



Doc. No. 78-4955-02

# Cisco 12008 Gigabit Switch Router DC-Input Power Supply Replacement Instructions

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**Product Numbers: PWR-GSR8-DC=**  
**Document Order Number: DOC-784955=**

This document presents procedures for adding, removing, or replacing a DC-input power supply for the Cisco 12008 Gigabit Switch Router. It contains the following sections:

- Installation Safety and ESD Precautions, page 2
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- Verifying the Installation of a Power Supply, page 18
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Use this document in conjunction with the *Cisco 12008 Gigabit Switch Router Installation and Configuration Guide* (document number 78-4953-01), which shipped with your Cisco 12008 Gigabit Switch Router.

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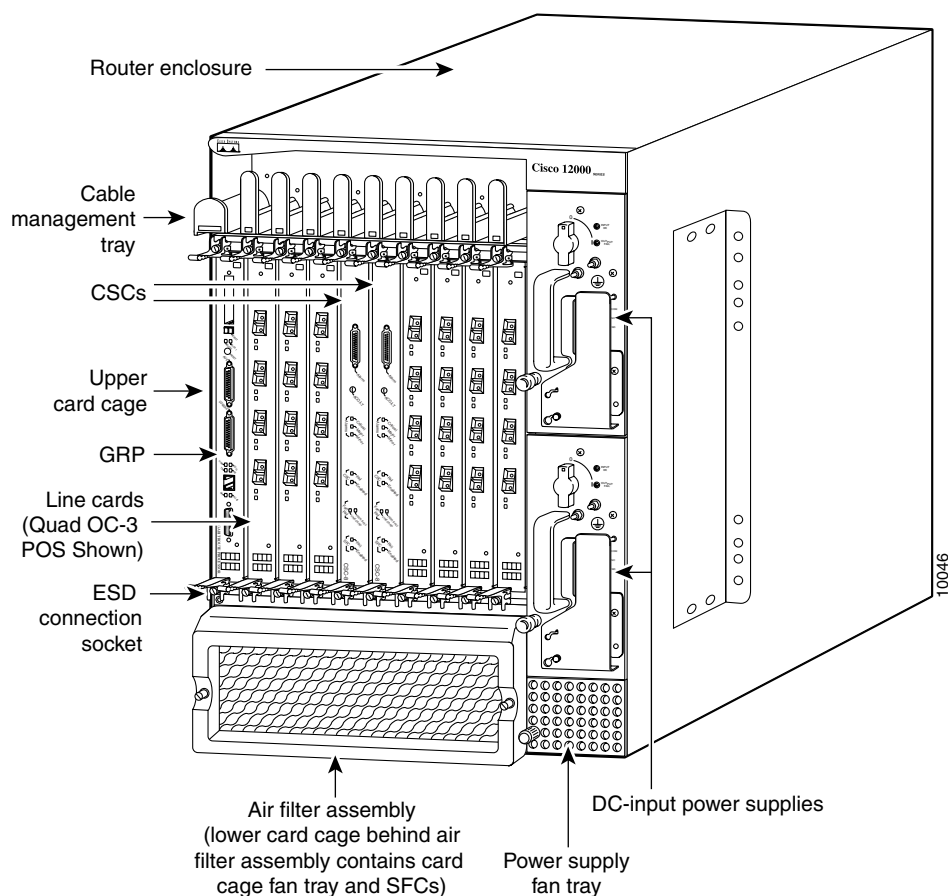
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## Installation Safety and ESD Precautions

Before you begin the installation or replacement procedures for the DC-input power supply, review the safety guidelines in this section to prevent injury to yourself or damage to the equipment. This section also lists the tools needed to perform the power supply installation or replacement procedures.

Figure 1 is a representation of the Cisco 12008 router.

**Figure 1 Front View of the Cisco 12008 Gigabit Switch Router**



## Safety Guidelines

The following list does not identify all the potentially hazardous conditions that you may encounter in the workplace; accordingly, you should be alert at all times and exercise care when working with electrical and electronic components.

To ensure your safety and protect the equipment, observe the following general guidelines:

- Always disconnect all power cords and network interface cables before moving the router.
- Keep tools and router components away from walkway areas.
- Do not work alone if potentially hazardous conditions exist in your working environment.

- Do not take any action that poses a potential hazard to yourself or other personnel or that makes the equipment unsafe.
- Carefully examine your work area for possible hazards, such as damp floors, ungrounded power extension cables, and missing safety grounds.

### Safety with Electricity

Observe the following electrical safety guidelines when working with the electrical and electronic components of the router:

- Locate the emergency power-off switch for the room in which you will be working.
- Disconnect all power cables and external network interface cables before moving the router.
- Do not work alone if potentially hazardous conditions exist in your working environment.
- Never assume that power has been disconnected from the router; always verify that power has been removed from any circuit that you intend to access.
- Carefully examine your work area for possible hazards, such as damp floors, ungrounded power extension cables, and missing safety grounds.

In addition, observe the following guidelines when working with equipment connected to telephone wiring or other network cabling.



**Warning** Do not work on the system or connect/disconnect cables during an electrical storm.

- Never install telephone jacks in wet locations, unless the jack is specifically designed for such use.
- Never touch uninsulated telephone wires or terminals, unless the telephone line is disconnected at the network interface.
- Use caution when installing or modifying telephone lines.



**Warning** Before working on the router, disconnect all telephone network cables to avoid exposure to network voltages.

### Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) damage to circuit boards and electronic components can occur if they are touched or handled improperly. ESD damage can result in intermittent or complete failure of electronic components.

