



Cisco VG224 Voice Gateway Hardware Installation Guide

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Preface

This preface discusses the audience, organization, and conventions of this publication, and describes how to obtain additional documentation.

Audience

This publication is designed for people who have some experience installing networking equipment such as routers, servers, and switches. The person installing Cisco VG224 voice gateway (VG) should be familiar with networks and telephony equipment as well as with electronic circuitry and wiring practices and have experience as an electronic or electromechanical technician.



Warning

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

Organization

Table 1 Major Sections of This Guide

Chapter	Title	Description
Chapter 1	Overview of the Cisco VG224 Voice Gateway	Features and specifications of the Cisco VG224 voice gateway.
Chapter 2	Planning Your Installation	Environmental requirements and cable routing considerations.
Chapter 3	Installing the Cisco VG224 Voice Gateway	Instructions for installing the Cisco VG224 voice gateway and connecting the cables.
Chapter 4	Powering On the Cisco VG224 Voice Gateway	Powering up the Cisco VG224 voice gateway and preparing for configuration.
Appendix A	Cable Specifications and Information	Pinouts for the Cisco VG224 voice gateway ports and cables.

Conventions

Table 2 *Installation Guide Conventions*

Convention	Description
boldface font	Commands and keywords.
<i>italic font</i>	Variables for which you supply values.
[]	Keywords or arguments that appear within square brackets are optional.
{x y z}	A choice of required keywords appears in braces separated by vertical bars. You must select one.
screen font	Examples of information displayed on the screen.
boldface screen font	Examples of information you must enter.
< >	Nonprinting characters, for example passwords, appear in angle brackets in contexts where italic font is not available.
[]	Default responses to system prompts appear in square brackets.



Note

Means *reader take note*. Notes contain helpful suggestions or references to materials not contained in this publication.



Timesaver

Means *the described action saves time*. You can save time by performing the action described in the paragraph.



Caution

Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.



Tip

Means *the following information will help you solve a problem*. The tips information might not be troubleshooting or even an action, but could be useful information, similar to a Timesaver.

Safety Warnings

Safety warnings appear throughout this publication in procedures that, if performed incorrectly, may harm you. A warning symbol precedes each warning statement. To see translations of the warnings that appear in this publication, refer to the *Cisco VG224 Voice Gateway Regulatory Compliance and Safety Information* document that accompanied your router or go to the following URL:

http://www.cisco.com/en/US/products/hw/gatecont/ps2250/products_regulatory_approvals_and_compliance_list.html

Warning Definition



Warning

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. To see translations of the warnings that appear in this publication, refer to the translated safety warnings that accompanied this device. Statement 1071

SAVE THESE INSTRUCTIONS

Waarschuwing

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van de standaard praktijken om ongelukken te voorkomen. Voor een vertaling van de waarschuwingen die in deze publicatie verschijnen, dient u de vertaalde veiligheidswaarschuwingen te raadplegen die bij dit apparaat worden geleverd.

Opmerking **BEWAAR DEZE INSTRUCTIES.**

Varoitus

TÄRKEITÄ TURVALLISUUTEEN LIITTYVIÄ OHJEITA

Tämä varoitusmerkki merkitsee vaaraa. Olet tilanteessa, joka voi johtaa ruumiinvammaan. Ennen kuin työskentelet minkään laitteiston parissa, ota selvää sähkökytkentöihin liittyvistä vaaroista ja tavanomaisista onnettomuuksien ehkäisykeinoista. Tässä asiakirjassa esitettyjen varoitusten käännökset löydät laitteen mukana toimitetuista ohjeista.

Huomautus **SÄILYTÄ NÄMÄ OHJEET**

Attention

IMPORTANTES INFORMATIONS DE SÉCURITÉ

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant causer des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers posés par les circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions d'avertissements figurant dans cette publication, consultez les consignes de sécurité traduites qui accompagnent cet appareil.

Remarque **CONSERVEZ CES INFORMATIONS**

Warnung WICHTIGE SICHERHEITSANWEISUNGEN

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu einer Körperverletzung führen könnte. Bevor Sie mit der Arbeit an irgendeinem Gerät beginnen, seien Sie sich der mit elektrischen Stromkreisen verbundenen Gefahren und der Standardpraktiken zur Vermeidung von Unfällen bewusst. Übersetzungen der in dieser Veröffentlichung enthaltenen Warnhinweise sind im Lieferumfang des Geräts enthalten.

Hinweis BEWAHREN SIE DIESE SICHERHEITSANWEISUNGEN AUF

Avvertenza IMPORTANTI ISTRUZIONI SULLA SICUREZZA

Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di intervenire su qualsiasi apparecchiatura, occorre essere al corrente dei pericoli relativi ai circuiti elettrici e conoscere le procedure standard per la prevenzione di incidenti. Per le traduzioni delle avvertenze riportate in questo documento, vedere le avvertenze di sicurezza che accompagnano questo dispositivo.

Nota CONSERVARE QUESTE ISTRUZIONI

Advarsel VIKTIGE SIKKERHETSINSTRUKSJONER

Dette varselssymbolet betyr fare. Du befinner deg i en situasjon som kan forårsake personskade. Før du utfører arbeid med utstyret, bør du være oppmerksom på farene som er forbundet med elektriske kretssystemer, og du bør være kjent med vanlig praksis for å unngå ulykker. For å se oversettelser av advarslene i denne publikasjonen, se de oversatte sikkerhetsvarslene som følger med denne enheten.

Merk TA VARE PÅ DISSE INSTRUKSJONENE

Aviso INSTRUÇÕES IMPORTANTES DE SEGURANÇA

Este símbolo de aviso significa perigo. O utilizador encontra-se numa situação que poderá ser causadora de lesões corporais. Antes de iniciar a utilização de qualquer equipamento, tenha em atenção os perigos envolvidos no manuseamento de circuitos eléctricos e familiarize-se com as práticas habituais de prevenção de acidentes. Para ver traduções dos avisos incluídos nesta publicação, consulte os avisos de segurança traduzidos que acompanham este dispositivo.

Nota GUARDE ESTAS INSTRUÇÕES

¡Advertencia! INSTRUCCIONES IMPORTANTES DE SEGURIDAD

Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Vea las traducciones de las advertencias que acompañan a este dispositivo.

Nota GUARDE ESTAS INSTRUCCIONES

Varning! VIKTIGA SÄKERHETSANVISNINGAR

Denna varningssignal signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanliga förfaranden för att förebygga olyckor. Se översättningarna av de varningsmeddelanden som finns i denna publikation, och se de översatta säkerhetsvarningarna som medföljer denna anordning.

OBS! SPARA DESSA ANVISNINGAR**FONTOS BIZTONSÁGI ELOÍRÁSOK**

Ez a figyelmeztető jel veszélyre utal. Sérülésveszélyt rejtő helyzetben van. Mielőtt bármely berendezésen munkát végezte, legyen figyelemmel az elektromos áramkörök okozta kockázatokra, és ismerkedjen meg a szokásos balesetvédelmi eljárásokkal. A kiadványban szereplő figyelmeztetések fordítása a készülékhez mellékelt biztonsági figyelmeztetések között található; a fordítás az egyes figyelmeztetések végén látható szám alapján kereshető meg.

ORIZZE MEG EZEKET AZ UTASÍTÁSOKAT!**Предупреждение****ВАЖНЫЕ ИНСТРУКЦИИ ПО СОБЛЮДЕНИЮ ТЕХНИКИ БЕЗОПАСНОСТИ**

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СОХРАНИТЕ ЭТИ ИНСТРУКЦИИ**警告 重要的安全性说明**

此警告符号代表危险。您正处于可能受到严重伤害的工作环境中。在您使用设备开始工作之前，必须充分意识到触电的危险，并熟练掌握防止事故发生的标准工作程序。请根据每项警告结尾提供的声明号码来找到此设备的安全性警告说明的翻译文本。

请保存这些安全性说明

警告 安全上の重要な注意事項

「危険」の意味です。人身事故を予防するための注意事項が記述されています。装置の取り扱い作業を行うときは、電気回路の危険性に注意し、一般的な事故防止策に留意してください。警告の各国語版は、各注意事項の番号を基に、装置に付属の「Translated Safety Warnings」を参照してください。

これらの注意事項を保管しておいてください。

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이 지시 사항을 보관하십시오.

Aviso **INSTRUÇÕES IMPORTANTES DE SEGURANÇA**

Este símbolo de aviso significa perigo. Você se encontra em uma situação em que há risco de lesões corporais. Antes de trabalhar com qualquer equipamento, esteja ciente dos riscos que envolvem os circuitos elétricos e familiarize-se com as práticas padrão de prevenção de acidentes. Use o número da declaração fornecido ao final de cada aviso para localizar sua tradução nos avisos de segurança traduzidos que acompanham o dispositivo.

GUARDE ESTAS INSTRUÇÕES**Advarsel** **VIGTIGE SIKKERHEDSANVISNINGER**

Dette advarselssymbol betyder fare. Du befinder dig i en situation med risiko for legemeskadedigelse. Før du begynder arbejde på udstyr, skal du være opmærksom på de involverede risici, der er ved elektriske kredsløb, og du skal sætte dig ind i standardprocedurer til undgåelse af ulykker. Brug erklæringsnummeret efter hver advarsel for at finde oversættelsen i de oversatte advarsler, der fulgte med denne enhed.

GEM DISSE ANVISNINGER**تحذير****إرشادات الأمان الهامة**

يوضح رمز التحذير هذا وجود خطر. وهذا يعني أنك متواجد في مكان قد ينتج عنه التعرض لإصابات. قبل بدء العمل، احذر مخاطر التعرض للصدمة الكهربائية وكن على علم بالإجراءات القياسية للحيلولة دون وقوع أي حوادث. استخدم رقم البيان الموجود في آخر كل تحذير لتحديد مكان ترجمته داخل تحذيرات الأمان المترجمة التي تأتي مع الجهاز. قم بحفظ هذه الإرشادات

Upozorenje **VAŽNE SIGURNOSNE NAPOMENE**

Ovaj simbol upozorenja predstavlja opasnost. Nalazite se u situaciji koja može prouzročiti tjelesne ozljede. Prije rada s bilo kojim uređajem, morate razumjeti opasnosti vezane uz električne sklopove, te biti upoznati sa standardnim načinima izbjegavanja nesreća. U prevedenim sigurnosnim upozorenjima, priloženima uz uređaj, možete prema broju koji se nalazi uz pojedino upozorenje pronaći i njegov prijevod.

SAČUVAJTE OVE UPUTE

Upozornění DŮLEŽITÉ BEZPEČNOSTNÍ POKYNY

Tento upozorňující symbol označuje nebezpečí. Jste v situaci, která by mohla způsobit nebezpečí úrazu. Před prací na jakémkoliv vybavení si uvědomte nebezpečí související s elektrickými obvody a seznamte se se standardními opatřeními pro předcházení úrazům. Podle čísla na konci každého upozornění vyhledejte jeho překlad v přeložených bezpečnostních upozorněních, která jsou přiložena k zařízení.

USCHOVEJTE TYTO POKYNY**Προειδοποίηση ΣΗΜΑΝΤΙΚΕΣ ΟΔΗΓΙΕΣ ΑΣΦΑΛΕΙΑΣ**

Αυτό το προειδοποιητικό σύμβολο σημαίνει κίνδυνο. Βρίσκεστε σε κατάσταση που μπορεί να προκαλέσει τραυματισμό. Πριν εργαστείτε σε οποιοδήποτε εξοπλισμό, να έχετε υπόψη σας τους κινδύνους που σχετίζονται με τα ηλεκτρικά κυκλώματα και να έχετε εξοικειωθεί με τις συνήθεις πρακτικές για την αποφυγή ατυχημάτων. Χρησιμοποιήστε τον αριθμό δήλωσης που παρέχεται στο τέλος κάθε προειδοποίησης, για να εντοπίσετε τη μετάφρασή της στις μεταφρασμένες προειδοποιήσεις ασφαλείας που συνοδεύουν τη συσκευή.

ΦΥΛΑΞΤΕ ΑΥΤΕΣ ΤΙΣ ΟΔΗΓΙΕΣ**אזהרה****הוראות בטיחות חשובות**

סימן אזהרה זה מסמל סכנה. אתה נמצא במצב העלול לגרום לפציעה. לפני שתעבוד עם ציוד כלשהו, עליך להיות מודע לסכנות הכרוכות במגלים חשמליים ולהכיר את הנהלים המקובלים למניעת תאונות. השתמש במספר ההוראה המסופק בסופה של כל אזהרה כדי לאתר את התרגום באזהרות הבטיחות המתורגמות שמצורפות להתקן.

