



Cisco 10-Gigabit Ethernet XENPAK Transceiver Modules Installation Note

Revised: January 20, 2012

Product Numbers:	XENPAK-10GB-SR=	XENPAK-10GB-LR=	XENPAK-10GB-LR+=
XENPAK-10GB-LW=	XENPAK-10GB-ER=	XENPAK-10GB-ER+=	XENPAK-10GB-ZR=
XENPAK-10GB-LX4=	XENPAK-10GB-CX4=	DWDM-XENPAK-xx.xx=	

This installation note provides instructions for installing the 10-Gigabit XENPAK transceiver modules. The XENPAK transceiver connects the electrical circuitry of the switch or router with the optical or copper network.

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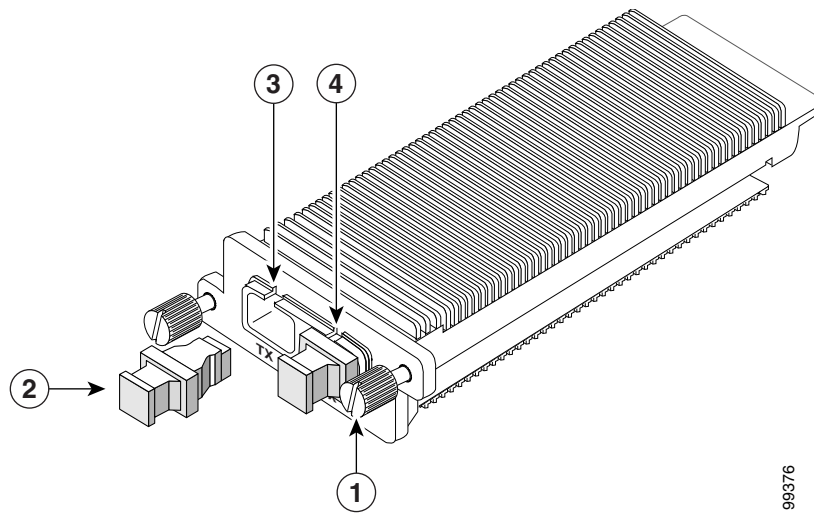


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Overview

The 10-Gigabit Ethernet XENPAK transceivers are a hot-swappable I/O devices that plug into 10-Gigabit Ethernet module ports. (See [Figure 1](#).) The XENPAK transceivers are available in either optical or copper interfaces.

Figure 1 XENPAK Transceiver



1	Captive installation screw	3	Transmit optical bore
2	Optical bore dust plug	4	Receive optical bore

The different types of XENPAK are described in [Table 1](#) and [Table 2](#).

Table 1 XENPAK Transceiver Modules

XENPAK Transceiver Product Number	Description
XENPAK-10GB-SR=	Cisco 10GBASE-SR XENPAK transceiver module for MMF, 850 nm wavelength, SC connector
XENPAK-10GB-LR=	Cisco 10GBASE-LR XENPAK transceiver module for SMF, 1310 nm wavelength, SC connector
XENPAK-10GB-LR+=	Cisco 10GBASE-LR+ XENPAK transceiver module for SMF, 1310 nm wavelength, SC connector (supports DOM)
XENPAK-10GB-LW=	Cisco 10GBASE-LW XENPAK transceiver module for SMF, 1310 nm wavelength, SC connector
XENPAK-10GB-ER=	Cisco 10GBASE-ER XENPAK transceiver module for SMF, 1550 nm wavelength, SC connector
XENPAK-10GB-ER+=	Cisco 10GBASE-ER+ XENPAK transceiver module for SMF, 1550 nm wavelength, SC connector (supports DOM)
XENPAK-10GB-ZR=	Cisco 10GBASE-ZR XENPAK transceiver module for SMF, 1550 nm wavelength, SC connector

Table 1 XENPAK Transceiver Modules (continued)

XENPAK Transceiver Product Number	Description
XENPAK-10GB-LX4=	Cisco 10GBASE-LX4 XENPAK transceiver module for MMF, 1310 nm wavelength, SC connector
XENPAK-10GB-LRM=	Cisco 10GBASE-LRM XENPAK transceiver module for MMF, 1310 nm wavelength dual SC connector
XENPAK-10GB-CX4=	Cisco 10GBASE-CX4 XENPAK transceiver module for CX4 cable, copper, InfiniBand 4x connectors for the following cable assemblies: <ul style="list-style-type: none"> • CAB-INF-28G-1=—1 m cable for 10GBASE-CX4 • CAB-INF-28G-5=—5 m cable for 10GBASE-CX4 • CAB-INF-28G-10=—10 m cable for 10GBASE-CX4 • CAB-INF-26G-15=—15 m cable for 10GBASE-CX4

Table 2 lists the part numbers and band or channel assignments for DWDM XENPAK transceiver modules.

