

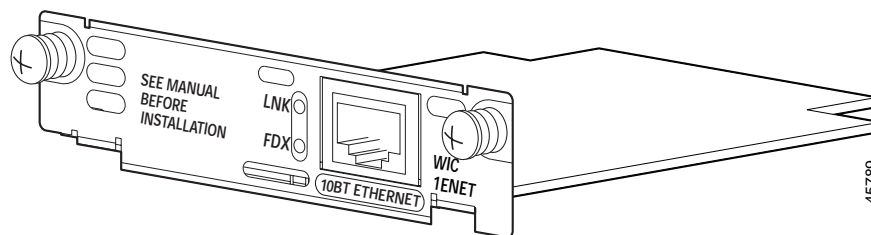


Configuring a Single-Port Ethernet WIC on a Cisco 1700 Series Router

The Cisco WIC-1ENET is a single-port Ethernet interface card supporting 10BASE-T Ethernet. The card provides the Cisco 1700 series router with additional Ethernet interfaces, that can use the functionality of the IOS with any type of external broadband modem, such as a cable modem, xDSL modem, and so forth.

Figure 1 shows the Cisco WIC-1ENET interface card.

Figure 1 *Cisco WIC-1ENET Interface Card*



The LNK (physical layer link) LED is on when the IOS recognizes the Cisco WIC-1ENET card and the connection is up. The FDX LED is on when the port is operating in full-duplex mode, and off when operating in half-duplex mode. Additionally, the Activity LED on the front of the Cisco 1700 series router indicates that data is transmitted or received on the slot.



Note

The *Cisco 1700 Router Hardware Installation Guide* provides procedures for physical installation. Although those instructions are for a WAN interface card (WIC), the procedures also apply to installing this card.

This document contains the following sections:

- [Cisco WIC-1ENET Requirements](#)
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- [Connecting a Cisco WIC-1ENET Card to the LAN](#)
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Cisco WIC-1ENET Requirements

This section describes the requirements and supported standards for the Cisco WIC-1ENET card.



Note

Cisco WIC-1ENET cards marked with the text “INSTALL IN slot 0 ONLY” can be used in any WIC slot if your router is running Cisco IOS Release 12.2(2)XJ or higher.

Processor Requirements

The MPC 860 microprocessor (revision B5 or later) is required for using the Cisco WIC-1ENET card. This processor has been applied to all Cisco 1700 series routers shipped after November 21, 1999.

Cisco 1700 series router serial numbers starting with JAB0347XXXX, JEU0347XXXX, or JMX0347XXXX and after have been manufactured with the Model MPC 860 revision B5 or later microprocessor.

The serial number incorporates a manufacturing date code. The format is LLLYYWWSSSS, in which:

LLL—Location at which the unit was built.

YY—Year that the unit was built (1997=01, 1998=02, 1999=03, 2000=04, 2001=05).

WW—Workweek of the year that the unit was built.

SSSS—Serial number.

The processor version information is displayed at boot up. You can also verify the processor revision by entering the **show version** command at the IOS command-line interface Router# prompt.

Memory Requirements

To run IOS images that support the Cisco WIC-1ENET card, the router must have a minimum amount of Flash memory and dynamic RAM (DRAM). For details on the memory requirements for each image, see *Release Notes for the Cisco 1700 Series Routers for Cisco IOS Release 12.2(4)T*.

Software Requirements

The Cisco WIC-1ENET card requires Cisco IOS Release 12.2(2)XJ or later if the card is installed in any WIC slot other than slot 0 or if more than one card is installed.

The card can be used with Cisco IOS Release 12.2(4)T, but the card must be installed in slot 0 and only one Cisco WIC-1ENET card can be installed in the router.

Supported Standards

The IEEE 802.3 Ethernet standards and 10BaseT Category 3, 4, and 5 UTP cable distances up to 328 feet (100 meters) are supported.

