Cisco Catalyst Micro Series Switch Hardware Installation Guide

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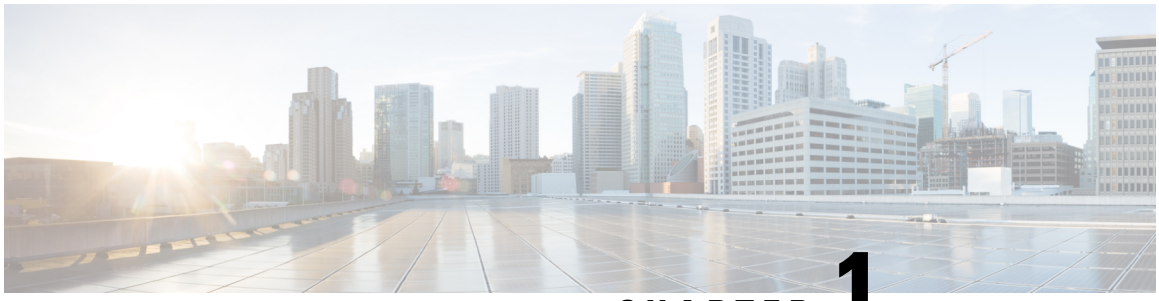

CHAPTER 1

Product Overview

Cisco Catalyst Micro Series switch is a small form factor micro switch designed to provide networking solutions for decentralized networking. The Cisco Catalyst Micro Series family of switches is ideal for FTTx deployments.

The following are some of the features of Cisco Catalyst Micro switches:

- provides four 1 Gigabit Ethernet (G) ports and two 1 G Copper or Fiber uplinks, with line-rate forwarding performance
- provides power over ethernet plus (PoE+) support with power budget upto 60 W and 120 W for different switch models
- enables silent operation and enhanced reliability with fan less design
- provides USB-C connector for power sourcing end user devices
- supports flexible mounting options such as wall mount, cable duct mount, desktop and table bottom mount

- Switch Models, on page 1
- Physical Components, on page 2
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Switch Models

Table 1: Cisco Catalyst Micro Series Switch Models and Description

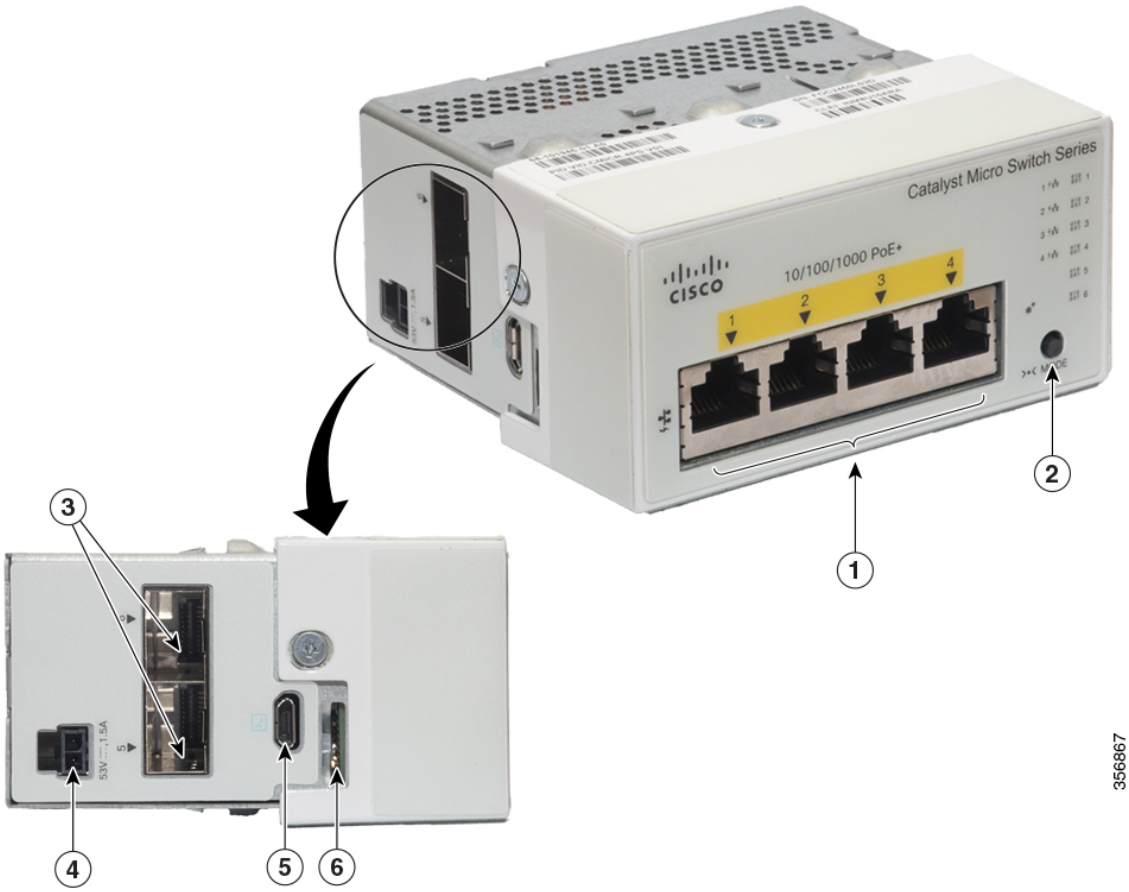
Switch Model	Description
CMICR-4PS	Four 1 Gigabit Ethernet downlink PoE+ ports; two 1 Gigabit Ethernet SFP uplink ports; uses external AC/DC adapters for power sourcing.
CMICR-4PC	Four 1 Gigabit Ethernet downlink PoE+ ports; one 1 Gigabit Ethernet SFP and one 1 Gigabit Ethernet RJ-45 uplink ports; uses external AC/DC adapters for power sourcing.

Switch Model	Description
CMICR-4PT	Four 1 Gigabit Ethernet downlink PoE+ ports; one 1 Gigabit Ethernet RJ-45 uplink port and one 1 Gigabit Ethernet RJ-45 or SFP combo uplink ports; two USB-C connectors for power sourcing; uses external AC/DC adapters or external PSE through PD ports for power sourcing.

Physical Components

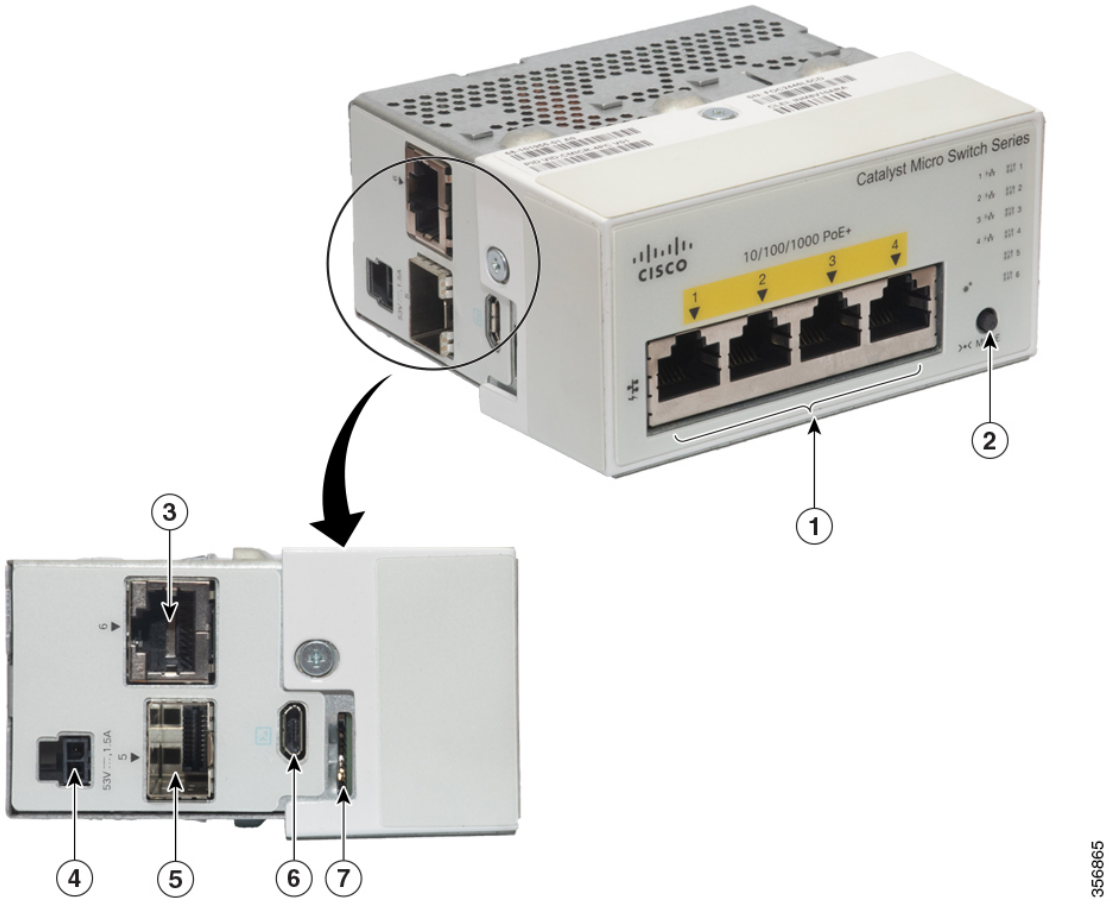
This section identifies the physical components that constitute the Cisco Catalyst Micro Series Switches.

Figure 1: Detailed Architecture of a CMICR-4PS Switch



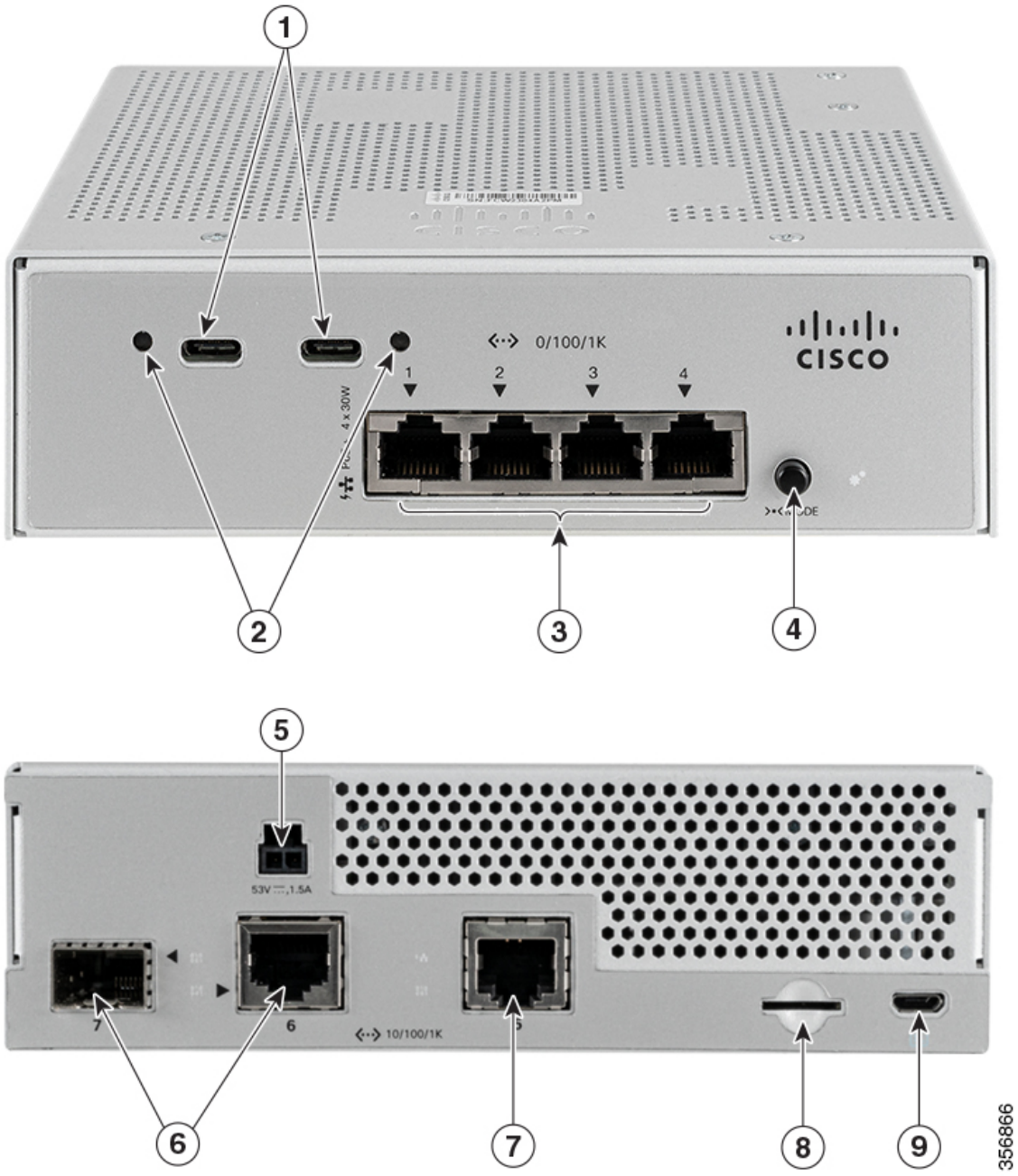
1	Four 1 G PoE+ downlink ports	4	Power adapter slot
2	Mode button	5	Micro USB console port
3	Two 1 G SFP uplink ports	6	microSD memory card slot

Figure 2: Detailed Architecture of a CMICR-4PC Switch



1	Four 1 G PoE+ downlink ports	5	1 G SFP uplink port
2	Mode button	6	Micro USB console port
3	1 G Copper uplink port	7	microSD memory card slot
4	Power adapter slot	-	-

Figure 3: Detailed Architecture of a CMICR-4PT Switch



1	USB-C ports	6	1 G combo uplink ports
2	USB-C-PWR LED	7	1 G Copper uplink port
3	1 G downlink ports	8	microSD memory card slot
4	Mode button	9	Micro USB console

5	Power supply slot	-	-

Hardware Features

This section describes the different hardware features supported on Cisco Catalyst Micro Series Switches.

PoE and PoE+ Ports

The PoE/PoE+ ports on the switch provide PoE+ support for devices compliant with IEEE 802.3af and IEEE 802.3at and also provide PoE support for end points such as access points, IP camera or surveillance systems, Cisco IP Phones and so on. The PoE switch ports are Power Source equipment (PSE) capable and source power to PD devices connected to the downlink ports. The switch can source PoE power of up to 30W per port, with a total budget that varies depending on the power adapter used. For more information about total PoE budget, see Power Supply Slot, on page 6.

The PoE ports use RJ-45 connectors with Ethernet pinouts. The end points are connected to the switches using CAT5/CAT5e/CAT6/CAT6a cables and they are powered and controlled through IP.

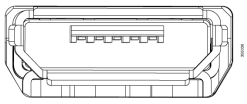
Console Ports

The console ports connect the switch to a PC running Microsoft Windows or to a terminal server. Cisco Catalyst Micro Series switches has a USB 2.0 Type B micro console port (5-pin connector).

To use the USB 2.0 Type B micro console port, an external USB device driver must be installed on any PC connected to the console port (for operation with Microsoft Windows). Mac OS X or Linux do not require special drivers. With the USB device driver, you can connect and disconnect the USB cable from the console port without affecting Windows HyperTerminal operations.

This illustration shows a 5-pin micro-Type B USB port.

Figure 4: USB 2.0 Type B Micro Port



The USB 2.0 Type B micro connector allows a USB Type A port to be connected directly to the switch console management port using a USB Type A to USB Type B micro cable.

The default baud rate for CMICR-4PT console is 9600 bits per second and for CMICR-4PS console is 115200 bits per second. Configure the baud rate and character format of the PC or terminal used for console access to match the console port default rate.

Combo Uplink Ports

CMICR-4PT switch consists of an uplink SFP/RJ45 combo port. On the rear side, the switch has two 1 G uplink ports of which one is an RJ45 copper port and the other is an SFP fiber port which functions together as the combo port. However, only one port can be used at time; the port accepts only a 10/100/1000BASE-T copper connection or an SFP fiber connection. Combo port does not support PoE.

By default, the port has RJ45 interface. You can switch between SFP or RJ45 using the **media-type** command on the interface.

USB-C Connector

CMICR-4PT switch contains two USB-C connectors for sourcing power to the end devices such as laptops, monitors, smart phones and so on. Each port can provide up to 60 W of power based on the pass through power availability.

microSD Flash Memory Card Slot

The switch provides a memory card slot that enables booting the device using a removable microSD flash memory card. When configured, the switch checks for configuration files and boot images on the microSD card and prefers booting from microSD memory card to system flash. This enables quick upgrades and replacement of switches without reconfiguring the new switch.

The microSD flash is disabled during reload, and you need to manually enable it by using the **sdflash enable** command. The performance of the switch is not affected by this behavior.

Power Supply Slot

The switch provides a power supply slot for powering the switch using an external AC-DC adapter. It supports two power supply adapters of 80 W and 65 W respectively. The default power adapter supported is 65 W. You must use the **power inline ps watt** *power number* CLI to switch between the power supplies. To return to the default settings use the no form of the command.

Catalyst CMICR-4PT switches can be powered either through an auxiliary AC-DC power adapter or from an external PSE through the UPOE PD ports. If both the power adapter and the UPOE ports are available, power is shared from both the sources. The auxiliary AC-DC power adaptor provides power redundancy and additional PoE.

You can order an adapter with the switch, or you can order it later from your Cisco representative. The following are the power adapters supported by Cisco Catalyst Micro Series switches.

- PSU-80W-AC: 80 W AC power adapter
- 65 W AC to DC power adapter with a specification of 53 V/1.22 A

Table 2: Available PoE Power for CMICR-4PS and CMICR-4PC Switches

Power Adapter Model	Available PoE
PSU-80W-AC	62 W
65 W AC to DC power adapter	50 W

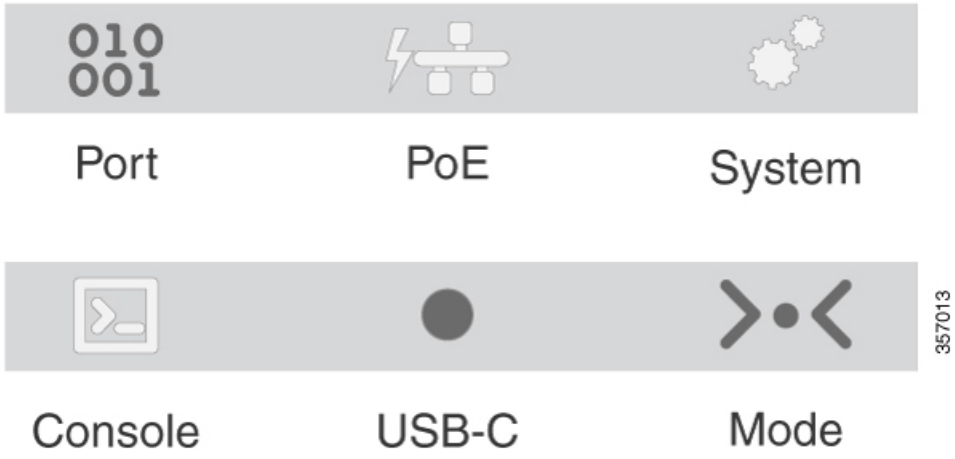
Table 3: Available Pass-Through Power for CMICR-4PT Switches

Adapter Power	Uplink PD Power	Pass-Through Power (W)		
		PoE	USB-C	Shared between PoE and USB-C
80	-	62	55	55
80	15	62	55	55
80	30	62	55	55
80	60	99	90	90
80	90	120	90	90
-	60	29	23	23
-	90	46	39	39

LEDs

You can use the system and port LEDs to monitor switch activity and performance. To conserve power, the LEDs remain off by default when switch is powered on. Press the Mode button to turn on the LEDs.

Figure 5: Switch LEDs



Downlink Port Data LEDs

RJ-45 ports have port LEDs. These LEDs, as a group or individually, provide information about the switch and about the individual ports.

Color	Description
Off	No link or port was administratively shut down.

Color	Description
Green	Link present but is not sending or receiving data.
Blinking green	Activity. Port is sending or receiving data.
Blinking 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 link faults.
Amber	Port is blocked by Spanning Tree Protocol (STP) and is not forwarding data. After a port is reconfigured, the port LED is amber for up to 30 seconds as STP searches for loops.

Downlink Port PoE LEDs

Color	Description
Off	PoE is not enabled.
Green	PoE is enabled. Ports are functioning correctly.
Blinking amber	• PoE port has been denied power. • PoE port has a PoE fault.

Uplink Port Data LEDs

LED Color	Description
Off	No link or port was administratively shut down.
Green	Link present but is not sending or receiving data.
Blinking green	Activity. Port is sending or receiving data.
Blinking 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 link faults.
Amber	Port is blocked by Spanning Tree Protocol (STP) and is not forwarding data. After a port is reconfigured, the port LED is amber for up to 30 seconds as STP searches for loops.

