CISCO SYSTEMS

Cisco 3800 Series Integrated Services Routers Quick Start Guide
INCLUDING LICENSE AND WARRANTY

1   Cisco One-Year Limited Warranty Terms

There are special terms applicable to your hardware warranty and various services that you can use during the warranty period. Your formal Warranty Statement, including the warranties and license agreements applicable to Cisco software, is available on Cisco.com at the following URL: www.cisco.com/go/warranty.

You can also contact the Cisco service and support website for assistance: http://www.cisco.com/en/US/support/

2   Overview

The Cisco 3800 series integrated services routers include the Cisco 3825 and Cisco 3845 routers. Both routers support WAN interface cards (WIC), voice/WAN interface cards (VWICs), high-speed WAN interface cards (HWICs), and advanced integration modules (AIMs). These routers differ as follows:

- Cisco 3825 routers support 2 network module slots. The lower network module slot, labeled 1, can hold either 1 single-wide network module or 1 extended single-wide network module. The upper network module slot, labeled 2, can hold either 1 single-wide network module, 1 extended single-wide network module, 1 double-wide network module, or 1 extended double-wide network module. Cisco 3825 routers also support 1 optional small form-factor pluggable (SFP) slot, 2 built-in Gigabit Ethernet LAN ports, 2 built-in USB ports for future use, 4 single-wide or 2 double-wide HWICs (high-speed WICs), 2 AIMs, 4 PVDMs (packet voice data modules), 24 ports of IP phone power output, and hardware-based VPN encryption acceleration. IP phone power is supported if the appropriate AC-input chassis power supply is installed.

- Cisco 3845 routers provide 4 network module slots, labeled 1, 2, 3, and 4. Each slot supports any of the following modules: single-wide network module, enhanced single-wide network module, or enhanced extended single-wide network module. Slots 1 and 2 combine to support double-wide network modules or extended double-wide network modules. Similarly, slots 3 and 4 combine to support double-wide network modules or extended double-wide network modules.
  Cisco 3845 routers also support 1 optional SFP slot, 2 built-in Gigabit Ethernet LAN ports, 2 built-in USB ports for future use, 4 single-wide or 2 double-wide HWICs, 2 AIMs, 4 PVDMs, 48 ports of IP phone power output, and hardware-based VPN encryption acceleration.

This document provides the minimum necessary information to help you install the router, power it up, and configure a network connection. This document directs you to other documents for the following information:

- More detailed router installation instructions, descriptions, and specifications
- Procedures for installing modules, interface cards, power supplies, and memory

> ✎
> **Note**   The interface numbering on Cisco 3800 series routers is different from the numbering on Cisco 3700 series routers. For more information on interface numbering, see the "Port Numbering" section on page 29.
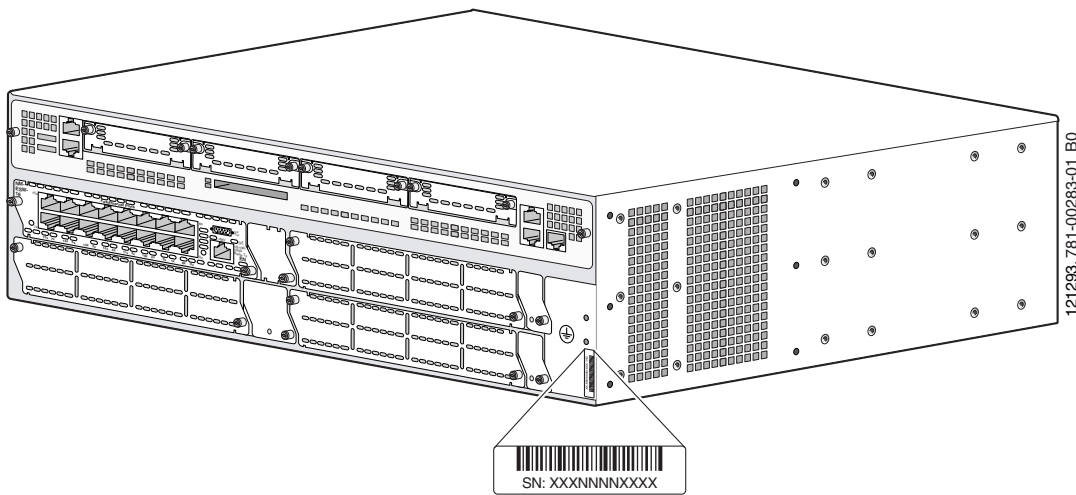
- Software configuration
- Regulatory compliance and safety information

Product Serial Number Location

The serial number label for Cisco 3825 and Cisco 3845 routers is located on the rear of the chassis, on the right side, as shown in Figure 1 and Figure 2.

Figure 1   Serial Number Location on Cisco 3825 Routers

Figure 2   Serial Number Location on Cisco 3845 Routers

For detailed product serial number location on the chassis, see the online Cisco 3800 series hardware installation documentation at the following URL:

http://cisco.com/en/US/products/ps5855/prod_installation_guides_list.html

Cisco Product Identification Tool

The Cisco Product Identification tool provides detailed illustrations and descriptions showing where to locate serial number labels on Cisco products. It includes the following features:

- A search option that allows browsing for models using a tree-structured product hierarchy
- A search field on the final results page making it easier to look up multiple products
- Clear identification of end-of-sale products in results lists

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

The Cisco Product Identification tool can be accessed at the following URL:

http://tools.cisco.com/Support/CPI/index.do

3 Documents, Equipment, and Tools

User Documentation

For complete platform documentation, see the following URL:

Step 1   http://cisco.com/en/US/products/ps5855/tsd_products_support_series_home.html

All the documents referenced in this quick start guide are available on Cisco.com. See the "Where to Go Next" section on page 34. To view or print an online document in its original page format, click the PDF icon.

Translated Versions

Para obtener la versión en español de la Quick Start Guide (Guía rápida), visite la siguiente dirección:

http://cisco.com/en/US/docs/routers/access/3800/hardware/quick/guide/38qsgesp.pdf

简体中文版的"快速入门指南",请到下列链接:

http://cisco.com/en/US/docs/routers/access/3800/hardware/quick/guide/38qsgchs.pdf

Items Included with Cisco 3800 Series Routers

Your router package should include the following items in addition to the router:

- RJ-45-to-DB-9 console cable and RJ-45-to-DB-25 modem cable for management access
- One 2.54-mm (0.100 in.) centerline, single row shunt
- Ground lug and two mounting screws; AC power cord with AC-powered routers
- One pair of rack-mount brackets with screws for 19-inch (48.26-cm) rack (screws are for bracket-to-chassis attachment)
- One pair of brackets for 19-inch (48.26-cm) rack (screws are for bracket-to-chassis attachment)
- Ethernet cable for LAN interface
- *Cisco 2800 Series and Cisco 3800 Series Integrated Services Routers Regulatory Compliance and Safety Information* document
- *Cisco Router and Security Device Manager (SDM) Quick Start Guide* document
- *Cisco 3800 Series Integrated Services Routers Quick Start Guide* (this document)

Items Not Included

Individual items in this list may be required for your application:

- PC with HyperTerminal or similar terminal emulation program, or a modem for remote administrative access
- Cables for WAN interfaces, voice interfaces, additional LAN interfaces
- Cable ties, number 2 Phillips screwdriver
- Four screws for installing the router in a rack (supplied with racks)
- 23-inch (58.42-cm) rack mount brackets
- 23-inch (58.42-cm) rack mount brackets for European Telecommunication Standards Institute (ETSI) racks (can be ordered from Cisco)
- Other typical equipment, such as channel service unit/data service unit (CSU/DSU); NT1 device for ISDN-BRI S/T; Ethernet switch

4   Install Chassis

This section contains basic installation procedures. For more detailed installation instructions, see the Cisco 3800 series hardware installation documentation at the following URL:

http://cisco.com/en/US/products/ps5855/prod_installation_guides_list.html

Safety Information

For safety information you must know before working on your Cisco router, see the *Cisco 2800 Series and Cisco 3800 Series Regulatory Compliance and Safety Information* document that accompanied this device.

This document contains translations of the warnings that appear in this quick start guide.

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. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. Statement 1071

SAVE THESE INSTRUCTIONS

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

Figyelem **FONTOS BIZTONSÁGI ELOÍRÁSOK**

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

ORIZZE MEG EZEKET AZ UTASÍTÁSOKAT!

Предупреждение **ВАЖНЫЕ ИНСТРУКЦИИ ПО СОБЛЮДЕНИЮ ТЕХНИКИ БЕЗОПАСНОСТИ**

Этот символ предупреждения обозначает опасность. То есть имеет место ситуация, в которой следует опасаться телесных повреждений. Перед эксплуатацией оборудования выясните, каким опасностям может подвергаться пользователь при использовании электрических цепей, и ознакомьтесь с правилами техники безопасности для предотвращения возможных несчастных случаев. Воспользуйтесь номером заявления, приведенным в конце каждого предупреждения, чтобы найти его переведенный вариант в переводе предупреждений по безопасности, прилагаемом к данному устройству.