IOS Commands

This section describes the full-duplex and half-duplex IOS commands. Cisco WIC-1ENET is set to half-duplex mode by default, and it does not auto-sense. If you set the Cisco WIC-1ENET to full-duplex operation, you must also set the device to which the port is attached to full-duplex mode.

full-duplex Command

To put the Ethernet interface into full-duplex mode, use the **full-duplex** command. The “no” form of this command changes the port to half-duplex mode.

full-duplex
no full-duplex

Syntax Description

full-duplex	Interface is in full-duplex mode.
no full-duplex	Interface is in half-duplex mode.

Default

Half-duplex mode

Command Mode

Interface configuration mode

Usage Guidelines

Use the **full-duplex** command to put the Cisco WIC-1ENET Ethernet interface into 10-Mbps full-duplex operation. The interface can be put into half-duplex mode again by entering the **no full-duplex** command.

Example

The following example puts the Cisco WIC-1ENET Ethernet interface into full-duplex mode:

```
1750(config)#interface Ethernet 0
1750(config-if)#full-duplex
```

The following example puts the Cisco WIC-1ENET Ethernet interface into half-duplex mode:

```
1750(config)#interface Ethernet 0
1750(config-if)#no full-duplex
```

To verify the interface state, enter a **show interface** command as follows:

```
1750#show interface Ethernet 0
Ethernet0 is up, line protocol is up
  Hardware is PQUICC Ethernet, address is 0001.64ff.ef6a (bia 0001.64ff.ef6a)
  MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Full-duplex, 10BaseT
  ....
```

Related Commands

half-duplex

half-duplex Command

To put the Ethernet interface into half-duplex mode, use the **half-duplex** command.

half-duplex

Syntax Description

half-duplex Interface is in half-duplex mode.

Default

Half-duplex mode

Command Mode

Interface configuration mode

Usage Guidelines

Use the **half-duplex** command to put the Cisco WIC-1ENET Ethernet interface into 10 Mbps half-duplex operation, the default state of the Ethernet interface.

Example

The following example puts the Ethernet interface into half-duplex mode of operation.

```
1750(config)#interface Ethernet 0
1750(config-if)#half-duplex
```

To verify the interface state, enter a **show interface** command as follows:

```
1750#show interface Ethernet 0
Ethernet0 is up, line protocol is up
  Hardware is PQUICC Ethernet, address is 0001.64ff.ef6a (bia 0001.64ff.ef6a)
  MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Half-duplex, 10BaseT
  ....
```

Related Commands

full-duplex

no full-duplex

Caveats

This section provides the latest information about the Cisco WIC-1ENET card.

Caveats for All Cisco WIC-1ENET Cards

This section provides the latest information about using a Cisco WIC-1ENET card when the router is running Cisco IOS Release 12.2(2)XJ or higher.

- If the Cisco WIC-1ENET is used with an IOS image that does not support it and if the Link LED does not light, an error message appears, indicating an unrecognized WIC. This does not damage the router or the Cisco WIC-1ENET card. The error message is “00:00:05: %PQUICC-1-UNKNOWN_WIC: PQUICC(0), WIC card has an unknown ID of 0xFF.”
- The router cannot use TFTP over the Cisco WIC-1ENET Ethernet connection until the router completes the boot process.
- This interface is not supported in the ROM Monitor; therefore, a TFTP download cannot be performed by using the interface in ROM Monitor mode. The 10/100 Ethernet interface supports TFTP download in ROM monitor mode. We suggest connecting the FE interface to the side of the network that provides the image.
- If two Cisco WIC-1ENET cards are installed, the first detected card will be “interface Ethernet 0”, regardless of the slot position. If one of the Cisco WIC-1ENET cards is later removed, be sure to remove the card from slot 1, so that the card in slot 0 will continue to be detected.

Caveats for Cisco WIC-1ENET Cards in Routers Running Cisco IOS Release 12.2(4)T

This section provides the latest information about using a Cisco WIC-1ENET card when the router is running Cisco IOS Release 12.2(4)T.