System LED

Color	System Status
Off	System is not powered on.
Green	System is operating normally.
Amber	System is receiving power but is not operating properly.

USB-C LED

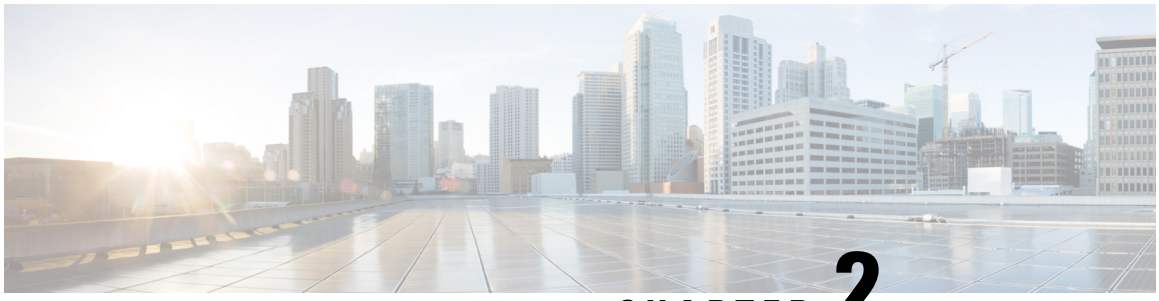
Color	Description
Off	USB PD power is not sourced or no USB device is connected.
Green	USB device is connected and power sourcing is initiated.

Mode Button

The mode button is used for resetting the switch, selecting or changing an LED mode, and manually waking up the switch from hibernation mode.

In Cisco Catalyst Micro Series Switches, LEDs are normally turned off to save power. When the mode button is pressed, the LEDs turn on for a set period of 60 seconds before they turn off again to save power. This can be overridden by a configuration parameter which alters the default 60 second timeout or disables LED power savings completely. All LEDs are affected by this function except the System LED, which only dims and does not turn off completely.

System State	Duration	Action
LEDs Off	Any	Activates the LEDs for 60 seconds, then returns the LEDs to Off State. System LED dims but does not turn off.
LEDs On	Any	Toggle between "Stat" and "Speed" LED modes. These modes only affect the port data LEDs.
Bootloader Active	Hold until bootloader completes	Stops autoboot and remains at bootloader prompt.
Switch in Deep Sleep	Hold for more than 1 second	Switch wakes up to full power mode.



CHAPTER 2

Switch Installation

- Safety Warnings, on page 11
- Contents of the Shipping Box, on page 12
- Installation Guidelines, on page 14
- Mounting the Switch, on page 15
- Installing SFP Modules, on page 47
- Installing a Grounding Lug, on page 48

Safety Warnings

This section includes the warning statements relating to basic installation. Read this section before you start the installation procedure.

Warning Do not work on the system or connect or disconnect cables during periods of lightning activity. **Statement 1001**

Warning Read the installation instructions before connecting the system to the power source. **Statement 1004**

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

Warning Do not disconnect connections to this equipment unless power has been removed or you have verified that the area is nonhazardous. Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product.**Statement 1062**

Warning This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. **Statement 1071**

Warning Voltages that present a shock hazard may exist on Power over Ethernet (PoE) circuits if interconnections are made using uninsulated exposed metal contacts, conductors, or terminals. Avoid using such interconnection methods, unless the exposed metal parts are located within a restricted access location and users and service people who are authorized within the restricted access location are made aware of the hazard. A restricted access area can be accessed only through the use of a special tool, lock and key or other means of security. **Statement 1072**

Warning No user-serviceable parts inside. Do not open. **Statement 1073**

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

Warning To prevent airflow restriction, allow clearance around the ventilation openings to be at least: 3 inches (7.6 cm). **Statement 1076**

Warning Hot surface. **Statement 1079**

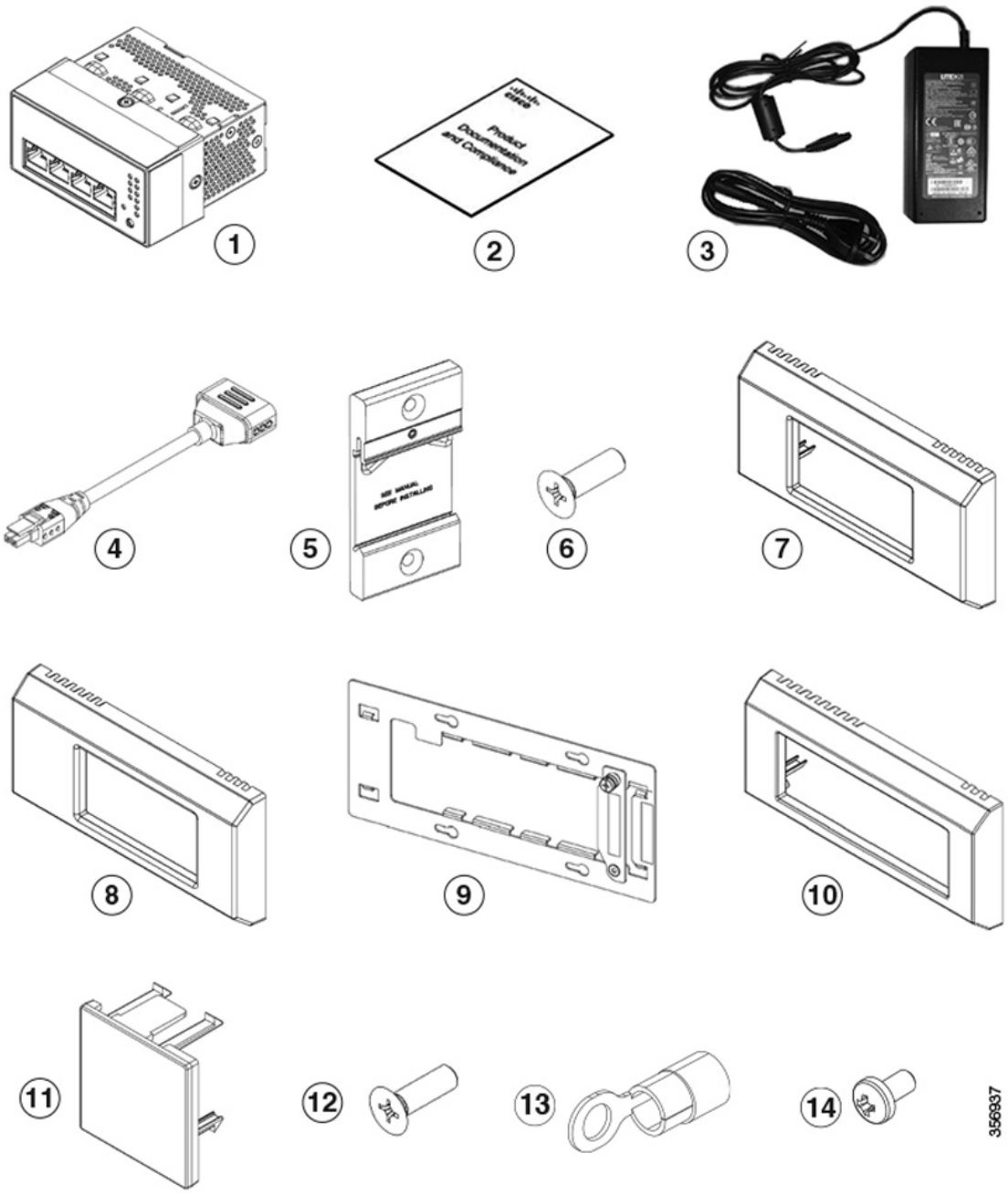
Warning Explosion Hazard—The area must be known to be nonhazardous before installing, servicing, or replacing the unit.**Statement 1082**

Contents of the Shipping Box

The shipping box contains the model of the switch you ordered and other components needed for installation. Some components are optional.

To install the switch, you will need to order mounting accessories depending on the mounting option that you choose. You can order them when you order your switch, or you can order them later from your Cisco representative.

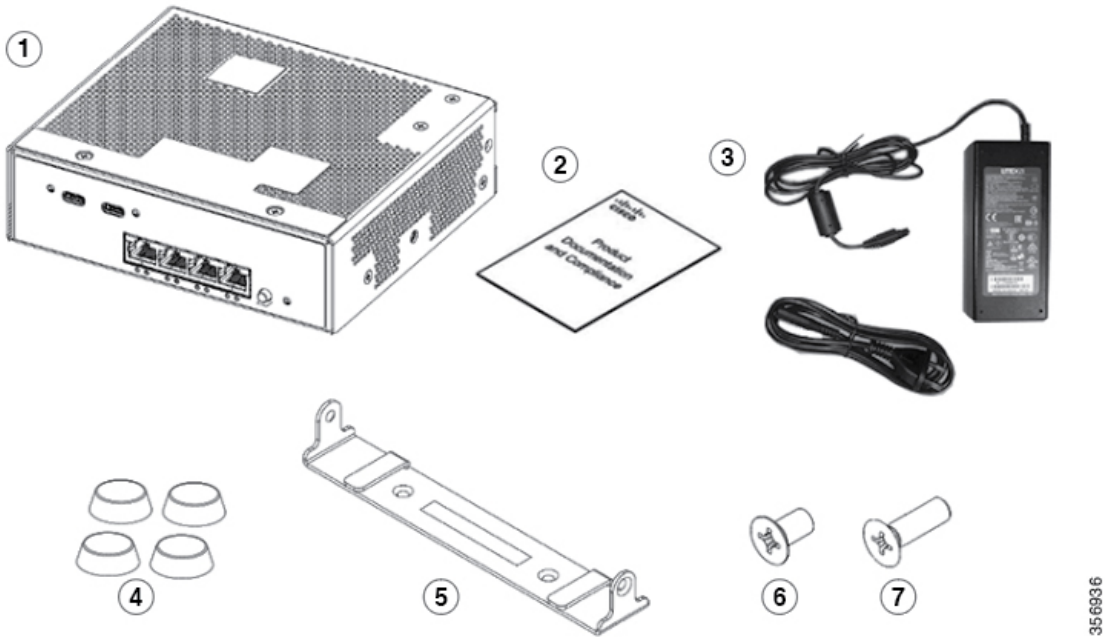
Figure 6: Shipping Box for CMICR-4PS and CMICR-4PC



1	CMICR-4PS or CMICR-4PC switch of Cisco Catalyst Micro Series Switches	8	(Optional) Bezel short off centered
2	Pointer Card	9	(Optional) Bracket short off centered
3	(Optional) AC power adapter and power cord	10	(Optional) Bezel long off centered

4	(Optional) Power adapter cable	11	(Optional) Blind cover
5	(Optional) DIN rail clip	12	(Optional) Four number M3 flat head screws
6	(Optional) Two number 6-32 DIN rail clip mounting screws	13	Grounding lug
7	(Optional) Bezel short centered	14	Flat head screw (6 mm length)

Figure 7: Shipping Box for CMICR-4PT



1	CMICR-4PT model of Cisco Catalyst Micro Series Switches	5	Mounting bracket
2	Pointer Card	6	Two M3.5 X 16 mm flat head screws
3	AC power adapter and power cord	7	Two M4 X 8 mm flat head screws
4	Four rubber mounting feet	-	-

Installation Guidelines

Supported Hardware

- Up to 1 GB of Cisco SD memory card is supported.
- USB to UART device driver from the Silicon Labs website. Download the device driver depending on the operating system installed.

General Guidelines

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

- The operating environment is within the ranges listed in Environmental Specifications.
- Cabling is away from sources of electrical noise, such as radios, power lines, and fluorescent lighting fixtures. Make sure that the cabling is safely away from other devices that might damage the cables.
- Airflow around the switch is unrestricted.
- For 10/100 and 1 Gigabit Ethernet ports, the cable length from a switch to a connected device cannot exceed 328 feet (100 meters).

Mounting the Switch

Mounting CMICR-4PS and CMICR-4PC Switches

The following are the supported mounting options for CMICR-4PS and CMICR-4PC switches.

- Direct mount on Rapid 45 duct
- Box mount on cable duct
- Anchor rail mount on cable duct
- Front-locking mount on cable duct
- DIN rail mount

For new installations, we recommend installing the switch using direct mount and box mount options. However, for existing installations, you can use your existing mounting accessories and install it using any of the supported mounting options.

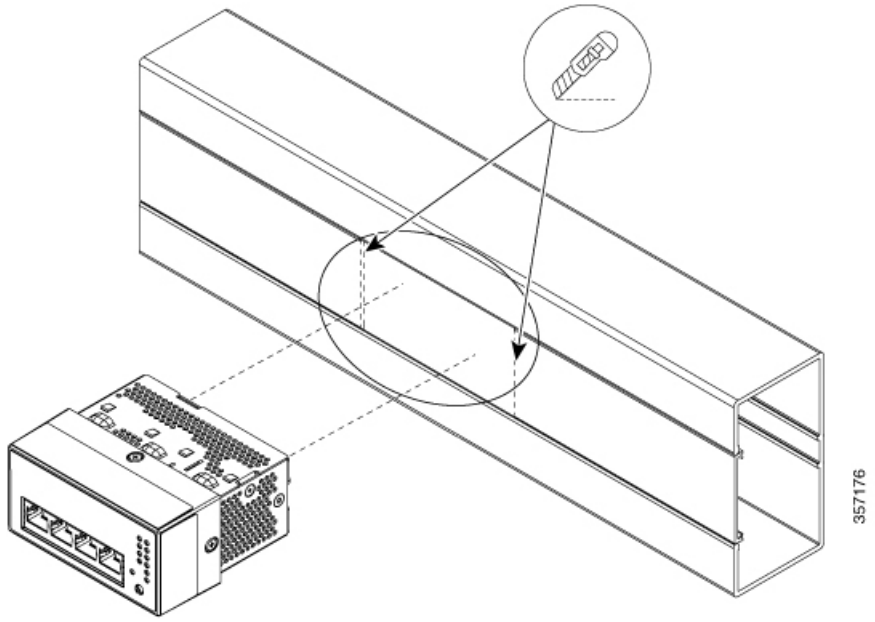
The following sections explain the steps in detail.

How to Mount the Switch on a Rapid 45 Duct

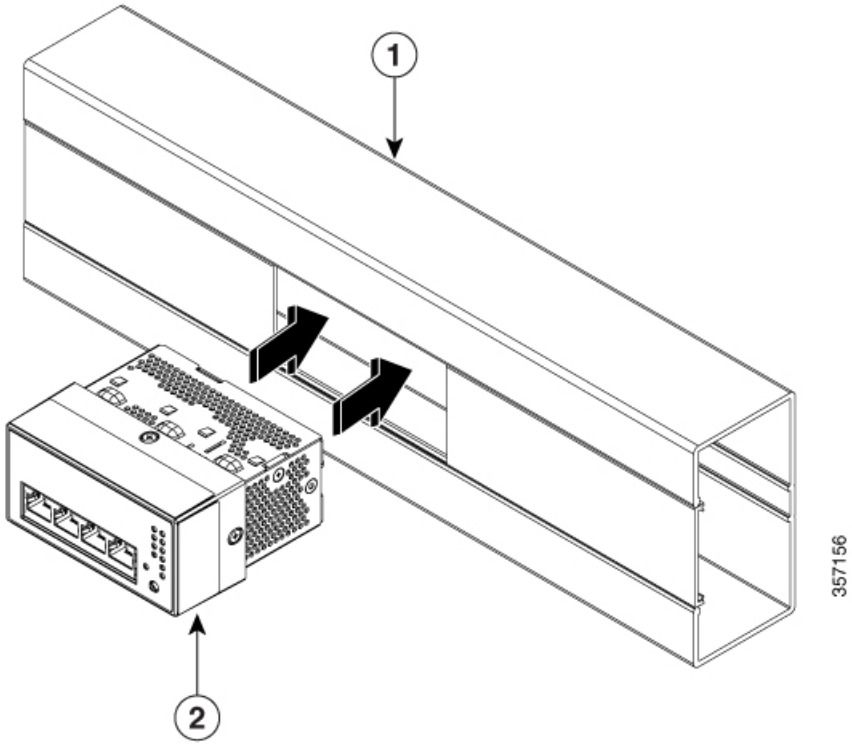
This topic describes the installation procedure for mounting the switch on a rapid 45 duct.

Procedure

Step 1 Cut the front cover of the duct on both sides to make an opening corresponding to the width of the switch.

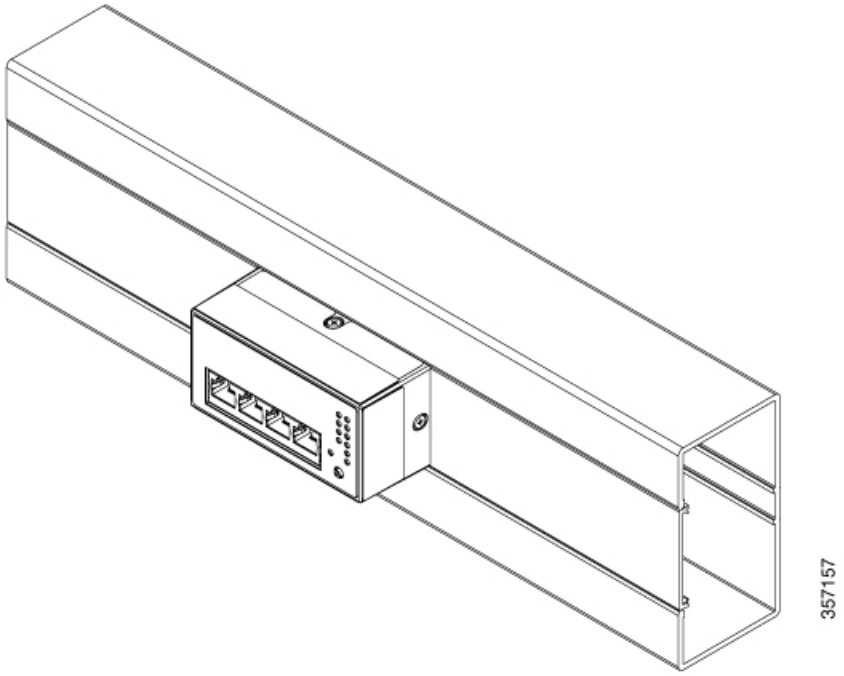


Step 2 Align and insert the switch in to the opening in the duct such that the four lancing features locks into the opening on the duct.



