



Cisco 1800 Series Integrated Services Router (Modular) Quick Start Guide

INCLUDING LICENSE AND WARRANTY

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1 Cisco One-Year Limited Hardware 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. Follow these steps to access and download the *Cisco Information Packet* and your warranty and license agreements from Cisco.com.

1. Launch your browser, and go to this URL:

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

The Warranties and License Agreements page appears.

2. To read the *Cisco Information Packet*, follow these steps:

- a. Click the **Information Packet Number** field, and make sure that the part number 78-5235-03A0 is highlighted.
- b. Select the language in which you would like to read the document.
- c. Click **Go**.

The Cisco Limited Warranty and Software License page from the Information Packet appears.

- d. Read the document online, or click the **PDF** icon to download and print the document in Adobe Portable Document Format (PDF).

Note You must have Adobe Acrobat Reader to view and print PDF files. You can download the reader from Adobe's website: <http://www.adobe.com>

3. To read translated and localized warranty information about your product, follow these steps:

- a. Enter this part number in the Warranty Document Number field:
78-10747-01C0.
- b. Select the language in which you would like to view the document.
- c. Click **Go**.

The Cisco warranty page appears.

- d. Review the document online, or click the **PDF** icon to download and print the document in Adobe Portable Document Format (PDF).

You can also contact the Cisco service and support website for assistance:

<http://www.cisco.com/en/US/support/>

Duration of Hardware Warranty

One (1) Year

Replacement, Repair, or Refund Policy for Hardware

Cisco or its service center will use commercially reasonable efforts to ship a replacement part within ten (10) working days after receipt of a Return Materials Authorization (RMA) request. Actual delivery times can vary, depending on the customer location. Cisco reserves the right to refund the purchase price as its exclusive warranty remedy.

To Receive a Return Materials Authorization (RMA) Number

Contact the company from whom you purchased the product. If you purchased the product directly from Cisco, contact your Cisco Sales and Service Representative.

Complete the information below, and keep it for reference.

Company product purchased from	
Company telephone number	
Product model number	
Product serial number	
Maintenance contract number	

2 Overview

The Cisco 1800 series integrated services routers includes the Cisco 1841 router, which is a data-only router. Cisco 1841 routers support WAN interface cards (WIC), voice/WAN interface cards (VWICs) in data mode only, single-wide high-speed WAN interface cards (HWICs), and advanced integration module (AIMs). This router has two WIC/VWIC/HWIC slots.



Note The interface numbering for this Cisco 1841 router is different from the numbering in Cisco 1700 series routers. (See the “Interface Numbering” section on page 16.)

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
- Software configuration
- Regulatory compliance and safety information

Product Serial Number Location

The serial number label for the Cisco 1841 router is located on the rear of the chassis, underneath interface card slot 0.

For detailed product serial number location on the chassis, refer to the online Cisco 1800 series hardware installation documentation at the following URL:

http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/1800/hw/index.htm

Cisco Product Identification Tool

The Cisco Product Identification (CPI) 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
- End of sale products are clearly identified 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, refer to the following URL:

http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/1800/index.htm

All the documents referenced in this quick start guide are available on Cisco.com. See the “Where to Go Next” section on page 21. 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://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/1800/qsg/index.htm

简体中文版的“快速入门指南”，请到下列链接：

http://www.cisco.com/univercd/cc/td/doc/product/access/lcs_mod/1800/qsg/index.htm

Items Included with Cisco 1841 Routers

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

- One blue RJ-45-to-DB-9 console cable; one DB-9-to-DB-25 modem adapter
- Power cord
- *Regulatory Compliance and Safety Information for Cisco 1840 Routers* document
- *Cisco Router and Security Device Manager (SDM) Quick Start Guide* document
- *Cisco 1800 Series Integrated Services Routers (Modular) Quick Start Guide (this document)*

Items Not Included

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

- PC with Hyperterminal or similar terminal emulation program, or a modem for remote administrative access
- Cables for WAN interfaces, LAN interfaces, or USB interface
- Cable ties, number 2 Phillips screwdriver
- Other typical equipment, such as channel service unit/data service unit (CSU/DSU); NT1 device for ISDN-BRI S/T; Ethernet hub; USB devices



Note

The onboard USB ports (version 1.1) support only USB devices approved and qualified by Cisco.



