



QUICK START GUIDE



Cisco IAD2430 Series Integrated Access Devices

INCLUDING LICENSE AND WARRANTY

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1 Cisco 90-Day Limited Hardware Warranty Terms

The following are special terms applicable to your hardware warranty. Your formal Warranty Statement, including the warranty applicable to Cisco software, appears in the Cisco Information Booklet that accompanies your Cisco product.

Duration of Hardware Warranty: Ninety Days

Replacement, Repair or Refund Procedure for Hardware: Cisco or its service center will use commercially reasonable efforts to ship a replacement part within ten (10) working days after receipt of the RMA request. Actual delivery times may vary depending on Customer location.

Cisco reserves the right to refund the purchase price as its exclusive warranty remedy.

To Receive a Return Materials Authorization (RMA) Number: Please contact the party from whom you purchased the product. If you purchased the product directly from Cisco, contact your Cisco Sales and Service Representative.

Complete the information below, and keep it for reference:

Product purchased from	
Their telephone number	
Product model and serial number	
Maintenance contract number	

2 Obtaining Documentation and Submitting a Service Request

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

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

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

3 Equipment, Tools, and Accessories

This section describes the equipment, tools, and accessories that accompany or are not included with your router.

Products in the Cisco IAD2430 Series IADs

The Cisco IAD2430, Cisco IAD2431, and Cisco IAD2432 series Integrated Access Devices (IADs) (routers) consist of five models with a common front panel (Figure 1); the front panel is labeled *Cisco IAD2400 Series* for these models. The Cisco IAD2435 series router consists of one model (Cisco IAD2435-8FXS IAD) with a front panel that is different from the front panel on other Cisco IAD2430 series routers (Figure 2). The Cisco IAD2430, Cisco IAD2431, and Cisco IAD2432 series routers include a slot for the external flash memory card, as well as console, auxiliary, and flash memory (CF) ports. The IAD back panels, labeled by specific model number, vary considerably, depending on interfaces, ports, and options. The analog voice ports use an RJ-21 interface.

Figure 1 Cisco IAD2430 Series Front Panel (Cisco IAD2432-24FXS IAD shown)

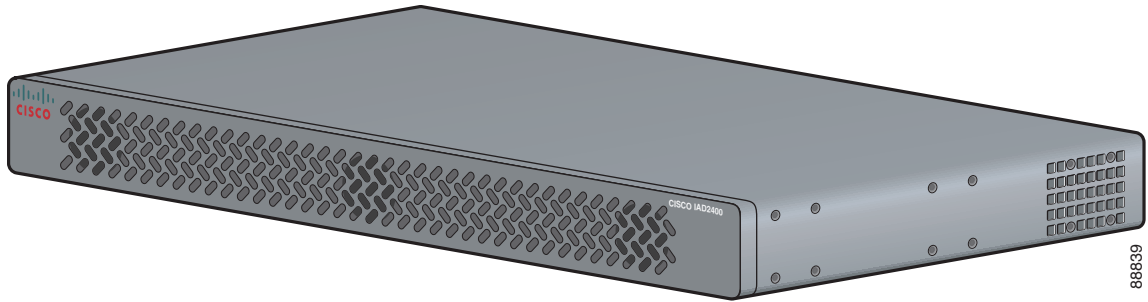


Figure 2 Cisco IAD2435 IAD Front Panel

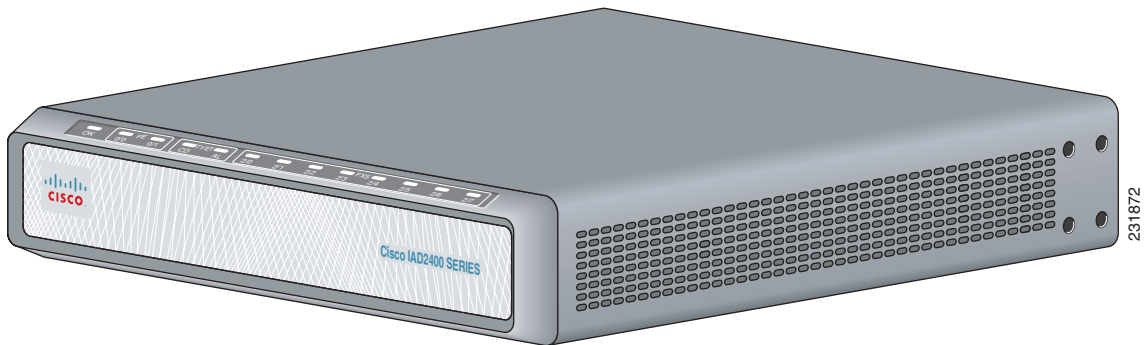
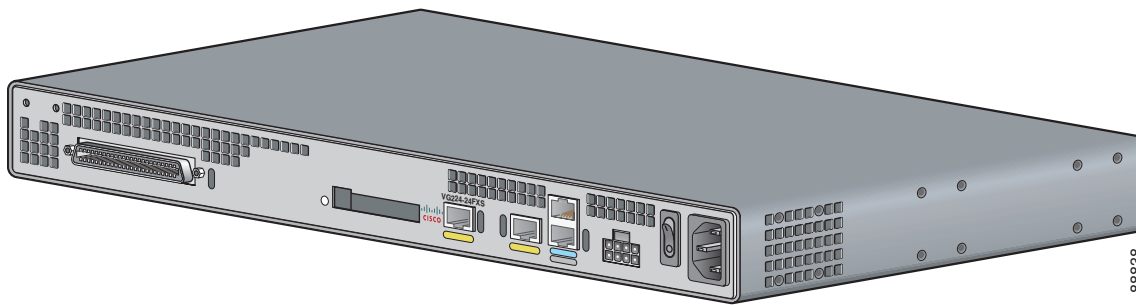


Figure 3 identifies the different back panels and features of the Cisco IAD2430 series models. Figure 4 shows the back panel and features of the Cisco IAD2432-24FXS IAD model. Figure 5 shows the back panel and features of the Cisco IAD2435-8FXS IAD model.

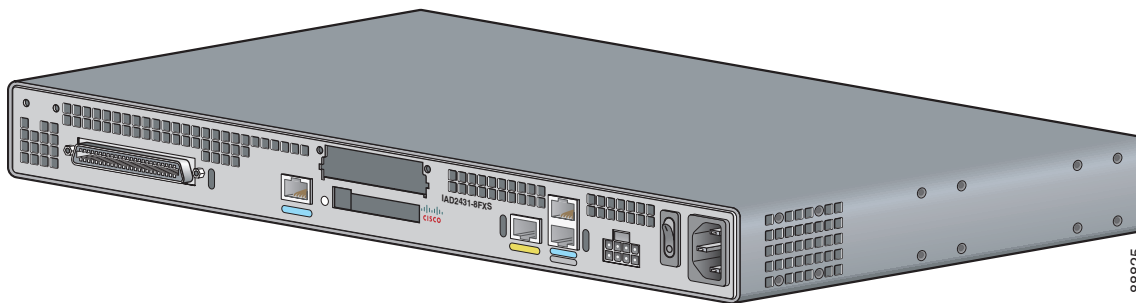


Note Not all models have all functions.

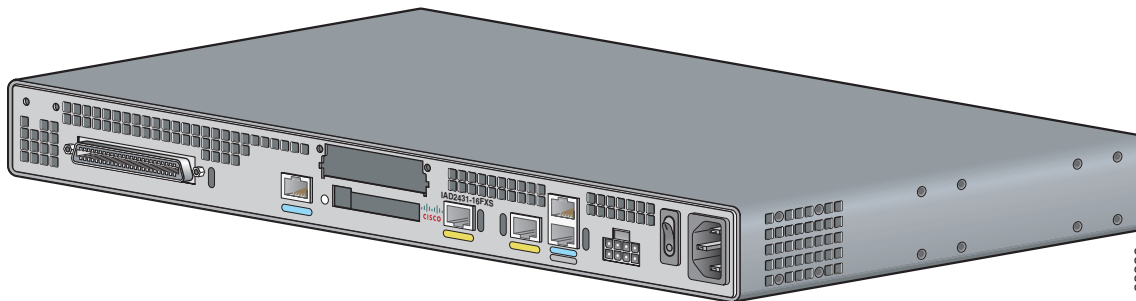
Figure 3 Back Panels for the Cisco IAD2430 Series Models



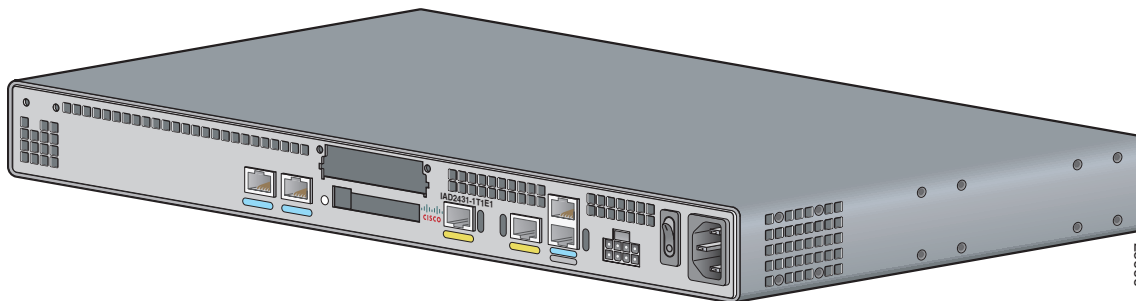
- Cisco IAD2430-24FXS IAD**
- RJ-21 analog voice interface
 - T1/E1 ports: none
 - FE ports: 2
 - External flash memory



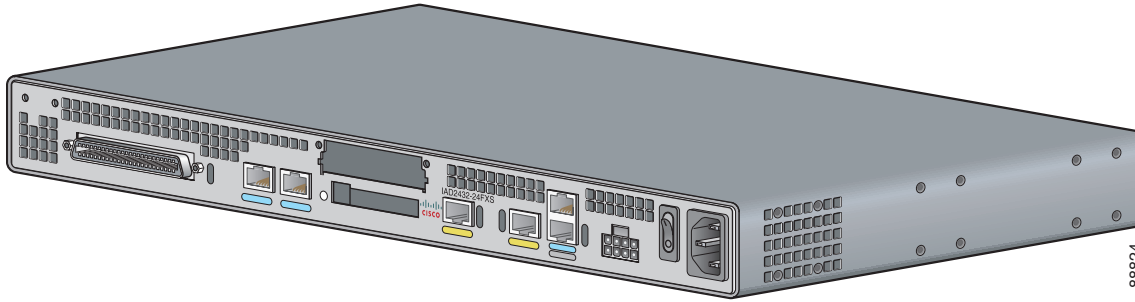
- Cisco IAD2431-8FXS IAD**
- RJ-21 analog voice interface
 - T1/E1 ports: 1
 - FE ports: 1
 - WIC/VIC option
 - External flash memory



- Cisco IAD2431-16FXS IAD**
- RJ-21 analog voice interface
 - T1/E1 ports: 1
 - FE ports: 2
 - WIC/VIC option
 - External flash memory

