



Cisco VG410 Voice Gateway Hardware Intallation Guide

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Preface

This preface describes the audience, organization, and conventions of this document. It also provides information on how to obtain other documentation.

This preface includes the following sections:

- [Reference Preface Map here](#), on page v

Reference Preface Map here



CHAPTER 1

Overview

The Cisco VG410 Analog Voice Gateway or Cisco VG410 Voice Gateway is a Cisco IOS-XE software-based medium-density analog phone gateway that connects public-switched telephone networks (PSTNs) and existing telephony equipment to Cisco Enterprise Routers.

This voice gateway offers Cisco IOS-XE software manageability on analog phone lines and supports business needs for analog voice ports for modem calls, fax calls, and analog supplementary services.

This device also connects analog phones, fax machines, modems, and speakerphones to the enterprise voice systems and is an intermediate path that enables TDM to IP transition. Further, the fixed-port (FXS and FXO) modules in this voice gateway provide Dual-Tone Multifrequency (DTMF) detection, voice compression and decompression, call progress tone generation, Voice Activity Detection (VAD), echo cancellation, and adaptive jitter buffering.

To know how to install this voice gateway, see the *Cisco VG410 Voice Gateway Installation Guide*. After installing the voice gateway, use this guide to complete basic router configuration using the setup command facility.



Note By default, the Cisco VG410 Voice Gateway boots up in the supported Cisco IOS XE platform versions only. To boot the device in a private image release, contact Cisco Technical Assistance Center (TAC).

This document is a summary of the software functionalities that are specific to Cisco VG410 Voice Gateway. This guide also contains information on using the Cisco IOS software to perform other configuration tasks, such as configuring voice ports and other features.

- [Features and Benefits, on page 1](#)
- [Identify the Device, on page 3](#)
- [SKU Information, on page 5](#)
- [Locate the Labels, on page 6](#)
- [LED Information, on page 8](#)
- [Technical Specifications, on page 10](#)

Features and Benefits

Cisco VG410 Voice Gateway provides VoIP connectivity to analog devices such as analog desk phones, analog conference room phones, fax machines, and modems. This voice gateway provides several improvements from the previous high-density analog and digital extension modules (EVMs) in the following ways:

- **Software Digital Signal Processor (DSP):** The Cisco VG410 Voice Gateway chassis utilizes its built-in CPU cores to handle the digital signal processing (DSP) tasks required for software implementation. This means that the functionality typically provided by a separate DSP component is now distributed among the CPU cores within the device. Further, the CPU cores effectively handle the necessary DSP operations. The software DSP comes pre-installed as part of the manufacturing process.
- **FXS-E (extended loops or long loops) support:** The first 24 ports of all the SKUs on the new modules support FXS-E with:
 - Higher loop current (35 mA) to accommodate specialty phones
 - Longer loop length for loops with 26 AWG wire, up to 11,000 feet (3400 meters)
 - Higher ringing voltage (65 Vrms, no load)

In addition to these features, Cisco VG410 Voice Gateway supports the following features:

- Webex calling
- Caller line ID
- G.711, G.729a, G.729ab, and G.726
- G722, iLBC
- Fax pass-through and relay (T.38)
- Modem pass-through, Modem relay, and V.150.1 MER modem relay support
- DTMF detection
- Echo cancellation
- Voice activity detection
- Comfort noise generation
- Real-Time Control Protocol (RTCP)
- Acoustic shock protection
- Real-Time Transport Protocol (RTP)
- RFC 4733 Digit Relay
- Noise reduction
- Call Details Records (CDR)
- Support for Loop-start and Ground start signaling
- Support for interworking with Cisco Unified Communications Manager (CUCM): Skinny Client Control Protocol (SCCP), Session Initiation Protocol (SIP), and Media Gateway Control Protocol (MGCP) 0.1
- Cable detection: GR909 line test

FXS Features

The FXS features include:

- Support for either FXS or DID functionality
- Message-Waiting Indicator (MWI)

FXO Features

The FXO features include:

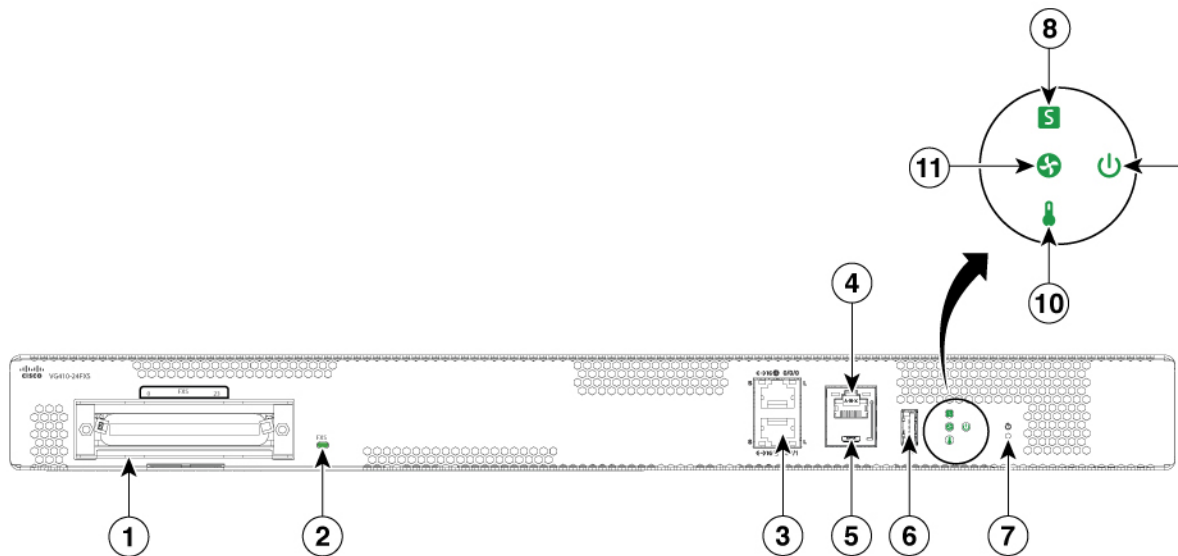
- Overload protection

For more information on features, benefits, and other specifications, refer to the [Cisco VG410 Voice Gateway Data Sheet](#).

