



Cisco Application Control Engine Module Installation Note

Product Numbers: ACE10-6500-K9, ACE20-MOD-K9

This document describes how to install the Cisco Application Control Engine (ACE) module. Unless otherwise noted, ACE module refers to the ACE10-6500-K9 (ACE10) or ACE20-MOD-K9 (ACE20).

You can install an ACE10 or an ACE20 module in the following chassis:

- A Catalyst 6500 series switch with IOS software version 12.2(18)SXF4 or later, or 12.2(33)SXH or later. You can install the ACE10 or ACE20 in all Catalyst 6500 series models (both the E and non-E switch chassis) as described in the [“Before You Install or Remove a Module”](#) section.
- A Cisco 7600 series router with IOS software release 12.2(18)SXF4 or 12.2(33)SRB or later. You can install the ACE module in all Cisco 7600 series router models (both the S and non-S router chassis).



Note

ACE10-6500-K9, ACE20-MOD-K9 and ACE30-MOD-K9 modules can occupy the same chassis, however, you cannot use an ACE10 or an ACE20 with an ACE30 for redundancy.

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Supervisor Engine and IOS Support for the ACE Module

Table 1 and Table 2 summarize the supervisor engine model and IOS version support for the ACE10 and the ACE20 in the Catalyst 6500 series switch and the Cisco 7600 series router, respectively.

Table 1 *Supervisor Engine and IOS Support for the ACE10 and ACE20 in a Catalyst 6500 Series Switch with a Multilayer Switch Feature Card (MSFC3 or MSFC4)*

Supervisor Engine Model	Minimum Required IOS Version	Other IOS Version Support
WS-SUP720	12.2(18)SXF4 (or later)	12.2(33)SXH (or later), 12.2(33)SXI ¹ (or later)
WS-SUP720-3B		
WS-SUP720-3BXL		
VS-S720-10G-3C	12.2(33)SXH (or later)	
VS-S720-10G-3CXL		
VS-S2T-10G ²	12.2(50)SY (or later)	
VS-S2T-10G-XL		

1. Minimum required IOS version for VSS support. See the [Virtual Switching System Support](#) section.
2. Minimum required ACE20 module software version for Supervisor Engine 2T support is A2(3.4) or later. This ACE software version supports both supervisor engine models: VS-S2T-10G and VS-S2T-10G-XL.

Table 2 *Supervisor Engine, Route Switch Processor (RSP), and IOS Support for the ACE10 and ACE20 in a Cisco 7600 Series Router with an MSFC3 or MSFC4*

Supervisor Engine or RSP	Minimum Required IOS Version	Other IOS Version Support
WS-SUP720	12.2(18)SXF4 (or later)	12.2(33) SRB (or later)
WS-SUP720-3B		Not supported: 12.2(33)SXH ¹
WS-SUP720-3BXL		
RSP720	12.2(33)SRC (or later)	None
RSP720-1GE		
RSP720-3CXL-GE		

1. Cisco IOS release 12.2(33)SXH runs only on the Catalyst 6500 series switch. Therefore, the Supervisor 720-10GE engines are not supported in the Cisco 7600 series router.

For more information about Cisco IOS releases, see the [Release Notes for Cisco IOS Release 12.2SXF and Rebuilds](#) and the [Release Notes for Cisco IOS Release 12.2\(33\)SXH and Later Releases](#).

Virtual Switching System Support

The ACE10 and the ACE20 running ACE software version A2(1.2) or later and earlier than A4(1.0) and installed in a Catalyst 6500 series switch running IOS software version 12.2(33)SXI or later support the Virtual Switching System (VSS). VSS is a system virtualization technology that allows the pooling of multiple Catalyst 6500 switches into a single virtual switch for increased operational efficiency by simplifying the network. Inter-chassis Supervisor switchover (SSO) boosts non-stop communication. For more information about VSS, see the *Cisco IOS Version 12.2(33)SXI Configuration Guide*.

Safety Overview



Warning

IMPORTANT SAFETY INSTRUCTIONS

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. Statement 1071

SAVE THESE INSTRUCTIONS

Waarschuwing

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van de standaard praktijken om ongelukken te voorkomen. Gebruik het nummer van de verklaring onderaan de waarschuwing als u een vertaling van de waarschuwing die bij het apparaat wordt geleverd, wilt raadplegen.

