



Cisco CWDM Passive Optical System Installation Note

This document provides installation instructions for the Cisco Coarse Wave Division Multiplexer (CWDM) passive optical system. The CWDM passive optical system product numbers are listed in [Table 1](#).

Table 1 CWDM Passive Optical System Product Numbers

Product Number	Description
CWDM-CHASSIS-2=	2-slot chassis, 1 RU
CWDM-MUX8A=	8-channel MUX/DEMUX module
CWDM-OADM4-1=	4-channel OADM module (1470, 1490, 1510, and 1530 nm)
CWDM-OADM4-2=	4-channel OADM module (1550, 1570, 1590, and 1610 nm)
CWDM-OADM1-1470=	Dual single-channel OADM module, 1470 nm
CWDM-OADM1-1490=	Dual single-channel OADM module, 1490 nm
CWDM-OADM1-1510=	Dual single-channel OADM module, 1510 nm
CWDM-OADM1-1530=	Dual single-channel OADM module, 1530 nm
CWDM-OADM1-1550=	Dual single-channel OADM module, 1550 nm
CWDM-OADM1-1570=	Dual single-channel OADM module, 1570 nm
CWDM-OADM1-1590=	Dual single-channel OADM module, 1590 nm
CWDM-OADM1-1610=	Dual single-channel OADM module, 1610 nm
WDM-1300-1550-S=	1300 nm/1550 nm splitter cable
CAB-SM-LCSC-1M=	LC to SC connector cable, 1 m
CAB-SM-LCSC-5M=	LC to SC connector cable, 5 m

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Overview

The Cisco CWDM passive optical system provides optical networking support for high-speed data communication for metropolitan area networks (MANs) over a grid of eight CWDM optical wavelengths in both ring configurations or point-to-point configurations.

The Cisco CWDM passive optical system includes these components:

- 2-slot chassis for Cisco Optical Add/Drop Multiplexers (OADMs)
- CWDM OADMs
 - 8-channel multiplexer/demultiplexer
 - Two 4-channel OADMs
 - Eight dual single-channel OADMs
- 1300 nm/1550 nm WDM splitter cable
- CWDM GBIC and CWDM SFP transceivers

CWDM 2-Slot Chassis

The CWDM 2-slot chassis (CWDM-CHASSIS-2) is a standard 19-inch chassis that is one rack unit (RU) in height. Each CWDM 2-slot chassis can hold two CWDM OADM modules. You can install the CWDM 2-slot chassis in the same equipment rack as your system or in an adjacent rack so that you can connect the OADMs to the CWDM GBIC transceivers or the CWDM SFP transceivers.

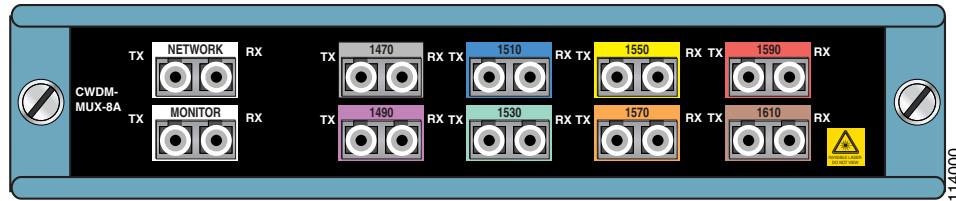
CWDM OADMs

The CWDM OADMs are passive devices that can multiplex/demultiplex or add/drop wavelengths from multiple fibers onto one optical fiber. The OADM connectors are interfaced to the color-matching CWDM GBIC or CWDM SFP transceivers on the equipment side. All OADMs are the same size. Two OADM modules can be installed in a CWDM 2-slot chassis (CWDM-CHASSIS-2). There are three different types of CWDM OADM modules

8-Channel Multiplexer/Demultiplexer (CWDM-MUX-8A=)

The 8-Channel Multiplexer/Demultiplexer (CWDM-MUX-8A=) allows you to multiplex/demultiplex eight separate channels into one pair of fiber. Dual fiber is used for both the network connection and the CWDM GBIC or CWDM SFP transceiver connections. The eight available wavelengths are 1470-nm, 1490-nm, 1510-nm, 1530-nm, 1550-nm, 1570-nm, 1590-nm, and 1610-nm. The multiplexer/demultiplexer, shown in [Figure 1](#), is equipped with a monitor port that allows you to attach a power meter or an optical spectrum analyzer to assist you in monitoring and troubleshooting the network.

Figure 1 8-Channel Multiplexer/Demultiplexer (CWDM-MUX8) Front Panel

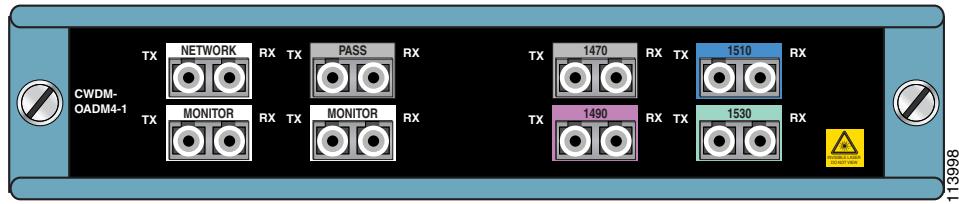
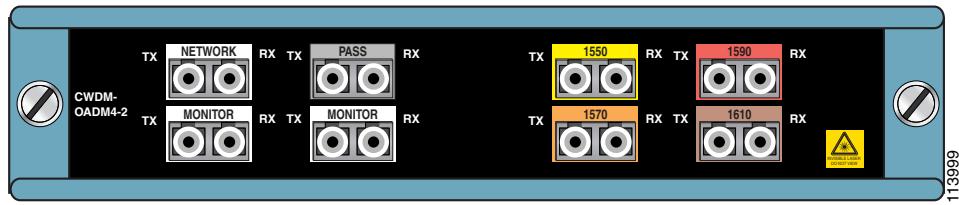


4-Channel OADM (CWDM-OADM4-1= and CWDM-OADM4-2=)

The 4-Channel OADM (CWDM-OADM4-1= and CWDM-OADM4-2=) allows you to add/drop four channels (with different wavelengths) into one direction of an optical ring. The other wavelengths are passed through the OADM. The 4-channel OADMs are transparent to the 1300-nm wavelength and includes a 1300-nm/1500-nm filter to mix legacy SONET/SDH/ATM ring installations with CWDM installations on the same optical fiber. Dual fiber is used for both the network and the GBIC or SFP connections. The two 4-channel OADMs, shown in [Figure 2](#) and [Figure 3](#), support the following wavelengths:

- CWDM-OADM4-1—1470-nm, 1490-nm, 1510-nm, and 1530-nm.
- CWDM-OADM4-2—1550-nm, 1570-nm, 1590-nm, and 1610-nm.

The 4-channel OADM modules are equipped with a monitor port that allows you to attach a power meter or an optical spectrum analyzer to assist you in monitoring and troubleshooting the network.