Identify the Device

The following images show the I/O panel views of the Cisco VG410 Voice Gateway chassis that help you identify this device:

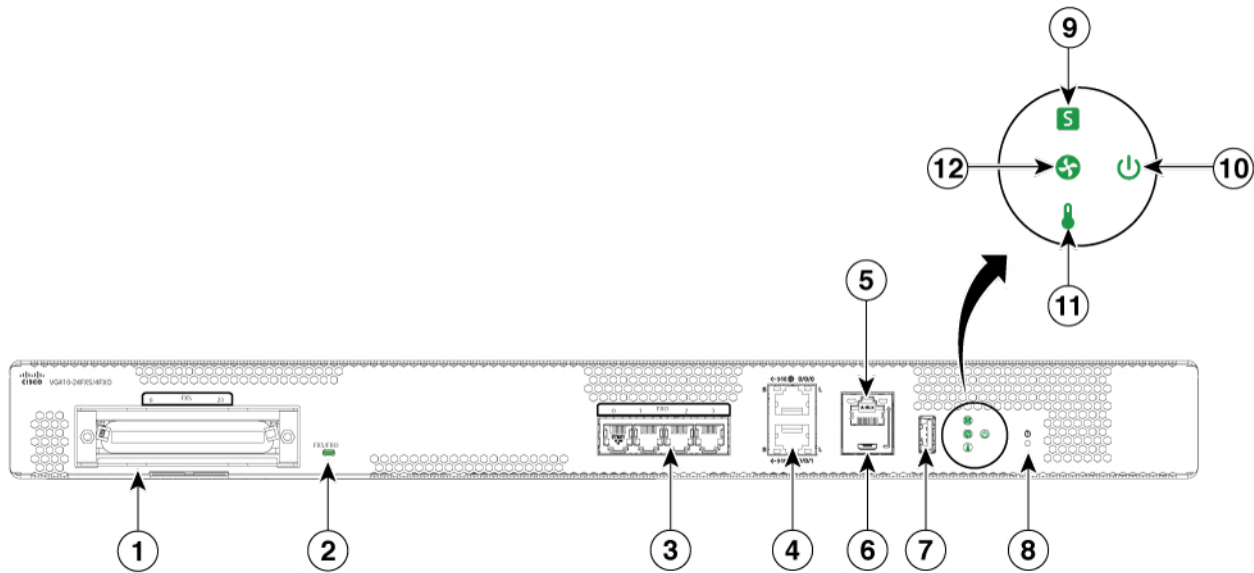
Figure 1: VG410-24FXS I/O Panel View



1	RJ 21 for FXS port
2	FXS LED
3	2X1 GE port
4	RJ45 console
5	Micro USB console
6	USB 3.0 type A port

7	Reset
8	System status indicator
9	Power supply status indicator
10	Temperature indicator
11	Environmental status indicator

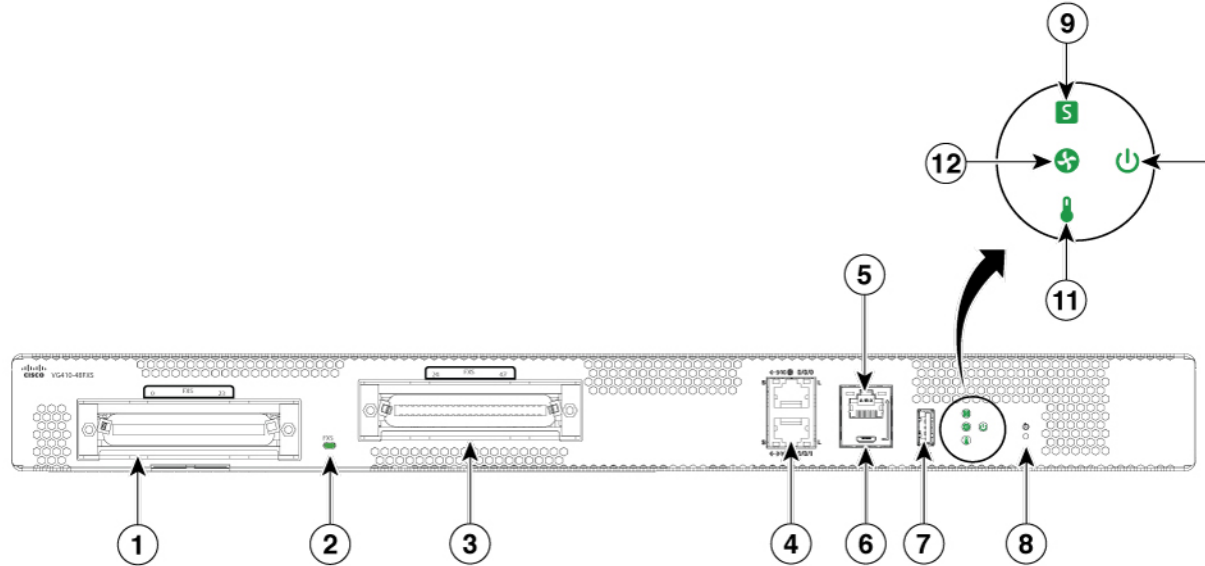
Figure 2: VG410-24FXS/4FXO I/O Panel View



1	RJ 21 for FXS port
2	FXS/FXO LED
3	RJ 11 for FXO port
4	2X1 GE port
5	RJ 45 console
6	Micro USB console
7	USB 3.0 Type A port
8	Reset
9	System status indicator
10	Power Supply status indicator
11	Temperature indicator

12	Environmental status indicator
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Figure 3: VG410-48FXS I/O Panel View



1	RJ 21 for FXS port
2	FXS LED
3	RJ 21 for FXS port
4	2X1 GE port
5	RJ45 console
6	Micro USB console
7	USB 3.0 Type A port
8	Reset
9	System status indicator
10	Power status indicator
11	Temperature indicator
12	Environmental status indicator

SKU Information

The following tables specify the Cisco VG410 Voice Gateway SKU information. All the SKUs support the following external interfaces:

Table 1: SKU Information: Front

Front	Details
WAN Port	Two GE RJ-45 copper interface ports support 10BASE-T, 100BASE-TX, and 1000Base-T
Console port	One RJ45 serial console port and one USB console port

Table 2: SKU Information: Back

Back	Details		
PSU	Support for one replaceable PSU		
Fans	Two or three fixed fans		
SKUs	VG410-24FXS	VG410-24FXS/4FXO	VG410-48FXS
FXS Ports	24	24	48
FXO Ports	0	4	0
Number of Failed Over Ports	N/a	4	N/a
Maximum REN	16	16	24
RJ 21 Connectors	1	1	2