Table 2 DWDM XENPAK Transceiver Modules

Product Number	Description	ITU Channel
DWDM-XENPAK-60.61=	10GBASE-DWDM 1560.61 nm XENPAK (100-GHz ITU grid)	21
DWDM-XENPAK-59.79=	10GBASE-DWDM 1559.79 nm XENPAK (100-GHz ITU grid)	22
DWDM-XENPAK-58.98=	10GBASE-DWDM 1558.98 nm XENPAK (100-GHz ITU grid)	23
DWDM-XENPAK-58.17=	10GBASE-DWDM 1558.17 nm XENPAK (100-GHz ITU grid)	24
DWDM-XENPAK-56.55=	10GBASE-DWDM 1556.55 nm XENPAK (100-GHz ITU grid)	26
DWDM-XENPAK-55.75=	10GBASE-DWDM 1555.75 nm XENPAK (100-GHz ITU grid)	27
DWDM-XENPAK-54.94=	10GBASE-DWDM 1554.94 nm XENPAK (100-GHz ITU grid)	28
DWDM-XENPAK-54.13=	10GBASE-DWDM 1554.13 nm XENPAK (100-GHz ITU grid)	29
DWDM-XENPAK-52.52=	10GBASE-DWDM 1552.52 nm XENPAK (100-GHz ITU grid)	31
DWDM-XENPAK-51.72=	10GBASE-DWDM 1551.72 nm XENPAK (100-GHz ITU grid)	32
DWDM-XENPAK-50.92=	10GBASE-DWDM 1550.92 nm XENPAK (100-GHz ITU grid)	33
DWDM-XENPAK-50.12=	10GBASE-DWDM 1550.12 nm XENPAK (100-GHz ITU grid)	34
DWDM-XENPAK-48.51=	10GBASE-DWDM 1548.51 nm XENPAK (100-GHz ITU grid)	36
DWDM-XENPAK-47.72=	10GBASE-DWDM 1547.72 nm XENPAK (100-GHz ITU grid)	37
DWDM-XENPAK-46.92=	10GBASE-DWDM 1546.92 nm XENPAK (100-GHz ITU grid)	38
DWDM-XENPAK-46.12=	10GBASE-DWDM 1546.12 nm XENPAK (100-GHz ITU grid)	39
DWDM-XENPAK-44.53=	10GBASE-DWDM 1544.53 nm XENPAK (100-GHz ITU grid)	41
DWDM-XENPAK-43.73=	10GBASE-DWDM 1543.73 nm XENPAK (100-GHz ITU grid)	42
DWDM-XENPAK-42.94=	10GBASE-DWDM 1542.94 nm XENPAK (100-GHz ITU grid)	43
DWDM-XENPAK-42.14=	10GBASE-DWDM 1542.14 nm XENPAK (100-GHz ITU grid)	44
DWDM-XENPAK-40.56=	10GBASE-DWDM 1540.56 nm XENPAK (100-GHz ITU grid)	46

Table 2 DWDM XENPAK Transceiver Modules (continued)

Product Number	Description	ITU Channel
DWDM-XENPAK-39.77=	10GBASE-DWDM 1539.77 nm XENPAK (100-GHz ITU grid)	47
DWDM-XENPAK-38.98=	10GBASE-DWDM 1538.98 nm XENPAK (100-GHz ITU grid)	48
DWDM-XENPAK-38.19=	10GBASE-DWDM 1538.19 nm XENPAK (100-GHz ITU grid)	49
DWDM-XENPAK-36.61=	10GBASE-DWDM 1536.61 nm XENPAK (100-GHz ITU grid)	51
DWDM-XENPAK-35.82=	10GBASE-DWDM 1535.82 nm XENPAK (100-GHz ITU grid)	52
DWDM-XENPAK-35.04=	10GBASE-DWDM 1535.04 nm XENPAK (100-GHz ITU grid)	53
DWDM-XENPAK-34.25=	10GBASE-DWDM 1534.25 nm XENPAK (100-GHz ITU grid)	54
DWDM-XENPAK-32.68=	10GBASE-DWDM 1532.68 nm XENPAK (100-GHz ITU grid)	56
DWDM-XENPAK-31.90=	10GBASE-DWDM 1531.90 nm XENPAK (100-GHz ITU grid)	57
DWDM-XENPAK-31.12=	10GBASE-DWDM 1531.12 nm XENPAK (100-GHz ITU grid)	58
DWDM-XENPAK-30.33=	10GBASE-DWDM 1530.33 nm XENPAK (100-GHz ITU grid)	59

**Note**

The dual SC connectors on the optical XENPAK transceivers support network interface cables with either Physical Contact (PC) or Ultra-Physical Contact (UPC) polished face types. The dual SC connectors on the optical XENPAK transceivers do not support network interface cables with an Angle Polished Connector (APC) polished face type.

The XENPAK transceiver connects the electrical circuitry of the module with the optical or copper network. [Table 3](#) lists the 10-Gigabit XENPAK port cabling specifications. [Table 4](#) lists the optical transmit and receive specifications for most XENPAK transceivers.

Table 3 10-Gigabit XENPAK Port Cabling Specifications

XENPAK Product Number	Wavelength (nm)	Cable Type	Core Size (microns)	Modal Bandwidth (MHz/km)	Maximum Cabling Distance ¹
XENPAK-10GB-SR	850	MMF	62.5	160	26 m (85.3 ft)
			62.5	200	33 m (108.3 ft)
			50.0	400	66 m (216.5 ft)
			50.0	500	82 m (269 ft)
			50.0	2000	300 m (984.3 ft)
XENPAK-10GB-LR XENPAK-10GB-LR+ XENPAK-10GB-LW	1310	SMF	G.652 fiber	—	10 km (6.21 mi)
XENPAK-10GB-ER ² XENPAK-10GB-ER+	1550	SMF	G.652 fiber	—	40 km (24.86 mi) ³
XENPAK-10GB-ZR	1550	SMF	G.652 fiber	—	80 km (49.72 mi) ⁴
DWDM-XENPAK-xx.xx	See Table 2 on page 3	SMF	G.652 fiber	—	80 km (49.72 mi) ⁴