שמור הוראות אלה**Opomena ВАЖНИ БЕЗБЕДНОСНИ НАПАТСТВИЈА**

Симболот за предупредување значи опасност. Се наоѓате во ситуација што може да предизвика телесни повреди. Пред да работите со опремата, бидете свесни за ризикот што постои кај електричните кола и треба да ги познавате стандардните постапки за спречување на несреќни случаи. Искористете го бројот на изјавата што се наоѓа на крајот на секое предупредување за да го најдете неговиот период во преведените безбедносни предупредувања што се испорачани со уредот.

ЧУВАЈТЕ ГИ ОБИЕ НАПАТСТВИЈА

Ostrzeżenie WAŻNE INSTRUKCJE DOTYCZĄCE BEZPIECZEŃSTWA

Ten symbol ostrzeżenia oznacza niebezpieczeństwo. Zachodzi sytuacja, która może powodować obrażenia ciała. Przed przystąpieniem do prac przy urządzeniach należy zapoznać się z zagrożeniami związanymi z układami elektrycznymi oraz ze standardowymi środkami zapobiegania wypadkom. Na końcu każdego ostrzeżenia podano numer, na podstawie którego można odszukać tłumaczenie tego ostrzeżenia w dołączonym do urządzenia dokumencie z tłumaczeniami ostrzeżeń.

NINIEJSZE INSTRUKCJE NALEŻY ZACHOWAĆ**Upozornenie DŮLEŽITÉ BEZPEČNOSTNÉ POKYNY**

Tento varovný symbol označuje nebezpečenstvo. Nachádzate sa v situácii s nebezpečenstvom úrazu. Pred prácou na akomkoľvek vybavení si uvedomte nebezpečenstvo súvisiace s elektrickými obvodmi a oboznámte sa so štandardnými opatreniami na predchádzanie úrazom. Podľa čísla na konci každého upozornenia vyhľadajte jeho preklad v preložených bezpečnostných upozorneniach, ktoré sú priložené k zariadeniu.

USCHOVAJTE SI TENTO NÁVOD

Related Documentation

The Cisco IOS software running your Cisco voice gateway includes extensive features and functionality. For information that is beyond the scope of this document, or for additional information, use the resources listed in [Table 3 on page 14](#).

**Timesaver**

Make sure that you have access to the documents listed in [Table 3](#). See the “[Obtaining Documentation](#)” section on [page 15](#) for information about obtaining these documents.

Table 3 *Related and Referenced Documents*

Cisco Product	Document Title
Cisco VG224 voice gateway	<ul style="list-style-type: none"> • <i>Cisco VG224 Voice Gateway Hardware Installation Guide</i> (this book) • <i>Cisco VG224 Voice Gateway Quick Start Guide</i> • <i>Cisco VG224 Voice Gateway Software Configuration Guide</i> • <i>Cisco VG224 Voice Gateway Regulatory Compliance and Safety Information</i>
Cisco IOS software ¹	<ul style="list-style-type: none"> • <i>Release Notes for Cisco VG224 Voice Gateway for Cisco IOS Release 12.3(4)</i>

1. Refer to the modular reference publications that correspond to the Cisco IOS software release installed on your Cisco VG224 voice gateway.

Obtaining Documentation

Cisco documentation and additional literature are available on Cisco.com. Cisco also provides several ways to obtain technical assistance and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

Cisco.com

You can access the most current Cisco documentation at this URL:

<http://www.cisco.com/univercd/home/home.htm>

You can access the Cisco website at this URL:

<http://www.cisco.com>

You can access international Cisco websites at this URL:

http://www.cisco.com/public/countries_languages.shtml

Ordering Documentation

You can find instructions for ordering documentation at this URL:

http://www.cisco.com/univercd/cc/td/doc/es_inpk/pdi.htm

You can order Cisco documentation in these ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Ordering tool:
<http://www.cisco.com/en/US/partner/ordering/index.shtml>
- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, USA) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

Documentation Feedback

You can send comments about technical documentation to bug-doc@cisco.com.

You can submit comments by using the response card (if present) behind the front cover of your document or by writing to the following address:

Cisco Systems
Attn: Customer Document Ordering
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Obtaining Technical Assistance

For all customers, partners, resellers, and distributors who hold valid Cisco service contracts, Cisco Technical Support provides 24-hour-a-day, award-winning technical assistance. The Cisco Technical Support Website on Cisco.com features extensive online support resources. In addition, Cisco Technical Assistance Center (TAC) engineers provide telephone support. If you do not hold a valid Cisco service contract, contact your reseller.

Cisco Technical Support Website

The Cisco Technical Support Website provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The website is available 24 hours a day, 365 days a year at this URL:

<http://www.cisco.com/techsupport>

Access to all tools on the Cisco Technical Support Website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a user ID or password, you can register at this URL:

<http://tools.cisco.com/RPF/register/register.do>

Submitting a Service Request

Using the online TAC Service Request Tool is the fastest way to open S3 and S4 service requests. (S3 and S4 service requests are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Service Request Tool automatically provides recommended solutions. If your issue is not resolved using the recommended resources, your service request will be assigned to a Cisco TAC engineer. The TAC Service Request Tool is located at this URL:

<http://www.cisco.com/techsupport/servicerequest>

For S1 or S2 service requests or if you do not have Internet access, contact the Cisco TAC by telephone. (S1 or S2 service requests are those in which your production network is down or severely degraded.) Cisco TAC engineers are assigned immediately to S1 and S2 service requests to help keep your business operations running smoothly.

To open a service request by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)

EMEA: +32 2 704 55 55

USA: 1 800 553 2447

For a complete list of Cisco TAC contacts, go to this URL:

<http://www.cisco.com/techsupport/contacts>

Definitions of Service Request Severity

To ensure that all service requests are reported in a standard format, Cisco has established severity definitions.

Severity 1 (S1)—Your network is “down,” or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Severity 2 (S2)—Operation of an existing network is severely degraded, or significant aspects of your business operation are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Severity 3 (S3)—Operational performance of your network is impaired, but most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Severity 4 (S4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- Cisco Marketplace provides a variety of Cisco books, reference guides, and logo merchandise. Visit Cisco Marketplace, the company store, at this URL:
<http://www.cisco.com/go/marketplace/>
- The Cisco *Product Catalog* describes the networking products offered by Cisco Systems, as well as ordering and customer support services. Access the Cisco Product Catalog at this URL:
<http://cisco.com/univercd/cc/td/doc/pcat/>
- *Cisco Press* publishes a wide range of general networking, training and certification titles. Both new and experienced users will benefit from these publications. For current Cisco Press titles and other information, go to Cisco Press at this URL:
<http://www.ciscopress.com>
- *Packet* magazine is the Cisco Systems technical user magazine for maximizing Internet and networking investments. Each quarter, Packet delivers coverage of the latest industry trends, technology breakthroughs, and Cisco products and solutions, as well as network deployment and troubleshooting tips, configuration examples, customer case studies, certification and training information, and links to scores of in-depth online resources. You can access Packet magazine at this URL:
<http://www.cisco.com/packet>
- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:
<http://www.cisco.com/ipj>
- World-class networking training is available from Cisco. You can view current offerings at this URL:
<http://www.cisco.com/en/US/learning/index.html>



Overview of the Cisco VG224 Voice Gateway

This chapter provides a brief description of the Cisco VG224 voice gateway (VG) and contains the following sections:

- [Overview, page 1-1](#)
- [Cisco VG224 Voice Gateway Deployment, page 1-4](#)
- [Interfaces and Service Capabilities, page 1-4](#)
- [Physical Description and LEDs, page 1-5](#)
- [Specifications, page 1-6](#)
- [Software Elements, page 1-7](#)

Overview

The Cisco VG224 supports the following interfaces:

- 10/100BASE-T LAN connection
- RJ-21 analog voice interface
- External/Internal compact flash

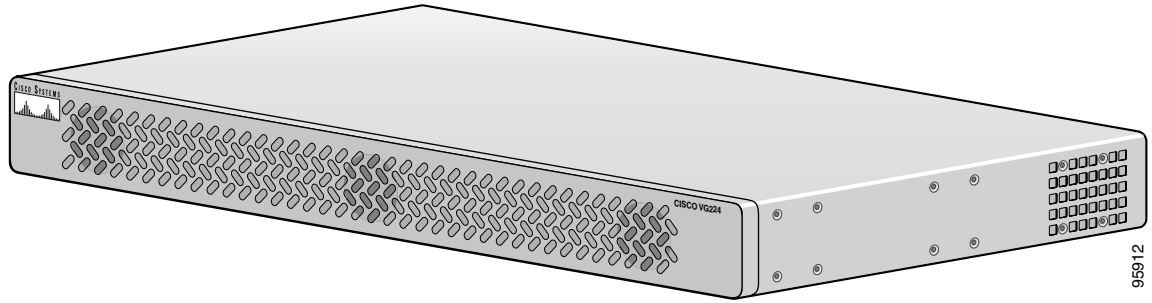
The Cisco VG224 can be housed in a rack, mounted on a wall, or set on a bench-top surface.



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 by security. Statement 1017

Figure 1-1 Cisco VG224 Voice Gateway Front Panel

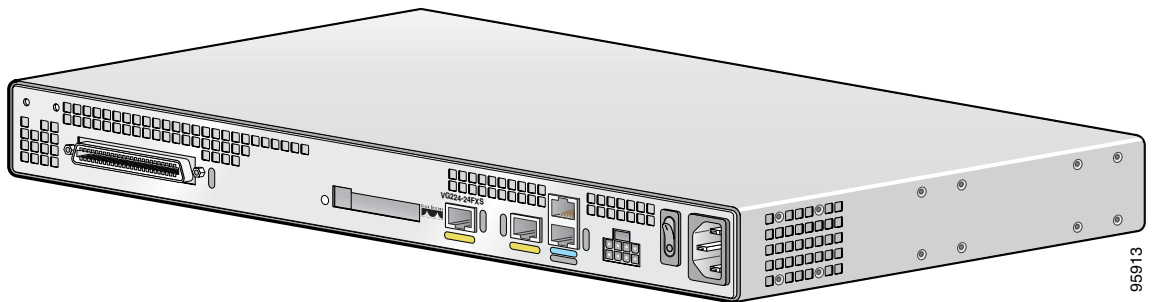


The Cisco VG224 provides 24 analog foreign exchange station (FXS) voice ports with two 10/100BASE-T ports. The chassis has the following interfaces:

- RJ-21 analog voice interface
- Two 10/100BASE-T ports
- External compact flash memory
- AC and DC power inputs

Figure 1-2 shows the basic types of Cisco VG224 chassis as seen from the cabling side.

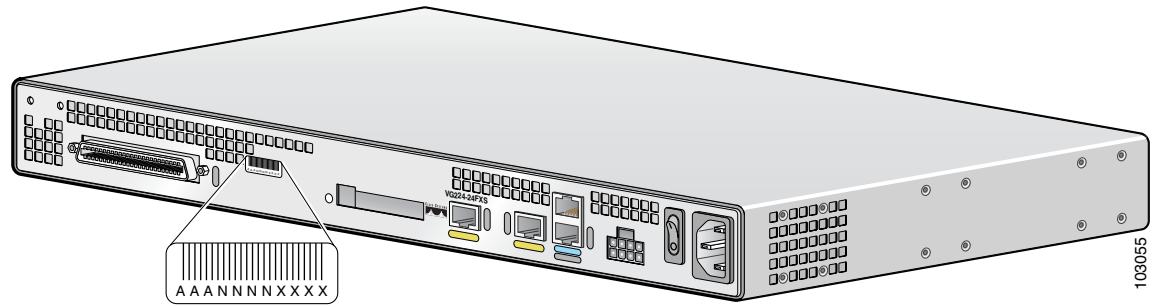
Figure 1-2 Cisco VG224 Voice Gateway Chassis



Product Serial Number Location for the Cisco VG224 Voice Gateway

The serial number label for the Cisco VG224 Voice Gateway is located on the rear of the chassis, in the middle-left side. (See Figure 1-3.)