- Only one Cisco WIC-1ENET can be installed in a Cisco 1720 or Cisco 1750 series router.
- Inserting the Cisco WIC-1ENET into slot 1 or slot 2 does not damage the router or the Cisco WIC-1ENET.
- The Cisco WIC-1ENET can be installed only in slot 0 of the Cisco 1720 or Cisco 1750 series router. If a Cisco WIC-1ENET is inserted in slot 1, an error message appears when the router is booted, and the interface is not available. The Link LED also does not light, because the IOS does not attempt any interaction when the Cisco WIC-1ENET is in an unsupported slot.

Related Documents

The following documents provide additional information about installing and configuring the Cisco WIC-1ENET interface card and configuring the router:

- *Cisco 1700 Router Hardware Installation Guide*—provides installation procedures for physically installing this card in a Cisco 1700 series router.
- *Release Notes for the Cisco 1700 Series Routers for Cisco IOS Release 12.2(4)T* and *Release Notes for the Cisco 1700 Series Routers for Cisco IOS Release 12.2(7)XJ*—provide information for running IOS images on a Cisco 1700 series router.
- *Cisco WAN Interface Cards Hardware Installation Guide*—provides installation information for WICs in routers.
- Cisco IOS configuration guides and command references—provide IOS software commands and configurations for your router.
- *Regulatory Compliance and Safety Information* document for your router—provides safety warnings and compliance information for your router.

Safety Warnings

Safety warnings appear throughout this publication in procedures that can harm you if they are performed incorrectly. A warning symbol precedes each warning statement.

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. Gebruik het nummer van de verklaring onderaan de waarschuwing als u een vertaling van de waarschuwing die bij het apparaat wordt geleverd, wilt raadplegen.

BEWAAR DEZE INSTRUCTIES

Varoitus	<p>TÄRKEITÄ TURVALLISUUSOHJEITA</p> <p>Tämä varoitusmerkki merkitsee vaaraa. Tilanne voi aiheuttaa ruumiillisia vammoja. Ennen kuin käsittelet laitteistoa, huomioi sähköpiirien käsittelyyn liittyvät riskit ja tutustu onnettomuuksien yleisiin ehkäisytapoihin. Turvallisuusvaroitusten käännökset löytyvät laitteen mukana toimitettujen käännettyjen turvallisuusvaroitusten joukosta varoitusten lopussa näkyvien lausuntonumeroiden avulla.</p> <p>SÄILYTÄ NÄMÄ OHJEET</p>
Attention	<p>IMPORTANTES INFORMATIONS DE SÉCURITÉ</p> <p>Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement.</p> <p>CONSERVEZ CES INFORMATIONS</p>
Warnung	<p>WICHTIGE SICHERHEITSHINWEISE</p> <p>Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung vor Unfällen vertraut. Suchen Sie mit der am Ende jeder Warnung angegebenen Anweisungsnummer nach der jeweiligen Übersetzung in den übersetzten Sicherheitshinweisen, die zusammen mit diesem Gerät ausgeliefert wurden.</p> <p>BEWAHREN SIE DIESE HINWEISE GUT AUF.</p>
Avvertenza	<p>IMPORTANTI ISTRUZIONI SULLA SICUREZZA</p> <p>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. Utilizzare il numero di istruzione presente alla fine di ciascuna avvertenza per individuare le traduzioni delle avvertenze riportate in questo documento.</p> <p>CONSERVARE QUESTE ISTRUZIONI</p>
Advarsel	<p>VIKTIGE SIKKERHETSINSTRUKSJONER</p> <p>Dette advarselssymbolet betyr fare. Du er i en situasjon som kan føre til skade på person. Før du begynner å arbeide med noe av utstyret, må du være oppmerksom på farene forbundet med elektriske kretser, og kjenne til standardprosedyrer for å forhindre ulykker. Bruk nummeret i slutten av hver advarsel for å finne oversettelsen i de oversatte sikkerhetsadvarslene som fulgte med denne enheten.</p> <p>TA VARE PÅ DISSE INSTRUKSJONENE</p>

Aviso INSTRUÇÕES IMPORTANTES DE SEGURANÇA

Este símbolo de aviso significa perigo. Você está em uma situação que poderá ser causadora de lesões corporais. Antes de iniciar a utilização de qualquer equipamento, tenha conhecimento dos perigos envolvidos no manuseio de circuitos elétricos e familiarize-se com as práticas habituais de prevenção de acidentes. Utilize o número da instrução fornecido ao final de cada aviso para localizar sua tradução nos avisos de segurança traduzidos que acompanham este dispositivo.