BEWAAR DEZE INSTRUCTIES

Varoitus

TÄRKEITÄ TURVALLISUUSOHJEITA

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

SÄILYTÄ NÄMÄ OHJEET

Attention

IMPORTANTES INFORMATIONS DE SÉCURITÉ

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement.

CONSERVEZ CES INFORMATIONS

Warnung WICHTIGE SICHERHEITSHINWEISE

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung 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 legemeskade. Før du begynder arbejde på udstyr, skal du være opmærksom på de involverede risici, der er ved elektriske kredsløb, og du skal sætte dig ind i standardprocedurer til undgåelse af ulykker. Brug erklæringsnummeret efter hver advarsel for at finde oversættelsen i de oversatte advarsler, der fulgte med denne enhed.

GEM DISSE ANVISNINGER**تحذير****إرشادات الأمان الهامة**

يوضح رمز التحذير هذا وجود خطر. وهذا يعني أنك متواجد في مكان قد ينتج عنه التعرض لإصابات. قبل بدء العمل، احذر مخاطر التعرض 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 συνήθεις 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**Опoмена**

пoстoи кaј eлeктpичнитe кoлa и тpeбa дa ги пoзнaвaтe стaндapднитe пoстaпкитe зa спpeчyвaњe нa нeспpeкни слyчaи. Искoристeтe гo бpoјoт нa изјaвaтa штo ce нaoѓa нa кpaјoт нa сeкoe пpeдyпpeдyвaњe зa дa гo нaјдeтe нeгoвиoт пepиoд вo пpeвeдeнитe бeзбeднoсни пpeдyпpeдyвaњa штo ce испoрaчaни co ypeдoт.

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

NEBS Level 3 Compliance

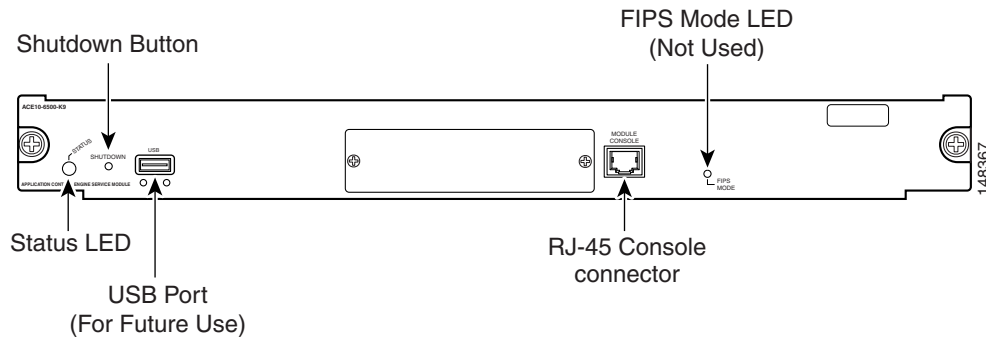
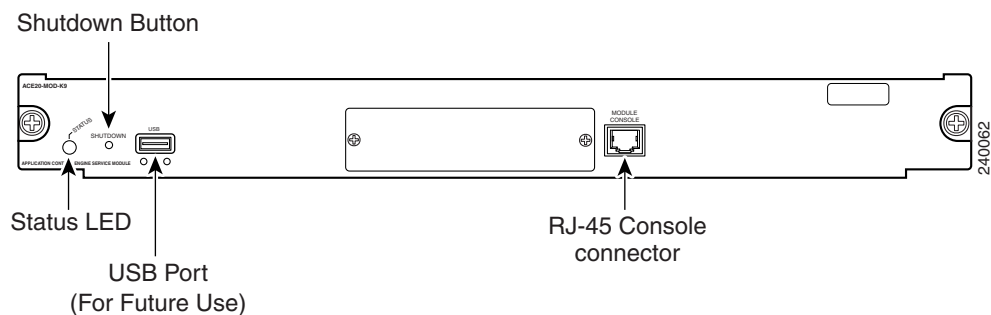
Table 3 lists the NEBS Level 3 compliance and ETSI environmental requirements for the ACE10 and ACE20.