Figure 2 4-Channel OADM (CWDM-OADM4-1) Front Panel**Figure 3 4-Channel OADM (CWDM-OADM4-2) Front Panel**

Dual Single-Channel OADMs (CWDM-OADM1-xxxx)

The Dual Single-Channel OADMs (CWDM-OADM1-xxxx) allows you to add/drop two channels of the same wavelength into the two directions of an optical ring. The other wavelengths are passed through the OADM. The dual single-channel OADMs are transparent to the 1300-nm wavelength and includes a 1300-nm/1500-nm filter to mix legacy SONET/SDH/ATM ring installations with CWDM installations on the same optical fiber. Dual fiber is used for both the network and the CWDM GBIC and CWDM SFP connections. Eight versions of this OADM are available, one for each wavelength of light. (See [Table 2](#).) The dual single-channel OADMs, shown in Figures 4 through 11, are color coded and match the color coding of the CWDM GBIC and CWDM SFP transceivers. The dual single-channel OADM modules are equipped with a monitor port that allows you to attach a power meter or an optical spectrum analyzer to assist you in monitoring and troubleshooting the network.

Table 2 Dual Single-Channel OADMs

Product Number	Description	Connector Color Code
CWDM-OADM1-1470=	Dual single-channel OADM (1470 nm)	Gray
CWDM-OADM1-1490=	Dual single-channel OADM (1490 nm)	Violet
CWDM-OADM1-1510=	Dual single-channel OADM (1510 nm)	Blue
CWDM-OADM1-1530=	Dual single-channel OADM (1530 nm)	Green
CWDM-OADM1-1550=	Dual single-channel OADM (1550 nm)	Yellow
CWDM-OADM1-1570=	Dual single-channel OADM (1570 nm)	Orange
CWDM-OADM1-1590=	Dual single-channel OADM (1590 nm)	Red
CWDM-OADM1-1610=	Dual single-channel OADM (1610 nm)	Brown

[Table 3](#) provides a comparison of the CWDM passive device types.

Table 3 CWDMD Passive Device Type Comparison

Product Number	Device Type	Number of Fiber Strands to the Network	Number of Gigabit Ethernet Links (Maximum)	Network Architecture Options
CWDM-OADM1-xxxx=	OADM (dual add/drop)	2	2	Ring (point-to-point possible)
CWDM-OADM4-1=	OADM	2	4	Ring, point-to-point
CWDM-OADM4-2=				
CWDM-MUX8=	Mux/Demux	2	8	Ring, point-to-point

The OADM module ports are color coded to help with installation. Each color indicates the wavelength of the port. For more information about the color codes, see the “[Connecting the CWDM Passive Optical System to Your System](#)” section on page 18.

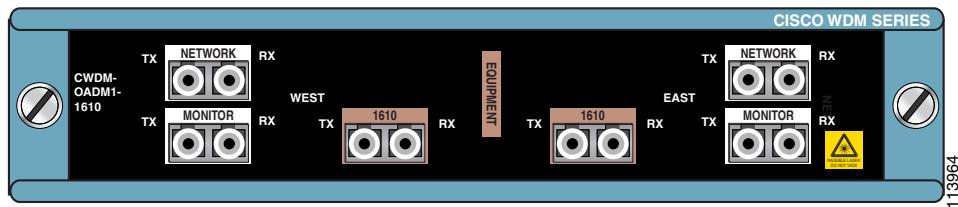
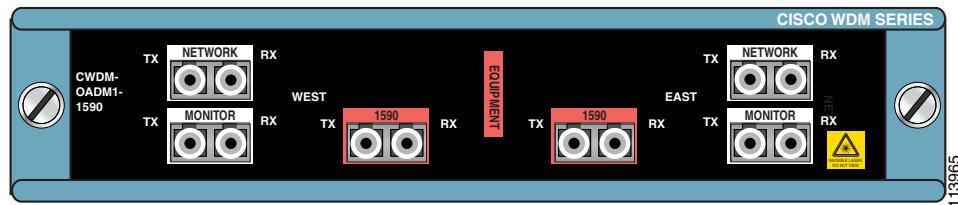
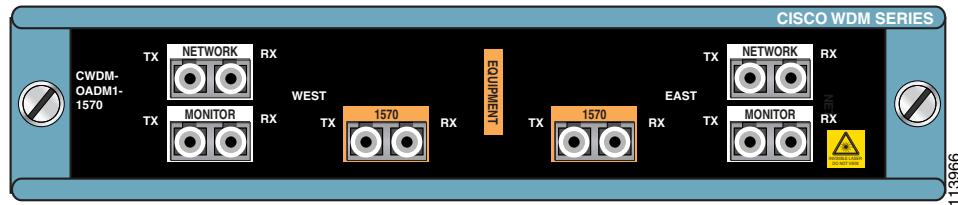
Figure 4 Dual Single-Channel OADM Front Panel (1610 nm)**Figure 5 Dual Single-Channel OADM Front Panel (1590 nm)****Figure 6 Dual Single-Channel OADM Front Panel (1570 nm)**

Figure 7 Dual Single-Channel OADM Front Panel (1550 nm)

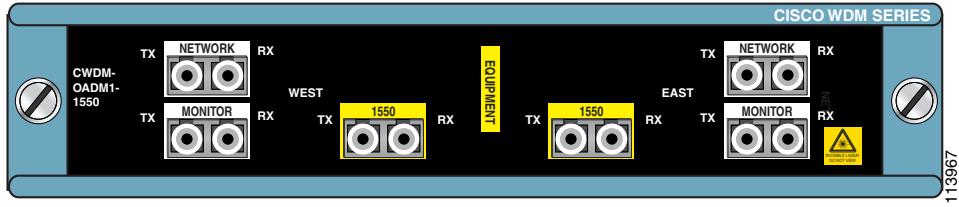


Figure 8 Dual Single-Channel OADM Front Panel (1530 nm)

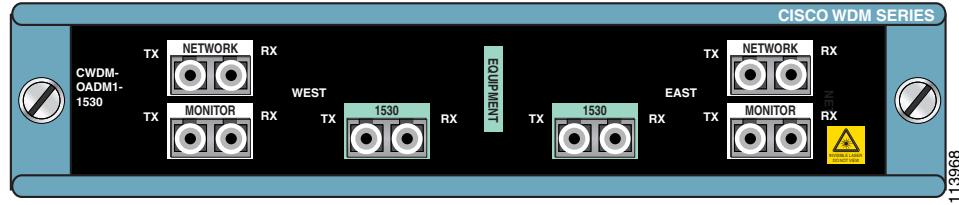


Figure 9 Dual Single-Channel OADM Front Panel (1510 nm)

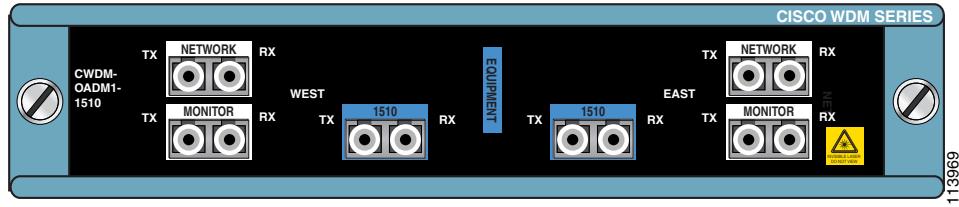


Figure 10 Dual Single-Channel OADM Front Panel (1490 nm)

