



# Cisco IE 2000U Switch Getting Started Guide

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## About This Guide

This guide covers switch management options, installation and basic mounting procedures, and troubleshooting help.

For additional installation and configuration information for Cisco IE 2000U switches, see the Cisco IE 2000U documentation at [www.cisco.com/go/ie2000u-docs](http://www.cisco.com/go/ie2000u-docs). For system requirements, important notes, limitations, open and resolved bugs, and last-minute documentation updates, see the Cisco IE 2000U release notes, which are also on Cisco.com.

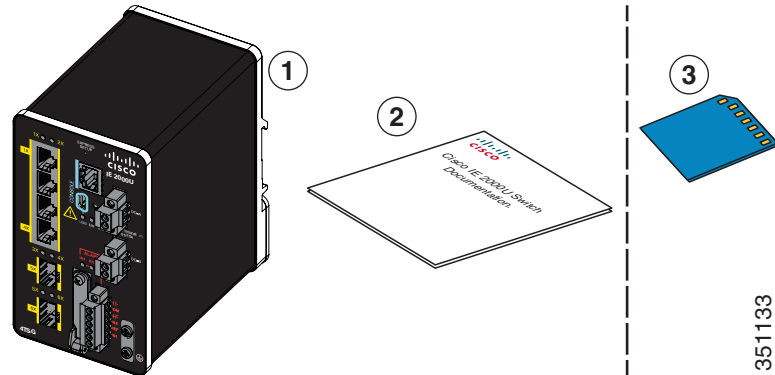
For translations of the warnings that appear in this publication, see the *Regulatory Compliance and Safety Information for the Cisco IE 2000U Switch* on Cisco.com.

When using the online publications, see the documents that match the Cisco IOS software version running on the switch.



# Shipping Box Contents

Figure 1 Cisco IE 2000U Shipping Box Contents



1	Cisco IE 2000U switch <sup>1</sup>	3	(Optional) Flash memory card <sup>2</sup>
2	Documentation		

1. The Cisco IE-2000U-4TS-G is shown as an example. Your switch model might look different.
2. The flash memory card is orderable.

## Managing the Switch

When you first set up the switch, you can use the CLI-based setup program to enter the initial IP information. For more information, see [CLI-Based Setup](#) in the [Cisco IE 2000U Switch Hardware Installation Guide](#).

After completing the CLI-based setup and installing the switch in your network, you can use one of these options for further configuration:

- [Accessing the Command-Line Interface](#)
- [Other Management Options](#)

## Accessing the Command-Line Interface

You can enter Cisco IOS commands and parameters through the CLI. Access the CLI by using one of these options:

- [Switch RJ-45 Console Port](#)
- [Switch USB Mini-Type B Console Port](#)

### Switch RJ-45 Console Port

To use the switch RJ-45 console port:

- 
- Step 1** Connect the supplied RJ-45-to-DB-9 adapter cable to the 9-pin serial port on the PC. Connect the other end of the cable to the console port on the switch.
  - Step 2** Start a terminal-emulation program on the PC.
  - Step 3** Configure the PC terminal emulation software for 9600 baud, 8 data bits, no parity, 1 stop bit, and no flow control.
  - Step 4** Use the CLI to enter commands to configure the switch.

For more information, see the *Cisco Connected Grid Switches System Management Software Configuration Guide* at [www.cisco.com/go/ie2000u-docs](http://www.cisco.com/go/ie2000u-docs) and the Cisco IOS 15.2M&T command references at [http://www.cisco.com/en/US/products/ps11746/prod\\_command\\_reference\\_list.html](http://www.cisco.com/en/US/products/ps11746/prod_command_reference_list.html).

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## Switch USB Mini-Type B Console Port

If you use the USB-mini console port, you must install the Cisco Windows USB device driver on the PC that is connected to that port. See the *Cisco IE 2000U Switch Hardware Installation Guide* for installation instructions.