Table 3 10-Gigabit XENPAK Port Cabling Specifications (continued)

XENPAK Product Number	Wavelength (nm)	Cable Type	Core Size (microns)	Modal Bandwidth (MHz/km)	Maximum Cabling Distance ¹
XENPAK-10GB-LX4	1310	MMF	62.5 50.0 50.0	500 400 500	300 m (984.3 ft) 240 m (787.4 ft) 300 m (984.3 ft)
XENPAK-10GB-CX4	—	CX4 (copper)	—	—	15 m (49.2 ft)
XENPAK-10GB-LRM	1310	MMF	62.5 50.0 50.0	500 400 500	220 m (722 feet) 100 m (328 feet) 220 m (722 feet)

1. Minimum cabling distance for optical XENPAK transceivers is 2 meters according to the IEEE 802.3ae standard.
2. Requires a 5 dB 1550 nm fixed loss attenuator for distances less than 20 km.
3. Links longer than 30 km are considered engineered links; meaning that for distances up to 30 km, no special link design rules need to be considered. Link distances beyond 30 km require that you verify the cable characteristics, especially the cable's loss value.
4. When shorter distances of SMF are used, an inline optical attenuator (11 dB) must be used to avoid overloading and damaging the receiver.

Table 4 XENPAK Transceiver Optical Transmit and Receive Specifications

XENPAK Product Number	Type	Transmit Power (dBm)	Receive Power (dBm)	Transmit and Receive Wavelength (nm)
XENPAK-10GB-SR	10GBASE-SR, 850 nm MMF	-1.0 (Max) -7.3 (Min)	-1.2 (Max) -9.9 (Min)	840 to 860
XENPAK-10GB-LR XENPAK-10GB-LR+	10GBASE-LR 1310 nm SMF	+0.5 (Max) -8.2 (Min)	+0.5 (Max) -14.4 (Min)	1260 to 1355
XENPAK-10GB-LW	10GBASE-LR 1310 nm SMF	+0.5 (Max) -8.2 (Min)	+0.5 (Max) -14.4 (Min)	1260 to 1355
XENPAK-10GB-ER XENPAK-10GB-ER+	10GBASE-ER 1550 nm SMF	+4 (Max) -4.7 (Min)	-1.0 (Max) -15.8 (Min)	1530 to 1565
XENPAK-10GB-ZR	10GBASE-ZR 1550 nm SMF	+4 (Max) 0 (Min)	-7 (Max) -24 (Min)	1530 to 1565
XENPAK-10GB-LX4	10GBASE-LX4 WWDM 1300 nm MMF	-0.5 per lane (Max) -6.75 per lane in OMA (Min)	-0.5 (Max) -14.25 per lane in OMA ¹ (Min)	Four lanes; overall range: 1269 to 1356
XENPAK-10GB-LRM	10GBASE-LR, 1310-nm MMF	0.5 (Max) -6.5 (Min)	0.5 (Max) -8.4 (Min average) and -6.4 (Min in OMA)	1260 to 1355

1. Optical Modulation Amplitude (OMA) sensitivity

Table 5 DWDM XENPAK Transceiver Optical Transmit and Receive Specifications

Parameter	Symbol	Minimum	Typical	Maximum	Units	Notes and Conditions
Transmitter						
Spectral Width	—	—		0.2	m	Full width, -20 dB from maximum, with resolution bandwidth (RBW) = 0.01 nm
Transmitter Center Wavelength	—	x-100	x	x+100	pm	Refer to Table 2 on page 3 for center wavelengths.
Side-Mode Suppression Ratio	SMSR	30	—	—	dB	—
Transmitter Extinction Ratio	OMI	9	—	—	dB	—
Transmitter Optical Output Power	P-out	-1.0	—	3.0	dBm	Average power coupled into single-mode fiber.
Receiver						
Receiver Optical Input Wavelength	—	1530	—	1565	nm	—
Receiver Damage Threshold	—	—	—	-1	dBm	—
Dispersion Tolerance	—	-500		1600	ps/nm	—
Power-Limited Performance (measured at optical signal-to-noise ratio [OSNR] of 30 dB at 0.1-nm RBW)						
Optical Input Power	Pin	-24.0		-7.0	dBm	¹
Dispersion Power Penalty	—	—	—	3	dB	¹
Noise-Limited Performance (measured at OSNR of 23 dB at 0.1-nm RBW)						
Optical Input Power	Pin	-17.0		-7.0	dBm	¹
Dispersion OSNR Penalty	—	—	—	3	dB	¹

1. At bit error rate (BER) = 10e-12 with an IEEE802.3 test pattern.

Safety

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

Statement 1071—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.

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 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.

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

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**FONTOS BIZTONSÁGI ELOÍRÁSOK**

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

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

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

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

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

请保存这些安全性说明

警告 安全上の重要な注意事項

「危険」の意味です。人身事故を予防するための注意事項が記述されています。装置の取り扱い作業を行うときは、電気回路の危険性に注意し、一般的な事故防止策に留意してください。警告の各国語版は、各注意事項の番号を基に、装置に付属の「Translated Safety Warnings」を参照してください。

これらの注意事項を保管しておいてください。

주의 **중요 안전 지침**

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

이 지시 사항을 보관하십시오.

