



CHAPTER 8

Preparation for Installation

This chapter provides a list of parts and tools you need to remove and replace the network processing engine (NPE) or network services engine (NSE) in:

- Cisco 7200 series routers, including the Cisco 7200 VXR routers
- Cisco uBR7200 series routers

This chapter also includes safety and ESD-prevention guidelines to help you avoid injury to yourself and damage to the equipment. See the “[Obtaining Documentation and Submitting a Service Request](#)” section on page iv for ordering and contact information. The following sections are found in this chapter:

- [Required Tools and Equipment, page 8-1](#)
- [Software and Hardware Requirements, page 8-2](#)
- [Table 8-4 lists the minimum software requirements for the NPE-400, NPE-G1, and NPE-G2.](#) [Table 8-5 and Table 8-6 list the recommended minimum Cisco IOS software release to ensure proper operation of the network processing engine or network services engine in supported router platforms., page 8-4](#)

Required Tools and Equipment

You need the following parts and tools to remove and replace an NPE or NSE in Cisco 7200 series routers, Cisco 7200 VXR routers, or Cisco uBR7200 series routers:

- A network processing engine or network services engine (NPE-100, NPE-150, NPE-175, NPE-200, NPE-225, NPE-300, NPE-400, NSE-1, NPE-G1, or NPE-G2)
- Number 2 Phillips screwdriver and a 3/16-inch flat-blade screwdriver
- An 8-mm wrench or nut driver, or adjustable wrench (for connecting a grounding lug to a Cisco uBR7200 series DC-input power supply)
- A 7-mm wrench or nut driver, or adjustable wrench (for connecting the DC-input power lead strain-relief cover to a DC-input power supply)
- Standard wire stripper (for connecting power to an installed DC-input power supply)
- Tape (for securing the switch handle of a DC circuit breaker in the off position)
- Your own ESD-prevention equipment or the disposable grounding wrist strap included with all field-replaceable units (FRUs)
- An antistatic mat or surface, or static-shielding bag
- Cable-management brackets and screws that ship with the NPE-G1 or NPE-G2

■ Software and Hardware Requirements

If your router is mounted in a 4-post or telco-type rack, make sure you have at least one other person available to assist you with removing the chassis from the rack.

Software and Hardware Requirements

The network processing engine and network services engine have different requirements for both hardware and software. See the “[NPE or NSE Requirements](#)” section on page 8-2.



Note Cisco IOS Release 12.2 changed the behavior of the ROM monitor (ROMmon) during the bootup sequence. See “[Boot Changes in Cisco IOS Release 12.2](#)” section on page 10-2 for more information.

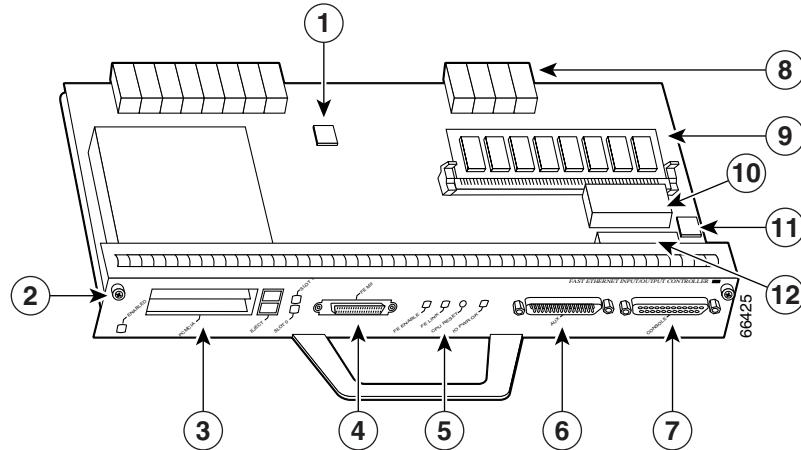
NPE or NSE Requirements

When installing an NPE-175, NPE-225, NPE-300, NPE-400, NPE-G2, or NSE-1 in a Cisco 7200 VXR router or Cisco uBR7246VXR router that is using a previously purchased I/O controller, you must upgrade the I/O controller boot helper image. The Cisco uBR7225VXR router does not support port adapters or I/O controllers.