**Note** You cannot use the switch console port and the switch USB-mini console port at the same time to access the CLI.

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To use the switch USB mini-type B console port:

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- Step 1** Start a terminal-emulation program on the PC.
- Step 2** Configure the PC terminal emulation software for 9600 baud, 8 data bits, no parity, 1 stop bit, and no flow control.
- Step 3** Use the CLI to enter commands to configure the switch.

See the *Cisco Connected Grid Switches System Management Software Configuration Guide* at [www.cisco.com/go/ie2000u-docs](http://www.cisco.com/go/ie2000u-docs) and the Cisco IOS 15.2M&T command references at [http://www.cisco.com/en/US/products/ps11746/prod\\_command\\_reference\\_list.html](http://www.cisco.com/en/US/products/ps11746/prod_command_reference_list.html).

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## Other Management Options

Cisco Configuration Professional is a PC-based application that provides device management for switches and routers. It simplifies configuration of features through easy-to-use wizards.

You can use SNMP management applications such as CiscoWorks LAN Management Solution (LMS) and Cisco netManager to configure and manage the switch. You also can manage it from an SNMP-compatible workstation that is running applications such as Cisco netManager or SunNet Manager.

# Installing the Switch

These sections explain how to install the switch on a DIN rail. See the switch hardware guide for more information.

**Note**

For instructions on how to install the switch in a hazardous environment, see the “Switch Installation” chapter of the *Cisco IE 2000U Switch Hardware Installation Guide* on Cisco.com.

- [Equipment That You Supply, page 4](#)
- [Before You Begin, page 4](#)
- [Installation Warning Statements, page 5](#)
- [Mounting the Switch to a DIN Rail, page 7](#)
- [Grounding the Switch, page 7](#)
- [Wiring the DC Power Source, page 8](#)
- [Attaching the Power Connector, page 10](#)
- [Optional Procedures, page 11](#)

## Equipment That You Supply

Obtain these necessary tools and equipment:

- Ratcheting torque flathead screwdriver that exerts up to 15 in-lb (1.69 N-m) of pressure
- For the protective ground connector, obtain a single or pair of stud size 6 ring terminals (such as Hollingsworth part number R3456B or equivalent)
- Crimping tool (such as Thomas & Bett part number WT2000, ERG-2001, or equivalent)
- 10- to 12-gauge copper ground wire (such as Belden part number 9912 or equivalent)
- For DC power connections, use 16- to 18-AWG, UL- and CSA-rated style 1007 or 1569 twisted-pair copper appliance wiring material (AWM) wire
- Wire-stripping tools for stripping 10- and 18-gauge wires
- A number 2 Phillips screwdriver
- A flat-blade screwdriver

## Before You Begin

When you determine where to install the switch, verify that these guidelines are met:

- Operating environment is within the range in the switch hardware installation guide.
- Clearance to front and rear panels meets these conditions:
  - Front-panel LEDs can be easily read.
  - Access to ports is sufficient for unrestricted cabling.
  - Front-panel direct current (DC) power and alarm connectors are within reach of the connection to the DC power source.

- Airflow around the switch must be unrestricted. To prevent the switch from overheating, there must be the following minimum clearances:
  - Top and bottom: 2.0 in. (50.8 mm)
  - Sides: 2.0 in. (50.8 mm)
  - Front: 2.0 in. (50.8 mm)

Contact your Cisco TAC if tighter spacings are required.

- Temperature surrounding the unit does not exceed 140°F (60°C), the maximum ambient temperature of the switch.


**Note**

When the switch is installed in an industrial enclosure, the temperature within the enclosure is greater than normal room temperature outside the enclosure.

- Cabling is away from sources of electrical noise, such as radios, power lines, and fluorescent lighting fixtures.
- This product is grounded to a bare metal surface, such as a ground bus, a grounded DIN rail, or a grounded bare rack. Use a zinc-plated, yellow-chromate steel DIN rail to assure proper grounding. The use of other materials (such as aluminum, plastic, and so on) that can corrode, oxidize, or are poor conductors can result in improper or intermittent grounding. When grounding to a DIN rail, secure the DIN rail to the mounting surface approximately every 7.8 in. (200 mm), and use appropriate end-anchors.