Locate the Labels

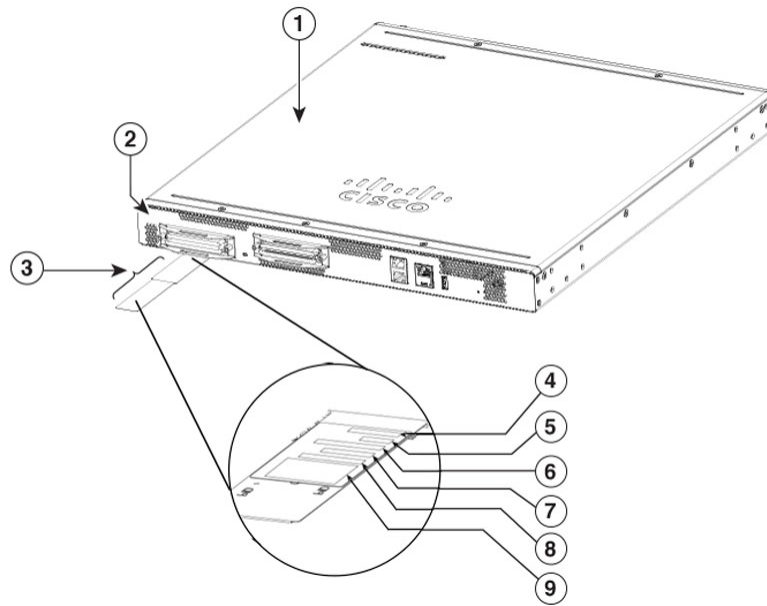
Use the Cisco Product Identification (CPI) tool to find labels on the platform. The tool provides detailed illustrations and descriptions of where labels are located on Cisco products. It includes the following features:

- A search option that allows browsing for models by using a tree-structured product hierarchy.
- A search field on the final results page that makes it easier to look up multiple products.
- End-of-sale products clearly identified in results lists.

The tool streamlines the process of locating the serial number labels and identifying products. Serial number information expedites the entitlement process and is required to access support services.

The following image shows the location of the labels on the Cisco VG410 Voice Gateway.

Figure 4: Cisco VG410 Voice Gateway Labels



1	Top Cover
2	PID
3	Label Tray
4	SN
5	CLEI
6	TAN
7	MAC
8	PIDVID
9	QR Code

The Serial number (SN), Common language equipment identifier (CLEI), Top Assembly Number (TAN), Product ID (PID), PID version ID (VID), and Quick response (QR) code are printed on a label at the bottom of the hardware or on a label tray located on the chassis.

LED Information

Table 3: LED Information for Cisco Voice Gateway 400 Series

LED	Colour	Description
PSU	Green/Off	<p>Power Supply Status</p> <p>Off: The system is powered off.</p> <p>Yellow: A power supply in the system is not functioning correctly.</p> <p>Green: The system is operating correctly.</p>
STAT (Status)	Green/Amber/Red	<p>System Status</p> <p>Yellow Blinking: BIOS/Rommon is booting</p> <p>Yellow: Rommon has completed booting and system is at Rommon prompt or booting platform software</p> <p>Green: System is working/operational</p>
USB CON/SERIAL CON	Green	<p>Green: Active console port is USB.</p> <p>Inactive: No Active console ports on both RJ45 and USB.</p> <p>Note When this LED is on, the SER CON LED will be off.</p>
RJ-45 CON	Green/Yellow	<p>Serial Console Active</p> <p>Green: Indicates that the RJ-45 is the active console port.</p> <p>No active console ports on both RJ45 and USB.</p> <p>When this LED is on, the SER CON LED will be off.</p>

LED	Colour	Description
TEMP	Green/Yellow/Red	<p>Off: Monitor is not active.</p> <p>Red: The system has detected a critical overcurrent event and may shut down.</p> <p>Yellow: One or more temperature sensors in the system are outside the acceptable range.</p> <p>Green: All the temperature sensors in the system are within acceptable range.</p>
FAN	Yellow/Green/Off	<p>Off: Fans are not being monitored.</p> <p>Yellow: One or more fans in the system are not functioning.</p> <p>Green: All the fans are operational.</p>
Ethernet SPD. (Speed of the ethernet port)	Green blinking/Off	<p>Green blinking: Blink frequency indicates port speed:</p> <ul style="list-style-type: none"> • 1 blink+ pause - FE or GE port operating at 10 Mb/s • 2 blinks + pause - FE or GE port operating at 100 Mb/s • 3 blinks + pause - GE port operating at 1000 Mb/s <p>Off: No link or a non-Ethernet 802.3af/t capable device is plugged in.</p>
Ethernet LNK (Link State of the ethernet port)	Green/Off	<p>Green: Ethernet cable is present, and link is established with other side</p> <p>Off: No link is found</p>
FXS/FXO (Voice Port Status)	Green/Off	<p>Green: There is at least one active call on the onboard analog FXS/FXO module.</p> <p>Off: There is no active call on the onboard analog FXS/FXO module.</p>

Technical Specifications

To access the Cisco VG410 Voice Gateway technical specifications, see the [Cisco VG410 Voice Gateway Analog Voice Gateway Datasheet](#).



CHAPTER 2

Planning the Installation

This chapter provides preinstallation information such as recommendations and requirements that must be met before you begin installing the voice gateway. Before you begin, inspect all the items for shipping damage. If anything appears to be damaged or if you encounter problems while installing or configuring your hardware, contact Cisco customer service.

- [Standard Warning Statements, on page 11](#)
- [General Safety Recommendations, on page 11](#)
- [Safety With Electricity, on page 12](#)
- [General Site Requirements, on page 13](#)
- [Site Environmental Requirements, on page 14](#)
- [Rack Requirements, on page 14](#)
- [Environmental Requirements, on page 15](#)
- [Power Guidelines and Requirements, on page 15](#)
- [Network Cabling and Interface Considerations, on page 16](#)
- [Tools and Equipment Required for Installation, on page 16](#)
- [Site Log, on page 17](#)

Standard Warning Statements

This section describes the warning definition and then lists the core safety warnings for the Cisco VG410 Voice Gateway.

General Safety Recommendations

Follow these guidelines to ensure general safety:

- Never attempt to lift an object that might be too heavy for you to lift by yourself.
- Keep the chassis area clear and dust-free during and after installation.
- If you remove the chassis cover, place it in a safe place.
- Keep tools and chassis components away from walk areas.
- Do not wear loose clothing that could get caught in the chassis. Fasten any tie or scarf and roll up sleeves.

- Wear safety glasses when working under conditions that might be hazardous to your eyes.
- Do not perform any action that may create a hazard to people, or which makes the equipment unsafe.

