



Installing and Upgrading Internal Modules and FRUs in Cisco 1900 Series ISRs

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This document describes how to install or upgrade modules that are located internally within your Cisco 1900 series integrated services router, such as internal modules, memory, internal service modules (ISMs), power supplies, and blowers. You need to remove the cover from the router to install or remove any of these items. The document contains the following sections:



Note

The Cisco 1905 ISR and Cisco 1921 ISR have no user-removable or user-installable components. Do not remove the chassis cover.

- [Safety Warnings, page 2](#)
- [Modules Internal to the Cisco 1905 and 1921 Routers, page 4](#)
- [Modules Internal to the Cisco 1905 and 1921 Routers, page 4](#)
- [Obtaining Documentation and Submitting a Service Request, page 24](#)



Note

To see translations of the warnings that appear in this publication, refer to the [Regulatory Compliance and Safety Information for Cisco 1900 Series Integrated Services Routers](#) document that accompanies your router.



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Safety Warnings



Warning

IMPORTANT SAFETY INSTRUCTIONS

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

SAVE THESE INSTRUCTIONS



Warning

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



Warning

Before working on a system that has an on/off switch, turn OFF the power and unplug the power cord.
Statement 1



Warning

During this procedure, wear grounding wrist straps to avoid ESD damage to the card. Do not directly touch the backplane with your hand or any metal tool, or you could shock yourself. Statement 94



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 you connect the system to its power source. Statement 1004



Warning

**This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than:
120 Vac, 15A (240Vac, 16A).** Statement 1005



Warning

This equipment has been designed for connection to TN and IT power systems. Statement 1007



Warning

To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables. Statement 1021



Warning

To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord. Statement 1023



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



Hazardous network voltages are present in WAN ports regardless of whether power to the router is OFF or ON. To avoid electric shock, use caution when working near WAN ports. When detaching cables, detach the end away from the router first. Statement 1026



Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place. Statement 1029



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



To prevent personal injury or damage to the chassis, never attempt to lift or tilt the chassis using the handles on modules (such as power supplies, fans, or cards); these types of handles are not designed to support the weight of the unit. Statement 1032



Do not use this product near water; for example, near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement, or near a swimming pool. Statement 1035



Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations. Statement 1036



Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface. Statement 1037



Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning. Statement 1038



To report a gas leak, do not use a telephone in the vicinity of the leak. Statement 1039

**Warning**

Ultimate disposal of this product should be handled according to all national laws and regulations.
Statement 1040

**Warning**

Before opening the unit, disconnect the telephone-network cables to avoid contact with telephone-network voltages. Statement 1041

**Warning**

This equipment contains a ring signal generator (ringer), which is a source of hazardous voltage. Do not touch the RJ-11 (phone) port wires (conductors), the conductors of a cable connected to the RJ-11 port, or the associated circuit-board when the ringer is active. The ringer is activated by an incoming call. Statement 1042

**Warning**

The covers are an integral part of the safety design of the product. Do not operate the unit without the covers installed. Statement 1077

**Warning**

For connections outside the building where the equipment is installed, the following ports must be connected through an approved network termination unit with integral circuit protection.

T1 SFP Statement 1044

Safety Warnings for Finland, Norway and Sweden

Warning statement 1017 applies to the countries of Finland, Norway, and Sweden.

**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

Modules Internal to the Cisco 1905 and 1921 Routers

**Warning**

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

**Warning**

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

There are no user-serviceable or field replaceable parts in the 1905 and 1921 model routers. For service and support issues see [“Obtaining Documentation and Submitting a Service Request”](#).

Modules Internal to the Cisco 1941 Router

This section tells how to install the field replaceable modules in the Cisco 1941 router. It contains the following subsections:

- [Opening and Closing the Chassis, page 5](#)
- [Locating Modules, page 7](#)
- [Installing and Removing DRAM UDIMMs, page 8](#)
- [Installing and Removing ISMs, page 10](#)
- [Installing and Removing a Power Supply, page 15](#)
- [Installing a Blower, page 20](#)
- [Opening and Closing the Chassis, page 5](#)
- [Installing and Replacing CompactFlash Memory Cards](#)

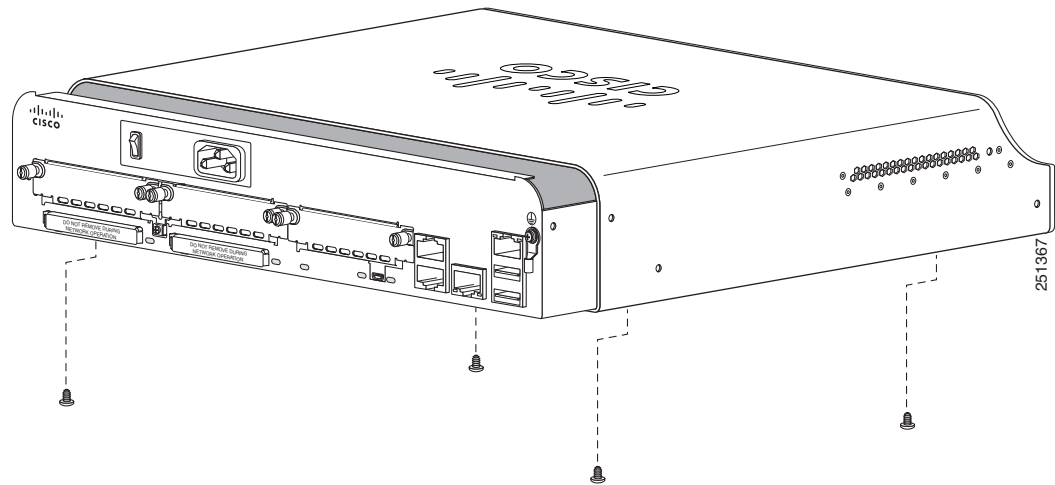
All the module replacement procedures in this section require removal of the chassis cover. Before you perform any of the module replacement procedures, disconnect the power and remove the cover as described in the [“Opening and Closing the Chassis” section on page 5](#). After you complete the module replacement procedures, install the chassis cover as described in the [“Opening and Closing the Chassis” section on page 5](#).

Opening and Closing the Chassis

To open or close the chassis, follow these steps. A number one Phillips screw driver is required.