1	Rapid 45 Duct (OBO Bettermann GK-53100LGR/6113002)	2	Switch

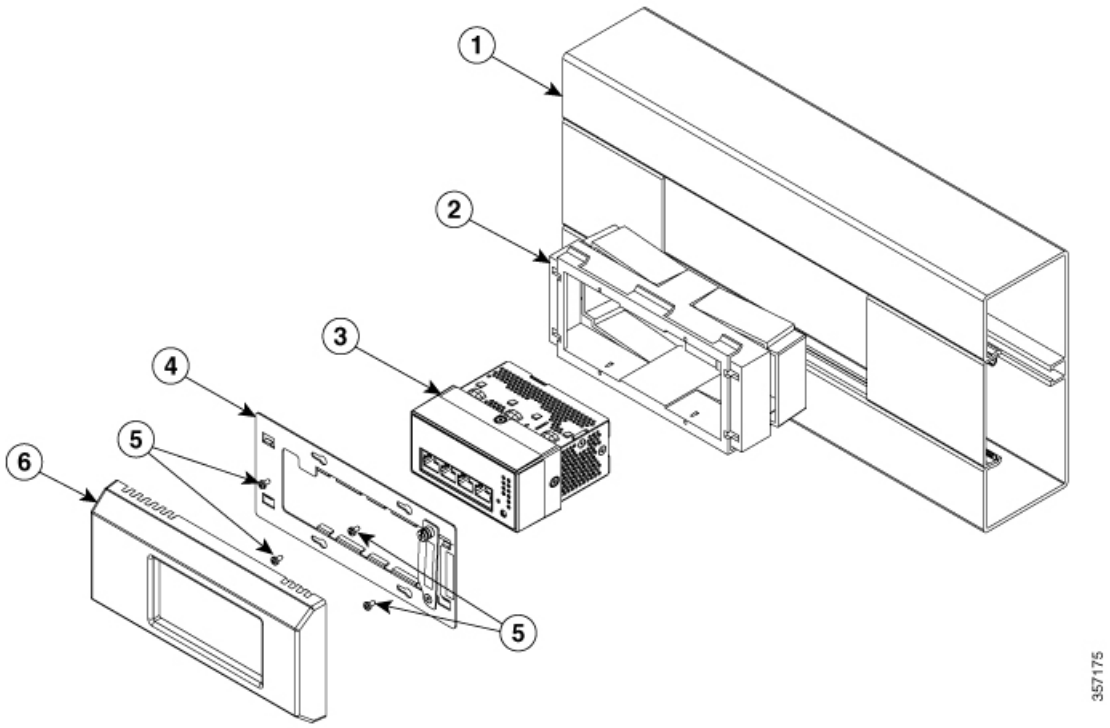
Figure 8: Switch Mounted on a Rapid 45 Duct



How to Mount the Switch in a Cable Duct with Mounting Box

Before you begin

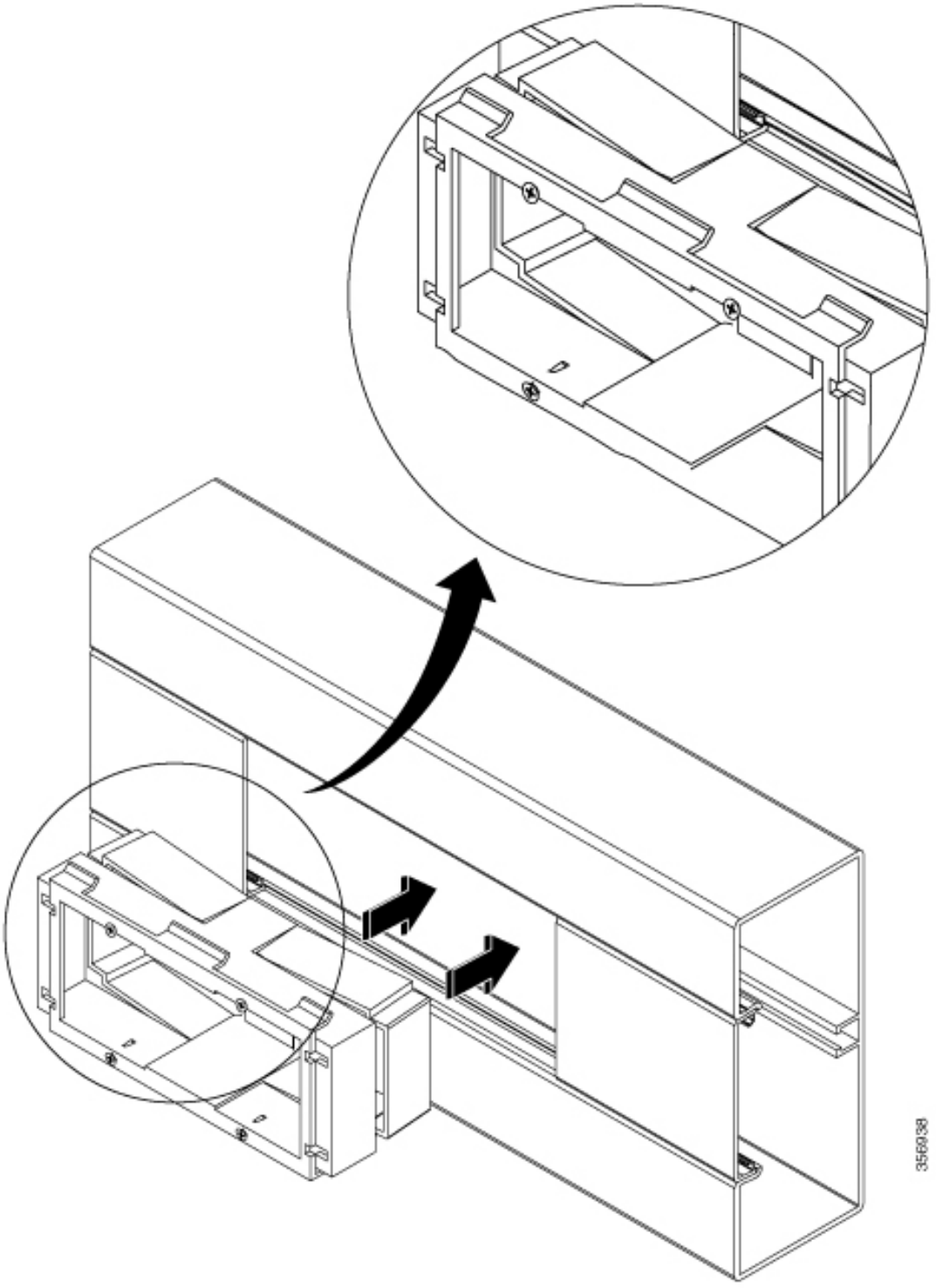
Ensure you have the following accessories available before starting the installation.



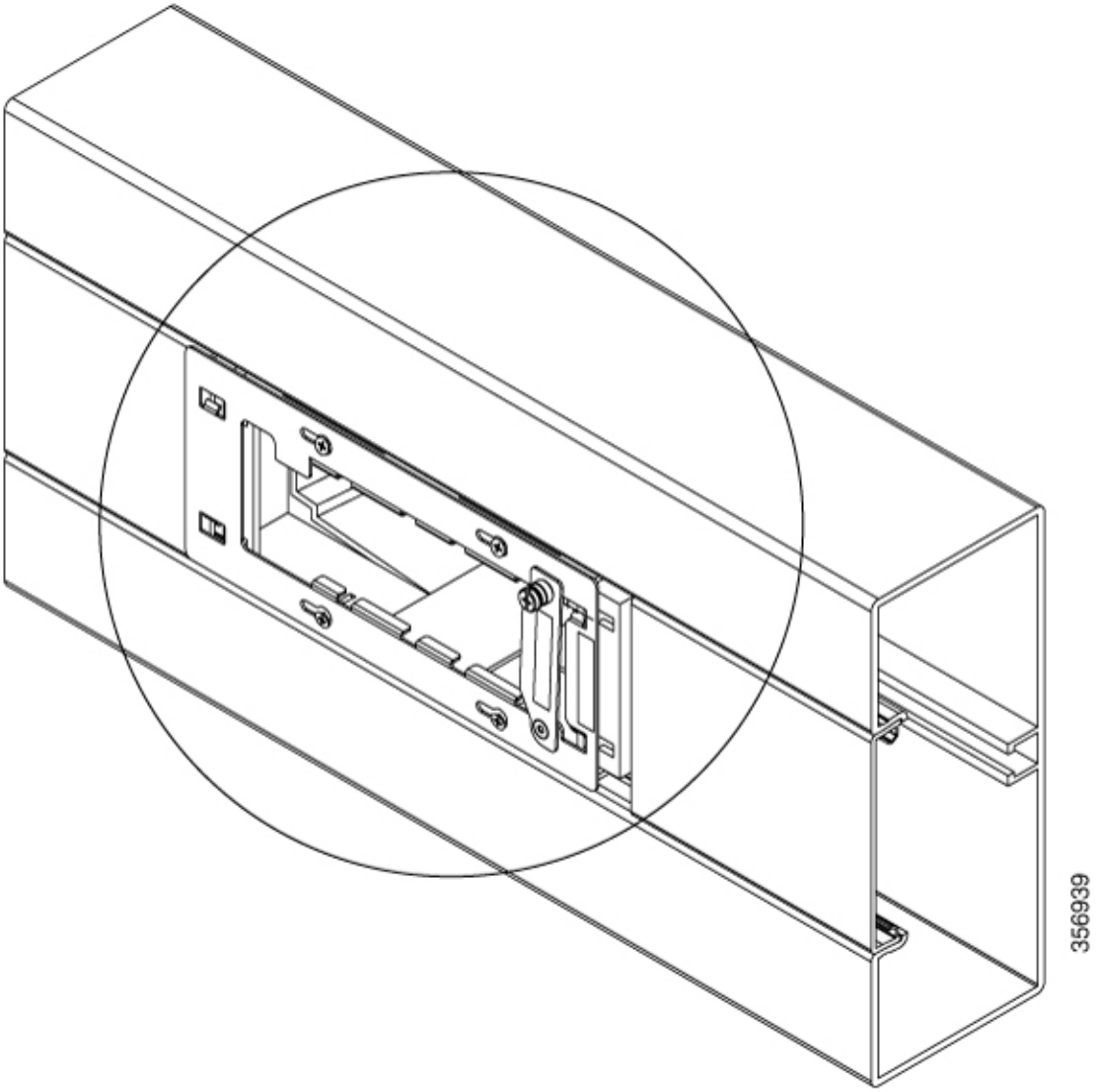
1	Rapid 80 duct (OBO Bettermann GS-S70110CW/ 6277001)	Off-the-shelf
2	Accessory mounting box, double (OBO Bettermann 71GD7 / 6288611)	Off-the-shelf
3	Switch	Supplied by Cisco
4	Short Off Centered Bracket (CMICR-BRKT-S-OC)	Supplied by Cisco
5	Flat head screw (14 mm length) - 4 Nos	Supplied by Cisco
6	Short Off Centered Bezel (CMICR-BZL-S-OC)	Supplied by Cisco

Procedure

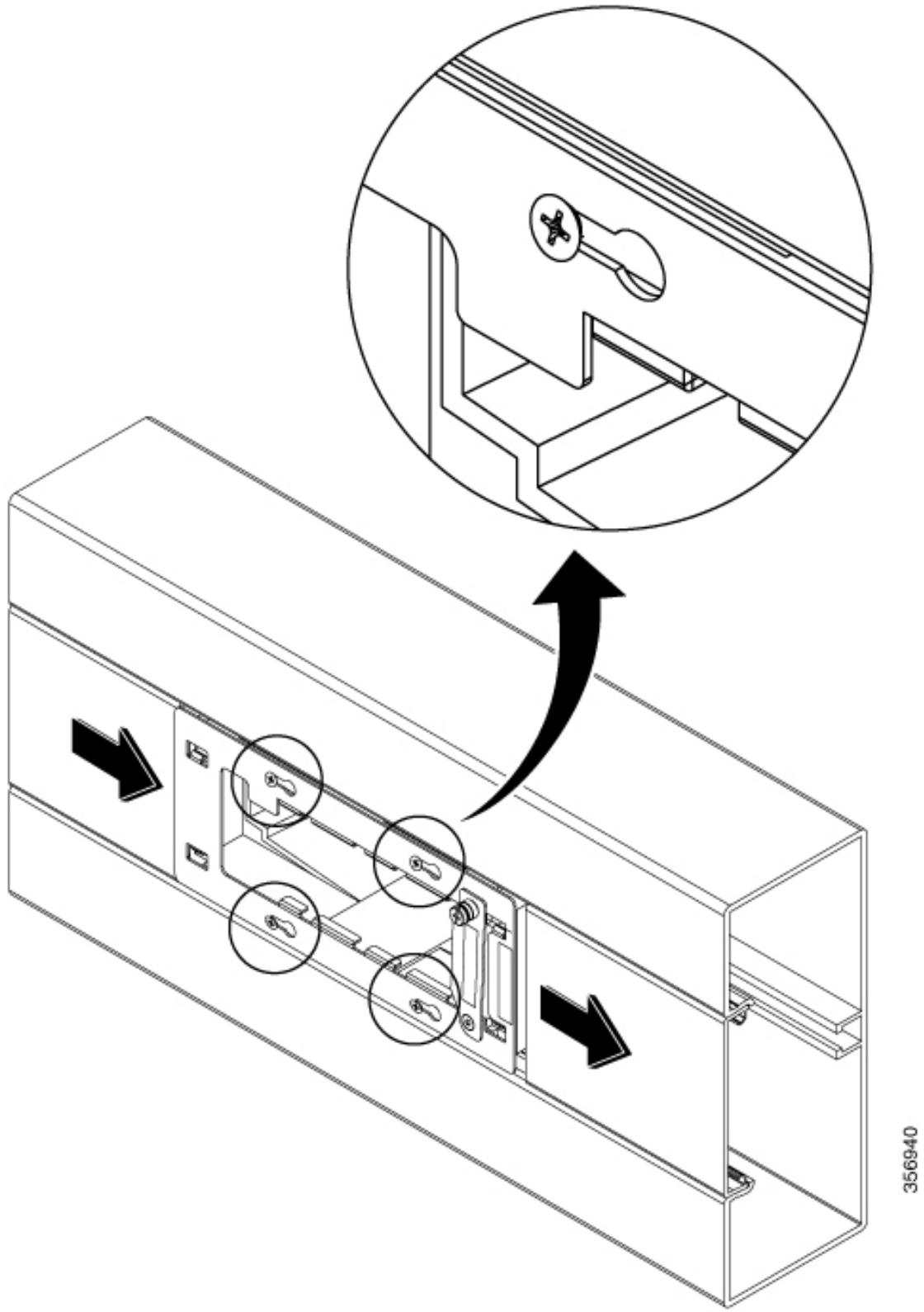
Step 1 Assemble the mounting box into the duct. Ensure that the clips on the mounting box snaps into the profile on the duct thereby locking the box into the duct.



Step 2 Position the mounting bracket such that the screw holes on it are aligned to the screw holes on the mounting box.



Step 3 Slide the bracket to the right and fasten the four flat head screws to fix the bracket to the mounting box.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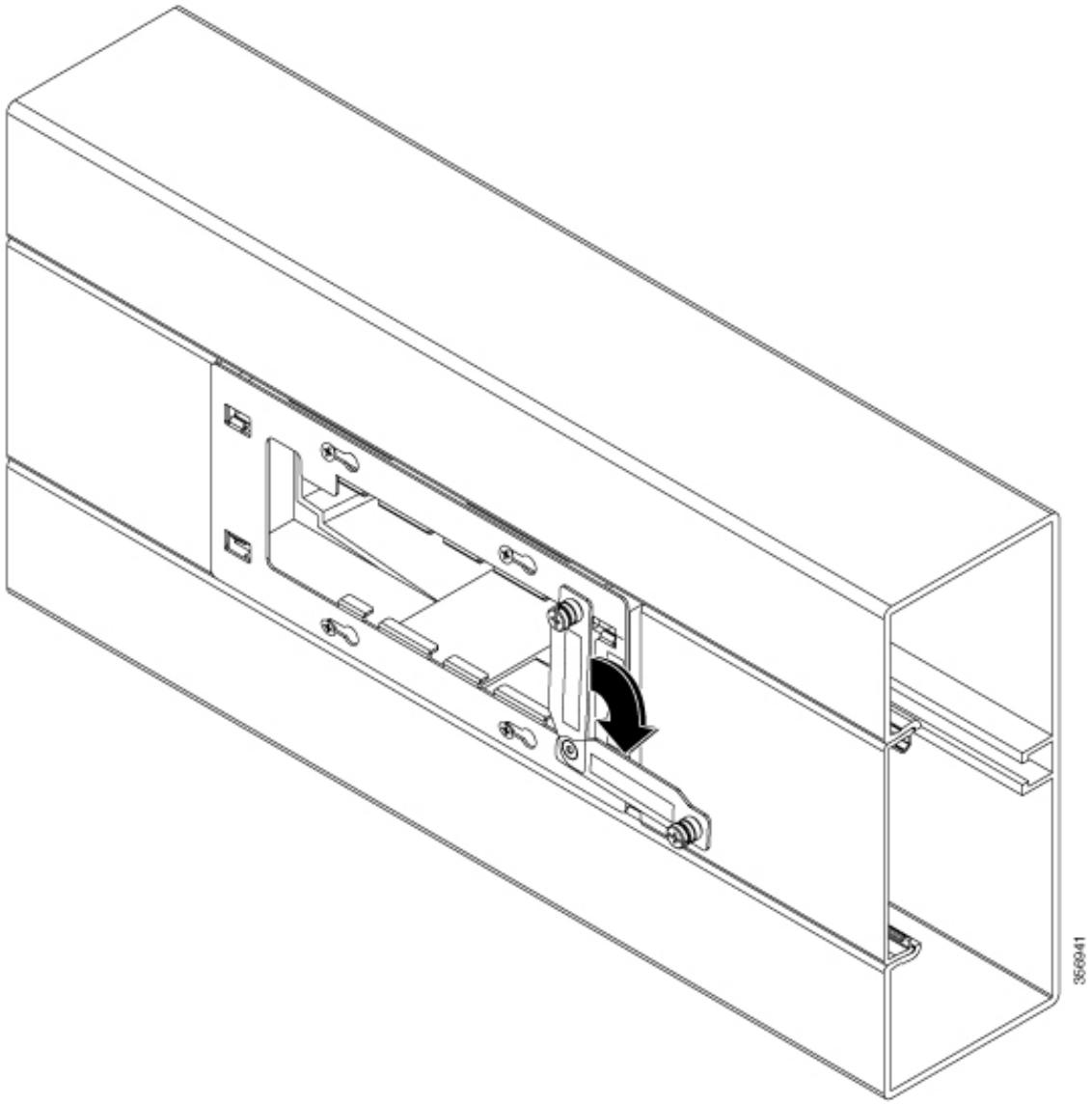
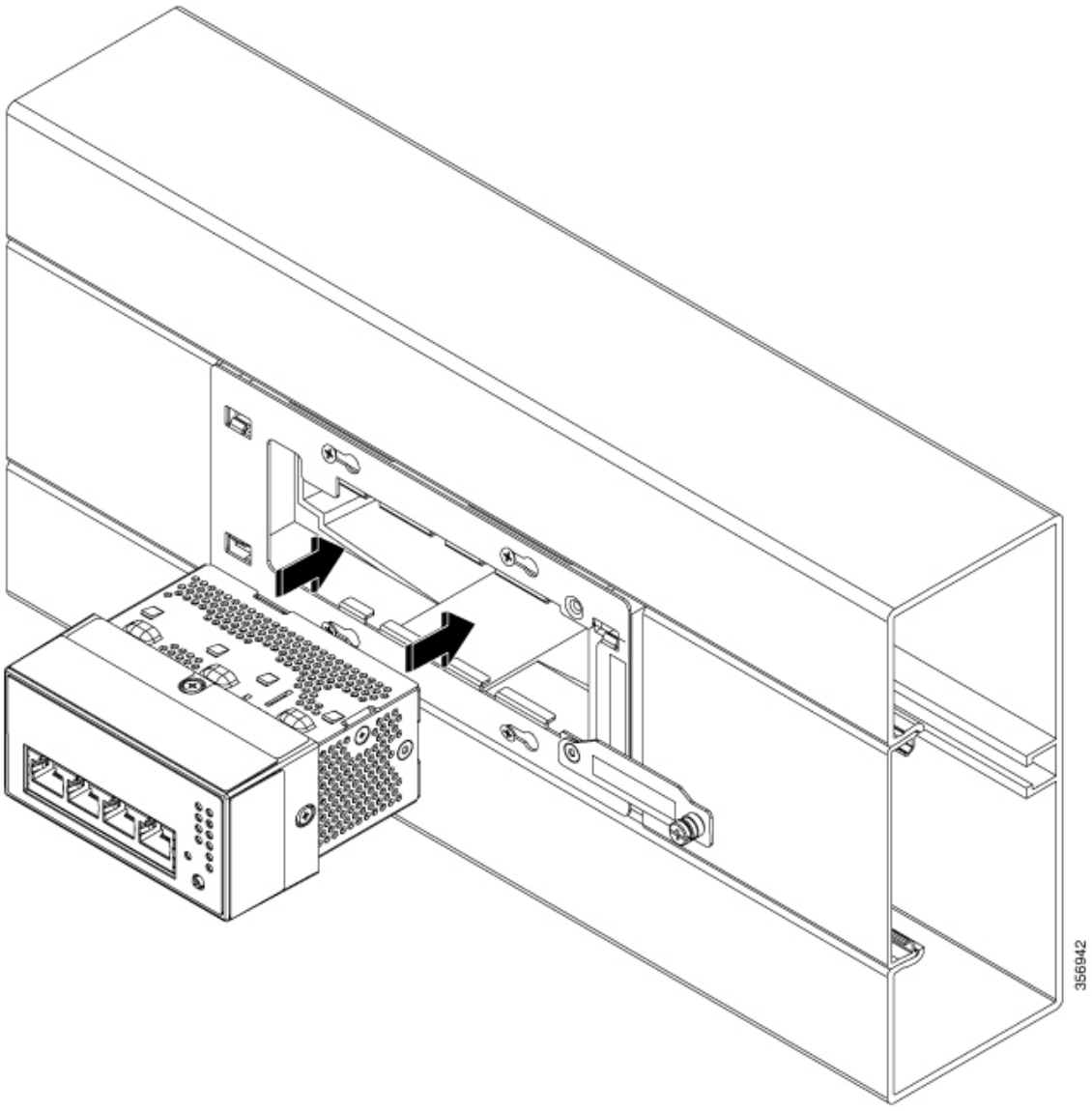
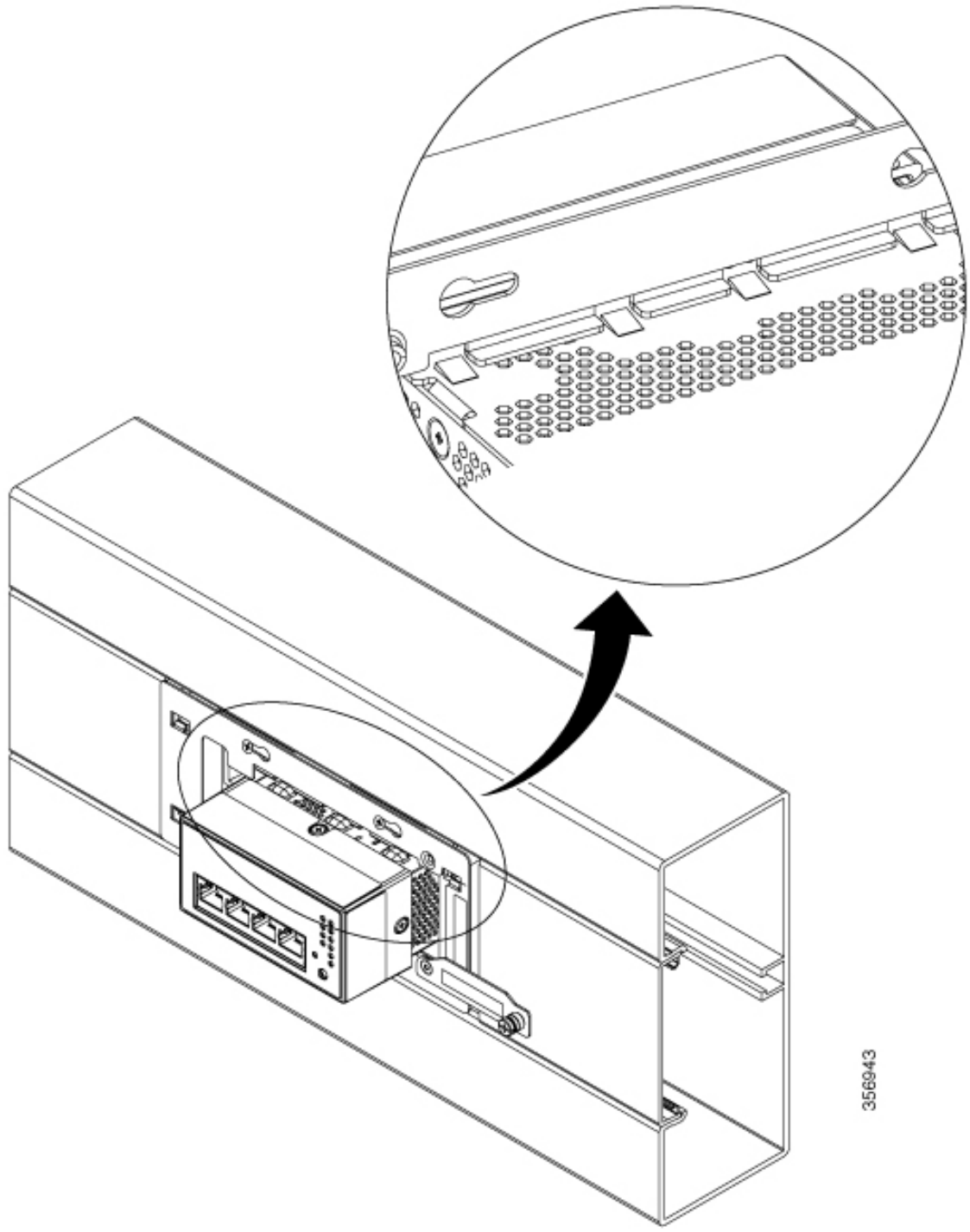
Step 4 Unscrew the locking plate on the mounting bracket and rotate it by 90 degrees clockwise to make enough space to install the switch.