Figure 1-3 Serial Number Locations




Note

The serial number for the Cisco VG224 Voice Gateway is 11 characters long

Configuration Options

The following interface options are available in the Cisco VG224 voice gateway:

Table 1-1 Configuration Options

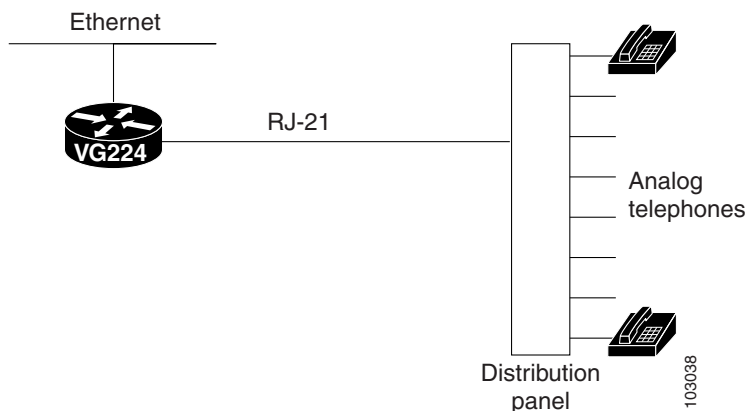
	RJ-21 ¹	T1/E1 ²	FE ³	WIC/VIC ⁴	CF ⁵
Cisco VG224 voice gateway	yes	none	2	n/a	external

1. Analog voice interface
2. T1/E1 ports
3. 10/100BASE-T ports
4. WAN interface card (data); voice interface card (voice)
5. Compact flash

Cisco VG224 Voice Gateway Deployment

Figure 1-4 shows a typical deployment scenario for the Cisco VG224 voice gateway.

Figure 1-4 Analog FXS User Interfaces with Metro Ethernet WAN Interface



Interfaces and Service Capabilities

The various physical ports and the services supported by each port type are described in Table 1-2.

- Two administrative ports—One console and one auxiliary.
- One or two 10/100BASE-T LAN ports.
- Cisco VG224 voice gateway for analog voice user interface is equipped with an RJ-21 port for connection to a distribution panel.

Table 1-2 Cisco VG224 Voice Gateway Interfaces and Service Capabilities

Port	Interface Configurations	Interface To	Services Supported	Details
Console Port 0/0	EIA/TIA-232 asynchronous serial (DCE ¹)	ASCII terminal Personal computer	Local administrative access	RJ-45 physical interface
Auxiliary Port 0/1	EIA/TIA-232 asynchronous serial (DTE ²)	Modem	Remote administrative access Data backup	RJ-45 physical interface
Fast Ethernet Port 0/0, 0/1	10/100BASE-T (802.3)	LAN	Data	RJ-45 physical interface
RJ-21 24 analog FXS voice ports Port 2/0 to 2/23	FXS (loop-start or ground-start)	Analog phone, fax, or modem Network side of key system Network side of analog PBX	Analog voice/fax or modem	Provides battery RJ-21 physical interface
CF ³ Slot 0			Flash memory	Flash card

1. DCE = data communications equipment

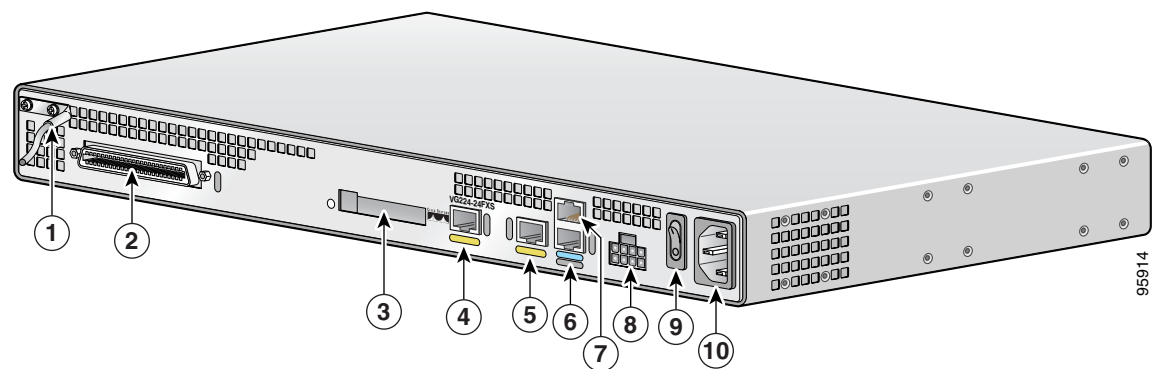
2. DTE = data terminal equipment

3. CF = compact flash memory

Physical Description and LEDs

All interface ports and LEDs are on the rear of the chassis.

Figure 1-5 Cisco VG224 Voice Gateway LEDs



1	Chassis ground connection	5	Fast Ethernet port 0	9	On/off switch
2	RJ-21 connector	6	AUX port	10	AC power input
3	Compact flash port	7	Console port		
4	Fast Ethernet port 1	8	DC power input ¹		

1. This is not a redundant failover power supply connection. You must use either DC or AC.

Chassis Grounding

Chassis grounding is provided through the power cable, which uses a standard grounding plug. The chassis is also equipped with two multi 4 x 0.7 screw terminals for chassis grounding. The accessory kit contains a crimp-type ground lug that attaches to the two screw terminals. For more information, refer to the “[Installing the Ground Connection](#)” section on page 3-11.


Port Numbering Conventions

Port numbering conventions for the Cisco VG224 are as follows:

- An external compact flash card is numbered CF 0.
- 10/100BASE-T ports are numbered 10/100BASE-T 0/0 and 10/100BASE-T 0/1 from right to left.
- FXS voice port numbering begins at 2/0 and extends to 2/7, 2/15, or 2/23, depending on the number of voice ports.

Specifications

Table 1-3 Cisco VG224 Voice Gateway Technical Specifications

Characteristic	Value
Dimensions	1.75H x 17.5W x 13.5D in. (44.4 x 444.5 x 342.9 mm)
Weight	11 lb (4.106 kg) max
Input power	100 to 240 VAC, 1 A (max), 50 to 60 Hz, 70 W (max)
Maximum power surge	
Input power (DC 12 volt battery) by chassis	60 W (204.7 BTU/h)
	 Caution Do not try to use AC and DC power at the same time. If you do, the unit stops operating and you have to reboot using a single power source.
MTBF	195,671 hours
Operating environment	32 to 122° F (0 to 50° C)
Nonoperating temperature	–40 to 185° F (–40 to 85° C)
Operating humidity	5 to 95%, noncondensing
Noise level	55 dB @ 3 ft
Agency approvals	Refer to the Cisco VG224 Regulatory Compliance and Safety Information document at the following URL: http://www.cisco.com/en/US/products/hw/gatecont/ps2250/products_regulatory_approvals_and_compliance_list.html



Ultimate disposal of this product should be handled according to all national laws and regulations.
Statement 1040

Software Elements

The operating system for the Cisco VG224 voice gateway is the Cisco IOS software that resides in flash memory.

Configuration Connections

You can use an ASCII terminal or a PC to configure a Cisco VG224 voice gateway. The configuration can be performed in several ways:

- Locally, with a direct connection through the console port
- Remotely, with a connection through the auxiliary port and a modem
- Through Telnet and TFTP

Configuration Methods

Automated Configuration

If your Cisco VG224 voice gateway was ordered with the Simple Network-Enabled Auto-Provision (SNAP) option, no onsite configuration is required. When the Cisco VG224 voice gateway is powered on and connected, the SNAP application downloads the applicable configuration files automatically.

Manual Configuration

When a Cisco VG224 voice gateway is first installed, use the procedure in [Chapter 4, “Power-On Procedure,”](#) for the initial configuration. This sets the basic communication parameters. After the Cisco VG224 voice gateway is operating and able to communicate, use the procedures in the [Cisco VG224 Voice Gateway Software Configuration Guide](#) to configure the specific services and functions, or to make changes to the existing configuration.

There are multiple methods for configuring a Cisco VG224 voice gateway:

- System configuration dialog
- Configuration mode—Cisco IOS software command-line interface (CLI)
- setup command facility—Remote configuration through a LAN
- SNMP-based application—CiscoView or HP OpenView
- HTTP-based configuration server—Provides access to the CLI from a web browser



Planning Your Installation

Before you install your Cisco VG224 voice gateway, consider the information in this chapter:

- [Location and Mounting Requirements, page 2-1](#)
- [Distance Limitations for Interface Cables, page 2-5](#)
- [Interference Considerations, page 2-5](#)

Location and Mounting Requirements

The three mounting possibilities for your Cisco VG224 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 VG224 should always be well ventilated and provide adequate air circulation to ensure proper cooling. The room temperature should be maintained from 32 to 122°F (0 to 50°C).



Note

The Cisco VG224 voice gateway chassis is designed for front-to-back 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 VG224 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 VG224 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.

Wall-Mounted

If the Cisco VG224 voice gateway is installed on a wall, there should be plenty of space on both sides to ensure that there is adequate air flow through the chassis.

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. For more information, refer to the [“Installing the Ground Connection”](#) section on page 3-11.

Power Source

A Cisco VG224 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.)



Caution

The Cisco VG224 voice gateway 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 need to reboot it with only a single power source.

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.



Warning

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

Statement 1001



Warning

Read the installation instructions before you connect the system to its power source. Statement 1004



Warning

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



Warning

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



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 by security. Statement 1017

The +12V DC Input Power Supply

The +12V DC power connector to use with the Cisco VG224 voice gateway is the Molex Mini-Fit Jr. 5557 series, 8 circuit dual row (Molex P/N 39-01-2085). The VG224 +12V DC power input was designed to be used with an external UPS system, and it has status signals that are reported to the VG224.

[Table 2-1](#) shows the connector pin assignment for the +12V DC power connector pin assignment.

Table 2-1 +12V DC Connector Pin Assignment

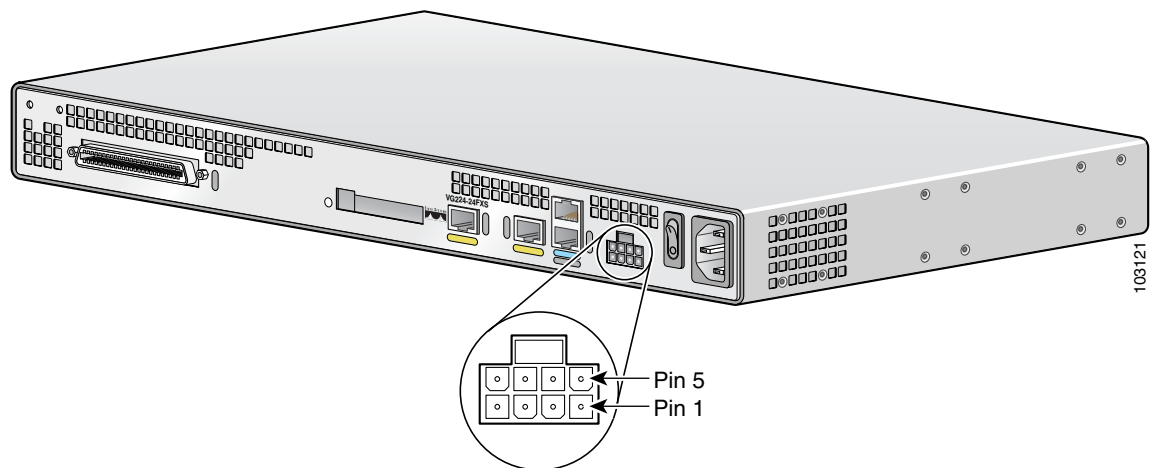
Pin	Direction	Description	SW Register 0x4A80_0038	Definition
1	Input	Enable (tie low)	—	—
2	Input	+12V (power)	—	—
3	Output	REP_BAT (tie low)	Bit 6: REP_MIS_BAT	Battery Missing: Fail 1 = missing Fail 0 = good
4	Input	GND (power return)	—	—
5	Output	ON_BAT (tie low)	Bit 4: BAT_ON	Battery on/off: Status 1 = off Status 0 = on
6	Input	+12V (power)	—	—
7	Output	LOW_BAT (tie low)	Bit 5: BAT_LOW	Battery power: Level status 1 = low Level status 0 = okay
8	Input	GND (power return)	—	—

**Caution**

Signal pins 1, 3, 5, and 7 should be tied low to prevent the Cisco VG224 voice gateway from reporting faults on the DC power. If the +12V DC option for powering VG224 is used the AC power must not be used.

Figure 2-1 shows the +12V DC power connector.

Figure 2-1 +12V DC Power Connector



Cable Types

The cable types that are used are dependent on the Cisco VG224 voice gateway that you are using. For more information, see the [“Interfaces and Service Capabilities”](#) section on page 1-4 and [Appendix A, “Cable Specifications and Information.”](#)

- Fast Ethernet 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:

- [Fast Ethernet Maximum Distance, page 2-5](#)
- [FXS Analog Voice Port Maximum Distance, page 2-5](#)

Fast Ethernet Maximum Distance

The maximum segment distance for Fast 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.

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 VG224 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).