Aviso **INSTRUÇÕES IMPORTANTES DE SEGURANÇA**

Este símbolo de aviso significa perigo. Você se encontra em uma situação em que há risco de lesões corporais. Antes de trabalhar com qualquer equipamento, esteja ciente dos riscos que envolvem os circuitos elétricos e familiarize-se com as práticas padrão de prevenção de acidentes. Use o número da declaração fornecido ao final de cada aviso para localizar sua tradução nos avisos de segurança traduzidos que acompanham o dispositivo.

GUARDE ESTAS INSTRUÇÕES**Advarsel** **VIGTIGE SIKKERHEDSANVISNINGER**

Dette advarselssymbol betyder fare. Du befinder dig i en situation med risiko for legemeskadedigelse. 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 للصدمة 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 συνηθισμένες 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 במגעלים 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 ОБИЕ 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 DŮLEŽITÉ BEZPEČNOSTNÉ POKYNY**

Tento varovný symbol označuje nebezpečenstvo. Nachádzate sa v situácii s nebezpečenstvom úrazu. Pred prácou na akomkoľvek vybavení si uvedomte nebezpečenstvo súvisiace s elektrickými obvodmi a oboznámte sa so štandardnými opatreniami na predchádzanie úrazom. Podľa čísla na konci každého upozornenia vyhľadajte jeho preklad v preložených bezpečnostných upozorneniach, ktoré sú priložené k zariadeniu.

USCHOVAJTE SI TENTO NÁVOD**Warning**

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

**Warning**

Class 1 laser product. Statement 1008

**Warning**

Because invisible laser radiation may be emitted from the aperture of the port when no cable is connected, avoid exposure to laser radiation and do not stare into open apertures. Statement 70

**Warning**

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

**Warning**

Use of controls, adjustments, or performing procedures other than those specified may result in hazardous radiation exposure. Statement 1057

Required Tools

You will need these tools to install the XENPAK transceiver module:

- Small flat-blade screwdriver to loosen or tighten the XENPAK transceiver captive installation screws.
- Wrist strap or other personal grounding device to prevent (Min) discharge (ESD) occurrences.
- Antistatic mat or antistatic foam to set the XENPAK transceiver on.
- Fiber-optic end-face cleaning tools and inspection equipment. For complete information on inspecting and cleaning fiber-optic connections, refer to the white paper at this URL:

http://www.cisco.com/en/US/tech/tk482/tk607/technologies_white_paper09186a0080254eba.shtml

Installing the XENPAK Transceiver



Caution

The 10-Gigabit XENPAK transceiver is a static-sensitive device. Always use an ESD wrist strap or similar individual grounding device when handling the XENPAK transceivers or coming into contact with the modules.

To install a 10-Gigabit XENPAK transceiver, follow these steps:

Step 1 Remove the 10-Gigabit Ethernet XENPAK transceiver from its protective packaging.



Note Do not remove the optical bore dust plugs until directed to do so later in the procedure.

Step 2 Check the label on the 10-Gigabit Ethernet XENPAK transceiver body to verify that you have the correct model for your network. Refer to [Table 2](#) to verify that the product number matches the desired band and channel.

Step 3 Align the XENPAK transceiver with the opening in the module faceplate, and slide the XENPAK transceiver into the opening until the XENPAK transceiver faceplate is in contact with the module faceplate. (See [Figure 2](#).) This step ensures that the XENPAK transceiver is fully seated in the module socket.

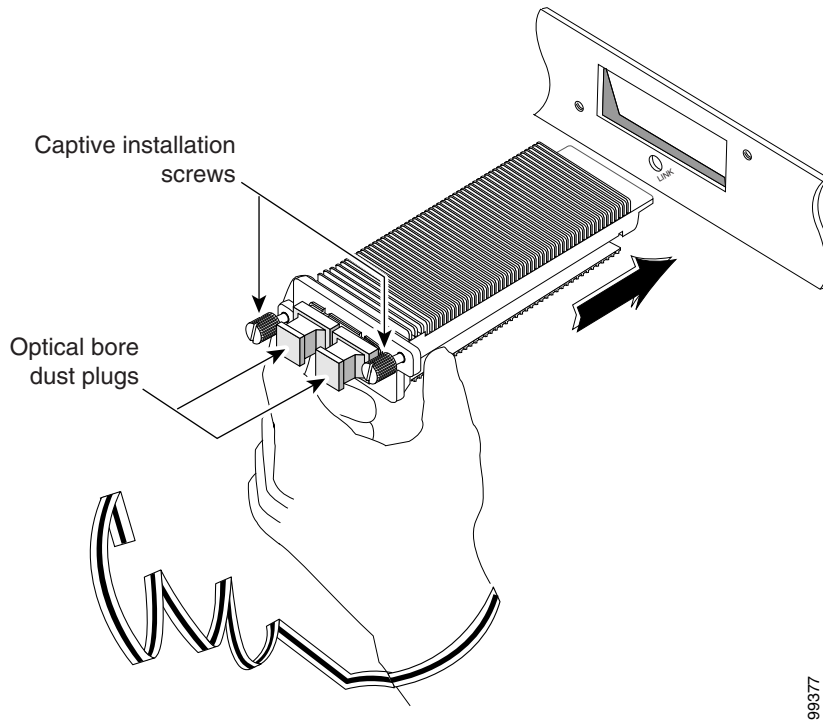
Step 4 Tighten the two captive installation screws to secure the XENPAK transceiver in the socket. Avoid cross-threading or overtightening the captive screws.