Safety With Electricity

Follow these guidelines when working on the equipment powered by electricity:

- Locate the emergency power-off switch in the room in which you are working. If an electrical accident occurs, you can quickly turn off the power.
- Disconnect all the power source before you install or remove a chassis and before you work near power supplies.
- Look carefully for possible hazards in your work area such as moist floors, ungrounded power extension cables, frayed power cords, and missing safety grounds.
- Do not work alone if hazardous conditions exist.
- Never assume that the power is disconnected from a circuit. Always check.
- Never open the enclosure of the internal power supply.
- If an electrical accident occurs to another person, proceed as follows:
 - Use caution; do not become a victim yourself.
 - Turn off the power supply to the device.
 - If possible, send another person to get medical aid. Otherwise, assess the condition of the victim and then call for help.
 - Determine if the person needs rescue breathing or external cardiac compressions; then take appropriate actions.

In addition, use the following guidelines when working with any equipment that is disconnected from a power source but has telephone wiring or other network cabling connections:

- Never install a telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for it.
- 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.
- Remove all the power cables from all the installed power supplies before opening the chassis.



Warning **Statement 1046**—Installing or Replacing the Unit

To reduce risk of electric shock, when installing or replacing the unit, the ground connection must always be made first and disconnected last.

If your unit has modules, secure them with the provided screws.

Prevent Electrostatic Discharge Damage

Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. It can occur if electronic printed circuit cards are improperly handled and can cause complete or intermittent failures. Always follow these ESD prevention procedures when removing and replacing modules:

- Ensure that the router chassis is electrically connected to the ground.
- Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. Connect the clip to an unpainted surface of the chassis frame to channel unwanted ESD voltages safely to the ground. To guard against ESD damage and shocks, the wrist strap and cord must operate effectively.
- If no wrist strap is available, ground yourself by touching a metal part of the chassis.

General Site Requirements

This section describes the requirements your site must meet for the safe installation and operation of your router. Ensure that the site is properly prepared before beginning installation. If you are experiencing shutdowns or unusually high errors with your existing equipment, the guidelines provided in this section can also help you isolate the cause of failures and prevent future problems.

General Precautions

Observe the following general precautions when using and working with your hardware:

- Keep your system components away from radiators and heat sources, and do not block cooling vents.
- Do not spill food or liquids on your system components, and never operate the product in a wet environment.
- Do not push any objects into the openings of your system components. Doing that can cause fire or electric shock by shorting out interior components.
- Position system cables and power supply cables carefully. Route system cables and the power supply cable and plug so that they cannot be stepped on or tripped over. Ensure that nothing else rests on your system component cables or power cable.
- Do not modify the power cables or plugs. Consult a licensed electrician or your power company for electrical modifications at your site. Always follow your local and national wiring rules.
- If you turn off your system, wait at least 30 seconds before turning it on again to avoid system component damage.

General Safety Warnings



Warning **Statement 9001**—Product Disposal

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



Warning Statement 1074—Comply with Local and National Electrical Codes

To reduce risk of electric shock or fire, installation of the equipment must comply with local and national electrical codes.

Site Selection Guidelines

The Cisco VG410 Voice Gateway requires specific environmental operating conditions. Temperature, humidity, altitude, and vibration can affect the performance and reliability of the router.

The installation location (room, closet, or cabinet) for the Cisco VG410 Voice Gateway should always be well ventilated and provide adequate air circulation to ensure proper cooling. The room temperature should be maintained between 32 to 104°F (0 to 40°C).

Site Environmental Requirements

Environmental monitoring in the router protects the system and components from damage caused by excessive voltage and temperature conditions. To ensure normal operation and avoid unnecessary maintenance, plan and prepare your site configuration before installation. After installation, ensure the site maintains the required environmental characteristics.

Environment	Specification
Steady state operating	32°F to 104°F (0°C to 40°C)
Storage	-40°F to 158°F (-40°C to 70°C)
Humidity operating (noncondensing)	5 to 85%
Humidity non-operating (noncondensing)	5 to 95%
Altitude operating over allowable temperature range	0 to 10,000 feet (0 to 3050 meters)
Altitude non-operating; over allowable temperature range	0 to 15,000 ft (0 to 4572 meters)
Thermal shock non-operating	30°C/ hr

Rack Requirements

The following information can help you plan your equipment rack configuration:

- Allow clearance around the rack for maintenance.
- Enclosed racks must have adequate ventilation. Ensure that the rack is not congested, because each device generates heat. An enclosed rack should have louvered sides and a fan to provide cooling air. Heat generated by equipment at the bottom of the rack can be drawn upward into the intake ports of the equipment above it.

- If you have installed the chassis using slide rails, check for blocked ventilation ports when it is in position in the rack or cabinet. Ensure that the ventilation ports of the Cisco VG410 Voice Gateway are not blocked.
- Baffles can help isolate exhaust air from intake air. Baffles also help draw cooling air through the cabinet. The best location for the baffles depends on the airflow patterns in the rack. You can test the airflow by experimenting with different equipment arrangements.



Warning Statement 1076— Clearance Around the Ventilation Openings

To prevent airflow restriction, allow clearance around the ventilation openings to be at least: 1 in (25.4mm).

Environmental Requirements

The location of your hardware and the layout of your equipment rack or wiring room are extremely important considerations for proper operation. Equipment placed too close together, inadequate ventilation, and inaccessible panels can cause malfunctions and shutdowns, and can make maintenance difficult. Plan for access to both front and rear panels of the hardware.

When planning your site layout and equipment locations, refer to the General Site Requirements section. If you are currently experiencing shutdowns or an unusually high number of errors with your existing equipment, these precautions and recommendations may help you to isolate the cause of failure and prevent future problems.

- Ensure that the room where your voice gateway operates has adequate air circulation. Electrical equipment generates heat. Without adequate air circulation, ambient air temperature may not cool equipment to acceptable operating temperatures.
- Always follow the ESD-prevention procedures to avoid damage to equipment. Damage from static discharge can cause immediate or intermittent equipment failure.
- Baffles can help isolate exhaust air from intake air. Baffles also help to draw cooling air through the chassis. The best placement of the baffles depends on the airflow patterns in the rack. Find the best placement by experimenting with different configurations.
- If an equipment installed in a rack (particularly in an enclosed rack) fails, try operating the equipment individually. Power off other equipment in the rack (and in the adjacent racks) to allow the hardware maximum cooling air and clean power.

Power Guidelines and Requirements

Check the power at your site to ensure that you are receiving clean power (free of spikes and noise). Install a power conditioner, if necessary.