Installing the Cisco VG224 Voice Gateway

This chapter contains the procedures for installing your Cisco VG224 voice gateway and consists of the following sections:

- [Safety Recommendations](#), page 3-2
- [Site Log](#), page 3-3
- [Keeping Track–Checklist](#), page 3-4
- [Mounting Tools and Equipment](#), page 3-5
- [Unpacking and Inspection](#), page 3-5
- [Rack-Mounting the Chassis](#), page 3-6
- [Wall-Mounting the Chassis](#), page 3-9
- [Bench-Top Installation](#), page 3-11
- [Installing the Ground Connection](#), page 3-11
- [Connecting Cables](#), page 3-14
- [Ports, Connectors, and Pinouts](#), page 3-20
- [Remote Terminal Connections \(If Applicable\)](#), page 3-20
- [Connecting Backup Power](#), page 3-21



Tip

While you do this installation, record your progress and site information. See the suggested format in the “[Keeping Track–Checklist](#)” section on page 3-4.



Warning

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



Warning

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

Safety Recommendations

The following information is included to alert you to safety recommendations and best practices when working with this equipment.

Maintaining Safety with Electricity

Follow these guidelines when working on equipment powered by electricity.



Warning

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

Statement 1001



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

General Safety Practices

Follow these guidelines to ensure personal safety and protect the equipment:

- Keep the chassis area clear and dust-free during and after installation.
- Put the removed chassis cover in a safe place.
- Keep tools away from walk areas where you and others could fall over them.
- Do not wear loose clothing that could get caught in the chassis.
- Wear safety glasses if you are working under any conditions that might be hazardous to your eyes.



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

Safety Tips

Use these tips as safety guidelines when installing or working around this equipment.

- Locate the emergency power-off switch for the room in which you are working. Then, if an electrical accident occurs, you can act quickly to turn off the power.
- Disconnect all power before installing or removing a chassis.
- Do not work alone if potentially hazardous conditions exist.
- Never assume that power is disconnected from a circuit. Always check.

- Look carefully for possible hazards in your work area, such as moist floors, ungrounded power extension cables, and missing safety grounds.
- If an electrical accident occurs, proceed as follows:
 - Use caution; do not become a victim yourself.
 - Turn off power to the system.
 - 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 action.

Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. ESD occurs when electronic components are improperly handled; it can result in complete or intermittent failures.

Always follow ESD-prevention procedures when removing and replacing components.

- Ensure that the chassis is electrically connected to earth ground.
- Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact.
- Connect the clip to the ESD-strap connection jack (to the left of the power switch on the rear of the chassis) or to an unpainted chassis frame surface.



Caution

For safety, periodically check the resistance value of the antistatic strap, which should be between 1 and 10 megohm (Mohm).

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

Keeping Track–Checklist

We recommend that you use an installation checklist and maintain a Site Log.

Installation Checklist

The Installation Checklist (see [Figure 3-1](#)) lists the tasks for installing a Cisco VG224 voice gateway. Print a copy of this checklist and mark the entries as you complete each task. For each Cisco VG224 voice gateway, include a copy of the checklist in your Site Log.

Figure 3-1 Installation Checklist

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		
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		

Mounting Tools and Equipment

Obtain the following tools and parts to install a Cisco VG224 voice gateway:

- Standard flat-blade screwdriver as required for attaching brackets to rack or wall
- Phillips screwdriver for attaching brackets to a Cisco VG224 voice gateway
- Mounting brackets and screws for 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 required
 - Eight wood screws or other fasteners, for installing the chassis on a wall. An additional starter screw can be used to facilitate wall-mounting.
- ESD-preventive wrist strap

In addition, you might need the following external equipment:

- Console terminal, or personal computer with terminal emulation software
- PC running terminal emulation software for administrative access
- Modem for remote access
- Analog voice RJ-21 cable
- Ethernet switch
- Modem for remote configuration

Unpacking and Inspection

Do not unpack the Cisco VG224 until you are ready to install it. If the installation site is not ready, keep the chassis in its shipping container to prevent accidental damage.

The Cisco VG224, cables, printed publications, and any optional equipment you ordered might be shipped in more than one container. When you unpack each shipping container, check the packing list to ensure that you received all the following items:

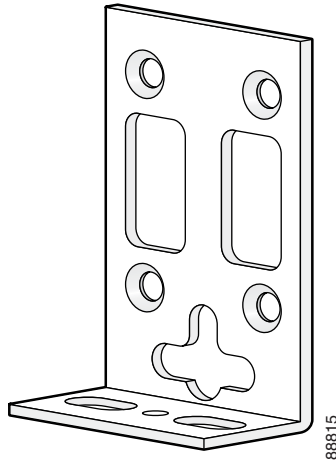
- Cisco VG224
- Power cord, 6-foot (1.8-meter)
- RJ-45-to-DB-25 adapter cable (labeled *Console*)
- RJ-45-to-DB-9 adapter cable (labeled *Auxiliary*)
- Rack-mounting brackets for 19-inch rack (one pair) with screws for attaching to chassis
- Chassis guard for wall-mounting applications
- Grounding lug and fasteners
- *Cisco VG224 Voice Gateway Quick Start Guide*
- *Cisco VG224 Voice Gateway Regulatory Compliance and Safety Information*

Inspect all items for shipping damage. If anything appears damaged, or if you encounter problems when installing or configuring your system, contact a customer service representative. (See the [“Obtaining Technical Assistance”](#) section on page 16.)

Rack-Mounting the Chassis

Your chassis ships with a pair of brackets for use with a 19-inch rack or mounting on the wall. The bracket is shown in [Figure 3-2](#).

Figure 3-2 Quick Mounting Bracket



Mounting Screws

Two sets of mounting screws are provided, in separate packages. Take care to use each screw type, and washers as needed, in the appropriate locations. [Table 3-1](#) clarifies the differences between rack-mounting and wall-mounting screws.

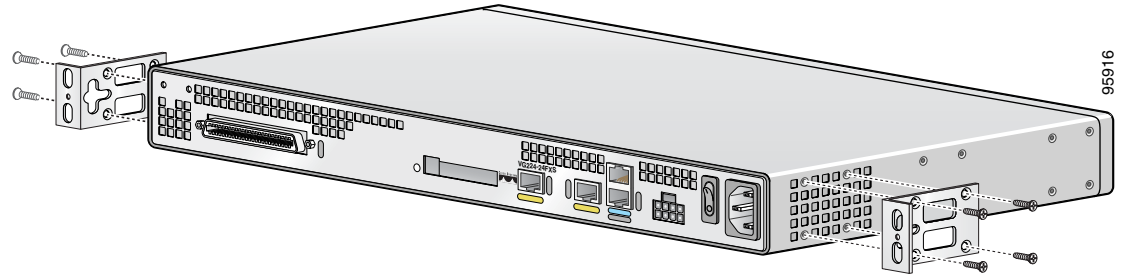
Table 3-1 Rack-Mounting Versus Wall-Mounting Screws

Rack-mounting	Wall-mounting
<ul style="list-style-type: none"> • Eight countersunk Phillips head screws (four per bracket) 	<ul style="list-style-type: none"> • Four 6–32 slotted hex screws (two per bracket) and four plastic washers
<ul style="list-style-type: none"> • Washers are not required 	<ul style="list-style-type: none"> • Washers are required

Attaching the Brackets

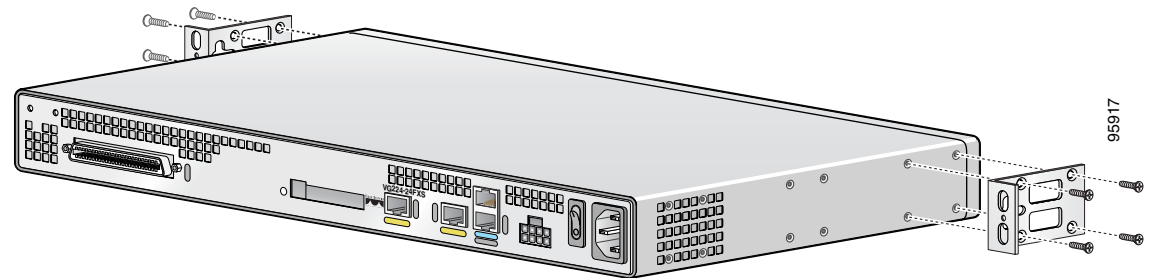
To install the chassis in a rack with the rear panel forward, attach the brackets as shown in [Figure 3-3](#).

Figure 3-3 19-Inch Rack Installation—Rear Panel Forward



To install the chassis in a center-mount telco rack, attach the brackets as shown in [Figure 3-4](#).

Figure 3-4 Telco 19-Inch Rack Installation—Rear Panel Forward



Installing the Cisco VG224 Voice Gateway in a Rack

The following warning applies only when the unit is rack-mounted:



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

To rack-mount the chassis, follow this procedure:

- Step 1** Choose one of the methods shown in [Figure 3-3 on page 3-7](#), or [Figure 3-4 on page 3-7](#), and attach the long leg of the mounting brackets to the chassis, as shown.



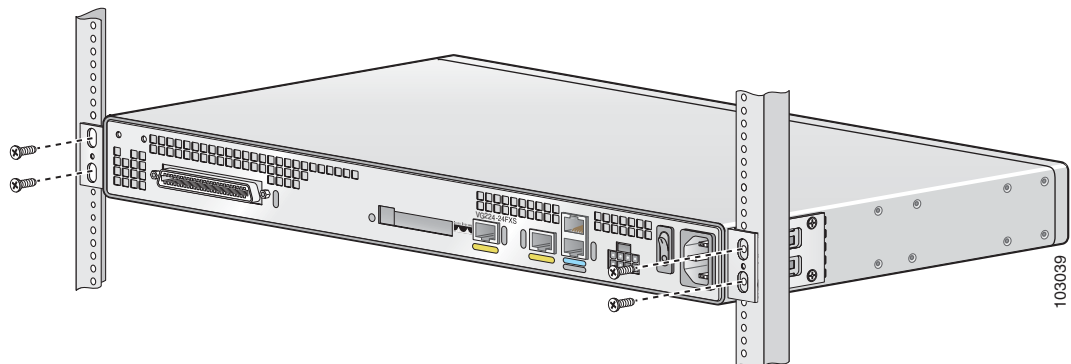
Caution

Make sure to use the correct screws for this mounting option (see [Table 3-1 on page 3-6](#)).

Screws are included for attaching the brackets to the chassis, but not for installing the chassis in a rack or on a wall. You need four additional machine screws to install the chassis in a rack. Use the screw size required by your rack. After the brackets are secured to the chassis, you can rack-mount the chassis.

- Step 2** Using screws that you provide, attach the chassis to the rack as shown in [Figure 3-5 on page 3-8](#).

Figure 3-5 Attaching the Chassis to the 19-Inch Rack



Wall-Mounting the Chassis

The following warning applies only when the unit is wall-mounted:



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



Caution

You can wall-mount the unit with either the right or left side facing up; however, the front and rear panels must be vertical.



Note

For information about obtaining the chassis guard, refer to field notice number 28655, [VG224 Chassis Guard - Safety Regulation](http://www.cisco.com/en/US/ts/fn/200/fn28655.html), at <http://www.cisco.com/en/US/ts/fn/200/fn28655.html>.

To wall-mount the chassis, follow this procedure:

Step 1

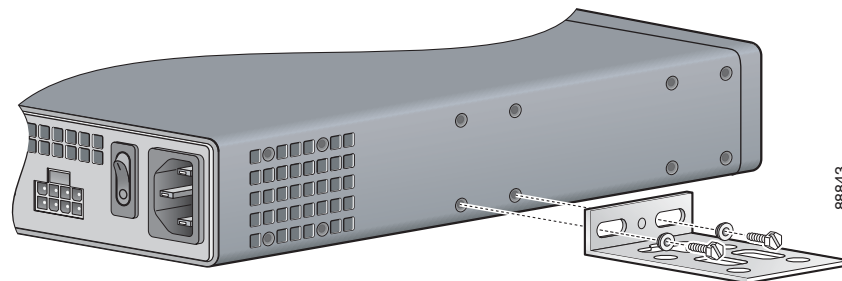
Attach the short leg of one bracket to the chassis, as shown in [Figure 3-6](#), using two 6-32 x 1/4 slotted hex screws (provided). Be sure to use a plastic washer (provided) with each screw; the narrow end of the washer must fit into the bracket slot, facing the chassis.



Caution

Be sure to use the correct screws and plastic washers for this mounting option. (See [Table 3-1 on page 3-6](#).)