Caution

Any optical signal greater than -1 dB can damage the DWDM XENPAK transceiver. The maximum sensitivity for the DWDM XENPAK receiver is -7 dB. You must use a 10 dB attenuator on short fiber-optic cable runs to prevent damage to the DWDM XENPAK transceiver and to guarantee the specified performance.

Figure 2 Installing the XENPAK Transceiver Module



Note

Before removing the dust plugs and making any optical connections, observe the following guidelines:

- Always keep the protective dust plugs on the unplugged fiber-optic cable connectors and the transceiver optical bores until you are ready to make a connection.
- Always inspect and clean the SC connector end-faces just before making any connections. Refer to the Tip on this page for a pointer to a fiber-optic inspection and cleaning white paper.
- Always grasp the SC connector housing to plug or unplug a fiber-optic cable.

Step 5 Remove the dust plugs from the network interface cable SC connectors. Save the dust plugs for future use.

Step 6 Inspect and clean the SC connector's fiber-optic end-faces. Refer to the Tip below for a pointer to a fiber-optic inspection and cleaning white paper.



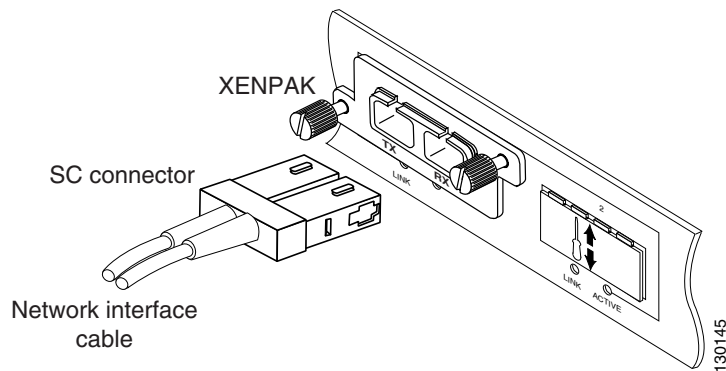
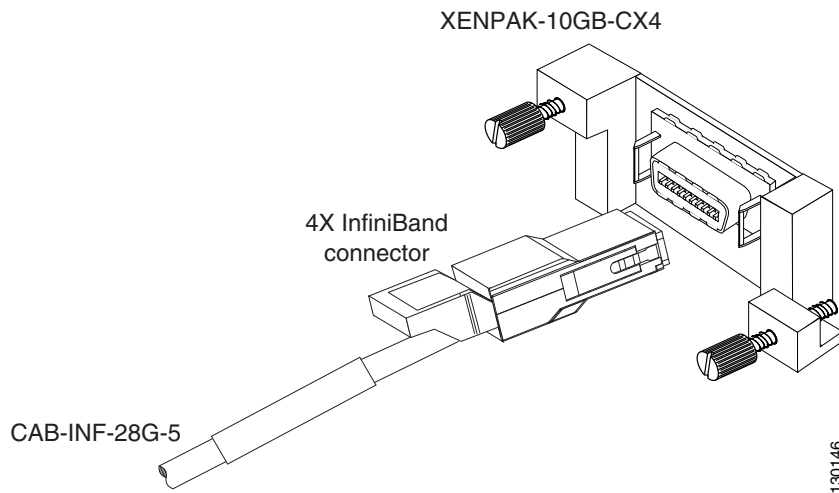
Tip

For complete information on inspecting and cleaning fiber-optic connections, refer to the white paper at this URL:

http://www.cisco.com/en/US/tech/tk482/tk607/technologies_white_paper09186a0080254eba.shtml

Step 7 Remove the dust plugs from the 10-Gigabit XENPAK transceiver optical bores. Save the dust plugs for future use.

Step 8 Immediately attach the network interface cable SC connectors to the 10-Gigabit XENPAK transceiver. (See [Figure 3](#) for cabling an optical interface XENPAK transceiver.) (See [Figure 4](#) for cabling a CX4 copper XENPAK transceiver.)

Figure 3 Cabling an Optical XENPAK Transceiver Module**Figure 4** Cabling a CX4 (Copper) XENPAK Transceiver Module