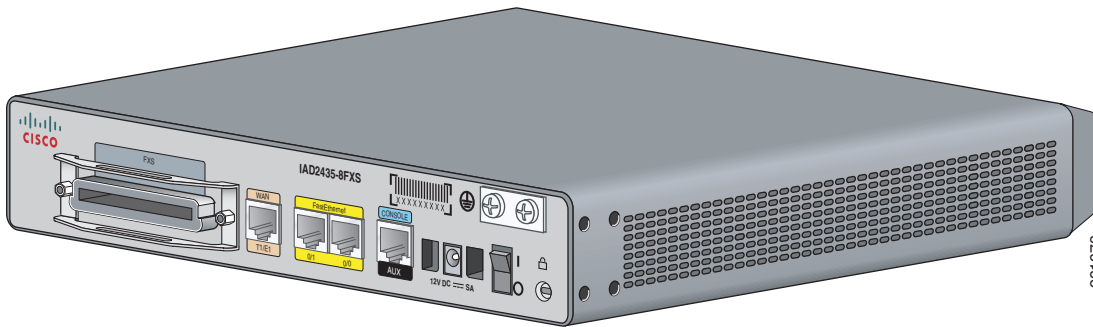


- Cisco IAD2431-1T1E1 IAD**
- T1/E1 ports: 2
 - FE ports: 2
 - WIC/VIC option
 - External flash memory



- Cisco IAD2432-24FXS IAD**
- RJ-21 analog voice port
 - T1/E1 ports: 2
 - FE ports: 2
 - WIC/VIC option
 - External flash memory

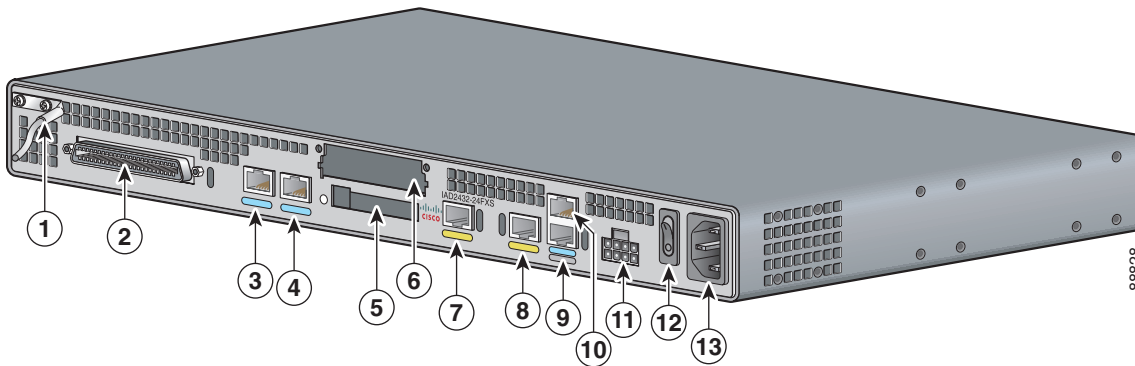
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- Cisco IAD2435-8FXS IAD**
- RJ-21 analog voice port
 - T1/E1 ports: 1
 - FE ports: 2

231873

Figure 4 Back Panel Function Options (Cisco IAD2432-24FXS IAD shown)



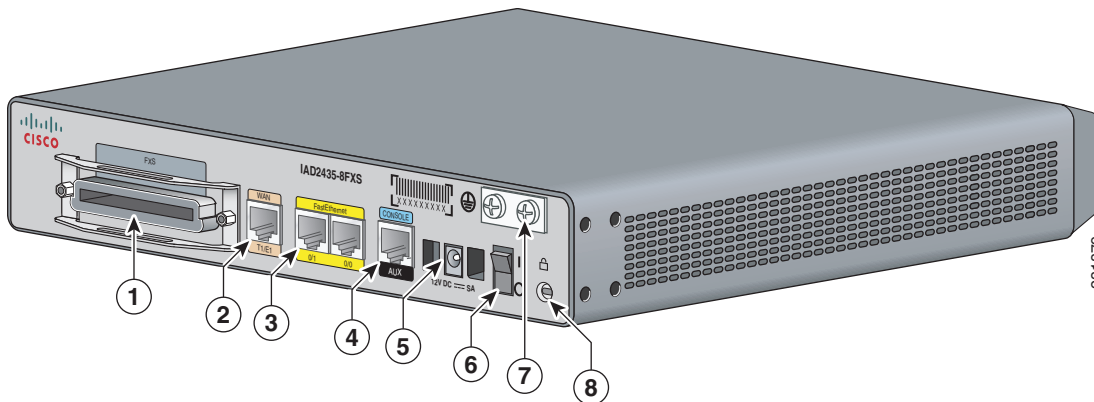
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1	Chassis ground connection	2	RJ-21 connector	3	T1/E1 port 1
4	T1/E1 port 0	5	Flash memory port	6	WIC/VIC slot
7	Fast Ethernet port 1	8	Fast Ethernet port 0	9	AUX port
10	Console port	11	DC power input	12	On/off switch
13	AC power input				



Note The console port is above the auxiliary port.

Figure 5 Back Panel Function Options (Cisco IAD2435-8FXS IAD shown)



1	RJ-21 connector	2	T1/E1 WAN uplink	3	Fast Ethernet port 1, Fast Ethernet port 0
4	Serial port—console or auxiliary	5	Power connector	6	On/off switch
7	Chassis ground connection	8	Kensington security slot		

Items Included with Cisco IAD2430, Cisco IAD2431, and Cisco IAD2432 IADs

The following items are included with each Cisco IAD2430, Cisco IAD2431, and Cisco IAD2432 IAD:

- Rack-mount brackets for 19-inch rack; grounding lug and fasteners; power cord
- NEBS grounding kit (Cisco IAD2432-24FXS)
- Connected RJ-45-to-DB9 cable (labeled *Console*)
- Connected RJ-45-to-DB-25 cable (labeled *Auxiliary*)

Note The rack-mount brackets for a 19-inch rack, the NEBS grounding kit, and the chassis guard for wall-mounting applications are not included with the Cisco IAD2435-8FXS IAD.

Note Power cords vary, depending upon local requirements.

Items Included with Cisco IAD2435 IADs

The following items are included with the Cisco IAD2435 IAD:

- Connected RJ-45-to-DB9 cable (labeled *Console*)
- Power cord

4 Product Serial Number Location

The serial number label for most of the Cisco IAD2430 series routers is located on the back of the chassis at the bottom, near the compliance label. The serial number label for the Cisco IAD2435 integrated access device is located on the bottom of the chassis. The serial number label is 0.25 x 1 inch (6.35 x 25.4 mm). It has the letters “SN:” followed by eleven characters.

5 Accessibility

This product family uses a command-line interface (CLI). Because it is text based and relies on a keyboard for navigation, the CLI is 508 conformant. All functions of the router can be configured and monitored through the CLI.

To view Cisco accessibility guidelines and product adherence, see Cisco Accessibility Products at the following URL:

<http://www.cisco.com/web/about/responsibility/accessibility/products>

6 Safety Information

The following warnings apply to the Cisco IAD2430 series IADs and should be read before installing this product.

For safety information that you need to know before working on your Cisco IAD2430 series IAD and for full translations of the warnings in this document, see the *Cisco IAD2400 Series Regulatory Compliance and Safety Information* document at the following URL:

<http://www.cisco.com/en/US/docs/routers/access/iad2400/hardware/rcsi/2400rcsi.html>



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



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



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



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



**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 (240 VAC, 10A international)** Statement 1005



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



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



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



Warning

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



Warning

To prevent accidental discharge in the event of a power line cross, route on-premise wiring away from power cables and off-premise wiring, or use a grounded shield to separate the on-premise wiring from the power cables and off-premise wiring. A power line cross is an event, such as a lightning strike, that causes a power surge. Off-premise wiring is designed to withstand power line crosses. On-premise wiring is protected from power line crosses by a device that provides overcurrent and overvoltage protection. Nevertheless, if the on-premise wiring is in close proximity to, or not shielded from, the off-premise wiring or power cables during a lightning strike or power surge, the on-premise wiring can carry a dangerous discharge to the attached interface, equipment, and nearby personnel. Statement 338



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. FXS/T3/E3 Statement 1044



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

This equipment needs to be grounded. Use a green and yellow 12 to 14 AWG ground wire to connect the host to earth ground during normal use. Statement 242



Warning

The importance of proper grounding cannot be overemphasized. It will minimize the potential for damage to your system and maximize safety at the system site. We recommend you consult a licensed electrician or your local electric utility company if you have any questions. Statement 269



Warning

A ground wire must always be a single piece of wire. Never splice two wires together for a ground. Corrosion and weathering can lead to a poor connection at the splice, making the ground ineffective and dangerous. Statement 270



Warning

This unit is intended to be mounted on a wall. Please read the wall mounting instructions carefully before beginning installation. Failure to use the correct hardware or to follow the correct procedures could result in a hazardous situation to people and damage to the system. Statement 248



Warning

AC connected units must have a permanent ground connection in addition to the power cable ground wire. NEBS-compliant grounding satisfies this requirement. Statement 284



Warning

To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

This unit should be mounted at the bottom of the rack if it is the only unit in the rack.

When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.

If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.
Statement 1006



Warning

There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions. Statement 1015



Warning

Take care when connecting units to the supply circuit so that wiring is not overloaded. Statement 1018



Warning

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



Warning

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



Warning

Use copper conductors only. Statement 1025



Warning

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



Warning

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



Warning

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



Warning

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



Warning

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



Warning

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 must be installed and maintained by service personnel as defined by AS/NZS 3260. Incorrectly connecting this equipment to a general-purpose outlet could be hazardous. The telecommunications lines must be disconnected 1) before unplugging the main power connector or 2) while the housing is open, or both. Statement 1043



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

7 Installing the Chassis

This section provides the procedures for installing the chassis.

Chassis Installation Options

You can set the chassis on a desktop, install it in a rack, or mount it on a wall.



Tip

Before proceeding, consider the location of the equipment with respect to a good ground. See the “Grounding the Chassis” section on page 18.

See the following instructions:

- Using the Correct Bracket Screws, page 10
- Using Rack-Mount Brackets, page 11
- Rack-Mounting the Chassis, page 12
- Setting the Chassis on a Desktop, page 13
- Setting the Cisco IAD2435 on a Desktop, page 13
- Wall-Mounting the Chassis, page 13
- Grounding the Chassis, page 18
- Connecting the RJ-21 Cable in the Velcro Harness, page 23



Caution

Use only the mounting hardware supplied with this product.

Using the Correct Bracket Screws

Two sets of bracket attachment screws are provided, in separate packages. Take care to use each screw type, and washers as needed, in the appropriate locations. Table 1 summarizes the bracket attachment screw types for the Cisco IAD2430, Cisco IAD2431, and Cisco IAD2432 IADs.

Table 1 *Bracket Attachment Screws for Rack-Mounting and Wall-Mounting*

Rack-Mounting	Wall-Mounting
Eight Phillips head screws (four per bracket). Washers are not required.	Four 6-32 slotted hex screws (two per bracket) and four plastic washers. Washers are required.

Using Rack-Mount Brackets

A new bracket accompanies this product. See Figure 6. This rack-mount bracket, with a keyhole feature, facilitates wall-mounting by allowing the installer to rest the bracket on a starter screw, freeing the installer’s hands.