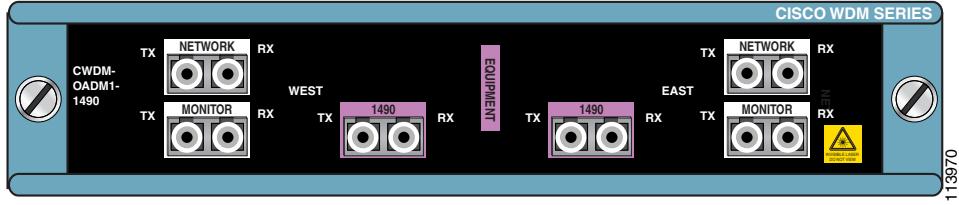
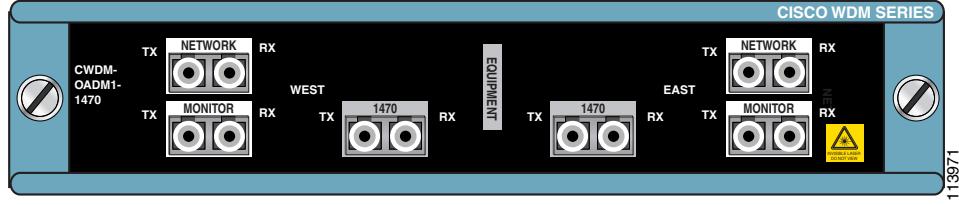


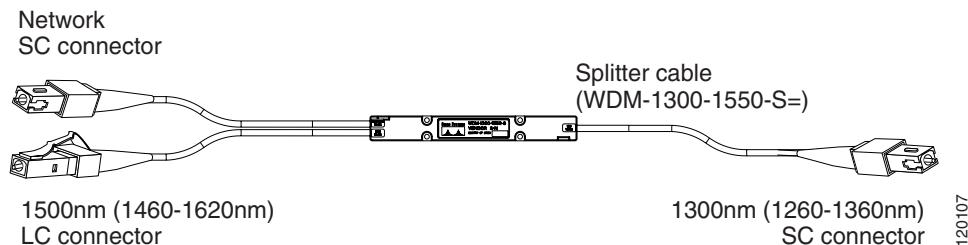
Figure 11 Dual Single-Channel OADM Front Panel (1470 nm)



WDM Splitter Cable (WDM-1300-1550-S=)

The WDM splitter cable provides bidirectional, multiplexing/demultiplexing for 1310-nm and 1550-nm signals. The WDM splitter cable is a Y cable (see [Figure 12](#)) with a 1310-nm branch terminating in an SC connector and a 1550-nm branch terminating in an LC connector. The common trunk branch of the Y cable is terminated in an SC connector. The WDM splitter cable is 1 meter in length.

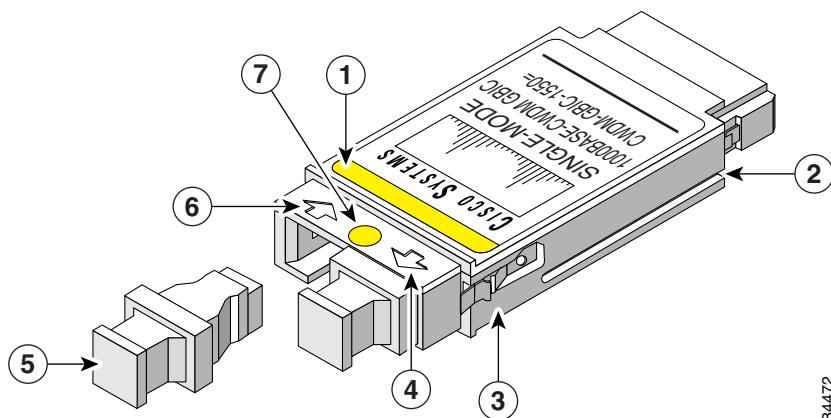
Figure 12 WDM Splitter Cable



CWDM GBIC and CWDM SFP Transceivers

The CWDM GBIC and CWDM SFP transceivers are hot-swappable input/output devices that link your switching module to the CWDM passive optical system using a pair of single-mode fiber-optic cables. The two transceiver types have different form factors and use different fiber-optic cable connectors. [Figure 13](#) shows a CWDM GBIC transceiver which uses an SC connector, and [Figure 14](#) shows a CWDM SFP transceiver which uses an LC connector.

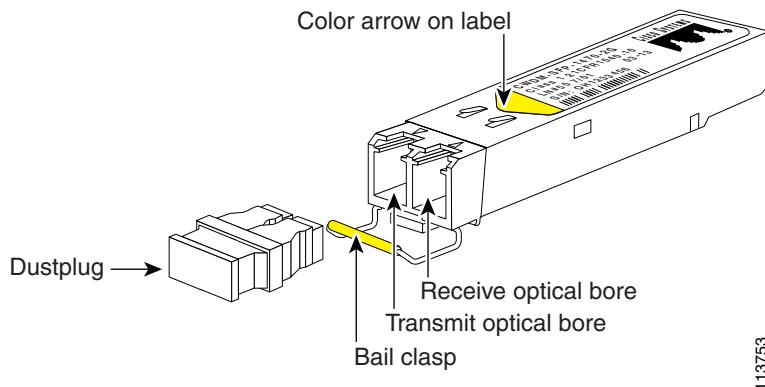
Figure 13 CWDM GBIC



1	Color label identifying laser wavelength	5	Optical bore dust plug
2	Alignment groove	6	Receive optical bore
3	Spring clip	7	Color dot identifying laser wavelength
4	Transmit optical bore		

**Warning**

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

Figure 14 CWDM SFP

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The CWDM GBIC and CWDM SFP transceivers are available in eight wavelengths. (See [Table 4](#).) Each CWDM GBIC and CWDM SFP transceiver is color coded to match the connector colors on the OADM modules.

Table 4 CWDM GBIC and SFP Transceiver Color Codes

GBIC Transceiver Product Number	SFP Transceiver Product Number	Description	Connector Color Code
CWDM-GBIC-1470=	CWDM-SFP-1470=	1000BASE-CWDM, 1470 nm	Gray
CWDM-GBIC-1490=	CWDM-SFP-1490=	1000BASE-CWDM, 1490 nm	Violet
CWDM-GBIC-1510=	CWDM-SFP-1510=	1000BASE-CWDM, 1510 nm	Blue
CWDM-GBIC-1530=	CWDM-SFP-1530=	1000BASE-CWDM, 1530 nm	Green
CWDM-GBIC-1550=	CWDM-SFP-1550=	1000BASE-CWDM, 1550 nm	Yellow
CWDM-GBIC-1570=	CWDM-SFP-1570=	1000BASE-CWDM, 1570 nm	Orange
CWDM-GBIC-1590=	CWDM-SFP-1590=	1000BASE-CWDM, 1590 nm	Red
CWDM-GBIC-1610=	CWDM-SFP-1610=	1000BASE-CWDM, 1610 nm	Brown

For information on installing, removing, and maintaining the CWDM GBIC and SFP transceivers, refer to the *Cisco CWDM GBIC and CWDM SFP Installation Note* that accompanies the CWDM GBIC and CWDM SFP transceivers.