To prevent ESD damage to router components, observe the following guidelines:

- Always wear an ESD-preventive wrist strap when handling router components; ensure that the strap makes ample contact with your skin.

The wrist strap only protects circuit boards and electronic components from ESD voltages present on the body; ESD voltages can also be present on clothing and can cause ESD damage to electronic components.

**Note** It is good practice to periodically check the resistance value of the antistatic wrist strap. The resistance measurement should be between 1 and 10 megohms.

- If you intend to return a removed circuit board to the factory for repair or replacement, immediately store the board in a static shielding bag or place it in an antistatic rack for ESD protection. Prepare the package properly for return shipment.

Power Supply Electrical Specifications

The electrical specifications of the DC-input power supply are shown in Table 1.

Table 1 Electrical Specifications of the DC-Input Power Supply

Electrical Characteristic	Value
Input power	Maximum: 1580W –40.5 VDC to –75 VDC @ 39A to 21A
Input voltage	Nominal: –48 VDC (United States) Tolerance limits: –40.5 VDC to –56 VDC Nominal: –60 VDC (International) Tolerance limits: –58 VDC to –75 VDC
Input current	33.75A maximum @ –48 VDC 27A maximum @ –60 VDC Internal circuit breaker is rated at 40A
Output power	Maximum: 1542W –48 VDC @ 33.7A +5 VDC @ 20.8A

Required Tools

To add, remove, or replace a DC-input power supply, you will need the following:

- A 1/4-inch flat-blade screwdriver (to loosen/tighten the captive installation screw on the power supply faceplate).
- A 10 mm, hollow-shaft nutdriver (to secure the source DC power cables to the terminals on the power supply with the supplied lock washers and nuts). A 1/4-inch socket wrench with a 10 mm deep-well socket will also suffice for this purpose.
- A voltmeter (to test the voltages across the source DC power cables).
- A replacement DC-input power supply (Product Number PWR-GSR8-DC=).

Adding, Removing, or Replacing a Power Supply

The Cisco 12008 can operate with either one or two DC-input power supplies. Although the router supports an online insertion and removal (OIR) capability for field replaceable units (FRUs), you must observe the following rules regarding the DC-input power supplies:

- If your Cisco 12008 is configured with a single DC-input power supply, you must power down the system before replacing the unit.

- If your Cisco 12008 is configured with two DC-input power supplies, you can remove and replace one of the power supplies while the other unit remains fully operational.

The DC-input power supply for the Cisco 12008 Gigabit Switch Router provides the following operating voltages to the router backplane:

- +5.2 VDC
- -48 VDC

The DC-input power supply (see Figure 2) has the following characteristics:

- Width of power supply body—3.5 inches (8.97 cm)
- Width of power supply faceplate—4.0 inches (10.26 cm)
- Height—10 inches (25.64 cm)
- Depth—17.6 inches (45.13 cm)
- Weight—14 lb (6.36 kg)

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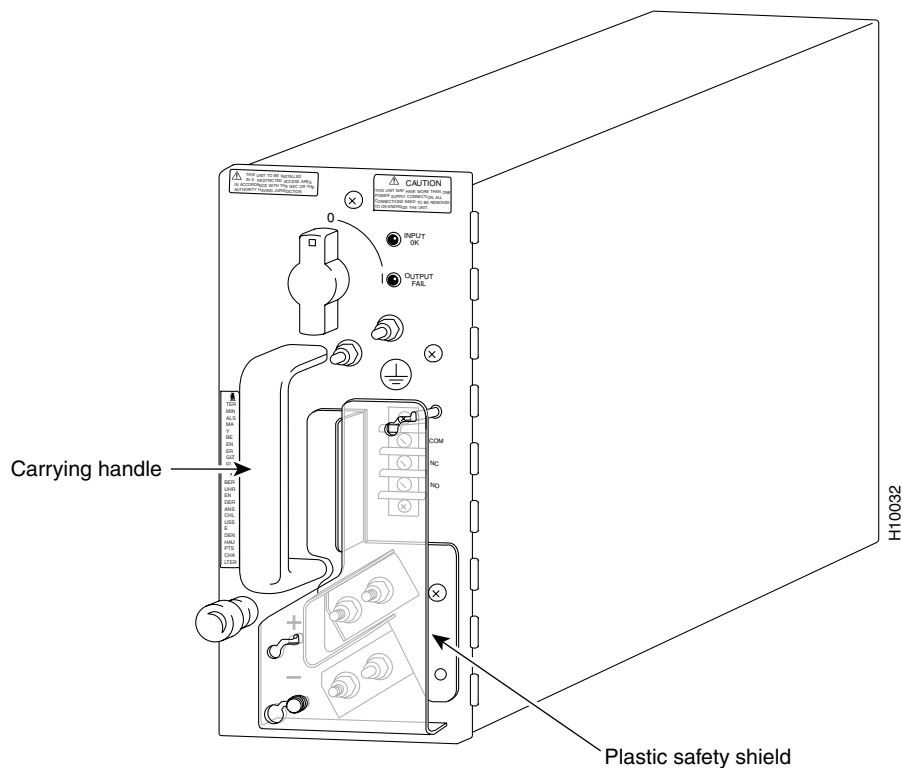
**Note** You should not install two DC-input power supplies unless you intend to use both units. In other words, powering the router with a single power supply while using the other bay to temporarily or indefinitely “store” an inert unit may disrupt the normal flow of cooling air through the router.