Opening the Chassis

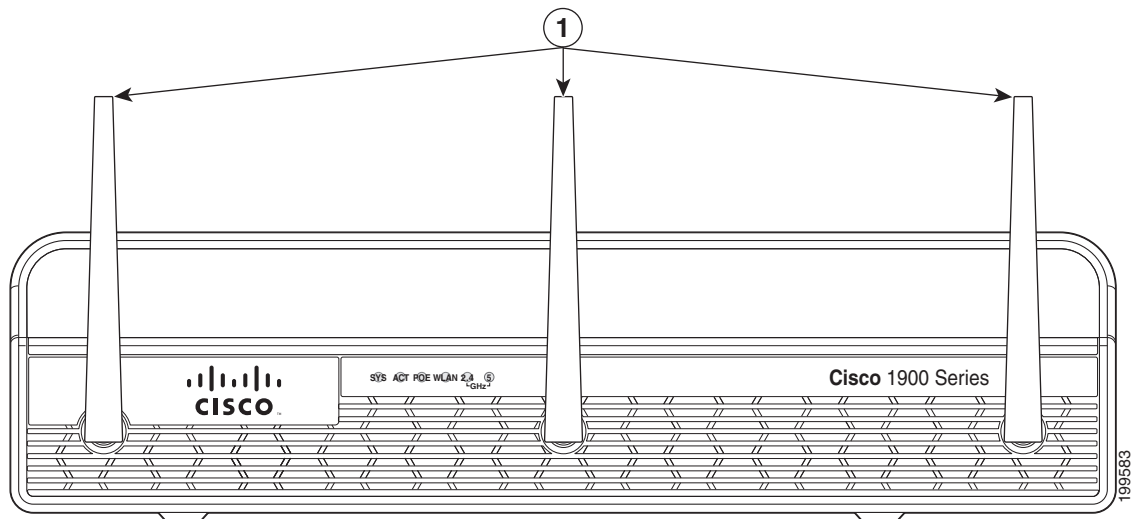
-
- | | |
|---------------|--|
| Step 1 | Make sure that the router is turned off and is disconnected from AC power. |
| Step 2 | Turn the router upside down, and rest the top of the router on a flat surface. |
| Step 3 | Use the Phillips screwdriver to remove the screws that holds the top of the of the case to the chassis, as shown in Figure 1 . |

Figure 1 *Removing the Chassis Screw*

1	Router cover fastening screws (4)	
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Note If the Cisco 1941 ISR has wireless antennas ([Figure 2](#)), you must first remove these by unscrewing them counter clockwise.

Figure 2 *Removing Wireless Antennas*

1	Wireless antennas	
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Step 4 Turn the router back to its original position (top up).

Step 5 Pull the top of the router (which is facing up toward you) back from the bottom of the router.

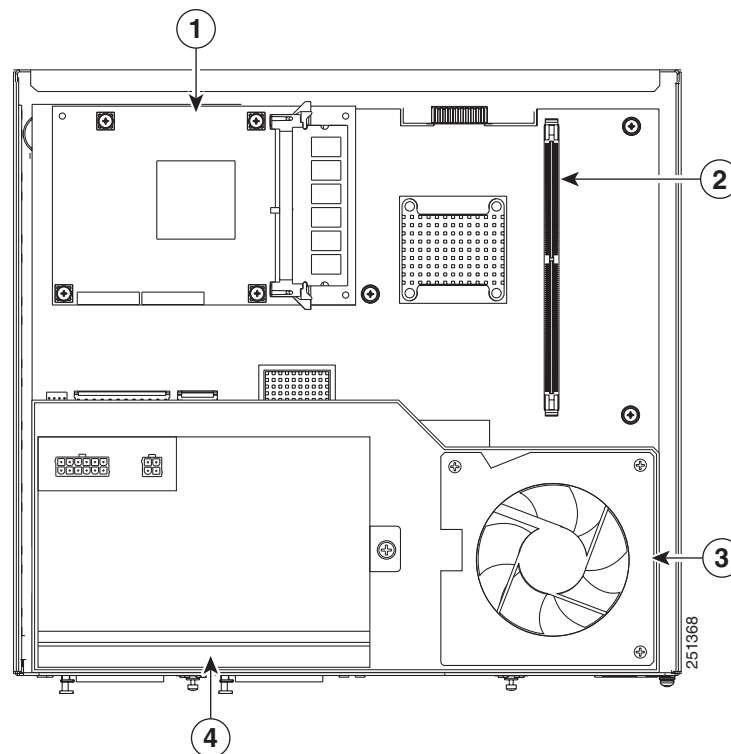
Closing the Chassis

-
- Step 1** Make sure that the router is turned off and is disconnected from AC power.
- Step 2** Slide the top of the router (which is facing up toward you) back onto the bottom of the router.
- Step 3** Turn the router upside down, and rest the top of the router on a flat surface.
- Step 4** Use the Phillips screwdriver to install the screws that hold the top of the case to the chassis, as shown in [Figure 1](#). Torque the screws to 6 to 8 in-lb (0.68 to 0.90 N-m).
- Step 5** Turn the router back to its original position (top up).
- Step 6** Reconnect the AC power.
-

Locating Modules

[Figure 3](#) shows where the locations of the ISM, unbuffered dual inline memory module (UDIMM), power supply and blower located in the Cisco 1941 chassis.

Figure 3 Cisco 1941 Internal Modules



1	ISM ¹	2	UDIMM
3	Blower	4	Power supply

1. In the 1941W this is a WLAN module. It is not a user removable or installable.

**Caution**

Do not, under any circumstances, tamper with or attempt to remove the safety shields protecting the WIC/HWIC slots and connectors.

Installing and Removing DRAM UDIMMs

Before you remove or install a DRAM UDIMM, remove the chassis cover as described in the [“Opening and Closing the Chassis”](#) section on page 5.

**Caution**

When you remove or install UDIMMs, always wear an ESD-preventive wrist strap, and ensure that it makes good contact with your skin. Connect the equipment end of the wrist strap to the metal part of the chassis.

**Caution**

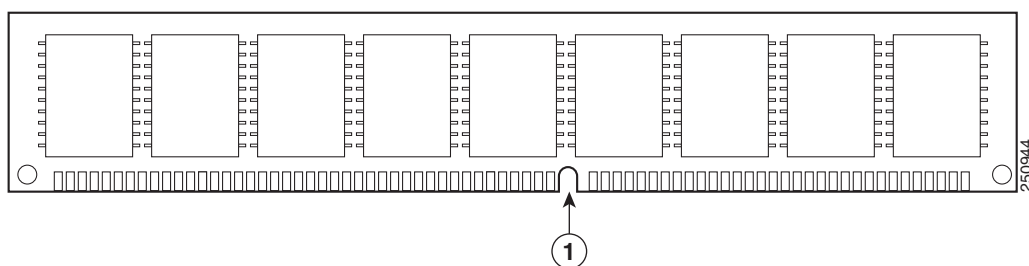
Handle DRAM UDIMMs by the edges only. UDIMMs are ESD-sensitive components and can be damaged by mishandling.

DRAM UDIMM Location and Orientation

On Cisco 1900 series routers, a single DRAM UDIMM socket is located on the system board. See [Figure 3](#) for the location of the UDIMM connector.

DRAM UDIMMs have a polarization notch on the mating edge to prevent incorrect insertion. [Figure 4](#) shows the polarization notch on a DRAM UDIMM.