Safety Overview

Throughout this publication, safety warnings appear in procedures that, if performed incorrectly, can harm you. 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 käsitlelet laitteistoa, huomioi sähköpiirien käsittelymisseen liittyvät riskit ja tutustu onnettomuuksien yleisiin ehkäisytapoihin. Turvallisuusvaroitusten käänökset löytyvät laitteen mukana toimitettujen käännettynä turvallisuusvaroitusten joukosta varoitusten lopussa näkyvien lausunonumeroiden 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 seznamate 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

Opromena

постои кај електричните кола и треба да ги познавате стандардните постапки за спречување на несреќни случаи. Искористете го бројот на изјавата што се наоѓа на крајот на секое предупредување за да го најдете неговиот период во преведените безбедносни предупредувања што се испорачани со уредот.
ЧУВАЈТЕ ГИ ОВИЕ НАПАТСТВИЈА

Ostrzeżenie WAŻNE INSTRUKCJE DOTYCZĄCE BEZPIECZEŃSTWA

Ten symbol ostrzeżenia oznacza niebezpieczeństwo. Zachodzi sytuacja, która może powodować obrażenia ciała. Przed przystąpieniem do prac przy urządzeniach należy zapoznać się z zagrożeniami związanymi z układami elektrycznymi oraz ze standardowymi środkami zapobiegania wypadkom. Na końcu każdego ostrzeżenia podano numer, na podstawie którego można odszukać tłumaczenie tego ostrzeżenia w dołączonym do urządzenia dokumencie z tłumaczeniami ostrzeżeń.

NINIEJSZE INSTRUKCJE NALEŻY ZACHOWAĆ**Upozornenie DÔLEŽITÉ BEZPEČNOSTNÉ POKYNY**

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

USCHOVAJTE SI TENTO NÁVOD**Warning**

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

**Warning**

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

**Warning**

Class I (CDRH) and Class 1M (IEC) laser products. Statement 1055

**Warning**

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

**Note**

The maximum output is less than 10 mW when measured through a 3.5-mm aperture located at a distance of 100 mm and the wavelength is 1470-nm to 1610-nm from the multichannel MUX or OADM module output connectors. Other fiber-optic ports have been tested and comply with the Class 1 limits of IEC 60825-1 and Class 1 limits of 21 CFR 1040.10 (with considerations pursuant to FDA Laser Notice 50, dated July 26, 2001).

Installing the CWDM Passive Optical System

The following sections provide installation procedures for the CWDM passive optical system components:

- [Required Tools, page 15](#)
- [Installing the 2-Slot Chassis \(CWDM-CHASSIS-2=\), page 15](#)
- [Installing the CWDM OADM Modules, page 16](#)
- [Removing the CWDM OADM Module, page 17](#)
- [Installing and Removing CWDM GBIC and CWDM SFP Transceivers, page 17](#)

Required Tools

You will need these tools to install the CWDM passive optical system:

- Number 2 Phillips screwdriver for the 10-32 or the 12-24 chassis installation screws.
- Wrist strap or other personal grounding device to prevent ESD occurrences.
- Antistatic mat or antistatic foam to set the equipment 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 document at this URL:
http://www.cisco.com/en/US/tech/tk482/tk607/technologies_white_paper09186a0080254eba.shtml
- Level (optional)
- Tape measure (optional)

Installing the 2-Slot Chassis (CWDM-CHASSIS-2=)


Note

Ensure that you install the 2-slot chassis in the same rack or an adjacent rack to your system so that you can connect all the cables between your CWDM OADM modules and the CWDM GBIC and CWDM SFP transceivers in your system.


Caution

When performing the following procedures, wear a grounding strap to avoid ESD damage to the OADM module. Some platforms have an ESD connector for attaching the wrist strap.

To mount the 2-slot chassis in an equipment rack, follow these steps:

Step 1

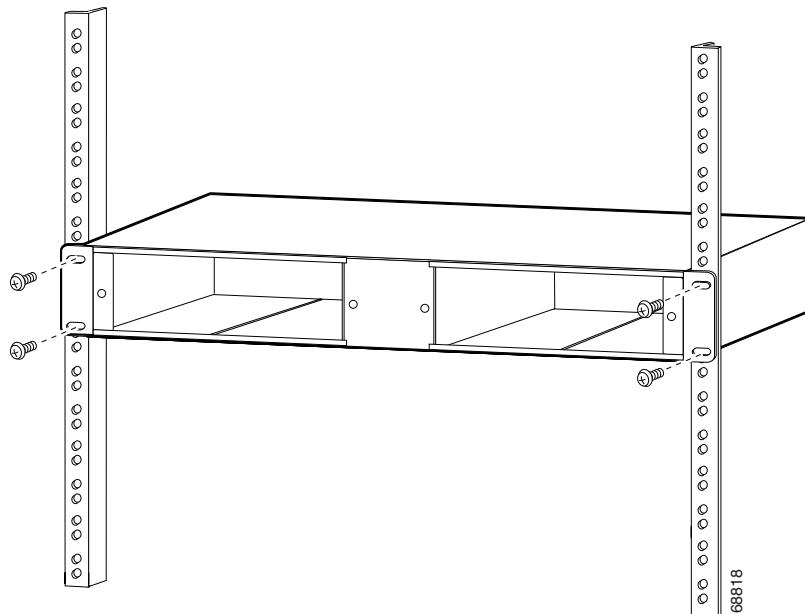
Remove the 2-slot chassis from the shipping packaging.

Step 2

Position the 2-slot chassis in the rack where you are going to install it. Align the mounting holes in the chassis L brackets with the mounting holes in the equipment rack to ensure that the 2-slot chassis is mounted straight and level. Use a level or tape measure to verify that the chassis is positioned level in the rack.

- Step 3** Secure the 2-slot chassis using four (two per side) 12-24 x 3/4-inch screws or four 10-32 x 3/4-inch screws. Thread the screws through the elongated holes in the L bracket and into the threaded holes in the mounting post. (See [Figure 15](#).)

Figure 15 *Mounting the 2-Slot Chassis in the Rack*



Installing the CWDM OADM Modules

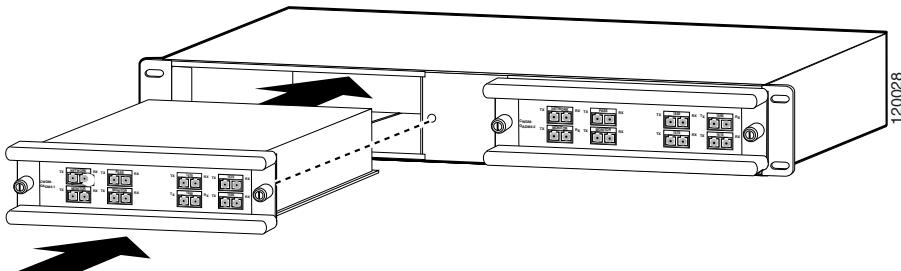


Caution When performing the following procedures, wear a grounding strap to avoid ESD damage to the OADM module. Make sure the other end of the ground strap is securely attached to a grounded point.

To install the CWDM OADM modules, follow these steps:

- Step 1** Align the CWDM OADM module with the slot on the 2-slot chassis. (See [Figure 16](#).)

Figure 16 *Installing a CWDM OADM Module*



-
- Step 2** Gently push the OADM module into the 2-slot chassis. Ensure that you line up the captive screws on the OADM module with the screw holes on the 2-slot chassis.
- Step 3** Tighten the two captive screws with the Number 2 Phillips screwdriver. Do not overtighten.
- Step 4** Do not remove the optical bore dust plugs at this time.
-

Removing the CWDM OADM Module



Caution

When performing the following procedures, wear a grounding strap to avoid ESD damage to the OADM module.