Table 3 NEBS Compliance and ETSI 300-019 Environmental Requirements

Specification	Description	Comments
NEBS Criteria Levels	SR-3580 NEBS level 3 (GR-63-CORE, issue 3, GR-1089-CORE, issue 4)	
Verizon NEBS Compliance	Telecommunications Carrier Group (TCG) Checklist	
Qwest NEBS requirements	Telecommunications Carrier Group (TCG) Checklist	
ATT NEBS requirements	ATT TP76200 level 3, TP7645 and TCG Checklist	

Front Panel Description

Figure 1 illustrates the front panel of the ACE10-6500-K9 module. Figure 2 illustrates the front panel of the ACE20-MOD-K9 module.

Figure 1 ACE10-6500-K9 Front Panel**Figure 2 ACE20-MOD-K9 Front Panel**

This section contains the following topics that describe the individual components on the front panel:

- [Status LED](#)
- [Shutdown Button](#)
- [RJ-45 Console Connector](#)
- [FIPS LED](#)

Status LED

When you power up the ACE module, it initializes various hardware components and communicates with the supervisor engine. The Status LED indicates the supervisor engine operations and the initialization results. During the normal initialization sequence, the status LED changes from off to red, orange, and green.



Note

For information on the supervisor engine LEDs, see the *Catalyst 6500 Series Switch Module Installation Guide* or the *Cisco 7600 Series Router Module Installation Guide*.

[Table 4](#) describes the Status LED operation.

Table 4 Status LED Description

LED Color	Description
Off	Indicates one of the following conditions: <ul style="list-style-type: none"> • The module is waiting for the supervisor engine to provide power. • The module is offline. • The module is not receiving power, which may be caused by one of the following: <ul style="list-style-type: none"> – Power is not available to the module. – Module temperature is over the limit¹.
Red	Indicates one of the following conditions: <ul style="list-style-type: none"> • The module is released from reset by the supervisor engine and is booting. • The boot code failed to run.
Orange	Indicates one of the following conditions: <ul style="list-style-type: none"> • The module is initializing hardware or communicating with the supervisor engine. • A fault occurred during the initialization sequence. • The module failed to download its Field Programmable Gate Arrays (FPGAs) at startup. The module continues with the remainder of the initialization sequence and provides the module online status from the supervisor engine. • The module has not received the module online status from the supervisor engine. This problem may be caused by the supervisor engine detecting a failure in an external loopback test that it issued to the module.
Green	The module is operational; the supervisor engine has provided module online status.
Green to Orange	The module is disabled through the supervisor engine command-line interface (CLI) using the no power enable module command.

1. Enter the **show environment temperature mod** command at the Catalyst 6500 series switch or Cisco 7600 series router CLI to display the temperature of each of the four sensors on the module.

Shutdown Button



Caution

Do not remove the ACE module from the Catalyst 6500 series switch or the Cisco 7600 series router until the module has shut down completely and the Status LED is orange. To avoid damaging the ACE module, you must correctly shut down the module before you remove it from the chassis or before you disconnect the power. You may damage the ACE module if you remove it from the switch before it completely shuts down.

The Shutdown button manually shuts down the ACE module. To properly shut down the ACE module to prevent data loss, enter the **no power enable module** command in Configure mode at the switch or router CLI.

If the ACE module fails to respond to this command, shut down the module by using a small pointed object (such as a paper clip) to access the Shutdown button on the front panel of the ACE module. The shutdown procedure may take several minutes. The Status LED turns off when the module shuts down.

USB Port

The USB port is intended for future use.

RJ-45 Console Connector

The RJ-45 Console port is used to initially configure the ACE module. The initial ACE module configuration must be made through a direct connection to the Console port. After the initial configurations, you can make an Secure shell (SSH) or Telnet connection to the module to further configure it.

The Console port uses an 8-pin RJ-45 connector to connect the ACE module to a terminal. Two RJ-45 console cables are included as part of the ACE module accessory kit.

The settings for the Console port are 9600 baud, 8 data bits, 1 stop bit, no parity. The Console port settings are fixed and cannot be changed.

FIPS LED

The Federal Information Processing Standards (FIPS) LED is not used. This LED is on the front panel of an ACE10-6500-K9 module only.