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. Al final de cada advertencia encontrará el número que le ayudará a encontrar el texto traducido en el apartado de traducciones que acompaña a este dispositivo.

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. Använd det nummer som finns i slutet av varje varning för att hitta dess översättning i de översatta säkerhetsvarningar som medföljer denna anordning.

SPARA DESSA ANVISNINGAR

Figyelem FONTOS BIZTONSÁGI ELOÍRÁSOK

Ez a figyelmeztető jel veszélyre utal. Sérülésveszélyt rejte 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.

ORIZZTE 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 legemeskade. 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 VAŽNI BEZBEDNOSNI NAPATSTVIJA**

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

Power Supply Warnings

The following warnings apply when you are installing a card or working with the power supply:



Warning

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



Warning

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



Warning

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



Warning

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

Electrical Warnings

The following warnings apply when you are working with electricity:



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

Caution No operator-serviceable parts inside. Refer servicing to qualified personnel. Statement 81

Follow these guidelines when working on equipment powered by electricity:

- Locate the emergency power-off switch in the room in which you are working. Then, if an electrical accident occurs, you can quickly shut the power off.
- Before working on the router, turn off power to the router and unplug the power cord.
- Disconnect all power before doing the following:
 - Installing or removing a router chassis
 - Working near power supplies
- Do not work alone if potentially hazardous conditions exist.
- Never assume that power is disconnected from a circuit. Always check.
- Look carefully for possible hazards in your work area, such as moist floors, ungrounded power extension cables, and missing safety grounds.

If an electrical accident occurs, proceed as follows:

- Use caution; do not become a victim yourself.
- Turn off power to the router.
- If possible, send another person to get medical aid. Otherwise, determine the condition of the victim and then call for help.
- Determine if the victim needs rescue breathing or external cardiac compressions; then take appropriate action.

Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. It can occur when printed circuit cards are improperly handled and can result in complete or intermittent failures. Always follow ESD prevention procedures when removing and replacing cards. Ensure that the router chassis is electrically connected to earth ground. Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. Connect the clip to an unpainted surface of the chassis frame to safely channel unwanted ESD voltages to ground. To guard against ESD damage and shocks, the wrist strap and cord must be used properly. If no wrist strap is available, ground yourself by touching the metal part of the chassis.



Caution

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

Connecting a Cisco WIC-1ENET Card to the LAN

Follow these steps to connect the card to the LAN by using a standard RJ-45 cable:

-
- | | |
|---------------|--|
| Step 1 | Confirm that the router power is turned off. |
| Step 2 | Install the Cisco WIC-1ENET card. |
| Step 3 | Connect one end of the RJ-45 cable to the Ethernet port on the Cisco WIC-1ENET card. |
| Step 4 | Connect the other end of the cable to the Ethernet port of the LAN or modem device. |
| Step 5 | Turn on power to the router and the device at the other end of the RJ-45 cable. |
| Step 6 | Verify that the IOS is running and that the LNK LED turns on, showing that the card is connected to the network. If the LED does not turn on, check the connections, and verify that the device the card is connected to is powered on and working properly. |
-

Configuring the Interface

Whenever you install a new Cisco WIC-1ENET card, or if you want to configure an existing card, you must configure the interface. If you replace a card that was already configured, the router recognizes it and brings up the interface by using the existing configuration.

Before you configure an interface, have the following information available:

- Protocols you plan to route on the new interface
- IP addresses, subnet masks, network numbers, zones, or other information related to the routing protocol

Obtain this information from your system administrator or network plan before you begin configuring the router.

You can configure the new interface and other router parameters by using any of the following methods:

- [Command-Line Configuration of the Cisco WIC-1ENET](#) (manual configuration)—recommended if you are familiar with IOS commands. Enter the commands at the prompt.
- [System Configuration Dialog](#) (Setup facility)—recommended if you are not familiar with IOS commands. You are prompted for each response.