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**Caution** You cannot use an AC-input power supply and a DC-input power supply in the same chassis.

**Figure 2** DC-Input Power Supply for the Cisco 12008



For additional information about the DC-input power supply, see the document entitled *Cisco 12008 Gigabit Switch Router Installation and Configuration Guide* (Document Order Number: DOC-784953=).

The following sections present the procedures for adding, removing, or replacing a DC-input power supply.

### Adding a Power Supply

In the following procedure, it is assumed that you will be adding a second (redundant) DC-input power supply to the router. It is also assumed that a blank filler panel is presently installed in the vacant power supply bay.

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**Note** A vacant power supply bay must always be covered with a blank filler panel to ensure EMI compliance and the proper flow of cooling air through the router enclosure.

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**Warning** Before attempting to install a redundant DC-input power supply, you must have a second, independent source of DC power available to service the unit.

To install a second (redundant) DC-input power supply, you must first satisfy the following requirements:

- Ensure that a dedicated 40A service is available for the second power supply.
- Ensure that the power cables from the source DC service circuit breaker to the DC-input power supply are made of 4 AWG, high-strand-count copper wire.
- Ensure that the lugs on the source DC power cables (see Figure 3) have dual-holes, centered 0.625 inch apart, and that they will fit over the 0.25-inch M6 (metric) threaded terminals on the DC power supply faceplate (see Figure 4).

**Figure 3 Dimensions of the Lugs Used with the Source DC Power Cables**

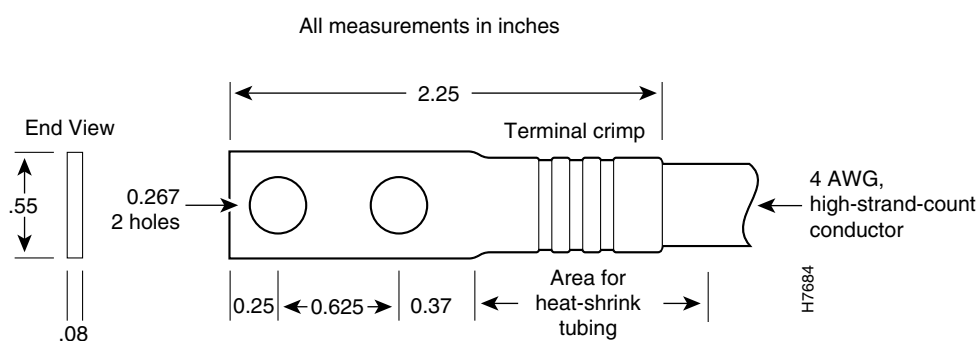
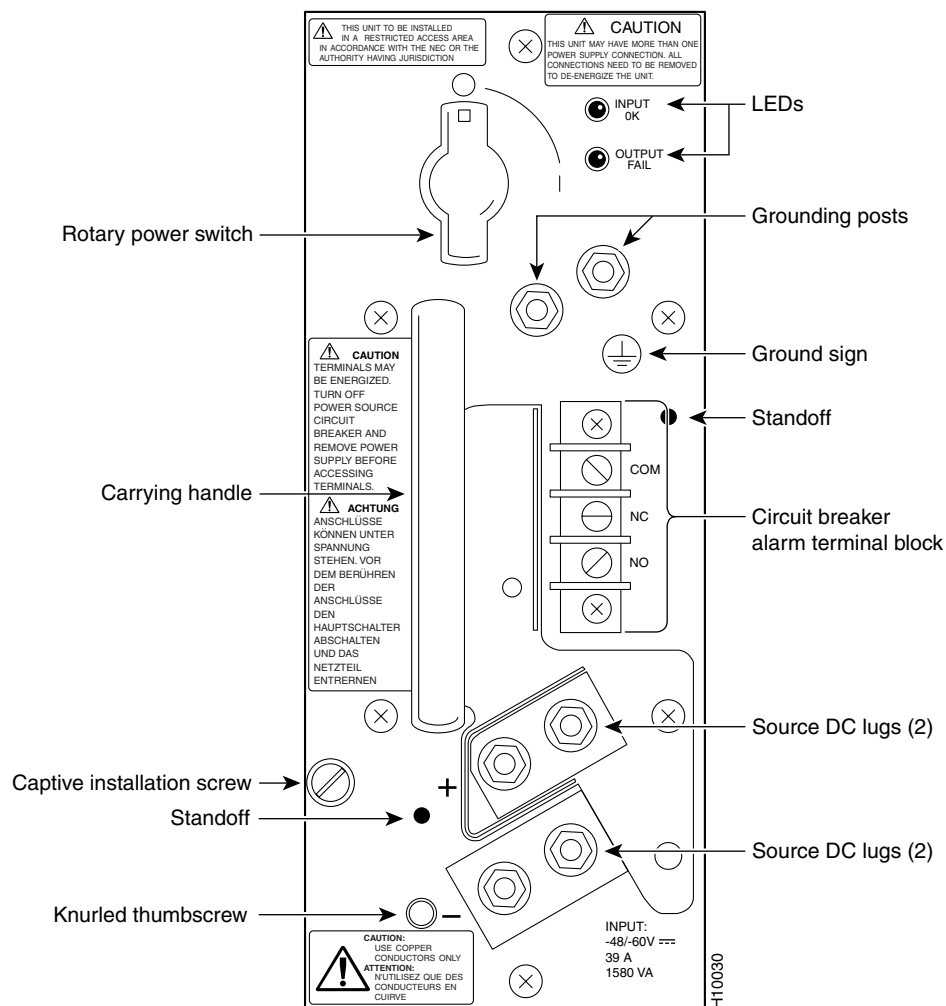


Figure 4 Faceplate of the DC-Input Power Supply



**Caution** AC-input and DC-input power supplies cannot be used together in the same router. Such a configuration is not supported and may damage the system.