Figure 4 *DRAM UDIMM Showing Polarization Notch*

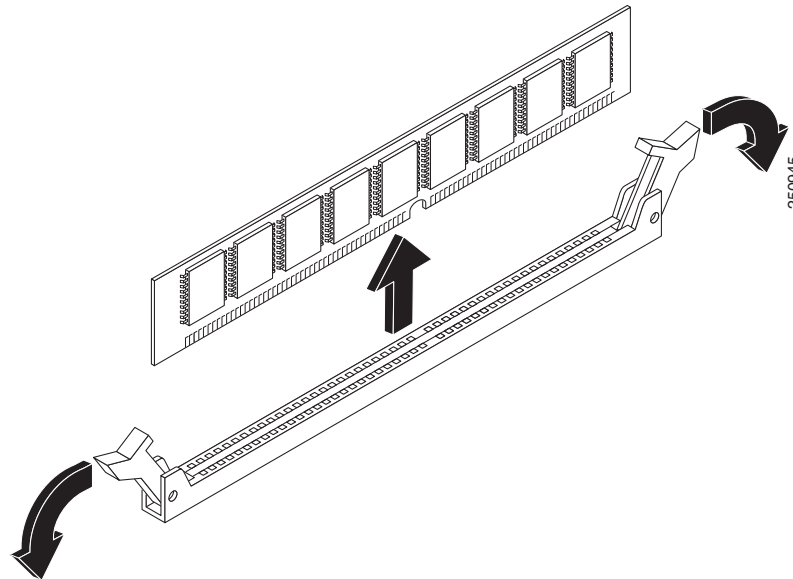


Removing a DRAM UDIMM

To remove a DRAM UDIMM from the system board, follow these steps:

- Step 1** Remove the cover to access the system board. If necessary see the [“Opening and Closing the Chassis”](#) section on page 5.
- Step 2** Locate the DRAM UDIMM on the system board. See the [“Locating Modules”](#) section on page 7 for the location of the UDIMM sockets.
- Step 3** Pull the latches away from the DRAM UDIMM at both ends; this lifts the UDIMM slightly. Then pull the UDIMM out of the socket. (See [Figure 5](#).)

Figure 5 **Removing a DRAM UDIMM**

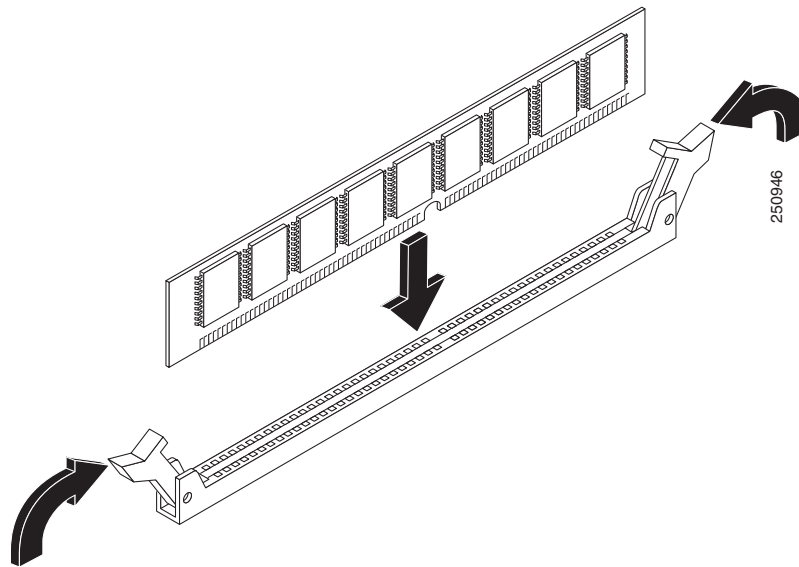


Step 4 Place the UDIMM in an antistatic bag to protect it from ESD damage.

Installing a DRAM UDIMM

To install a DRAM UDIMM in a Cisco 1900 series router follow these steps:

-
- Step 1** Remove the cover to gain access to the system board. If necessary see the [“Opening and Closing the Chassis”](#) section on page 5.
 - Step 2** Locate the DRAM UDIMM connector on the system board. See the [“Locating Modules”](#) section on page 7, for the location of the UDIMM connectors.
 - Step 3** Make sure that both latches on the UDIMM connector are in the open position.
 - Step 4** Orient the UDIMM so that the polarization notch lines up with the polarization key on the connector. (See [Figure 4.](#))
 - Step 5** Insert the UDIMM carefully into the connector.
 - Step 6** Carefully and firmly press the DRAM UDIMM into the connector until the latches close onto the UDIMM. Make sure that both latches rotate to the closed position against the UDIMM. (See [Figure 6.](#))

Figure 6 *Installing a DRAM UDIMM*

Step 7 When you finish installing modules, install the cover on the router. If necessary see the [“Opening and Closing the Chassis”](#) section on page 5.

Installing and Removing ISMs

Internal Service Modules (ISMs) plug into an ISM connector on the system board as described in the [“Installing an ISM”](#) section on page 12.

Before you remove or install an ISM, remove the chassis cover as described in the [“Opening and Closing the Chassis”](#) section on page 5.



Note

In the 1941W a WLAN module is installed in the ISM connector. It is not user removable.



Caution

When you remove or install an ISM, always wear an ESD-preventive wrist strap, and ensure that it makes good contact with your skin. Connect the equipment end of the wrist strap to the metal part of the chassis.



Caution

Handle ISMs by the edges only. ISMs are ESD-sensitive components and can be damaged by mishandling.

Software Requirement for ISMs

Cisco IOS software of a specified release or later release is required for using an ISM.

To determine the version of Cisco IOS software that is running on your router, log in to the router and enter the **show version** command:

```
Router> show version
```

```
Cisco Internetwork Operating System Software
2900 Software (C2900-ADVENTERPRISEK9-M), Version 12.3(8.2)T, INTERIM SOFTWARE
```

ISM Location

See the [“Locating Modules” section on page 7](#) for the location of the ISM.

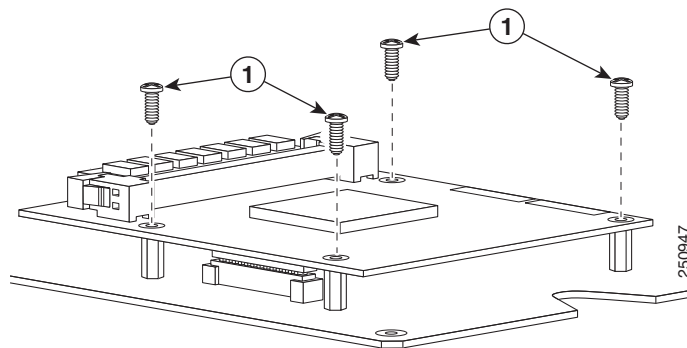
Removing an ISM

Before you remove an ISM, remove the chassis cover as described in the [“Opening and Closing the Chassis” section on page 5](#).

