS-M and Cisco ME 3400EG-12CS-M support two modular redundant power supplies, either AC or DC. The switch requires a single power supply to operate. If a failure occurs with a power supply, replace only that failed power supply to maintain redundancy.

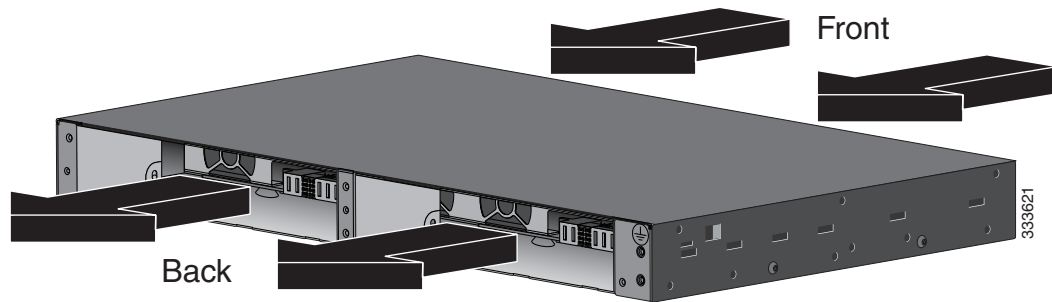
See [Chapter 3, “Installing and Removing AC- and DC-Power-Supply Modules,”](#) for instructions on installing the AC- and DC-power supplies. See [Appendix A, “Technical Specifications,”](#) for voltage and other specifications.

Fans

Air flow on an ME-3400E-24TS-M is front to back.

Figure 1-12 ME-3400E-24TS-M Air Flow

Chassis Airflow



The switch can operate with only one fan. For maximum efficiency, at least two of the four fans should be operational in a warm environment. A fan failure triggers an alarm. When a fan fails, replace the power supply immediately.

Management Options

- Cisco IOS CLI

You can fully configure and monitor the switch from the CLI. You can access the CLI either by connecting your management station directly to the switch console port or by using Telnet from a remote management station. See the switch command reference on Cisco.com for more information.

For setup instructions that use the CLI, go to [Appendix C, “Configuring the Switch with the CLI-Based Setup Program.”](#)
- CiscoView application

The CiscoView device-management application displays the switch image so that you can set configuration parameters and view switch status and performance information. The CiscoView application, which you purchase separately, can be a standalone application or part of a Simple Network Management Protocol (SNMP) platform. See the CiscoView documentation for more information.
- SNMP network management

You can manage switches from a SNMP-compatible management station that is running platforms such as HP OpenView or SunNet Manager. The switch supports a comprehensive set of Management Information Base (MIB) extensions and four Remote Monitoring (RMON) groups. See the switch software configuration guide on Cisco.com and the documentation that came with your SNMP application for more information.

Network Configurations

See the switch software configuration guide on Cisco.com for an explanation of network configuration concepts. The software configuration guide also provides examples of network configurations that use the switch to create dedicated network segments that are interconnected through Ethernet connections.