**Note** If you are adding a second (redundant) DC-input power supply to your router, you will need to obtain the source DC power cables and terminal lugs from a commercial supplier to connect source DC power to the new DC-input power supply. These parts are not available from Cisco Systems.

To add a second (redundant) DC-input power supply to the router, perform the following steps:

**Step 1** Locate the source DC circuit breaker that will service the DC-input power supply; ensure that this circuit breaker is set to the OFF position. For added safety, tape the circuit breaker handle in the OFF position.



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**Note** The color coding scheme used for the source DC power cables for the DC-input power supply depends on the scheme used for the site DC power source. Typically, green or green/yellow is used for earth ground, red is used for positive (+), and black is used for negative (-). Make certain that you properly map the color coding scheme used at the site for the DC power source to the proper terminals on the DC-input power supply faceplate.

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**Warning** To be completely sure that power has been removed from the source DC circuit that will be used in servicing the new power supply, use a voltmeter to measure the voltage across the negative (-) and positive (+) source DC leads. Set the voltmeter to a range that makes it capable of measuring up to 75 VDC. The measurement across the positive and negative leads should be zero (0) volts.

**Step 2** Using a 1/4-inch flat-blade screwdriver, loosen the captive installation screw on the blank filler panel covering the vacant (upper) power supply bay; remove the filler panel and retain it for possible future use.

Presumably, you will be installing the new power supply in the upper power supply bay, since, by convention, a single DC-input power supply is installed in the lower bay.

**Step 3** Ensure that the rotary power switch on the faceplate of the new power supply that you will be installing is set to the OFF (O) position.

**Step 4** Grasp the carrying handle on the new power supply with your left hand; while lifting the power supply, place your right hand beneath the unit to support its weight.

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**Note** The carrying handle on the DC-input power supply is designed to be grasped with your left hand, rather than your right hand. Using your left hand eliminates the potential for catching your fingers in the limited space between the plastic safety shield (see Figure 2) and the carrying handle.

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**Warning** The DC-input power supply weighs 14 lb (6.36 kg). For safety, use both hands to install the unit in the power supply bay.

**Step 5** Position the power supply appropriately for insertion into the vacant upper bay.

**Step 6** Gently slide the unit into the bay, carefully seating it so that the power supply faceplate rests flush against the sheet metal of the power supply bay.



**Caution** To prevent damage to the blind-mating connector at the rear of the power supply, do not use excessive speed or force when inserting the power supply into the bay.

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**Note** All necessary electrical connections between the power supply and the backplane are accomplished automatically by means of the blind-mating connector at the rear of the power supply.