To handle power failure conditions, an uninterruptible power supply (UPS) is needed. A separate UPS for Cisco VG410 Voice Gateway is a viable option when the ISR/UPS is not co-located with it.

The Cisco VG410 Voice Gateway supports both AC and DC power supply. For more information on power supply, see *Power Supplies* chapter in this guide.

For additional information on the power requirements, see the *Cisco VG410 Voice Gateway Datasheet*.



Warning Statement 1005— Circuit Breaker

This product relies on the building's installation for short-circuit (overcurrent) protection. To reduce risk of electric shock or fire, ensure that the protective device is rated not greater than 20A.

Network Cabling and Interface Considerations

Network Cabling Considerations

The following are the cable types that are used in the Cisco VG410 Voice Gateway:

- GE cables (RJ-45 to RJ-45 straight-through cables)
- Analog voice cables (RJ-21)

Interface Considerations

When you run cables for any significant distance in an electromagnetic field, interference can occur between the electromagnetic field and the signals on the cables. This has two implications for the installation of terminal plant cabling:

- Unshielded plant cabling can emit radio interference.
- Strong electromagnetic interference (EMI), especially as caused by lightning or radio transmitters, can destroy the EIA/TIA-232 drivers and receivers in the Cisco VG410 Voice Gateway.

If you use twisted-pair cables with a good distribution of grounding conductors in your plant cabling, emitted radio interference is unlikely.

If you have cables exceeding recommended distances, or if you have cables that pass between buildings, give special consideration to the effect of lightning strikes or ground loops. If your site has these characteristics, consult experts in lightning suppression and shielding. The electromagnetic pulse caused by lightning or other high-energy phenomena can easily couple enough energy into unshielded conductors to destroy electronic devices.

Most data centres cannot resolve such infrequent but potentially catastrophic problems without pulse meters and other special equipment. Take precautions to avoid these problems by providing a properly grounded and shielded environment and by installing electrical surge suppression.

For advice on the prevention of electromagnetic interference, consult experts in radio-frequency interference (RFI).

Tools and Equipment Required for Installation

You need the following tools and equipment to install and upgrade the voice gateway and its components:

- Standard flat-blade screwdriver as required for attaching the brackets for rack mounting.

- Phillips screwdriver for attaching the brackets to the voice gateway.
- Mounting brackets and screws for the 19 or the 23 inches rack, if required.
- Four telco machine screws, for installing the chassis in a rack (use the screw size required by the rack).
- An ESD-preventive wrist strap.
- A modem for remote configuration.

In addition, you might also need the following external equipment:

- A Console terminal or PC with terminal emulation software
- A PC running terminal emulation software for administrative access
- A modem for remote access
- Analog voice RJ-21 and RJ-11 cables
- An ethernet switch

Site Log

We recommend that you maintain a site log to record all actions relevant to the system. A site log typically includes:

- Installation - Print a copy of the installation checklist and insert it into the site log.
- Upgrades and maintenance - Use the site log to record ongoing maintenance and expansion history. Update the site log to reflect the following:
 - Configuration changes
 - Maintenance schedules, requirements, and procedures performed
 - Comments, notes, and problems
 - Changes and updates to Cisco IOS software



CHAPTER 3

Installing the Cisco VG410 Voice Gateway

This chapter provides the prerequisites and the procedure for installing the Cisco VG410 Voice Gateway in an equipment rack.

- [Prerequisites for the Installation, on page 19](#)
- [Unpack the Device, on page 20](#)
- [Mounting the Voice Gateway in Rack, on page 20](#)
- [Setting the Chassis on a Desktop, on page 23](#)
- [Chassis Grounding, on page 25](#)

Prerequisites for the Installation

Before installing the device, read the safety warnings and gather the required tools and equipment. For more information about the required tools and equipment, see the *Tools and Equipment* section in this hardware installation guide.

Safety Recommendations



Note Statement 407—Japanese Safety Instruction

You are strongly advised to read the safety instruction before using the product.

<https://www.cisco.com/web/JP/techdoc/pldoc/pldoc.html>

When installing the product, use the provided or designated connection cables/power cables/AC adapters.

〈製品仕様における安全上の注意〉
www.cisco.com/web/JP/techdoc/index.html

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**Warning Statement 1024**—Ground Conductor

This equipment must be grounded. To reduce the risk of electric shock, 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.

**Warning Statement 1046**—Installing or Replacing the Unit

To reduce risk of electric shock, when installing or replacing the unit, the ground connection must always be made first and disconnected last.

If your unit has modules, secure them with the provided screws.

**Warning Statement 338**—Prevent Accidental Discharge

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 cable during a lightning strike or power surge, the on-premise wiring can carry a dangerous discharge to the attached interface, equipment, or nearby personnel.

Unpack the Device

Do not unpack the device until you are ready to install it. If the final installation site will not be ready for some time, keep the chassis in its shipping container to prevent accidental damage. When you are ready to install the chassis, proceed with unpacking it.

The chassis, accessory kit, publications, and any optional equipment you ordered may be shipped in more than one container. When you unpack the containers, check the packing list to ensure that you received all of the items on the list.

If anything appears damaged, or if you encounter problems when installing or configuring your system, contact a customer service representative.

Mounting the Voice Gateway in Rack

You can install the Cisco VG410 Voice Gateway in 19-inch (48.26-cm) Electronic Industries Alliance (EIA) racks. You can also mount the voice gateway in a 600-mm ETSI rack. You can mount the voice gateway in the following ways:

- **Front mounting:** Brackets attached at the front of the chassis with the front panel facing forward. Brackets can be attached so that mounting surface can be co-planar with the front of the chassis or recessed 1.0".

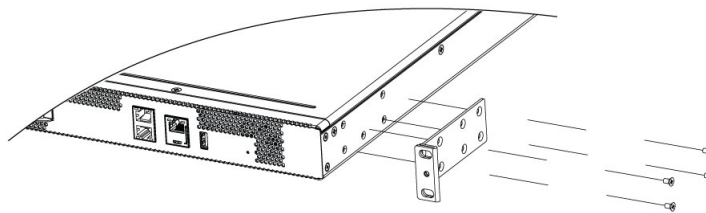
- **Back mounting:** Brackets attached at the back of the chassis (PSU and fanside) with the back panel facing forward.
- **Mid-mount:** By reversing the orientation of the brackets, mid-mounting of the chassis can be achieved with either orientation.

Perform the following steps to mount the device on the rack:

Step 1 Attach the mounting brackets to the chassis as shown in the following images, using the screws provided.