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。

주의   중요 안전 지침

이 경고 기호는 위험을 나타냅니다. 작업자가 신체 부상을 일으킬 수 있는 위험한 환경에 있습니다. 장비에 작업을 수행하기 전에 전기 회로와 관련된 위험을 숙지하고 표준 작업 관례를 숙지하여 사고를 방지하십시오. 각 경고의 마지막 부분에 있는 경고문 번호를 참조하여 이 장치와 함께 제공되는 번역된 안전 경고문에서 해당 번역문을 찾으십시오.

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 legemesbeskadigelse. 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 للصدمات الكهربائية وكن على علم بالإجراءات القياسية للحيلولة دون وقوع أي حوادث. استخدم رقم البيان الموجود في أخر 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 במעגלים חשמליים ולהכיר את הנהלים המקובלים למניעת תאונות. השתמש במספר ההוראה המסופק בסופה של כל אזהרה כד 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 ОВИЕ 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	**DÔLEŽITÉ 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

Warning	Before working on a system that has an on/off switch, turn OFF the power and unplug the power cord. Statement 1

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

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

Warning   **Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.** Statement 1029

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

Warning   **To prevent personal injury or damage to the chassis, never attempt to lift or tilt the chassis using the handles on modules (such as power supplies, fans, or cards); these types of handles are not designed to support the weight of the unit.** Statement 1032

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

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

Warning   **To prevent the system from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of 40 deg.** Statement 1047

Installing the Router

You can install any Cisco 3800 series router in a rack. See the applicable instructions in the following sections.

Note   Cisco 3800 series routers are normally ordered with modules and interface cards. Before you remove or install any modules or interface cards, see the documents that accompany those items or to the online Cisco 3800 series hardware installation documentation at the following URL:

http://cisco.com/en/US/products/ps5855/prod_installation_guides_list.html

For module and interface card compatibility information, see the data sheet for each module and interface card.

Caution   To prevent damage to the chassis, never attempt to lift or tilt the chassis by the plastic panel on the front. Always hold the chassis by the metal body.

Rack-Mounting the Router

Cisco 3800 series routers can be installed in 19-inch (48.26-cm) racks. Use the standard brackets for mounting the chassis in a 19-inch (48.26-cm) rack.

> **Note** If you choose to install your Cisco router in a 23-inch (58.42-cm) rack, you must acquire a 23-inch (58.42-cm) rack adapter from the rack manufacturer.

You can mount the router in the following ways:

- Center mounting—Brackets attached in the center of the chassis with the front panel facing forward
- Front mounting—Brackets attached at the front of the chassis with the front panel facing forward
- Rear mounting—Brackets attached at the rear of the chassis with the rear panel facing forward

The brackets are shown in Figure 3 and Figure 4.

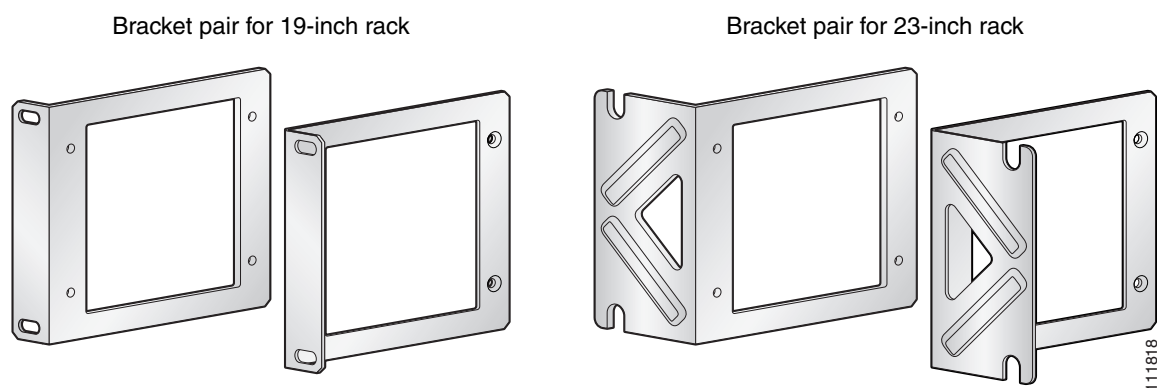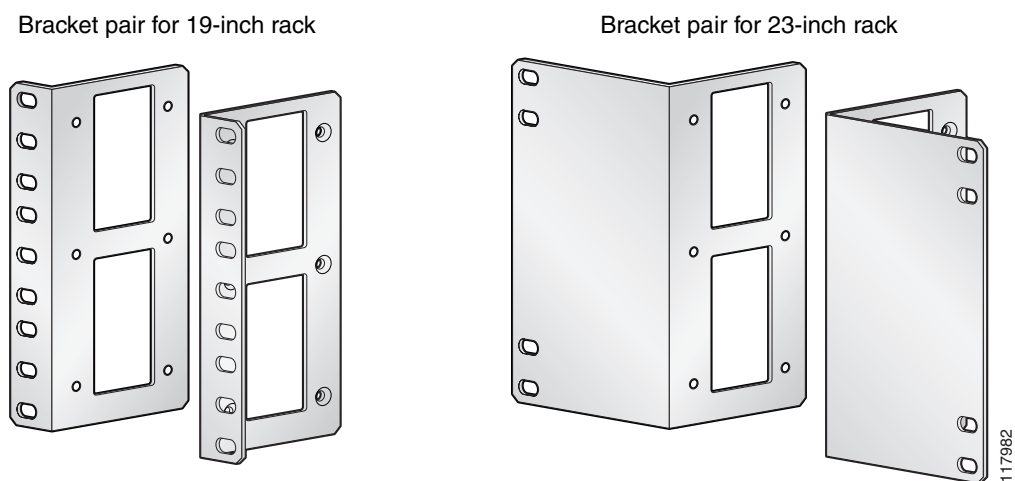*Figure 3   Rack-Mounting Brackets for Cisco 3825 Routers*

Figure 4   Rack-Mounting Brackets for Cisco 3845 Routers

Attaching Brackets to the Router for Rack-Mounting

Attach the mounting brackets to the router chassis as shown in Figure 5 through Figure 8, using the screws provided.

⚠️

Caution   Do not overtorque the screws. The recommended torque is 10–12 inch-lb (1.1–1.4 N-m) for the Cisco 3825 router and 15–18 inch-lb (1.7–2.0 N-m) for the Cisco 3845 router.

⚠️

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

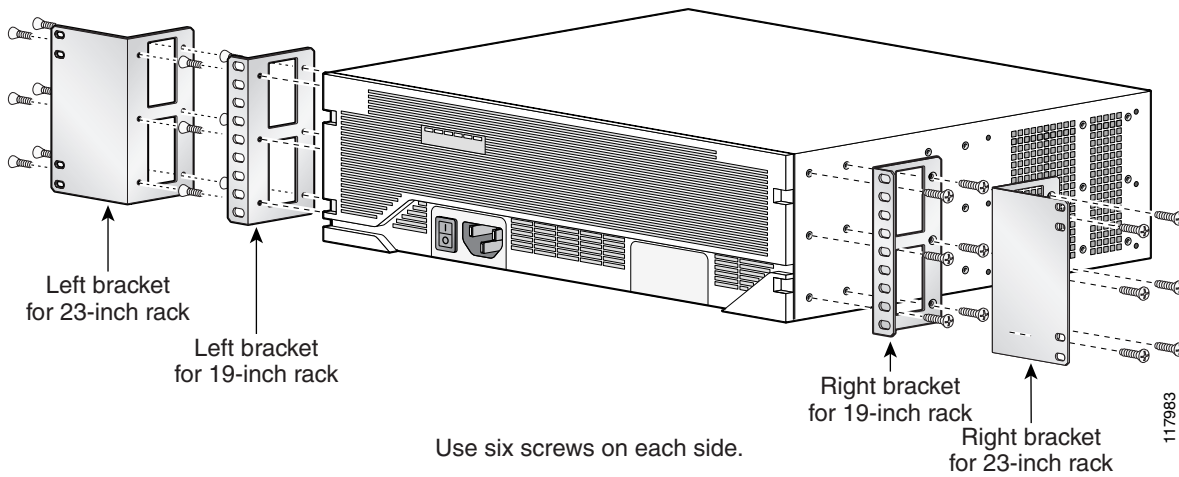*Figure 5   Bracket Installation for Front Mounting*

Left bracket
for 23-inch rack

Left bracket
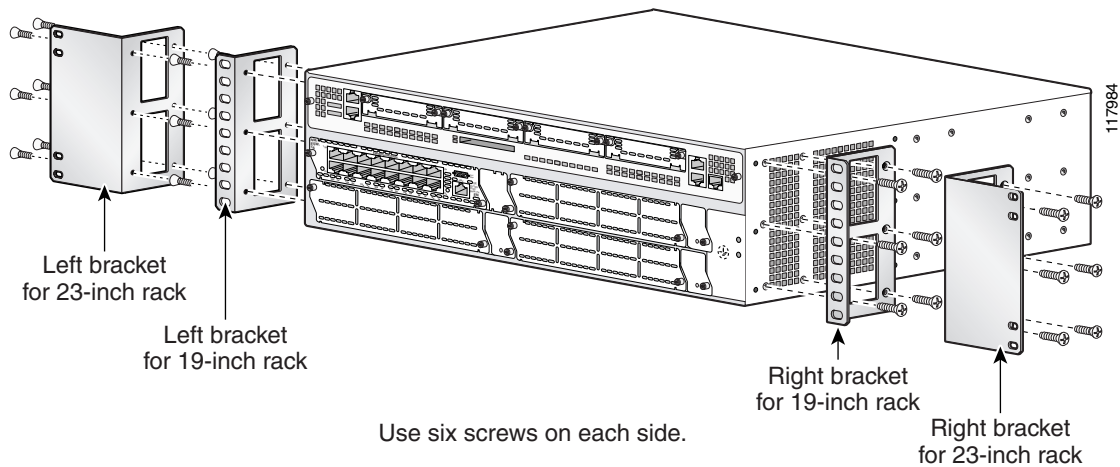for 19-inch rack

Right bracket
for 19-inch rack

Right bracket
for 23-inch rack

Use six screws on each side.