Note Instructions for upgrading the boot helper image on the I/O controller are contained in the online *Memory Replacement Instructions for the Network Processing Engine or Network Services Engine and Input/Output Controller* publication.

Figure 8-1 *Input/Output Controller—Showing Boot ROM and Flash SIMM*



1	Temperature sensor	7	Console port
2	Captive installation screw	8	Midplane connectors
3	PC Card slots	9	Flash SIMM (U99)
4	Optional Fast Ethernet port (MII receptacle)	10	NVRAM (U41)
5	LEDs and CPU reset button	11	Temperature sensor
6	Auxiliary port	12	Boot ROM (U20)

Use the following table to determine supported NPEs or the NSE-1 for specific routers.

Table 8-1 Routers and Supported NPEs or NSE-1

Router	Supported NPEs or NSE
Cisco 7200 VXR routers	All NPEs and the NSE-1
Cisco 7200 series routers	NPE-100, NPE-150, NPE-175, NPE-200, and NPE-225
Cisco 7206 as a router shelf in a Cisco AS5800 Universal Access Server	NPE-200
Cisco 7206VXR as a router shelf in a Cisco AS5800 Universal Access Server	NPE-300 and NPE-400
Cisco uBR7223 universal broadband router	NPE-150, NPE-200, and NPE-225
Cisco uBR7246 universal broadband router	NPE-150, NPE-200, and NPE-225
Cisco uBR7246VXR universal broadband router	NPE-225, NPE-300, NPE-400, and UBR7200-NPE-G1, UBR7200-NPE-G2
Cisco uBR7225VXR universal broadband router	UBR7200-NPE-G1, UBR7200-NPE-G2

Table 8-2 NPE or NSE Router and Port Adapter Compatibility Requirements

NPE or NSE	Compatible Only With Routers	Not Compatible or Supported With Routers	Port Adapter
NPE-G2	Cisco 7200 VXR routers Cisco uBR7246VXR router Cisco uBR7225VXR router	Keyed to prevent inserting in Cisco 7200 series routers (7202, 7204, and 7206)	—
NPE-G1	Cisco 7200 VXR routers Cisco uBR7246VXR router Cisco uBR7225VXR router	Keyed to prevent inserting in Cisco 7200 series routers (7202, 7204, and 7206)	—
NSE-1	Cisco 7200 VXR routers	Keyed to prevent inserting in Cisco 7200 series routers (7202, 7204, and 7206) Note The NSE-1 is not supported in the Cisco uBR7200 series routers, even though it is physically capable of being inserted into the router chassis.	—
NPE-300 and NPE-400	Cisco 7200 VXR routers Cisco uBR7246VXR router	Keyed to prevent insertion in Cisco 7200 series routers (7202, 7204, and 7206) and the Cisco uBR7246 and Cisco uBR7223 universal broadband routers	Not supported with the PA-A1 port adapter

Port Adapter Jacket Card Support

The Port Adapter Jacket Card inserts into the I/O controller slot of a Cisco 7200 VXR router when an NPE-G2 or NPE-G1 is installed. The Port Adapter Jacket Card network processing engine support is shown in [Table 8-3](#).

Table 8-3 Network Processing Engines Supporting the Port Adapter Jacket Card

Network Processing Engine	Software
NPE-G2	Cisco IOS Release 12.4(4)XD2
NPE-G1	Cisco IOS Release 12.4(4)XD

Software Requirements

[Table 8-4](#) lists the minimum software requirements for the NPE-400, NPE-G1, and NPE-G2. [Table 8-5](#) and [Table 8-6](#) list the recommended minimum Cisco IOS software release to ensure proper operation of the network processing engine or network services engine in supported router platforms.