These procedures are explained in the following sections. To change the settings shown in the examples and to obtain further information, refer to the IOS configuration guides and command references. If you have questions or need help, see the [“Obtaining Technical Assistance”](#) section in this document.

Command-Line Configuration of the Cisco WIC-1ENET

You can configure the Cisco WIC-1ENET card by entering IOS commands on the command line. This method provides the greatest power and flexibility. For further information about these commands, refer to the IOS configuration guides and command references. You can display help by entering a question mark (?) at the prompt.

To configure the card by using the command-line interface (CLI), follow this procedure:

Step 1 Connect a console or a PC running terminal emulation software, such as HyperTerminal, to the router. If you need instructions for connecting to the console port of the router, refer to the installation chapter of your router installation and configuration guide.

Step 2 Power on the router. If the startup configuration is valid, the EXEC prompt (`Router>`) appears. If the startup configuration is not valid, the router attempts to run Auto Install, and the following prompt appears:

Would you like to enter the initial dialog? [yes]:

Enter **no** and press **Enter** to display the EXEC prompt.

Step 3 Enter **enable** and the password (if any) to enter enable mode. The prompt changes to the privileged mode prompt (`Router#`). Configuration changes can be made only in enable mode.

Step 4 Enter **config terminal** to enter configuration mode:

```
Router#config terminal
Router(config)#
```

The router enters global configuration mode, shown by the `Router(config)#` prompt.

If you want to change the router configuration, you can configure global parameters, passwords, network management, and routing protocols. For complete information about global configuration commands, refer to the IOS configuration guides and command references.

Step 5 Select the Ethernet interface to configure. The following example assumes the card is installed in slot 0:

```
Router(config)#interface Ethernet 0
Router(config-if)#
```

The prompt changes again to show that you are in interface configuration mode.

Step 6 Configure the routing protocols on the Cisco WIC-1ENET interface. (You must have previously enabled these protocols as part of global configuration.) In this example, IP and IPX are being configured:

```
Router(config-if)#ip address ipaddress subnetmask
Router(config-if)#ipx network networknumber
```

Step 7 Enter **no shutdown** to enable the port:

```
Router(config-if)#no shutdown
```

Step 8 Enter **exit** to return to the `Router(config)#` prompt.

Step 9 Exit configuration mode and return to privileged mode by pressing **Ctrl-Z**. To see the current running configuration, including any changes you made, enter the **show running-config** command:

```
Router#show running-config
```

Step 10 To store the running configuration in NVRAM, enter the **copy running-config startup-config** command while in privileged mode:

```
Router#copy running-config startup-config
Building configuration. . .
[OK]
Router#
```

The router automatically copies the startup configuration in NVRAM to the running configuration and executes it whenever the router is powered on or the **reload** command is entered. To see the configuration stored in NVRAM, enter the **show startup-config** command:

```
Router#show startup-config
```

System Configuration Dialog

You can configure the router using the system configuration dialog (also called the Setup facility). The system configuration dialog prompts you for each response.

This section shows a sample configuration using the system configuration dialog. You should enter values appropriate for your router and network. To change the settings shown in the examples and to obtain further information, refer to the IOS configuration guides and command references.

Many prompts in the system configuration dialog include default answers, shown in square brackets following the question. Enter your response, or press **Return** to accept the default answer.

You can request help at any time by entering a question mark (?) at the system configuration dialog prompt.

Follow these steps to configure the router by using the system configuration dialog:

-
- Step 1** Power down the router, and install the Cisco WIC-1ENET.
 - Step 2** Connect a console to the router. If you need instructions for connecting a console, refer to the installation chapter of your router installation and configuration guide.
 - Step 3** Power on the router.
 - Step 4** If the router does not have a valid startup configuration file, it tries to run AutoInstall. The following prompt appears:

```
Would you like to enter the initial dialog? [yes]:
```

Enter **no**, and press **Enter** to display the EXEC prompt (Router>).