- To rack-mount the unit, you have three positioning options. See the “Rack-Mounting the Chassis” section on page 12.
- To wall-mount the unit, attach the short leg of the bracket to the chassis at the pair of holes in the center of the chassis side. See the “Wall-Mounting the Chassis” section on page 13.

Figure 6 *Rack-Mount Bracket*

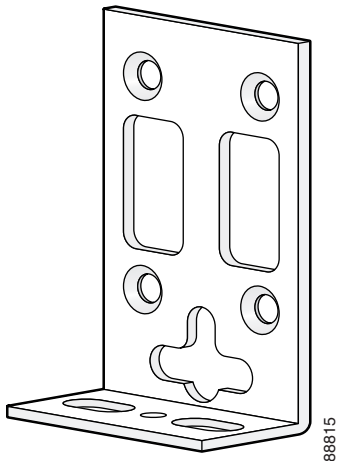
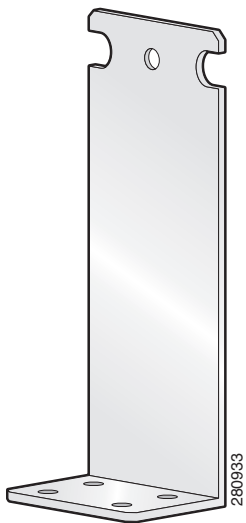


Figure 7 shows the rack-mount bracket for the Cisco IAD2435-8FXS model.

Figure 7 *Rack-Mount Bracket (Cisco IAD2435-8FXS only)*



Rack-Mounting the Chassis

To rack-mount the chassis, follow these steps:

Step 1 Choose one of the methods shown in Figure 8, Figure 9, Figure 10, and Figure 11, as appropriate, and attach the long side of the mounting brackets to the chassis, as shown.



Caution

Make sure to use the correct screws for this mounting option (see Table 1 on page 11).



Note

Screws are included for attaching the brackets to the chassis, but not for installing the chassis in a rack or on a wall. You must purchase four additional machine screws to install the chassis in a rack. Use the screw size required by your rack.



Caution

Cisco IAD2435-8FXS provides for back-panel rack-mounting only, as shown in Figure 11.

Figure 8 19-Inch Rack-Mounting with Front Panel Forward

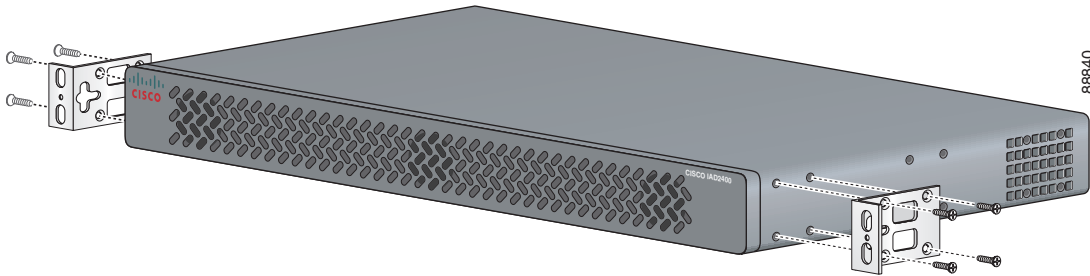


Figure 9 19-Inch Rack-Mounting with Back Panel Forward

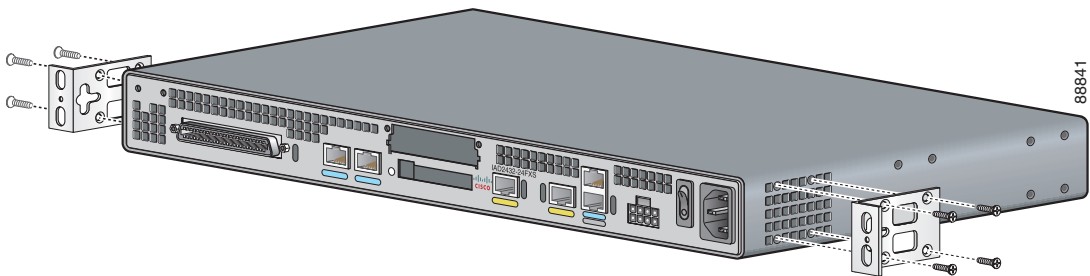


Figure 10 Telco 19-Inch Rack-Mounting with Back Panel Forward

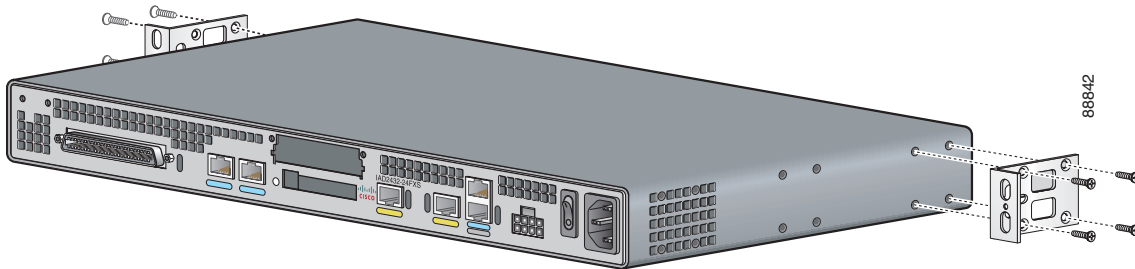
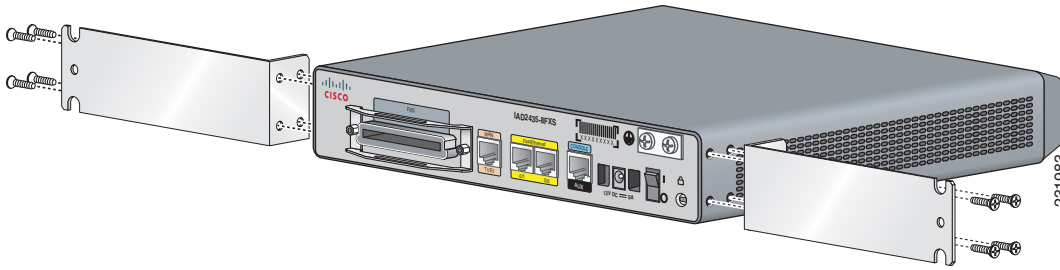


Figure 11 Cisco IAD2435 IAD Rack-Mounting with Back Panel Forward



Step 2 Install the chassis in the rack, using screws that you purchase.

Setting the Chassis on a Desktop

You can set the Cisco IAD2430 series IADs on a desktop. To place the Cisco IAD2430, Cisco IAD2431, or Cisco IAD2432 IAD on a desktop follow these steps:

Step 1 Verify that a suitable AC power outlet is available.



Caution Do not plug this unit into an AC outlet that does not have a UL-certified receptacle that is properly tied into the building ground.

Step 2 Place the four rubber feet (from the accessory kit) in the four indentations on the underside of the chassis. The slight elevation provided by the rubber feet helps provide proper airflow through and around the chassis.

Step 3 Place the Cisco IAD on a smooth, flat surface.



Caution Do not place anything on top of the chassis that weighs more than 10 lb (4.5 kg). Excessive weight on top can damage the chassis.

Setting the Cisco IAD2435 on a Desktop

You can also place the Cisco IAD2435 IAD on a desktop. To place the Cisco IAD2435 IAD on a desktop follow the preceding steps.



Caution Do not place anything on top of the router that weighs more than 5 pounds (2.25 kg), and do not stack routers on a desktop. Excessive distributed weight of more than 5 pounds, or pound point load of 5 pounds on top could damage the chassis.

After you install the router, you must connect the chassis to a reliable earth ground. For the chassis ground connection procedures, see the “Grounding the Chassis” section on page 18.

Wall-Mounting the Chassis



Caution You can wall-mount the Cisco IAD2430, Cisco IAD2431, or Cisco IAD2432 IAD with either the right side or the left side facing up; however, the front and back panels must be vertical. The Cisco IAD2435 IAD must be mounted with the front panel facing up.

Wall-Mounting the Cisco IAD2430, Cisco IAD2431, and Cisco IAD2432 IADs

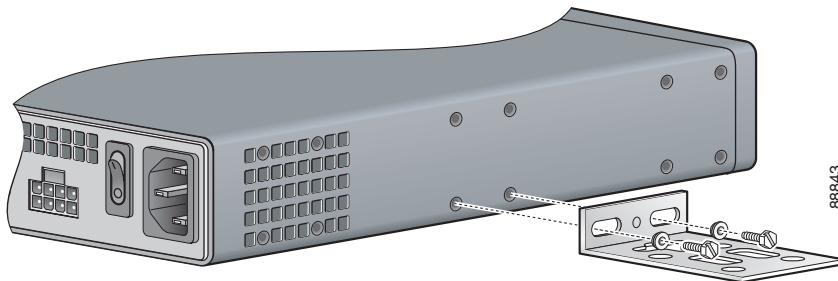
To wall-mount a Cisco IAD2430, Cisco IAD2431, or Cisco IAD2432 IAD, follow these steps:

Step 1 Attach the short side of one bracket to the chassis, as shown in Figure 12, using two 6-32 x 1/4 slotted hex screws (provided). Be sure to use a plastic washer (provided) with each screw; the narrow end of the washer must fit into the bracket slot, facing the chassis.



Caution Be sure to use the correct screws and plastic washers for this mounting option. (See Table 1 on page 11.)

Figure 12 Attaching the Brackets for Wall-Mounting



Step 2 Attach the second bracket to the other side of the chassis.

Step 3 Attach the router to the wall by using the brackets and attachment hardware that you provide, as follows:

- You can install a starter screw in the wall, and hook the bracket keyhole over the screw. This holds the unit in place for easy installation of the attachment screws.
- Attach both brackets to the wall.