Table 8-4 Software Requirements for the NPE-400, NPE-G1, and NPE-G2

Router Platform	Network Processing Engine		
	NPE-400	NPE-G1	NPE-G2
Cisco 7200 Series			
• Cisco 7204VXR and Cisco 7206VXR	Cisco IOS Release 12.1(3a)E or later releases of 12.1E Cisco IOS Release 12.1(5)T or later releases of 12.1T Cisco IOS Release 12.0(14)S or later releases of 12.0S	Cisco IOS Release 12.2(4)BW Cisco IOS Release 12.2(8)B or later releases of 12.2 B	Cisco IOS Release 12.4(4)XD or later releases of 12.4XD. Note The NPE-G2 ¹ uses software images that begin with the prefix “c7200p-”.
• Cisco 7204 and Cisco 7206	—	—	—
• Cisco 7202	—	—	—
Cisco AS5800 Universal Access Server			
• Cisco 7206 router shelf ²	—	—	—
• Cisco 7206VXR router shelf	Cisco IOS Release 12.2(5)M or later releases of 12.2M	—	—
Cisco uBR7200 series			

Table 8-4 Software Requirements for the NPE-400, NPE-G1, and NPE-G2

Router Platform	Network Processing Engine		
	NPE-400	NPE-G1	NPE-G2
• Cisco uBR7246VXR	<p>Cisco IOS Release 12.1(6)EC or later releases of 12.1EC with a special boot helper image of 12.0(15)SC [ubr7200-boot-mz.120-15.SC]</p> <p>Cisco IOS Release 12.2(4)BC1 or later releases of 12.2BC</p> <p>Cisco IOS Release 12.3(9a)BC or later releases of 12.3BC</p>	<p>Cisco IOS Release 12.2(11)CX³ with a special boot helper image of 12.2(11)CX [ubr7200-boot-mz.122-11.CX or ubr7200-kboot-mz.122-11.CX]</p> <p>Cisco IOS Release 12.2(33)SCA or later releases of 12.2S</p>	<p>Cisco IOS Release 12.2(33)SCA⁴</p> <p>Note The NPE-G2 uses software images that begin with the prefix “ubr7200p-”.</p>
• Cisco uBR7225VXR	—	<p>Cisco IOS Release 12.2(33)</p> <p>Cisco IOS Release 12.2(33)SCA with a boot helper image [ubr7200-boot-mz.122-33.SCA] or [ubr7200-kboot-mz.122-33.SCA]</p>	Cisco IOS Release 12.2S

1. The NPE-G2 has its own Cisco IOS software image with the prefix “c7200p-” in the software images filenames, including the boot image. The NPE-G2 does not boot up with a software image with the prefix “c7200-”. Previous network processing engines, or the network services engine, do not boot up with the “c7200p-” boot image. They use the prefix “c7200-”.
2. For information about the Cisco 7206 or Cisco 7206VXR as router shelves in the Cisco AS5800 Universal Access Server, refer to the Cisco AS5800 Universal Access Server documentation listed in the “[Related Documentation](#)” section on page iii.
3. The Cisco uBR7246VXR universal broadband router requires the Cisco uBR7200-NPE-G1 version of the NPE-G1.
4. The Cisco uBR7246VXR universal broadband router requires the Cisco uBR7200-NPE-G2 version of the NPE-G2.

Table 8-5 Software Requirements for the NPE-100, NPE-150, NPE-200, and NPE-300

Router Platform¹	Network Processing Engine			
	NPE-100²	NPE-150²	NPE-200²	NPE-300²
Cisco 7200 series				
• Cisco 7204VXR and Cisco 7206VXR	Cisco IOS Release 12.0(2)XE2 or later releases of 12.0XE Cisco IOS Release 12.0(3)T or later releases of 12.0T			

■ Software and Hardware Requirements

Table 8-5 Software Requirements for the NPE-100, NPE-150, NPE-200, and NPE-300 (continued)

Router Platform¹	Network Processing Engine			
	NPE-100²	NPE-150²	NPE-200²	NPE-300²
• Cisco 7204 and Cisco 7206	Cisco IOS Release 11.1(8)	Cisco IOS Release 11.1(5)	Cisco IOS Release 12.0 or 12.0S or later releases of 12.0 or 12.0S Cisco IOS Release 11.2(12)P or later releases of 11.2P Cisco IOS Release 11.3(2)T or later releases of 11.3T Cisco IOS Release 11.3(2)AA or later releases of 11.3AA	—
• Cisco 7202	—	Cisco IOS Release 11.3(4)AA or later releases of 11.3AA: Cisco IOS Release 12.0 or 12.0S	—	—
Cisco AS5800 Universal Access Server				
• Cisco 7206 router shelf ³	—	—	Cisco IOS Release 11.3(2)AA or later releases of 11.3AA	—
• Cisco 7206VXR router shelf	—	—	—	Cisco IOS Release 12.0(4)XJ or later releases of 12.0XJ