System and Environmental Requirements

The following sections describe the system and environmental requirements for the ACE module:

- [System Requirements](#)
- [Supported Hardware and Software](#)
- [Power Requirements](#)
- [Memory Requirements](#)
- [Environmental Requirements](#)

System Requirements

An ACE module occupies one slot in the Catalyst 6500 series switch or Cisco 7600 series router chassis. ACE10-6500-K9, ACE20-MOD-K9, and ACE30-MOD-K9 modules can occupy the same chassis, but you cannot use an ACE10 or ACE20 with an ACE30 for redundancy. A single chassis supports a maximum of four ACE modules.

Before you install the ACE module with preloaded software in the Catalyst 6500 series switch or Cisco 7600 series router chassis, ensure that the chassis contains the following:

- Supervisor Engine 720 with Cisco IOS software and a Multilayer Switch Feature Card (MSFC3). The ACE module supports the following models of Supervisor 720 engines: WS-SUP720, WS-SUP720-3B, WS-SUP720-3BXL, VS-S720-10G-3C, VS-S720-10G-3CXL.
- Any module that has ports to connect to the server and client networks.

For more information on the Catalyst 6500 series switch, see the *Catalyst 6500 Series Switches Installation Guide* at this URL:

http://www.cisco.com/en/US/products/hw/switches/ps708/prod_installation_guides_list.html

For more information on the Cisco 7600 series router, see the *Cisco 7600 Series Router Installation Guide* at this URL:

http://www.cisco.com/en/US/products/hw/routers/ps368/prod_installation_guides_list.html

Supported Hardware and Software

Table 5 lists the minimum ACE module software release, and supported hardware and Cisco IOS software version for the ACE module.

Table 5 Supported Hardware and Software

Product Description	Product Number	Minimum ACE Software Release Required	Cisco IOS Release	
			Catalyst 6500 Series Switch	Cisco 7600 Series Router
ACE module	ACE10-6500-K9	3.0(0)A1(2) for the Catalyst 6500 series switch, 3.0(0)A1(4)a for the Cisco 7600 series router	Cisco IOS Release 12.2(18)SXF4 or later or 12.2(33)SXH or later or 12.2(33)SXI or later	Cisco IOS Release 12.2(18)SXF4 or later or 12.2(33)SRB or later or 12.2(33)SRC or later
	ACE20-MOD-K9	3.0(0)A1(4)a		
Console cable	72-876-01	Not applicable	Not applicable	Not applicable
Accessory kit (contains two console cables)	800-05097-01	Not applicable	Not applicable	Not applicable

Power Requirements

An ACE module module operates on power supplied by the Catalyst 6500 series switch or the Cisco 7600 series router. The power consumption of the ACE10 and ACE20 modules is 220 W (751 BTU/hr). To ensure that you have sufficient power available for the ACE in your chassis, enter the following command at the supervisor engine CLI:

```
SUP-C# show power available
system power available = 496.86 Watts (11.83 Amps @ 42V)
```

Memory Requirements

The ACE module memory is not configurable.

Environmental Requirements

Table 6 lists the environmental requirements for the ACE module.

Table 6 ACE module Environmental Requirements

Item	Specification
Temperature, ambient operating	0° to 40°C (32° to 104°F)
Temperature, ambient nonoperating	–40° to 70°C (–40° to 158°F)
Humidity (RH), ambient (noncondensing) operating	10% to 85%
Nonoperating relative humidity (noncondensing)	5% to 95%

Before You Install or Remove a Module

Before you install an ACE module in the Catalyst 6500 series switch or Cisco 7600 series router, ensure that the following items are available:

- Management station available through a Telnet or a console connection to perform the configuration tasks
- Phillips-head screwdriver
- Wrist strap or other grounding device
- Antistatic mat or antistatic foam

When you handle a module, always use a wrist strap or other grounding device to prevent electrostatic discharge (ESD).



Caution

During this procedure, wear grounding wrist straps to avoid ESD damage to the modules.



Caution

Do not directly touch the backplane with your hand or any metal tool or you may shock yourself.

All Catalyst 6500 series switches and Cisco 7600 series routers support hot swapping, allowing you to install, remove, and replace modules without turning off chassis power. For more information on removing the modules from a switch, see the [“Removing a Module”](#) section.