Step 5 Insert the switch through the opening on the mounting bracket.

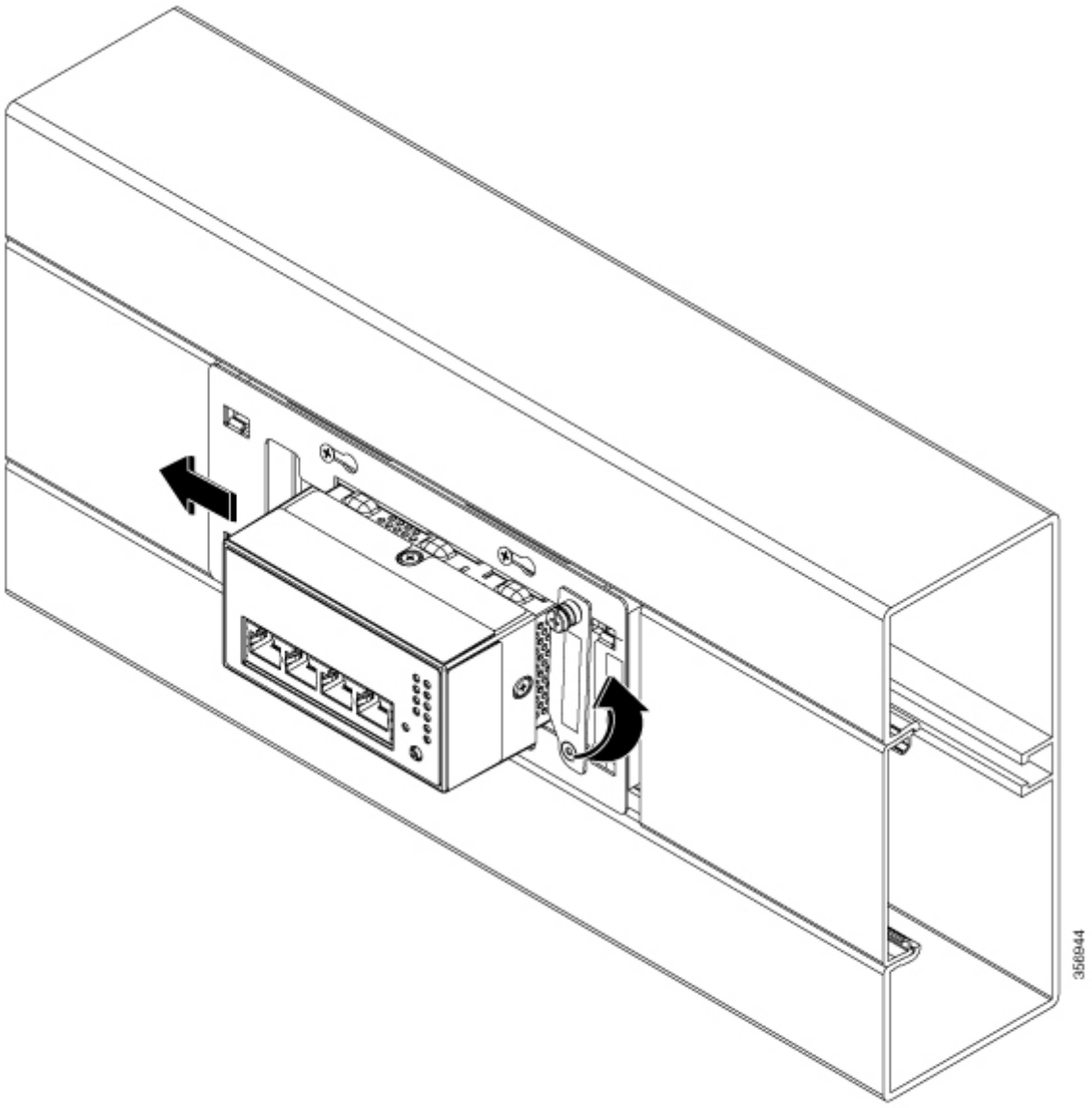


Step 6 Ensure that all the four lancing features of the unit are guided through the mounting bracket openings.



Step 7 Slide the switch to the left until the switch touches the other end of the bracket.

Step 8 Rotate the locking plate on the mounting bracket 90 degrees anticlockwise and fasten the screw.



Step 9 Snap the bezel into the mounting bracket.

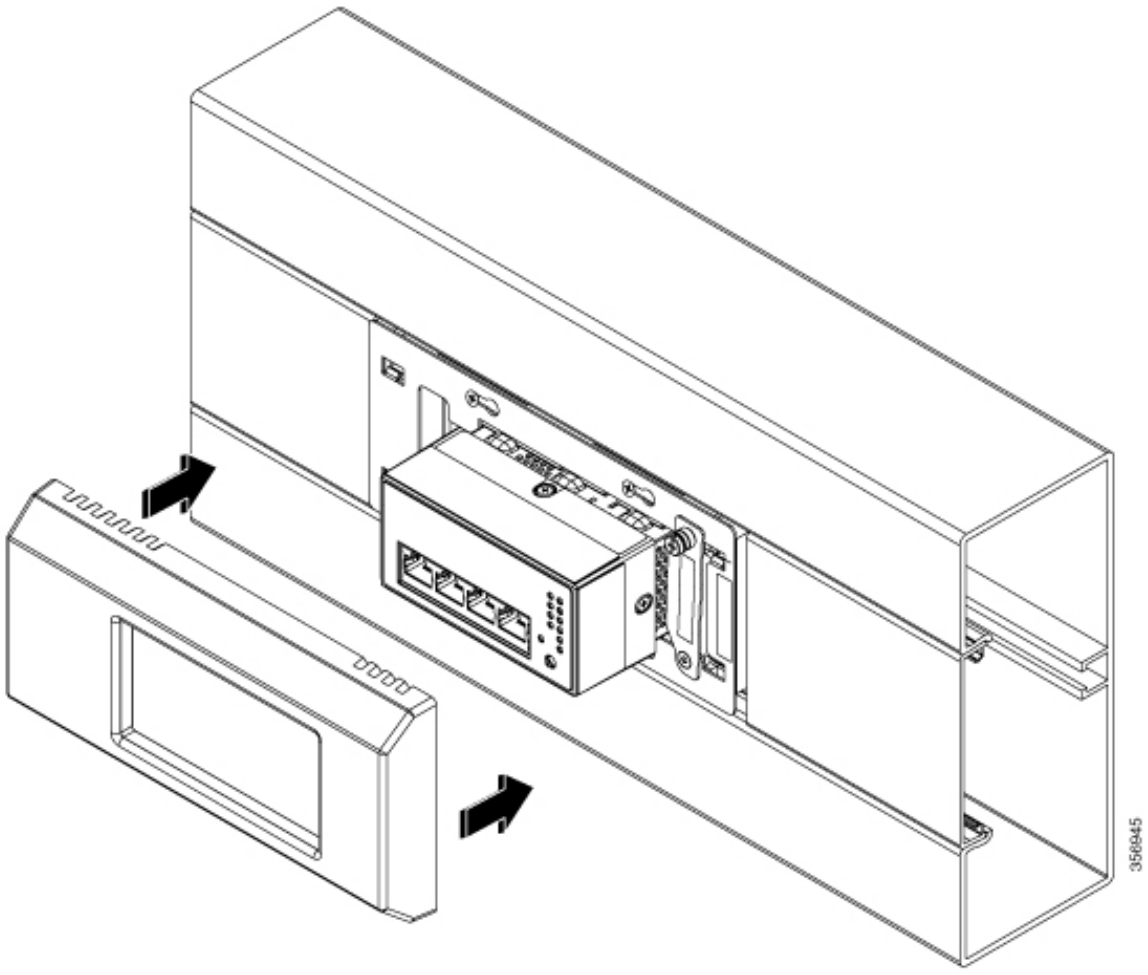

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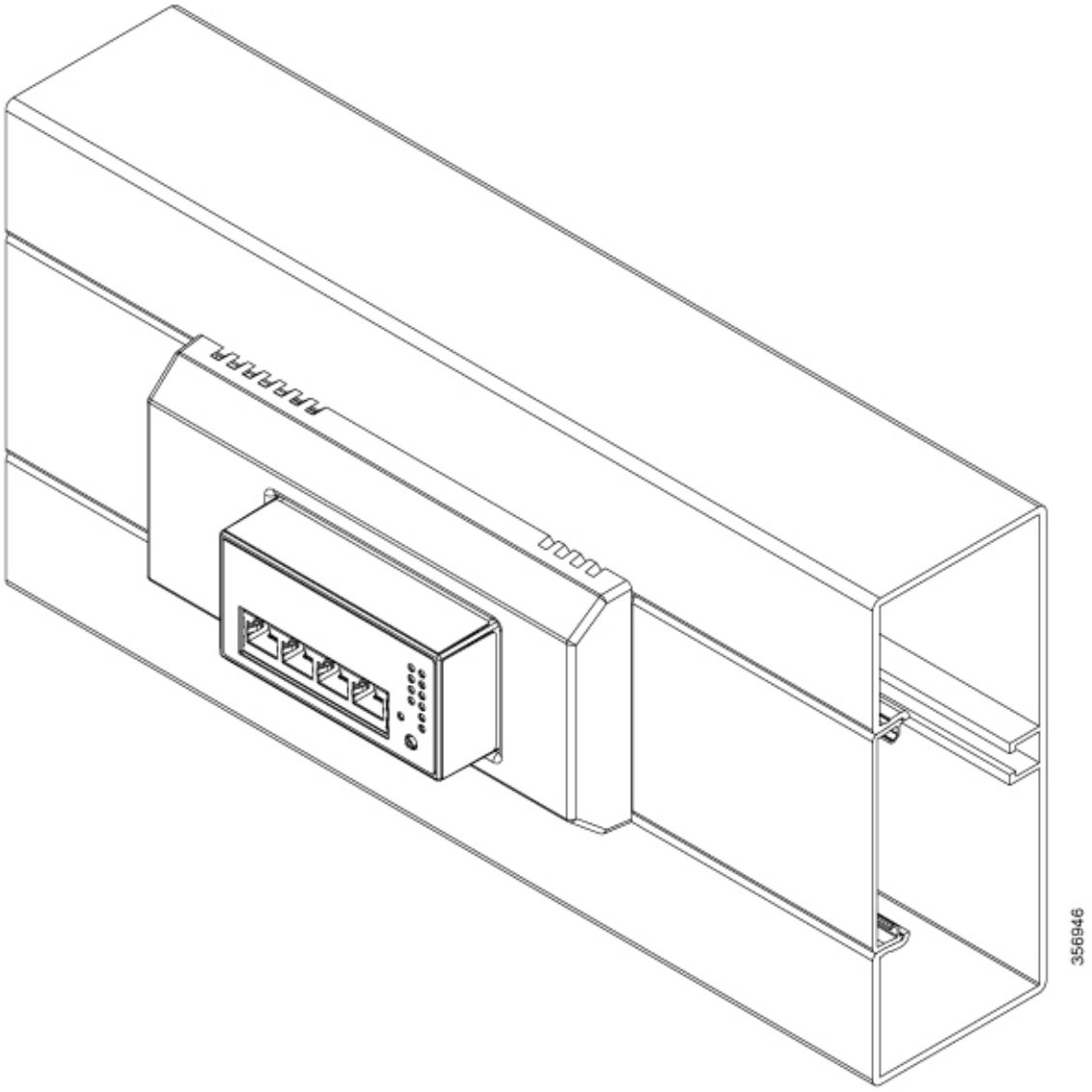
Figure 9: Switch Mounted on a Cable Duct with Mounting Box

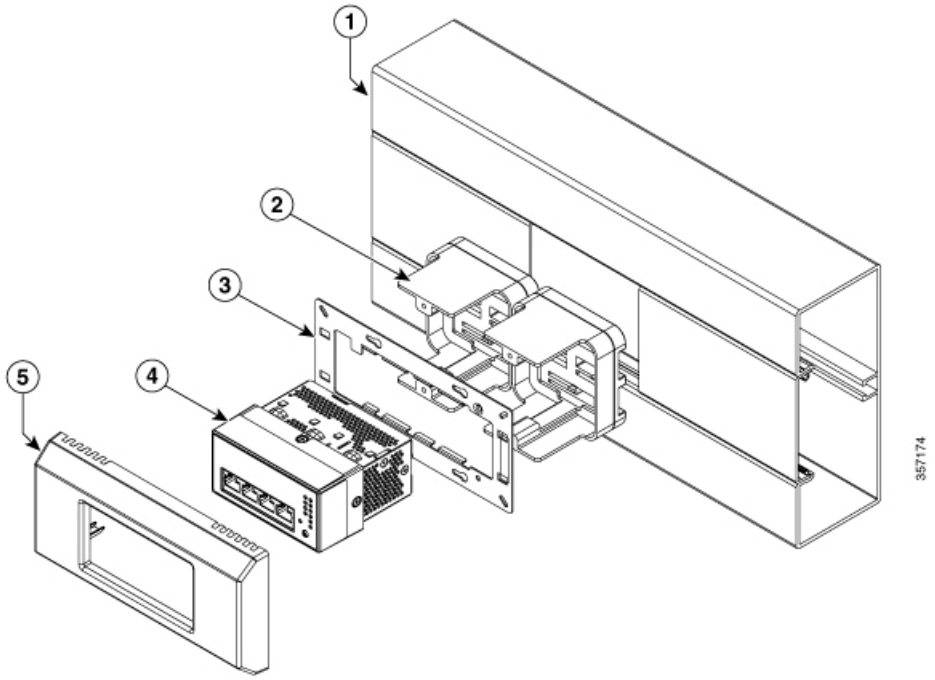


How to Mount the Switch in a Cable Duct with Anchor Rail

This topic describes the installation procedure for mounting the switch on a wall duct with anchor rail. This procedure assumes that you have an existing duct with device support and bracket installed.

Before you begin

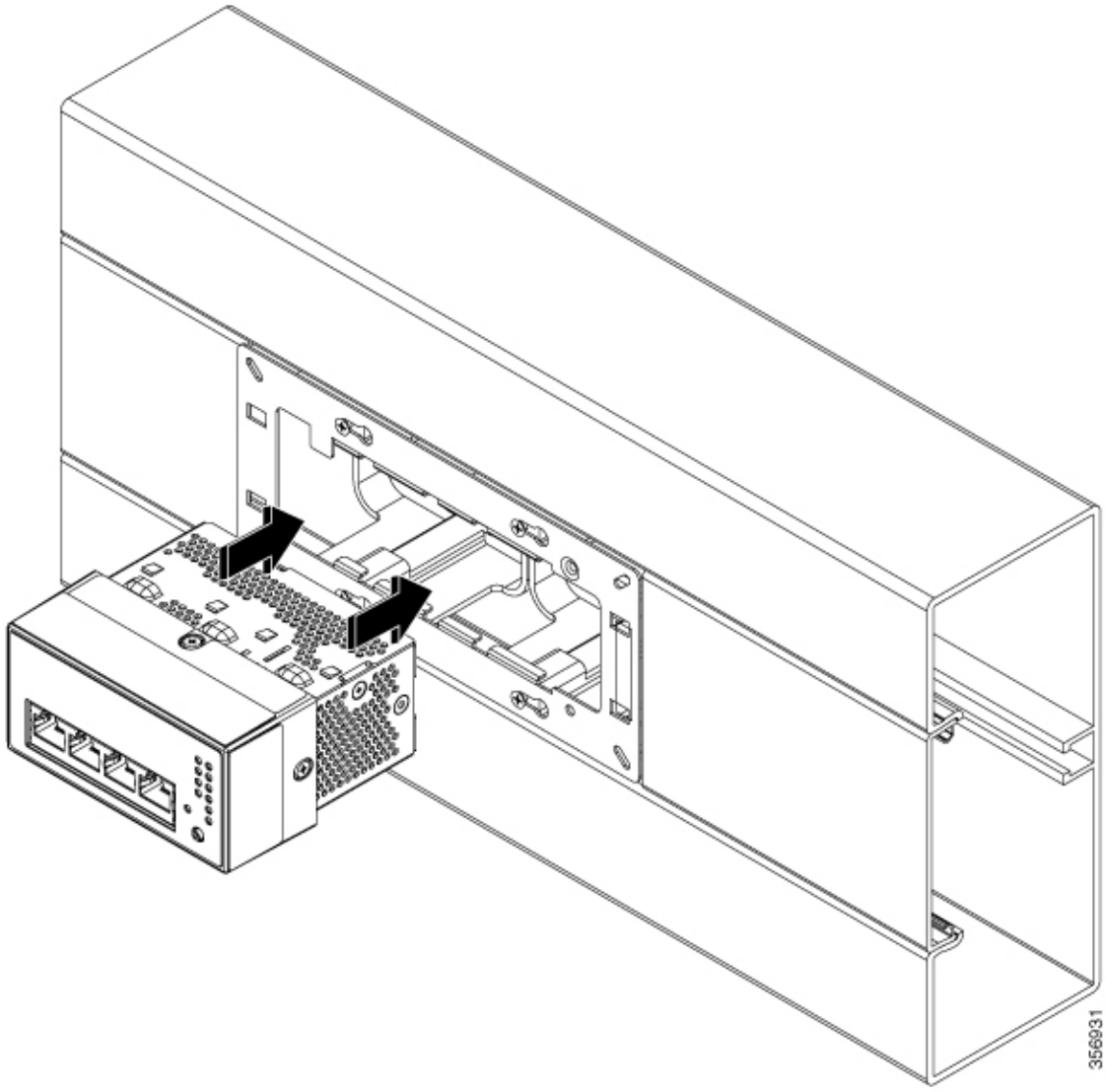
Ensure you have the following accessories available before starting the installation.