Table 8-5 Software Requirements for the NPE-100, NPE-150, NPE-200, and NPE-300 (continued)

Router Platform ¹	Network Processing Engine			
	NPE-100 ²	NPE-150 ²	NPE-200 ²	NPE-300 ²
Cisco uBR7200 series				
• Cisco uBR7246VXR	—	—	—	Cisco IOS Release 12.0(6)SC or later releases of 12.0SC Cisco IOS Release 12.1(3)EC1 or later releases of 12.1 EC Cisco IOS Release 12.2(4)BC1 or later releases of 12.2BC
• Cisco uBR7246 and Cisco uBR7223	—	Cisco IOS Release 11.3(6)NA or later releases of 11.3NA Cisco IOS Release 12.0(6)SC or later releases of 12.0SC Cisco IOS Release 12.1(3)EC1 or later releases of 12.1 EC Cisco IOS Release 12.2(4)BC1 or later releases of 12.2BC	—	

1. The NPE-300 is not supported in the Cisco 7202, Cisco 7204, or Cisco 7206 routers.
2. Cisco IOS Release 12.1(5)T and later releases of 12.1T require a minimum of 128 MB of SRAM or SDRAM.
3. For information about the Cisco 7206 or Cisco 7206VXR as router shelves in the Cisco AS5800 Universal Access Server, refer to the Cisco AS5800 Universal Access Server documentation listed in the “[Related Documentation](#)” section on page iii.

Table 8-6 Software Requirements for the NPE-175, NPE-225, and NSE-1

	NPE or NSE		
Router Platform	NPE-175 ¹	NPE-225 ¹	NSE-1
Cisco 7200 Series			
• Cisco 7204VXR and Cisco 7206VXR	Cisco IOS Release 12.0(4)XE or later releases of 12.0XE Cisco IOS Release 12.0(5)T or later releases of 12.0T		Cisco IOS Release 12.1E or Cisco IOS Release 12.1(5)T or later releases of 12.1T

Table 8-6 Software Requirements for the NPE-175, NPE-225, and NSE-1 (continued)

	NPE or NSE		
Router Platform	NPE-175 ¹	NPE-225 ¹	NSE-1
• Cisco 7204 and Cisco 7206	Cisco IOS Release 12.0(4)XE or later releases of 12.0XE Cisco IOS Release 12.0(5)T or later releases of 12.0T		—
Cisco uBR7200 series²			
• Cisco uBR7246VXR, Cisco uBR7246, and Cisco uBR7223	—	Cisco IOS Release 12.0(6)SC or later releases of 12.0SC Cisco IOS Release 12.1(3)EC1 or later releases of 12.1 EC Cisco IOS Release 12.2(4)BC1 or later releases of 12.2BC	—

1. Cisco IOS Release 12.1(5)T and later releases of 12.1T require a minimum of 128 MB of SRAM or SDRAM.

2. Previous documents stated that the Cisco uBR7200 series routers supported the NPE-175. Because the NPE-175 has reached its end of life and was never made orderable for the Cisco uBR7200 series routers, the NPE-175 is no longer shown as supported for the Cisco uBR7200 series routers.

Safety Guidelines

Following are safety guidelines that you should follow when working with any equipment that connects to electrical power or telephone wiring.



Warning

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

Statement 1030

Safety Warnings



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

TÄRKEITÄ TURVALLISUUSOHJEITA

Tämä varoitusmerkki merkitsee vaaraa. Tilanne voi aiheuttaa ruumiillisia vammoja. Ennen kuin käsittelet laitteistoa, huomioi sähköpiirien käsittelemiseen liittyvät riskit ja tutustu onnettomuuksien yleisiin ehkäisytapoihin. Turvallisuusvaroitusten käännökset löytyvät laitteen mukana toimitettujen käännettyjen turvallisuusvaroitusten joukosta varoitusten lopussa näkyvien lausuntonumeroiden avulla.