To remove an ISM, perform the following procedure. To complete this procedure, you need a number 2 Phillips screwdriver or flat-blade screwdriver.

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- Step 1** Locate the ISM to be removed. See the [“Locating Modules” section on page 7](#) for the location of the ISM.
- Step 2** Remove the four screws from the ISM as shown in [Figure 7](#).

Figure 7 Removing Screws from the ISM



1	ISM retention screws (4)		
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- Step 3** Carefully lift the ISM from the connector and the standoff. Keep the ISM parallel with the system board to prevent damage to the connector and standoff.
- Step 4** Place the ISM in an antistatic bag to protect it from ESD damage.
-

Installing an ISM

Before you install an ISM, remove the chassis cover as described in the [“Opening and Closing the Chassis” section on page 5](#).

To install an ISM, perform the following procedure. To complete this procedure, you need a number 2 Phillips screwdriver or flat-blade screwdriver, and a 1/4-inch nut driver or wrench.

Installing an ISM in a Cisco 1900 Series Router

The Cisco 1900 series routers have one ISM connector on the system board. To install the ISM, perform the following steps. The ISM is an optional upgrade. The procedure below assumes you are upgrading your router to include an ISM.

- Step 1** Find the location of the four screws on the system board near the ISM connector. When no ISM is installed the four screws are holding the system board in place. See [“Locating Modules” section on page 7](#).

Figure 8 **System Board ISM Screws**

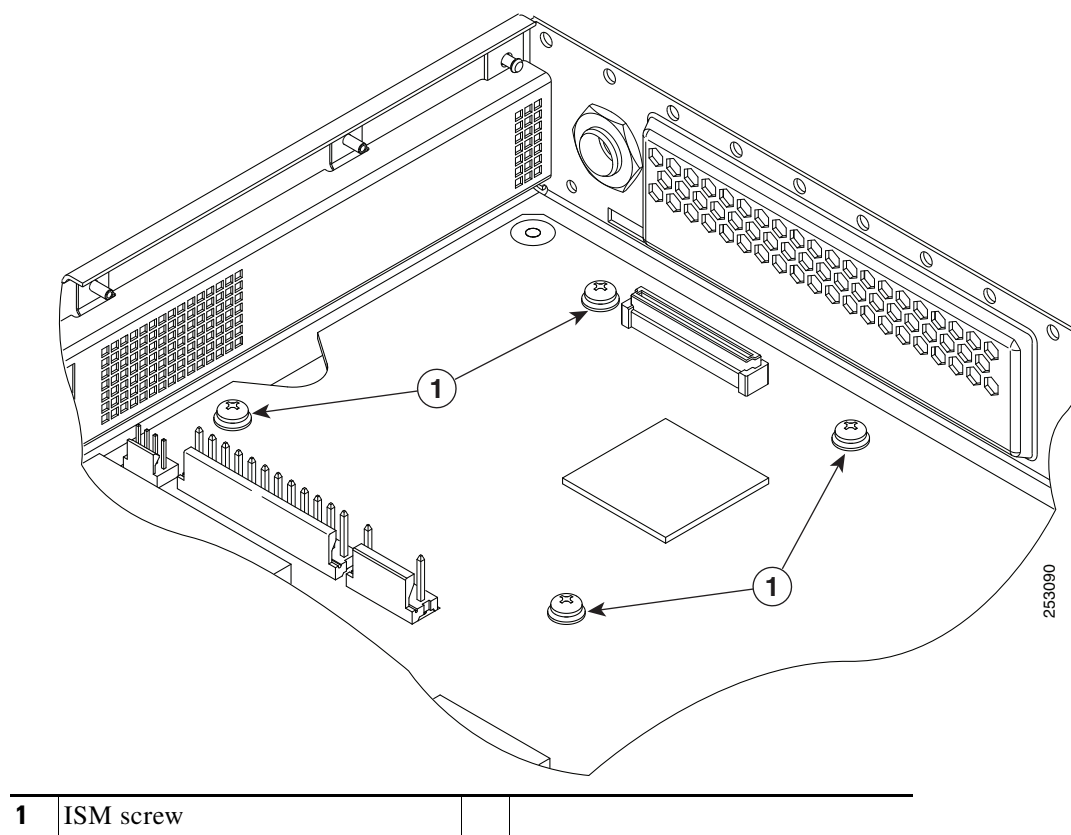
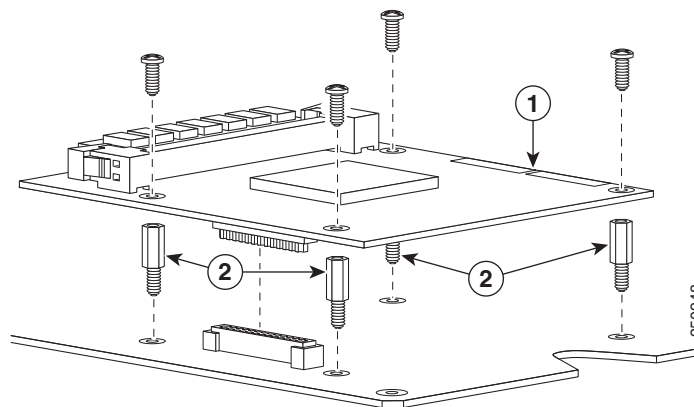
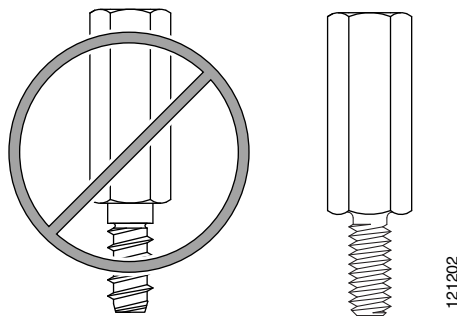


Figure 9 Connecting the ISM to the Cisco 1900 Series System Board

1	ISM	2	Standoffs (4)
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- Step 2** Remove the four screws from the system board and keep them. The screws will be used to install the ISM on the standoffs in [Step 3](#).
- Step 3** Locate the four machine-thread standoffs from the accessory kit. (See [Figure 10](#).)

Figure 10 Metal Standoffs

- Step 4** Install the four machine-thread metal standoffs into the system board in place of the four screws removed in [Step 2](#), as shown in [Figure 9](#). Use a 1/4-inch nut driver to tighten the standoffs. Torque the standoffs to 6 to 8 in-lb (0.68 to 0.90 N-m).

**Caution**

Make sure that the standoffs are straight when installed. Tighten them gently but firmly. Torque them to 6 to 8 in-lb (0.68 to 0.90 N-m). The shoulder must be seated tightly against the system board.