Removing the XENPAK Transceiver



Caution

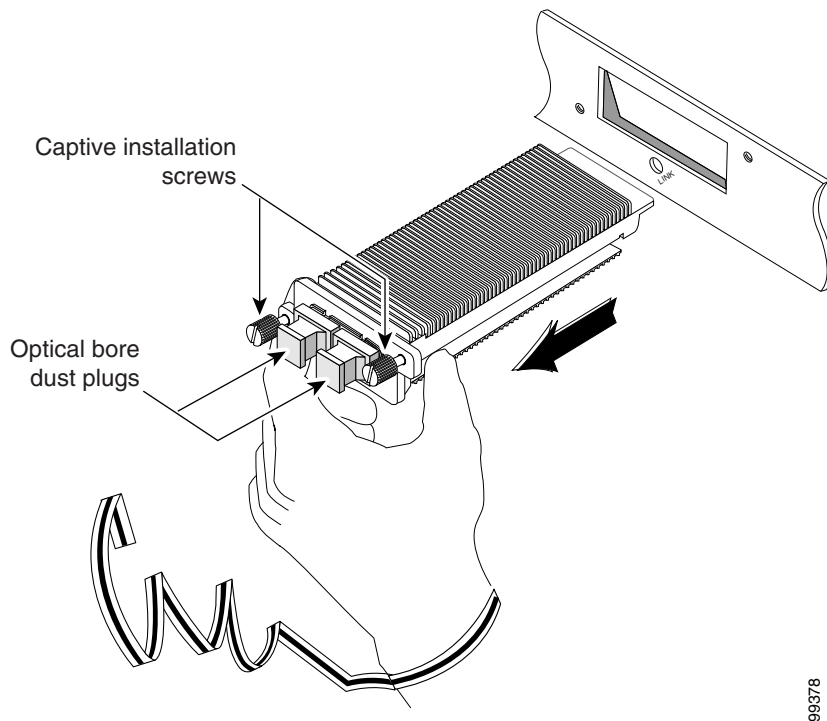
The 10-Gigabit XENPAK transceiver is a static-sensitive device. Always use an ESD wrist strap or similar individual grounding device when handling the XENPAK transceivers or coming into contact with the modules.

If you are removing a 10-Gigabit XENPAK transceiver, follow these steps:

- Step 1** Disconnect the network fiber-optic cable from the 10-Gigabit XENPAK transceiver connectors. Immediately reinstall the dust plugs in the XENPAK transceiver optical bores and the fiber-optic cable SC connectors.
- Step 2** Loosen the two captive installation screws that secure the XENPAK to the module.

- Step 3** Slide the XENPAK transceiver out of the module socket. (See [Figure 5](#).) Immediately place the XENPAK transceiver in an antistatic bag.

Figure 5 Removing a XENPAK Transceiver Module



99378

Translated Safety Warnings

This section repeats in multiple languages the basic warnings that appear in this document.

Statement 1008—Class 1 Laser Product



Warning Class 1 laser product.

Waarschuwing Klasse-1 laser produkt.

Varoitus Luokan 1 lasertuote.

Attention Produit laser de classe 1.

Warnung Laserprodukt der Klasse 1.

Avvertenza Prodotto laser di Classe 1.

Advarsel Laserprodukt av klasse 1.

Aviso Produto laser de classe 1.

¡Advertencia! Producto láser Clase I.

Varning! Laserprodukt av klass 1.

Figyelem Class 1 besorolású lézeres termék.

Предупреждение Лазерное устройство класса 1.

警告 这是 1 类激光产品。

警告 クラス1レーザー製品です。

주의 클래스 1 레이저 제품.

Aviso Produto a laser de classe 1.

Advarsel Klasse 1 laserprodukt.

تحذير Class 1 Laser منتج ١

Upozorenje	Laserski proizvod klase 1
Upozornění	Laserový výrobek třídy 1.
Προειδοποίηση	Προϊόν λέιζερ κατηγορίας 1.
אזהרה	מוצר לייזר Class 1.
Opomena	Ласерски производ од класа 1.
Ostrzeżenie	Produkt laserowy klasy 1.
Upozornenie	Laserový výrobok triedy 1.
Opozorilo	Laserski izdelek 1. razreda.
警告	類別 1 雷射產品。
Предупреждение	Лазерен продукт от клас 1.

Statement 1030—Equipment Installation



Warning

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

Waarschuwing

Deze apparatuur mag alleen worden geïnstalleerd, vervangen of hersteld door bevoegd geschoold personeel.

Varoitus

Tämän laitteen saa asentaa, vaihtaa tai huoltaa ainoastaan koulutettu ja laitteen tunteva henkilökunta.

Attention

Il est vivement recommandé de confier l'installation, le remplacement et la maintenance de ces équipements à des personnels qualifiés et expérimentés.

Warnung

Das Installieren, Ersetzen oder Bedienen dieser Ausrüstung sollte nur geschultem, qualifiziertem Personal gestattet werden.

Avvertenza

Questo apparato può essere installato, sostituito o mantenuto unicamente da un personale competente.

Advarsel	Bare opplært og kvalifisert personell skal foreta installasjoner, utskiftninger eller service på dette utstyret.
Aviso	Apenas pessoal treinado e qualificado deve ser autorizado a instalar, substituir ou fazer a revisão deste equipamento.
¡Advertencia!	Solamente el personal calificado debe instalar, reemplazar o utilizar este equipo.
Varning!	Endast utbildad och kvalificerad personal bör få tillåtelse att installera, byta ut eller reparera denna utrustning.
	A berendezést csak szakképzett személyek helyezhetik üzembe, cserélhetik és tarthatják karban.
Предупреждение	Установку, замену и обслуживание этого оборудования может осуществлять только специально обученный квалифицированный персонал.
警告	只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。
警告	この装置の設置、交換、保守は、訓練を受けた相応の資格のある人が行ってください。
주의	교육을 받고 자격을 갖춘 사람만 이 장비를 설치, 교체, 또는 서비스를 수행해야 합니다.
Aviso	Somente uma equipe treinada e qualificada tem permissão para instalar, substituir ou dar manutenção a este equipamento.
Advarsel	Kun uddannede personer må installere, udskifte komponenter i eller servicere dette udstyr.
تحذير	يسمح للمنيين المتخصصين فقط بتركيب المعدة أو استبدالها أو إجراء الصيانة عليها.
Upozorenje	Uređaj smije ugrađivati, mijenjati i servisirati samo za to obučeno i osposobljeno servisno osoblje.
Upozornění	Instalaci, výměnu nebo opravu tohoto zařízení smějí provádět pouze proškolené a kvalifikované osoby.
Προειδοποίηση	Η τοποθέτηση, η αντικατάσταση και η συντήρηση του εξοπλισμού επιτρέπεται να γίνονται μόνο από καταρτισμένο προσωπικό με τα κατάλληλα προσόντα.
הזהרה	
Орорена	Местењето, заменувањето и сервисирањето на оваа опрема треба да му биде дозволено само на обучен и квалификуван персонал.