Figure 3-6 Attaching the Brackets for Wall-Mounting



Step 2

Attach the second bracket to the opposite side of the chassis.

Step 3

Attach the router to the wall using the brackets previously attached 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**

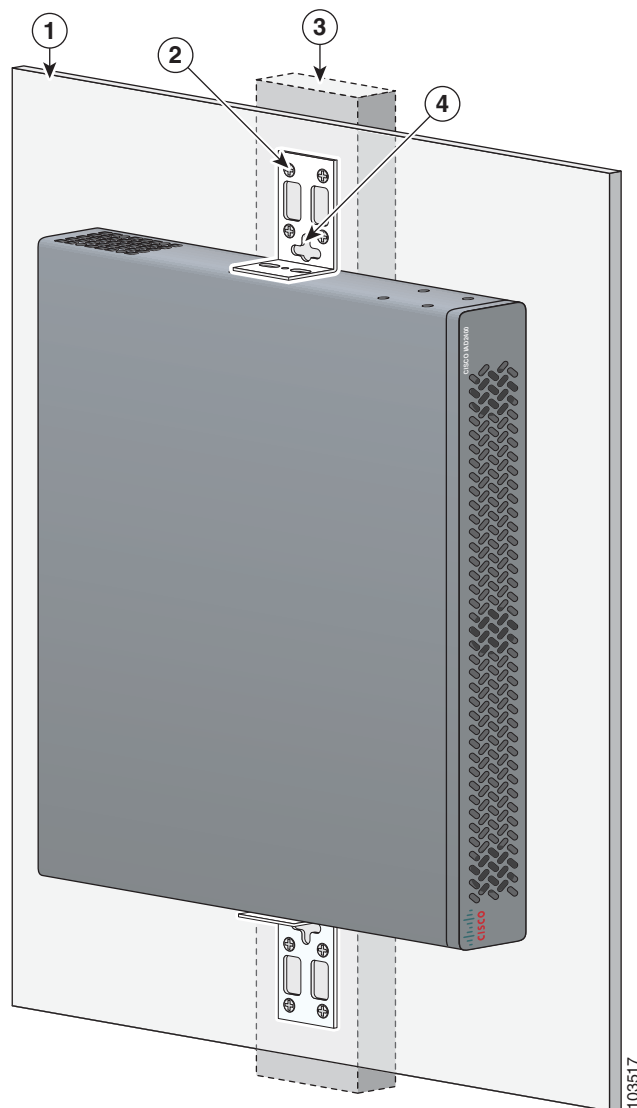
For attaching to a wall stud, each bracket requires two #10 wood screws (round- or pan-head) with #10 washers, or two #10 washer-head screws. The screws must be long enough to penetrate at least 3/4 inch (20 mm) into supporting wood or metal wall stud.

**Note**

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

- [Figure 3-7](#) shows the orientation required for installation.

Figure 3-7 Wall-Mounting the Chassis



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

Bench-Top Installation

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



Caution

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

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

Step 3 Place the Cisco VG224 voice gateway 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.

Installing the Ground Connection



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

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

Use copper conductors only. Statement 1025

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 ground the chassis, follow this procedure:

Step 1 Locate a suitable ground location.



Tip

Use a multimeter to measure the resistance between various ground locations, such as the following:

- 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 VG224 voice gateway chassis and the ground of a power tap
- Between the Cisco VG224 voice gateway chassis and the ground of a junction box

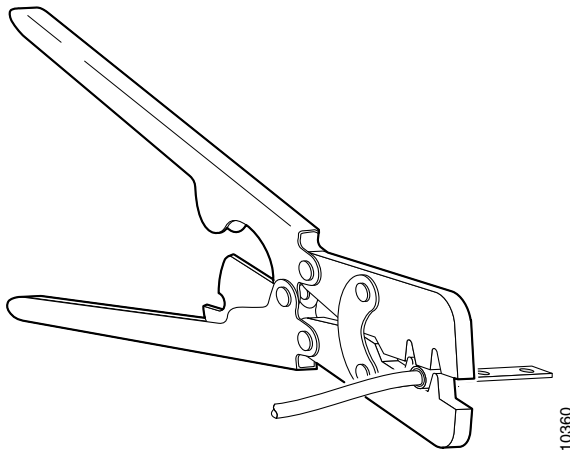
A good ground connection should read between 0.0 and 0.5 ohms.

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 in. (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. (See [Figure 3-8](#).)

Figure 3-8 Crimping a Ground Lug onto the Ground Wire



Step 4 Attach the ground lug or ring terminal to the chassis as shown in [Figure 3-9](#) or [Figure 3-10](#). 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

You can orient the crimped end of the ground lug in either direction (right or left).

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

Figure 3-9 NEBS-Compliant Chassis Ground Connection Using Ground Lug

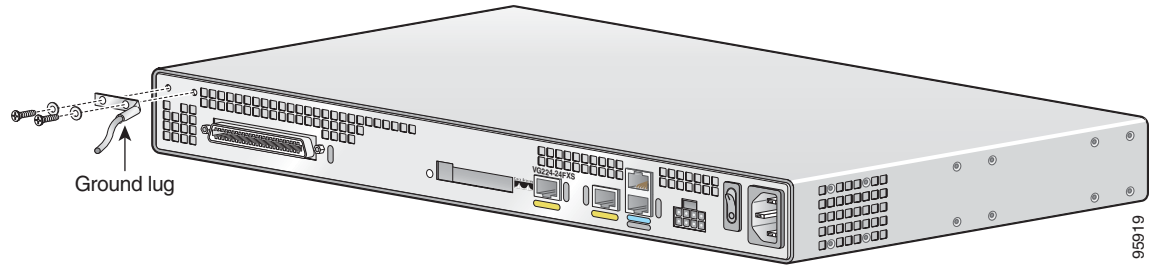
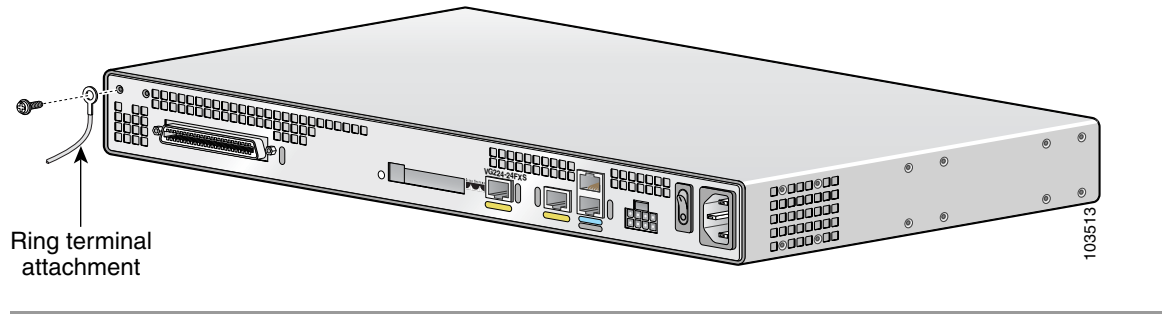


Figure 3-10 Chassis Ground Connection Using Ring Terminal



Connecting Cables

For cables not included with your Cisco VG224 voice gateway, pinout information is in [Appendix A, “Cable Specifications and Information.”](#) Cisco VG224 voice gateway ports are color-coded for identification.



Warning

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

Statement 1001



Warning

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



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

[Table 3-2](#) shows the results of the NEBS Type 1/3 power cross tests (tip/ring to ground) performed on the Cisco VG224 voice gateway FXS ports.

Table 3-2 Results of the NEBS Power Cross Tests on FXS Ports

NEBS Tests	Results
50 V/0.33 A; 15 minutes	Pass
100 V/0.17 A; 15 minutes	Pass
200 V/1.00 A; 1-second pulses, 60 repetitions	Pass



Note

The installation must comply with all applicable codes.

LAN and Power Cables

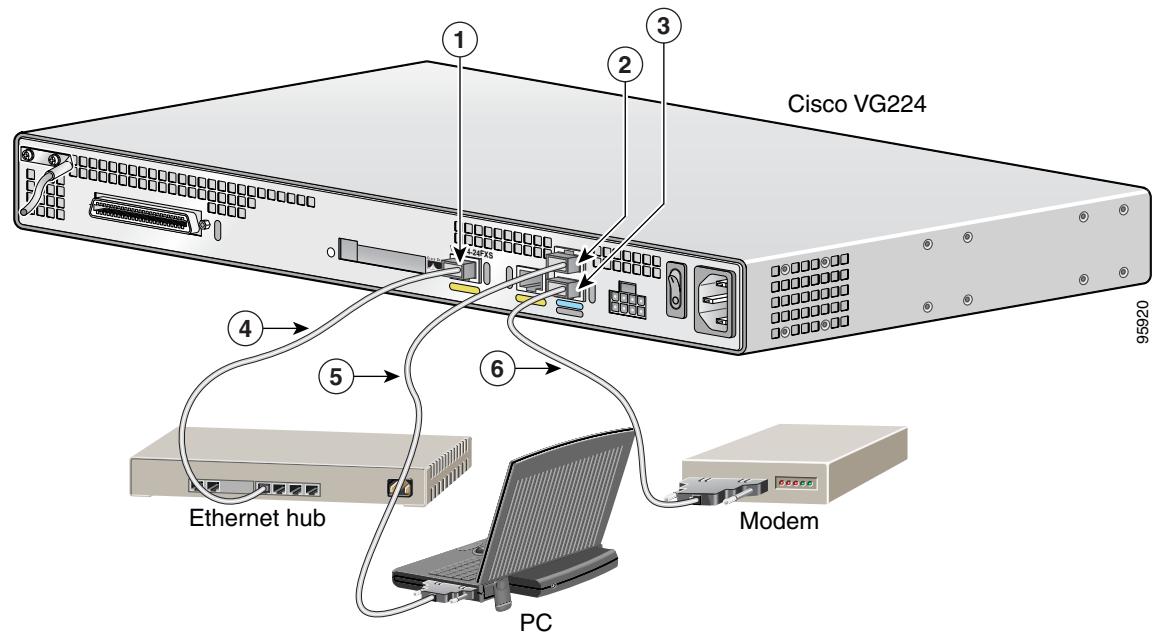
These cables and connections are described in [Table 3-3](#) and in [Figure 3-11](#).

Table 3-3 LAN, Administrative Access, and Power Cable Selection

Port or Connection	Color or Type	Connected To	Cable
Fast Ethernet	Yellow	Fast Ethernet switch	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 (not shown)	Power	100–240 VAC, 50–60 Hz	Grounding power cord (included) ¹

1. Power cables vary to meet local requirements.

Figure 3-11 LAN and Administrative Access Connections



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

Connecting the Input Power

**Caution**

The Cisco VG224 voice gateway 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 need to reboot it with only a single power source.

Cable

Use the AC power cable.

Procedure

-
- Step 1** Connect the AC power cable (supplied) to the recessed power plug on the rear of the concentrator.
- Step 2** Plug the cable into a power source with a voltage of 100 to 240 VAC.
-

Connecting the Console Port to a PC or an ASCII Terminal

Use the procedure in this section to connect the console port to a PC running terminal emulation software.

**Note**

The console port does not support hardware flow control.

Cable

Use an RJ-45-to-RJ-DB-9 console cable (see item 5 in [Figure 3-11 on page 3-15](#))

For pinouts, see [Table A-1 on page A-3](#) and [Table A-2 on page A-4](#) in Appendix A, “Cable Specifications and Information.”

Procedure

-
- Step 1** Configure the terminal emulation software requirements:
- 9600 baud
 - 8 data bits
 - 1 stop bit
 - no parity
 - no flow control
-

Connecting the Auxiliary Port to a Modem

Use the procedure in this section to connect the auxiliary port to a modem.

Cable

Use an RJ-45-to-DB25 auxiliary cable (labeled *Modem*).

For pinouts, see [Table A-3 on page A-5](#) and [Table A-4 on page A-5](#) in [Appendix A, “Cable Specifications and Information.”](#)

Procedure

-
- Step 1** Connect the cable from the auxiliary port (black) to the DB-25 port on the modem. (See item 6 in [Figure 3-11 on page 3-15](#).)
- Step 2** Configure the modem.
- Match the transmission speed of the auxiliary port (default is 9600 baud).
 - Set the hardware flow control for Data Carrier Detect (DCD) and Data Terminal Ready (DTR) operation.

**Note**

The baud rate for the auxiliary (and console) port can be configured in software for 1200, 2400, 4800, 19200, 38400, 57600, and 115200.

Connecting the Fast Ethernet Port to the Fast Ethernet Switch

Use the procedure in this section to connect a Fast Ethernet port to the Fast Ethernet switch.