Note

The USB port (version 1.1) is intended for future use only.

4 Install Chassis

This section contains basic installation procedures. For more detailed installation instructions, refer to the Cisco 1800 series hardware installation documentation at the following URL:

http://www.cisco.com/univercd/cc/td/doc/product/access/lcs_mod/1800/hw/index.htm

Safety Information

The *Regulatory Compliance and Safety Information for Cisco 1840 Routers* document contains translations of the warnings that appear in this quick start guide.

For safety information you must know before working on your Cisco router, refer to the *Regulatory Compliance and Safety Information for Cisco 1840 Routers* document that accompanied this device.

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 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

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 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 συνήθειες 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 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 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

Take care when connecting units to the supply circuit so that wiring is not overloaded. Statement 1018



Warning

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



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



Warning

There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions. Statement 1015

Installing the Router



Note

Cisco 1800 series routers are normally ordered with modules and interface cards. Before you remove or install any modules or interface cards, refer to the documents that accompany those items or to the online Cisco 1800 series hardware installation documentation at the following URL:

http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/1800/hw/index.htm

You can set any Cisco 1800 series router on a desktop. See the applicable instructions in the following section:

- Installing the Router on a Desktop, page 10



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.

Installing the Router on a Desktop

The Cisco 1841 router is shipped with the rubber feet attached to the chassis.



Caution

Your chassis installation must allow unrestricted airflow for chassis cooling. For placing on a desktop, keep at least one inch of clear space beside the cooling inlet and exhaust vents.



Caution

Do not place any items that weigh more than 10 pounds (4.5 kilograms) on top of the chassis, and do not stack routers on top of each other.

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

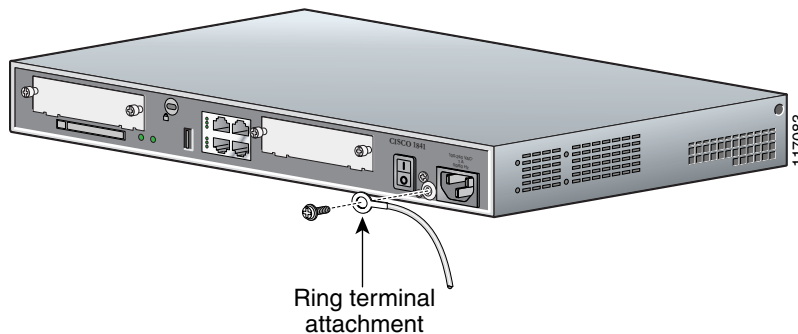
**Warning**

This equipment needs to be grounded. Use a green and yellow 14 AWG ground wire to connect the host to earth ground during normal use. Statement 190

To connect the chassis to a reliable earth ground, using a ring terminal and size 14 AWG (2 mm²) wire, follow these steps:

-
- Step 1** Strip one end of the ground wire to expose approximately 3/4 inch (20 mm) of conductor.
- Step 2** Crimp the 14 AWG green ground wire to a UL Listed/CSA certified ring terminal, using a crimping tool that is recommended by the ring terminal manufacturer. The ring terminal provided on the back panel of the router is suitable for a No. 6 grounding screw.
- Step 3** Attach the ring terminal to the chassis as shown in Figure 1. Use a number 2 Phillips screwdriver and the screw supplied with the ring terminal. Tighten the screw to a torque of 8 to 10 inch-pounds (0.9 to 1.1 newton meters.)
- Step 4** Connect the other end of the ground wire to a known good electrical grounding point such as a service panel grounding lug. Consult a licensed electrician if you have any questions about the suitability of the ground connection.

Figure 1 Chassis Ground Connection on the Cisco 1841 Router



5 Connecting Cables



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

This section provides an overview of the cabling for different ports and connections on the Cisco 1841 router.