## Installation Warning Statements


**Warning**

**Before performing any of the following procedures, ensure that power is removed from the DC circuit.** Statement 1003


**Warning**

**This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 3A.** Statement 1005


**Warning**

**This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security.** Statement 1017


**Warning**

**This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.** Statement 1024


**Warning**

**Only trained and qualified personnel should be allowed to install, replace, or service this equipment.** Statement 1030



**Warning**

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**To prevent the system from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of: 140°F (60°C)** Statement 1047

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**Warning**

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**This equipment is supplied as “open type” equipment. It must be mounted within an enclosure that is suitably designed for those specific environmental conditions that will be present and appropriately designed to prevent personal injury resulting from accessibility to live parts. The interior of the enclosure must be accessible only by the use of a tool.**

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**The enclosure must meet IP 54 or NEMA type 4 minimum enclosure rating standards.** Statement 1063

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**Warning**

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**This equipment is intended to be grounded to comply with emission and immunity requirements. Ensure that the switch functional ground lug is connected to earth ground during normal use.** Statement 1064

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**Warning**

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**When used in a Class I, Division 2, hazardous location, this equipment must be mounted in a suitable enclosure with proper wiring method, for all power, input and output wiring, that complies with the governing electrical codes and in accordance with the authority having jurisdiction over Class I, Division 2 installations.** Statement 1066

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**Caution**

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Airflow around the switch must be unrestricted. To prevent the switch from overheating, there must be the following minimum clearances:

- Top and bottom: 2.0 in. (50.8 mm)
- Sides: 2.0 in. (50.8 mm)
- Front: 2.0 in. (50.8 mm)

Contact your Cisco TAC representative if tighter spacings are required.

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**Caution**

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This equipment is suitable for use in Class I, Division 2, Groups A, B, C, D, or only nonhazardous locations.

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**Caution**

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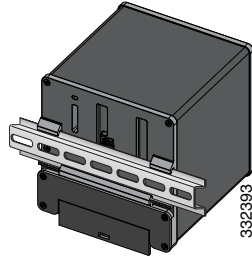
Connect the unit only to a Class 2 DC power source.

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## Mounting the Switch to a DIN Rail

The switch ships with a spring-loaded latch on the rear panel for a mounting on a DIN rail.

To attach the switch to a DIN rail, follow these steps:

- |               |  |  |
|---------------|--|--|
| <b>Step 1</b> | Position the rear panel of the switch directly in front of the DIN rail, making sure that the DIN rail fits in the space between the two hooks near the top of the switch and the spring-loaded latch near the bottom. |  |
| <b>Step 2</b> | Holding the bottom of the switch away from the DIN rail, place the two hooks on the back of the switch over the top of the DIN rail.   |  |
| <b>Step 3</b> | Push the switch toward the DIN rail to cause the spring-loaded latch at the bottom rear of the switch to move down, and snap into place.   |  |
| <b>Step 4</b> | Connect power to the switch.<br>See the wiring instructions in the <a href="#">“Grounding the Switch”</a> section on page 7 and the <a href="#">“Wiring the DC Power Source”</a> section on page 8.                    |  |

## Grounding the Switch



**Warning**

**This equipment must be grounded. Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.** Statement 1024



**Warning**

**This equipment is intended to be grounded to comply with emission and immunity requirements. Ensure that the switch functional ground lug is connected to earth ground during normal use.** Statement 1064



**Caution**

To make sure that the equipment is reliably connected to earth ground, follow the grounding procedure instructions, and use a UL-listed ring terminal lug suitable for number 10-to-12 AWG wire, such as Hollingsworth part number R3456B or equivalent.



**Note**

Use at least a 4 mm<sup>2</sup> conductor to connect to the external grounding screw.