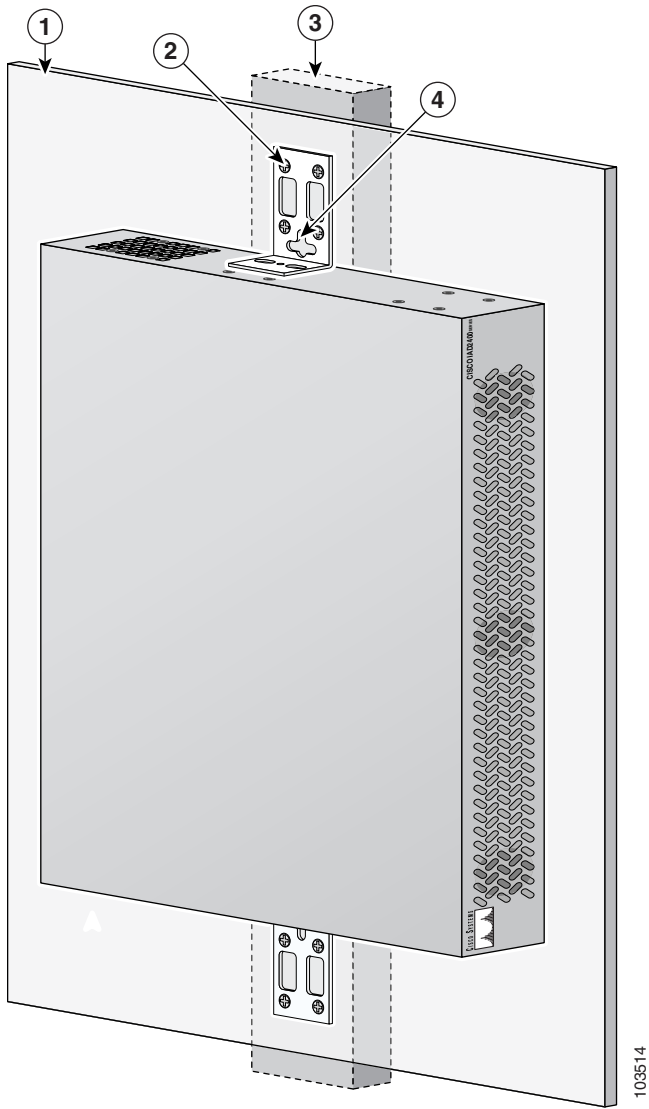
Note For attaching to a wall stud, each bracket requires two number-10 wood screws (round- or pan-head) with number-10 washers, or two number-10 washer-head screws. The screws must be long enough to penetrate at least 3/4 inch (20 mm) into the supporting wood or metal wall stud.



Note For hollow-wall mounting, each bracket requires two wall anchors with washers. Wall anchors and washers must be size number 10.

Figure 13 shows the orientation required for installing the Cisco IAD2430, Cisco IAD2431, or Cisco IAD2432 IADs.

Figure 13 Attaching the Cisco IAD2430, Cisco IAD2431, or Cisco IAD2432 IAD Chassis to a Wall



1	Wall	2	Bracket
3	Wall stud	4	Keyhole (for starter screw)

Wall-Mounting the Cisco IAD2435 IADs

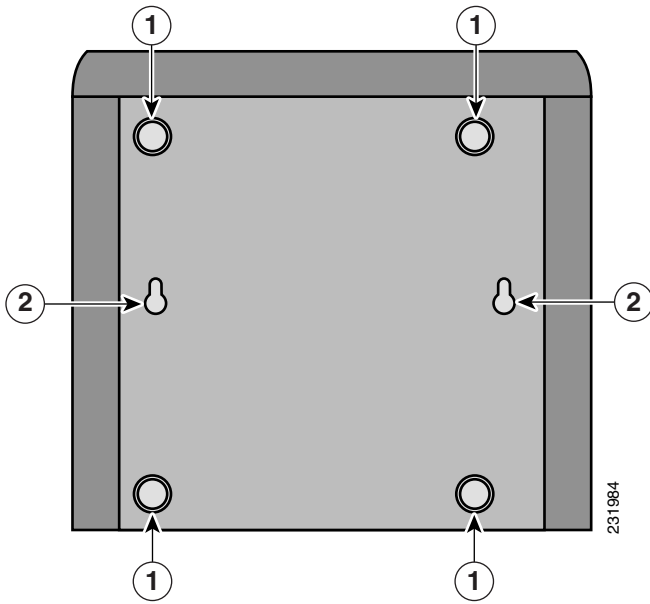
You can mount the Cisco IAD2435 router on a wall or other vertical surface by using the molded mounting brackets on the bottom of the router and two number-six, 3/4-inch (M3.5 x 20 mm) screws. You must provide the screws. Figure 14 shows the mounting-screw slots.



Caution

If you are mounting the router on drywall, use two hollow-wall anchors (1/8 inch with 5/16-inch drill bit, or M3 with 8-mm drill bit) to secure the screws. If the screws are not properly anchored, the strain of the network cable connections could pull the router from the wall.

Figure 14 Mounting-Screw Slots for Wall-Mounting the Cisco IAD2435 IAD



1	Rubber feet	2	Mounting-screw slots
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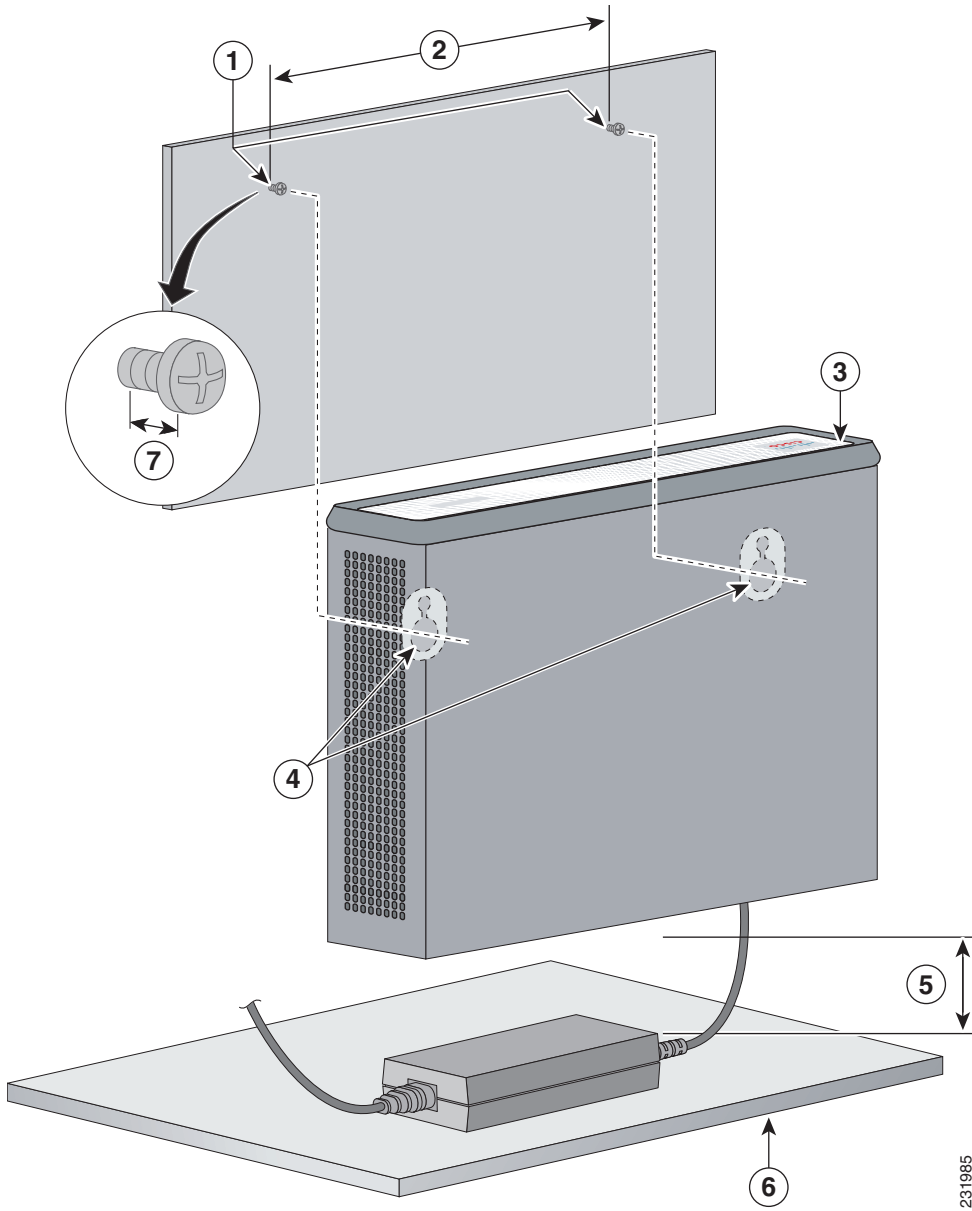
The following conditions must be met when you mount the router:

- Because you will use the LEDs as status and problem indicators, the LEDs on the front panel must face upward and must be easily visible.
- The back panel must face downward to reduce strain on the cable connections.
- The power supply must rest on a horizontal surface such as the floor or a table. If the power supply is not supported, it could place strain on the power supply cable and cause it to disconnect from the connector on the router back panel.

To wall-mount a Cisco IAD2435 IAD, follow these steps:

- Step 1** Secure two screws 7 inches (17.78 centimeters) apart into a wall and 5/32 inch (0.40 centimeter) from the wall.
- Step 2** Hang the router on the screws as shown in Figure 15.
- Step 3** Place the power supply on a horizontal surface.

Figure 15 Mounting the Cisco IAD2435 IAD on a Wall



231985

1	Two number-six, 3/4-in. screws	2	Distance between the two screws (7 in. [17.78 cm])
3	Cisco IAD2435 router	4	Mounting-screw slots
5	Maximum distance between the router and the power supply (6 ft [1.8 m])	6	Horizontal surface for supporting the power supply
7	Distance between the screw and the wall (5/32 in. [0.40 cm])		

Grounding the Chassis

Use the information in this section to provide proper ground for the Cisco IAD2400 series IADs.

You must connect the chassis to a reliable earth ground; the ground wire must be installed in accordance with local electrical safety standards.

- For NEBS-compliant grounding, use size AWG 6 (13 mm²) wire and the ground lug provided in the accessory kit.
- For NEC-compliant grounding, use size AWG 14 (2 mm²) or larger wire and an appropriate user-supplied ring terminal.
- For EN/IEC 60950-compliant grounding, use size AWG 18 (1 mm²) or larger wire and an appropriate user-supplied ring terminal.

To connect the chassis to a reliable earth ground, follow these steps:

Step 1 Locate a suitable ground.



Tip Using a multimeter, measure the resistance between various possible ground locations, such as between the ground of a junction box (outlet) and the ground of a power tap, between the ground of a junction box and a metal water pipe, between the Cisco IAD chassis and the ground of a power tap, and between the Cisco IAD chassis and the ground of a junction box. A good ground connection should read between 0.0 and 0.5 ohm.

Step 2 Strip one end of the ground wire to the length required for the ground lug or terminal.

- For the NEBS ground lug—approximately 0.75 inch (20 mm)
- For user-provided ring terminal—as required

Step 3 Crimp the ground wire to the ground lug or ring terminal, using a crimp tool of the appropriate size.

Step 4 Attach the ground lug (Figure 16 and Figure 17) or ring terminal (Figure 18) to the chassis. For the ground lug, use the two screws with captive locking washers provided. For a ring terminal, use one of the screws provided. Use a number-2 Phillips screwdriver, and tighten the screws to a torque of 8 to 10 in-lb (0.9 to 1.1 N-m).



Note For chassis with ground lugs, attach the ground lug to the chassis as shown in Figure 16 and Figure 17.