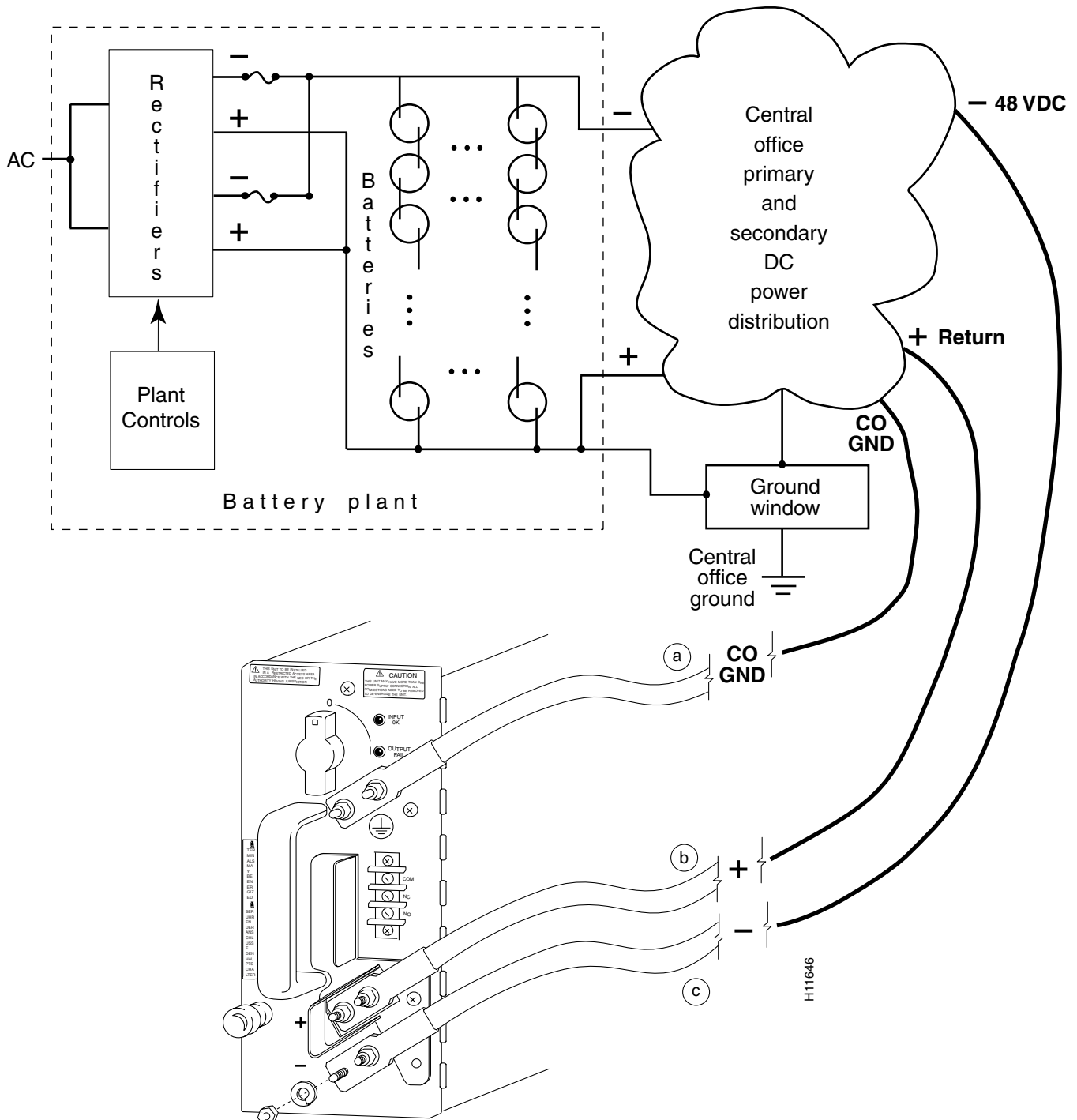
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- Step 7** Using a 1/4-inch flat-blade screwdriver, tighten the captive installation screw on the power supply faceplate (see Figure 4).
- Step 8** Remove the plastic safety shield (see Figure 2) that covers the alarm terminal block and the positive (+) and negative (–) terminals on the power supply faceplate.
- To remove the plastic safety shield, take the following actions:
- (a) Loosen the knurled thumbscrew on the bottom left standoff that secures the safety shield to the power supply faceplate.
  - (b) Grasp the safety shield and move it to the right and obliquely upward, positioning the shield so that it can be freed from the three standoffs on the power supply faceplate.
  - (c) Remove the shield from the standoffs and set it aside temporarily.
- Step 9** Unscrew the loosely mounted lockwashers and nuts from all six terminals on the power supply faceplate; set this hardware aside temporarily.
- Step 10** As an added safety precaution, it is recommended that you add a length of shrink tubing to the crimp area on each power cable lug (see Figure 3) before connecting the leads to the power supply.
- The shrink tubing acts as an insulator to prevent the crimp area on the source DC power cable lugs from coming in contact with the metal faceplate of the DC-input power supply.
- Step 11** Connect the source DC power leads to the terminals on the power supply faceplate. In so doing, you must strictly observe the following order of connection for the power supply cables:
- (a) Ground
  - (b) + (positive)
  - (c) – (negative)
- Step 12** Using the lockwashers and nuts removed from the terminals in Step 9, connect each power supply cable to the appropriate terminals on the power supply faceplate.
- Observe the order shown in Figure 5 in connecting the source DC power cables.
- Step 13** After installing each cable, securely tighten the two lockwashers and nuts on the power supply terminals using a 10 mm nutdriver (or a 1/4-inch socket wrench with a 10 mm deep-well socket).



**Caution** Do not overtighten the nuts on the power supply terminals.

Figure 5 Connecting Source DC Power Cables to the DC-Input Power Supply



- Step 14** If you intend to attach an external alarm monitoring facility to the alarm terminal block on the power supply, connect the leads from the alarm monitoring facility to the circuit breaker alarm terminal block. Figure 6 shows a representative example of how the leads can be connected to the alarm terminal block.

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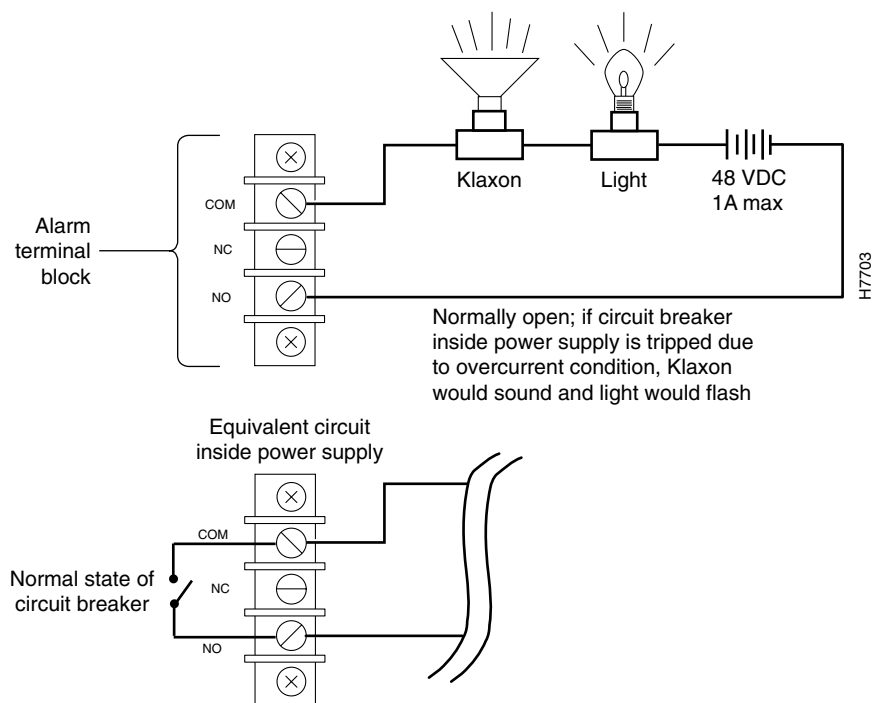
**Note** The circuit breaker alarm terminal block enables you to attach an external monitoring facility to the power supply to remotely detect when the power supply circuit breaker is tripped during an overcurrent condition in the power supply.