When the software detects that a module has been installed or removed, it automatically runs diagnostic and discovery routines, acknowledges the presence or absence of the module, and resumes switch operation.

The Catalyst 6503 or 6503-E switch chassis has three horizontal slots. The Catalyst 6504 or 6504-E switch, or Cisco 7604 router chassis has four horizontal slots. In these chassis, the slots can be used as follows:

- Slot 1, the top-most slot, is reserved for the supervisor engine.
- Slot 2 can be used for a redundant supervisor engine.
- If a redundant supervisor engine is not required, the following slots are available for modules:
 - Slots 2 and 3 on the 3-slot chassis
 - Slots 2 through 4 on the 4-slot chassis
- Empty slots require filler panels to maintain consistent airflow through the chassis.

The Catalyst 6506 or 6506-E switch, or Cisco 7606 router chassis has six horizontal slots. The Catalyst 6509 or 6509-E switch chassis has nine horizontal slots. The Catalyst 6509-NEB and Catalyst 6509-NEB-A switches or the Cisco 7609 router have nine vertical slots, which are numbered 1 to 9 from right to left. Install vertical modules with the component side facing to the right. In these chassis, the slots can be used as follows:

- Slot 5 is reserved for the supervisor engine.
- Slot 6 can be used for a redundant supervisor engine.
- If a redundant supervisor engine is not required, the following slots are available for modules:
 - Slots 1 through 4 and slot 6 on the 6-slot chassis
 - Slots 1 through 4 and slots 6 through 9 on the 9-slot chassis
- Empty slots require filler panels to maintain consistent airflow through the switch chassis.

The Catalyst 6513 or 6513E switch or Cisco 7613 router chassis has 13 horizontal slots. In these chassis, the slots can be used as follows:

- Slot 7 is reserved for the supervisor engine.
- Slot 8 can be used for a redundant supervisor engine.
- If a redundant supervisor engine is not required, slots 1 through 6 and slots 8 through 13 are available for modules.
- Empty slots require filler panels to maintain consistent airflow through the chassis.

Installing a Module

This section describes how to install an ACE module in a Catalyst 6500 series switch or a Cisco 7600 series router.



Warning

Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.



Caution

To prevent ESD damage, handle modules by the carrier edges only.



Caution

During this procedure, wear grounding wrist straps to avoid ESD damage to the module. Do not directly touch the backplane with your hand or any metal tool, or you could shock yourself.

To install a module in the chassis, perform these steps:

- Step 1** Choose an appropriate slot for the module.
- Step 2** Verify that there is enough clearance to accommodate any interface equipment that you will connect directly to the module ports. If possible, place the modules between the empty slots that contain only the module filler panels.

- Step 3** Verify that the captive installation screws are tightened on all modules installed in the chassis. This action ensures that the EMI gaskets on all modules are fully compressed to maximize the opening space for the replacement module.