For detailed information on the connections, cables, and pinouts, refer to the following documents:

- *Cisco Interface Cards Installation Guide* at the following URL:
http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/cis2600/hw_inst/wic_inst/wic_doc/index.htm
- *Cisco Modular Access Router Cable Specifications* at the following URL:
http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/cis3600/hw_inst/cabling/marcabl.htm

WAN and LAN Connections

The connections and cables listed in Table 1 are described in detail in the Cisco 1800 series hardware installation documents at the following URL:

http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/1800/hw/index.htm



Caution Do not connect a WAN, telephone, or fax cable to an interface card until you have completed the installation procedure.



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

Table 1 summarizes the basic WAN and LAN connections for the Cisco 1841 router.

Table 1 **WAN and LAN Connections**

Port or Connection	Port Type, Color ¹	Connected To:	Cable
Fast Ethernet (FE)	RJ-45, yellow	Ethernet hub	Crossover to connect to a router Straight-through to connect to a switch
T1/E1 WAN	RJ-48C	T1 or E1 network or CSU/DSU	RJ-48 T1/E1 straight-through (Crossover to connect to a PBX or any other equipment)
Cisco serial (1T)	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/TIA-530) and the serial port operating mode (DTE or DCE). Refer to the Cisco Modular Access Router Cable Specifications document for information about selecting these cables.
Cisco Smart serial (2T)	Cisco Smart compact connector, blue	CSU/DSU and serial network or equipment For WIC-2T and WIC-2A/S only	
DSL	RJ-11C/RJ-14C	Network demarcation device for service provider's DSL interface	RJ-11 straight-through for 2-wire RJ-14 straight-through for 4-wire
BRI S/T WAN (external NT1 ²)	RJ-45, orange	NT1 device or PINX ³	RJ-45 straight-through
BRI U WAN (built-in NT1)	RJ-49C/CA-A11, orange	ISDN network	RJ-49 straight-through
Analog modem	RJ-11	PSTN	RJ-11 straight-through
56/64-kbps CSU/DSU	8-pin modular	RJ-48S interface	RJ-48 straight-through

1. The color codes are specific to cables shipped by Cisco

2. NT1 = Network Termination 1

3. PINX = Private integrated network exchange

Console, Auxiliary, and USB Port Connections

The connections described in Table 2 provide system management access.



Note The USB port (version 1.1) is intended for future use only.

Table 2 **Console and Auxiliary Port Connections**

Port or Connection	Color or Type	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-9 console cable and DB-9-to-DB-25 adapter
USB	—	Peripheral devices	USB cable

Power Connections

Connect the router power cord to a 15A, 120 VAC power source or 10A, 240 VAC power source.



Warning

This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 15A, 120VAC (10A, 240VAC). Statement 1005



Note

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

6 Power Up the Router

Checklist for Power Up

You are ready to power up the Cisco 1841 router after the following steps are completed:

- Chassis is securely mounted and grounded. (See the “Install Chassis” section on page 4.)
- Power and interface cables are connected. (See the “Connecting Cables” section on page 12.)
- Make sure that the external CompactFlash memory card is properly seated into the slot. For installation instructions, refer to the online Cisco 1800 series hardware installation documentation at the following URL:
http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/1800/hw/index.htm
- PC with 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.
- Suitable PC COM port is selected in the terminal emulation program.



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.



Caution

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



Caution

To prevent damage to the ejector mechanism, the ejector button next to the CompactFlash memory card must remain fully seated when not being used to eject a CompactFlash memory card.

Power-Up Procedure

To power up your Cisco 1841 router and verify that it goes through its initialization and self-test, perform this procedure. When the procedure is finished, the Cisco 1841 router is ready to configure.



Note

To view the boot sequence, you must have a console connection to the Cisco 1841 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 14.

Step 2 Move the power switch to the ON position. The SYS PWR LED on the front of the chassis blinks green and the fans operate. If this does not happen, refer to the “Troubleshooting” module in the online Cisco 1800 series hardware installation documentation at the following URL:

http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/1800/hw/index.htm

Startup messages appear in your terminal emulation program window. When the startup messages end, the SYS PWR LED comes on solid green.