To remove the OADM module or the multiplexer/demultiplexer module, follow these steps:

-
- Step 1** Disconnect all network interface cables from the OADM module and immediately install dust plugs in the network interface cable connectors and the OADM connectors.
- Step 2** Loosen the captive screw on each side of the OADM module or the multiplexer/demultiplexer module using a Phillips screwdriver.
- Step 3** Gently pull on both captive screws to release the OADM module or the multiplexer/demultiplexer module from the 2-slot chassis.
- Step 4** Pull the OADM module or the multiplexer/demultiplexer module out of the 2-slot chassis, and place it on an antistatic mat or antistatic foam pad.
-

Installing and Removing CWDM GBIC and CWDM SFP Transceivers

For information on installing, removing, and maintaining the CWDM GBIC transceivers and CWDM SFP transceivers, refer to the *Cisco CWDM GBIC and CWDM SFP Installation Note* that accompanies the CWDM GBIC and CWDM SFP transceivers.



Caution

CWDM SFP and CWDM GBIC transceivers are static-sensitive devices. Always use an ESD wrist strap or similar individual grounding device when handling or coming in contact with CWDM SFP and CWDM GBIC transceivers.



Note

To prevent contamination, do not remove the optical bore dust plugs from the CWDM SFP and CWDM GBIC transceivers until directed to do so.

Connecting the CWDM Passive Optical System to Your System

This section is divided into the following topics:

- [Connecting Cables to the Dual Single-Channel OADM Module, page 18](#)
- [Connecting Cables to the CWDM 4-Channel OADM Module, page 20](#)
- [Connecting Cables to the CWDM 8-Channel Multiplexer/Demultiplexer Module, page 23](#)



Note

Use the CWDM passive optical system connector color codes shown in [Table 2](#) to help you connect the CWDM passive optical system to your system.

See [Figure 2](#) through [Figure 13](#) for the OADM and multiplexer/demultiplexer module front panels.



Warning

Class 1M laser radiation when open. Do not view directly with optical instruments. Statement 1053

Connecting Cables to the Dual Single-Channel OADM Module



Note

Make sure that the CWDM GBIC or CWDM SFP transceiver color code matches the color of the OADM port to which it is connected.

To connect the cables to the dual single-channel OADM module, follow these steps (see [Figure 17](#)):

Step 1

Insert the CWDM GBIC or CWDM SFP transceivers into the appropriate modules on your switch or router system if you have not already done so. For more information on CWDM SFP and CWDM GBIC transceivers, refer to the *Cisco CWDM GBIC and CWDM SFP Installation Note* that accompanied your transceivers.



Note

Always use single-mode fiber-optic patch cables to connect dual single-channel OADM ports to the CWDM GBIC or the CWDM SFP transceivers.



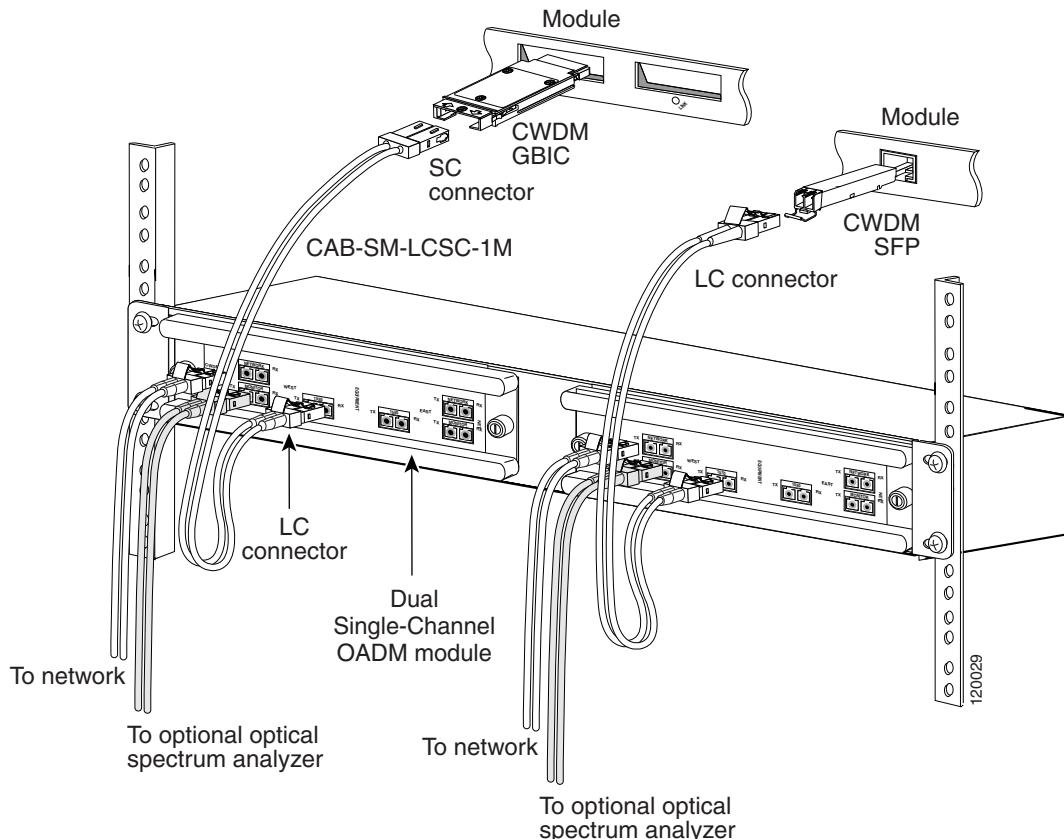
Note

CWDM GBIC transceivers are equipped with SC connectors. To make connections to the LC connectors on the OADM modules, you must use an LC to SC patch cable (Cisco part number CAB-SM-LCSC-1M=[1 meter cable], CAB-SM-=LCSC-5M=[5 meter cable], or an equivalent patch cable).



Warning

Invisible laser radiation may be emitted from the end of the unterminated fiber cable or connector. Do not view directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard. Statement 1056

Figure 17 Cabling a CWDM Dual Single-Channel OADM 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 2 Remove the dust plugs from the network interface cable connector and the transceiver optical bore. Save the dust plugs for future use.

Step 3 Inspect and clean the connector's fiber-optic end-faces. Refer to the Tip below for a pointer to the fiber-optic inspection and cleaning white paper.



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

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

Step 4 Connect the single-mode fiber-optic patch cable from the CWDM GBIC or CWDM SFP transceiver to the OADM module EQUIPMENT connector. Connect the Tx ports to the Rx ports and the Rx ports to the Tx ports to ensure that the system operates correctly.

- a. If you are using CWDM SFP transceivers, use an LC-to-LC patch cable.
- b. If you are using CWDM GBIC transceivers, you must use an SC-to-LC patch cable (CAB-SM-LCSC-1M= or CAB-SM-LCSC-5M=).



Note CWDM GBIC transceivers are equipped with SC connectors. To make connections to the LC connectors on the OADM modules, you must use an LC to SC patch cable (Cisco part number CAB-SM-LCSC-1M= [1 meter cable], CAB-SM-LCSC-5M= [5 meter cable], or an equivalent patch cable).

Step 5 If you use both channels of the module, repeat **Step 4** for the second channel.

Step 6 Connect the network west backbone single-mode fiber-optic cable to the NETWORK WEST connector on the OADM module, and connect the east backbone single-mode fiber-optic cable to the NETWORK EAST connector on the OADM module.

Step 7 If you are planning to monitor your network with an optical power meter or an optical spectrum analyzer, connect your meter or analyzer to the MONITOR port on the OADM.

Connecting Cables to the CWDM 4-Channel OADM Module



Note Make sure that the CWDM GBIC or CWDM SFP transceiver color code matches the color of the OADM port to which it is connected.

