



Preparing for Installation

This chapter describes the general equipment, safety, and site preparation requirements for installing the PA-VXA, PA-VXB, and PA-VXC port adapters. This chapter contains the following sections:

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- [Software and Hardware Requirements, page 2-2](#)
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Required Tools and Equipment

You need the following tools and parts to install a port adapter. If you need additional equipment, contact a service representative for ordering information.

- PA-VXA-1TE1-24+(=), PA-VXA-1TE1-30+(=), PA-VXB-2TE1(=), PA-VXB-2TE1+(=), PA-VXC-2TE1(=), or PA-VXC-2TE1+(=) port adapter
- Shielded cables (foil twisted-pair [FTP]) with 120-ohm impedance (for E1 connections only)



Note To comply with Conducted Susceptibility of the CE marking requirements, shielded 120-ohm (screened) cables should be used with this board.

- Number 2 Phillips screwdriver
- Your own electrostatic discharge (ESD)-prevention equipment or the disposable grounding wrist strap included with all upgrade kits, field-replaceable units (FRUs), and spares
- Antistatic mat
- Antistatic container

Software and Hardware Requirements

Table 2-1 lists the recommended minimum Cisco IOS software release required to use the PA-VXA, PA-VXB, and PA-VXC port adapters in the supported router platforms.

Table 2-1 PA-VXA, PA-VXB, and PA-VXC Software and Hardware Requirements

Port Adapters on Supported Platforms	Recommended Minimum Cisco IOS Release
PA-VXA-1TE1-24+	
<ul style="list-style-type: none"> Cisco 7200 series and Cisco 7200 VXR routers 	Cisco IOS Release 12.2(4)T or a later release of Cisco IOS Release 12.2 T Cisco IOS Release 12.2(4)B or a later release of Cisco IOS Release 12.2 B
<ul style="list-style-type: none"> Cisco 7500 series routers with VIP^{1, 2} 	Cisco IOS Release 12.2(4)T or a later release of Cisco IOS Release 12.2 T
PA-VXA-1TE1-30+	
<ul style="list-style-type: none"> Cisco 7200 series and Cisco 7200 VXR routers 	Cisco IOS Release 12.2(4)T or a later release of Cisco IOS Release 12.2 T Cisco IOS Release 12.2(4)B or a later release of Cisco IOS Release 12.2 B
<ul style="list-style-type: none"> Cisco 7500 series routers with VIP^{1, 2} 	Cisco IOS Release 12.2(4)T or a later release of Cisco IOS Release 12.2 T
PA-VXB-2TE1	
<ul style="list-style-type: none"> Cisco 7200 series and Cisco 7200 VXR routers 	Cisco IOS Release 12.1(3)T or an earlier release of Cisco IOS Release 12.1 T
PA-VXB-2TE1+	
<ul style="list-style-type: none"> Cisco 7200 series and Cisco 7200 VXR routers 	Cisco IOS Release 12.1(3)T or a later release of Cisco IOS Release 12.1 T Cisco IOS Release 12.2(1) or a later release of Cisco IOS Release 12.2 Cisco IOS Release 12.2(1)T or a later release of Cisco IOS Release 12.2 T Cisco IOS Release 12.2(4)B or a later release of Cisco IOS Release 12.2 B
<ul style="list-style-type: none"> Cisco 7301 routers 	Cisco IOS Release 12.2(11)YZ or a later release of Cisco IOS Release 12.2 YZ
<ul style="list-style-type: none"> Cisco 7401ASR routers 	Cisco IOS Release 12.2(2)DD or a later release of Cisco IOS Release 12.2 DD Cisco IOS Release 12.2(4)B or a later release of Cisco IOS Release 12.2 B
<ul style="list-style-type: none"> Cisco 7500 series routers with VIP^{1, 2} 	Cisco IOS Release 12.1(3)T or a later release of Cisco IOS Release 12.1 T Cisco IOS Release 12.2(1) or a later release of Cisco IOS Release 12.2 Cisco IOS Release 12.2(1)T or a later release of Cisco IOS Release 12.2 T
PA-VXC-2TE1	
<ul style="list-style-type: none"> Cisco 7200 series and Cisco 7200 VXR routers 	Cisco IOS Release 12.1(3)T or an earlier release of Cisco IOS Release 12.1 T
<ul style="list-style-type: none"> Cisco 7301 routers 	Cisco IOS Release 12.2(11)YZ or a later release of Cisco IOS Release 12.2 YZ
PA-VXC-2TE1+	
<ul style="list-style-type: none"> Cisco 7200 series and Cisco 7200 VXR routers 	Cisco IOS Release 12.1(3)T or a later release of Cisco IOS Release 12.1 T Cisco IOS Release 12.2(1) or a later release of Cisco IOS Release 12.2 Cisco IOS Release 12.2(1)T or a later release of Cisco IOS Release 12.2 T Cisco IOS Release 12.2(4)B or a later release of Cisco IOS Release 12.2 B
<ul style="list-style-type: none"> Cisco 7401ASR routers 	Cisco IOS Release 12.2(2)DD or a later release of Cisco IOS Release 12.2 DD Cisco IOS Release 12.2(4)B or a later release of Cisco IOS Release 12.2 B