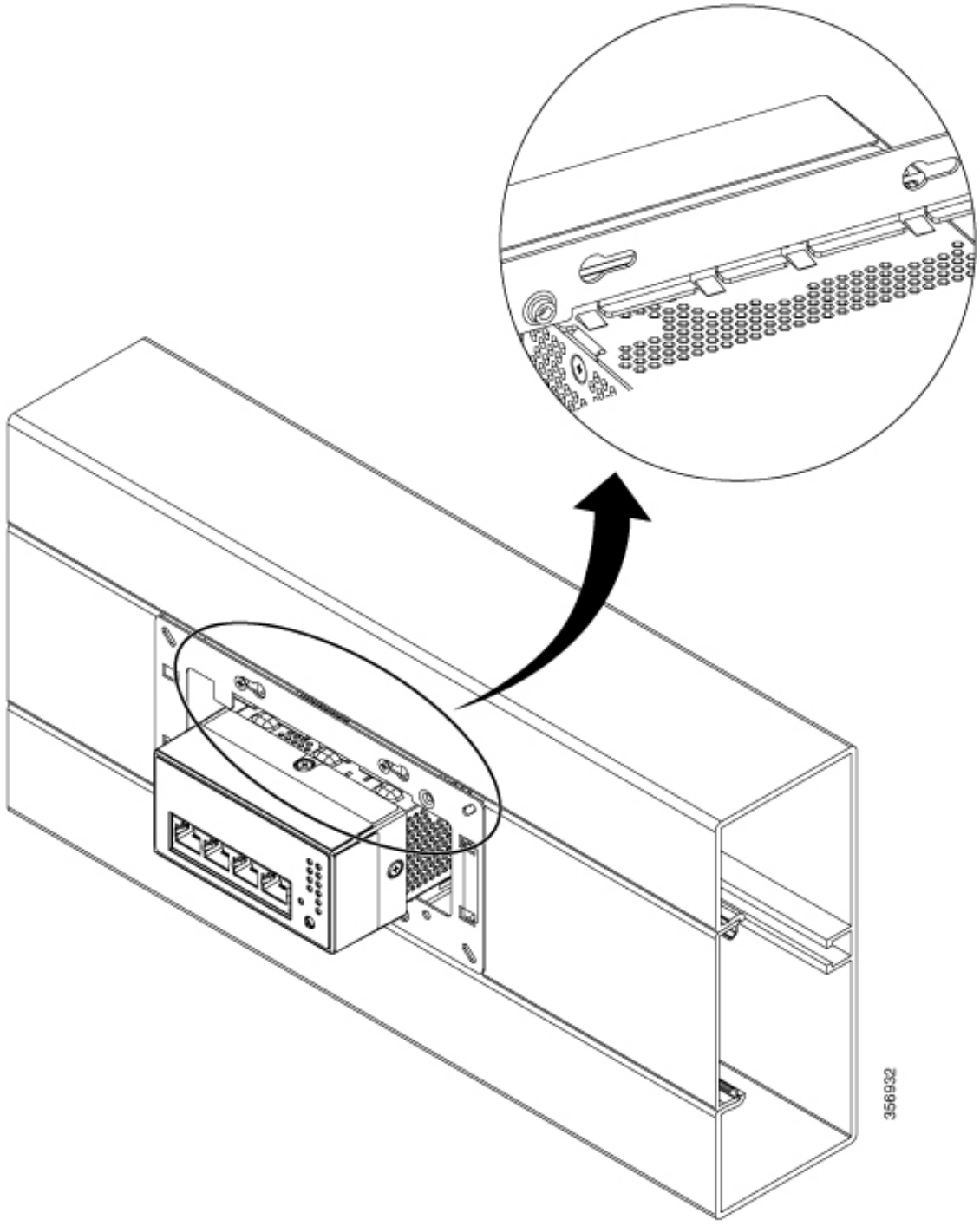
1	Trunking base (Hager BR7010019010)	Off-the-shelf
2	Device support	Off-the-shelf
3	Mounting bracket	Off-the-shelf
4	Switch	Supplied by Cisco
5	Short Centered Bezel (CMICR-BZL-S-C)	Supplied by Cisco

Procedure

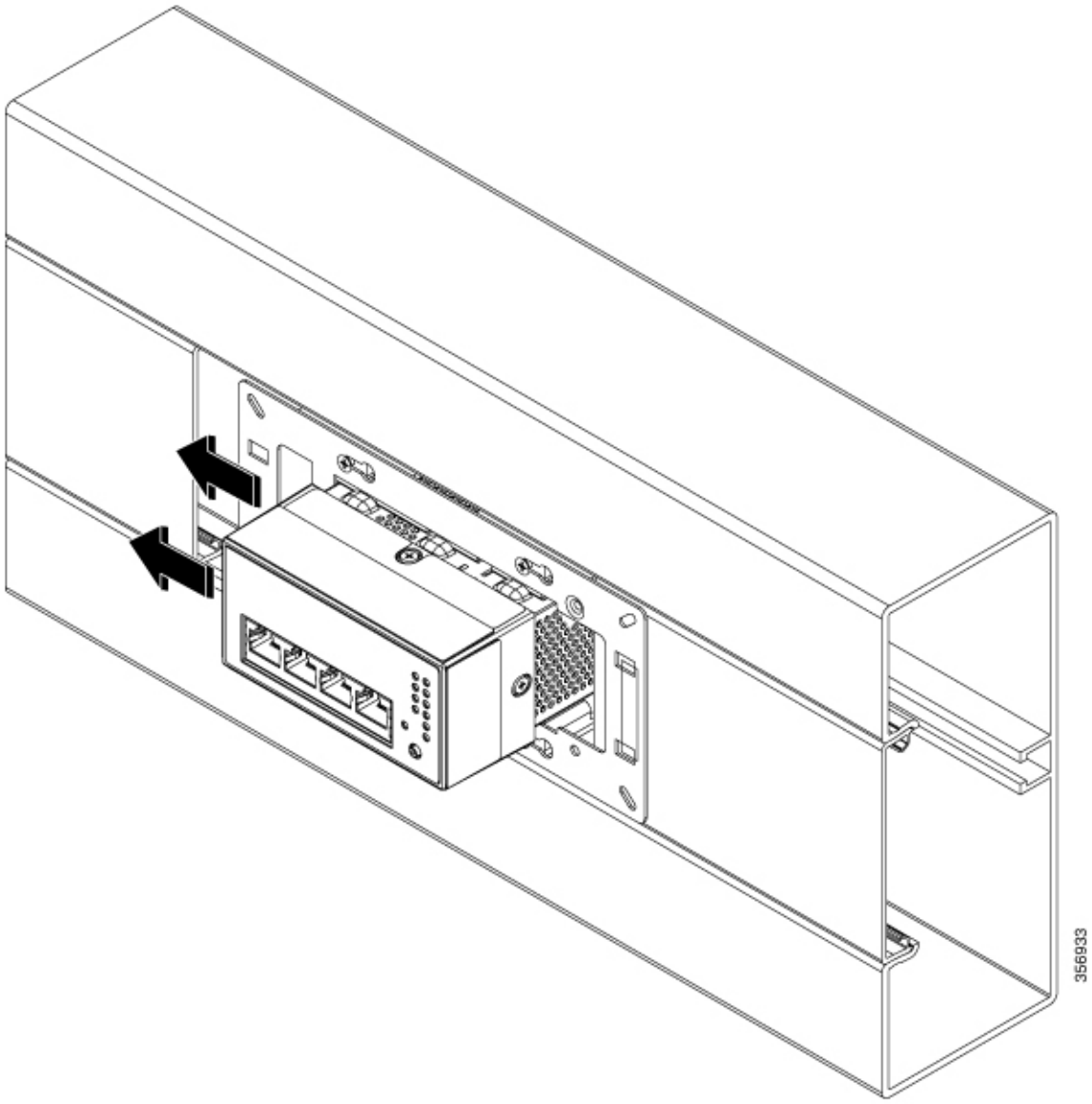
Step 1 Insert the switch into the mounting bracket installed on the duct.



Step 2 Make sure that all the four lancing features of the unit are guided through the mounting bracket openings.



Step 3 Slide the switch towards the left until it touches the end of the bracket. .



Step 4 Snap the plastic bezel into the mounting bracket.

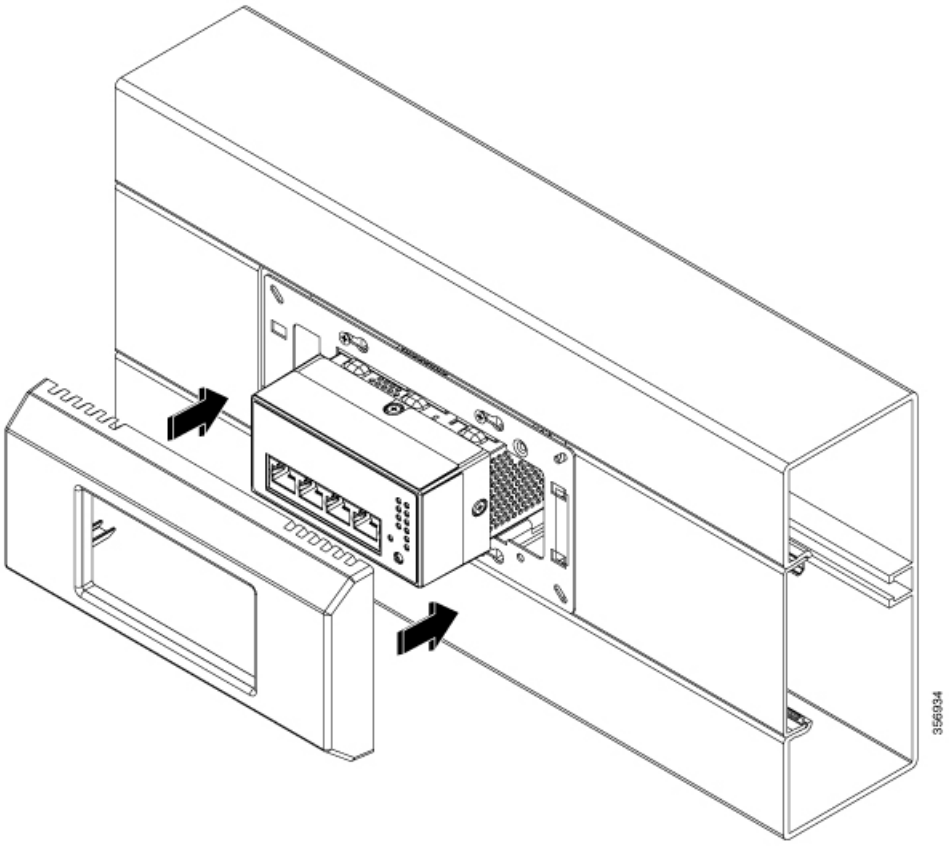
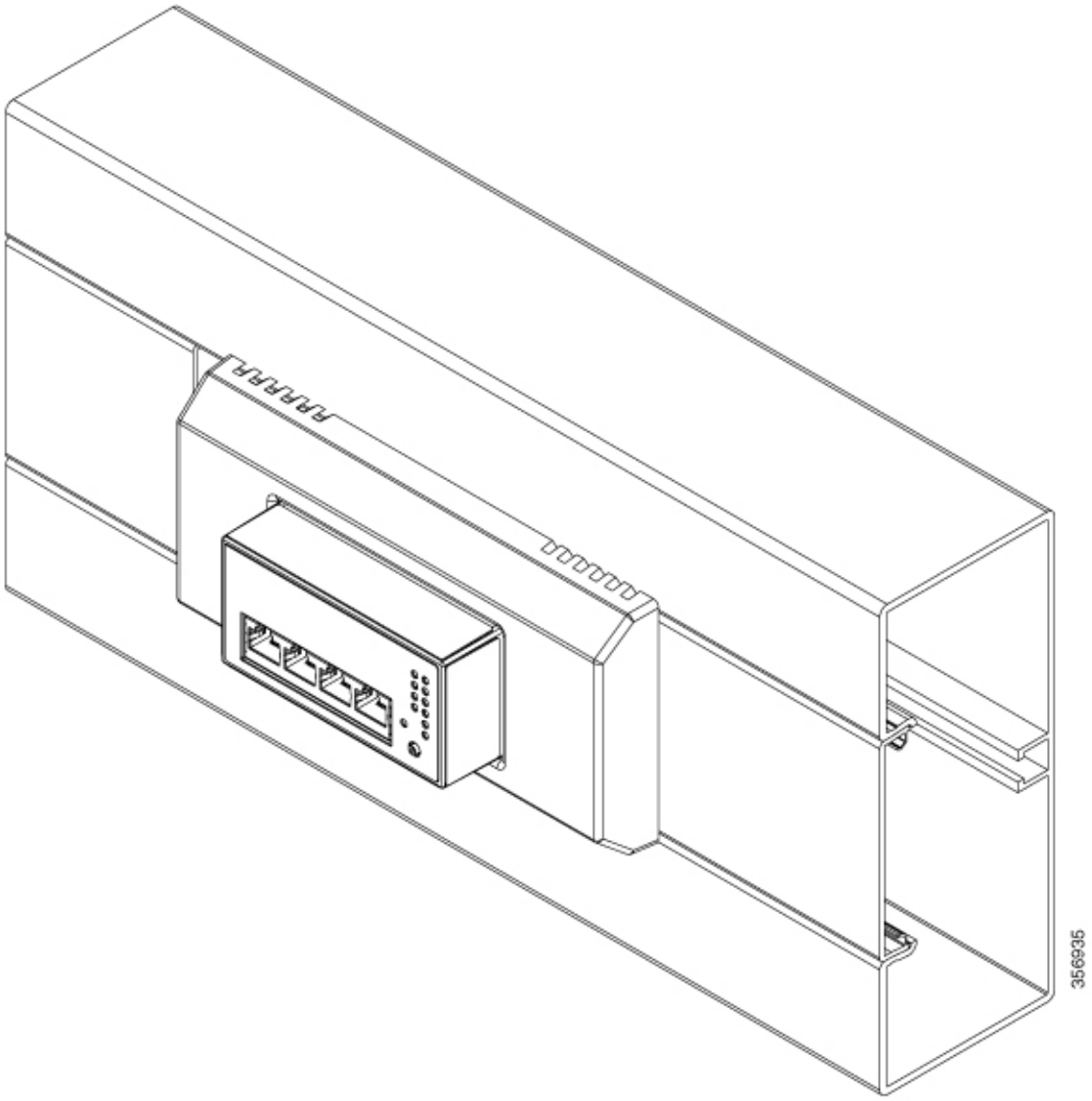

356934

Figure 10: Switch Mounted on a Cable Duct with Anchor Rail



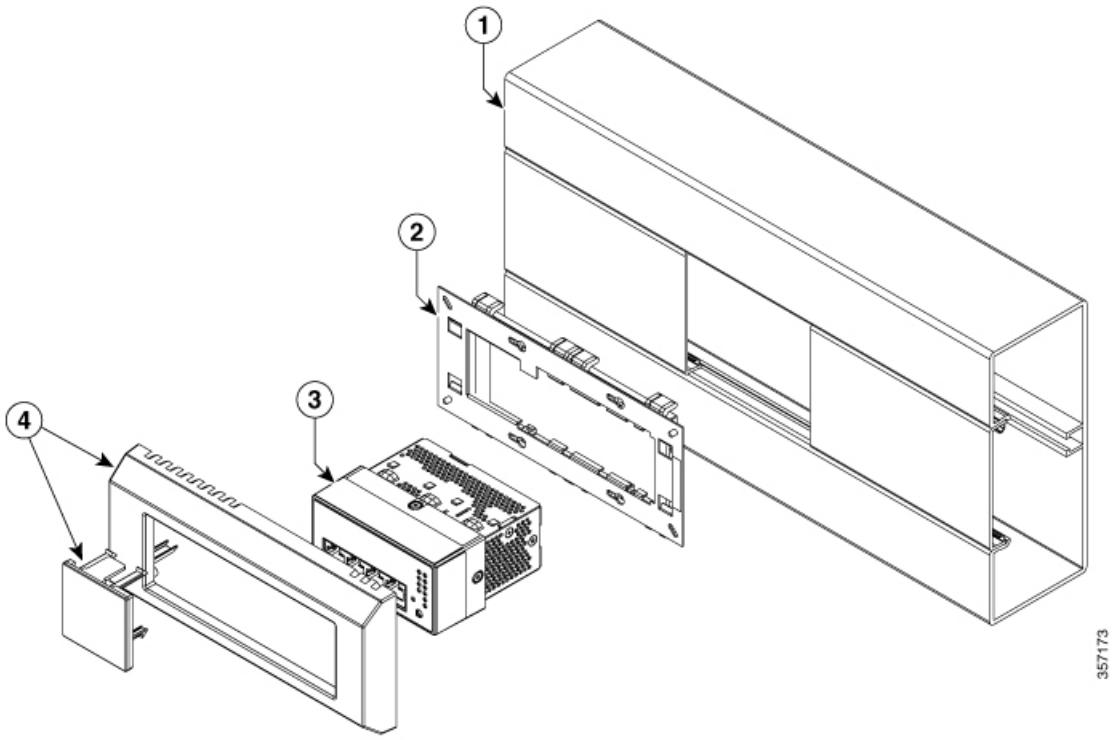
How to Mount the Switch in a Front-Locking Cable Duct

This topic describes the installation procedure for mounting the switch on a front-locking duct. This procedure assumes that you have an existing duct with mounting bracket assembly installed.

Before you begin

Note This mounting option is currently not supported. Support for front-locking duct will be available in a later release.

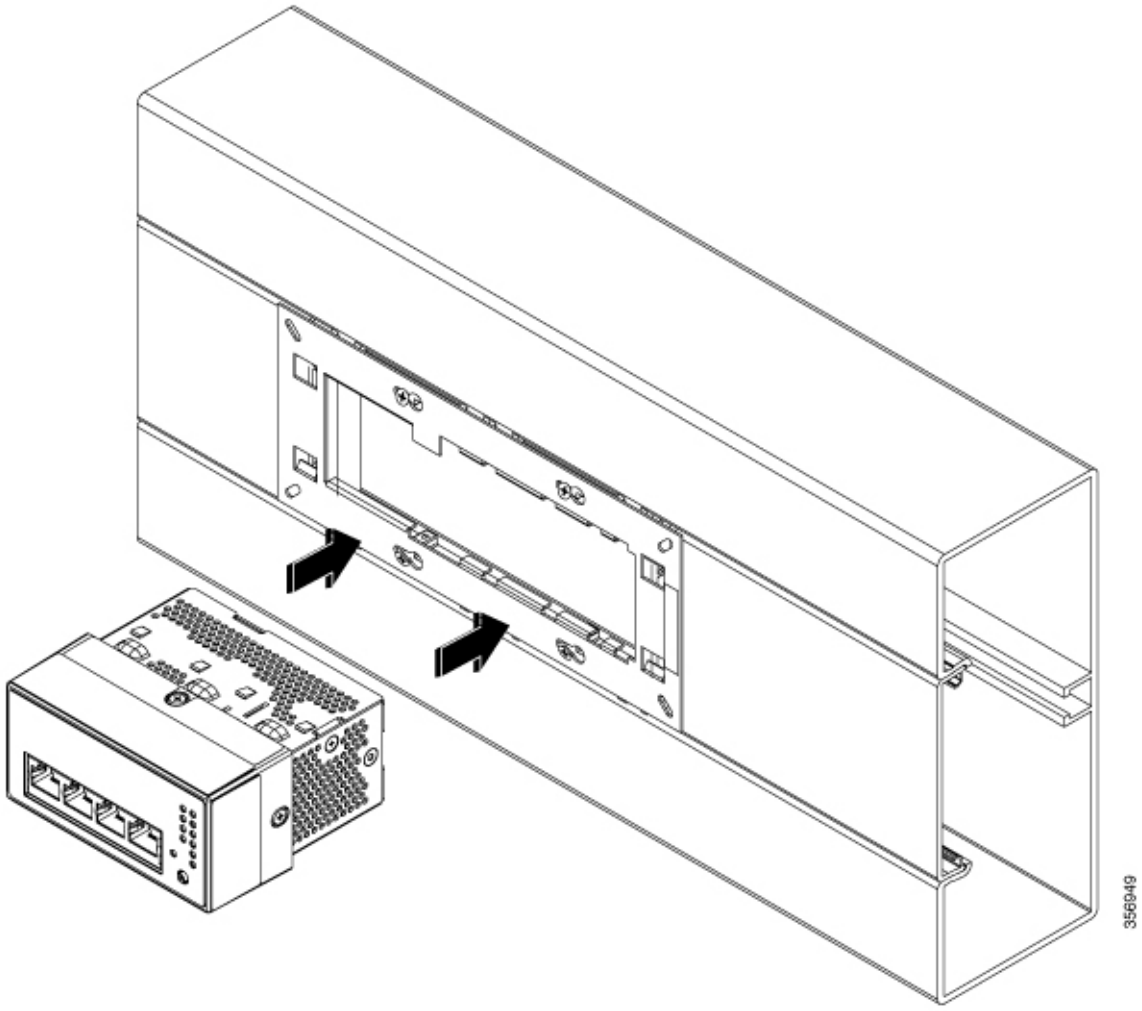
Ensure you have the following accessories available before starting the installation.