The ground lug is not supplied with the switch. You can use one of the these options:

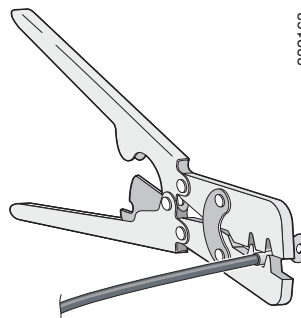
- Single ring terminal
- Two single ring terminals

To connect the switch to a protective ground:

**Step 1** Use a standard Phillips screwdriver or a ratcheting torque screwdriver with a Phillips head to remove the ground screw from the front panel of the switch. Store the ground screw for later use.

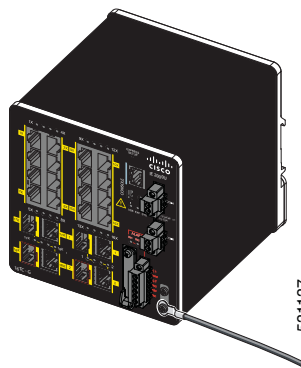
**Step 2** Use the manufacturer’s guidelines to determine the wire length to be stripped.

**Step 3** Insert the ground wire into the ring terminal lug, and using a crimping tool, crimp the terminal to the wire. If two ring terminals are being used, repeat this action for a second ring terminal.



**Step 4** Slide the ground screw from Step 1 through the ring terminal.

**Step 5** Insert the ground screw into the functional ground screw opening on the front panel.



**Step 6** Use a ratcheting torque screwdriver to tighten the ground screws and ring terminal to the switch front panel to 3.5 in-lb (0.4 N-m). The torque should not exceed 3.5 in-lb (0.4 N-m).

**Step 7** Attach the other end of the ground wire to a grounded bare metal surface, such as a ground bus, a grounded DIN rail, or a grounded bare rack.

## Wiring the DC Power Source

Read the warnings in this section before wiring the DC power source:



**Caution**

This product is intended to be supplied by a Class 2 power source marked with Class 2 and rated from 12, 24, or 48 VDC, 2.5 A.



**Warning**

**A readily accessible two-poled disconnect device must be incorporated in the fixed wiring.**

Statement 1022

**Warning**

**This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than:**

**3A.** Statement 1005

**Warning**

**Installation of the equipment must comply with local and national electrical codes.** Statement 1074

**Warning**

**Before performing any of the following procedures, ensure that power is removed from the DC circuit.**

Statement 1003

**Warning**

**Only trained and qualified personnel should be allowed to install, replace, or service this equipment.**

Statement 1030

**Caution**

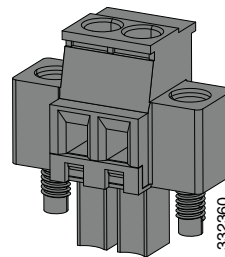
You must connect the switch only to a DC-input power source that has an input supply voltage of 12, 24, or 48 VDC. If the supply voltage is not in this range, the switch might not operate properly or might be damaged.

**Caution**

For wire connections to the power and alarm connectors, you must use UL- and CSA-rated, style 1007 or 1569 twisted-pair copper appliance wiring material (AWM) wire.


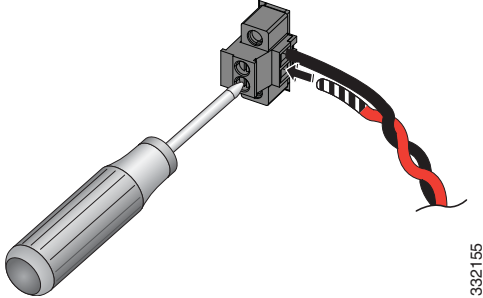
To wire the switch to a DC-input power source:

**Step 1** Locate the power connector.



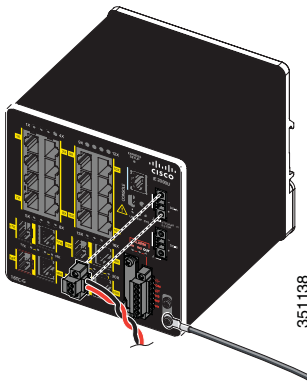
**Step 2** Identify the positive and return DC power connections on the connector. The positive DC power connection is labeled “+”, and the return is the adjacent connection labeled “-” on the switch.