Caution Do not over-torque the screws. The recommended torque is 15 to 18 inch-lb (1.7 to 2.0 N-m)

Figure 5: Attach the Mounting Brackets



Step 2 Attach the second bracket to the opposite side of the chassis. Use a number-2 Phillips screwdriver to install the number-6 bracket screws.

Attention Your chassis installation must allow unrestricted airflow for chassis cooling.

Step 3 Use the screws provided with the rack to install the chassis in the rack. For the 19-inch EIA brackets, start the lower pair of screws first, and rest the brackets on the lower screws while you insert the upper pair of screws.

See the following images that show the mounting positions from the I/O side, mid mount, and from the power socket side, respectively.

Figure 6: I/O Side Mounting

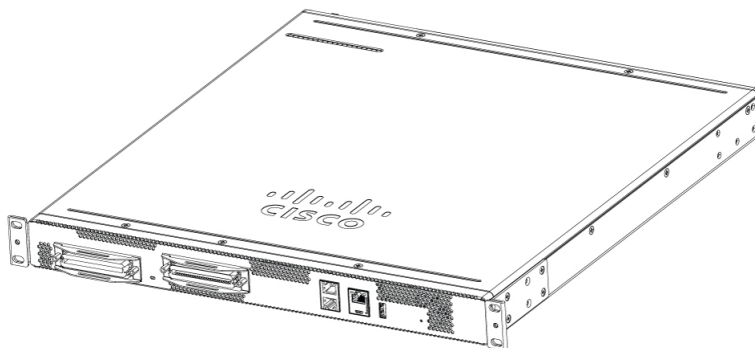
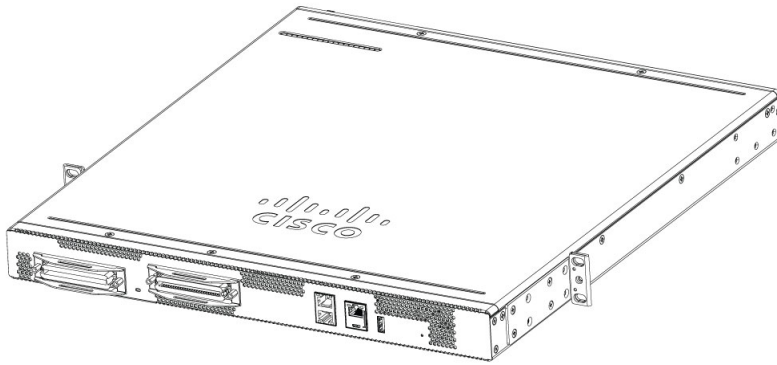
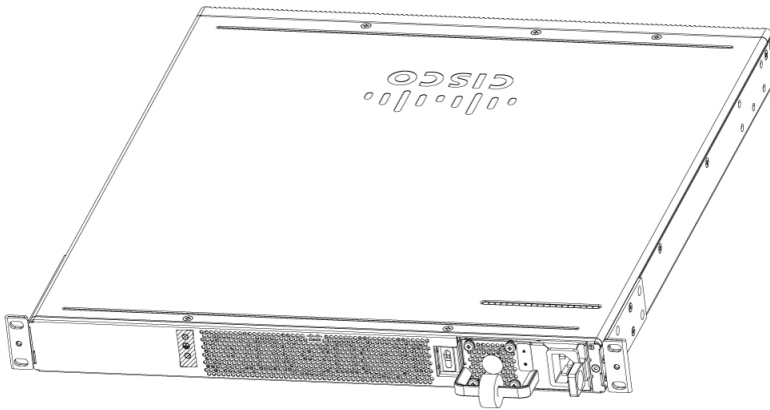
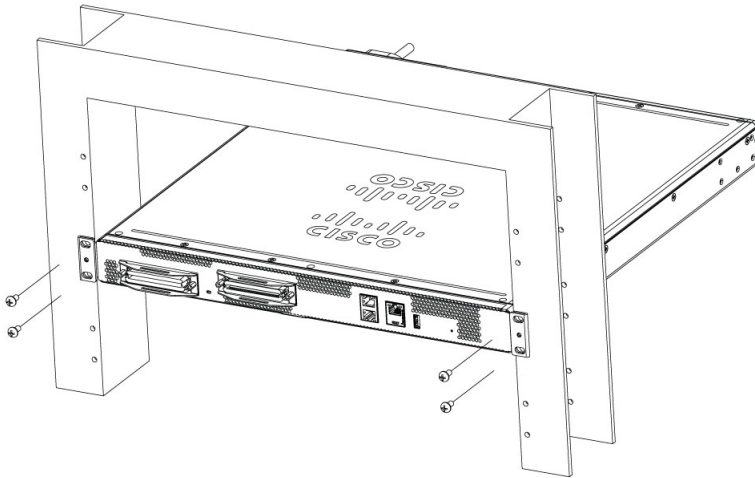


Figure 7: Mid mounting**Figure 8: Power Socket Side Mounting**

The screw slots in the brackets are spaced to line up with every second pair of screw holes in the rack. When the correct screw holes are used, the small threaded holes in the brackets line up with unused screw holes in the rack. If the small holes do not line up with the rack holes, you must raise or lower the brackets to the next rack hole. See the following image that shows a front mounted orientation in rack, for more clarity.

Figure 9: Front Mounted in Rack

**Warning Statement 1006**—Chassis Warning for Rack-Mounting and Servicing

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.

Warning Statement 1047—Overheating Prevention

To reduce the risk of fire or bodily injury, do not operate the unit in an area that exceeds the maximum recommended ambient temperature of: 40 degrees C.