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The functions and uses of the circuit breaker alarm terminal block are described in greater detail in Chapter 1 of the document entitled *Cisco 12008 Gigabit Switch Router Installation and Configuration Guide* (Document Order Number DOC-784953=).

- Step 15** Reinstall the plastic safety shield (see Figure 2) on the power supply faceplate by taking the following actions:
- (a) Seat the shield over the standoffs on the power supply faceplate.
  - (b) Move the shield to the left and obliquely downward so that it registers properly on the three standoffs on the power supply faceplate.
  - (c) Tighten the knurled thumbscrew on the bottom left standoff to secure the shield to the power supply faceplate.
- Step 16** Remove the tape from the main circuit breaker supplying source power to the new power supply (see Step 1).
- Step 17** Set the circuit breaker to the ON position.
- Step 18** Set the rotary power switch on the new DC-input power supply to the ON (I) position.

To verify that the new DC-input power supply is operating properly, proceed to the section entitled “Verifying the Installation of a Power Supply,” page 18.

**Figure 6** Connecting Leads to the Circuit Breaker Alarm Terminal Block

## Removing a Power Supply

For the following procedure, it is assumed that you will remove a DC-input power supply from a Cisco 12008 that is equipped with a single such unit. In this case, you must power down the router before removing the power supply.

It is also assumed that the power supply to be removed is installed in the lower power supply bay, which, by convention, is the normal configuration for a single power supply.

Lastly, in such a single power supply configuration, it is assumed that the vacant upper power supply bay has previously been covered by a blank filler panel to ensure EMI compliance and the proper flow of cooling air through the router. However, if such is not the case, it is recommended that you either install a second (redundant) power supply in the vacant bay or cover it with a blank filler panel.

To remove the DC-input power supply from the router, perform the following steps:

**Step 1** Set the rotary power switch on the power supply faceplate to the OFF (O) position.

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**Note** Turning the power supply switch counterclockwise to the OFF (O) position also releases the mechanical interlock (latching mechanism) that secures the power supply in the bay.

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**Step 2** Locate and turn off the source DC circuit breaker that is currently servicing the DC-input power supply.

**Step 3** Tape the circuit breaker handle in the OFF position as an additional safety precaution.

- Step 4** Remove the plastic safety shield (see Figure 2) that covers the alarm terminal block and the positive (+) and negative (–) terminals on the power supply faceplate.

To remove the plastic safety shield, take the following actions:

- (a) Loosen the knurled thumbscrew on the bottom left standoff that secures the safety shield to the power supply faceplate.
- (b) Grasp the safety shield and move it to the right and obliquely upward, positioning the shield so that it can be freed from the three standoffs on the power supply faceplate.
- (c) Remove the shield from the standoffs and set it aside temporarily.



**Warning** To be completely sure that power has been removed from the source DC circuit presently servicing the power supply to be removed, use a voltmeter to measure the voltage across the negative (–) and positive (+) source DC leads. Set the voltmeter to a range that makes it capable of measuring up to 75 VDC. The measurement across the positive and negative leads should be zero (0) volts.

- Step 5** Before removing the power cables, write the name of each cable on a piece of tape, as follows:

- Ground
- + (positive)
- – (negative)

- Step 6** Attach each piece of tape to the appropriate cable to identify it for later reconnection.

- Step 7** Remove the power cables from the power supply terminals; strictly observe the following order in removing the cables:

- (a) – (negative)
- (b) + (positive)
- (c) Ground

- Step 8** Using a 10 mm nutdriver (or a 1/4-inch socket wrench with a 10 mm deep-well socket), loosen the nuts securing the negative (–) power cable to the bottom terminals on the power supply faceplate; remove the nuts and locking washers from the terminals and set this hardware aside temporarily.

- Step 9** Proceed in like manner to remove the remaining power cables from the positive (+) terminals and the grounding terminals, making sure that you remove the earth ground cable last.

- Step 10** For added safety, place tape over the exposed lugs of the power cables to prevent contact between the leads.

- Step 11** If leads are attached to the circuit breaker alarm terminal block on the power supply faceplate (see Figure 6), make a note of how these leads are connected so that they can be properly reconnected later.

- Step 12** Using a 1/4-inch flat-blade screwdriver, loosen the captive installation screw on the power supply faceplate (see Figure 4).

- Step 13** Grasp the power supply carrying handle with your left hand and pull the unit halfway out of the bay to disengage the blind-mating connector at the back of the power supply from the backplane.



**Warning** The DC-input power supply weighs 14 lb (6.36 kg). For safety, use both hands to remove the unit from the power supply bay.

**Step 14** Place your right hand beneath the power supply to support its weight; withdraw the unit completely from the bay.

**Step 15** Set the power supply aside in a safe place, pending further disposition.

If you intend to return the removed power supply to the factory for repair or replacement, repackage the unit properly for return shipment using the original packing materials, if available.