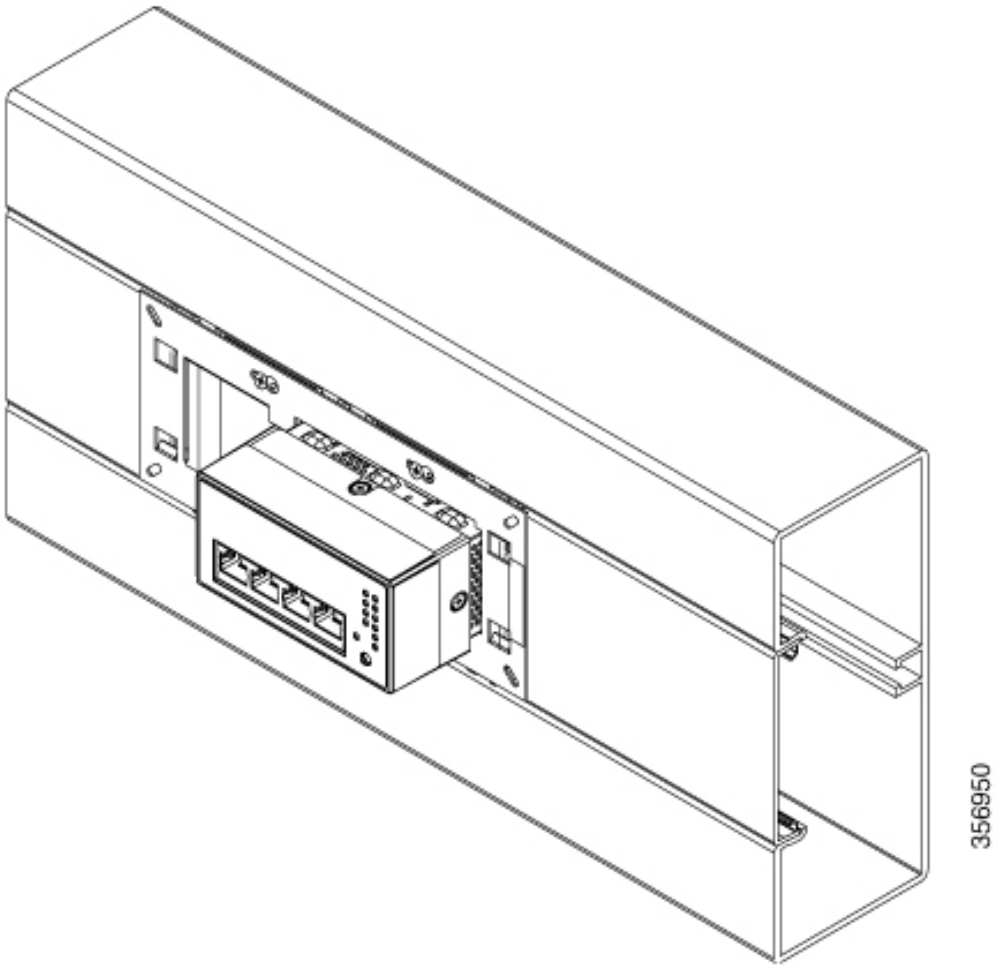
1	Trunking base (Hager, BR7010019010)	Off-the-shelf
2	Mounting bracket	Off-the-shelf
3	Switch	Supplied by Cisco
4	Long Off Centered Bezel and Blind cover (CMICR-BZL-L-OC)	Supplied by Cisco

Procedure

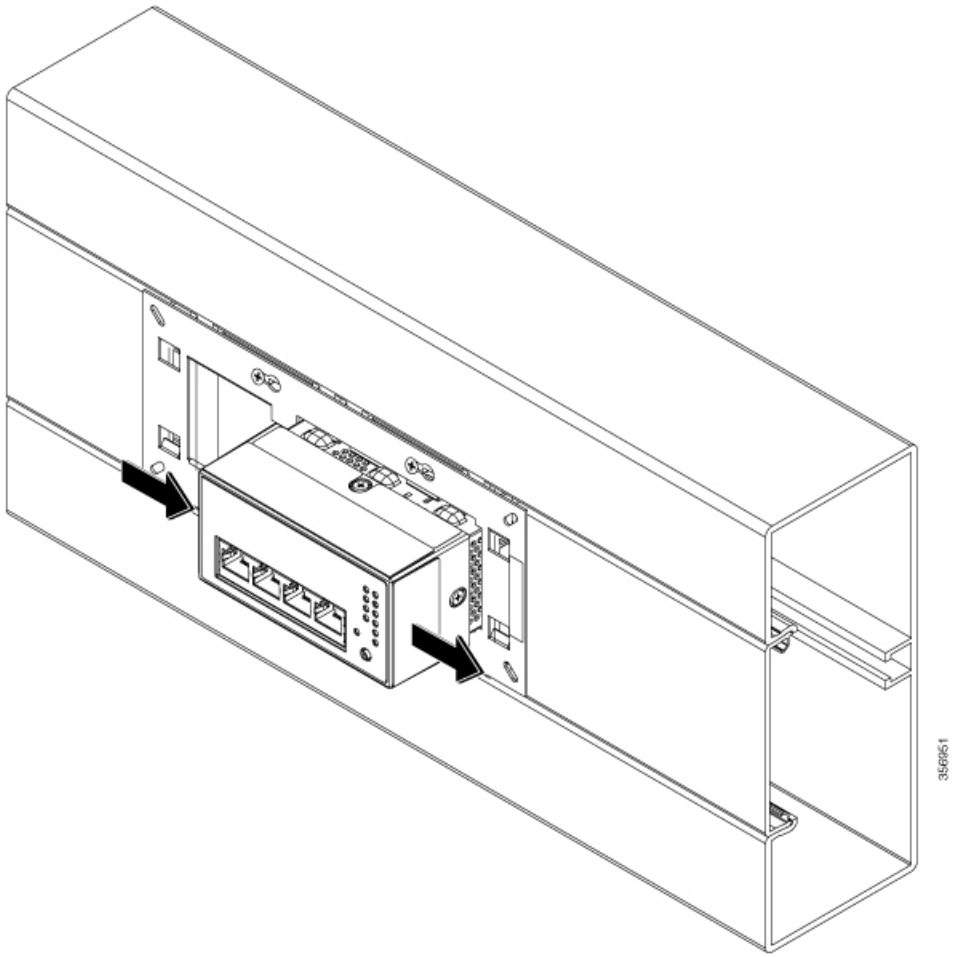
Step 1 Insert the switch into the duct through the opening on the mounting bracket assembly.



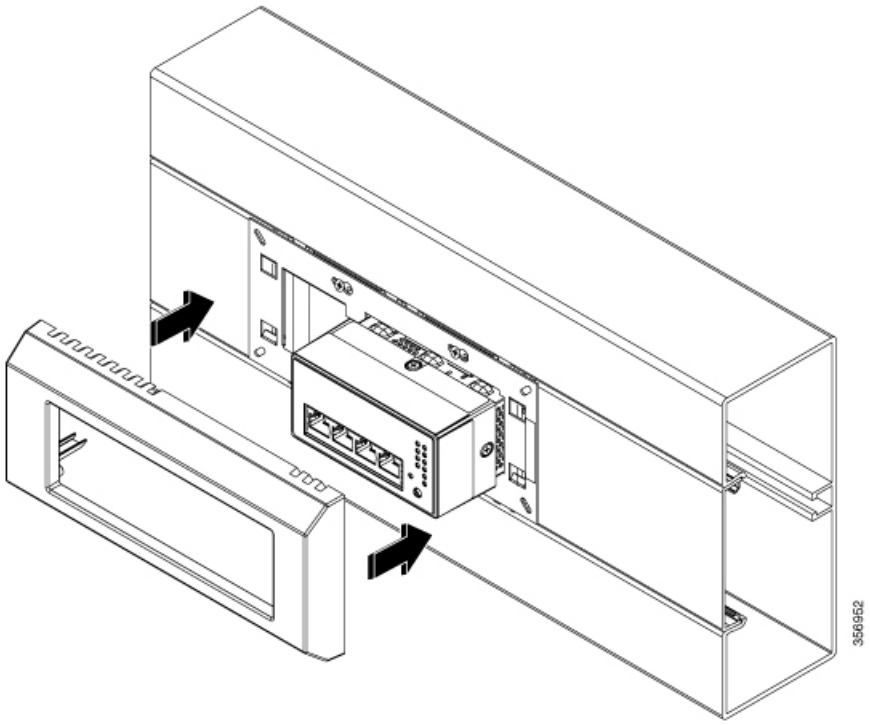
Step 2 Ensure that all the four lancing features of the switch are guided through the mounting bracket openings.



Step 3 Slide the switch to the left until the switch touches the other end of the bracket.



Step 4 Snap the bezel into the mounting bracket.



Step 5 Snap the blind cover into the space between the switch and the bezel.

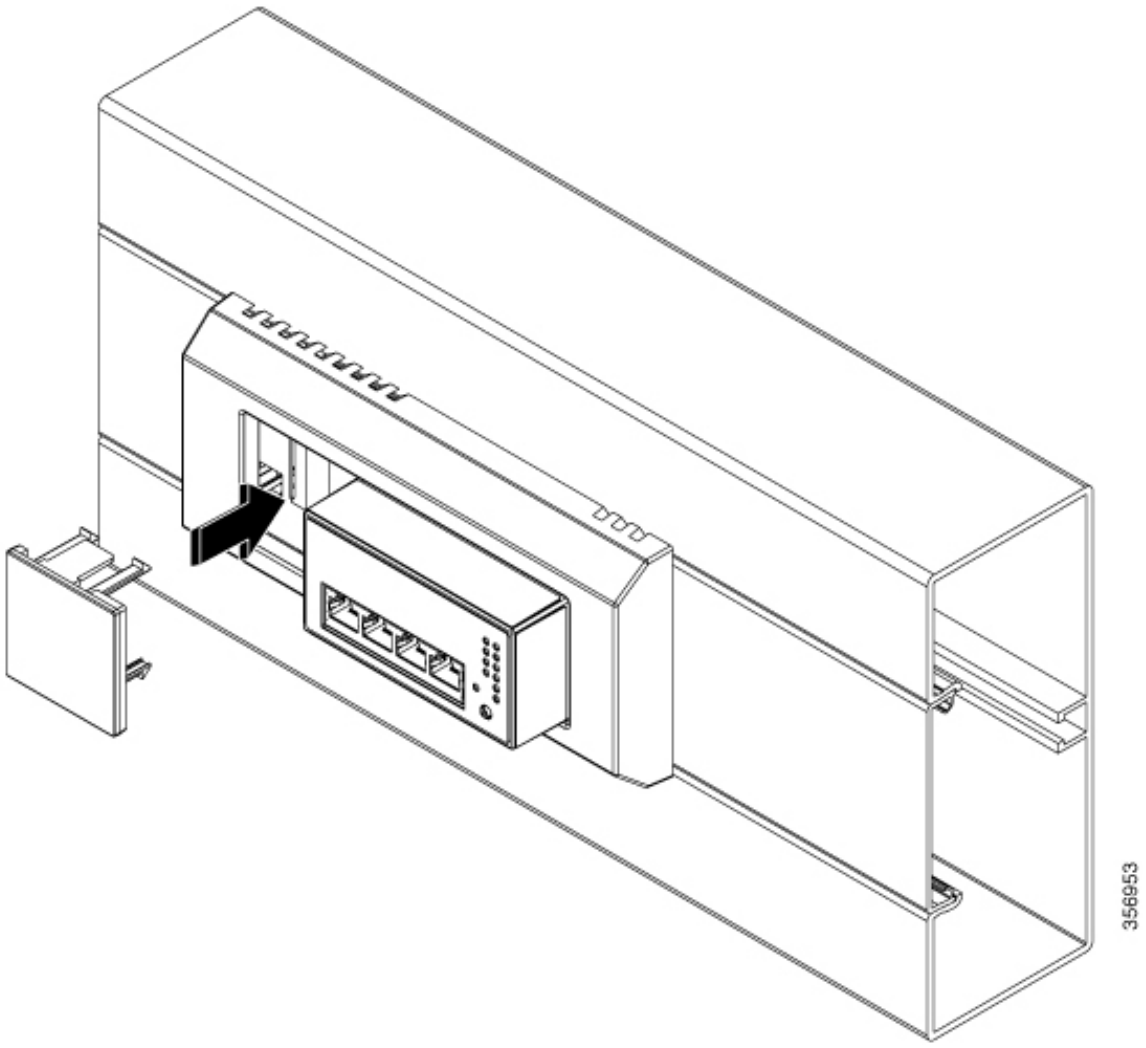
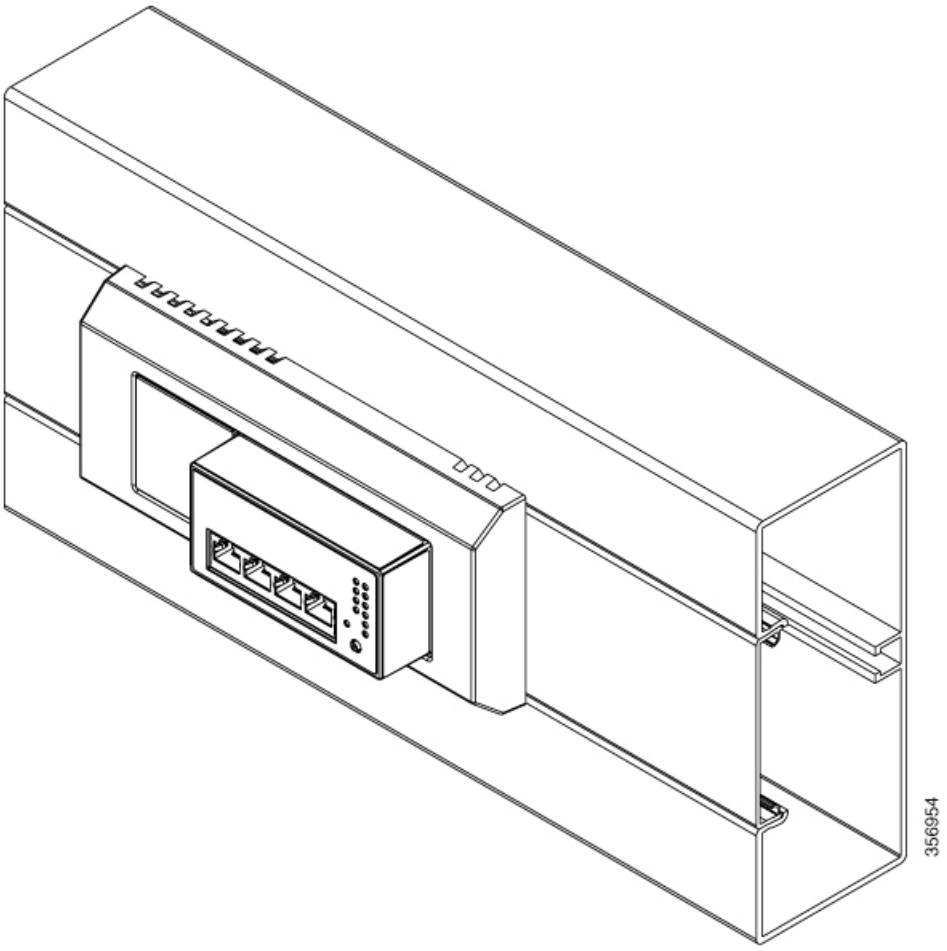

356953

Figure 11: Switch Mounted in a Front-Locking Cable Duct



How to Mount the Switch on a DIN Rail

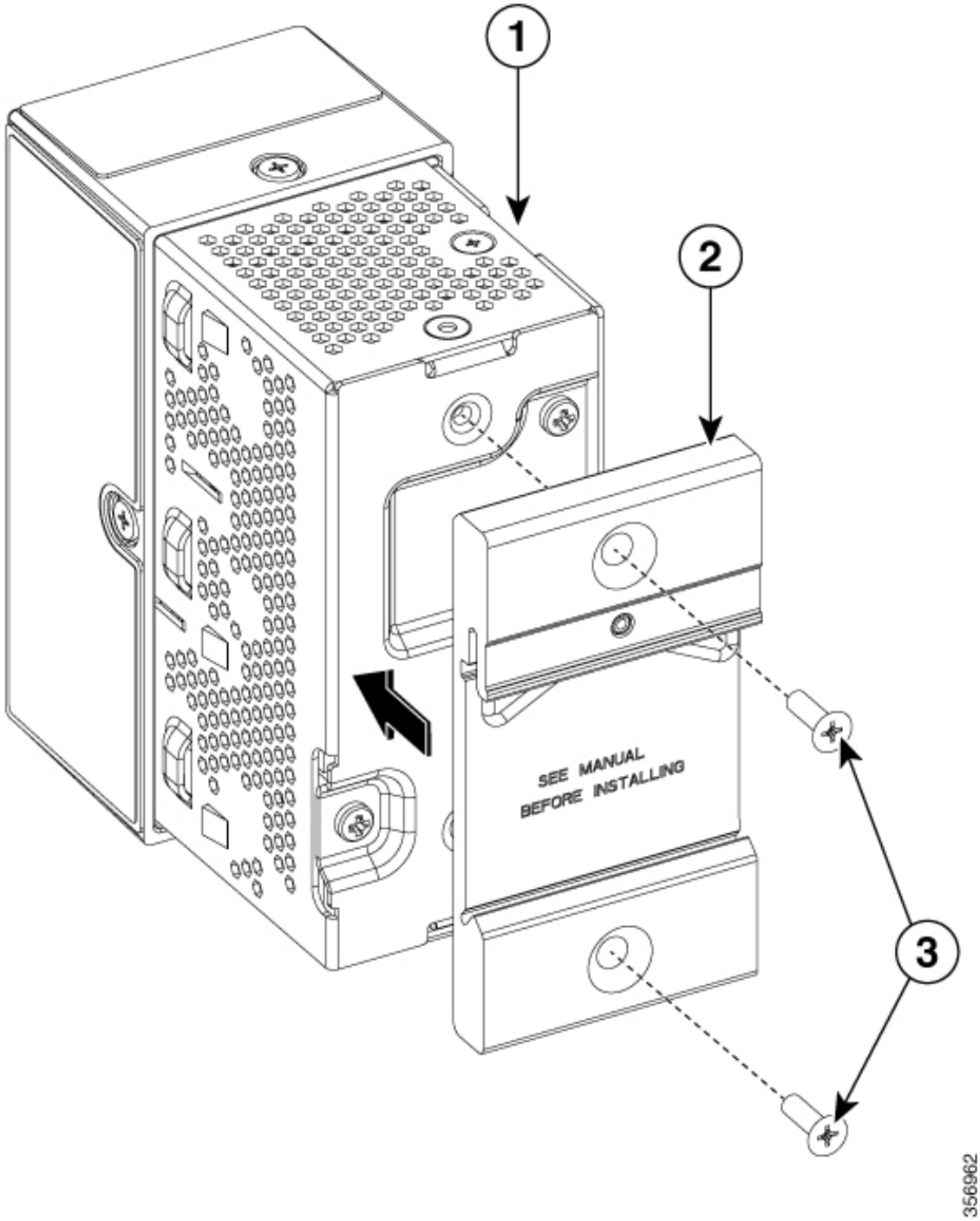
Before you begin

Ensure you have obtained the following before proceeding with the mounting:

- DIN rail clip
- Two Phillips flat head screws

Procedure

Step 1 Attach the DIN rail clip to the rear of the switch using the two screws provided in the kit.



1	Switch	3	Phillips flat head screws (2 Nos)
2	DIN rail clip (CMICR-CLIP-DIN)	-	-

Step 2 Position and place the switch on the DIN rail at an angle where the spring on the DIN clip engages with the DIN rail.

Step 3 Press the switch at the bottom so that the spring compresses against the DIN rail and the hook clamps to the DIN rail.