Ostrzeżenie	Do instalacji, wymiany i serwisowania tych urządzeń mogą być dopuszczone wyłącznie osoby wykwalifikowane i przeszkolone.
Upozornenie	Inštaláciu, výmenu alebo opravu tohto zariadenia smú vykonávať iba vyškolené a kvalifikované osoby.

Statement 1040—Product Disposal



Warning

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

Waarschuwing

Het uiteindelijke wegruimen van dit product dient te geschieden in overeenstemming met alle nationale wetten en reglementen.

Varoitus

Tämä tuote on hävitettävä kansallisten lakien ja määräysten mukaisesti.

Attention

La mise au rebut ou le recyclage de ce produit sont généralement soumis à des lois et/ou directives de respect de l'environnement. Renseignez-vous auprès de l'organisme compétent.

Warnung

Die Entsorgung dieses Produkts sollte gemäß allen Bestimmungen und Gesetzen des Landes erfolgen.

Avvertenza

Lo smaltimento di questo prodotto deve essere eseguito secondo le leggi e regolazioni locali.

Advarsel

Endelig kassering av dette produktet skal være i henhold til alle relevante nasjonale lover og bestemmelser.

Aviso

Deitar fora este produto em conformidade com todas as leis e regulamentos nacionais.

¡Advertencia!

Al deshacerse por completo de este producto debe seguir todas las leyes y reglamentos nacionales.

Varning!

Vid deponering hanteras produkten enligt gällande lagar och bestämmelser.

Figyelem

A készülék végső elhelyezéséről az adott országban érvényes törvények és előírások szerint kell intézkedni.

Предупреждение

Окончательная установка данного изделия должна выполняться в соответствии со всеми региональными и местными правилами и нормами.

警告

本产品的废弃处理应根据所有国家的法律和规章进行。

警告

この製品を廃棄処分する際は、各国の法律および規制に従って取り扱ってください。

주의	해당 국가의 관련 법규 및 규정에 따라 이 장치를 폐기해야 합니다.
Aviso	O descarte definitivo deste produto deve estar de acordo com todas as leis e regulamentações nacionais.
Advarsel	Endelig bortskaffelse af dette produkt skal ske i henhold til gældende love og regler.
تحذير	عند التخلص من المنتج يجب اتباع القوانين والتشريعات المحلية.
Upozorenje	Zbrinjavanje ovoga proizvoda u otpad treba provesti u skladu s važećim zakonima i odredbama.
Upozornění	Upozornění: Likvidace tohoto výrobku musí být provedena podle platných zákonů a předpisů.
Προειδοποίηση	Η τελική απόρριψη αυτού του προϊόντος πρέπει να γίνεται σύμφωνα με όλους τους εθνικούς νόμους και κανονισμούς.
אזהרה	סילוק סופי של מוצר זה חייב להיות בהתאם להנחיות ולחוקי המדינה.
Opomena	Крајното фрлање на овој производ треба да се изврши во согласност со сите национални закони и прописи.
Ostrzeżenie	Ostateczna likwidacja tego urządzenia po jego wycofaniu z eksploatacji powinna odbywać się zgodnie z przepisami krajowymi.
Upozornenie	Upozornenie Likvidácia tohto výrobku musí byť vykonaná podľa platných zákonov a predpisov.

Statement 1057—Hazardous Radiation Exposure



Warning

Use of controls, adjustments, or performing procedures other than those specified may result in hazardous radiation exposure. Statement 1057

Waarschuwing

Het gebruik van regelaars of bijstellingen of het uitvoeren van procedures anders dan opgegeven kan leiden tot blootstelling aan gevaarlijke straling.

Varoitus

Säätimien tai säätöjen käyttö ja toimenpiteiden suorittaminen ohjeista poikkeavalla tavalla voi altistaa vaaralliselle säteilylle.