Cable

Use a straight-through Fast Ethernet cable (not included).

Procedure

-
- Step 1** Connect the cable from a Fast Ethernet port to an available port on the Fast Ethernet switch. (See item 4 in [Figure 3-11 on page 3-15](#).)
- Step 2** Connect the second cable if it is required.

**Note**

Not all models have two ports.

Voice Cables



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



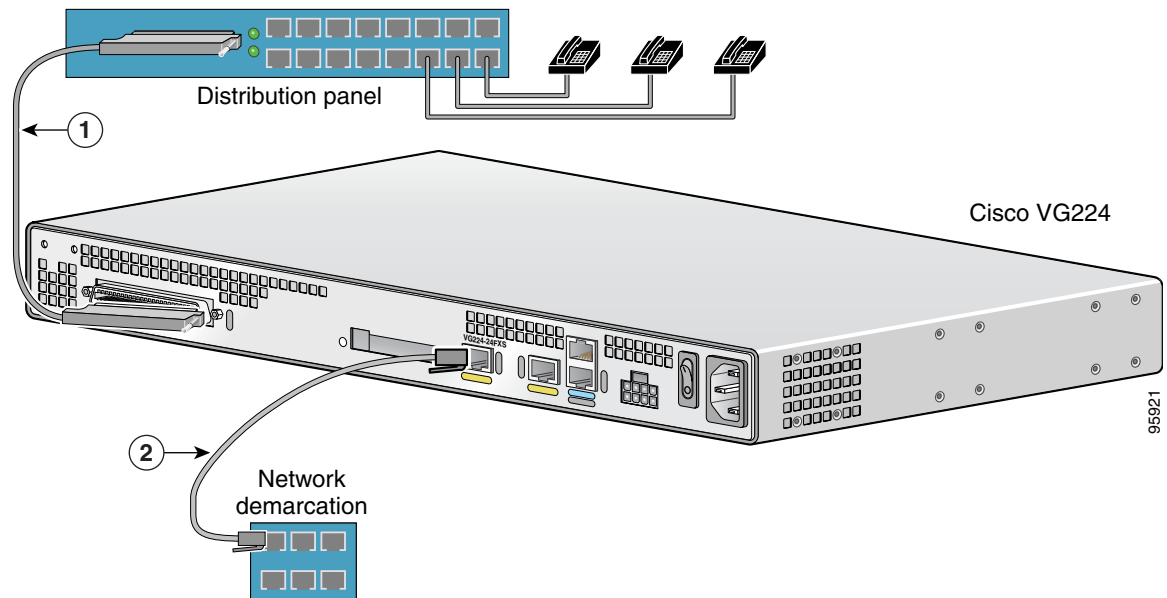
Warning

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

The analog FXS voice cables and connections are:

Color or Type	Connected To	Cable
RJ-21	Distribution panel	RJ-21-to-RJ-21 straight-through cable (not included)

Figure 3-12 WAN and Voice Connections



1	RJ-21 cable	2	RJ-45 cable (through a patch panel) to central office
----------	-------------	----------	---

Connecting the Analog Voice Interface to a Distribution Panel

To connect the multiport analog voice interface to a distribution panel, which connects to telephones, faxes, or analog PBX equipment, use the following procedure. (See [Figure 3-13](#).)

Cable

Use an RJ-21 cable with Amphenol 50-pin connectors (not included).

For RJ-21X/CA21A pinouts, see [Table A-5 on page A-6 in Appendix A, “Cable Specifications and Information.”](#)



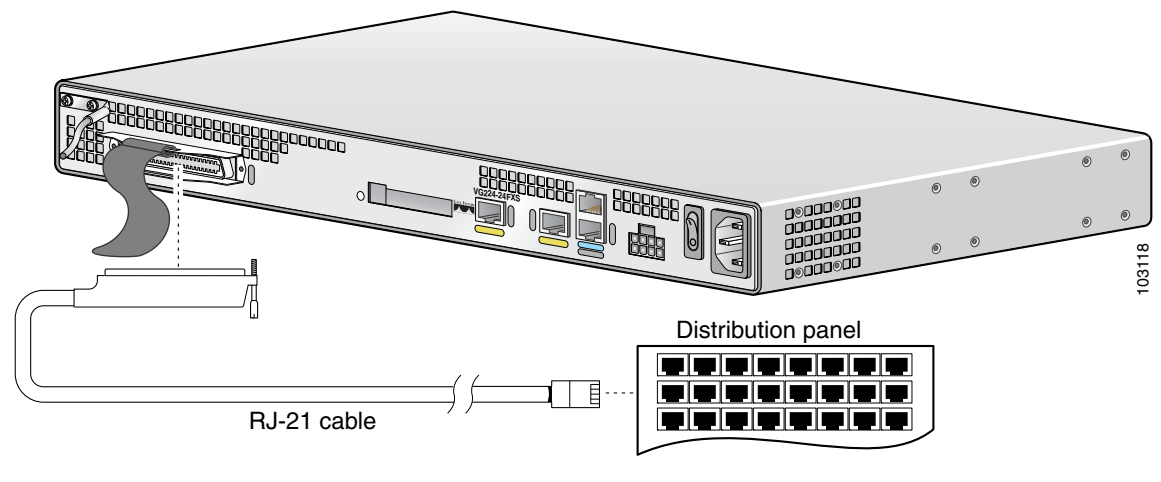
Warning

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

Procedure

- Step 1** Connect the RJ-21 cable from the analog voice multiport to the distribution panel.
- Step 2** Secure the cable in place using the strap.

Figure 3-13 Analog Voice Connection



103118

Ports, Connectors, and Pinouts

Table 3-4 summarizes the cable connections between Cisco VG224 voice gateway and the network and user interfaces. Find the port and the equipment or network type in the table; then look at the applicable pinout table in Appendix A, “Cable Specifications and Information.”

Table 3-4 Cable Use Reference Table

Cisco VG224 Port	Port Color	Connector/Cable	Interface To	Pinout Information
Console	Light blue	RJ-45/Rollover	PC	Table A-1
			ASCII terminal	Table A-2
Auxiliary	Black	RJ-45/Rollover	Modem	Table A-3
Fast Ethernet	Yellow	RJ-45/Fast Ethernet	LAN	Table A-5
Analog voice multiport	Gray	RJ-21X/ 50-conductor	Distribution panel for analog telephone, fax, PBX, or central office line	Table A-6

Remote Terminal Connections (If Applicable)

If you are configuring a Cisco VG224 voice gateway from a remote location, connect the modem and the remote PC or terminal to the telephone network as described in this section.

Connecting to a Modem

To connect the local modem and the remote modem to live telephone outlets, use standard telephone cables.

Connecting to a Remote PC

To link a Cisco VG224 voice gateway to a remote PC, use the following procedure:



Note

The remote PC must be running terminal emulation software.

-
- Step 1** Connect the remote PC and modem.
- Step 2** Set the PC terminal emulation software requirements:
- 9600 baud
 - 8 data bits
 - 1 stop bit
 - no parity
 - no flow control.
- Step 3** Key in and dial the telephone number of the Cisco VG224 voice gateway external modem.
-

Connecting to a Remote ASCII Terminal

To link a Cisco VG224 voice gateway to a remote ASCII terminal, such as a VT100, use the following procedure:

-
- Step 1** Connect the remote ASCII terminal and modem.
- Step 2** Set the terminal requirements:
- 9600 baud
 - 8 data bits
 - 1 stop bit
 - no parity
 - no flow control.
- Step 3** Key in the telephone number of the Cisco VG224 voice gateway external modem, or, if you are using a Hayes-compatible modem, enter **ATDT** and the number to be dialed.
-

Connecting Backup Power

A Cisco VG224 voice gateway can be installed with optional backup power. Backup power to a DC-powered chassis is provided by a 12-volt battery backup system; see the [“Connecting a Backup Battery to a DC-Powered Cisco VG224”](#) section for connection instructions. Backup power to an AC-powered chassis is provided by an uninterruptible power supply (UPS); see the [“Connecting a UPS to an AC-Powered Cisco VG224”](#) section for connection instructions.

**Caution**

The Cisco VG224 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.

The maximum power requirement for the Cisco VG224 voice gateway is 70 W.

Connecting a Backup Battery to a DC-Powered Cisco VG224

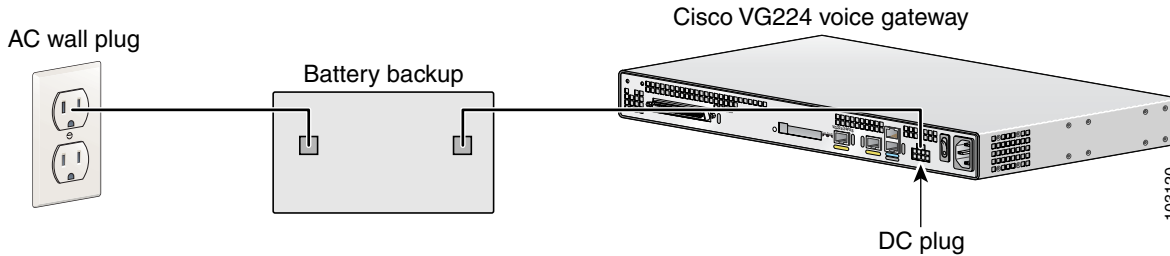
Connect a 12-volt backup battery to the DC input connector on your Cisco VG224 voice gateway. Before you install a backup battery, be sure to read the installation instructions for the backup battery equipment.

[Figure 3-14](#) shows a setup using an external backup battery.

**Note**

[Figure 3-14](#) shows one possible setup; please review your backup battery documents before setting up your system.

Figure 3-14 Connecting a Battery Backup to a DC-Powered Cisco VG224

**Caution**

Use a backup battery only if you are not using AC to power your Cisco VG224 voice gateway. *Do not use AC and DC power at the same time.* If you do, the unit stops operating, and you need to reboot it with only a single power source.

**Note**

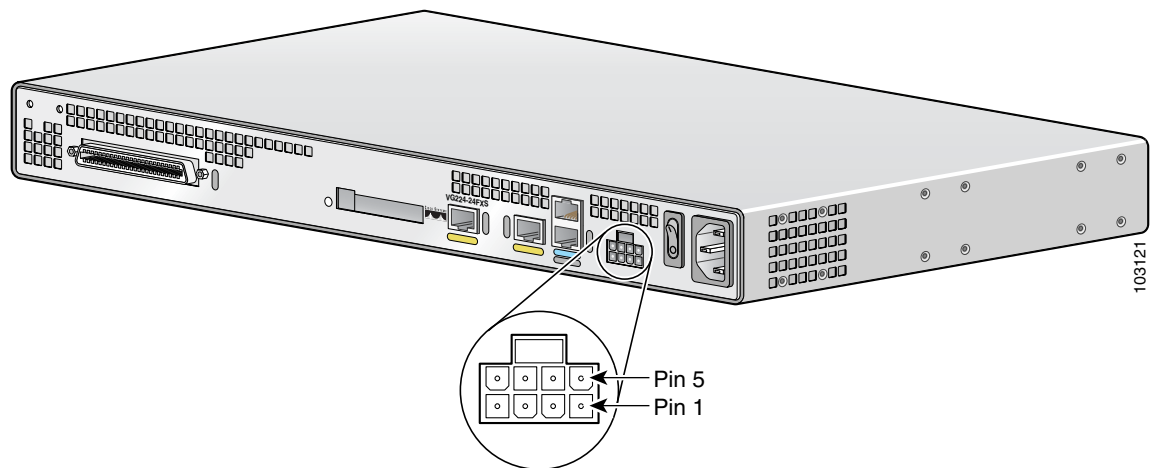
We recommend a 12-volt automotive battery if you require longer periods of battery backup (up to 8 hours).

Figure 3-15 shows the DC power connector. See Table 3-5 for pinout information for the DC power connector on the Cisco VG224 voice gateway.

Table 3-5 Pinouts for DC Power Connector

Pin Number	Descriptions	Pin Number	Descriptions
1	GND (input enable)	5	ON_BAT (battery is on)
2	+12V (power)	6	+12V (power)
3	REP_BAT (replace battery)	7	LOW_BAT (battery is low)
4	GND (power return)	8	GND (power return)

Figure 3-15 DC Power Connector



Connecting a UPS to an AC-Powered Cisco VG224

Connect an uninterruptible power supply to the AC input on your Cisco VG224 voice gateway. Before you install a UPS, be sure to read the installation instructions for the UPS.