- Step 5** Insert the connector on the ISM into the ISM connector on the system board. (See [Figure 9](#).)

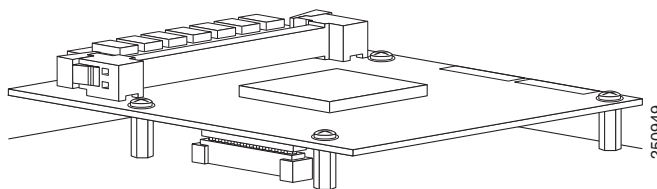
**Note**

Be sure to press firmly on the ISM until the board seats onto the connector. (See [Figure 9](#).)

- Step 6** Insert the screws through the ISM into the metal standoffs. (See [Figure 9](#).) Carefully tighten the screws with a Phillips screwdriver. Torque the screws to 6 to 8 in-lb (0.68 to 0.90 N-m).

Step 7 Check that the ISM is installed correctly on the system board. (See [Figure 11](#).)

Figure 11 *Correctly Installed ISM*



Step 8 When you finish installing modules, install the cover on the router. See the “[Opening and Closing the Chassis](#)” section on page 5.

Verifying ISM Installation

Use the **show diag** command to verify that the ISM has been installed correctly. In the following example, one ISM is recognized by the system. (See the bold entry.)

Router# **show diag**

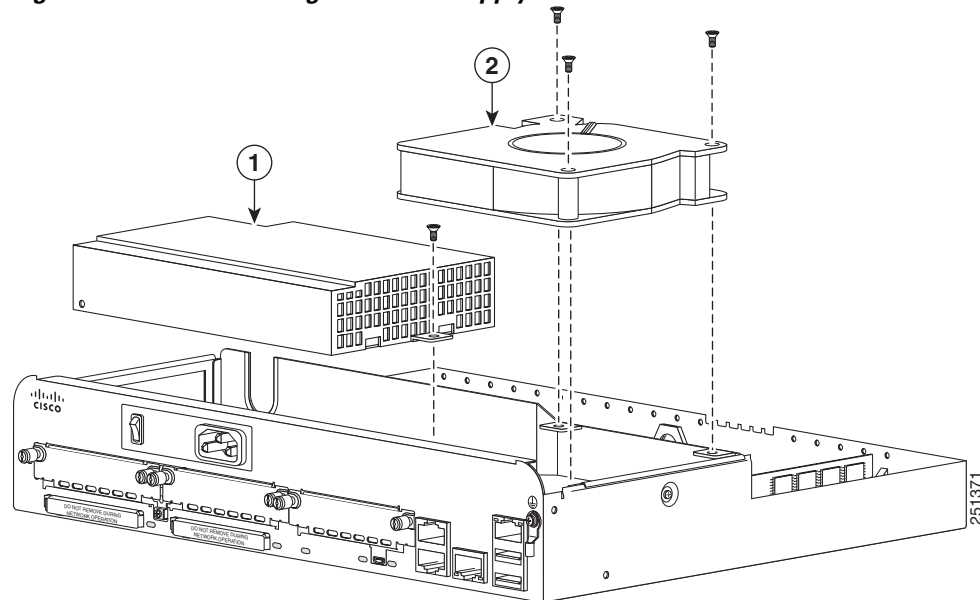
```
ISM Slot 0:
  Internal-Service-Module
  Internal-Service-Module is analyzed
  Internal-Service-Module insertion time 13:25:34 ago
  EEPROM contents at hardware discovery:
  Hardware Revision      : 1.0
  Part Number           : 73-11709-01
  Board Revision        : 01
  Deviation Number      : 0-0
  Fab Version           : 01
  PCB Serial Number     : FHH1228P02T
  RMA Number            : 0-0-0-0
  RMA History           : 00
  RMA Test History      : 00
  Top Assy. Part Number  : 800-30779-01
  Product (FRU) Number : ISM-SRE-200-K9
  Version Identifier     : V01
  CLEI Code             : CLEITBDXXX
  EEPROM format version 4
  EEPROM contents (hex):
    0x00: 04 FF 40 06 31 41 01 00 82 49 2D BD 01 42 30 31
    0x10: 80 00 00 00 00 02 01 C1 8B 46 48 48 31 32 32 38
    0x20: 50 30 32 54 81 00 00 00 00 04 00 03 00 D9 03 40
    0x30: C1 CB C0 46 03 20 00 78 3B 01 CB 8E 49 53 4D 2D
    0x40: 53 52 45 2D 32 30 30 2D 4B 39 89 56 30 31 00 C6
    0x50: 8A 43 4C 45 49 54 42 44 58 58 58 FF FF FF FF FF
    0x60: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
    0x70: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
```

Installing and Removing a Power Supply

To replace a power supply, perform the following procedure. To complete this procedure, you need a number 2 Phillips screwdriver or flat-blade screwdriver.

- Step 1** Remove the cover. See [“Opening and Closing the Chassis”](#) section on page 5.
- Step 2** Locate the power supply. See the [“Locating Modules”](#) section on page 7 for the location of the power supply.
- Step 3** Remove the one screw from the power supply as shown in [Figure 12](#).

Figure 12 *Removing the Power Supply and Blower*



1	Power Supply	2	Blower
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- Step 4** Slide and lift the power supply from the chassis and disconnect the power cable.
- Step 5** Insert the replacement power supply.
- Step 6** Tighten the securing screw.
- Step 7** Replace the cover. See [“Opening and Closing the Chassis”](#) section on page 5.

Installing Power over Ethernet

The Power over Ethernet (PoE) must be installed before you turn on the power supply. Insertion of the PoE power supply after boot up is not supported.

To install Power over Ethernet (PoE), follow these steps.

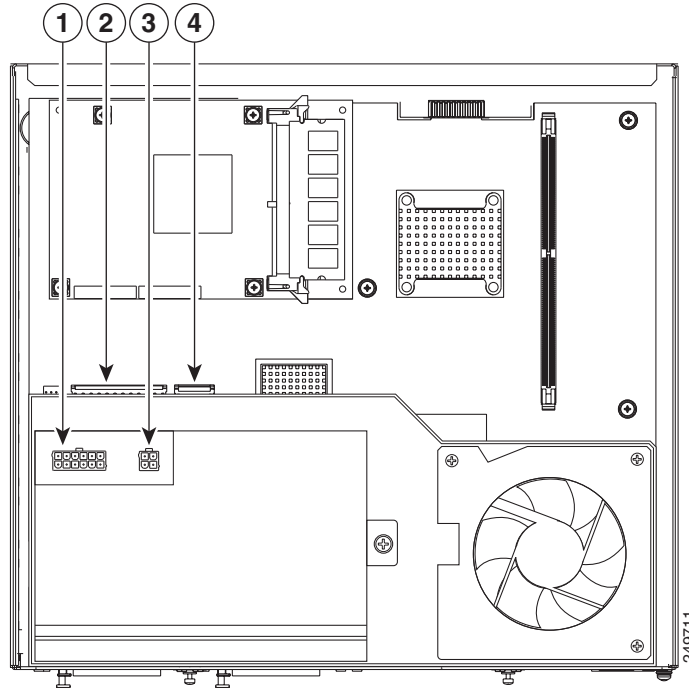
- Step 1** Remove the cover. See [“Opening and Closing the Chassis”](#) section on page 5.