Attention	L'utilisation de commandes, de réglages ou de procédures autres que ceux spécifiés peut entraîner une exposition dangereuse à des radiations.
Warnung	Die Verwendung von nicht spezifizierten Steuerelementen, Einstellungen oder Verfahrensweisen kann eine gefährliche Strahlenexposition zur Folge haben.
Avvertenza	L'adozione di controlli, regolazioni o procedure diverse da quelle specificate può comportare il pericolo di esposizione a radiazioni.
Advarsel	Brug av kontroller eller justeringer eller utførelse av prosedyrer som ikke er spesifiserte, kan resultere i farlig strålingseksponering.
Aviso	O uso de controles, ajustes ou desempenho de procedimentos diferentes dos especificados pode resultar em exposição prejudicial de radiação.
¡Advertencia!	La aplicación de controles, ajustes y procedimientos distintos a los especificados puede comportar una exposición peligrosa a la radiación.
Varning!	Om andra kontroller eller justeringar än de angivna används, eller om andra processer än de angivna genomförs, kan skadlig strålning avges.
Figyelem	Az előírtaktól különböző kezelőszervek és módosítások használata, vagy ilyen eljárások végrehajtása sugárzásveszélyt rejt magában.
Предупреждение	Использование других элементов управления и регулировки, а также не указанные здесь действия могут привести к воздействию опасного излучения.
警告	不按照规定的步骤控制、调整或操作有可能造成危险的辐射外泄。
警告	記載されている手順以外の方法で性能を調節しようとする、レーザー光線の放射に曝される危険性があります。
주의	명시되어 있지 않은 제어기의 사용, 조절, 또는 절차의 수행으로 위험한 방사열이 노출될 수 있습니다.
Aviso	O uso de controles, ajustes ou procedimentos diferentes daqueles especificados pode resultar em exposição perigosa à radiação.
Advarsel	Brug af kontrolfunktioner, justeringer, eller udførelse af procedurer andre end de, der er angivet, kan resultere i udsættelse for farlig bestråling.
تحذير	قد ينتج عن استخدام أدوات التحكم أو التعديلات أو القيام بأداء عمليات غير تلك المذكورة، التعرض للإشعاعات الضارة.
Upozorenje	Korištenje kontrola, podešavanja i obavljanje postupaka koji nisu dozvoljeni može za posledicu imati izlaganje opasnim količinama zračenja.

Upozornění	Používání ovladačů a úprav nebo provádění jiných než stanovených operací může mít za následek vystavení působení nebezpečného záření.
Προειδοποίηση	Η χρήση χειριστηρίων, ρυθμίσεων ή η εκτέλεση άλλων διαδικασιών από αυτές που προδιαγράφονται μπορεί να οδηγήσει σε επικίνδυνη έκθεση σε ακτινοβολία.
אזהרה	שימוש בפקדים, התאמות או נהלי ביצוע, להוציא אלה המצוינים, עלול להסתיים בחשיפה לקרינה מסוכנת.
Opomena	Употребата на контроли, дотерувањата или вршењето на постапки поинакви од оние што се определени може да ве изложат на опасни зрачења.
Ostrzeżenie	Użycie elementów sterujących, przeprowadzanie regulacji lub wykonywanie czynności innych niż opisane może narazić użytkownika na niebezpieczne promieniowanie.
Upozornenie	Používanie ovládačov a úprav alebo uskutočňovanie iných ako stanovených operácií môže mať za následok vystavenie pôsobeniu nebezpečného žiarenia.

Statement 70—Invisible Laser Radiation Warning



Warning

Because invisible laser radiation may be emitted from the aperture of the port when no cable is connected, avoid exposure to laser radiation and do not stare into open apertures.

Waarschuwing

Omdat er onzichtbare laserstraling uit de opening van de poort geëmitteerd kan worden wanneer er geen kabel aangesloten is, dient men om blootstelling aan laserstraling te vermijden niet in de open openingen te kijken.

Varoitus

Kun porttiin ei ole kytketty kaapelia, portin aukosta voi vuotaa näkymätöntä lasersäteilyä. Älä katso avoimiin aukkoihin, jotta et altistu säteilylle.

Attention

Etant donné qu'un rayonnement laser invisible peut être émis par l'ouverture du port quand aucun câble n'est connecté, ne pas regarder dans les ouvertures béantes afin d'éviter tout risque d'exposition au rayonnement laser.

Warnung

Aus der Öffnung des Ports kann unsichtbare Laserstrahlung austreten, wenn kein Kabel angeschlossen ist. Kontakt mit Laserstrahlung vermeiden und nicht in offene Öffnungen blicken.

Avvertenza

Poiché quando nessun cavo è collegato alla porta, da quest'ultima potrebbe essere emessa radiazione laser invisibile, evitare l'esposizione a tale radiazione e non fissare con gli occhi porte a cui non siano collegati cavi.

Advarsel	Usynlige laserstråler kan sendes ut fra åpningen på utgangen når ingen kabel er tilkoblet. Unngå utsettelse for laserstråling og se ikke inn i åpninger som ikke er tildekket.
Aviso	Evite uma exposição à radiação laser e não olhe através de aberturas expostas, porque poderá ocorrer emissão de radiação laser invisível a partir da abertura da porta, quando não estiver qualquer cabo conectado.
¡Advertencia!	Cuando no esté conectado ningún cable, pueden emitirse radiaciones láser invisibles por el orificio del puerto. Evitar la exposición a radiaciones láser y no mirar fijamente los orificios abiertos.
Varning!	Osynliga laserstrålar kan sändas ut från öppningen i porten när ingen kabel är ansluten. Undvik exponering för laserstrålning och titta inte in i ej täckta öppningar.

Related Documentation

For hardware installation and maintenance information on specific Cisco routers and switches, see the installation and configuration guide for your router or switch.

For software configuration information and support, see the Cisco IOS software configuration and command reference publications for the installed Cisco IOS software release or the Catalyst operating system software configuration and command reference publications for the installed Catalyst operating system software release.

Support summaries for all XENPAKs are at:

http://www.cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html

Obtaining Documentation and Submitting a Service Request

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

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

Subscribe to the *What's New in Cisco Product Documentation* as an RSS feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service. Cisco currently supports RSS Version 2.0.

This document is to be used in conjunction with the publications described in the “[Obtaining Documentation and Submitting a Service Request](#)” section on page 24.

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