Figure 16 NEBS-Compliant Chassis Ground Connection Using Ground Lug

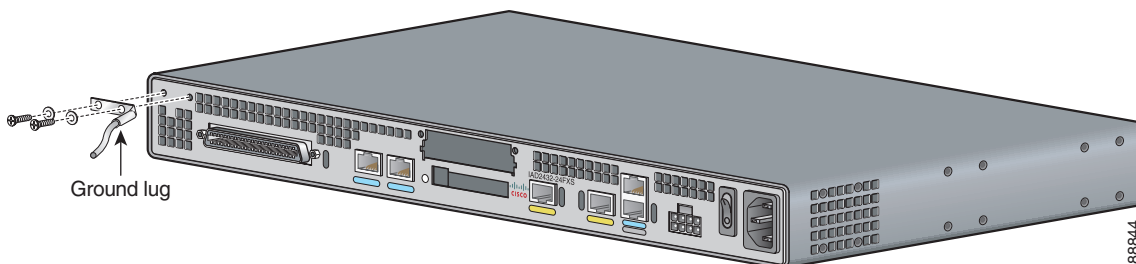
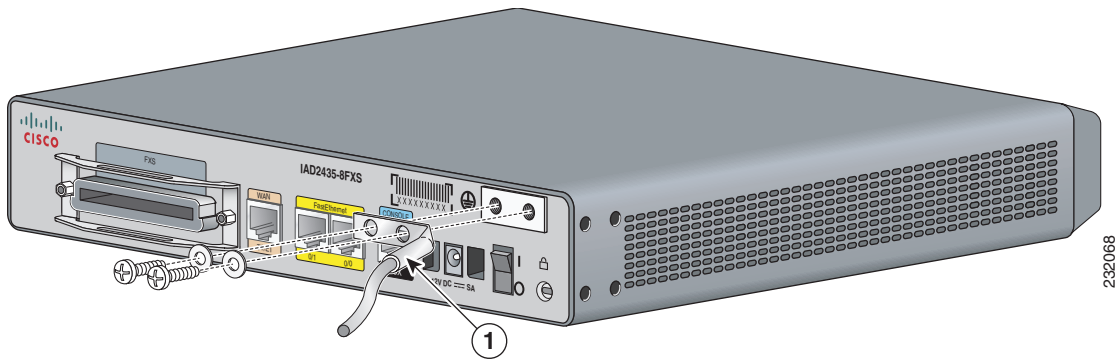
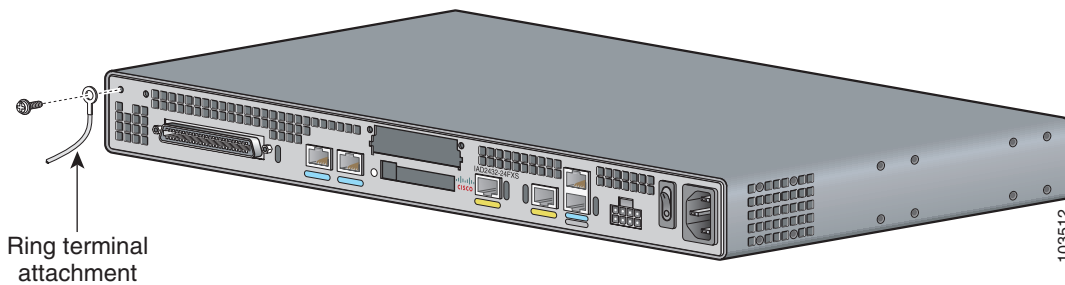


Figure 17 Cisco IAD2435 IAD Chassis Ground Connection Using Ground Lug



1 Grounding lug

Figure 18 Chassis Ground Connection Using Ring Terminal



Step 5 Connect the other end of the ground wire to a grounding point at your site.

8 Installing a WAN or Voice Interface Card

The Cisco IAD2430 series IADs include a slot for a WAN interface card (WIC) or voice interface card (VIC).



Note The Cisco IAD2435 router is a fixed-configuration router and does not support interface cards.

Releases of the Cisco IAD2430 series IADs support the following WICs and VICs (also used by Cisco 2600 series and Cisco 3600 series routers):

- WIC-1T
- WIC-2T
- WIC-1DSU-T1
- VIC2-2FXS
- VIC2-4FXS
- VIC2-2FXO
- VIC2-4FXO
- VIC2-2BRI-NT/TE
- WIC-1ADSL
- WIC-1SHDSL-V2
- WIC-1ADSL-DG

- VWIC-2MFT-T1
- VWIC-2MFT-E1



Note Contact your Cisco account representative for the most recent, supported cards.

For detailed information on installing and connecting interface cards, see the following URL:

http://www.cisco.com/en/US/products/hw/modules/ps2641/prod_installation_guides_list.html



Caution WAN and voice interface cards do not support online insertion and removal (OIR, or hot swapping). Before inserting a card into the Cisco IAD chassis, you must turn off electrical power and disconnect network cables.

Always use an ESD-preventive wrist strap when handling cards.

To install a WIC or VIC, follow these steps:

- Step 1** Use a number-2 Phillips screwdriver to remove the screws holding the metal plate over the card slot cover. Remove the plate.
- Step 2** Holding the interface card by the edges, line up the card with the guides on both sides of the slot.
- Step 3** Insert the card in the slot. Push until it is firmly seated in the connector and the front panel of the card is flush with the back panel of the Cisco IAD.
- Step 4** Use the screwdriver to tighten the captive screws on the card.

9 Connecting Cables

This section provides the procedure for connecting cables to your router.

Connecting LAN and Power Cables

Table 2 lists port connections and cables for connecting Cisco IAD2430 series routers. Figure 19 shows LAN, administrative access, and power connections for the Cisco IAD2430 series IADs. Figure 20 shows the connections for the Cisco IAD2435 IAD.



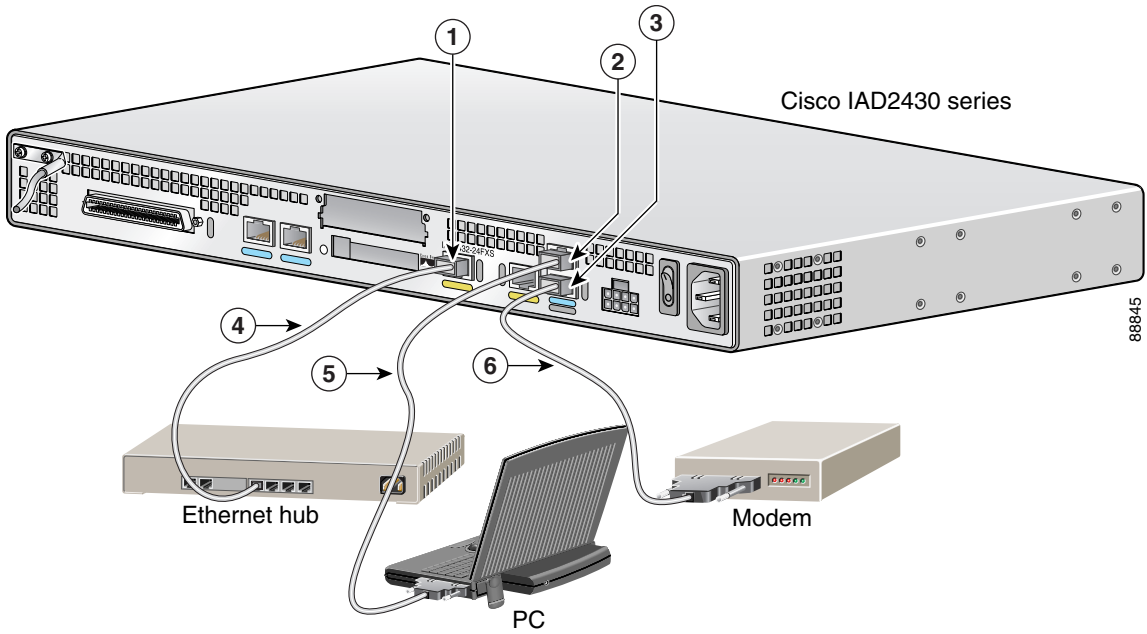
Caution The Cisco IAD2430 series chassis provides inputs for both AC and DC power. Design your installation to use only one type of power. *Do not use AC and DC power at the same time.* If you do, the unit stops operating, and you must reboot it with only a single power source.

Table 2 LAN, Administrative Access, and Power Cable Selection

Port or Connection	Color or Type	Connected To	Cable
Fast Ethernet	Yellow	Fast Ethernet hub	Straight-through Fast Ethernet cable (not included)
Console	Light blue	PC or ASCII terminal communication (COM) port	RJ-45-to-DB9 console cable (included)
Auxiliary	Black	Modem for remote access	RJ-45-to-DB25 auxiliary cable (included)
Power	Power	100–240 VAC, 50–60 Hz	Grounding power cord (included) ¹

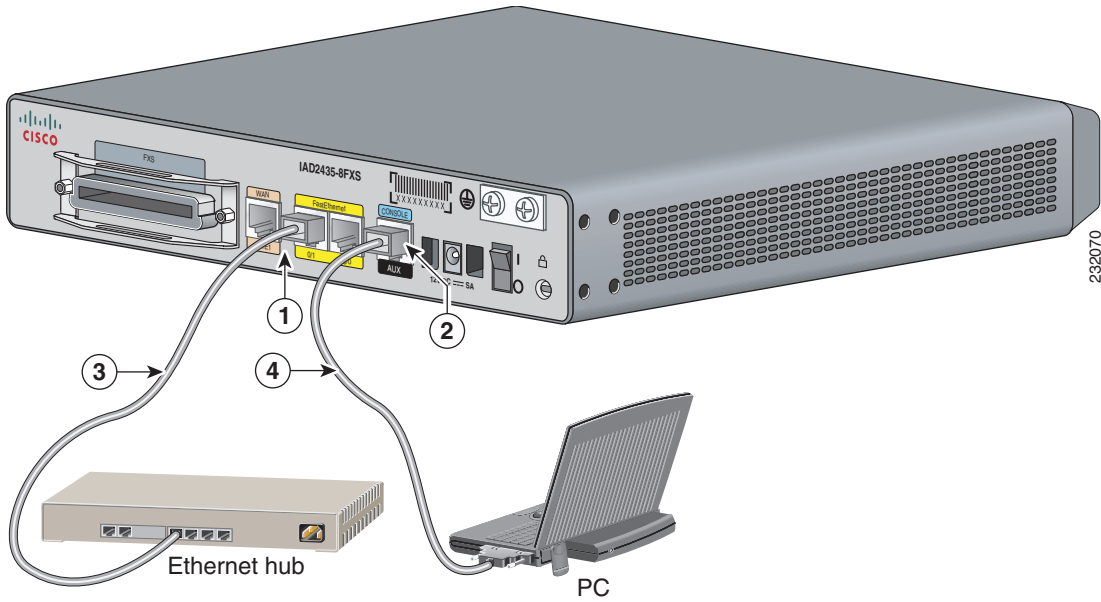
1. Power cables vary to meet local requirements.