If the startup configuration is valid, the EXEC prompt (Router>) appears.
 - Step 5** Enter **enable** to enter privileged mode. The enable prompt (Router#) appears. Enter enter setup mode and display the system configuration dialog as follows:

```
Router> enable
```
 - Step 6** Enter Setup mode by entering the following command:

```
Router# setup
```
 - Step 7** Follow the prompts and change the parameters, or accept the defaults to configure global parameters, such as passwords, network management, and routing protocols. Refer to the procedures in the IOS configuration guides and command references.

The following is an example of the process.

- a. Enter **yes** to start setup mode.

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

- b. Respond to the prompt as follows:

```
Would you like to enter basic management setup? [yes/no]: no
First, would you like to see the current interface summary? [yes]: no
```

- c. Enter the host name of the router as follows:

```
Configuring global parameters:
Enter host name [Router]: hostname
```

- d. Enter the enable secret password as follows:

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

- e. Enter the enable password as follows:

```
Enter enable password: password
```

- f. Enter the virtual terminal password as follows:

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

- g. Respond to the prompts as follows:

```
Configure SNMP Network Management? [yes]: no
Configure IP? [yes]: yes
Configure IGRP routing? [yes]: yes
Your IGRP autonomous system number [1]: 1
Configure bridging? [no]: no
```

- h. Enter the IP address and subnet mask as follows:

```
Configuring interface parameters:
Do you want to configure Ethernet0 interface? [yes]: yes
Configure IP on this interface? [yes]: yes
IP address for this interface: ipaddress
Subnet mask for this interface [255.0.0.0] : netmask
Class X network is x.x.x.x, x subnet bits; mask is /x

Do you want to configure FastEthernet0 interface? [yes]: no
```

The following configuration command script was created:

```
hostname Router
enable secret 5 $1$ANpR$LY0j7mFpk1TE7SSAXDgVA/
enable password password
line vty 0 4
password password
no snmp-server
!
!
ip routing
no bridge 1
!
```



```

interface Ethernet0
ip address x.x.x.x x.x.x.x
!
router igrp 1
 redistribute connected
 network x.x.x.x
 network x.x.x.x
!
end

```

After the configuration you entered appears, you are asked whether you want to use it.

Step 8 Enter **yes** to save the startup configuration:

```

Use this configuration? [yes/no]: yes
Building configuration...
Use the enabled mode 'configure' command to modify this configuration.

Press RETURN to get started!

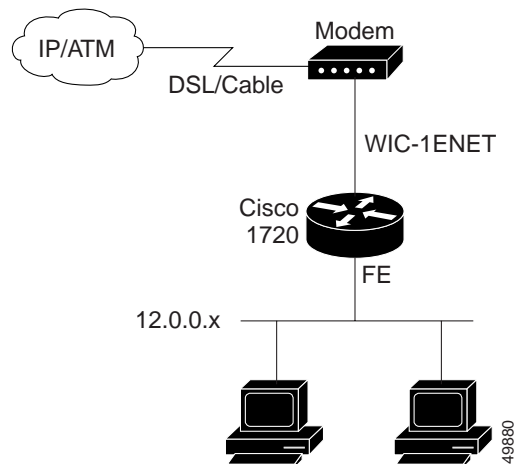
```

The configuration is saved. Otherwise, enter **no**. The information you entered is discarded, and you can reenter the configuration parameters.

Router Configuration Scenarios

The following examples show a Cisco 1700 series router configured to use the Cisco WIC-1ENET. These are sample configurations. For descriptions of the features and commands, see the configuration guidelines on the Cisco website.