**Step 3** Measure a strand of twisted-pair copper wire (16- to 18-AWG) long enough to connect to the DC power source.

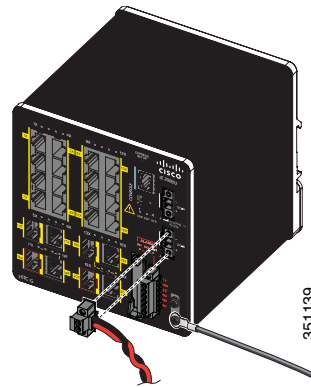
- |               |  |  |
|---------------|--|--|
| <b>Step 4</b> | <p>Using a 16- to 18-gauge wire-stripping tool, strip each of the two wires to 0.25 inch (6.3 mm) <math>\pm</math> 0.02 inch (0.5 mm). Do not strip more than 0.27 inch (6.8 mm) of insulation from the wire. Stripping more than the recommended amount of wire can leave exposed wire from the connector after installation.</p> |  |
| <b>Step 5</b> | <p>Remove the two captive screws that attach the power connector to the switch, and remove the power connector. Remove both connectors if you are connecting to two power sources.</p>   |  |
| <b>Step 6</b> | <p>On the power connector, insert the exposed part of the positive wire into the connection labeled “+” and the exposed part of the return wire into the connection labeled “-”. Make sure that you cannot see any wire lead. Only wire <i>with insulation</i> should extend from the connector.</p>                               |  |
| <b>Step 7</b> | <p>Use a ratcheting torque flathead screwdriver to torque the power connector captive screws (above the installed wire leads) to 2 in-lb (0.23 N-m), the maximum recommended torque.</p>   |  |
| <b>Step 8</b> | <p>Connect the other end of the positive wire (the one connected to +) to the positive terminal on the DC power source, and connect the other end of the return wire (the one connected to RT) to the return terminal on the DC power source.</p>  |  |
| <b>Step 9</b> | <p>If you are installing the switch and are using a second power source, repeat Step 3 through Step 7 using a second power connector.</p>  |  |

## Attaching the Power Connector

To connect the DC power connector to the switch:

- |               |  |  |
|---------------|--|--|
| <b>Step 1</b> | <p>Insert the power connector into the receptacle on the switch front panel.</p>                     |  |
| <b>Step 2</b> | <p>Use a flathead screwdriver to tighten the captive screws on the sides of the power connector.</p> |  |

- Step 3** (Optional) Insert a second power connector into the receptacle on the switch front panel.



- Step 4** Use a flathead screwdriver to tighten the captive screws on the sides of the second power connector.
- Step 5** To apply power to a switch that is directly connected to a DC power source, locate the circuit breaker on the panel board that services the DC circuit, and switch the circuit breaker to the ON position.

## Optional Procedures

For detailed instructions on these procedures, see the *Cisco IE 2000U Switch Hardware Installation Guide* on Cisco.com:

- Wiring the external alarm relays
- Installation in a hazardous environment

## Connecting to the Switch Ports

These sections describe how to connect to the switch ports, the SFP module ports, and the dual-purpose ports. For additional cabling information, see the *Cisco IE 2000U Switch Hardware Installation Guide* on Cisco.com.

- [Connecting to 10/100 and 10/100/1000 Ports, page 11](#)
- [Installing SFP Modules and Connecting to Ports, page 13](#)
- [Connecting to Dual-Purpose Ports, page 13](#)
- [Verifying Port Connectivity, page 14](#)