Figure 19 LAN, Administrative Access, and Power Connections (Cisco IAD2430 Series IADs)



1	Fast Ethernet port	2	Console port
3	AUX port	4	Fast Ethernet (straight-through)
5	RJ-45-to-DB9 console cable	6	RJ-45-to-DB25 auxiliary cable

Figure 20 LAN, Administrative Access, and Power Connections (Cisco IAD2435 IAD)



1	Fast Ethernet port	2	Serial port—console or auxiliary
3	Fast Ethernet (straight-through)	4	RJ-45-to-DB9 console cable

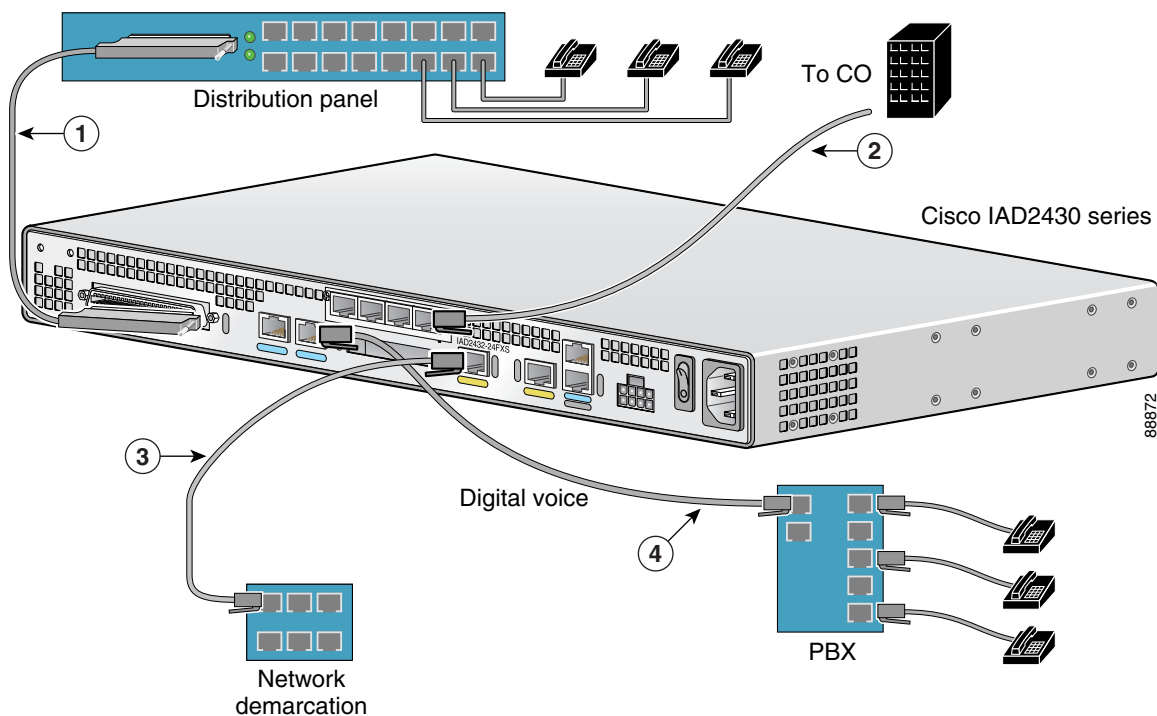
Connecting WAN and Voice Cables

WAN and voice cables and connections are described in Table 3 and shown in Figure 21.

Table 3 WAN and Voice Cable Selection

Port or Interface		Color or Type	Connected To	Cable (not included)
T1/E1, WIC-1DSU-T1	WAN	Light green	WAN	RJ-48 T1 cable
T1/E1	Digital voice	RJ-48C	Digital PBX	RJ-48 T1 cable
WIC-2T	Serial	60-pin D-sub	CSU/DSU and serial network or equipment	Serial transition cable matching signaling protocol (EIA/TIA-232, EIA/TIA-449, V.35, X.21, or EIA-530) and operating mode (DTE or DCE)
VIC2-4FXO	FXO	RJ-11	Station side of analog PBX	RJ-11 cable
Analog voice	FXS	RJ-21	Distribution panel	RJ-21-to-RJ-21 straight-through cable

Figure 21 WAN and Voice Connections



1	RJ-21 cable	2	RJ-45 cable (through a patch panel) to central office
3	RJ-48 straight-through cable	4	RJ-48 rollover cable

Note

If you have specified the use of a private line automatic ringdown (PLAR) off-premises extension (OPX) connection mode for an FXO voice port (with loop resistance less than 8000 Ohm), you must ensure that the soft-offhook option is enabled on the port.

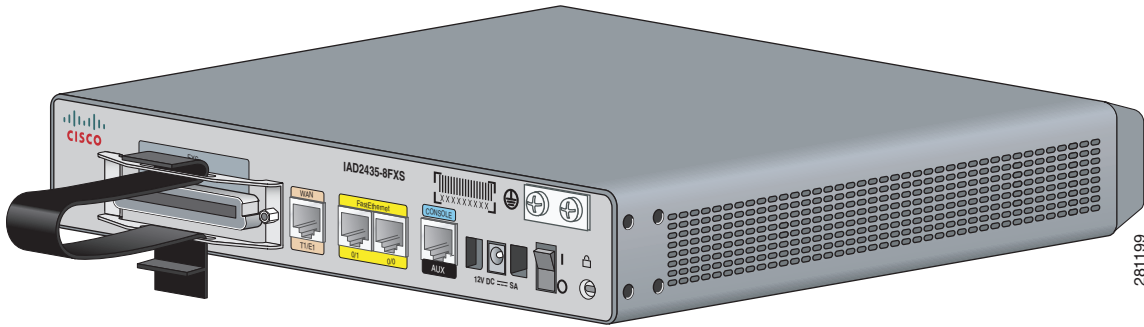
This option allows a stepped offhook resistance during seizure which avoids overloading the circuit during offhook in the event that ringing voltage is present on the circuit at the same time as the trunk seizure. The stepped offhook resistance is initially set to 800 Ohms, then adjusts to 50 Ohms when ringing voltage is not present.

To enable `soft-offhook` command on the port, and to access the `connection` command with `plar opx` syntax, see the [Cisco Command Lookup Tool](#).

Connecting the RJ-21 Cable in the Velcro Harness

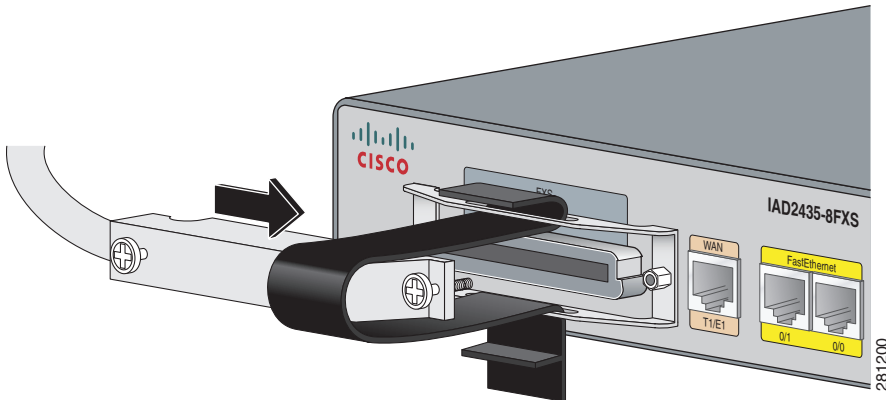
For the Cisco IAD2430 series models that have a Velcro harness available for the RJ-21 cable (see Figure 22), follow these steps:

Figure 22 Cisco IAD2430 Series RJ-21 Velcro Harness



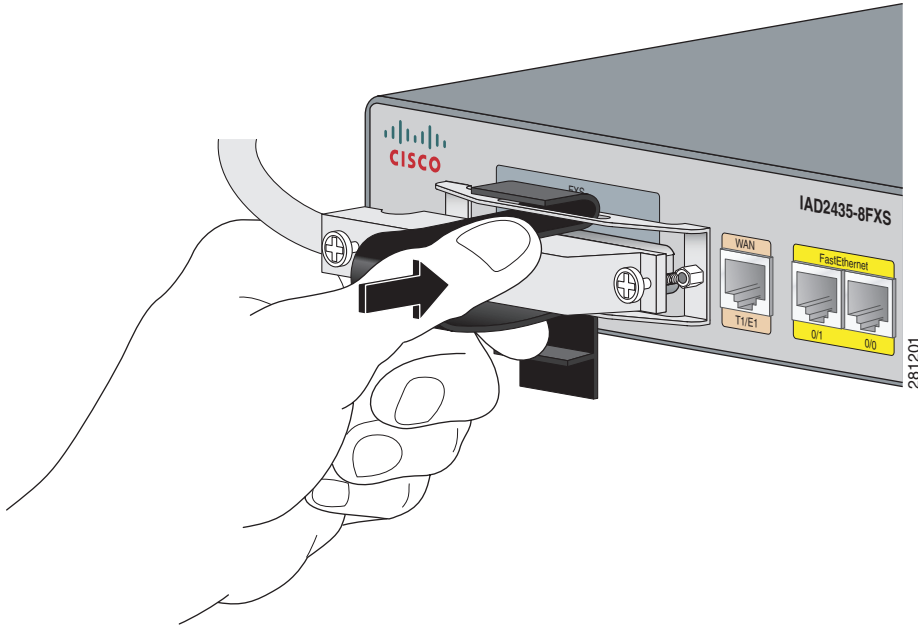
Step 1 Slip the RJ-21 cable connector through the Velcro strap (see Figure 23).

Figure 23 Sliding the RJ-21 Cable Through the Velcro Harness



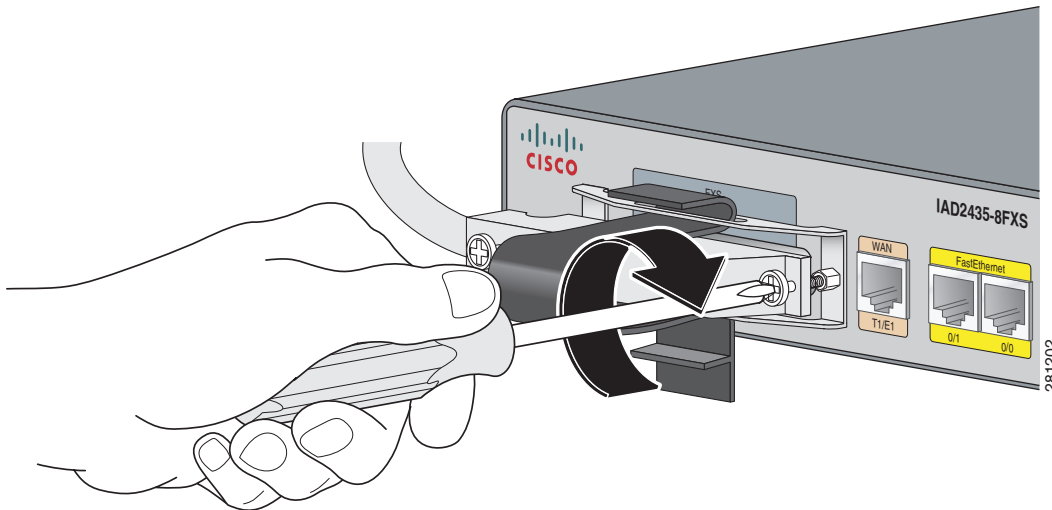
Step 2 Push the male RJ-21 cable connector into the slot of the female RJ-21 connection on the router. Push the male RJ-21 cable firmly until the RJ-21 security clips are firmly seated (see Figure 24).