**Note**

If the Cisco 1941 ISR has wireless antennas, you must first remove these by unscrewing each antenna counter clockwise. See [Figure 2](#).

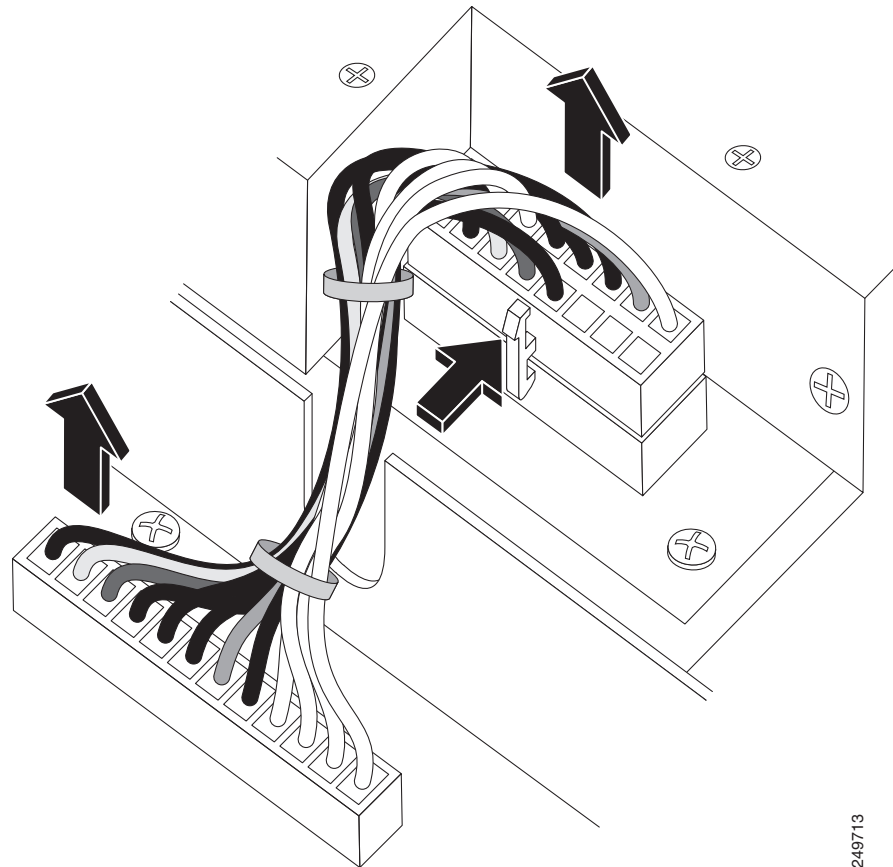
- Step 2** Locate the power supply cable and power supply cable connectors as shown in [Figure 13](#) and [Figure 14](#).

Figure 13 *Locating the Power Supply and PoE Connectors*



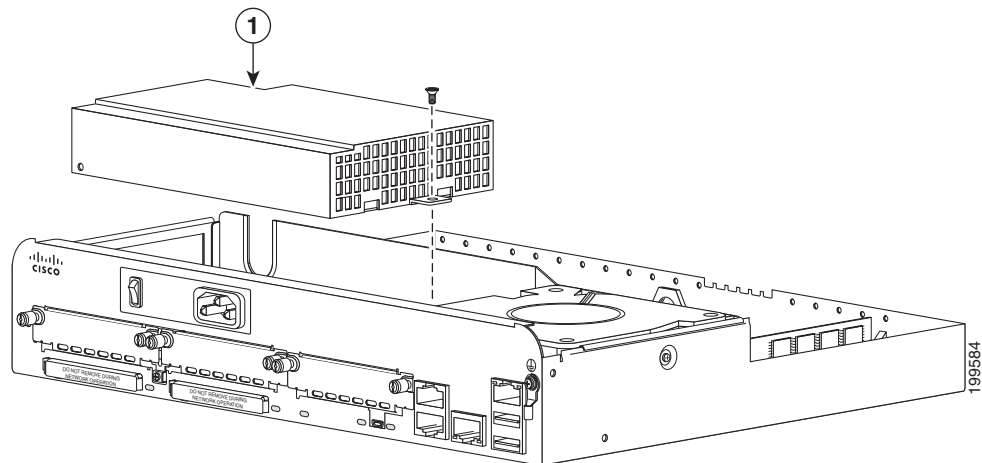
1	AC small power supply cable connector	2	AC large power supply cable connector
3	PoE small cable connector	4	PoE large cable connector

- Step 3** Disconnect the power supply cable. See [Figure 14](#).

Figure 14 Removing the Power Supply Cable

249713

Step 4 Locate the power supply. See [Figure 3](#).

Figure 15 Removing the Power Supply

199584

1	Power supply		
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Step 5 Remove the one screw from the power supply as shown in [Figure 15](#).

Step 6 Slide and lift the power supply from the chassis.

Step 7 Replace the AC power supply with the PoE power supply.



Note The PoE power supply reveals the PoE connector.

Step 8 Tighten the PoE power supply securing screw.

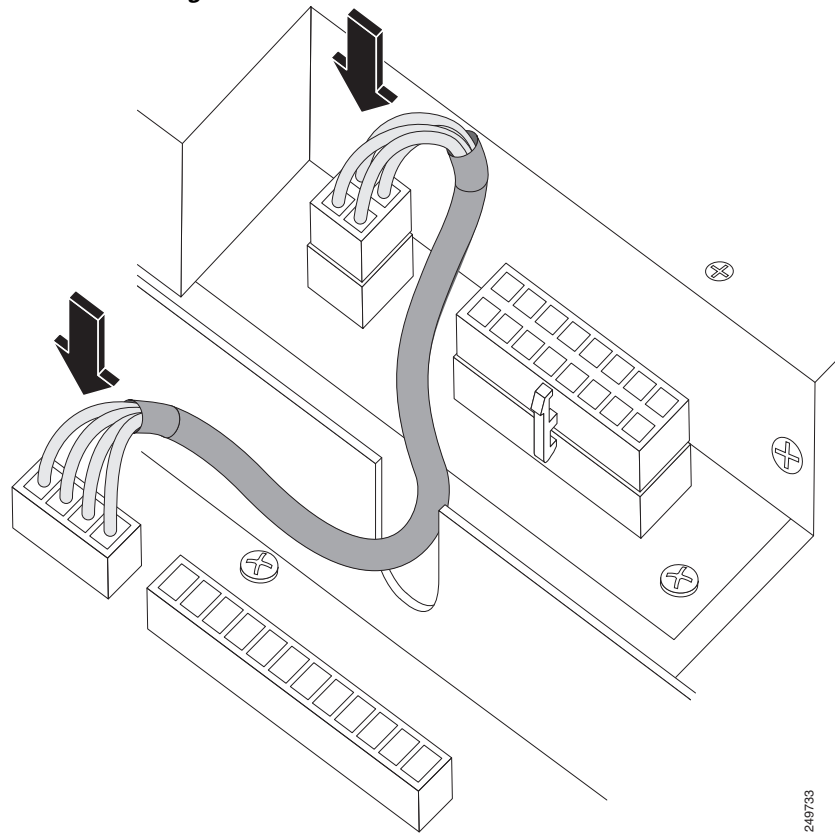
Step 9 Locate the PoE cable and the AC power supply cable. See [Figure 16](#).