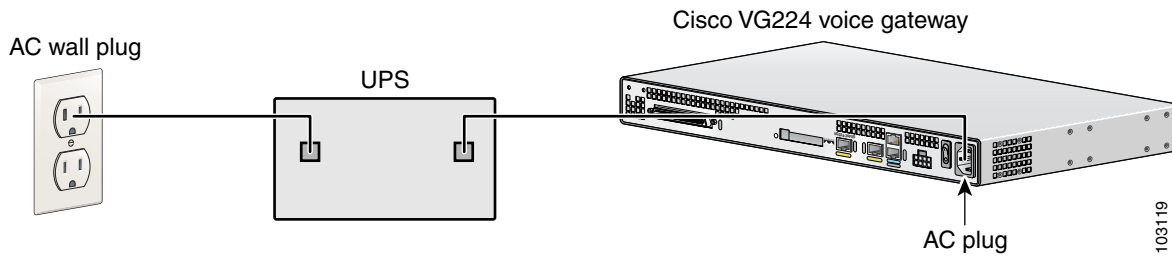
Figure 3-16 shows a setup using a UPS.



Note

Figure 3-16 shows one possible setup; please review your UPS documents before setting up your system.

Figure 3-16 Connecting a UPS to an AC-Powered Cisco VG224





Powering On the Cisco VG224 Voice Gateway

To power on your Cisco VG224 voice gateway, perform the following tasks in the order listed, as required:

- [Checklist for Power-On, page 4-1](#)
- [Power-On Procedure, page 4-1](#)
- [Initial Configuration Procedures, page 4-2](#)
- [Troubleshooting, page 4-4](#)

Checklist for Power-On

You can power on a Cisco VG224 voice gateway if it meets the requirements described in [Chapter 3, “Installing the Cisco VG224 Voice Gateway”](#):

- The chassis is securely mounted.
- Power cable is connected.
- Interface cables are connected.

Power-On Procedure

Perform this procedure to power on your Cisco VG224 voice gateway and verify that it goes through its initialization and self-test. When this is finished, the Cisco VG224 voice gateway is ready to configure.

To power on the Cisco VG224 voice gateway, follow this procedure:

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 VG224 voice gateway power switch to the ON position.

The green LED next to the auxiliary port should come on and the fan should operate. If this does not happen, see the [“Troubleshooting” section on page 4-4](#).

The following message is displayed at the end of the boot-up messages:

```
--- System Configuration Dialog ---  
Would you like to enter the initial 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 autoinstall? [yes]
```