Figure 24 Pushing the RJ-21 Cable in to the Cisco IAD2435 IAD



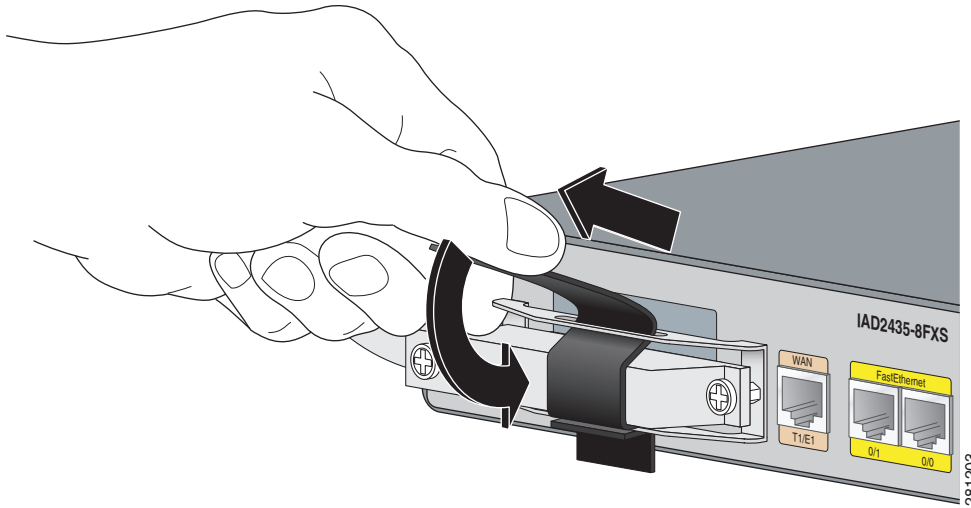
Step 3 Use a number 2 (flat or Phillips screwdriver) to attach the captive screws on the RJ-21 male connector (see Figure 25).

Figure 25 Tightening the Captive Screws



Step 4 Pull the Velcro strap up until it is tight. Then pull it down and affix the strap to the other side of the Velcro harness (see Figure 26).

Figure 26 Tightening the Velcro Strap



10 Powering On the Cisco IAD

This section provides the procedure for powering on your Cisco IAD2430 router.



Caution

Do not use AC and DC power at the same time. If you do, the unit stops operating, and you must reboot it with only a single power source.

Checklist for Power-On

You can power on the Cisco IAD2430 series IADs if it meets these requirements:

- The chassis is securely mounted.
- Power and interface cables are connected.

Power-On Procedure

Perform this procedure to power on your Cisco IAD2430 series IADs and verify that it completes its initialization and self-test.

To power on the Cisco IAD, follow these steps:

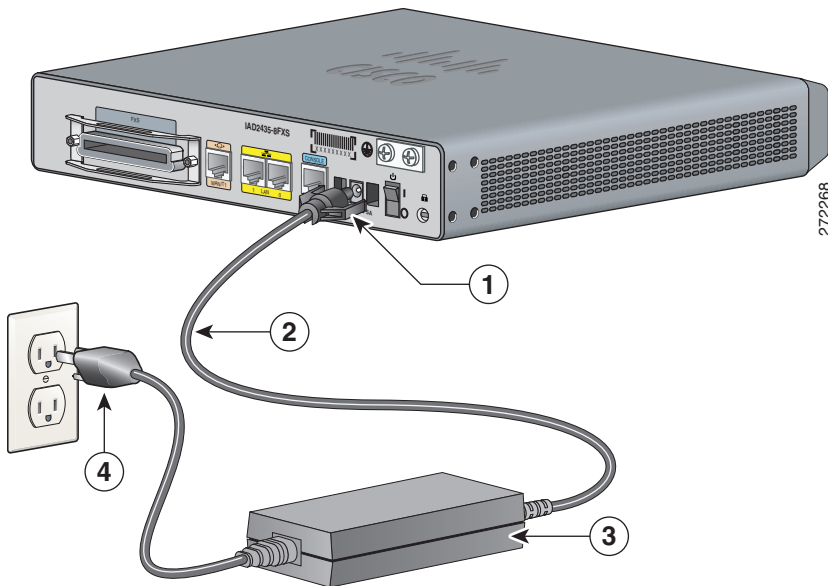
Step 1 Power on your terminal or PC, and configure it for 9600 bps, 8 data bits, 1 stop bit, and no parity.

Step 2 Move the Cisco IAD power switch to the ON position (Cisco IAD2430 through Cisco IAD2432 IADs only).

The green LED next to the auxiliary (AUX) port should come on and the fan should operate. If this does not happen, see the power-on procedure in the *Cisco IAD2430 Series Integrated Access Device Hardware Installation Guide*.

For the Cisco IAD2435 IAD, plug in the external power supply (see Figure 24).

Figure 27 Connecting the External Power Supply to the Cisco IAD2435 IAD



1	Power lock clip	2	Power cord
3	Power adapter	4	AC plug

The following message appears at the end of the bootup messages:

```
--- System Configuration Dialog ---
Continue with configuration dialog? [yes/no]:
```

Step 3 Enter **no** to proceed with manual configuration using the command-line interface (CLI):

```
Would you like to enter the initial configuration dialog? [yes/no]: no
Would you like to terminate autostall? [yes]
```

Step 4 Press **Return** to terminate autostall and continue with manual configuration.

Several messages appear, ending with lines similar to the following:

```
Copyright (c) 2008 by cisco Systems, Inc.
Compiled <date> <time> by <person>
```

Step 5 Press **Return** to bring up the Router> prompt:

```
flashfs[4]: Initialization complete.
Router>
```

Step 6 Enter privileged EXEC mode:

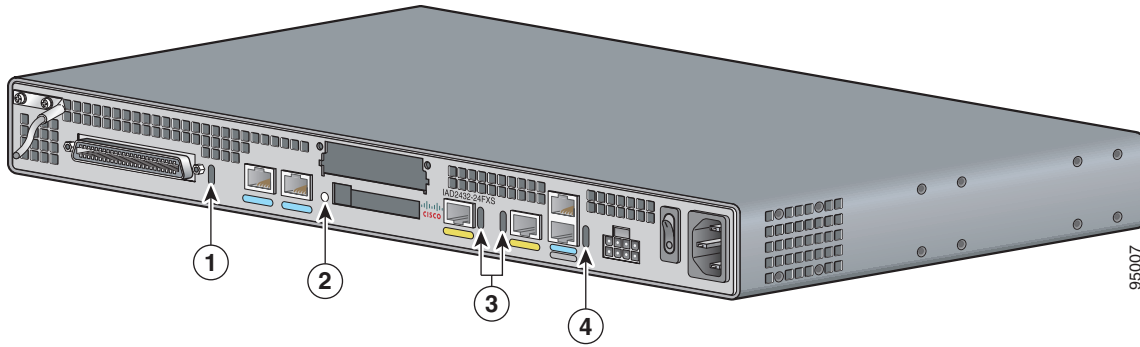
```
Router> enable
Router#
```

Step 7 Continue with the ““Performing the Initial Configuration” section on page 28.”

LEDs

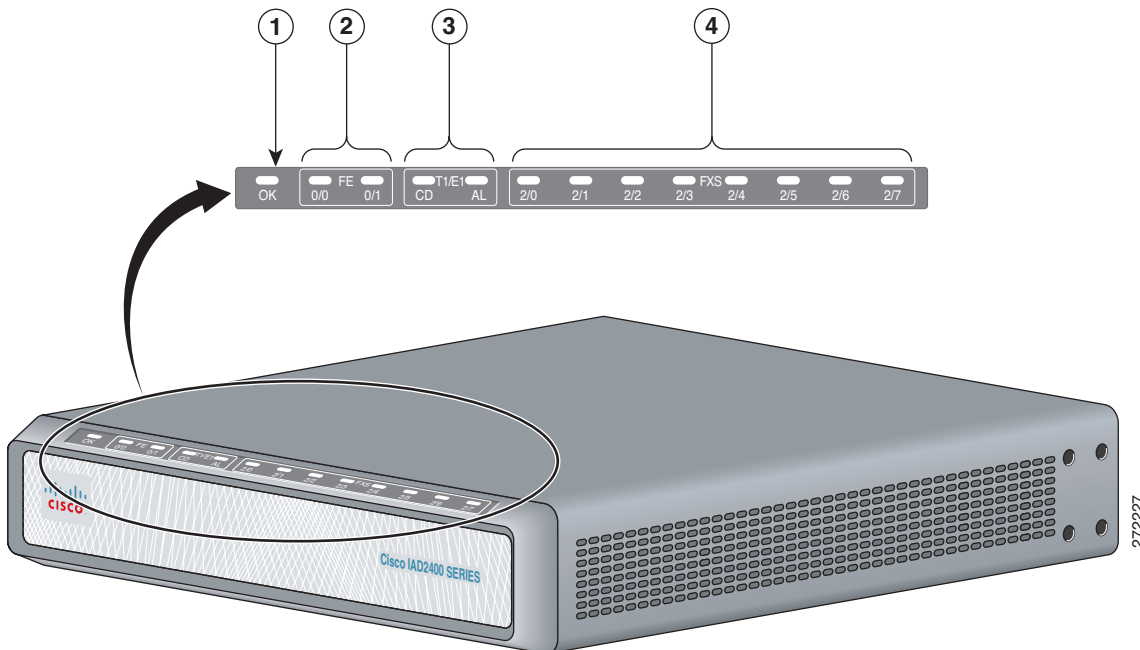
Figure 28 and Figure 29 show the LED functions of the different Cisco IAD243x chassis.

Figure 28 Cisco IAD2430 Series LEDs (Cisco 2432-24FXS shown)



No.	LED/Color and Description
1	ACT—green: Green indicates activity—when any of the 24 voice ports is active in a call (off hook) or when one of the analog ports is in use Status—green: Green when accessing IAD
2	CF (Slot 0)—green: Green when accessing read or write function
3	LINK—green: Indicates link activity 100—green: 100BASE-T is active FDX—green: Green when full duplex is active, off when in half-duplex mode
4	ACT—green: Blinking green during packet transfer and interrupts SYS—green: Blinking green for power-on and self-test, then solid green PWR—green: Solid green when system has power

Figure 29 Cisco IAD2435 Series LEDs



No.	LED/Color	Description
1	PWR OK—green	Off—no power Steady on—normal operation Slow blink—bootup phase or in ROMMON monitor mode
2	FE ports 0/0, 0/1—green	Off—No link Steady on—link Blinking—TXD/RXD data
3	T1/E1 CD (carrier detect)—green T1/E1 AL—Amber	Off—no Carrier detect Steady on—Carrier detect Off—no Alarm condition Steady on—Alarm condition
4	FXS port 0 through port 7—green	Off—On hook Steady On—Off hook

11 Performing the Initial Configuration

This section describes how to configure the Cisco IAD2430 series IADs to perform basic communication functions. You may initially configure your router by using the Cisco IOS command-line interface (CLI) or by using the setup command facility. To create the initial configuration, the setup command facility prompts you for basic information about your router and network.

