Planning Your Installation

This chapter provides preinstallation information, such as recommendations and requirements that must be met before installing Cisco VG400 Voice Gateway. Before you begin, inspect all items for shipping damage. If anything appears to be damaged or if you encounter problems installing or configuring the Voice Gateway, contact the customer service. Warranty, service, and support information is included in the Hardware Quick Start guide that is shipped with your product. See the following sections to prepare for installation:

Location and Mounting Requirements

The three mounting possibilities for your Cisco VG400 Voice Gateway are as follows:

- Rack-mount
- Wall-mount
- Bench-mount

The mounting location must provide the following:

- Access to the chassis.
- Access to a suitable power source.
- Access to an appropriate earth ground.
- Allowance for adequate heat dissipation and airflow around the chassis.

Temperature Control and Ventilation

The installation location (room, closet, or cabinet) for the Cisco VG400 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).

Note The Cisco VG400 Voice Gateway chassis is designed for back and sides-to-front airflow.

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 the hardware 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.

- When mounting a chassis in an open rack, ensure that the rack frame does not block the intake or exhaust ports. If the chassis is installed on slides, check the position of the chassis when it is seated in the rack.

If the Cisco VG400 Voice Gateway is installed in an enclosed rack with a ventilation fan at the top, make sure that heated air drawn upward from other equipment does not prevent adequate cooling.

If the chassis is installed using slide rails, check for blocked ventilation ports when it is in position in the rack or cabinet. Make sure that the ventilation ports of the Cisco VG400 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.

Access to Chassis

Allow space at the rear of the chassis for cable connections. Also consider the need to access the chassis for future upgrades, maintenance, and troubleshooting.

Chassis grounding is provided through the power cable, which uses a standard grounding plug. However, the chassis also requires a reliable earth ground using the earth ground lug and hardware provided. For more information, see the Chassis Grounding section.

Power Source and Supply

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.

A Cisco VG400 Voice Gateway with AC power supply auto selects power ranging from 100-240V. AC versions include a 6-foot (1.8-meter) electrical power cord.

To handle power failure conditions, an uninterrupted power supply (UPS) is needed. UPS is widely available in all markets, including emerging markets (due to prevalence of UPS for personal computers).

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

SAVE THESE INSTRUCTIONS

Warning   This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than 20A Statement 1005

Network Cabling Considerations

The cable types that are used are dependent on the Cisco VG400 Voice Gateway that you are using. For more information, see the *Cable Specifications and Information* in this guide..

The following are the cable types that are used in Cisco VG400 Voice Gateway:

- GE cables

- Analog voice cables (RJ-11)

Distance Limitations for Interface Cables

When planning your installation, consider distance limitations and potential electromagnetic interference (EMI) as defined by the Electronic Industries Association (EIA). Distance limitation information is included for the following VG ports:

- Gigabit Ethernet Maximum Distance: The maximum segment distance for Gigabit Ethernet is 330 feet (100 meters) (specified in IEEE 802.3).

- FXS Analog Voice Port Maximum Distance: The maximum distance is established by a total allowable loop resistance, including the phone or terminal equipment, of 600 ohms.

- FXS-E (Extended loop) Analog Voice Port Maximum Distance: The maximum distance is established by a total allowable loop resistance, including the phone or terminal equipment, of 1400 ohms.

Note   Typically, a 26 AWG wire is equal to 81.6 ohm/Kft and 24 AWG wire is equal to 51.3 ohm/Kft.

Interference 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 vg400 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 just described 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.

If you remove any module, you must either install a module in its place or install a cover plate over the opening. All module openings must be either occupied or covered to prevent electromagnetic interference.

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

Required tools and equipment for installation

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

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, as per your mounting.

- Phillips screwdriver for attaching the brackets to the Voice Gateway.

- Mounting brackets and screws for the 24-inch rack, if required.

- Four telco machine screws, for installing the chassis in a rack (use the screw size required by the rack).

- Screws and anchors for wall-mounting (if applicable):

    - Eight wood screws or other fasteners, for installing the chassis on a wall.

    - An additional starter screw can be used to facilitate wall-mounting.

- An ESD-preventive wrist strap

• 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

> • Modem for remote access.

> • Analog voice RJ-11 cables

> • Ethernet switch

• A modem for remote configuration.

Site Log

We recommend that you maintain a Site Log to record all actions relevant to the system. Site Log entries might include the following:

• 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

Installation Checklist

The Installation Checklist lists the tasks for installing a Cisco VG400 Voice Gateway. Print a copy of this checklist and mark the entries as you complete each task. For each Cisco VG400 Voice Gateway, include a copy of the checklist in your Site Log.

Installation Checklist for site _____

Cisco VG name/serial number _____

Task	Verified by	Date
Background information placed in Site Log		
Environmental specifications verified		
Site power voltages verified		
Installation site prepower check completed		
Required tools available		

Task	Verified by	Date
Additional equipment available		
Cisco VG received		
Quick start guide received		
Regulatory compliance and safety information received		
Information packet, warranty card, and Cisco.com card received		
Software version verified		
Rack, desktop, or wall-mounting of chassis completed		
Initial electrical connections established		
ASCII terminal attached to console port		
Modem attached to console port (for remote configuration)		
Signal distance limits verified		
Startup sequence steps completed		
Initial operation verified		