## Replacing an Existing Power Supply

In the following procedure, it is assumed that you will be replacing an existing power supply in a router containing redundant DC-input power supplies. In this configuration, the router's online insertion and removal (OIR) capability enables you to replace a given power supply without removing power from the router.

To replace a power supply in a redundant DC-input power supply configuration, perform the following steps:

**Step 1** Set the rotary power switch on the faceplate of the power supply to be removed to the OFF (O) position.

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**Note** Turning the power supply switch to the OFF (O) position also releases the mechanical interlock (latching mechanism) that secures the power supply within in the bay.

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**Step 2** Locate and turn off the source DC circuit breaker that is currently servicing the DC-input power supply.

**Step 3** Tape the circuit breaker handle in the OFF position as an additional safety precaution.

**Step 4** Remove the plastic safety shield (see Figure 2) that covers the alarm terminal block and the positive (+) and negative (–) terminals on the power supply faceplate.

To remove the plastic safety shield, take the following actions:

- (a) Loosen the knurled thumbscrew on the bottom left standoff that secures the safety shield to the power supply faceplate.
- (b) Grasp the safety shield and move it to the right and obliquely upward, positioning the shield so that it can be freed from the three standoffs on the power supply faceplate.
- (c) Remove the shield from the standoffs and set it aside temporarily.



**Warning** To be completely sure that power has been removed from the source DC circuit presently servicing the power supply to be removed, use a voltmeter to measure the voltage across the negative (–) and positive (+) source DC leads. Set the voltmeter to a range that makes it capable of measuring up to 75 VDC. The measurement across the positive and negative leads should be zero (0) volts.

- Step 5** Before removing the power cables, write the name of each cable on a piece of tape, as follows:
- Ground
  - + (positive)
  - – (negative)
- Step 6** Attach each piece of tape to the appropriate cable to identify it for later reconnection.
- Step 7** Remove the power cables from the power supply terminals, strictly observing the following order of removal:
- (a) – (negative)
  - (b) + (positive)
  - (c) Ground
- Step 8** Using a 10 mm nutdriver (or a 1/4-inch socket wrench with a 10 mm deep-well socket), loosen the nuts securing the negative (–) power cable to the bottom terminals on the power supply faceplate; remove the nuts and locking washers from the terminals; set this hardware aside temporarily and remove the power cable from the negative terminals.
- Step 9** Proceed in like manner to remove the positive (+) and grounding cables from the power supply terminals, making sure that you remove the ground cable last.
- Step 10** For added safety, place tape over the exposed lugs of the power cables to prevent contact between the leads.
- Step 11** If an external alarm monitoring facility is attached to the circuit breaker alarm terminal block on the power supply faceplate (see Figure 6), make a note of how the leads are connected. Doing so enables you to identify each lead properly for later reconnection.
- Step 12** Disconnect the leads from the circuit breaker alarm terminal block.
- Step 13** Using a 1/4-inch flat-blade screwdriver, loosen the captive installation screw on the power supply faceplate (see Figure 4).
- Step 14** Grasp the power supply carrying handle with your left hand and pull the unit halfway out of the bay to disengage the blind-mating connector at the back of the power supply from the backplane.



**Warning** The DC-input power supply weighs 14 lb (6.36 kg). For safety, use both hands to withdraw the unit from the bay.

- Step 15** Place your right hand beneath the power supply to support its weight; withdraw the unit completely from the bay.
- Step 16** Pending further action, set the unit aside in a safe place.
- If you intend to return the removed power supply to the factory for repair or replacement, restore the nuts and lock washers to the power supply terminals, and reinstall the plastic safety shield (see Figure 2) on the faceplate standoffs. Repackage the unit properly for return shipment using the original packing materials, if available.
- Step 17** On the new DC-input power supply that you intend to install in the now vacant power supply bay, set the rotary power switch on the power supply faceplate to the OFF (0) position.



- Step 18** Grasp the carrying handle on the power supply with your left hand; place your right hand beneath the unit to support its weight.
- Step 19** Position the unit appropriately for insertion into the power supply bay.
- Step 20** Gently slide the new power supply into the vacant bay, carefully seating it so that the power supply faceplate is flush against the sheet metal of the power supply bay. This action ensures that the blind-mating connector at the rear of the power supply is firmly seated into the backplane connector.



**Caution** To prevent damage to the blind-mating connectors, do not use excessive speed or force when inserting the new power supply into the bay.

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**Note** All the necessary electrical connections between the power supply and the backplane are accomplished automatically by means of the blind-mating connectors.

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- Step 21** Using a 1/4-inch flat-blade screwdriver, tighten the captive installation screw on the power supply faceplate.
- Step 22** Remove the plastic safety shield (see Figure 2) from the new power supply, taking the same actions as specified in Step 4 above.



**Warning** To be completely sure that power has been removed from the source DC circuit that you intend to reconnect to the new power supply, use a voltmeter to measure the voltage across the negative (–) and positive (+) source DC leads. Set the voltmeter to a range that makes it capable of measuring up to 75 VDC. The measurement across the positive and negative leads should be zero (0) volts.

- Step 23** Unscrew the loosely mounted lockwashers and nuts from all six terminals on the new power supply faceplate; set this hardware aside temporarily.
- Step 24** Before connecting each cable to the appropriate terminals on the power supply faceplate, remove the tape (that you applied in Step 10 above) from the lug. Strictly observe the following order in connecting the leads to the power supply terminals:
- (a) Ground
  - (b) + (positive)
  - (c) – (negative)
- Step 25** Secure each cable to the terminals using the previously removed lockwashers and nuts. Tighten the lockwashers and nuts on each terminal using a 10 mm nutdriver (or a 1/4-inch socket wrench with a 10 mm deep-well socket).