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

Several messages are displayed, ending with a line similar to the following:

```
...
Copyright (c) 1986-2003 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 next section, “[Initial Configuration Procedures](#).”



Note

If the `rommon 1>` prompt appears, your system has booted in ROM monitor mode. For information on the ROM monitor, refer to the router rebooting and ROM monitor information in the *Cisco IOS Configuration Fundamentals Configuration Guide* for your Cisco IOS software release.

Initial Configuration Procedures

Manual Configuration

To configure the Cisco VG224 voice gateway from a console (locally or remotely), refer to the *Cisco VG224 Voice Gateway Software Configuration Guide* for the configuration instructions. To configure it remotely through Telnet, continue to the “[Setting the Fast Ethernet Port IP Address](#)” section on page 4-3 to set an Ethernet or Fast Ethernet (10/100BASE-T) port IP address.

For information about obtaining any referenced documentation, see the “[Obtaining Technical Assistance](#)” section on page 16.

This section shows how to prepare the Cisco VG224 voice gateway to perform basic communication functions through its 10/100BASE-T interfaces.



Note

The Console port is above the AUX port.

Perform the following initial configuration procedures, as applicable:

- [Getting Your Network Information, page 4-3](#)
- [Setting the Fast Ethernet Port IP Address, page 4-3](#)
- [Verifying and Saving Your Configuration, page 4-4](#)

Getting Your Network Information

Before you begin the configuration process, get the IP address for the 10/100BASE-T ports.

Setting the Fast Ethernet Port IP Address

To configure the Cisco VG224 voice gateway remotely through a Fast Ethernet connection, connect the 10/100BASE-T port to a live Ethernet connection using a standard Ethernet cable with RJ-45 connectors; then complete this procedure to set the IP address for the port. After setting this address, you can configure the Cisco VG224 voice gateway remotely through a Telnet connection.

	Command	Purpose
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 FastEthernet 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 (10/100BASE-T) port.
Step 5	Router(config-if)# no shutdown	Activates the 10/100BASE-T 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 VG224.
Step 9	Router(config-line)# end	Returns to privileged EXEC mode.
Step 10	Router# copy system:running-config nvram:startup-config	Saves the configuration.

Verifying and Saving Your Configuration

To verify the configuration and save it in NVRAM so that the configuration remains in effect if the Cisco VG224 is restarted, enter the following commands:

	Command	Purpose
Step 1	Router# <code>show running-config</code>	Displays the current operating configuration, including any changes you have just made.
Step 2	Router# <code>show startup-config</code>	Displays the configuration currently stored in NVRAM.
Step 3	Router# <code>show controller t1 1/0</code>	Displays the configuration of the T1 network interface controller. Slot and port may vary.
Step 4	Router# <code>copy running-config startup-config</code>	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 VG224 voice gateway or turn off the power before you complete this step, you lose the configuration.

Troubleshooting

This section describes possible mechanical problems and corrective actions.

If there appears to be a malfunction, first check all cables and connections. If these are in order, see [Table 4-1](#) for specific troubles and solutions.

For problems with the configuration, refer to the [Cisco VG224 Voice Gateway Software Configuration Guide](#) at the following URL:

<http://cisco.com/en/US/docs/routers/access/vg224/software/configuration/guide/scg.html>

Table 4-1 Troubleshooting the Cisco VG224 Voice Gateway

Symptom	Possible Cause	Corrective Action
Power LED and fan are off	Power source switched off	Switch power source on
	Faulty power cable	Check/replace power cable
	Faulty power source	Check/correct input power
	Faulty internal power supply	Contact Cisco ¹ or your Cisco reseller
Power LED on; fan off	Faulty Cisco VG224	Contact Cisco ¹ Technical Service Center or your Cisco reseller
Power LED off; fan on	Faulty Cisco VG224	Contact Cisco ¹ or your Cisco reseller
No initialization response from Cisco VG224	Faulty modem console terminal	Check/replace modem/terminal
	Faulty cabling to terminal	Check/replace cable
	Faulty Cisco VG224	Contact Cisco ¹ or your Cisco reseller
Unit shuts off after operating for some time	Overheating	Check ventilation
	Faulty Cisco VG224	Contact Cisco ¹ or your Cisco reseller
Console screen display freezes	Console fault	Reset/replace console
	Software error	Repeat power-on procedure
	Faulty Cisco VG224	Contact Cisco ¹ or your Cisco reseller

1. See the “Obtaining Technical Assistance” section on page 16.



Cable Specifications and Information

This appendix provides the connector and pinout information you need for making or purchasing cables used with Cisco VG224 voice gateway. To order cables from Cisco, see the “[Obtaining Technical Assistance](#)” section on page 16. This appendix contains the following sections:

- [Console and Auxiliary Port Cables and Pinouts](#), page A-1
- [Fast Ethernet Port Pinouts \(RJ-45\)](#), page A-6
- [Analog Voice Multipoint Pinouts \(RJ-21X/CA21A\)](#), page A-7

The following list shows you which table to see for pinout information:

Cisco VG224 Voice Gateway Port and Connection Type	Pinout Information
Console Port to PC—Cable Pinouts (RJ-45 to DB-9)	Table A-1 on page A-3
Console Port to ASCII Terminal—Cable Pinouts (RJ-45 to DB-25)	Table A-2 on page A-4
Auxiliary Port to Modem—Cable Pinouts (RJ-45 to DB-25)	Table A-3 on page A-5
Alternative Terminal and Modem Connections	Table A-4 on page A-5
Fast Ethernet Port Pinouts (RJ-45)	Table A-5 on page A-6

Console and Auxiliary Port Cables and Pinouts

Your Cisco VG224 voice gateway comes with the cable and adapters you need to connect a PC, an ASCII terminal, or a modem to your Cisco VG224 voice gateway. The cable kit includes:

- RJ-45-to-RJ-45 rollover cable
- RJ-45-to-DB-9 adapter cable for console connection
- RJ-45-to-DB-25 adapter cable for modem connection

The following illustrations and tables provide cable pinout information:

- Console port to a PC—See [Table A-1](#) and [Table A-4](#)
- Console port to an ASCII terminal—See [Table A-2](#) and [Table A-4](#)
- Auxiliary port to a modem—See [Table A-3](#) and [Table A-4](#)

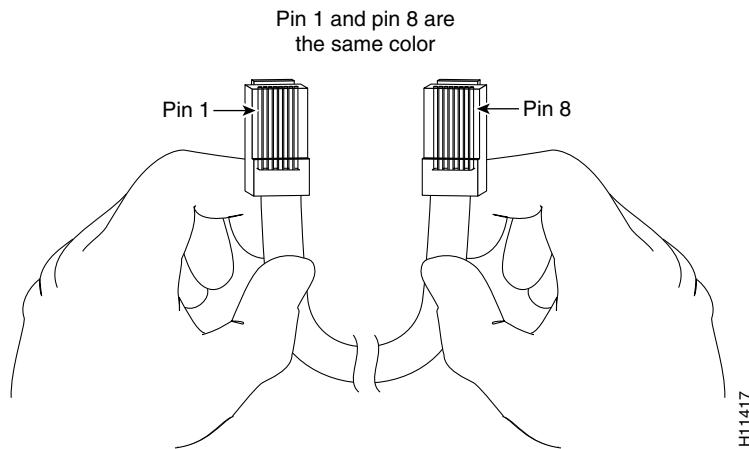
The console port is configured as data communications equipment (DCE); the auxiliary port is configured as data terminal equipment (DTE). Both are asynchronous serial ports and use RJ-45 connectors.

Identifying a Rollover Cable

You can identify a rollover cable by holding the plugs side by side, with the tab at the back and comparing the modular plugs at the two ends of the cable. The wire connected to the pin on the outside of the left plug should be the same color as the wire connected to the pin on the outside of the right plug. (See [Figure A-1 on page A-2](#).)

If your cable comes from Cisco Systems, pin 1 is white on one plug, and pin 8 is white on the opposite plug. (A rollover cable reverses the wire connections at the opposite ends: 1 to 8, 2 to 7, 3 to 6, 4 to 5, 5 to 4, 6 to 3, 7 to 2, and 8 to 1.)

Figure A-1 Identifying a Rollover Cable



Console Port to PC

Figure A-2 shows the RJ-45-to-RJ-45 rollover cable assembly and the RJ-45-to-DB-9 female DTE adapter (labeled TERMINAL); Table A-1 lists the pinouts.

Figure A-2 Console Port to PC—Cable and Adapter

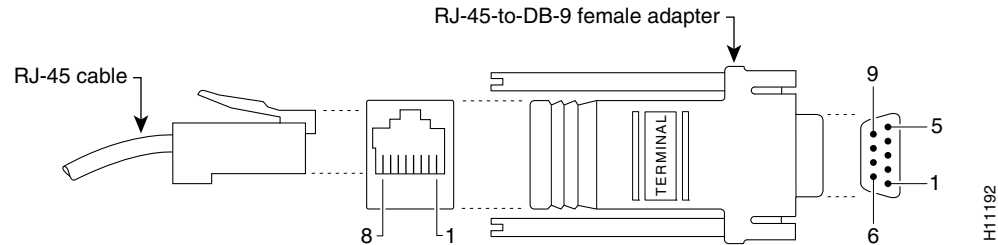


Table A-1 Console Port to PC—Cable Pinouts (RJ-45 to DB-9)

Console Port (DCE, RJ-45)	RJ-45-to-RJ-45 Rollover Cable		RJ-45-to-DB-9 Adapter "TERMINAL"		PC Port (DTE, DB-9)
	RJ-45 Pin	RJ-45 Pin	RJ-45 Pin	DB-9 Pin	
Signal					Signal
RTS	1 ¹	8	8	8	CTS
DTR	2	7	7	6	DSR
TxD	3	6	6	2	RxD
GND	4	5	5	5	GND
GND	5	4	4	5	GND
RxD	6	3	3	3	TxD
DSR	7	2	2	4	DTR
CTS	8 ¹	1	1	7	RTS

1. Pin 1 is connected to pin 8 inside the Cisco VG224 voice gateway.

Console Port to ASCII Terminal

Figure A-3 shows the RJ-45-to-RJ-45 rollover cable assembly and the RJ-45-to-DB-25 female DTE adapter (labeled TERMINAL); Table A-2 lists the pinouts.

Figure A-3 Console Port to ASCII Terminal—Cable and Adapter

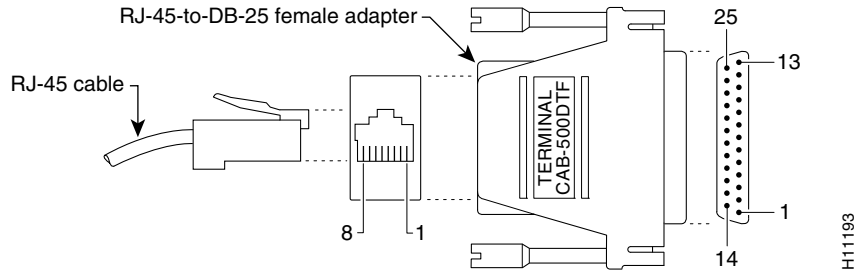


Table A-2 Console Port to ASCII Terminal—Cable Pinouts (RJ-45 to DB-25)

Console Port (DCE, RJ-45)	RJ-45-to-RJ-45 Rollover Cable		RJ-45-to-DB-25 Adapter "TERMINAL"		Terminal Port (DTE, DB-25)
	RJ-45 Pin	RJ-45 Pin	RJ-45 Pin	DB-25 Pin	
RTS	1 ¹	8	8	5	CTS
DTR	2	7	7	6	DSR
TxD	3	6	6	3	RxD
GND	4	5	5	7	GND
GND	5	4	4	7	GND
RxD	6	3	3	2	TxD
DSR	7	2	2	20	DTR
CTS	8 ¹	1	1	4	RTS

1. Pin 1 is connected to pin 8 inside the Cisco VG224 voice gateway.

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Auxiliary Port to Modem

Figure A-4 shows the RJ-45-to-RJ-45 rollover cable assembly and the RJ-45-to-DB-25 male DCE adapter (labeled MODEM); Table A-3 on page A-5 lists the pinouts.

Figure A-4 Auxiliary Port to Modem—Cable and Adapter

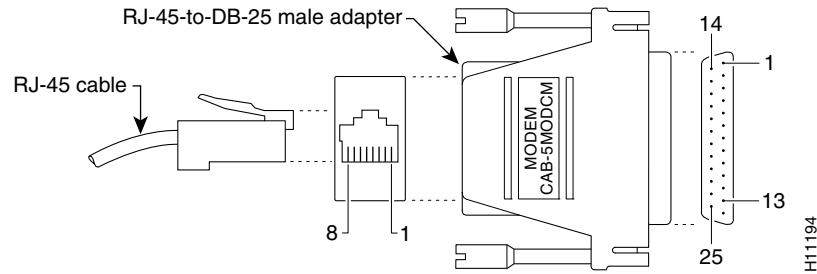


Table A-3 Auxiliary Port to Modem—Cable Pinouts (RJ-45 to DB-25)

Auxiliary Port (DTE, RJ-45)	RJ-45-to-RJ-45 Rollover Cable		RJ-45-to-DB-25 Adapter "MODEM"		Modem Port (DCE, DB-25)	
	Signal	RJ-45 Pin	RJ-45 Pin	RJ-45 Pin		DB-25 Pin
RTS		1	8	8	4	RTS
DTR		2	7	7	20	DTR
TxD		3	6	6	2	TxD
GND		4	5	5	7	GND
GND		5	4	4	7	GND
RxD		6	3	3	3	RxD
DSR		7	2	2	8	DCD
CTS		8	1	1	5	CTS

Alternative Connections to Terminal and Modem

Your Cisco VG224 voice gateway ships with an RJ-45-to-RJ-45 rollover cable and two adapters for connection to a PC, a terminal, or a modem. If you want to use an RJ-45 straight-through cable or other adapters, see Table A-4 for usable cable and adapter combinations.

Table A-4 Alternative Terminal and Modem Connections

Cisco VG224 Port Connection	RJ-45 Cable Type	Adapter
Console port to PC	Straight-through	DCE, DB-9 female
Auxiliary port to modem	Rollover ¹	DCE ² , DB-25, male
	Straight-through	DTE ² , DB-25, male

1. An octal cable or RJ-45 breakout cable is equivalent to a rollover cable.
2. Modify the DB-25 adapter by removing the wire in pin 6 and placing it in the pin 8 position.

Fast Ethernet Port Pinouts (RJ-45)

Figure A-5 shows the RJ-45 connector wiring for the Fast Ethernet cable; Figure A-5 lists the pinouts.


Note

Pinout shown is for category 3, 4, or 5 10/100BASE-T connection to an Fast Ethernet switch.

Figure A-5 RJ-45 Connector Wiring

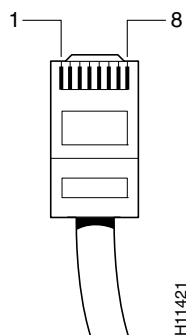


Table A-5 Fast Ethernet Port Pinouts (RJ-45)

Pin ¹	Signal
1	TX+
2	TX-
3	RX+
4	-
5	-
6	RX-
7	-
8	-

1. Any pin not referenced is not connected.

Analog Voice Multiport Pinouts (RJ-21X/CA21A)

Figure A-6 shows the RJ-21 connector wiring for the cable used for the multiport analog voice interface.

Figure A-6 RJ-21 Connector Wiring

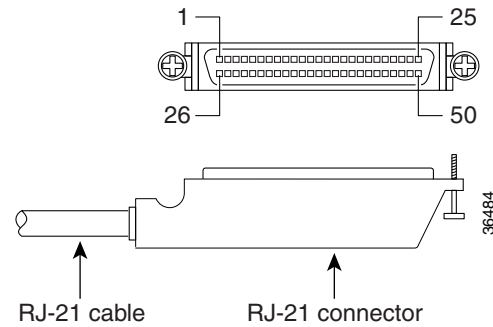


Table A-6 lists the pinouts for the RJ-21 connector.

Table A-6 RJ-21 Connector Pinouts

Port Number	Connector Pin Number	Signal	Port Number	Connector Pin Number	Signal
1	1 26	Ring Tip	13	13 38	Ring Tip
2	2 27	Ring Tip	14	14 39	Ring Tip
3	3 28	Ring Tip	15	15 40	Ring Tip
4	4 29	Ring Tip	16	16 41	Ring Tip
5	5 30	Ring Tip	17	17 42	Ring Tip
6	6 31	Ring Tip	18	18 43	Ring Tip
7	7 32	Ring Tip	19	19 44	Ring Tip
8	8 33	Ring Tip	20	20 45	Ring Tip
9	9 34	Ring Tip	21	21 46	Ring Tip
10	10 35	Ring Tip	22	22 47	Ring Tip
11	11 36	Ring Tip	23	23 48	Ring Tip

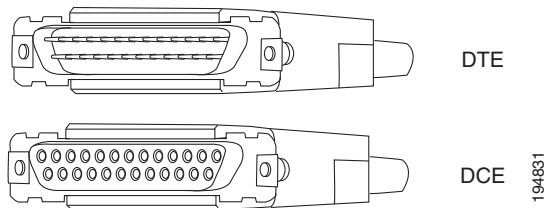
Table A-6 RJ-21 Connector Pinouts

Port Number	Connector Pin Number	Signal	Port Number	Connector Pin Number	Signal
12	12	Ring	24	24	Ring
	37	Tip		49	Tip
—	—	—	—	25, 50, 51, 52	GND

EIA/TIA-232 Connections

The EIA/TIA-232 standard supports unbalanced circuits at signal speeds up to 64 kbps.

For connection to a Cisco VG224 voice gateway serial port, use the EIA/TIA-232 serial transition cable with the Cisco 12-in-1 connector on one end and a DB-25 connector (as shown in [Figure A-7](#)) on the other. The DB-25 connector can be male for DTE or female for DCE. To order a cable, see the “[Obtaining Technical Assistance](#)” section on page 16.

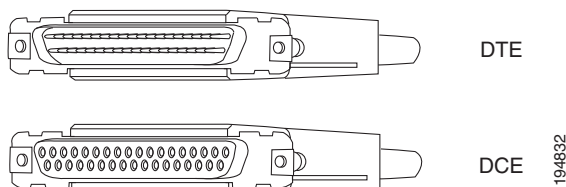
Figure A-7 EIA/TIA-232 Serial Transition Cable Connectors

EIA/TIA-449 Connections

The EIA/TIA-449 standard, which supports balanced and unbalanced transmissions, is a faster (up to 2 Mbps) version of the EIA/TIA-232 standard that provides more functions and supports transmission over greater distances.

The EIA/TIA-449 standard was intended to replace the EIA/TIA-232 standard. However, this standard was not widely adopted because of the large installed base of DB-25 hardware. Also, the larger size of the 37-pin EIA/TIA-449 connectors limited the number of connections possible (fewer than are possible with the smaller, 25-pin EIA/TIA-232 connector).

To make a connection to a Cisco VG224 voice gateway serial port, use the EIA/TIA-449 serial transition cable with the Cisco 12-in-1 connector on one end and a DB-37 connector (as shown in [Figure A-8](#)) on the other. The DB-37 connector can be male for DTE or female for DCE. To order a cable, see the “[Obtaining Technical Assistance](#)” section on page 16.

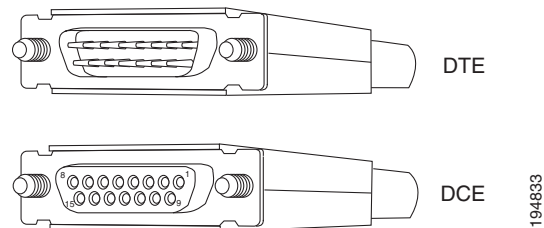
Figure A-8 EIA/TIA-449 Serial Transition Cable Connectors

V.35 Connections

The V.35 standard is recommended for speeds up to 48 kbps, although in practice it is used successfully at 4 Mbps. The Cisco VG224 voice gateway supports speeds up to 2.048 Mbps.

Use the V.35 serial transition cable (not included) with the Cisco 12-in-1 connector on one end and a standard 34-pin Winchester-type connector (as shown in [Figure A-9](#)) on the other. The 34-pin Winchester-type connector can be male for DTE or female for DCE. To order a cable, see the “[Obtaining Technical Assistance](#)” section on page 16.

Figure A-9 V.35 Serial Transition Cable Connectors

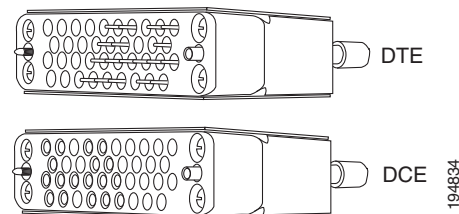


X.21 Connections

The X.21 connector uses a 15-pin connector for balanced circuits and is commonly used in the United Kingdom to connect to the public data network. X.21 relocates some of the logic functions to the DTE and DCE interfaces and, as a result, requires fewer circuits and a smaller connector than EIA/TIA-232.

Use the X.21 serial transition cable (not included) with the Cisco 12-in-1 connector on one end and a DB-15 connector (as shown in [Figure A-10](#)) on the other. The DB-15 connector can be male for DTE or female for DCE. To order a cable, see the “[Obtaining Technical Assistance](#)” section on page 16.

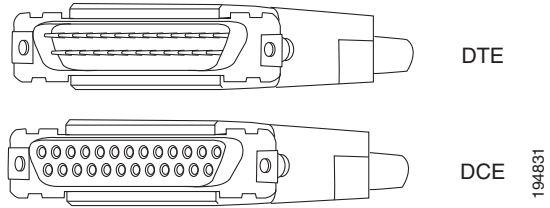
Figure A-10 X.21 Serial Transition Cable Connectors



EIA/TIA-530 Connections

The EIA/TIA-530 standard, which supports balanced transmission, provides the increased functionality, speed, and distance of EIA/TIA-449 on the smaller, DB-25 connector used for EIA/TIA-232. Like EIA/TIA-449, EIA/TIA-530 refers to the electrical specifications of EIA/TIA-422 and EIA/TIA-423. Although the specification recommends a maximum speed of 2 Mbps, EIA/TIA-530 is used successfully at 4 Mbps or faster speeds over short distances. Cisco VG224 voice gateway supports speeds up to 2.048 Mbps.

Use the EIA/TIA-530 serial transition cable (not included) with the Cisco 12-in-1 connector on one end and a DB-25 connector (as shown in [Figure A-11](#)) on the other. The DB-25 connector can be male for DTE or female for DCE. To order a cable, see the “[Obtaining Technical Assistance](#)” section on page 16.

Figure A-11 EIA/TIA-530 Serial Transition Cable Connectors



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X.21 [A-8](#)