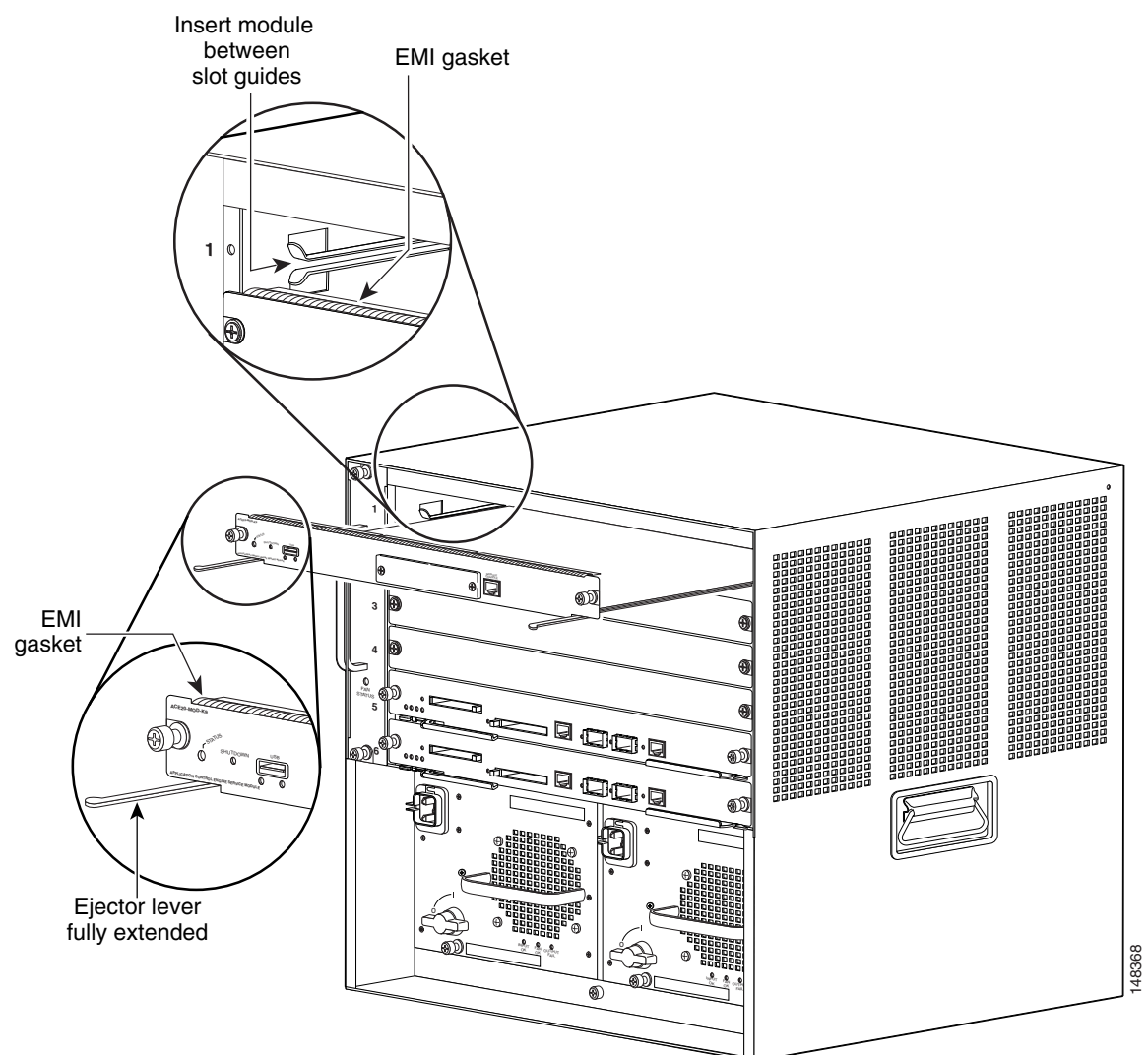


Note If the captive installation screws are loose, the EMI gaskets on the installed modules push adjacent modules toward the open slot, reducing the opening size and making it difficult to install the replacement module.

- Step 4** Remove the filler panel by removing the two Phillips pan-head screws from the filler panel.

- Step 5** Open both ejector levers fully on the module (see [Figure 3](#)).