## Connecting to 10/100 and 10/100/1000 Ports



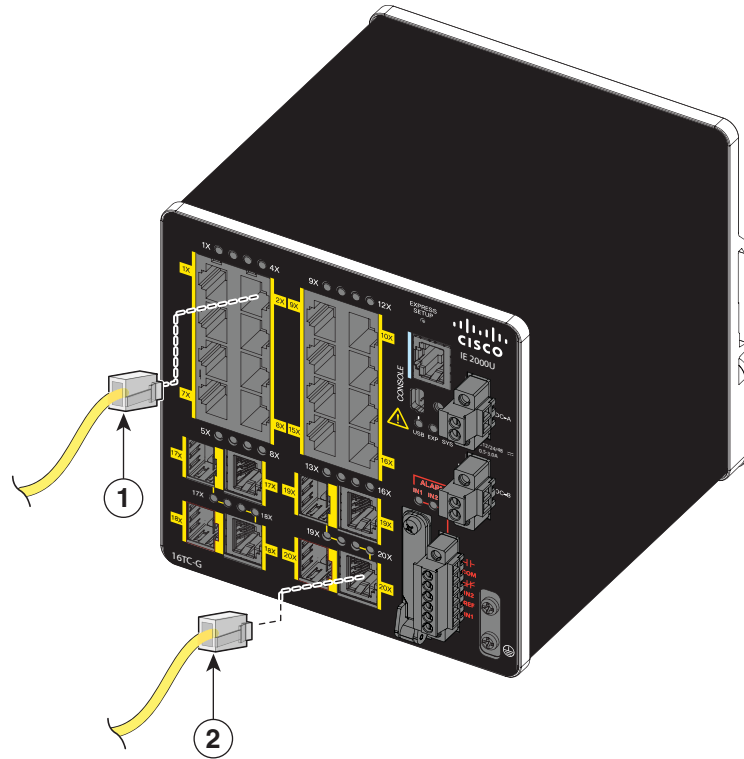
### Caution

To prevent electrostatic-discharge (ESD) damage, follow your normal board and component handling procedures.

To connect to the ports:

- Step 1** When you connect these switches to any Ethernet-enabled communication devices, insert a straight-through twisted four-pair, Category 5 or higher grade cable (unshielded twisted pair (UTP)) in a switch 10/100 or 10/100/1000 port.

**Figure 2** Connecting to an Ethernet Port



351140

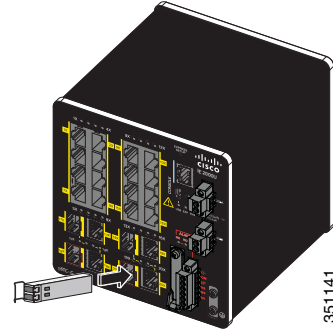
<b>1</b>	10/100 port
<b>2</b>	10/100 or 10/100/1000 port (depending on model)

- Step 2** Insert the other cable end into an RJ-45 connector on the other device.
- The auto-MDIX feature is enabled by default. For configuration information for this feature, see the *Cisco Connected Grid Switches Interfaces Software Configuration Guide* at [www.cisco.com/go/ie2000u-docs](http://www.cisco.com/go/ie2000u-docs) or the Cisco IOS 15.2M&T command references at [http://www.cisco.com/en/US/products/ps11746/prod\\_command\\_reference\\_list.html](http://www.cisco.com/en/US/products/ps11746/prod_command_reference_list.html).

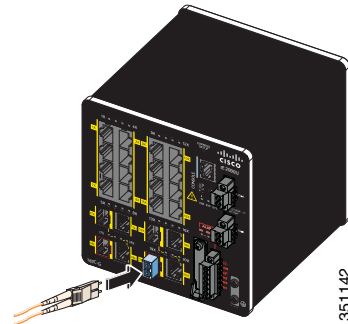
## Installing SFP Modules and Connecting to Ports

To install the modules and connect to ports:

- Step 1** Grasp the module on the sides, and insert it into the switch slot until you feel the connector snap into place.



- Step 2** Insert an appropriate cable into the module port.



- Step 3** Insert the other cable end into the other device.

For a list of supported modules, see the *Release Notes for the Cisco IE 2000U Switch* at [www.cisco.com/go/ie2000u-docs](http://www.cisco.com/go/ie2000u-docs). For detailed instructions on installing, removing, and connecting to SFP modules, see the documentation that came with the SFP module.