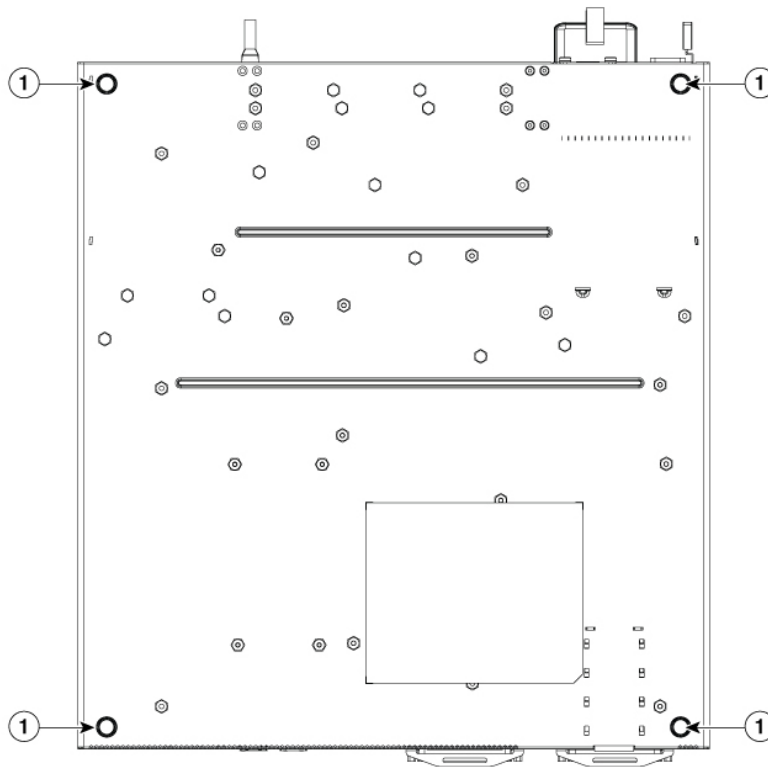
Setting the Chassis on a Desktop

After unpacking your device, you can place it on a desktop, bench top, or a shelf. However, be aware of the following before you set your chassis on a desktop:

- Do not place anything on top of the router that weighs more than 10 pounds (4.5 kg), and do not stack the gateway hardware on a desktop. Excessive distributed weight of more than 10 pounds, or pound point load of 10 pounds on top could damage the chassis.
- To prevent airflow restriction, allow clearance around the ventilation openings to be at least 1 inch (2.54cms). Statement 1076.
- After you install the voice gateway, you must connect the chassis to a reliable earth ground.

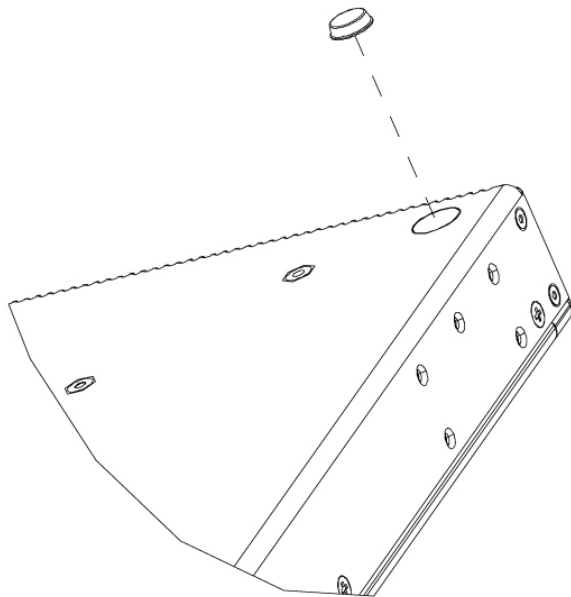
The following images indicate the location of the feet for the chassis and the application of the foot.

Figure 10: Location of the Feet



Here, 1 indicates the position of the feet.

Figure 11: Application of the Foot



Chassis Grounding

Before you connect the power or turn on the power to your chassis, you must provide an adequate chassis ground (earth) connection for the chassis. To install the ground connection for your router, perform the following steps:

Before you begin

After you install the voice gateway, you must connect the chassis to a reliable earth ground. You must install the ground wire in accordance with local electrical safety standards.

You will need the following tools and supplies to connect the system ground to the chassis:

- A size 10 AWG (4 mm²) or larger copper wire
- An appropriate user-supplied ring terminal with an inner diameter of 1/4 in. (5–7 mm).
- A Philips screwdriver

Step 1 Use the wire stripper to strip one end of the ground wire to the required length for the ground lug or terminal.

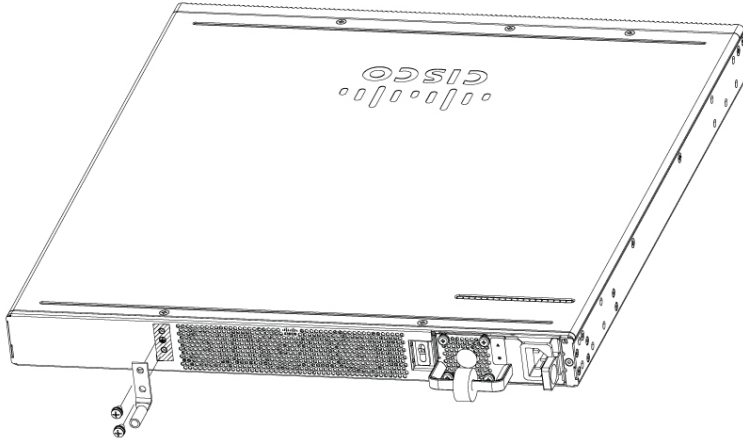
- For the ground lug, you'd require approximately 0.75 inch (20 mm)
- For user-provided ring terminal, use length as required

Step 2 Insert the wire into the open end of the grounding lug.

Step 3 Use the crimping tool to carefully crimp the wire receptacle around the wire. This step is required to ensure a proper mechanical connection.

- Step 4** Locate the chassis ground connector on the side of your chassis.
- Step 5** Insert the two screws through the holes in the grounding lug. Use the two screws with captive locking washers provided.
- Step 6** Use the Number 2 Phillips screwdriver to carefully tighten the screws until the grounding lug is held firmly to the chassis. Do not over tighten the screws.
- Step 7** Connect the opposite end of the grounding wire to the appropriate grounding point at your site to ensure an adequate chassis ground.

Figure 12: Chassis Grounding





CHAPTER 4

Setting up the Power Supplies

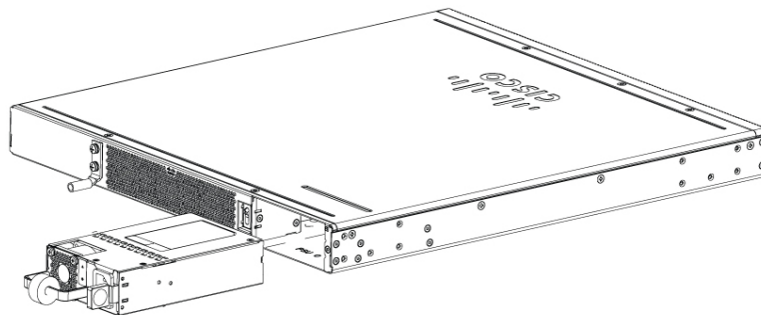
The following chapter describes the AC power supply for Cisco VG410 Voice Gateway, and how to set up the power supply for your voice gateway.

