



CHAPTER 3

Planning Your Installation

Before you install your Cisco VG350 Voice Gateway, consider the information in this chapter:

- [Location and Mounting Requirements, page 3-1](#)
- [Distance Limitations for Interface Cables, page 3-4](#)
- [Interference Considerations, page 3-5](#)

Location and Mounting Requirements

The three mounting possibilities for your Cisco VG350 Voice Gateway are as follows:

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

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 VG350 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 122°F (0 to 50°C).



Note

The Cisco VG350 Voice Gateway chassis is designed for back and sides-to-front airflow.

Enclosed Racks

**Caution**

Enclosed racks must have adequate ventilation. An enclosed rack should never be overcrowded and should have louvers and a fan.

If the Cisco VG350 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 VG350 Voice Gateway are not blocked.

**Tip**

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.

Bench-Mounted

If the unit is placed on a bench-top, do not stack other equipment or paper on the chassis. Provide plenty of space for air circulation (front to back). Inadequate ventilation can result in overheating and damage.

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

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.

Power Source

A Cisco VG350 Voice Gateway with AC power supply autoselects either 100–127 volt or 200–240 volt operation. AC versions include a 6-foot (1.8-meter) electrical power cord. (A label near the power cord indicates the correct voltage, frequency, current draw, and power dissipation.)

Power Supply Considerations

Cisco VG350 Voice Gateway requires significantly more power because of its high-density ports and OPX 'Lite' requirements.

This requires a larger 48V battery backup that may need to be custom built.

To handle power failure conditions, an uninterruptible power supply (UPS) is needed. UPS is widely available in all markets, including emerging markets (due to prevalence of UPS for personal computers). Thus, a separate UPS for Cisco VG350 Voice Gateway is a viable option when the ISR/UPS is not co-located with it.

If you suspect that your AC power is not clean—if lights flicker often or there is machinery with large motors nearby—have a qualified person test the power. Install a power conditioner if necessary.



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

Statement 1001



Read the installation instructions before you connect the system to its 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 U.S. (240 VAC, 10A international) Statement 1005



The device is designed for connection to TN and IT power systems. Statement 1007



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 by security. Statement 1017

Cable Types

The cable types that are used are dependent on the Cisco VG350 Voice Gateway that you are using. For more information, see the [“Interfaces and Service Capabilities”](#) section on page 1-3 and [“Cable Specifications and Information”](#) section on page A-1.

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

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](#), page 3-4
- [FXS Analog Voice Port Maximum Distance](#), page 3-4
- [FXS-E \(Extended loop\) Analog Voice Port Maximum Distance](#), page 3-4

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 VG350 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 centers cannot resolve the 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).