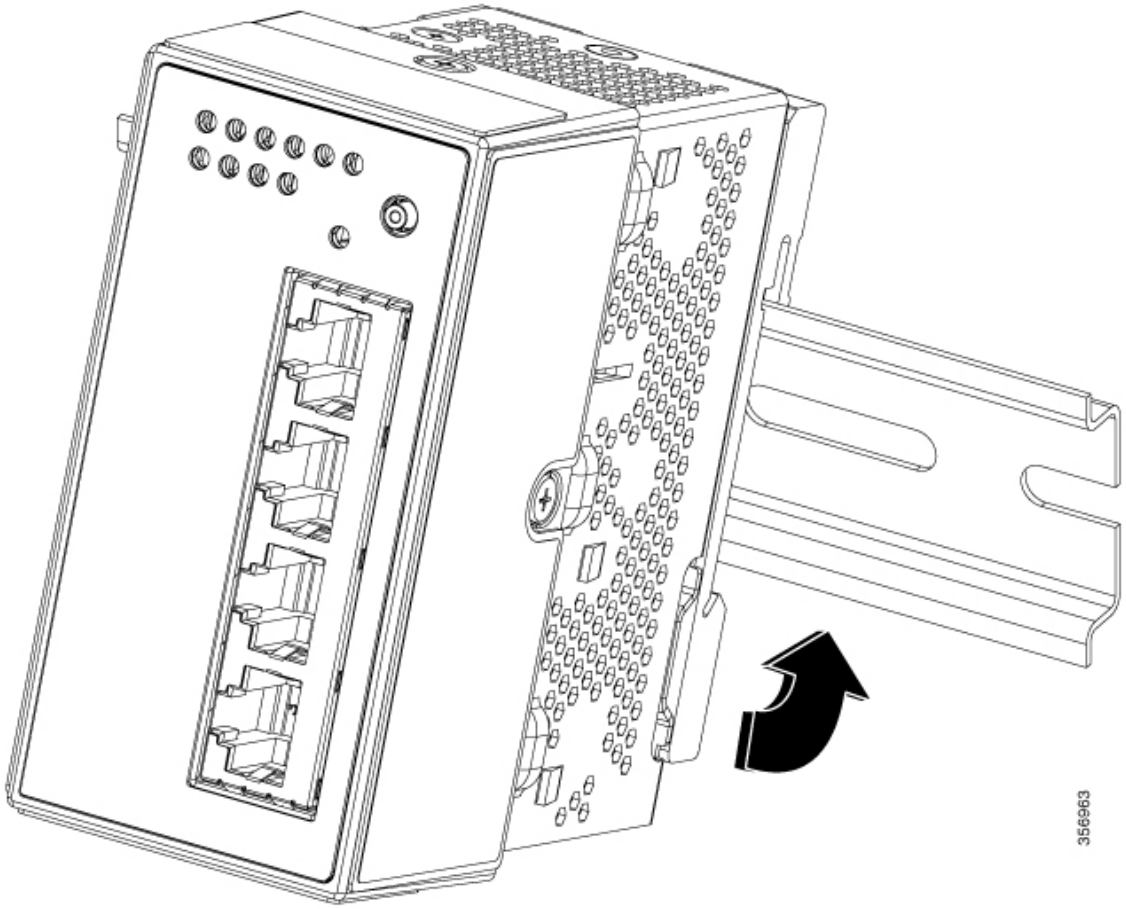
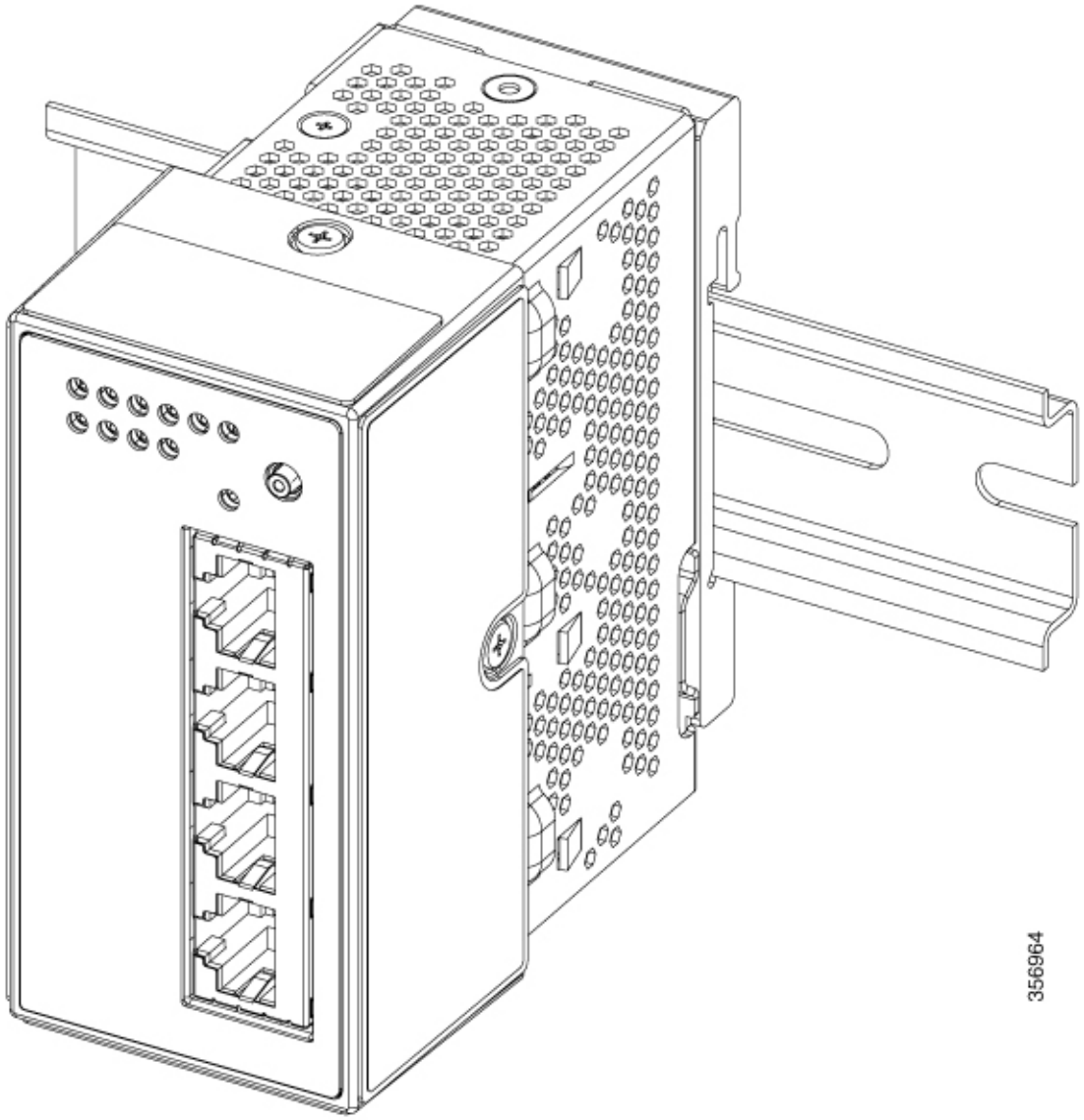


Figure 12: Switch Mounted on a DIN Rail



Mounting CMICR-4PT Switches

The following are the supported mounting options for CMICR-4PT switches.

- Table top mount
- Table bottom mount
- Wall mount

The following section explain the steps in detail.

How to Mount the Switch on a Table Top or a Table Bottom or a Wall

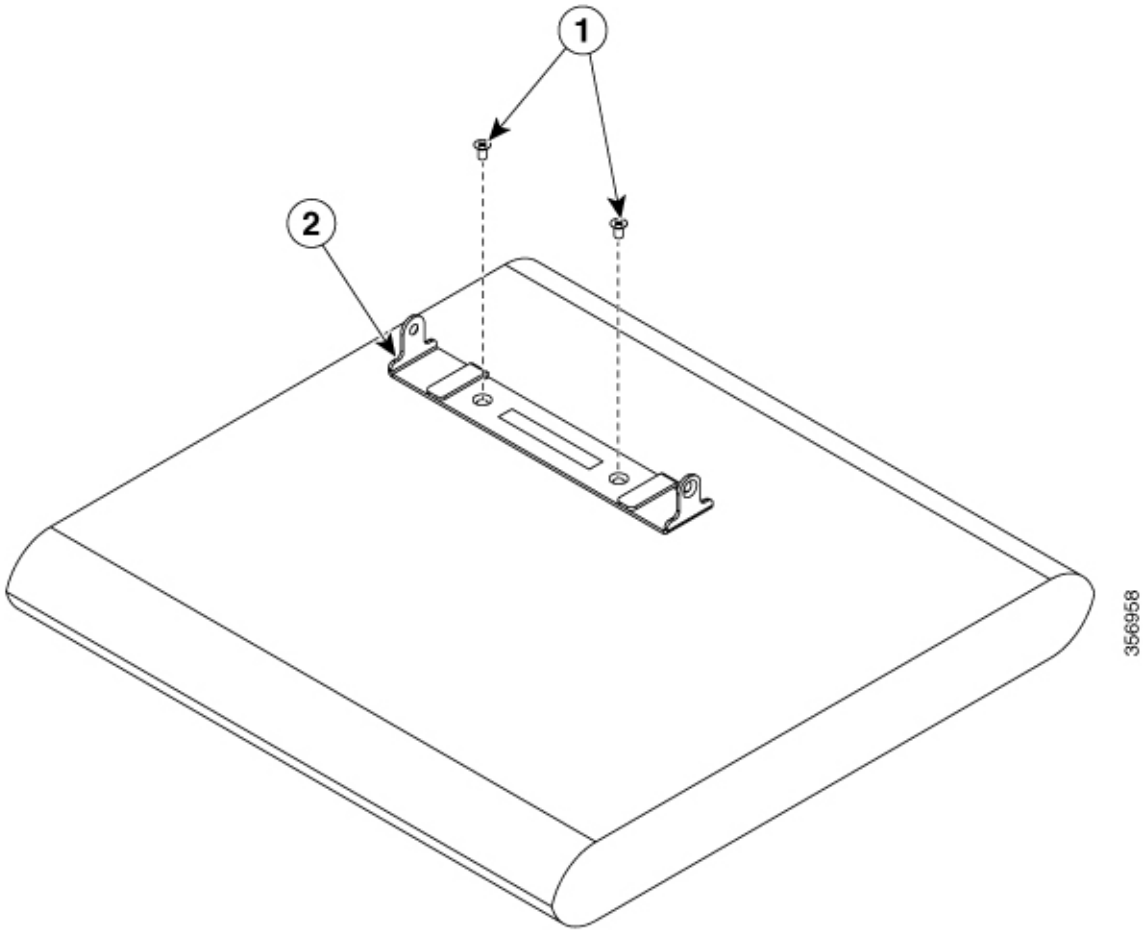
Before you begin

Ensure you have obtained the following accessories:

- Mounting bracket
- Two number M4 bracket mounting screws
- Two number M4 switch mounting screws

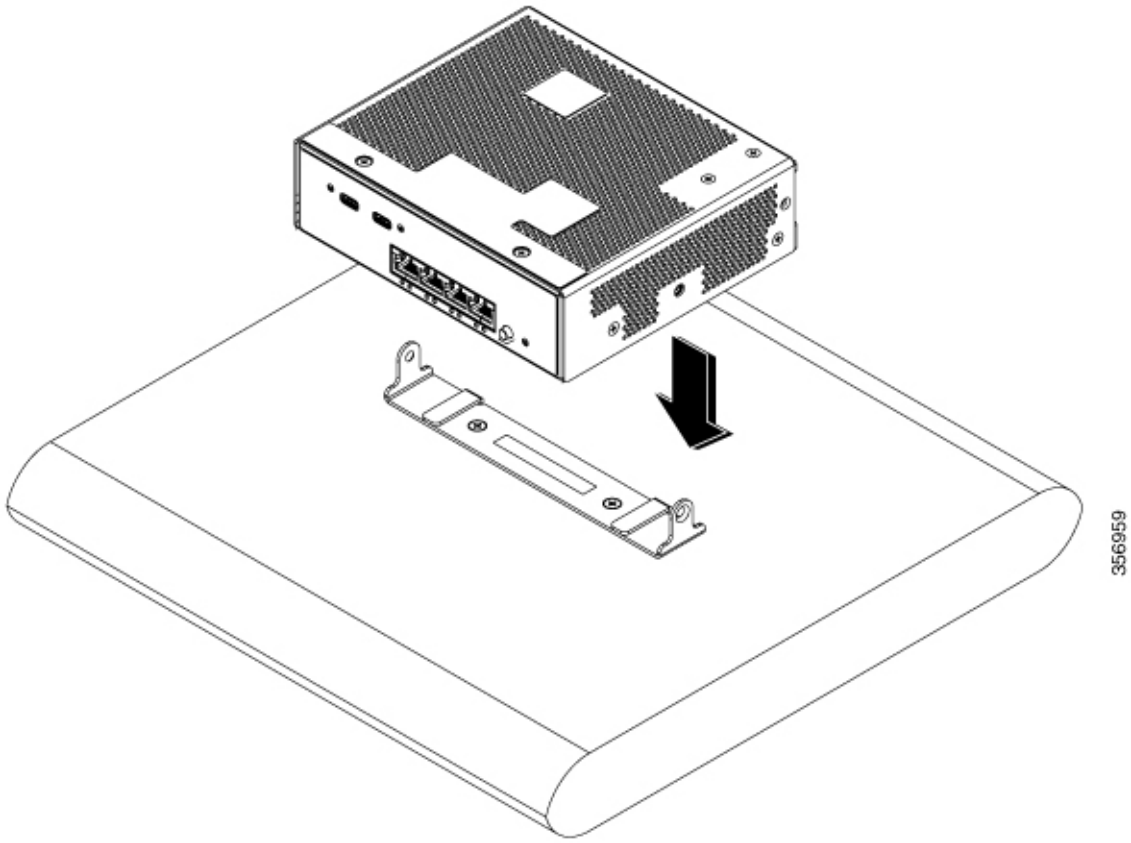
Procedure

Step 1 Attach the mounting bracket to the table top or table bottom or on the wall and fasten it with the two M4 bracket mounting screws provided in the kit.



1	M4 bracket mounting screws	2	Mounting bracket

Step 2 Align the switch with the mounting holes in the bracket.



Step 3 Fasten the switch to the bracket using the 2 M4 switch mounting screws provided.

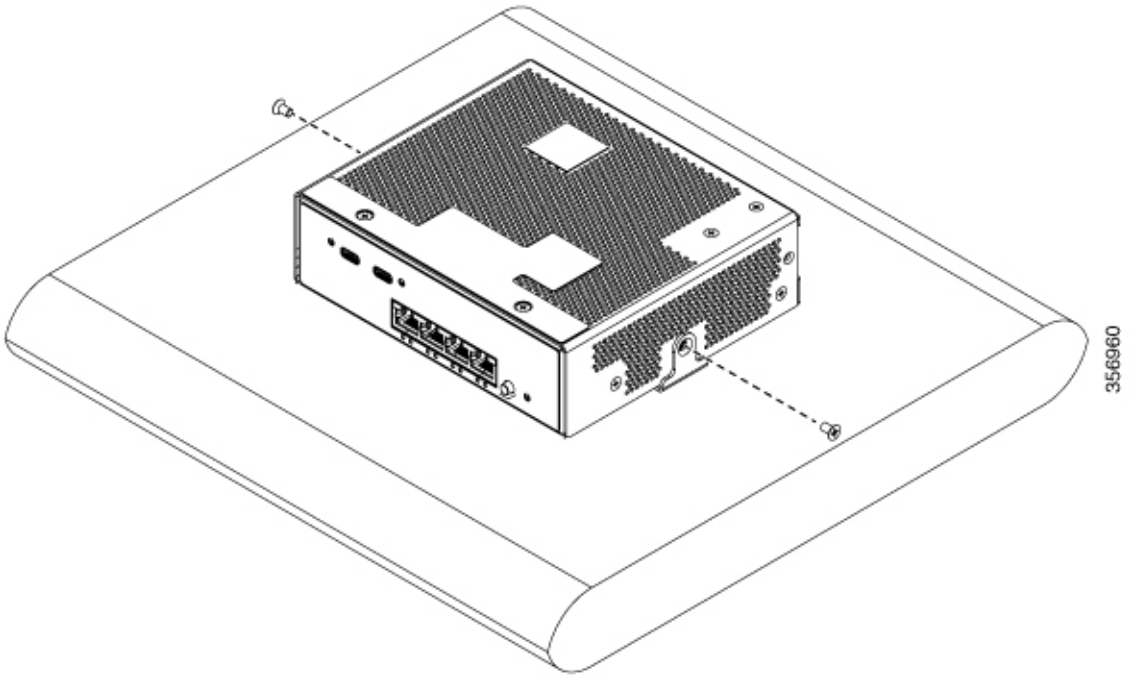
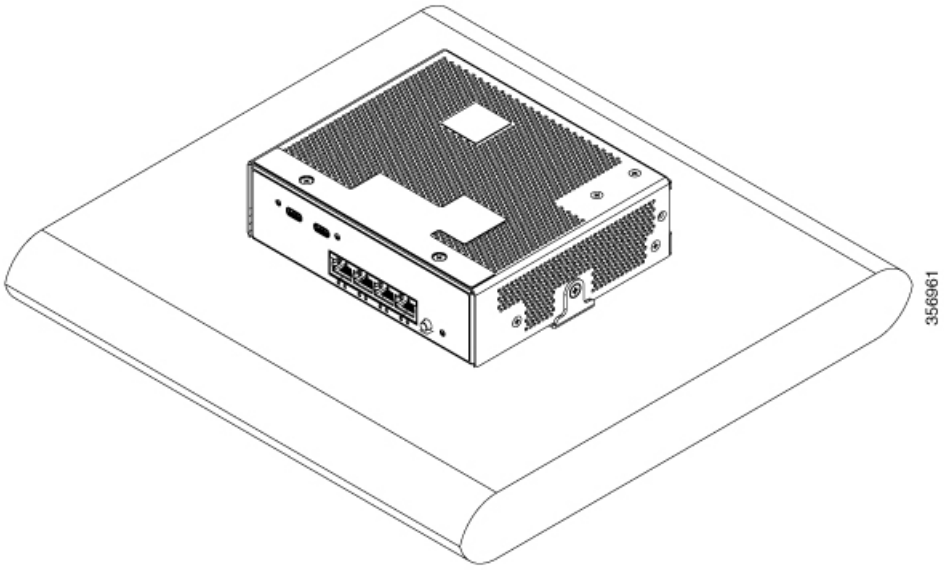


Figure 13: Switch Mounted on a Table



Installing SFP Modules

Installing an SFP or SFP+ Module

Before you begin

When installing SFP or SFP+ modules, follow these guidelines:

- Do not remove the dust plugs from the modules or the rubber caps from the fiber-optic cable until you are ready to connect the cable. The plugs and caps protect the module ports and cables from contamination and ambient light.
- To prevent ESD damage, follow your normal board and component handling procedures when connecting cables to the switch and other devices.

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

Procedure

Step 1 Attach an ESD preventive wrist strap to your wrist and to a bare metal surface.

Step 2 Find the send (TX) and receive (RX) markings on the module top.

On some SFP or SFP+ modules, the send and receive (TX and RX) markings might be replaced by arrows that show the direction of the connection.

Step 3 If the module has a bale-clasp latch, move it to the open, unlocked position.

Step 4 Align the module in front of the slot opening, and push until you feel the connector snaps into place.

Step 5 If the module has a bale-clasp latch, close it.

Step 6 For fiber optic SFP or SFP+ modules, remove the dust plugs and save.

Step 7 Connect the SFP cables.

Removing an SFP or SFP+ Module

Procedure

Step 1 Attach an ESD preventive wrist strap to your wrist and to a bare metal surface.

Step 2 Disconnect the cable from the SFP module. For reattachment, notice which cable connector plug is send (TX) and which is receive (RX).

Step 3 Insert a dust plug into the optical ports of the SFP or SFP+ module to keep the optical interfaces clean.

Step 4 If the module has a bale-clasp latch, pull the bale out and down to eject the module. If the latch is obstructed and you cannot use your finger, use a small, flat-blade screwdriver or other long, narrow instrument to open the latch.

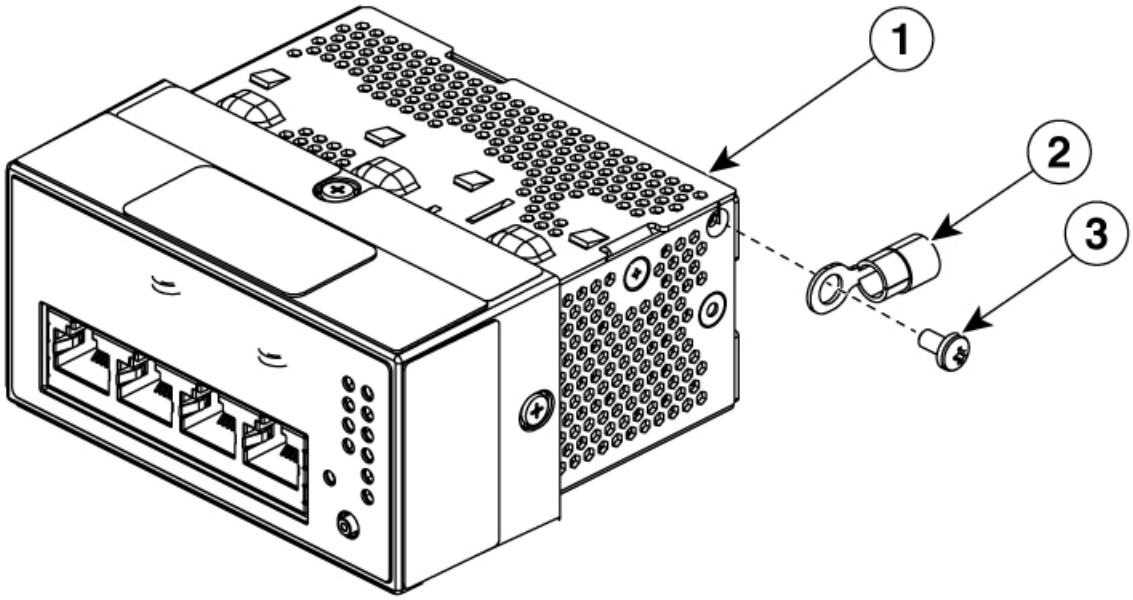
Step 5 Grasp the SFP or SFP+ module, and carefully remove it from the module slot.