117983

Figure 6   Bracket Installation for Rear Mounting

Left bracket
for 23-inch rack

Left bracket
for 19-inch rack

Right bracket
for 19-inch rack

Right bracket
for 23-inch rack

Use six screws on each side.

117984

Figure 7   *Bracket Installation for Center Mounting with Front Panel Forward*

Left bracket
for 23-inch rack

Left bracket
for 19-inch rack

Right bracket
for 19-inch rack

Right bracket
for 23-inch rack

Use six screws on each side.

117985

Figure 8   *Bracket Installation for Center Mounting with Rear Panel Forward*

Left bracket
for 23-inch rack

Left bracket
for 19-inch rack

Right bracket
for 19-inch rack

Right bracket
for 23-inch rack

Use six screws on each side.

117986

Installing the Router in a Rack

⚠️

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

⚠️

Caution   Be sure to leave space above and below each router in a rack, to allow for cooling air circulation.

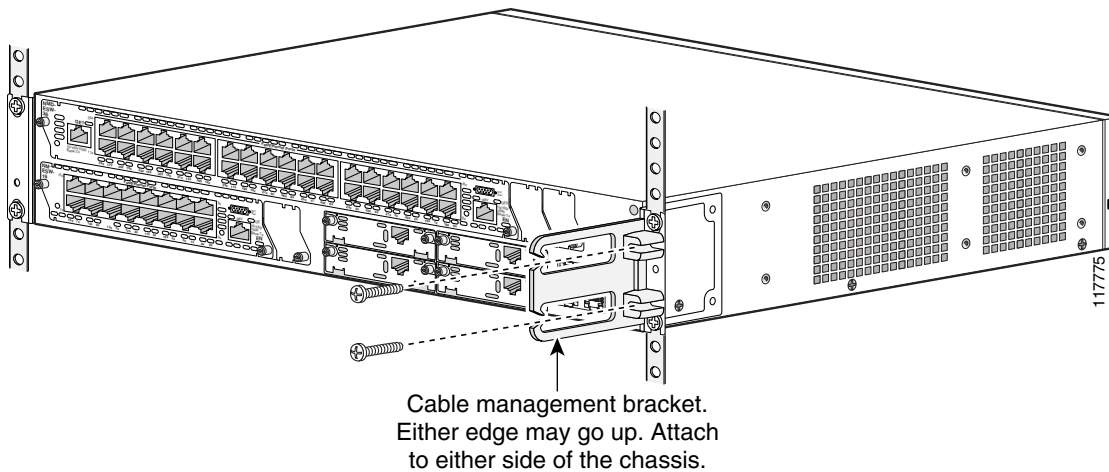Use two screws for each side (supplied with the rack, not with the router).

> **Tip**   Start the lower pair of screws first, and rest the brackets on the lower screws while you insert the upper pair of screws.

Attaching the Cable Management Bracket

The optional cable management bracket provides attachment points for organizing and routing cables. Attach the cable management bracket to the left or right rack-mount bracket using the screw provided. You can attach the cable management bracket to either the upper or the lower threaded hole. See Figure 9 for attachment locations.

Figure 9   Attaching the Cable Management Bracket to the Cisco 3825 Router

Cable management bracket.
Either edge may go up. Attach
to either side of the chassis.

Grounding the Chassis

> **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**   **During this procedure, wear grounding wrist straps to avoid ESD damage to the card. Do not directly touch the backplane with your hand or any metal tool, or you could shock yourself.** Statement 94

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 6 AWG (13 mm^2) copper wire and the ground lug provided in the accessory kit.

> **Note**   This equipment is suitable for installation in Network Telecommunications Facilities and locations where the NEC applies. The equipment is suitable for installation as part of the Common Bonding Network (CBN).

To connect the chassis to a reliable earth ground, perform the following steps:

Step 1   Strip one end of the ground wire to the length required for the ground lug or terminal (about 0.75 in. [20 mm] for the NEBS ground lug).

Step 2   Crimp the ground wire to the ground lug, using a crimp tool of the appropriate size.

Step 3 Attach the ground lug to the chassis as shown in Figure 10 and Figure 11. Tighten the screws to a torque of 8 to 10 in-lb (0.9 to 1.1 N-m).

Step 4 Connect the other end of the ground wire to a suitable grounding point at your site.

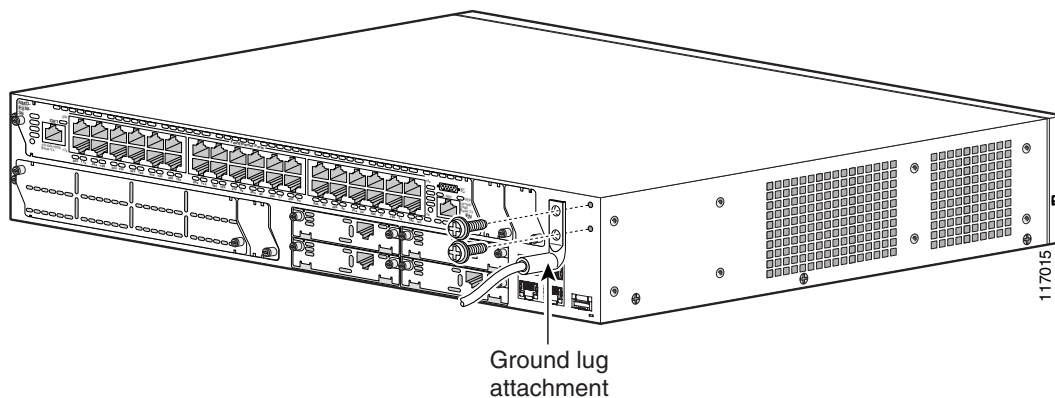*Figure 10*   *NEBS-Compliant Chassis Ground Connection on Cisco 3825 Chassis*
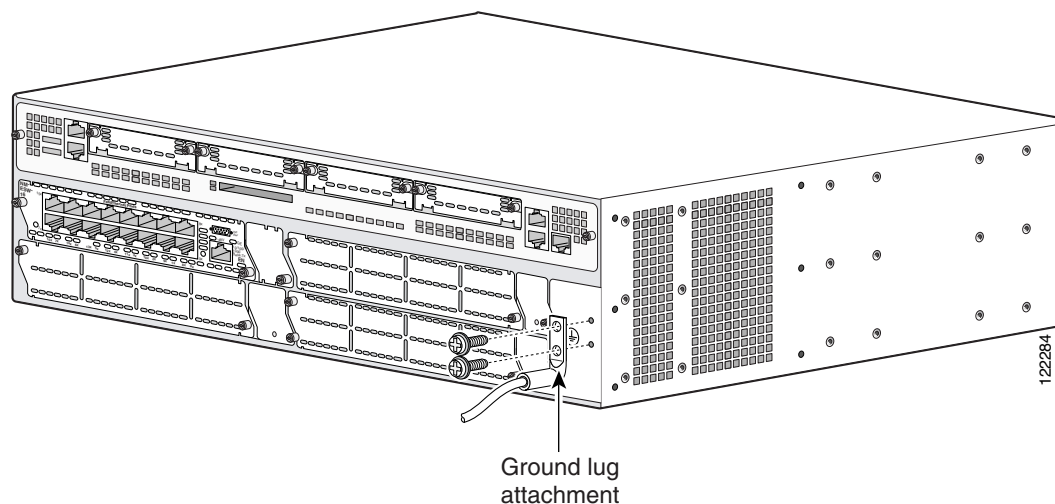

Ground lug
attachment

Figure 11   *NEBS-Compliant Chassis Ground Connection on Cisco 3845 Chassis*

Ground lug
attachment

5   Connect Cables

⚠

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

⚠

Warning   **The ISDN connection is regarded as a source of voltage that should be inaccessible to user contact. Do not attempt to tamper with or open any public telephone operator (PTO)-provided equipment or connection hardware. Any hardwired connection (other than by a nonremovable, connect-one-time-only plug) must be made only by PTO staff or suitably trained engineers.** Statement 23

Warning **To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables.** Statement 1021

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

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

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

Caution To comply with the Telcordia GR-1089 NEBS standard for electromagnetic compatibility and safety, connect the built in Gigabit Ethernet ports only to intra-building or unexposed wiring or cable. The intrabuilding cable must be shielded and the shield must be grounded at both ends. The intra-building port(s) of the equipment or subassembly must not be metallically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 4) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring.

Caution To comply with Telcordia NEBS GR-1089-Core and EN 300386 requirements, you must use foil twisted-pair cable that is properly grounded at both ends.