To connect the cables to the CWDM 4-channel OADM module, follow these steps (see [Figure 18](#)):

Step 1 Insert the CWDM GBIC transceivers or CWDM SFP transceivers into the appropriate modules on your switch or router system if you have not already done so. For more information on installing CWDM GBIC or CWDM SFP transceivers, refer to the *Cisco CWDM GBIC and CWDM SFP Installation Note*.



Note Always use single-mode fiber-optic patch cables to connect the CWDM OADM ports to the CWDM GBIC transceivers or CWDM SFP transceivers.

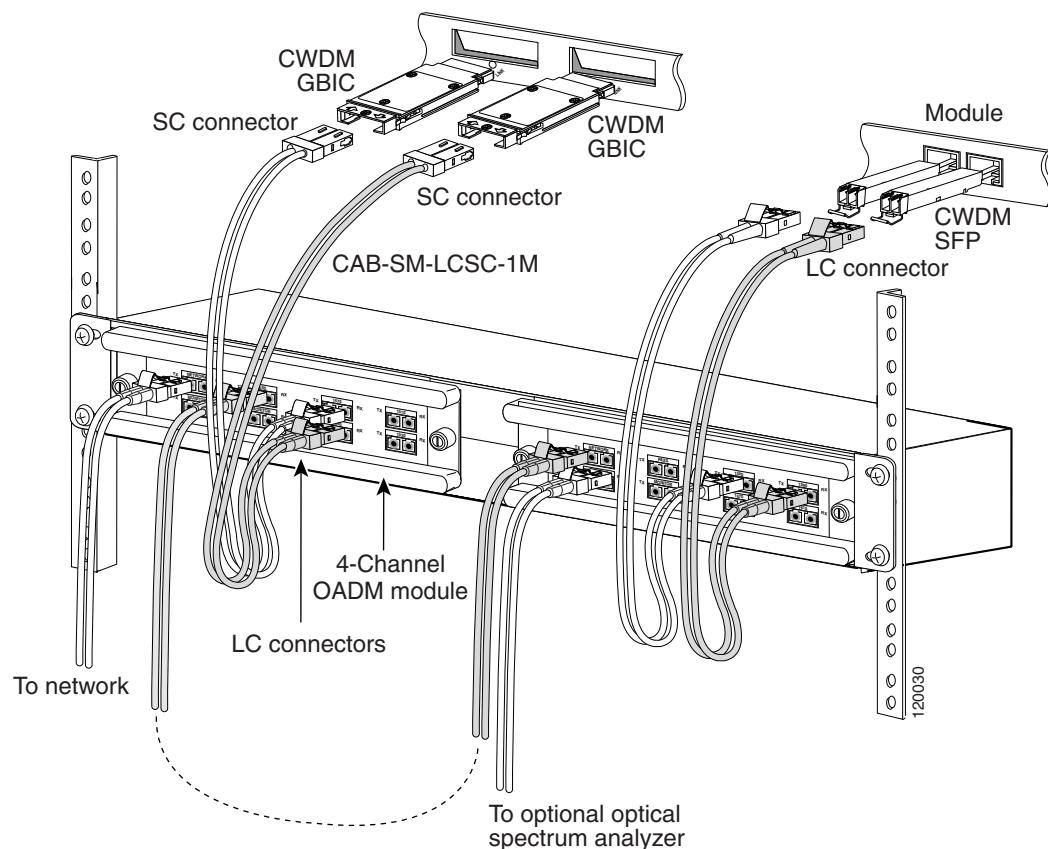


Note CWDM GBIC transceivers are equipped with SC connectors. To make connections to the LC connectors on the OADM modules, you must use an LC to SC patch cable (Cisco part number CAB-SM-LCSC-1M= [1 meter cable], CAB-SM-LCSC-5M= [5 meter cable], or an equivalent patch cable).

**Warning**

Invisible laser radiation may be emitted from the end of the unterminated fiber cable or connector. Do not view directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard. Statement 1056

Figure 18 Cabling a 4-Channel OADM 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 2 Remove the dust plugs from the network interface cable connector and the transceiver optical bore. Save the dust plugs for future use.

Step 3 Inspect and clean the connector's fiber-optic end-faces. Refer to the Tip below for a pointer to the fiber-optic inspection and cleaning white paper.



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

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

Step 4 Connect the single-mode fiber-optic cables from the CWDM GBICs (Tx/Rx; up to four channels) to the 4-channel module equipment connectors (Tx/Rx; up to four wavelengths, 1470-nm, 1490-nm, 1510-nm, 1530-nm) for OADM4-1 or 1550-nm, 1570-nm, 1590-nm, and 1610-nm for OADM4-2.



Note Connect the Tx ports to the Rx ports and the Rx ports to the Tx ports to ensure that the system operates correctly.

Step 5 Connect the one backbone single-mode fiber-optic cable to the NETWORK connector on the OADM module, and connect the other backbone single-mode fiber-optic cable to the PASS connector on the OADM module.

Step 6 If you are planning to monitor your network with an optical power meter or an optical spectrum analyzer, connect your meter or analyzer to the MONITOR port on the OADM.

Connecting Cables to the CWDM 8-Channel Multiplexer/Demultiplexer Module

**Note**

Make sure that the CWDM GBIC transceiver color code or CWDM SFP transceiver color code matches the color code of the OADM port to which it is connected.

To connect cables to a CWDM 8-channel multiplexer/demultiplexer module, follow these steps (see [Figure 19](#)):

Step 1

Insert the CWDM GBIC or CWDM SFP transceivers into the appropriate modules on your switch or router system if you have not already done so. For more information on installing CWDM GBIC transceivers and SFP transceivers, refer to the *Cisco CWDM GBIC and CWDM SFP Installation Note*.

**Note**

Clean all fiber-optic plugs on the cables before inserting the plugs into the fiber-optic connectors.