Cisco IOS CLI

To configure the initial router settings by using the Cisco IOS CLI, follow these steps:

Step 1 Set up a console connection to your router. The following message is displayed:

```
...
router con0 is now available
```

Step 2 Press **Return** or **Enter**. The following message is displayed:

```
Cisco Configuration Professional Express (Cisco CP Express) is installed on this device.
This feature requires the one-time use of the username "cisco"
with the password "cisco." The default username and password have a privilege level of 15.

Please change these publicly known initial credentials using Cisco CP Express or the Cisco IOS CLI.
```

```
Here are the Cisco IOS commands.
```

```
username <myuser> privilege 15 secret 0 <mypassword>
no username cisco
```

```
Replace <myuser> and <mypassword> with the username and password you want to use.
```

```
For more information about Cisco CP Express please follow the instructions in the QUICK START GUIDE for
your router...
```

```
...
User Access Verification
Username:
```

Step 3 Enter the username *cisco*, and press **Return** or **Enter**. The following prompt is displayed:

```
Password:
```

Step 4 Enter the password *cisco*, and press **Return** or **Enter**. The following prompt is displayed:

```
Router#
```

A message is displayed that is similar to the first message that directs you to change the username and password.

You are now in privileged EXEC mode.



Note You **must** change the username and password before you log off the router. You cannot use the username *cisco* or password *cisco* after you log off from this session.

Step 5 To change the username and password, enter the following at the prompt:

```
username username privilege 15 secret 0 password
```

Username and *password* are the username and password that you wish to use.



Note Use the **copy running-config startup-config** command at the privileged EXEC mode prompt (`Router#`) to save the configuration to NVRAM.

Step 6 Verify the initial configuration. See the “Verifying and Saving Your Configuration” section on page 33.

Setup Command Facility

The setup command facility guides you through the configuration process by prompting you for the specific information that is needed to configure your system. Use the setup command facility to configure a hostname for the router, to set passwords, and to configure an interface for communication with the management network.

To use the setup command facility, you will need to establish a console connection with the router and enter privileged EXEC mode.

To configure the initial router settings by using the setup command facility, follow these steps:

Step 1 Establish a console connection to your router and enter privileged EXEC mode. For instructions on how to enter privileged EXEC mode see Step 1 through Step 4 in the “Cisco IOS CLI” section on page 28.

Step 2 In privileged EXEC mode, at the prompt, enter *setup*.

```
yourname# setup
```

The following message is displayed:

```
--- System Configuration Dialog ---
```

```
Continue with configuration dialog? [yes/no]:
```

You are now in setup command facility.

The prompts in the setup command facility vary, depending on your router model, on the installed interface modules, and on the software image. The following steps and the user entries (in bold) are shown as examples only.



Note If you make a mistake while using the setup command facility, you can exit and run the setup command facility again. Press **Ctrl-C**, and enter the **setup** command at the privileged EXEC mode prompt (`Router#`).

Step 3 To proceed using the setup command facility, enter **yes**:

```
Continue with configuration dialog? [yes/no]: yes
```

Step 4 When the following messages appear, enter **yes** to enter basic management setup:

```
At any point you may enter a question mark '?' for help.  
Use ctrl-c to abort configuration dialog at any prompt.
```

```
Default settings are in square brackets '[]'.
```

```
Basic management setup configures only enough connectivity  
for management of the system, extended setup will ask you
```

to configure each interface on the system

Would you like to enter basic management setup? [yes/no]: **yes**

Step 5 Enter a hostname for the router (this example uses *Router*):

Configuring global parameters:
Enter host name [Router]: **Router**

Step 6 Enter an enable secret password. This password is encrypted (more secure) and cannot be seen when viewing the configuration.

The enable secret is a password used to protect access to privileged EXEC and configuration modes. This password, after entered, becomes encrypted in the configuration.
Enter enable secret: **xxxxxxx**

Step 7 Enter an enable password that is different from the enable secret password. This password is not encrypted (less secure) and can be seen when viewing the configuration.

The enable password is used when you do not specify an enable secret password, with some older software versions, and some boot images.
Enter enable password: **xxxxxxx**

Step 8 Enter the virtual terminal password, which prevents unauthenticated access to the router through ports other than the console port:

The virtual terminal password is used to protect access to the router over a network interface.
Enter virtual terminal password: **xxxxxxx**

Step 9 Respond to the following prompts as appropriate for your network:

Configure SNMP Network Management? [yes]:
Community string [public]:

A summary of the available interfaces is displayed.

Step 10 Choose one of the available interfaces for connecting the router to the management network:

Enter interface name used to connect to the management network from the above interface summary: **fastethernet0/0**

Step 11 Respond to the following prompts as appropriate for your network:

Configuring interface FastEthernet0/0:
Use the 100 Base-TX (RJ-45) connector? [yes]: **yes**
Operate in full-duplex mode? [no]: **yes**
Configure IP on this interface? [yes]: **yes**
IP address for this interface: **172.1.2.3**
Subnet mask for this interface [255.255.0.0] : **255.255.0.0**
Class B network is 172.1.0.0, 26 subnet bits; mask is /16

The configuration is displayed:

The following configuration command script was created:

```
hostname Router
enable secret 5 $1$D5P6$PYx41/lQIASK.HcSbf05q1
enable password xxxxxx
line vty 0 4
password xxxxxx
snmp-server community public
!
no ip routing
!
interface FastEthernet0
no shutdown
speed 100
duplex auto
```

```
ip address 172.1.2.3 255.255.0.0
!
```

Step 12 Respond to the following prompts. Enter 2 to save the initial configuration.

```
[0] Go to the IOS command prompt without saving this config.
[1] Return back to the setup without saving this config.
[2] Save this configuration to nvram and exit.
```

```
Enter your selection [2]: 2
Building configuration...
Use the enabled mode 'configure' command to modify this configuration.
```

```
Press RETURN to get started! RETURN
```

```
The user prompt is displayed.
Router>
```

Step 13 Verify the initial configuration. See the “Verifying and Saving Your Configuration” section on page 33.

After you create the initial configuration file, you can use the Cisco IOS CLI to perform additional configuration.

Getting Your Network Information

Gather the following information, as applicable, before you begin the configuration process:

- For Fast Ethernet ports: IP address
- For T1/E1 ports: clock source, framing, line code, cable length (T1 only)

Setting the Fast Ethernet Port IP Address


To set an IP address for the Fast Ethernet port, follow the steps below. After setting this address, you can configure the Cisco IAD2430 series IADs remotely through a Telnet connection.

	Command	Description
Step 1	Router# configure terminal	Enters global configuration mode.
Step 2	Router(config)# enable password <i>password</i>	Sets a password for the privileged EXEC mode.
Step 3	Router(config)# interface Fast Ethernet 0/0	Enters interface configuration mode.
Step 4	Router(config-if)# ip address <i>IP-address subnet-mask</i>	Enters the IP address and subnet mask for the Fast Ethernet port.
Step 5	Router(config-if)# no shutdown	Activates the Fast Ethernet port.
Step 6	Router(config-if)# exit	Returns to global configuration mode.
Step 7	Router(config)# line vty 0 4	Enters line configuration mode.
Step 8	Router(config-line)# password <i>password</i>	Sets a password for remote access to the Cisco IAD.
Step 9	Router(config-line)# end	Returns to privileged EXEC mode.
Step 10	Router# copy system:running-config nvram:startup-config	Saves the configuration.

Configuring a T1/E1 Port for a WAN Connection

The T1/E1 port supports balanced T1/E1 according to ANSI T1.403 and has a built-in CSU/DSU.


To configure basic T1/E1 controller settings to support PPP, High-Level Data Link Control (HDLC), or Frame Relay (FR), follow these steps, beginning in global configuration mode:

	Command	Description
Step 1	Router(config)# controller t1/e1 1/0	Enters controller configuration mode by controller number.
Step 2	Router(config-ctrl)# clock source {internal line loop-timed}	Configures the controller clock source for a DS1 link. If the clock source is a network device attached to the T1/E1 port that you are configuring now, select the line option. For any other clock source (either internal or a network device attached to any other port), select the internal option.  Note The IAD2435 IAD supports only two clock source options: internal clock source and line clock source.
Step 3	Router(config-ctrl)# description line	Enters a description of the controller, such as the destination or its application. The description can be as many as 80 characters long.
Step 4	Router(config-ctrl)# cablelength short {133 266 399 533 655} or Router(config-ctrl)# cablelength long {gain26 gain36} {-15db -22.5db -7.5db 0db}	Configures the cable length if the length is 655 ft (200 m) or shorter. or Configures the receive gain and transmit attenuation if the cable length is longer than 655 ft (200 m).
Step 5	Router(config-ctrl)# framing {sf esf}	If necessary, changes the DS1 link framing format. The default is SuperFrame (sf).
Step 6	Router(config-ctrl)# linecode {ami b8zs}	If necessary, changes the line encoding format for the DS1 link. The default is ami .
Step 7	Router(config-ctrl)# no shutdown	Activates the T1/E1 controller.
Step 8	Router(config-ctrl)# exit	Exits controller configuration mode.
Step 9	Router(config)# exit	Exits configuration mode.
Step 10	Router# show controller t1/e1 1/0	Verifies the controller configuration.

Configuring Digital Voice

To configure basic T1/E1 controller settings to support PPP, HDLC, or FR, follow these steps, beginning in global configuration mode:

	Command	Description
Step 1	Router(config)# controller t1/e1 1/0	Enters controller configuration mode by controller number.
Step 2	Router(config-ctrl)# mode cas	Configures channel-associated signaling.
Step 3	Router(config-ctrl)# framing esf	Configures framing.
Step 4	Router(config-ctrl)# linecode b8zs	Configures line encoding format.
Step 5	Router(config-ctrl)# framing {sf esf}	If necessary, changes the DS1 link framing format. The default is SuperFrame (sf).
Step 6	Router(config-ctrl)# ds0-group 1 timeslots 1-24 type e&m-immediate-start	Configures the DS0 group.


	Command	Description
Step 7	Repeat Step 3 through Step 6 for each additional DS0 group.	Configures additional DS0 groups on the T1/E1 interface. You can configure as many as 24 DS0 groups on a T1/E1 interface.  Note Configure a maximum of 8 time slots in a DS0 group on the Cisco IAD2435 IAD.
Step 8	Router(config-ctrl)# no shutdown	Activates the T1/E1 controller.
Step 9	Router(config-ctrl)# exit	Exits controller configuration mode.
Step 10	Router(config)# exit	Exits configuration mode.
Step 11	Router# show controller t1/e1 1/0	Verifies the controller configuration.

For additional information about configuring specific features, see the following references:

- For PPP, HDLC, or FR, consult the online master index for the Cisco IOS release that you are using.
- For loopback diagnostics, or for configuring controller channel groups, channel-associated signaling (CAS) voice groups, or time-division multiplexing (TDM) cross-connects, see the *Cisco IAD2430 Series Integrated Access Devices Software Configuration Guide*.

Verifying and Saving Your Configuration

To verify the configuration and save it in NVRAM so that the configuration remains in effect if the Cisco IAD is restarted, enter the following commands:

Command	Description
Router# show running-config	Displays the current operating configuration, including any changes you have made.
Router# show startup-config	Displays the configuration currently stored in NVRAM.
Router# show controller t1/e1 1/0	Displays the configuration of the T1/E1 network interface controller.
Router# copy running-config startup-config	Writes the current running configuration to NVRAM, where it overwrites the startup configuration and becomes the new startup configuration.  Note If you reboot the Cisco IAD2430 series IAD or turn off the power before you complete this step, you lose the configuration.



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