Table 2-1 PA-VXA, PA-VXB, and PA-VXC Software and Hardware Requirements (continued)

Port Adapters on Supported Platforms	Recommended Minimum Cisco IOS Release
<ul style="list-style-type: none"> Cisco 7500 series routers with VIP^{1,2} 	Cisco IOS Release 12.1(3)T or a later release of Cisco IOS Release 12.1 T Cisco IOS Release 12.2(1) or a later release of Cisco IOS Release 12.2 Cisco IOS Release 12.2(1)T or a later release of Cisco IOS Release 12.2 T

1. The VIP2 and VIP4 support the PA-VXB and PA-VXC.

2. The VIP6 supports the PA-VXA and the PA-VXB.

**Note**

Voice over Frame Relay is not supported on the Cisco 7500 series router in Cisco IOS Release 12.1(3)T.

**Note**

The PA-VXB and PA-VXC port adapters are not supported in systems with an NPE-100 installed.

Checking Hardware and Software Compatibility

To check the minimum software requirements of Cisco IOS software with the hardware installed on your router, Cisco maintains the Software Advisor tool on Cisco.com. This tool does not verify whether modules within a system are compatible, but it does provide the minimum IOS requirements for individual hardware modules or components.

**Note**

Access to this tool is limited to users with Cisco.com login accounts.

To access Software Advisor, click **Login** at Cisco.com and go to **Technical Support Help—Cisco TAC: Tool Index: Software Advisor**. You can also access the tool by pointing your browser directly to <http://www.cisco.com/cgi-bin/support/CompNav/Index.pl>.

Choose a product family or enter a specific product number to search for the minimum supported software release needed for your hardware.

Safety Guidelines

This section provides safety guidelines that you should follow when working with any equipment that connects to electrical power or telephone wiring.

Safety Warnings

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

**Warning**

This warning symbol means *danger*. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. To see translations of the warnings that appear in this publication, refer to the *Regulatory Compliance and Safety Information* document that accompanied this device.

Waarschuwing

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 standaard maatregelen om ongelukken te voorkomen. Voor vertalingen van de waarschuwingen die in deze publicatie verschijnen, kunt u het document *Regulatory Compliance and Safety Information* (Informatie over naleving van veiligheids- en andere voorschriften) raadplegen dat bij dit toestel is ingesloten.

Varoitus

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 julkaisussa esiintyvien varoitusten käännökset löydät laitteen mukana olevasta *Regulatory Compliance and Safety Information* -kirjasta (määräysten noudattaminen ja tietoa turvallisuudesta).

Attention

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 le document *Regulatory Compliance and Safety Information* (Conformité aux règlements et consignes de sécurité) qui accompagne cet appareil.

Warnung

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 finden Sie im Dokument *Regulatory Compliance and Safety Information* (Informationen zu behördlichen Vorschriften und Sicherheit), das zusammen mit diesem Gerät geliefert wurde.