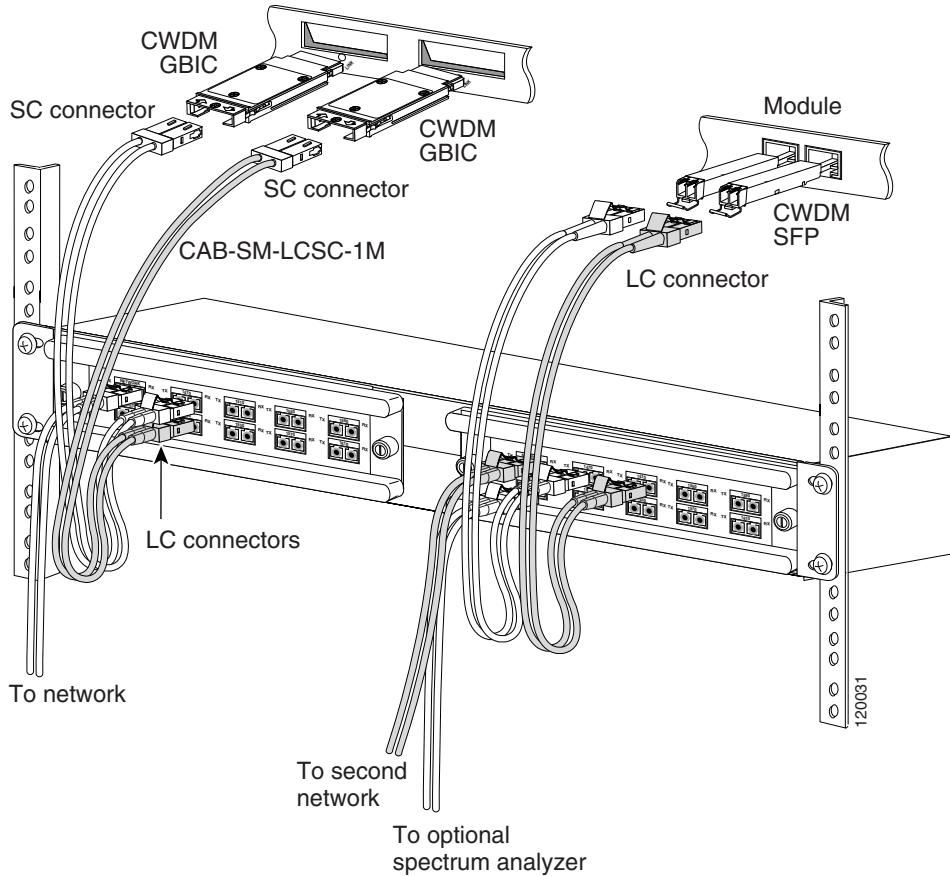
**Note**

Always use single-mode fiber-optic patch cables to connect the 8-channel multiplexer/demultiplexer ports to the CWDM GBIC transceivers and CWDM SFP transceivers.

**Warning**

Invisible laser radiation may be emitted from the end of the unterminated fiber cable or connector. Do not view directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard. Statement 1056

Figure 19 Cabling a CWDM 8-Channel Multiplexer/Demultiplexer 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 2 Remove the dust plugs from the network interface cable connector and the transceiver optical bore. Save the dust plugs for future use.

Step 3 Inspect and clean the connector's fiber-optic end-faces. Refer to the Tip below for a pointer to the fiber-optic inspection and cleaning white paper.



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

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

- Step 4** Connect the single pair fiber-optic cables from the CWDM GBIC transceivers or CWDM SFP transceivers (Tx/Rx; up to eight channels) to the 8-channel multiplexer/demultiplexer module equipment connectors (Tx/Rx; up to eight wavelengths).

**Note**

CWDM GBIC transceivers are equipped with SC connectors. To make connections to the LC connectors on the multiplexer/demultiplexer device, you must use an LC to SC patch cable (Cisco part number CAB-SM-LCSC-1M= [1 meter cable], CAB-SM-LCSC-5M= [5 meter cable], or an equivalent patch cable).

**Note**

Connect the Tx ports to the Rx ports and the Rx ports to the Tx ports to ensure that the system operates correctly.

- Step 5** Connect the network backbone single pair fiber-optic cable to the multiplexer/demultiplexer NETWORK connector on the OADM module.

- Step 6** If you are planning to monitor your network with an optical power meter or an optical spectrum analyzer, connect your meter or analyzer to the MONITOR port on the OADM.

Specifications

Table 5 lists the environmental specifications for the CWDM OADM and multiplexer/demultiplexer modules. **Table 6** lists the optical specifications for the CWDM OADM and multiplexer/demultiplexer modules.

Table 5 CWDM Passives Physical and Environmental Specifications

Item	Specification
Physical Characteristics	
Dimensions	8.35 x 1.75 x 8.7 in. (212 x 44 x 221 mm)
Weight	1.5 lbs. (0.68 kg)
Environmental	
Operating temperature	32 to 140 °F (0 to 60°C)
Storage temperature	-40 to 185°F (-40 to 85°C)

Table 6 CWDM OADM and Multiplexer/Demultiplexer Module Optical Specifications

Device	Path	Value
CWDM-MUX8A		
Filter Passband Width	Add/Drop	± 6.0 nm (minimum)
Channel Insertion Loss	Add/Drop	2.2 dB (maximum)
Monitor Insertion Loss	Network Tx/Rx Monitor Tx/Rx	23 dB (maximum)
CWDM-OADM4-x		
Filter Passband Width	Add/Drop	±6.0 nm (minimum)
CWDM Channel Insertion Loss	Add/Drop	1.8 dB (maximum)
Pass 1550-nm Insertion Loss	NETWORK Rx/Tx—PASS Tx/Rx	2.1 dB (maximum)
Pass 1310-nm Insertion Loss	NETWORK Rx/Tx—PASS Tx/Rx	2.1 dB (maximum)
Monitor Insertion Loss	NETWORK Rx/Tx—MONITOR Tx/Rx PASS Rx/Tx—MONITOR Tx/Rx	23 dB (maximum)
CWDM-OADM1-xxxx		
Filter Passband Width	Add/Drop	±6.0-nm (minimum)
CWDM Channel Insertion Loss	Add/Drop	1.5 dB (maximum)
Pass 1550-nm Insertion Loss	NETWORK Rx WEST/EAST— NETWORK Tx EAST/WEST	1.5 dB (maximum)
Pass 1310-nm Insertion Loss	NETWORK Rx WEST/EAST— NETWORK Tx EAST/WEST	1.7 dB (maximum)
Monitor Insertion Loss	NETWORK Tx/Rx WEST/EAST— TAP Tx/Rx WEST/EAST	23 dB (maximum)
WDM-1300-1550-S		
Pass 1310-nm Insertion Loss	Add/Drop	1.2 dB (maximum)
Pass 1550-nm Insertion Loss	Add/Drop	0.8 dB (maximum)

Translated Safety Warnings

This section contains the translations to the warnings that appear in this publication.

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 huolata 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 للفنيين المختصين فقط بتركيب المعدة أو استبدالها أو إجراء الصيانة عليها.
Upozorenje	Uredaj smije ugradivati, mijenjati i servisirati samo za to obučeno i osposobljeno servisno osoblje.
Upozornení	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 καταρπισμένο προσωπικό με τα κατάλληλα προσόντα.
ازهارה	רק עובדים מיומנים ומוסמכים רשאים להתקין, להחליף, או לטפל בצד זה.
Опомена	Местењето, заменувањето и сервисирањето на оваа опрема треба да 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 lakiens ja määärysten 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.
	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.
Upozornení	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.
Опомена	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 1053—Class 1M Laser Radiation



Class 1M laser radiation when open. Do not view directly with optical instruments.

Waarschuwing	Klasse-1M laserstraling indien toegangspaneel open is. Niet rechtstreeks bekijken met optische instrumenten.
Varoitus	Säteilee luokan 1M lasersäädelyä avattuna. Älä katso säteeseen optisilla laitteilla.
Attention	Radiation laser de classe 1M en cas d'ouverture. Ne pas observer directement avec des instruments optiques.
Warnung	Laserstrahlung der Klasse 1 M, wenn geöffnet. Nicht mit optischen Instrumenten direkt hineinsehen.
Avvertenza	Radiazioni laser Classe 1 quando aperto. Non osservare in maniera diretta con strumenti ottici.
Advarsel	Laserstråling i klasse 1M i åpen stilling. Skal ikke ses direkte med optiske instrumenter.
Aviso	Radiação laser classe 1M quando aberto. Não olhar diretamente com instrumentos ópticos.
¡Advertencia!	Los productos láser Clase 1M emiten radiación una vez abiertos. No los mire directamente con instrumentos ópticos.

Warning! Klass 1M laser utstrålning när öppen. Betrakta ej direkt med optiska instrument.

Nyitott állapotban Class 1M besorolású lézersugárzás van jelen. Ne nézze közvetlenül optikai berendezésekkel!

Предупреждение При открывании возможно наличие лазерного излучения класса 1М. Не смотрите непосредственно на лазерный луч через оптические приборы.