Figure 2 *Example Configuration*



Example PPPoE Client Configuration

Point-to-Point Protocol (PPP) over Ethernet (PPPoE) offers a familiar dial interface to subscribers over customer premises equipment (CPE), as shown in [Figure 2](#). It allows PCs connected to CPE to establish separate PPP sessions. It allows hosts connected to CPE to establish PPP sessions. When the router is running PPPoE, hosts connected to the router are not required to run individual PPP sessions.

```

vpdn enable
no vpdn logging
vpdn-group 1
request-dialin
protocol pppoe
!
ip host pppoe_server 16.0.0.2
crypto isakmp enable
crypto isakmp key 12abcjhrweit345 address 16.0.0.2
!
crypto isakmp identity address
!
crypto isakmp policy 1
auth pre-share
encr des
hash sha
!
crypto ipsec transform-set proposall esp-des esp-sha-hmac ah-sha-hmac
mode tunnel
!
crypto map tag 10 ipsec-isakmp
set peer 16.0.0.2
set transform-set proposall
no match address
!
int Dialer0
ip address 16.0.0.1 255.0.0.0
crypto map tag
encapsulation ppp
ip mtu 1492
dialer pool 1
dialer-group 1
dialer-list 1 protocol ip permit
!
interface FastEthernet0
ip address 12.0.0.1 255.0.0.0
!
interface Ethernet0
pppoe enable
pppoe-client dial-pool-number 1

```

Example NAT Configuration

In following example, Network Address Translation (NAT) is used to translate all the source addresses passing access list 1 to an address from the pool named ext-net. This pool defines a list of external addresses from 150.150.151.1 to 150.150.151.8 that can be used by the address list permitted by access list 1.

```

ip nat pool ext-net 150.150.151.1 150.150.151.8 netmask 255.255.255.0
ip nat inside source list 1 pool ext-net
!
interface FastEthernet 0
ip address 12.12.12.1 255.255.255.0
ip nat inside
no shut
!
interface Ethernet 0
ip address 150.150.150.1
ip nat outside
no shut
!

```

```
access-list 1 permit 12.0.0.0 0.0.0.255
```

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

Documentation DVD

Cisco documentation and additional literature are available in a Documentation DVD package, which may have shipped with your product. The Documentation DVD is updated regularly and may be more current than printed documentation. The Documentation DVD package is available as a single unit.

Registered Cisco.com users (Cisco direct customers) can order a Cisco Documentation DVD (product number DOC-DOCDVD=) from the Ordering tool or Cisco Marketplace.

Cisco Ordering tool:

<http://www.cisco.com/en/US/partner/ordering/>

Cisco Marketplace:

<http://www.cisco.com/go/marketplace/>

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/>

- 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 1 800 553-NETS (6387).

Documentation Feedback

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

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

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

We appreciate your comments.

Cisco Product Security Overview

Cisco provides a free online Security Vulnerability Policy portal at this URL:

http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html

From this site, you can perform these tasks:

- Report security vulnerabilities in Cisco products.
- Obtain assistance with security incidents that involve Cisco products.
- Register to receive security information from Cisco.

A current list of security advisories and notices for Cisco products is available at this URL:

<http://www.cisco.com/go/psirt>

If you prefer to see advisories and notices as they are updated in real time, you can access a Product Security Incident Response Team Really Simple Syndication (PSIRT RSS) feed from this URL:

http://www.cisco.com/en/US/products/products_psirt_rss_feed.html

Reporting Security Problems in Cisco Products

Cisco is committed to delivering secure products. We test our products internally before we release them, and we strive to correct all vulnerabilities quickly. If you think that you might have identified a vulnerability in a Cisco product, contact PSIRT:

- Emergencies—security-alert@cisco.com
- Nonemergencies—psirt@cisco.com



Tip

We encourage you to use Pretty Good Privacy (PGP) or a compatible product to encrypt any sensitive information that you send to Cisco. PSIRT can work from encrypted information that is compatible with PGP versions 2.x through 8.x.

Never use a revoked or an expired encryption key. The correct public key to use in your correspondence with PSIRT is the one that has the most recent creation date in this public key server list:

<http://pgp.mit.edu:11371/pks/lookup?search=psirt%40cisco.com&op=index&exact=on>

In an emergency, you can also reach PSIRT by telephone:

- 1 877 228-7302
- 1 408 525-6532

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.

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/>

- *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>

Use this document in conjunction with your router installation and configuration guide, the *Regulatory Compliance and Safety Information* document for your router, the *Cisco 1700 Router Hardware Installation Guide*, and the Cisco IOS configuration guides and command references.

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Configuring a Single-Port Ethernet WIC on a Cisco 1700 Series Router

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