Figure 16 *PoE Cable and AC Power Supply Cable*



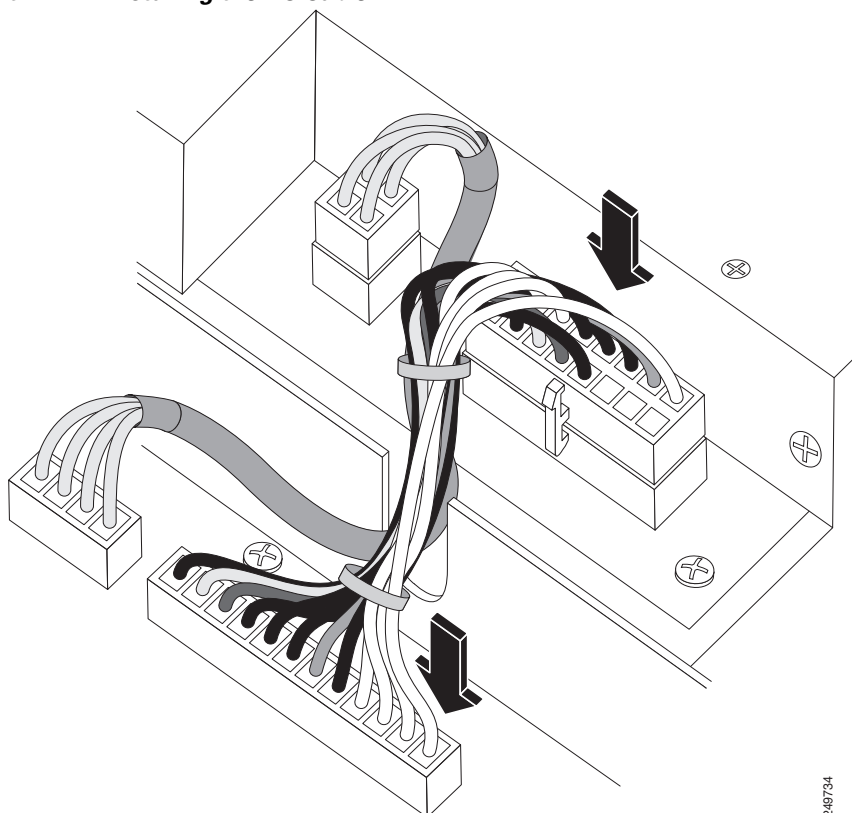
Step 10 Connect the PoE cable to the small PoE connector next to the PoE power supply and the large PoE connector on the mother board as shown in [Figure 17](#).

Figure 17 *Installing the PoE Cable*



Note Be sure to thread the PoE cable through the sheet metal channel shown in [Figure 17](#).

- Step 11** Connect the AC cable to the connector next to the PoE power supply and the other connector on the mother board. See [Figure 18](#).

Figure 18 *Installing the AC Cable*

Note The AC cable should thread through the sheet metal channel on top of the PoE cable as shown in [Figure 18](#).

Step 12 Replace the cover. See [“Opening and Closing the Chassis”](#) section on page 5.



Note If your Cisco 1941 ISR is wireless, reattach the wireless antennas.

Installing a Blower

To replace a blower, perform the following procedure. To complete this procedure, you need a number 2 Phillips screwdriver or flat-blade screwdriver.

- Step 1** Remove the cover. See [“Opening and Closing the Chassis”](#) section on page 5.
- Step 2** Locate the blower in the chassis. See the [“Locating Modules”](#) section on page 7 for the location of the blower.
- Step 3** Remove the three screws from the blower as shown in [Figure 12](#).
- Step 4** Lift the blower from the chassis and disconnect the power cable.
- Step 5** Insert the replacement blower.

- Step 6** Tighten the securing screws.
- Step 7** Replace the cover. See [“Opening and Closing the Chassis” section on page 5](#).
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Installing and Replacing CompactFlash Memory Cards

This section describes installing and replacing CompactFlash (CF) memory cards in Cisco 1941 integrated services routers. You can perform these procedures when the router has been installed in its working location with all power and interface cables connected. This chapter contains the following sections:

- [Preventing Electrostatic Discharge Damage, page 21](#)
- [Removing a CompactFlash Memory Card, page 21](#)
- [Installing a CompactFlash Memory Card, page 23](#)

Preventing Electrostatic Discharge Damage

This section describes installing and replacing CompactFlash (CF) memory cards in Cisco 1900 series integrated services routers. It contains the following sections:

To prevent ESD damage, follow these guidelines:

- Always use an ESD wrist or ankle strap and ensure that it makes good skin contact.
- Connect the equipment end of the strap to an unfinished chassis surface.
- Place a removed CompactFlash memory card on an antistatic surface or in a static shielding bag. If the card will be returned to the factory, immediately place it in a static shielding bag.
- Avoid contact between the card and clothing. The wrist strap protects the card from ESD voltages on the body only; ESD voltages on clothing can still cause damage.
- Do not remove the wrist strap until the installation is complete.



Caution

For safety, periodically check the resistance value of the antistatic strap. The measurement should be between 1 and 10 megohms (Mohms).