Step 6 Place the module in an antistatic bag or other protective environment.

Installing a Grounding Lug

Before you begin

Ensure you have the following accessories available before starting the installation.



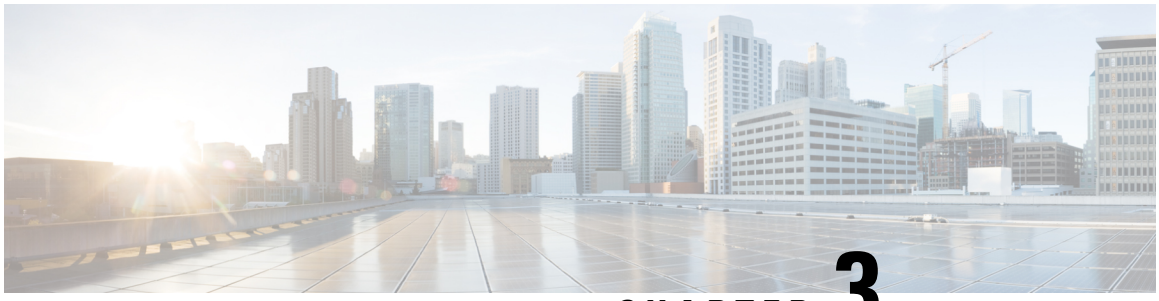
1	Switch	Supplied by Cisco
2	Ground lug	Supplied by Cisco
3	Flat head screw (6 mm length)	Supplied by Cisco

Procedure

Step 1 Strip the covering from the end of the power supply grounding wire.

Step 2 Insert the stripped end of the ground wire into the open end of the grounding lug and crimp the lug securely to the wire.

Step 3 Attach the grounding lug to the switch using the provided screw.



CHAPTER 3

Connecting the Switch

- 10/100/1000 PoE and PoE+ Port Connections, on page 49
- 10/100/1000 Ethernet Port Connections, on page 50
- Powering up the Switch, on page 50

10/100/1000 PoE and PoE+ Port Connections

The ports provide PoE support for devices compliant with IEEE 802.3af and 802.3at (PoE+), and also provide Cisco prestandard PoE support for Cisco IP Phones and Cisco Aironet Access Points.

On a per-port basis, you can control whether or not a port automatically provides power when an IP phone or an access point is connected.

Caution Category 5e and Category 6 cables can store high levels of static electricity. Always ground the cables to a suitable and safe earth ground before connecting them to the switch or other devices.

Caution Noncompliant cabling or powered devices can cause a PoE port fault. Use only standard-compliant cabling to connect Cisco prestandard IP Phones and wireless access points, IEEE 802.3af, or 802.3at (PoE+) compliant devices. You must remove any cable or device that causes a PoE fault.

Procedure

Step 1 Connect one end of the cable to the switch PoE port.

Step 2 Connect the other end of the cable to an RJ-45 connector on the other device. The port LED turns on when both devices have established a link.

The port LED is amber while STP discovers the topology and searches for loops. This process takes about 30 seconds, and then the port LED turns green. If the LED is off, the other device might not be turned on, there might be a cable problem, or there might be a problem with the adapter in the other device.

Step 3 Reconfigure and reboot the connected device, if needed.

Step 4 Repeat Steps 1 through 3 to connect each device.

Note Many legacy powered devices, including older Cisco IP phones and access points that do not fully support IEEE 802.3af, might not support PoE when connected to the switches by a crossover cable.

10/100/1000 Ethernet Port Connections

The switch 10/100/1000 Ethernet port configuration changes to operate at the speed of the attached device. If the attached ports do not support autonegotiation, you can manually set the speed and duplex parameters. Connecting devices that do not autonegotiate or that have the speed and duplex parameters manually set can reduce performance or result in no linkage.

To maximize performance, choose one of these methods for configuring the Ethernet ports:

- Let the ports autonegotiate both speed and duplex.
- Set the interface speed and duplex parameters on both ends of the connection.

Powering up the Switch

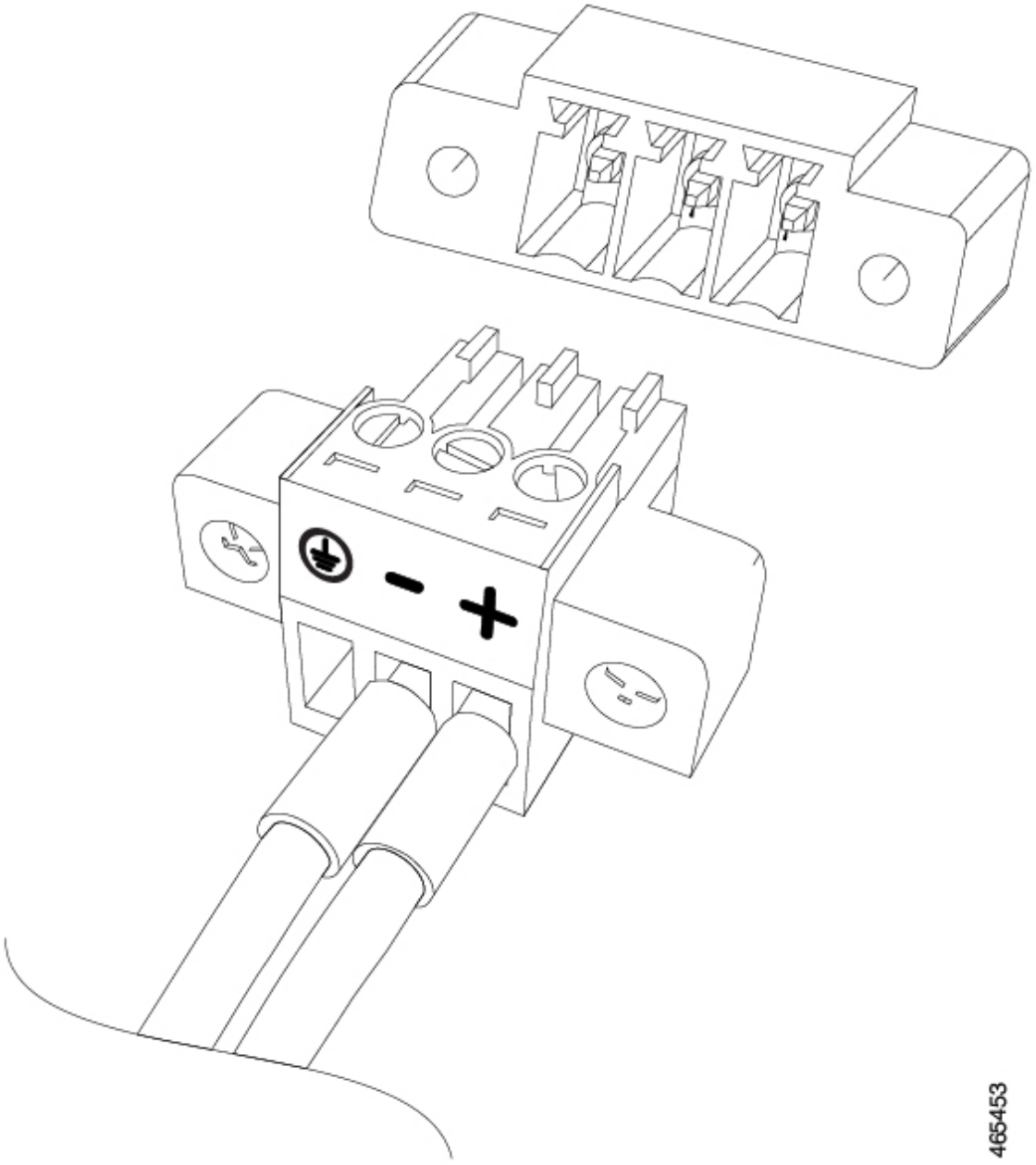
Procedure

Step 1 Plug the AC connector on the auxiliary power adapter cord into an AC power socket.

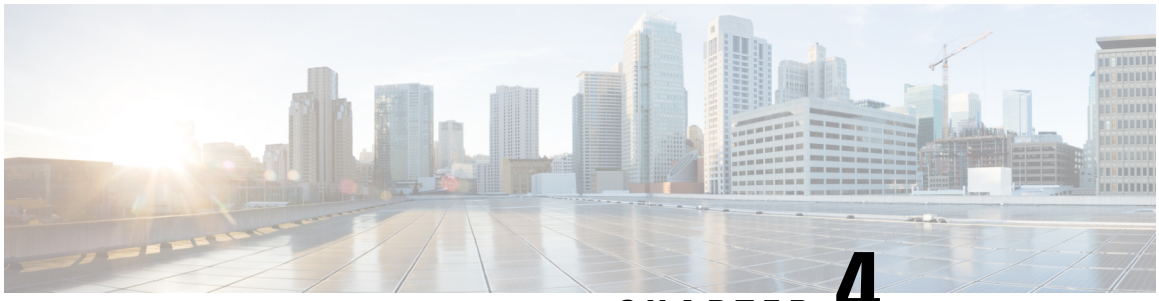
Step 2 Insert the DC connector of the adapter into the power adapter slot on the switch. The System LED starts blinking indicating that the system is booting.

Note If you are using the 65W AC to DC power adapter to power the CMICR-4PC and CMICR-4PS switches, then follow the power adapter cable polarity as shown in the following image.

Figure 14: 65W AC to DC Adapter



Step 3 For CMICR-4PC switches, to utilize the power from the uplink port on the switch, connect an Ethernet cable between the uplink port and the PSE port.



CHAPTER 4

Troubleshooting

- Diagnosing Problems, on page 53
- Finding the Switch Serial Number, on page 56

Diagnosing Problems

The LEDs on the front panel provide troubleshooting information about the switch. They show POST failures, port-connectivity problems, and overall switch performance. You can also get statistics from Device Manager, from the CLI, or from an SNMP workstation.

Switch POST Results

POST failures are usually fatal. Contact your Cisco technical support representative if your switch does not pass POST.

Switch LEDs

If you have physical access to the switch, look at the port LEDs for troubleshooting information about the switch. See the LED section for a description of the LED colors and their meanings.

Switch Connections

Bad or Damaged Cable

Always examine the cable for marginal damage or failure. A cable might be just good enough to connect at the physical layer, but it could corrupt packets as a result of subtle damage to the wiring or connectors. You can identify this situation because the port has many packet errors or the port constantly flaps (loses and regains link).

- Examine or exchange the copper or fiber-optic cable with a known, good cable.
- Look for broken or missing pins on cable connectors.
- Rule out any bad patch panel connections or media convertors between the source and the destination. If possible, bypass the patch panel, or eliminate faulty media convertors (fiber-optic-to-copper).
- Try the cable in another port or interface, if possible, to see if the problem follows the cable.

Ethernet and Fiber-Optic Cables

Make sure that you have the correct cable for the connection.

- For Ethernet, use Category 3 copper cable for 10 Mb/s UTP connections. Use either Category 5, Category 5e, or Category 6 UTP for 10/100/1000 Mb/s connections.
- For fiber-optic cables, verify that you have the correct cable for distance and port type. Ensure that the connected device ports match and use the same type of encoding, optical frequency, and fiber type.
- For copper connections, determine if a crossover cable was used when a straight-through was required or the reverse. Enable auto-MDIX on the switch, or replace the cable.

Link Status

Verify that both sides have link. A single broken wire or a shutdown port can cause one side to show link even though the other side does not have link.

A port LED that is on does not guarantee that the cable is fully functional. The cable might have encountered physical stress that causes it to function at a marginal level. If the port LED does not turn on:

- Connect the cable from the switch to a known good device.
- Ensure that both ends of the cable are connected to the correct ports.
- Verify that both devices have power.
- Verify that you are using the correct cable type.
- Check for loose connections. Sometimes a cable appears to be seated, but is not. Disconnect the cable and then reconnect it.

10/100/1000 Port Connections

A port appears to malfunction:

- Use the Mode button to show the status for all ports.
- Use the **show interfaces** privileged EXEC command to see if the port is error-disabled, disabled, or shutdown. Reenable the port if necessary.

10/100/1000 PoE+ Port Connections

A powered device connected to a PoE port does not receive power:

- Use the Mode button to show the PoE status for all ports.
- Use the **show interfaces** privileged EXEC command to see if the port is in error-disabled, disabled, or shutdown. Reenable the port if necessary.
- Verify that the power supply installed in the switch meets the power requirements of your connected devices.
- Verify that there is sufficient PoE power budget to provide power to the attached device. Use the **show power inline** global configuration command to check on the available PoE power budget.

- Verify the cable type. Many legacy powered devices, including older Cisco IP phones and access points that do not fully support IEEE 802.3af, might not support PoE when connected to the switch by a crossover cable. Replace the crossover cable with a straight-through cable.

Caution Noncompliant cabling or powered devices can cause a PoE port fault. Use only standard-compliant cabling to connect Cisco prestandard IP Phones and wireless access points or IEEE 802.3af-compliant devices. You must remove any cable or device that causes a PoE fault.

Interface Settings

Verify that the interface is not disabled or powered off. If an interface is manually shut down on either side of the link, it does not come up until you reenable the interface. Use the **show interfaces** privileged EXEC command to see if the interface is error-disabled, disabled, or shutdown on either side of the connection. If needed, reenable the interface.

Ping End Device

Ping from the directly connected switch first, and then work your way back port by port, interface by interface, trunk by trunk, until you find the source of the connectivity issue. Make sure that each switch can identify the end device MAC address in its Content-Addressable Memory (CAM) table.

Switch Performance

Speed, Duplex, and Autonegotiation

If the port statistics show a large amount of alignment errors, frame check sequence (FCS), or late-collisions errors, this might mean a speed or duplex mismatch.

A common issue with speed and duplex occurs when duplex and speed settings are mismatched between two switches, between a switch and a router, or between the switch and a workstation or server. Mismatches can happen when manually setting the speed and duplex or from autonegotiation issues between the two devices.

To maximize switch performance and to ensure a link, follow one of these guidelines when changing the duplex or the speed settings.

- Let both ports autonegotiate both speed and duplex.
- Manually set the speed and duplex parameters for the interfaces on both ends of the connection.
- If a remote device does not autonegotiate, use the same duplex settings on the two ports. The speed parameter adjusts itself even if the connected port does not autonegotiate.

Autonegotiation and Network Interface Cards

Problems sometimes occur between the switch and third-party network interface cards (NICs). By default, the switch ports and interfaces autonegotiate. Laptops or other devices are commonly set to autonegotiate, yet sometimes autonegotiation issues occur.

To troubleshoot autonegotiation problems, try manually setting both sides of the connection. If this does not solve the problem, there could be a problem with the firmware or software on your NIC. You can resolve this by upgrading the NIC driver to the latest version.

Cabling Distance

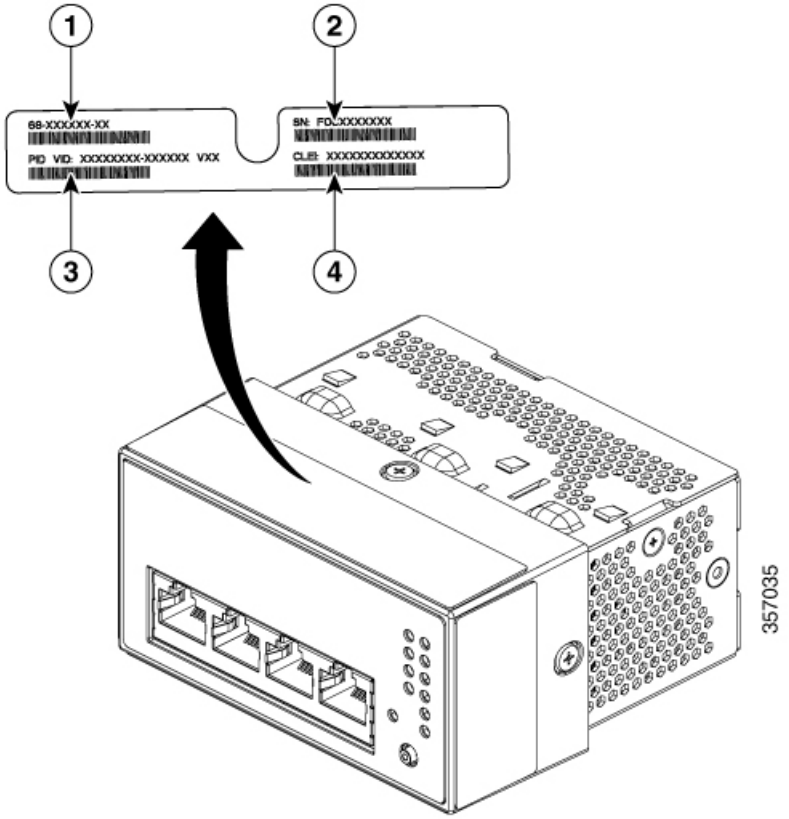
If the port statistics show excessive FCS, late-collision, or alignment errors, verify that the cable distance from the switch to the connected device meets the recommended guidelines.

Finding the Switch Serial Number

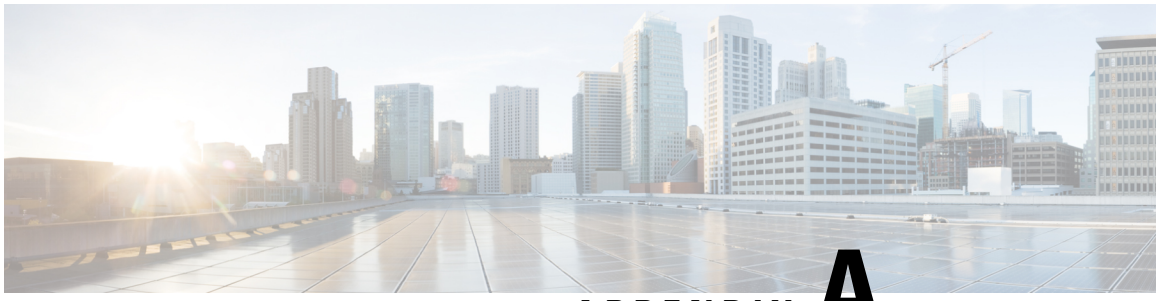
If you contact Cisco Technical Assistance, you need to know the switch serial number. You can also use the **show version** privileged EXEC command to see the switch serial number.

Figure 15: Serial Number Location

Serial number of the switch is located at the bottom of the switch. Following illustration shows all the labels on the switch.



1	Top Assembly Number (TAN)	3	Product Identifier (PID)
2	Serial Number (SN)	4	CLEI code



APPENDIX A

Technical Specifications

- Physical Specifications, on page 57
- Environmental Specifications, on page 57
- Power Adapter Specifications, on page 58

Physical Specifications

Physical Dimensions of the Switch	
Weight	• CMICR-4PS: 1.32 lbs (0.60 kg) • CMICR-4PC: 1.32 lbs (0.60 kg) • CMICR-4PT: 2.07 lbs (0.94 kg)
Dimensions (H x D x W)	• CMICR-4PS: 1.79 X 3.54 X 3.10 inches (4.55 x 9.0 x 7.88 cm) • CMICR-4PC: 1.79 X 3.54 X 3.10 inches (4.55 x 9.0 x 7.88 cm) • CMICR-4PT: 1.77 X 6.00 X 5.29 inches (4.5 x 15.24 x 13.45 cm)

Environmental Specifications

Environmental Ranges	
Operating temperature [1]	23 to 95°F (–5 to 35°C) up to 5000 ft (1524 m) 23 to 86°F (–5 to 30°C) up to 10,000 ft (3048 m)
Storage temperature	-13º to 158ºF (-25º to 70ºC) up to 15,000 ft (4572 m)
Operating relative humidity	5% to 90% (noncondensing)
Storage relative humidity	5% to 95% (noncondensing)
Operating altitude	Up to 10,000 ft (3048 m)

Environmental Ranges	
Storage altitude	Up to 15,000 ft (4572 m)

[1] Minimum ambient temperature for cold start is 32°F (0°C)

Power Adapter Specifications

Voltage Range	85 VAC (minimum), 100/12/240 VAC (nominal), 264 VAC (maximum)
Line Frequency	47 Hz (minimum), 50/60 Hz (nominal), 63 Hz (maximum)
Output	53 V
Voltage (VDC) at 0.7A load	53.5 V
Voltage Tolerance	±1 % (52.965 VDC - 54.035 VDC)
Minimum Current (A)	0
Maximum Current (A)	1.5 A
Total Error	±2%

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- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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