SÄILYTÄ NÄMÄ OHJEET

Attention

IMPORTANTES INFORMATIONS DE SÉCURITÉ

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.

CONSERVEZ CES INFORMATIONS

Warnung WICHTIGE SICHERHEITSHINWEISE

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 von 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.

BEWAHREN SIE DIESE HINWEISE GUT 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. Utilizzare il numero di istruzione presente alla fine di ciascuna avvertenza per individuare le traduzioni delle avvertenze riportate in questo documento.

CONSERVARE QUESTE ISTRUZIONI

Advarsel VIKTIGE SIKKERHETSINSTRUKSJONER

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.

TA VARE PÅ DISSE INSTRUKSJONENE

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

Varng! 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**FONTOS BIZTONSÁGI ELOÍRÁSOK**

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

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

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

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

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

请保存这些安全性说明

警告 安全上の重要な注意事項

「危険」の意味です。人身事故を予防するための注意事項が記述されています。装置の取り扱い作業を行うときは、電気回路の危険性に注意し、一般的な事故防止策に留意してください。警告の各言語版は、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**

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

Upozorenje VAŽNE SIGURNOSNE NAPOMENE

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

SAČUVAJTE OVE UPUTE

Upozornění DŮLEŽITÉ BEZPEČNOSTNÍ POKYNY

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

USCHOVEJTE TYTO POKYNY

Προειδοποίηση

ΣΗΜΑΝΤΙΚΕΣ ΟΔΗΓΙΕΣ ΑΣΦΑΛΕΙΑΣ

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

ΦΥΛΑΞΤΕ ΑΥΤΕΣ ΤΙΣ ΟΔΗΓΙΕΣ

אזהרה

סימן אזהרה זה מסמל סכנה. אתה נמצא במצב העולול לגרום לפציעה. לפני שתעבד עם ציוד כלשהו, עליך להיות מודע לסכנות הרכבות במערכות חשמליים ולהכיר את הנוהלים המקבילים למניעת תאונות. השתמש במספר ההוראה המופיע בסופה של כל אזהרה כדי לאתר את התרגום באזהרות הבטיחות המתורגמות שמצורפות להתקן.

הוראות בטיחות חשובות**שמור הוראות אלה**

Опомена

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

Electrical Equipment Guidelines

Follow these basic guidelines when working with any electrical equipment:

- Before beginning any procedures requiring access to the chassis interior, locate the emergency power-off switch for the room in which you are working.
- Disconnect all power and external cables before moving a chassis.
- Do not work alone when potentially hazardous conditions exist.
- Never assume that power has been disconnected from a circuit; always check.
- Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.
- Carefully examine your work area for possible hazards such as moist floors, ungrounded power extension cables, and missing safety grounds.

Telephone Wiring Guidelines

Use the following guidelines when working with any equipment that is connected to telephone wiring or to other network cabling:

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.

- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

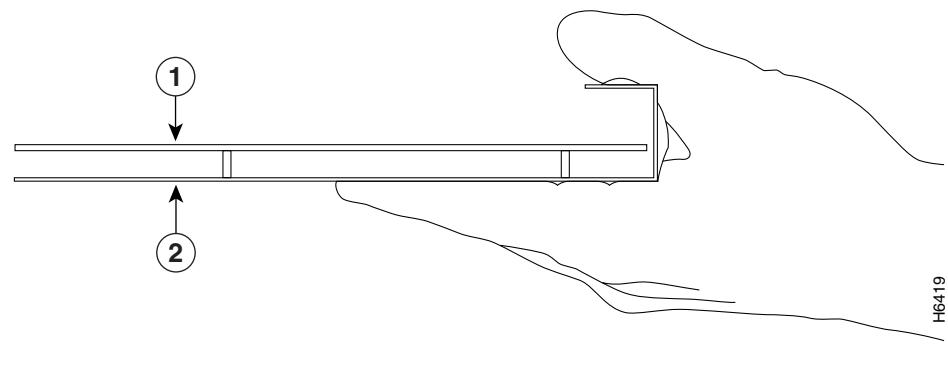
Electrostatic Discharge Prevention

Electrostatic discharge (ESD) damages equipment and impairs electrical circuitry. ESD occurs when printed circuit boards are improperly handled and results in complete or intermittent failures.