Power Connections

This section describes procedures for connecting your router to AC power, DC power, and backup power. See the appropriate subsection:

- Connecting the Routers to AC Power, page 16
- Connecting the Router to DC Power, page 17
- Connecting the Router to Backup Power, page 22

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

Note The installation must comply with all required electrical codes applicable at the installation site.

Connecting the Routers to AC Power

If your router uses AC power, connect it to a 15 A, 120 VAC (240 VAC, 10 A) circuit with overcurrent protection. If backup power is required, see the "Connecting the Router to Backup Power" section on page 22.

Note The input voltage tolerance limits for AC power are 85 and 264 VAC.

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 **This product requires short-circuit (overcurrent) protection, to be provided as part of the building installation. Install only in accordance with national and local wiring regulations.** Statement 1045

The following warning applies to both AC power supplies and AC power supplies with IP phone power in the Cisco 3825 router and Cisco 3845 router:

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, 15 A (240 VAC, 10 A).** Statement 1005

Note This product requires surge protection to be provided as part of the building installation. To comply with the Telcordia GR-1089 NEBS standard for electromagnetic compatibility and safety, an external surge protective device (SPD) is required at the AC power service equipment.

Connecting the Router to DC Power

If your router has a DC-input power supply, follow the directions in this section for proper wiring. If backup power is required, see the "Connecting the Router to Backup Power" section on page 22.

DC Wiring Requirements for Cisco 3800 Series Routers

Caution DC return is isolated from the frame (NEBS DC-I).

Warning **This product requires short-circuit (overcurrent) protection, to be provided as part of the building installation. Install only in accordance with national and local wiring regulations.** Statement 1045

Warning **This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 60 VDC, 20 A.** Statement 1005

Warning **This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 60 VDC, 30 A.** Statement 1005

Note 60 VDC, 20 A applies to DC power in Cisco 3825 routers and 60 VDC, 30 A applies to DC power in Cisco 3845 routers.

Warning **Use copper conductors only.** Statement 1025

A Cisco 3800 series router with a DC-input power supply requires copper wire for the power connections. Table 1 and Table 2 summarize the DC wiring requirements.

If you connect dual DC power sources to a Cisco 3825 router, both sources must be the same polarity and voltage.

For a Cisco 3845 router, the safety ground wire connection must be at the same potential as the 0 V (return) connection.

Table 1   DC Wiring Requirements for Cisco 3825 Routers

DC Input[1]	DC Input Wire Size	Safety Ground Wire Size	Wire Terminal (Lug)	Overcurrent Protection
24–36 VDC, 12 A, positive or negative, single source or dual sources	AWG 14 (2.0 mm^2)	AWG 14 (2.0 mm^2), minimum	Amp/Type No. 32957 or equivalent	20 A maximum
36–60 VDC, 8 A, positive or negative, single source or dual sources				

1. The input voltage tolerance limits for DC power are 18 and 72 VDC.

Table 2   DC Wiring Requirements for Cisco 3845 Routers

DC Input[1]	DC Input Wire Size	Safety Ground Wire Size	Wire Terminal (Lug)	Overcurrent Protection
24–36 V, 19 A, positive or negative, single source or dual sources	AWG 12 (3.0 mm^2)	AWG 12 (3.0 mm^2), minimum	Amp/Tyco No. 34852 or equivalent	30 A
36–60 V, 13 A, positive or negative, single source or dual sources	AWG 12 or 14 (3.0 or 2.0 mm^2)	AWG 12 (3.0 mm^2), minimum	For AWG 12: Amp/Tyco No. 34852 or equivalent For AWG 14: Amp/Tyco No. 32957 or equivalent	20 - 30 A

1. The input voltage tolerance limits for DC power are 18 and 72 VDC.

Wiring Procedure for DC Input

To connect the router to a DC power source, perform the following steps:

Step 1   Remove power from the DC circuit. To ensure that power is removed from the DC circuit, locate the circuit breaker for the DC circuit, switch the circuit breaker to the OFF position, and tape the circuit-breaker switch in the OFF position.

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

Tip   Secure all power cabling when installing this unit, to avoid disturbing field-wiring connections.

Warning   **When stranded wiring is required, use approved wiring terminations, such as closed-loop or spade-type with upturned lugs. These terminations should be the appropriate size for the wires and should clamp both the insulation and conductor.** Statement 1002

Step 2   Strip the wires to the appropriate length for the terminals. The strip length is 3/16 to 1/4 inch (5 to 6 mm) for Amp/Tyco number 32957 terminals and 5/16 to 3/8 inch (8 to 9 mm) for Amp/Tyco number 34852 terminals.

Step 3   Crimp the terminals onto the DC power input and safety ground wires.

Step 4   Remove the plastic safety covers from the terminal block. Save the covers for reinstallation after you finish wiring.

Step 5 Connect the wires to the terminal block, starting with the safety ground wire. Connect each wire to the appropriate terminal as shown in Figure 12. Tighten the terminal screws to 10.0 ± 0.5 in-lb (1.1 ± 0.05 N-m).

⚠️
Warning **The illustration shows the DC power supply terminal block. Wire the DC power supply as illustrated. The proper wiring sequence is ground to ground, positive to positive, and negative to negative. The ground wire should always be connected first and disconnected last.** Statement 239

⚠️
Warning **An exposed wire lead from a DC-input power source can conduct harmful levels of electricity. Be sure that no exposed portion of the DC-input power source wire extends from the terminal block plug.** Statement 122

⚠️
Caution Do not overtorque the terminal block screws. The recommended torque is 10.0 ± 0.5 in-lb (1.1 ± 0.05 N-m).

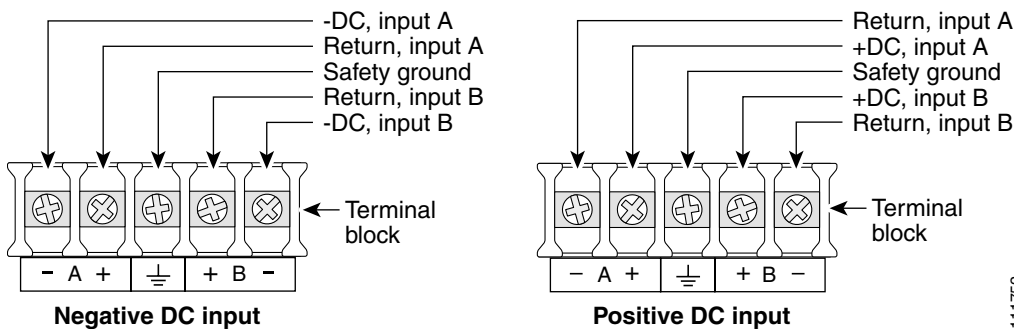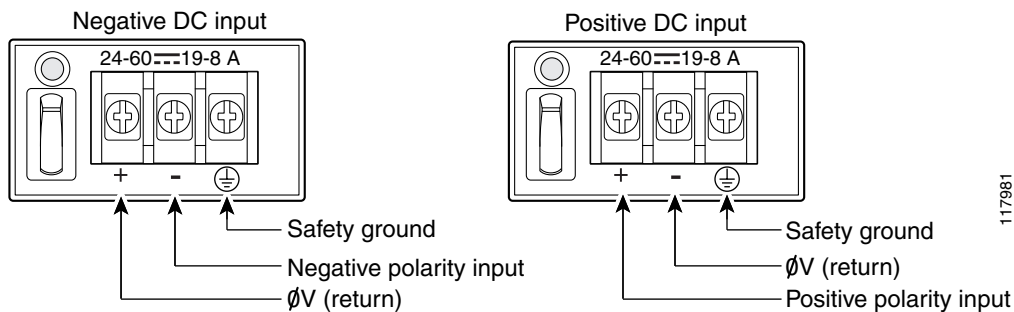*Figure 12* *DC Power Connections for Cisco 3825 Routers (Typical)*

Figure 13 *DC Power Connections for Cisco 3845 Routers*

Step 6 Install the plastic safety covers over the terminals. (See Figure 14 or Figure 15.)

⚠️
Warning **The safety cover is an integral part of the product. Do not operate the unit without the safety cover installed. Operating the unit without the cover in place will invalidate the safety approvals and pose a risk of fire and electrical hazards.** Statement 117

Step 7 Organize and secure the wires using cable ties as shown in Figure 14 or Figure 15. Make sure that the wires do not project above or below the front panel of the router.

Step 8 If a second power supply is installed and intended for use, repeat Step 1 through Step 7 for the second power supply.

Step 9 Turn on power to the DC circuit. Be sure to remove tape used to secure the circuit-breaker switch in the OFF position.