警告 打开时，会产生 1M 类激光辐射。请勿直接用光学仪器观看。

警告 装置を開いた状態では、Class 1Mレーザーが放射されています。光学機器を使用して直接見ないでください。

Statement 1055—Class I and Class 1M Laser



Warning

Class I (CDRH) and Class 1M (IEC) laser products.

Waarschuwing

Laserproducten van Klasse I (CDRH) en Klasse 1M (IEC).

Varoitus

Luokan I (CDRH) ja luokan 1M (IEC) lasertuotteita.

Attention

Produits laser catégorie I (CDRH) et catégorie 1M (IEC).

Warnung

Laserprodukte der Klasse I (CDRH) und Klasse 1M (IEC).

Avvertenza

Prodotti laser di Classe I (CDRH) e Classe 1M (IEC).

Advarsel

Klasse I (CDRH) og klasse 1M (IEC) laserprodukter.

Aviso

Produtos laser Classe I (CDRH) e Classe 1M (IEC).

¡Advertencia!

Productos láser de Clase I (CDRH) y Clase 1M (IEC).

Varng! Laserprodukter av Klass I (CDRH) och Klass 1M (IEC).

Class I (CDRH) és Class 1M (IEC) besorolású lézeres termékek.

Предупреждение Лазерные устройства класса I (CDRH) и класса 1M (IEC).

警告 这是 I (CDRH) 类和 1M (IEC) 类激光产品。

警告 クラスI(CDRH) および クラス1M(IEC) レーザー製品です。

Statement 1056—Unterminated Fiber Cable



Warning

Invisible laser radiation may be emitted from the end of the unterminated fiber cable or connector. Do not view directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard.

Waarschuwing

Er kunnen onzichtbare laserstralen worden uitgezonden vanuit het uiteinde van de onafgebroken vezelkabel of connector. Niet in de straal kijken of deze rechtstreeks bekijken met optische instrumenten. Als u de laseruitvoer met bepaalde optische instrumenten bekijkt (zoals bijv. een oogloep, vergrootgras of microscoop) binnen een afstand van 100 mm kan dit gevaar voor uw ogen opleveren.

Varoitus

Päättämättömän kuitukaapelin tai -liittimen päästä voi tulla näkymätöntä lasersäteilyä. Älä tuijota sädettä tai katso sitä suoraan optisilla välineillä. Lasersäteen katsominen tietyillä optisilla välineillä (esim. suurennuslasilla tai mikroskoopilla) 10 cm:n päästä tai sitä lähempää voi olla vaarallista silmille.

Attention

Des émissions de radiations laser invisibles peuvent se produire à l'extrémité d'un câble en fibre ou d'un raccord sans terminaison. Ne pas fixer du regard le rayon ou l'observer directement avec des instruments optiques. L'observation du laser à l'aide certains instruments optiques (loupes et microscopes) à une distance inférieure à 100 mm peut poser des risques pour les yeux.

Warnung

Eine unsichtbare Laserstrahlung kann vom Ende des nicht angeschlossenen Glasfaserkabels oder Steckers ausgestrahlt werden. Nicht in den Laserstrahl schauen oder diesen mit einem optischen Instrument direkt ansehen. Ein Betrachten des Laserstrahls mit bestimmten optischen Instrumenten, wie z.B. Augenlupen, Vergrößerungsgläsern und Mikroskopen innerhalb eines Abstands von 100 mm kann für das Auge gefährlich sein.

Avvertenza

L'estremità del connettore o del cavo ottico senza terminazione può emettere radiazioni laser invisibili. Non fissare il raggio od osservarlo in modo diretto con strumenti ottici. L'osservazione del fascio laser con determinati strumenti ottici (come loupette, lenti di ingrandimento o microscopi) entro una distanza di 100 mm può provocare danni agli occhi.

Advarsel	Usynlig laserstråling kan emittere fra enden av den ikke-terminerte fiberkabelen eller koblingen. Ikke se inn i strålen og se heller ikke direkte på strålen med optiske instrumenter. Observering av laserutgang med visse optiske instrumenter (for eksempel øyelupe, forstørrelsesglass eller mikroskoper) innenfor en avstand på 100 mm kan være farlig for øynene.
Aviso	Radiação laser invisível pode ser emitida pela ponta de um conector ou cabo de fibra não terminado. Não olhe fixa ou diretamente para o feixe ou com instrumentos ópticos. Visualizar a emissão do laser com certos instrumentos ópticos (por exemplo, lupas, lentes de aumento ou microscópios) a uma distância de 100 mm pode causar riscos à visão.
¡Advertencia!	El extremo de un cable o conector de fibra sin terminación puede emitir radiación láser invisible. No se acerque al radio de acción ni lo mire directamente con instrumentos ópticos. La exposición del ojo a una salida de láser con determinados instrumentos ópticos (por ejemplo, lupas y microscopios) a una distancia de 100 mm puede comportar lesiones oculares.
Varng!d	Osynlig laserstrålning kan komma från änden på en oavslutad fiberkabel eller -anslutning. Titta inte rakt in i strålen eller direkt på den med optiska instrument. Att titta på laserstrålen med vissa optiska instrument (t.ex. lupper, förstoringsglas och mikroskop) från ett avstånd på 100 mm kan skada ögonen.
	A lezáratlan optikai kábelek és a csatlakozók láthatatlan lézerfényt bocsáthatnak ki. Ne nézzen bele a sugárba, és ne nézze közvetlenül, optikai berendezések segítségével! Ha a kibocsátott lézert 100 mm-esnél kisebb távolságból nézi bizonyos optikai eszközökkel (például nagyítóval vagy mikroszkóppal), látásárosodást szenvedhet.
Предупреждение	Световоды и разъемы без заглушек могут испускать невидимое лазерное излучение. Не допускайте попадания лазерного луча в глаза и не смотрите на него через оптические приборы. Нельзя смотреть на источник лазерного излучения через некоторые оптические приборы (например увеличительное стекло, лупу или микроскоп) с расстояния ближе 100 мм: это может привести к травме органов зрения.
警告	无终端接头的光纤缆的末端或接头有可能发出不可见的激光辐射。请勿直视光束或直接用光学仪器观看。在 100 毫米的距离内用某些光学仪器（例如小型放大镜、放大镜和显微镜）观看激光输出有可能伤害眼睛。
警告	終端されていない光ファイバ ケーブルまたはコネクタの開口部からは、目に見えないレーザー光線が放射されていることがあります。光線をのぞきこんだり、光学機器を使用して直接見たりしないでください。ある種の光学機器（ルーペ、拡大鏡、顕微鏡など）を使用して 100 mm 以内の距離からレーザー光線を見ると、目を痛めことがあります。

Statement 1057—Hazardous Radiation Exposure



Warning

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

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

Bruk av kontroller eller justeringer eller utførelse av prosedyrer som ikke er spesifiserte, kan resultere i farlig strålingseksposering.

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.

Az előírtaktól különböző kezelőszervek és módosítások használata, vagy ilyen eljárások végrehajtása sugárzásveszélyt rejti 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と、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 posljedicu 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 εκτέλεση άλλων διαδικασιών από αυτές που προδιαγράφονται μπορεί να οδηγήσει σε επικίνδυνη έκθεση σε ακτινοβολία.
ازدراهه	שימוש בפקדים, התאמות או נהלי ביצוע, להוציא אלה המצוינים, עלול להסתיימם בחשיפה לקרינה מסווגת.
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.

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 a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS Version 2.0.

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