Caution

Do not press any keys on the keyboard until the messages stop and the SYS PWR LED is solid 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.

You may see different startup messages:

- If you see the following messages, the router has booted with a configuration file and is ready for initial configuration using Cisco Router and Security Device Manager (SDM):

```
yourname con0 is now available
```

```
Press RETURN to get started.
```



Note

Because SDM is installed on your router by default, we recommend using SDM to perform the initial configuration.

If SDM is installed on your router, we recommend using SDM to perform the initial configuration. See the “Initial Configuration Using Cisco Router and Security Device Manager” section on page 17 to learn how to configure your router using SDM, or how to obtain SDM and install it on your router.

- If you see the following messages, the router has booted and is ready for initial configuration using the setup command facility or the command-line interface (CLI):

```
--- 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]:
```

To learn how to use the setup command facility to configure the router, see the “Initial Configuration Using Setup Command Facility” section on page 17. To learn how to use the CLI to configure the router, see the “Initial Configuration Using Cisco CLI—Manual Configuration” section on page 20.

If the `rommon 1>` prompt appears, your system has booted in ROM monitor mode. For information on using ROM monitor, refer to the “Troubleshooting and Maintenance” module in the online Cisco 1800 series software configuration documentation at the following URL:

http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/1800/sw/index.htm

Verify the Front Panel LED Indications

The indicator LEDs described in Table 3 provide power, activity, and status information.

Table 3 LED Indicators

LED	Color	Description	Location
SYS PWR	Green	Router has successfully booted up and the software is functional. This LED blinks while booting or in the ROM monitor.	Front
SYS ACT	Green	Blinking when any packets are transmitted or received on any WAN or LAN, or when monitoring system activity.	Front

Table 3 **LED Indicators (continued)**

LED	Color	Description	Location
CF	Green	On when compact flash memory is busy. Do not remove CompactFlash memory card when this light is on.	Back
FDX (FE 0)	Green	On indicates full-duplex operation. Off indicates half-duplex operation.	Back
100 (FE 0)	Green	On indicates a 100-Mbps link. Off indicates a 10-Mbps link.	Back
Link (FE 0)	Green	On when the router is correctly connected to a local Ethernet LAN through Ethernet port 0.	Back
FDX (FE 1)	Green	On indicates full-duplex operation. Off indicates half-duplex operation.	Back
100 (FE 1)	Green	On indicates a 100-Mbps link. Off indicates a 10-Mbps link.	Back
Link (FE 1)	Green	On when the router is correctly connected to a local Ethernet LAN through Ethernet port 1.	Back
AIM	Green	On indicates presence of an AIM in the internal AIM slot.	Back

Verify the Hardware Configuration

Verify the router hardware configuration by entering 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 (WICs, VWICs, HWICs) and advanced integration modules (AIMs).

7 Interface Numbering

Each individual interface (port) on a Cisco 1841 router is identified by a number. A Cisco 1841 router contains the following wide-area network (WAN) and local-area network (LAN) interface types:

- Two onboard Fast Ethernet LAN interfaces
- Two slots in which you can install WICs, VWICs (data only), and HWICs

The numbering format for the slots is *interface-type 0/slot-number/port-number*. Table 4 summarizes the interface numbering.

Table 4 **Interface Numbering**

Slot Number	Slot Type	Slot Numbering Range	Example ¹
Onboard Ports	Fast Ethernet	0/0 and 0/1	interface fastethernet 0/0
Slot 0	HWIC/WIC/VWIC ²	0/0/0 to 0/0/3	interface serial 0/0/0 line async 0/0/0
Slot 1	HWIC/WIC/VWIC ²	0/1/0 to 0/1/3	interface serial 0/1/0 line async 0/1/0

1. The interfaces listed are examples only; other possible interface types are not listed.

2. VWICs are data-only in Cisco 1841 routers.

**Note**

On the Cisco 1841 router, the numbering format for configuring an async interface is 0/slot/port. To configure the line associated with an async interface, simply use the interface number to specify the async line. For example, line 0/0/0 specifies the line associated with interface serial 0/0/0 on a WIC-2A/S in slot 0. Similarly, line 0/1/1 specifies the line associated with interface async 0/1/1 on a WIC-2AM in 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” section on page 17.
- Setup command facility—See the “Initial Configuration Using Setup Command Facility” section on page 17.
- Command-line interface (CLI)—See the “Initial Configuration Using Cisco CLI—Manual Configuration” section on page 20.