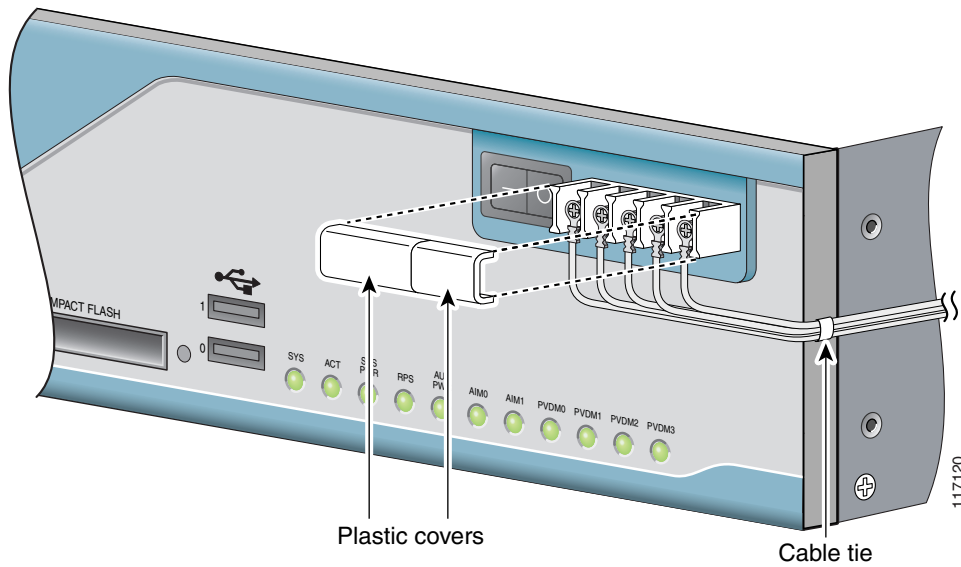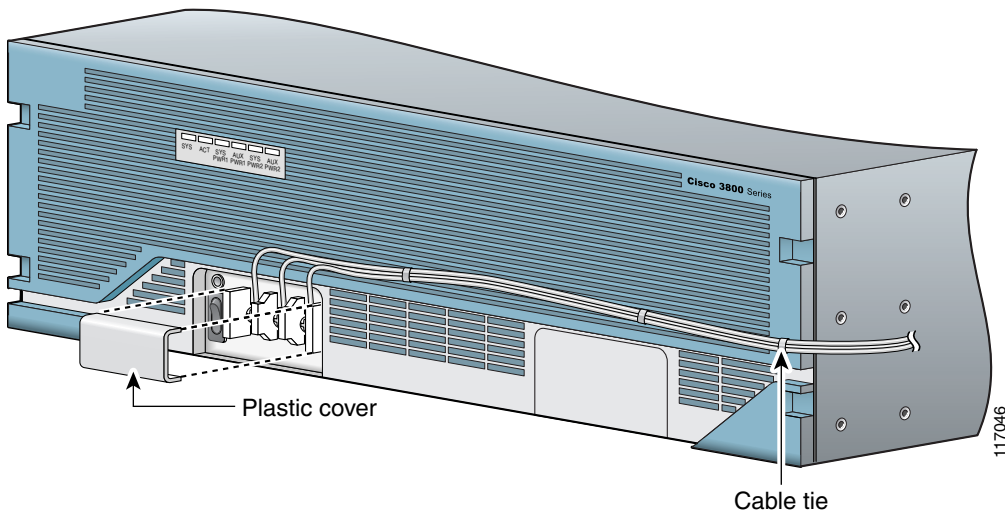*Figure 14   DC Wire Routing and Attachment for Cisco 3825 Routers*

Plastic covers

Cable tie

Figure 15   DC Wire Routing and Attachment for Cisco 3845 Routers

Plastic cover

Cable tie

Approved Scenarios and Scenarios Not Approved for Dual DC Power Supply Configuration

You can connect a single DC power source to either the A input or the B input. If there are dual power sources, connect one source to the A input and one source to the B input. Both sources must be the same polarity (with respect to ground) and voltage (within 0.25 volts). Do not connect –DC grounded and +DC grounded dual sources to a Cisco 3825 series integrated router.
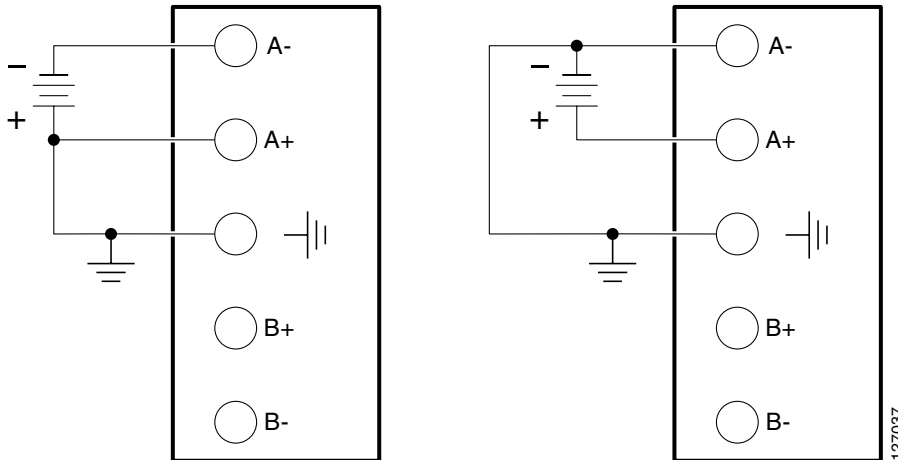
⚠

Caution   Dual sources with opposite-polarity grounding damage equipment.
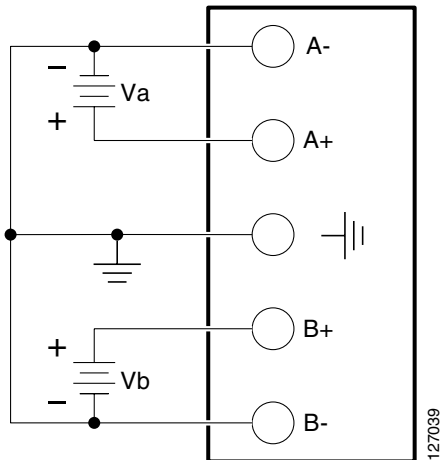
In Figure 16, either the positive source terminal or the negative source terminal is tied to ground.

Figure 16   Connecting to One Source Only—Source A or Source B

In Figure 17, source A and source B share common negative terminal connections.

Figure 17   Connecting Source A and Source B with Common Negative Terminals

In Figure 18, source A and source B share common positive terminal connections. This is allowed only if Va equals Vb (within 0.25 V).
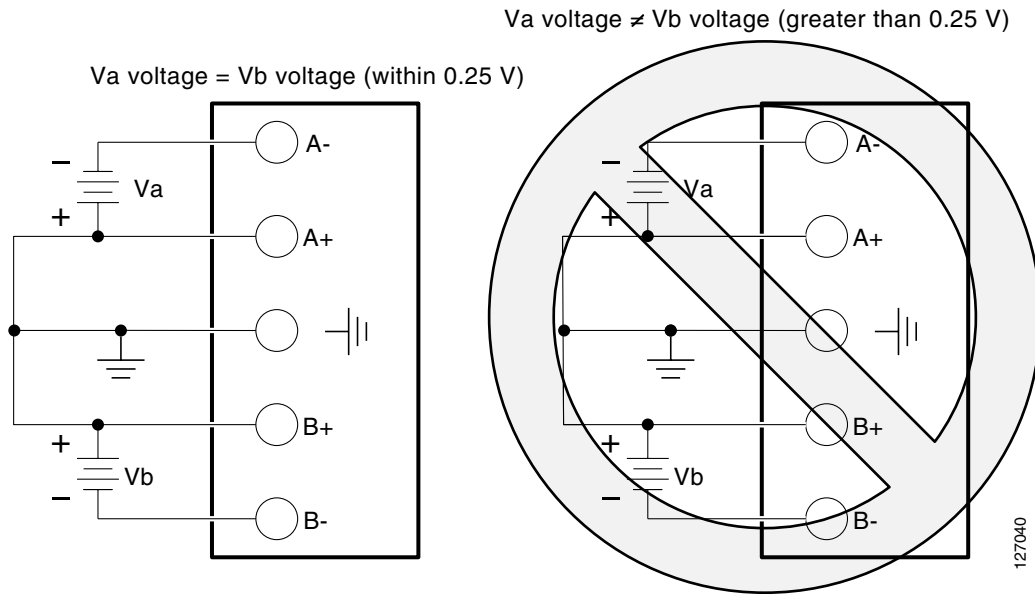
⚠️
Caution   When connecting source A and source B with common positive terminals, if source A and source B voltages are unequal by more than 0.25 V, the higher-voltage source can discharge into the lower-voltage source through the A- and B- input terminals. Excessive discharging currents through these terminals can cause one or both of the dual input DC power supply's internal A- or B- fuses to open, resulting in lack of redundancy or system failure. When source A and source B are within 0.25 V, discharge current is minimal.

✎
Note   When source A and source B are wired with common negative terminals, as in Figure 17, discharging does not occur and there is no restriction requiring that source A and source B voltages be equal.

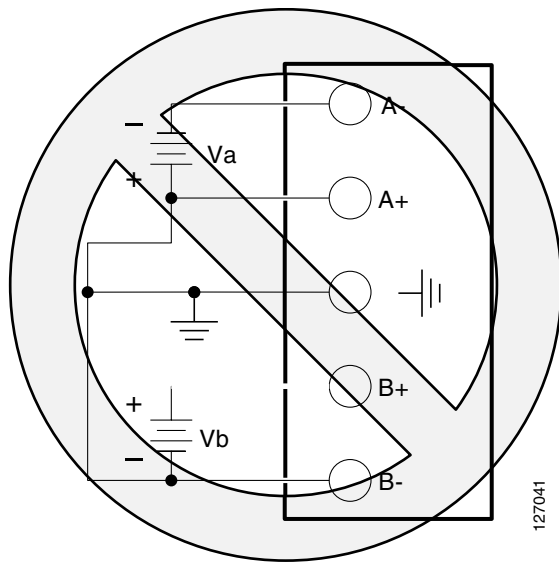*Figure 18   Connecting Source A and Source B with Common Positive Terminals*

In Figure 19, source A and source B are wired with opposite polarity grounds. *Do not* use this configuration.