The network processing engine or network services engine, I/O controller, port adapters, and Cisco uBR7200 series cable interface line cards consist of printed circuit boards that are fixed in a metal carrier. Electromagnetic interference (EMI) shielding, connectors, and a handle are integral components of the carrier. Handle the network processing engine or network services engine, I/O controller, port adapters, and Cisco uBR7200 series cable interface line cards by their carrier edges and handles; never touch the printed circuit board or connector pins.

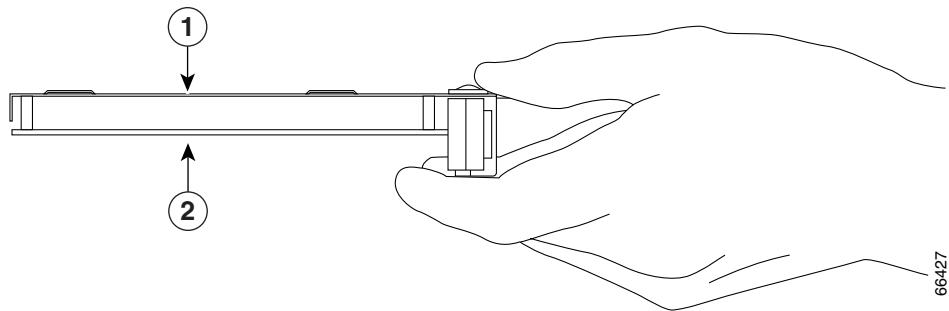
Figure 8-2 shows the location of a printed circuit board in a network processing engine or network services engine, I/O controller, or Cisco uBR7200 series cable interface line card metal carrier. Do not touch the printed circuit board when handling any of the components.

Figure 8-2 Handling the Network Processing Engine or Network Services Engine, the I/O Controller, and the Cisco uBR7200 Series Cable Interface Line Cards—Side View



1	Printed circuit board	2	Metal carrier
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Figure 8-3 shows the location of a printed circuit board in a port adapter metal carrier. Do not touch the printed circuit board when handling a port adapter.

Figure 8-3 Handling a Port Adapter—Side View**1** Metal carrier**2** Printed circuit board

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Although the metal carrier helps to protect the printed circuit boards from ESD, wear a preventive antistatic strap whenever handling the network processing engine or network services engine, I/O controller, port adapters, or Cisco uBR7200 series cable interface line cards. Ensure that the strap makes good skin contact and connect the strap's clip to an unpainted chassis surface to channel unwanted ESD voltages safely to ground.

If no wrist strap is available, ground yourself by touching the metal part of the chassis.

**Caution**

Make sure to tighten the captive installation screws on the network processing engine or network services engine, Cisco uBR7200 series cable interface line cards, and the I/O controller (use a number 2 Phillips or a 3/16-inch flat-blade screwdriver). These screws prevent accidental removal, provide proper grounding for the router, and help to ensure that the network processing engine or network services engine, Cisco uBR7200 series cable interface line cards, and the I/O controller are properly seated in the router midplane.

Following are guidelines for preventing ESD damage:

- Always use an ESD wrist strap or ankle strap when installing or replacing the network processing engine or network services engine, I/O controller, port adapters, or Cisco uBR7200 series cable interface line cards. Ensure that the ESD strap makes contact with your skin.
- Handle the network processing engine or network services engine, I/O controller, port adapters, or Cisco uBR7200 series cable interface line cards by their metal carrier edges and handles only; avoid touching the printed circuit board components or any connector pins.
- When removing the network processing engine or network services engine, I/O controller, port adapters, or Cisco uBR7200 series cable interface line cards, place them on an antistatic surface with the printed circuit board components facing upward, or in a static shielding bag. If you are returning an I/O controller, network processing engine or network services engine, port adapter, or Cisco uBR7200 series cable interface line card to the factory, immediately place it in a static shielding bag.

**Caution**

Periodically check the resistance value of the antistatic strap. The measurement should be within the range of 1 to 10 megohms (Mohms).