Avvertenza

Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di lavorare su qualsiasi apparecchiatura, occorre conoscere i pericoli relativi ai circuiti elettrici ed essere al corrente delle pratiche standard per la prevenzione di incidenti. La traduzione delle avvertenze riportate in questa pubblicazione si trova nel documento *Regulatory Compliance and Safety Information* (Conformità alle norme e informazioni sulla sicurezza) che accompagna questo dispositivo.

Advarsel

Dette varselsymbolet betyr fare. Du befinner deg i en situasjon som kan føre til personskade. Før du utfører arbeid på utstyr, må du være oppmerksom på de faremomentene som elektriske kretser innebærer, samt gjøre deg kjent med vanlig praksis når det gjelder å unngå ulykker. Hvis du vil se oversettelser av de advarslene som finnes i denne publikasjonen, kan du se i dokumentet *Regulatory Compliance and Safety Information* (Overholdelse av forskrifter og sikkerhetsinformasjon) som ble levert med denne enheten.

Aviso	Este símbolo de aviso indica perigo. Encontra-se numa situação que lhe poderá causar danos físicos. Antes de começar a trabalhar com qualquer equipamento, familiarize-se com os perigos relacionados com circuitos eléctricos, e com quaisquer práticas comuns que possam prevenir possíveis acidentes. Para ver as traduções dos avisos que constam desta publicação, consulte o documento <i>Regulatory Compliance and Safety Information</i> (Informação de Segurança e Disposições Reguladoras) que acompanha este dispositivo.
¡Advertencia!	Este símbolo de aviso significa peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considerar los riesgos que entraña la corriente eléctrica y familiarizarse con los procedimientos estándar de prevención de accidentes. Para ver una traducción de las advertencias que aparecen en esta publicación, consultar el documento titulado <i>Regulatory Compliance and Safety Information</i> (Información sobre seguridad y conformidad con las disposiciones reglamentarias) que se acompaña con este dispositivo.
Varning!	Denna varningssymbol 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 vanligt förfarande för att förebygga skador. Se förklaringar av de varningar som förkommer i denna publikation i dokumentet <i>Regulatory Compliance and Safety Information</i> (Efterrättelse av föreskrifter och säkerhetsinformation), vilket medföljer denna anordning.

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.

Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) damage, which can occur when electronic cards or components are improperly handled, results in complete or intermittent failures. Port adapters and processor modules comprise printed circuit boards that are fixed in metal carriers. Electromagnetic interference (EMI) shielding and connectors are integral components of the carrier. Although the metal carrier helps to protect the board from ESD, use a preventive antistatic strap during handling.

Following are guidelines for preventing ESD damage:

- Always use an ESD wrist or ankle strap and ensure that it makes good skin contact.
- Connect the equipment end of the strap to an unfinished chassis surface.
- When installing a component, use any available ejector levers or captive installation screws to properly seat the bus connectors in the backplane or midplane. These devices prevent accidental removal, provide proper grounding for the system, and help to ensure that bus connectors are properly seated.
- When removing a component, use any available ejector levers or captive installation screws to release the bus connectors from the backplane or midplane.
- Handle carriers by available handles or edges only; avoid touching the printed circuit boards or connectors.
- Place a removed board component-side-up on an antistatic surface or in a static shielding container. If you plan to return the component to the factory, immediately place it in a static shielding container.
- Avoid contact between the printed circuit boards and clothing. The wrist strap only protects components from ESD voltages on the body; ESD voltages on clothing can still cause damage.
- Never attempt to remove the printed circuit board from the metal carrier.



Caution

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

FCC Class A Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to correct the interference at their own expense.

You can determine whether your equipment is causing interference by turning it off. If the interference stops, it was probably caused by the Cisco equipment or one of its peripheral devices. If the equipment causes interference to radio or television reception, try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the equipment to one side or the other of the television or radio.
- Move the equipment farther away from the television or radio.

- Plug the equipment into an outlet that is on a different circuit from the television or radio. (That is, make certain the equipment and the television or radio are on circuits controlled by different circuit breakers or fuses.)

**Note**

The PA-VXA, PA-VXB, and PA-VXC port adapters have been designed to meet these requirements. Modifications to this product that are not authorized by Cisco Systems, Inc., could void the various approvals and negate your authority to operate the product.