⚠
Caution   *Do not* use the DC input configuration shown in Figure 19.

Figure 19   Source A and Source B Wired with Opposite-Polarity Grounds

Connecting the Router to Backup Power

The Cisco 3845 router operates in redundant mode when two power supplies are installed. The Cisco 3825 router has one internal power supply and a connector for mating to an external backup power source.

To connect the Cisco 3825 router to the external Cisco Redundant Power System (RPS), remove the RPS connector cover from the bezel and connect the RPS cable. (See Figure 20 and Figure 21.)

See the *Cisco RPS-675 Hardware Installation Guide* for more information about RPS power connections. To locate this documents, see the "Where to Go Next" section on page 34.

Note For information about installing a second power supply in the Cisco 3845 router, see the Cisco 3800 series hardware installation documentation at the following URL:

http://cisco.com/en/US/products/ps5855/prod_installation_guides_list.html

Caution Before connecting the RPS to the router, make sure that either the RPS is in standby mode or the RPS AC power is disconnected. Connecting the RPS to AC power automatically places the RPS in active mode.

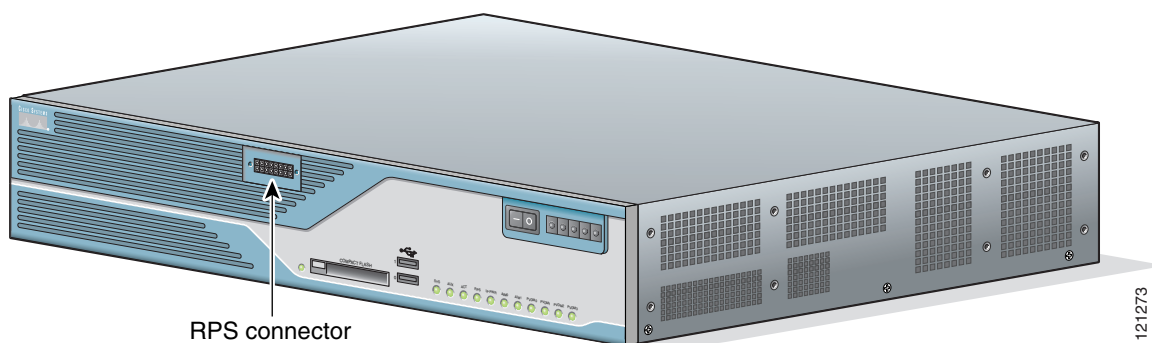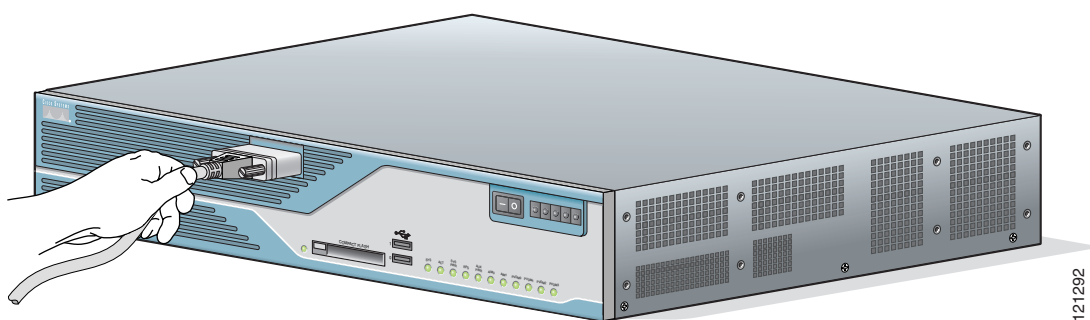*Figure 20   RPS Connector on the Cisco 3825 Router*

RPS connector

Figure 21   Plugging the RPS Connector into the Cisco 3825 Router

WAN, LAN, and Voice Connections

The connections and cables listed in Table 3 are described in detail in the Cisco 3800 series hardware installation documents at the following URL:

http://cisco.com/en/US/products/ps5855/prod_installation_guides_list.html

Note An Ethernet cable is typically provided with the router. Additional cables and transceivers can be ordered from Cisco. For ordering information, contact customer service. For cable pinouts, see the *Cisco Modular Access Router Cable Specifications* document.

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

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

⚠ Warning **Class 1 laser product.** Statement 1008

⚠ Caution To comply with the Telcordia GR-1089 NEBS standard for electromagnetic compatibility and safety, connect Gigabit Ethernet ports using RJ-45 connectors for shielded twisted pair cable only to intra-building or unexposed wiring or cable. The intrabuilding cable must be shielded and the shield must be grounded at both ends. The intra-building port(s) of the equipment or subassembly must not be metallically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 4) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring.

Table 3 summarizes some typical WAN, LAN, and voice connections for the Cisco 3800 series routers.

Table 3   WAN, LAN, and Voice Connections

Port or Connection	Port Type, Color[1]	Connection	Cable
Ethernet	RJ-45, yellow	Ethernet switch	Category 5 or higher Ethernet
T1/E1 WAN xCE1T1-PRI	RJ-48C/CA81A RJ-48S, tan	T1 or E1 network External T1 CSU or other T1 equipment	RJ-48 T1/E1 RJ-48S to RJ-48S TE; RJ-48S to RJ-48S NT; RJ-48S to RJ-48S T1' RJ-48S to bare RJ-48S to BNC; RJ-48S to twinaxial cable RJ-48S to DB-15 RJ-48S to DB-15 null
T3/DS3/E3 WAN	BNC connector	T3 network, CSU/DSU, or other T3/DS3 equipment	75-ohm coaxial cable
OC3 / STM-1 WAN	SC connector	OC3/STM-1 network or device	Single-mode or multimode optical fiber
Cisco serial	60-pin D-sub, blue	CSU/DSU and serial network or equipment	Cisco serial transition cable that matches the signaling protocol (EIA/TIA-232, EIA/TIA-449, V.35, X.21, or EIA-530) and the serial port operating mode (DTE or DCE).[2]
Cisco Smart serial	Cisco Smart compact connector, blue	CSU/DSU and serial network or equipment	
ADSL	RJ-11C/CA11A, lavender	Network demarcation device for service provider's DSL interface	RJ-11 straight-through
SHDSL	RJ-11C/CA11A, lavender, RJ-14	Network demarcation device for service provider's DSL interface	RJ-11 straight-through for 2-wire RJ-14 straight-through for 4-wire
T1/E1 digital voice	RJ-48C/CA81A, tan	Digital PBX, ISDN network, CSU/DSU	RJ-48 T1/E1
Analog voice FXS	RJ-11, gray	Telephone, fax	RJ-11; RJ21 if using NM-HDA, straight-through
Analog voice FXO	RJ-11, pink	Central office, analog PBX	
Analog voice E&M	RJ-45, brown	Analog PBX	RJ-45
BRI S/T WAN (external NT1)	RJ-45/CB-1D, orange	NT1 device or private integrated network exchange (PINX)	RJ-45 straight-through
BRI U WAN (built-in NT1)	RJ-49C/CA-A11, red	ISDN network	RJ-48 straight-through

Table 3   WAN, LAN, and Voice Connections

Port or Connection	Port Type, Color[1]	Connection	Cable
BRI NT/TE (built-in NT1)	RJ-45, orange	ISDN terminal equipment and ISDN network	RJ-45 straight-through in TE mode BRI crossover in NT mode
56/64-kbps CSU/DSU	8-pin modular, blue	RJ-48S interface in subrate device or network	RJ-48 straight-through
T1/FT1 CSU/DSU	8-pin modular, blue	RJ-48C interface	RJ-48 straight-through
Gigabit Ethernet SFP, optical	LC, color according to optical wavelength	1000BASE-SX, -LX, -LH, -ZX, -CWDM	Optical fiber as specified on applicable data sheet

1. The color codes are specific to cables shipped by Cisco.
2. See the *Cisco Modular Access Router Cable Specifications* document for information about selecting these cables.

System Management Connections

The connections described in Table 4 provide system management access.

✎

Note   The USB ports (version 1.1) are intended for future use only.

Table 4   System Management Connections

Port	Color	Connected To	Cable
Console	Light blue	PC or ASCII terminal communication port (usually labeled COM)	RJ-45-to-DB-9 console cable
Auxiliary	Black	Modem for remote access	RJ-45-to-DB-25 modem cable or RJ-45-to-DB-9 console cable and DB-9 to DB-25 adapter

6   Power Up the Router

⚠

Caution   To ensure adequate cooling, never operate the router unless the cover and all modules and cover plates are installed.