### Caution

Removing and installing an SFP module can shorten its useful life. Do not remove and insert SFP modules more often than is absolutely necessary.

## Connecting to Dual-Purpose Ports

Only one port on a dual-purpose port can be active at a time. If both ports are connected, the SFP module port has priority.

To connect to the ports:

- 
- Step 1** Insert either an RJ-45 connector to the 10/100/1000 port (see the [“Connecting to 10/100 and 10/100/1000 Ports”](#) section on page 11), or install an SFP module into the SFP module slot, and connect a cable to the SFP module port. (See the [“Installing SFP Modules and Connecting to Ports”](#) section on page 13.)
- Step 2** Insert the other cable end into the other device.
- 

## Verifying Port Connectivity

After you connect to the switch port and another device, the port LED turns amber while the switch establishes a link. This process takes about 30 seconds, and then the LED turns green when the switch and the target device have an established link. If the LED is off, the target device might not be turned on, there might be a cable problem, or there might be a problem with the adapter installed in the target device.

## Troubleshooting

In case of difficulty with troubleshooting, this section provides help as well as Cisco.com. This section includes how to reset the switch, how to access help online, and where to find more information.

## Resetting the Switch

These are reasons why you might want to reset the switch to the factory default settings:

- You installed the switch in your network and cannot connect to it because you assigned the wrong IP address.
- You want to reset the password on the switch.



**Caution**

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Resetting the switch deletes the configuration and reboots the switch.

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To reset the switch:

Power up the switch and wait a couple of minutes for it to boot up completely.

The configuration is reset and the system reboots.

The switch now behaves like an unconfigured switch. You can configure the switch by using the CLI setup procedure as described in the *Cisco IE 2000U Switch Hardware Installation Guide*.

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## Accessing Online Help

First look for a solution to your problem in the troubleshooting section of the *Cisco IE 2000U Switch Hardware Installation Guide* or the *Cisco IOS Basics and File Management for Connected Grid Switches* at [www.cisco.com/go/ie2000u-docs](http://www.cisco.com/go/ie2000u-docs). You can also access the Cisco Technical Support and Documentation website for a list of known hardware problems and extensive troubleshooting documentation.

## For More Information

For more information about the switch, see these documents at [www.cisco.com/go/ie2000u-docs](http://www.cisco.com/go/ie2000u-docs):

- *Cisco IE 2000U Switch Hardware Installation Guide*. This guide provides complete hardware descriptions and detailed installation procedures.
- *Regulatory Compliance and Safety Information for the Cisco IE 2000U Switch*. This guide contains agency approvals, compliance information, and translated warning statements.
- *Release Notes for the Cisco IE 2000U Switch*. The release notes include important information about the Cisco IOS release software, and any limitations, restrictions, and caveats that apply to the releases.
- *Cisco Connected Grid Switches System Management Software Configuration Guide*. This guide provides a product overview and detailed descriptions and procedures of the switch software features for managing the switch.
- *Cisco IOS Basics and File Management for Connected Grid Switches*. This guide describes the Cisco IOS command-line interface, the Cisco IOS Configuration Engine, and how to work with the Cisco IOS file system, configuration files, and software images. This document also describes how to identify and resolve software problems related to the Cisco IOS software on the switch.
- *Cisco IOS 15.2M&T command references*, at:  
[http://www.cisco.com/en/US/products/ps11746/prod\\_command\\_reference\\_list.html](http://www.cisco.com/en/US/products/ps11746/prod_command_reference_list.html).

This reference provides detailed descriptions of the Cisco IOS commands related to the switch.

## Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS version 2.0.

### To Receive a Return Materials Authorization (RMA) Number

Contact the company from whom you purchased the product. If you purchased the product directly from Cisco, contact your Cisco Sales and Service Representative.

Complete the information below, and keep it for reference.

Company product purchased from	
Company telephone number	
Product model number	
Product serial number	
Maintenance contract number	

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