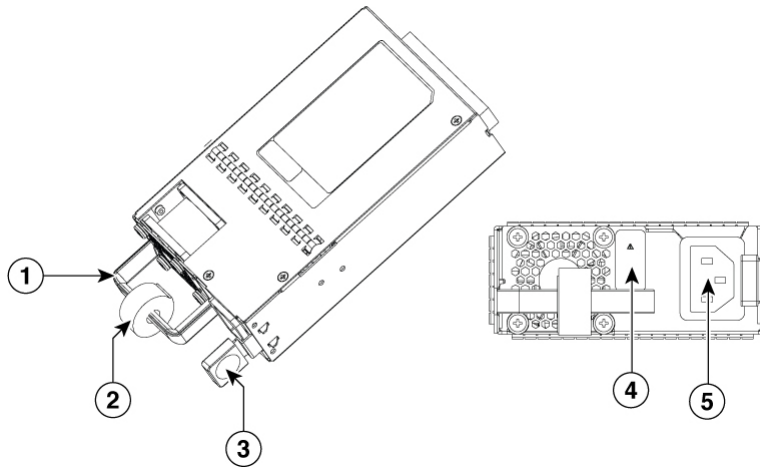
- [AC Power Supply, on page 27](#)

AC Power Supply

The Cisco VG410 Voice Gateway supports a PWR-VG410-250WAC AC power supply. The following images display the AC power supply.

Figure 13: Cisco VG410 Voice Gateway AC Power Supply



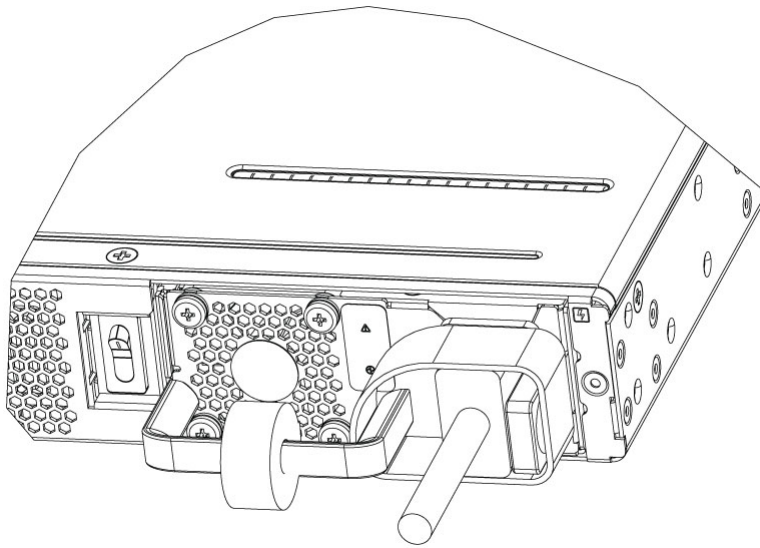


1	Handle
2	Velcro strap
3	Latch tab
4	Status LED
5	Power socket

Removing the AC Power Supply

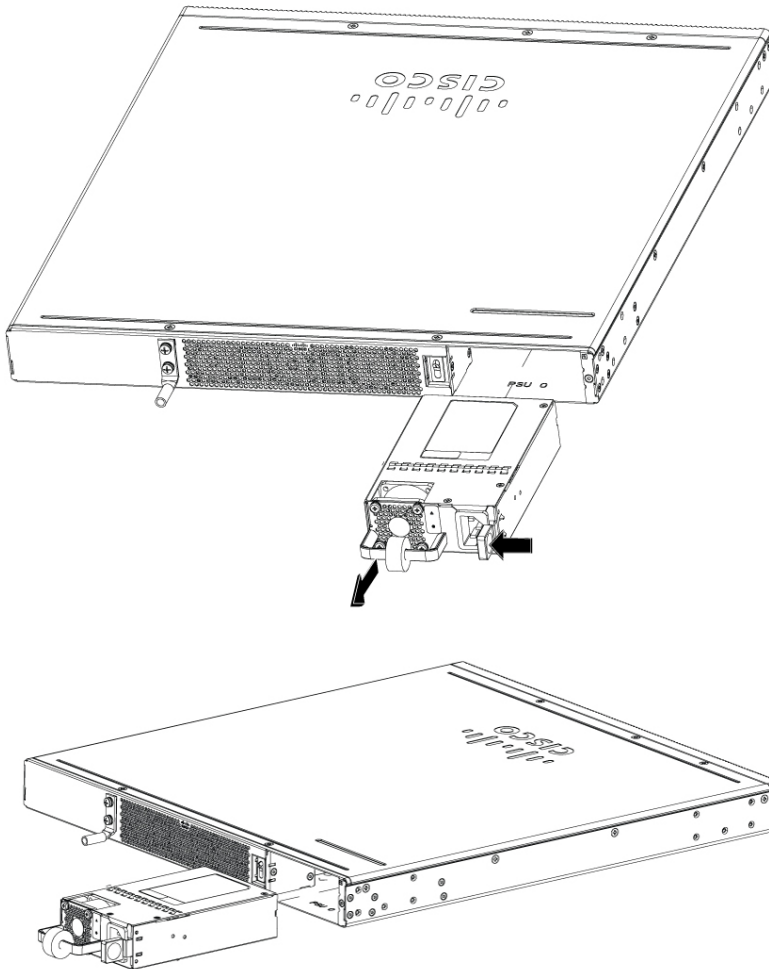
To remove an AC power supply from the voice gateway, perform these steps:

-
- Step 1** Read the safety warnings section of this document.
- Step 2** Shut down the device before removing the power supply.
- Step 3** If in use, remove the Velcro strap securing the power supply cable to the power supply latch.



Step 4 Remove the AC power cord from the power socket.

Step 5 Depress the power supply latch and use the handle to pull the supply out of the device.



Replacing the AC Power Supply

To replace or install an AC power supply into the device, perform these steps:

- Step 1** Use the handle to push the power supply into the router. The power supply latch should provide an audible click when the supply is fully seated.
- Step 2** Install the AC power cord into the power socket on the power supply.
- Step 3** If used, reapply the Velcro strap around the power cord and the power supply latch.
- Step 4** If the device was turned off, turn the power back on to the device.



CHAPTER 5

Configuring the Cisco VG410 Voice Gateway

After the device is operational, see the *Cisco VG410 Voice Gateway Software Configuration Guide* to configure the voice gateway. This guide also specifies the configuration information for specific services and functions, and provides the information to make changes to an existing configuration.