Checklist for Power Up

You are ready to power up the Cisco 3800 series router after the following steps are completed:

*   Chassis is securely mounted and grounded. (See the "Install Chassis" section on page 5.)
*   Power and interface cables are connected. (See the "Connect Cables" section on page 15.)
*   PC with HyperTerminal or similar terminal emulation program is connected to the console port, powered up, and configured for 9600 baud, 8 data bits, 1 stop bit, no flow control, and no parity. (See the "Power Connections" section on page 16.)
*   Suitable PC COM port is selected in the terminal emulation program.
*   You have selected passwords for access control.
*   You have determined the IP addresses for the Ethernet and serial interfaces.

✎

Note   For initial power-up, a direct console connection is recommended. After the initial configuration is completed, a remote modem connection can be used for router management.

Power-Up Procedure

To power up your Cisco router and verify that it goes through its initialization and self-test, perform this procedure. When the procedure is finished, the Cisco router is ready to configure.

> ✎
> **Note** To view the boot sequence, you must have a console connection to the Cisco router *before* it powers up.

Step 1 Make sure that your PC is powered up and connected as described in the "Checklist for Power Up" section on page 25.

Step 2 Move the power switch to the ON position on the router. The SYS LED blinks green on both the Cisco 3825 and Cisco 3845 routers. During the boot process, the SYS PWR LED on the Cisco 3825 chassis is steady green, and the SYS PWR1 LED or SYS PWR2 LED on the Cisco 3845 chassis are off. If this does not happen, see the "Troubleshooting" document in the online Cisco 3800 series hardware installation documentation at the following URL:

http://cisco.com/en/US/products/ps5855/tsd_products_support_troubleshoot_and_alerts.html

Startup messages appear in your terminal emulation program window. After Cisco IOS software has finished booting, the SYS LED for both routers is steady green, and the SYS PWR1 LED or SYS PWR2 LED on the Cisco 3845 chassis is steady green.

> ⚠
> **Caution** *Do not press any keys on the keyboard until the messages stop and the SYS LED is steady green.* Any keys pressed during this time are interpreted as the first command typed when the messages stop, which might cause the router to power off and start over. It takes a few minutes for the messages to stop.

Verify the Front Panel LED Indications

The indicator LEDs described in Table 4 provide power, activity, and status information:

Table 5   Cisco 3800 Series LED Indicators

LED	Cisco 3825 Router	Cisco 3845 Router	Color and State	Meaning
SYS	Front	Front	Off	Router not receiving power
			Steady green	Normal operation
			Blinking green	Booting or in ROM monitor mode
			Amber	Powered but malfunctioning
ACT	Front	Front	Off	No packet activity
			Steady or blinking green	Packet activity
SYS PWR	Front	—	Off	Router not receiving power
			Steady green	Normal operation
RPS	Front	—	Off	Connected to primary power system
			Steady green	Connected to redundant power system
SYS PWR1	—	Front	Off	Power system 1 not present
			Steady green	Present and enabled
			Amber	Present and malfunctioning

Table 5   Cisco 3800 Series LED Indicators (continued)

LED	Cisco 3825 Router	Cisco 3845 Router	Color and State	Meaning
SYS PWR2	—	Front	Off	Power system 2 not present
			Steady green	Present and enabled
			Amber	Present and malfunctioning
AUX PWR	Front	—	Off	IP phone power off
			Steady green	Normal operation
			Amber	Powered but malfunctioning
AUX PWR1	—	Front	Off	IP phone power system 1 not present
			Steady green	Present and enabled
			Amber	Powered but malfunctioning
AUX PWR2	—	Front	Off	IP phone power system 2 not present
			Steady green	Present and enabled
			Amber	Powered but malfunctioning
AIM0	Front	Rear	Off	AIM0 not present
			Green	Present and enabled
			Amber	Present but malfunctioning
AIM1	Front	Rear	Off	AIM1 not present
			Green	Present and enabled
			Amber	Present but malfunctioning
PVDM0	Front	Rear	Off	PVDM0 not present
			Green	Present and enabled
			Amber	Present but malfunctioning
PVDM1	Front	Rear	Off	PVDM1 not present
			Green	Present and enabled
			Amber	Present but malfunctioning
PVDM2	Front	Rear	Off	PVDM2 not present
			Green	Present and enabled
			Amber	Present but malfunctioning
PVDM3	Front	Rear	Off	PVDM3 not present
			Green	Present and enabled
			Amber	Present but malfunctioning
CF	Front	Rear	Off	Flash memory not being accessed
			Steady green	Flash memory is being accessed; do not eject the CompactFlash memory card
			Blinking green	Flash memory is being accessed; do not eject the CompactFlash memory card
SFP	Rear	Rear	Off	SFP link not established
			Green	SFP port active, link established
GE0: Link	Rear	Rear	Off	No link
			Green	Ethernet cable present, link established

Table 5 **Cisco 3800 Series LED Indicators (continued)**

LED	Cisco 3825 Router	Cisco 3845 Router	Color and State	Meaning
GE0: Speed	Rear	Rear	Blinking green	Blink frequency indicates port speed
GE1: Link	Rear	Rear	Off	No link
			Green	Ethernet cable present, link established
GE1: Speed	Rear	Rear	Blinking green	Blink frequency indicates port speed

Verify the Hardware Configuration

To display and verify the hardware features, enter the following commands:

- **show version**—Displays the system hardware version; the installed software version; the names and sources of configuration files; the boot images; and the amount of installed DRAM, NVRAM, and flash memory.
- **show diag**—Lists and displays diagnostic information about the installed controllers, interface processors, and port adapters. Typical examples are network modules, interface cards (VICs, WICs, HWICs, and AIMs) and PVDMs.

7 Port Numbering

Each built-in networking port on a Cisco 3800 series router, and each port on a network module or interface card, is identified in Cisco IOS software by an interface type and a number or series of numbers separated by forward slashes (/). Port numbers for Cisco 3800 series routers follow the rules in this section.

✎
Note The interface numbering for Cisco 3800 series routers is different from the numbering in Cisco 3700 series routers.

Built-In Ports

The Gigabit Ethernet ports built into the router's rear panel are numbered 0/0 and 0/1. These numbers are used with the interface-type keyword **gigabitethernet** to identify these ports in Cisco IOS software commands—**gigabitethernet 0/0** and **gigabitethernet 0/1**.

Network Module Ports

Ports on network modules inserted into a router slot are numbered *slot/port*, where slot is the *slot* number and *port* is the port number.

The Cisco 3825 router has two network module slots. The lower slot is numbered 1; the upper slot is numbered 2. The Cisco 3845 router has four slots: 1 at lower right, 2 at lower left, 3 at upper right, and 4 at upper left.

✎
Note Double-wide or extended double-wide network modules use slot numbers 2 and 4.

Ports in a network module are normally numbered from right to left and bottom to top, starting at 0. See the *Cisco Network Modules Hardware Installation Guide* for more information.

Table 6 summarizes the interface numbering.

Table 6   Port Numbering

Port Location	Port Numbering Scheme	Examples[1]
Built into the chassis rear panel	*Interface-type* 0 / *port*	interface gigabitethernet 0/1
In an interface card plugged directly into a chassis slot	*Interface-type* 0 / *interface-card-slot*[2] / *port*	interface serial 0/1/1
In an interface card plugged into a slot in a network module	*Interface-type network-module-slot*[3] / *interface-card-slot* / *port*	voice-port 1/1/0
Built into a network module	*Interface-type network-module-slot* / *port*	interface gigabitethernet 1/0

1. The interfaces listed are examples only; other possible interface types are not listed.
2. Interface card slot numbers for double-width interface-card slots are 1 and 3 only.
3. Network module slot numbers are 1 and 2 for the Cisco 3825 router; 1, 2, 3, and 4 for the Cisco 3845 router.

Interface Card Ports

Interface cards can be inserted either directly into a router slot or into a slot in a network module.

Interface Card in Router

Interface cards inserted into a router slot are numbered *0/HWIC-slot/port*. *HWIC-slot* is 0, 1, 2, or 3, as labeled on the router rear panel.

> ✎
> **Note**   Double-wide interface cards use slot numbers 1 and 3.

Ports in an interface card are normally numbered from right to left and bottom to top, starting at 0. See the *Cisco Interface Cards Installation Guide* for more information.

Interface Card in Network Module

Some network modules provide slots for interface cards. Ports in these interface cards are numbered *router-slot/module-slot/port*, where *router-slot* is 1, 2, 3, or 4.

> ✎
> **Note**   Double-wide or extended double-wide network modules use slot numbers 2 and 4.

Slots in network modules for interface cards are normally numbered from right to left, starting at 0. Ports in an interface card are normally numbered from right to left and bottom to top, starting at 0. For more information, see the *Cisco Network Modules Hardware Installation Guide* and *Cisco Interface Cards Installation Guide*.

> ✎
> **Note**   On the Cisco 3825 and Cisco 3845 routers, the interface numbering scheme is the same for asynchronous interfaces as other types of interfaces. To configure the line associated with an async interface, simply use the interface number to specify the async line. For example, line 0/3/0 specifies the line associated with interface serial 0/3/0 on a WIC-2A/S in slot 3. Similarly, line 1/22 specifies the line associated with interface async 1/22 on an NM-32A in network module slot 1.