Removing a CompactFlash Memory Card

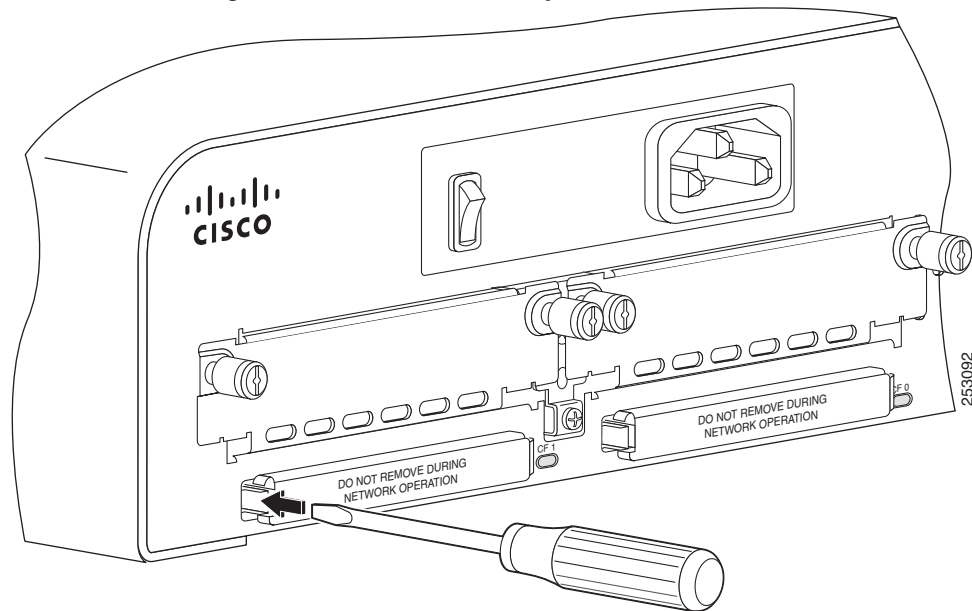
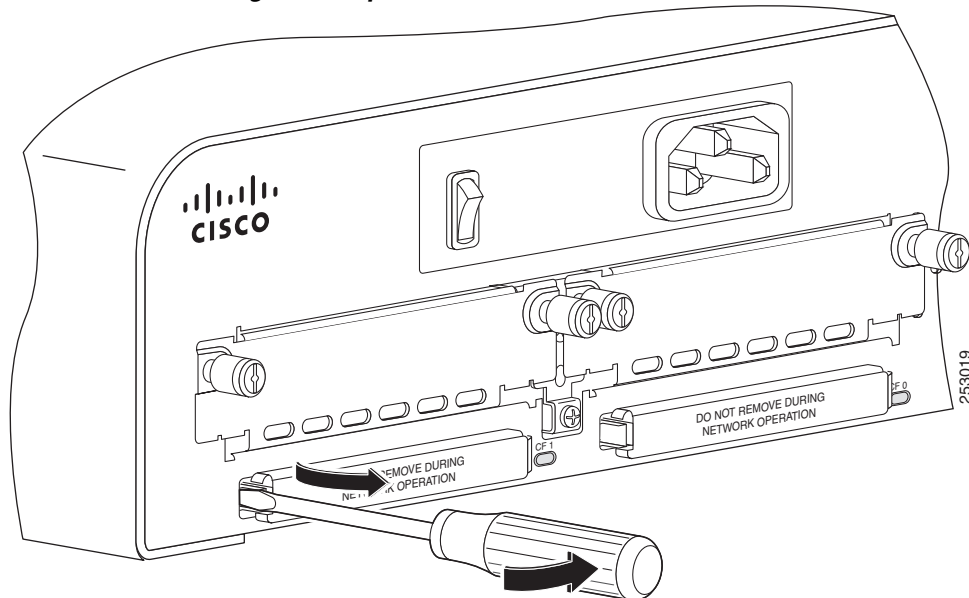
To remove a CompactFlash memory card from the chassis, perform the following steps:



Caution

Do not remove a CompactFlash memory card from the chassis while it is being accessed. The CF LED blinks to indicate when flash memory is being accessed. Removing the CompactFlash memory card from the router while flash memory is being accessed can cause data corruption and erratic operation.

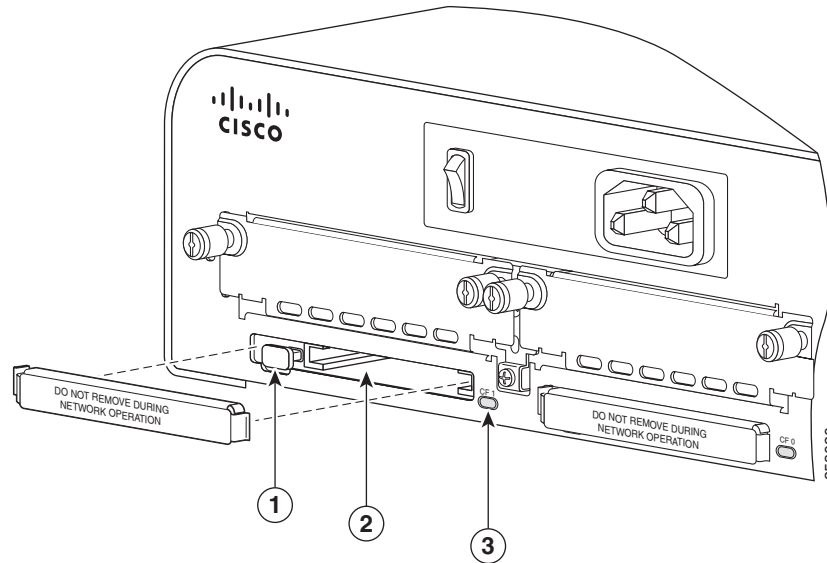
- Step 1** Remove the CompactFlash cover by placing a flat screwdriver in the slot and pushing sideways against the tension to release the cover door. (See [Figure 19](#) and [Figure 20](#).)

Figure 19 Inserting Screwdriver in to the CompactFlash Cover**Figure 20** Removing the CompactFlash Cover

- Step 2** Press the ejector button next to the CompactFlash memory card. The ejector button moves outward so that it projects from the panel.
- Step 3** Press the ejector button again. (See [Figure 21](#).) This ejects the CompactFlash memory card part-way out of its slot.
- Step 4** Pull the CompactFlash memory card out of its slot.
- Step 5** Push the ejector button in until the button is flush with the bezel.

**Caution**

To prevent damage to the ejector mechanism, the ejector button must remain pressed all the way in (flush against the bezel) when not being used to eject a CompactFlash memory card.

Figure 21 CompactFlash Memory Card Slot in Cisco 1900 Series Routers

1	Ejector button	2	CompactFlash slot
3	CF LED	4	

Installing a CompactFlash Memory Card

To install a CompactFlash memory card, perform the following steps:

- Step 1** Make sure that the ejector button is fully seated so that it does not project out from the panel. (See [Figure 21](#)).



Note If the ejector button is projecting out from the panel, push it in until it is flush with the bezel.

- Step 2** Insert the CompactFlash memory card into the slot until it is fully seated. The ejector button remains flush with the panel.



Note If the ejector button is projecting from the panel after you insert the CompactFlash memory card, remove the CompactFlash memory card, press the ejector button until it clicks, and reinsert the CompactFlash memory card.

**Caution**

To prevent damage to the ejector mechanism, the ejector button must remain fully seated when not being used to eject a CompactFlash memory card.

Step 3 Replace the CompactFlash cover by pushing it in place until it snaps in place.

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:

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