**Caution** Do not overtighten the nuts on the power supply terminals.

- Step 26** If you intend to reconnect the external alarm monitoring facility to the circuit breaker alarm terminal block on the new power supply, reconnect the leads the same way they were on the old power supply (see Step 11).
- Step 27** Remove the tape securing the main source DC circuit breaker in the OFF (0) position (see Step 3).
- Step 28** Set the main source DC circuit breaker to the ON (1) position.
- Step 29** Set the rotary power switch on the new DC-input power supply to the ON (I) position.

To verify that the new DC-input power supply is operating properly, perform the procedure in the following section.

## Verifying the Installation of a Power Supply

To verify the operation of a newly-installed DC-input power supply, you first apply power to the unit and observe the status of the LEDs on the power supply faceplate.

To verify the operation of a newly-installed DC-input power supply, perform the following steps:

- Step 1** First, verify that the following conditions are satisfied:
- The power supply is completely inserted into the bay and secured in place with its captive installation screw.
  - A vacant power supply bay is covered with a blank filler panel.
  - The source DC power cables are connected properly to the terminals on the power supply faceplate.
  - The source end of the DC power cables is properly connected to the main source DC circuit breaker.
  - The main source DC circuit breaker that services the DC-input power supply is in the ON (I) position.
  - The source DC voltage is within the range indicated on the power supply faceplate.
  - If two DC-input power supplies are installed, each power supply is being serviced by a separate 40A DC power source.
- Step 2** Assuming that you have not already done so, set the rotary power switch of the newly installed power supply to the ON position.
- Step 3** Observe the behavior of the green INPUT OK LED on the power supply faceplate for the following conditions:
- If the source DC voltage is within the proper operating range, the INPUT OK LED goes on.
  - If the green INPUT OK LED does not go on, determine if
    - (a) The main source DC circuit breaker is on.
    - (b) The source DC power cables are connected properly to the terminals on the power supply faceplate.
  - If the INPUT OK LED goes on, proceed to Step 4.
  - If the INPUT OK LED does not go on after you apply power to the unit and verify the conditions outlined in Step 1, contact your local Cisco service representative for assistance.

**Step 4** Observe the behavior of the red OUTPUT FAIL LED on the power supply faceplate after you apply power to the unit. This LED should flash on momentarily, then go off and remain so.

- If the OUTPUT FAIL LED on the new power supply behaves as expected, you can proceed with normal system operations.
- If the OUTPUT FAIL LED remains on when the new power supply is installed and powered up, the power supply may be faulty, or an adverse environmental condition may exist in the router, such as an overvoltage or overtemperature condition that causes the power supply to shut down.
- If two power supplies are installed and the OUTPUT FAIL LED on only one power supply goes on, you can assume that the power supply itself is faulty, or that the DC source for that power supply is faulty.
- If the OUTPUT FAIL LEDs on both power supplies go on, each of which is connected to a separate DC power source, you can assume that an overvoltage or overtemperature condition in the router is causing both power supplies to fail. Also, the OUTPUT FAIL LEDs could be on due to a defective MBus controller or an old version of MBus code.

If the new DC-input power supply fails to operate properly after several attempts to power it up as described above, contact your Cisco service representative for assistance.

## Cisco Connection Online

Cisco Connection Online (CCO) is Cisco Systems' primary, real-time support channel. Maintenance customers and partners can self-register on CCO to obtain additional information and services.

Available 24 hours a day, 7 days a week, CCO provides a wealth of standard and value-added services to Cisco's customers and business partners. CCO services include product information, product documentation, software updates, release notes, technical tips, the Bug Navigator, configuration notes, brochures, descriptions of service offerings, and download access to public and authorized files.

CCO serves a wide variety of users through two interfaces that are updated and enhanced simultaneously: a character-based version and a multimedia version that resides on the World Wide Web (WWW). The character-based CCO supports Zmodem, Kermit, Xmodem, FTP, and Internet e-mail, and it is excellent for quick access to information over lower bandwidths. The WWW version of CCO provides richly formatted documents with photographs, figures, graphics, and video, as well as hyperlinks to related information.

You can access CCO in the following ways:

- WWW: <http://www.cisco.com>
- WWW: <http://www-europe.cisco.com>
- WWW: <http://www-china.cisco.com>
- Telnet: [cco.cisco.com](http://cco.cisco.com)
- Modem: From North America, 408 526-8070; from Europe, 33 1 64 46 40 82. Use the following terminal settings: VT100 emulation; databits: 8; parity: none; stop bits: 1; and connection rates up to 28.8 kbps.

For a copy of CCO's Frequently Asked Questions (FAQ), contact [cco-help@cisco.com](mailto:cco-help@cisco.com). For additional information, contact [cco-team@cisco.com](mailto:cco-team@cisco.com).

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**Note** If you are a network administrator and need personal technical assistance with a Cisco product that is under warranty or covered by a maintenance contract, contact Cisco's Technical Assistance Center (TAC) at 800 553-2447, 408 526-7209, or [tac@cisco.com](mailto:tac@cisco.com). To obtain general information about Cisco Systems, Cisco products, or upgrades, contact 800 553-6387, 408 526-7208, or [cs-rep@cisco.com](mailto:cs-rep@cisco.com).

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