8 Perform Initial Configuration

You can configure your router by using one of the following tools:

- Cisco Router and Security Device Manager (SDM)—See the "Initial Configuration Using Cisco Router and Security Device Manager (SDM)" section on page 30.
- Setup command facility—See the "Initial Configuration Using the Setup Command Facility" section on page 31.
- Command-line interface (CLI)—See the "Initial Configuration Using the Cisco CLI—Manual Configuration" section on page 33.

> ✎
> **Note**   If you need help with the interface and port numbering, see the "Port Numbering" section on page 29.

Initial Configuration Using Cisco Router and Security Device Manager (SDM)

If the following messages appear at the end of the startup sequence, Cisco Router and Security Device Manager (SDM) is installed on your router:

```
yourname con0 is now available

Press RETURN to get started.
```

For instructions on configuring your router by using SDM, see the *Cisco Router and Security Device Manager (SDM) Quick Start Guide* that shipped with your router.

http://www.cisco.com/pcgi-bin/tablebuild.pl/sdm

To obtain the SDM quick start guide, SDM release notes, and other SDM documentation, go to www.cisco.com/go/sdm and click the Technical Documentation link.

Initial Configuration Using the Setup Command Facility

This section shows how to use the setup command facility to configure a hostname for the router, set passwords, and configure an interface for communication with the management network. If the following messages appear at the end of the startup sequence, the setup command facility has been invoked automatically:

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

At any point you may enter a question mark '?' for help.
Use ctrl-c to abort configuration dialog at any prompt.
Default settings are in square brackets '[]'.

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

The setup command facility prompts you for basic information about your router and network, and it creates an initial configuration file. After the configuration file is created, you can use the CLI or Cisco Router and Security Device Manager (SDM) to perform additional configuration.

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

For help with interface and port numbering, see the "Port Numbering" section on page 29.

✎

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

Step 1   To proceed using the setup command facility, enter **yes** when the power-up messages have ended.

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

Step 2   When the following messages appear, press **Return** to enter basic management setup:

```
At any point you may enter a question mark '?' for help.
Use ctrl-c to abort configuration dialog at any prompt.
Default settings are in square brackets '[]'.

Basic management setup configures only enough connectivity
for management of the system, extended setup will ask you
to configure each interface on the system

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

Step 3   Enter a hostname for the router (this example uses **Router**):

```
Configuring global parameters:

Enter host name [Router]: Router
```

Step 4   Enter an enable secret password. This password is encrypted (more secure) and cannot be seen when you view the configuration.

```
The enable secret is a password used to protect access to
privileged EXEC and configuration modes. This password, after
```

```
entered, becomes encrypted in the configuration.
Enter enable secret: xxxxxx
```

Step 5   Enter an enable password that is different from the enable secret password. This password is *not* encrypted (less secure) and can be seen when you view the configuration.

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

Step 6   Enter the virtual terminal password, which prevents unauthenticated access to the router through ports other than the console port:

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

Step 7   Respond to the following prompts as appropriate for your network:

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

A summary of the available interfaces appears.

Note   The interface numbering that appears is dependent on the type of Cisco modular router platform and on the installed interface modules and cards.

```
Current interface summary

Controller Timeslots D-Channel Configurable modes Status
T1 0/0/0   24        23        pri/channelized    Administratively up
T1 0/0/1   24        23        pri/channelized    Administratively up
T1 0/2/0   24        23        pri/channelized    Administratively up
T1 0/2/1   24        23        pri/channelized    Administratively up

Any interface listed with OK? value "NO" does not have a valid configuration

Interface               IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0      20.0.0.40       YES DHCP   up                    up
GigabitEthernet0/1      unassigned      NO  unset  up                    up
```

Step 8   Choose one of the available interfaces for connecting the router to the management network:

```
Enter interface name used to connect to the
management network from the above interface summary: gigabitethernet0/0
```

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

```
Configuring interface GigabitEthernet0/0:
Use the 100 Base-TX (RJ-45) connector? [yes]: yes
Operate in full-duplex mode? [no]: no
Configure IP on this interface? [yes]: yes
    IP address for this interface: 172.1.2.3
    Subnet mask for this interface [255.255.0.0] : 255.255.0.0
    Class B network is 172.1.0.0, 16 subnet bits; mask is /16
```

The configuration is displayed:

```
The following configuration command script was created:

hostname Router
enable secret 5 $1$D5P6$PYx41/lQIASK.HcSbfO5q1
enable password xxxxxx
line vty 0 4
password xxxxxx
snmp-server community public
!
```

```
no ip routing

!
interface GigabitEthernet0/0
no shutdown
media-type 100BaseX
half-duplex
ip address 172.1.2.3 255.255.0.0
!
interface GigabitEthernet0/1
shutdown
no ip address
!
end
```

Step 10 Respond to the following prompts. Choose [**2**] to save the initial configuration:

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

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


Press RETURN to get started! RETURN
```

The user prompt appears:

```
Router>
```

Step 11 Verify the initial configuration. See the "Verify the Initial Configuration" section on page 34 for verification procedures.

Initial Configuration Using the Cisco CLI—Manual Configuration

This section shows how to display a command-line interface (CLI) prompt for configuration using the CLI, and it directs you to documentation for the CLI configuration. You can use the CLI if the following messages appear at the end of the startup sequence:

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

At any point you may enter a question mark '?' for help.
Use ctrl-c to abort configuration dialog at any prompt.
Default settings are in square brackets '[]'.

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

If these messages do not appear, SDM and a default configuration file were installed on the router at the factory. To use SDM to configure the router, see the "Initial Configuration Using Cisco Router and Security Device Manager (SDM)" section on page 30.

For help with interface and port numbering, see the "Port Numbering" section on page 29.

Step 1 To proceed with manual configuration using the CLI, enter **no** when the power-up messages end:

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

Step 2 Press **Return** to terminate autoinstall and continue with manual configuration:

```
Would you like to terminate autoinstall? [yes] Return
```

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

```
...
Copyright (c) 1986-2004 by Cisco Systems, Inc.
Compiled <date> <time> by <person>
```

Step 3 Press **Return** to display the Router> prompt:

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

Step 4 Enter privileged EXEC mode:

```
Router> enable
Router#
```

Step 5 For configuration procedures, see the applicable configuration instructions in the Cisco 3800 series software configuration documents at the following URL:

http://cisco.com/en/US/products/ps5855/tsd_products_support_configure.html

✎
Note To avoid losing work you have completed, be sure to save your configuration occasionally as you proceed. Use the **copy running-config startup-config** command to save the configuration to NVRAM.

Step 6 When you have finished the initial configuration, verify the initial configuration. See the "Verify the Initial Configuration" section on page 34 for verification procedures.

Verify the Initial Configuration

Verify that the new interfaces are operating correctly by performing the following tests:

- To verify that the interfaces are operating correctly and that the interfaces and line protocol are in the correct state (up or down), enter the **show interfaces** command.
- To display a summary status of the interfaces configured for IP, enter the **show ip interface brief** command.
- To verify that you configured the correct hostname and password, enter the **show configuration** command.

When you complete and verify the initial configuration, your Cisco router is ready to configure for specific functions. See the "Where to Go Next" section on page 34 for information about locating documentation for advanced configuration procedures.

9 **Where to Go Next**

For additional configuration procedures, see the appropriate Cisco 3800 series routers documentation or Cisco IOS software documentation, available online on Cisco.com.

🔍
Tip See the "Obtaining Documentation" section on page 35 for help in locating these documents.

To access documentation on Cisco.com:

For Cisco 3800 series routers platform documentation, start on Cisco.com at **http://www.cisco.com**, and choose **Products & Solutions > Routers > Cisco 3800 Series Integrated Services Routers > Technical Documentation >** *Document type* **>** *Document*.

For Cisco IOS software documentation, start on Cisco.com at **http://www.cisco.com**, and choose **Products & Solutions > IOS Software > Cisco IOS Software Releases >** *Your Cisco IOS software release*.

To get updated information about platform support for features, access Cisco Feature Navigator II at http://www.cisco.com/go/fn. (This requires a registered account on Cisco.com.)

To access documentation using Cisco Connection Online (CCO):

For Cisco 3800 series routers platform documentation, start on Cisco.com at **http://www.cisco.com**, and click the **Technical Documentation** link under Quick Links. Under the Product Documentation heading, navigate to Modular Access Routers and to the documentation for your router.

For Cisco IOS software documentation, start on Cisco.com at **http://www.cisco.com**, and click the **Technical Documentation** link under Quick Links. Under the Product Documentation heading, navigate to the Cisco IOS software documentation for the Cisco IOS software release that is installed on your router.

10   Obtaining Documentation

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

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

11   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:

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

We appreciate your comments.

12 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

Note Use the Cisco Product Identification (CPI) tool to locate your product serial number before submitting a web or phone request for service. You can access the CPI tool from the Cisco Technical Support Website by clicking the **Tools & Resources** link under Documentation & Tools. Choose **Cisco Product Identification Tool** from the Alphabetical Index drop-down list, or click the **Cisco Product Identification Tool** link under Alerts & RMAs. The CPI tool offers three search options: by product ID or model name; by tree view; or for certain products, by copying and pasting **show** command output. Search results show an illustration of your product with the serial number label location highlighted. Locate the serial number label on your product and record the information before placing a service call.

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 provides recommended solutions. If your issue is not resolved using the recommended resources, your service request is 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.

13   Obtaining Additional Publications and Information

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

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

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