Initial Configuration Using Cisco Router and Security Device Manager

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, refer to the *Cisco Router and Security Device Manager (SDM) Quick Start Guide* that shipped with your router.

**Tip**

If the messages above do not appear, SDM and the *Cisco Router and Security Device Manager (SDM) Quick Start Guide* were not shipped with your router. If you want to use SDM, you can download the latest version of SDM and instructions for installing it on your router from the following location:

<http://www.cisco.com/cgi-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 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 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 “Interface Numbering” section on page 16.



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 enter the **setup** command at the privileged EXEC mode prompt (Router#).

Step 1 To proceed using the setup command facility, enter **yes**:

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

Step 2 When the following messages appear, enter **yes** 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 viewing 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: xxxxxxx
```

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 viewing 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: xxxxxxx
```

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: xxxxxxx
```

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 is displayed.

**Note**

The interface numbering that appears depends 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 0/1/0	24	23	pri/channelized	Administratively up
T1 0/1/1	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	Prol
FastEthernet0/0	unassigned	NO	unset	up	up
FastEthernet0/1	unassigned	NO	unset	up	dow

Step 8 Select 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: **fastethernet0/0**

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

```
Configuring interface FastEthernet0/0:
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, 26 subnet bits; mask is /16
```

Step 10 The configuration is displayed:

The following configuration command script was created:

```
hostname Router
enable secret 5 $1$D5P6$PYx41/lQIASK.HcSbf05q1
enable password xxxxxx
line vty 0 4
password xxxxxx
snmp-server community public
!
no ip routing
!
interface FastEthernet0/0
speed 100
half-duplex
ip address 172.1.2.3 255.255.0.0
!
interface FastEthernet0/1
shutdown
no ip address
end
```

Step 11 Respond to the following prompts. Select [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 is displayed.

```
Router>
```

Step 12 Verify the initial configuration. See the “Verify the Initial Configuration” section on page 21 for verification procedures.

Initial Configuration Using 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” section on page 17.

For help with interface and port numbering, see the “Interface Numbering” section on page 16.

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, refer to the applicable configuration instructions in the Cisco 2800 series software configuration documents. See the “Where to Go Next” section on page 21 for information about accessing these documents.



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 21 for verification procedures.

Verify the Initial Configuration

To verify that the new interfaces are operating correctly, perform 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 host name 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 21 for information about locating documentation for advanced configuration procedures.

9 Where to Go Next

For additional configuration procedures, refer to the appropriate Cisco 1800 series routers documentation or Cisco IOS software documentation, available online on Cisco.com.



Tip See the “Obtaining Documentation” section on page 21 for help in locating these documents.

To access documentation on Cisco.com

For Cisco 1841 router platform documentation, begin at Cisco.com at <http://www.cisco.com>, and select **Products & Solutions > Routers > 1800 Series Integrated Services Routers> Technical Documentation > Document type > Document**.

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

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

To access documentation using Cisco Connection Online (CCO):

For Cisco 1800 series routers platform documentation, start on Cisco.com at <http://www.cisco.com>, and click the **Technical Documentation** tab 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** tab 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

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).

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:

Cisco Systems
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>

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.

13 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>
- *iQ Magazine* is the quarterly publication from Cisco Systems designed to help growing companies learn how they can use technology to increase revenue, streamline their business, and expand services. The publication identifies the challenges facing these companies and the technologies to help solve them, using real-world case studies and business strategies to help readers make sound technology investment decisions. You can access iQ Magazine at this URL:
<http://www.cisco.com/go/iqmagazine>
- *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>

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