Figure 3 Positioning the Module in a Horizontal Slot Chassis

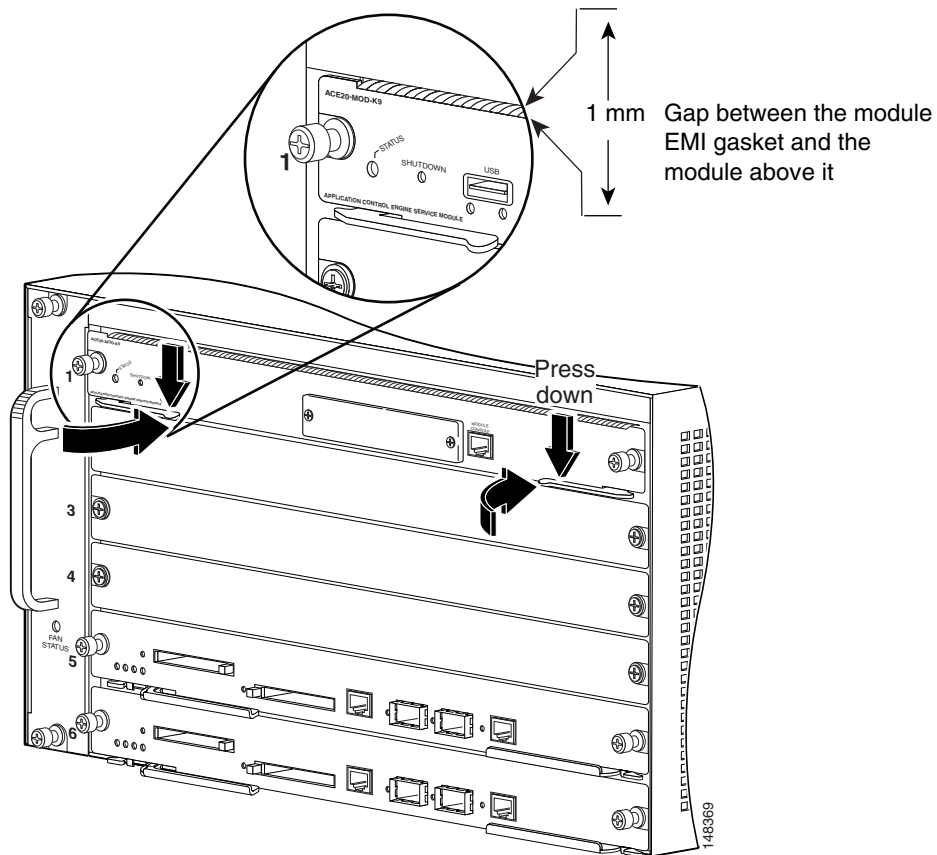


- Step 6** Depending on the orientation of the slots in the chassis (horizontal or vertical), perform one of the following sets of substeps:

Horizontal slots

- a. Position the module in the slot. Ensure that you align the sides of the module carrier with the slot guides on each side of the slot (see [Figure 3](#)).
- b. Carefully slide the module into the slot until the EMI gasket along the top edge of the module makes contact with the module in the slot above it and both ejector levers have closed to approximately 45 degrees with respect to the module faceplate (see [Figure 4](#)).

Figure 4 Clearing the EMI Gasket in a Horizontal Slot Chassis



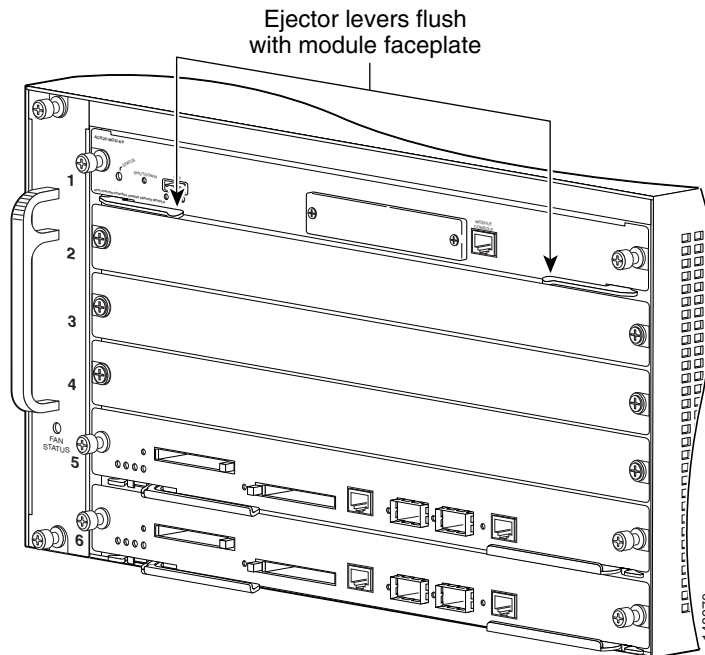
- c. Using the thumb and forefinger of each hand, grasp the two ejector levers and press down to create a small (0.040 inch [1 mm]) gap between the EMI gasket and the module above it (see [Figure 4](#)).


Caution

Do not press down too firmly on the levers because you may bend or damage them.

- d. While pressing down on the left and right ejector levers, simultaneously close them to fully seat the module in the backplane connector. The ejector levers are fully closed when they are flush with the module faceplate (see [Figure 5](#)).

Figure 5 Ejector Levers Fully Closed in a Horizontal Slot Chassis



Note Failure to fully seat the module in the backplane connector may result in error messages.

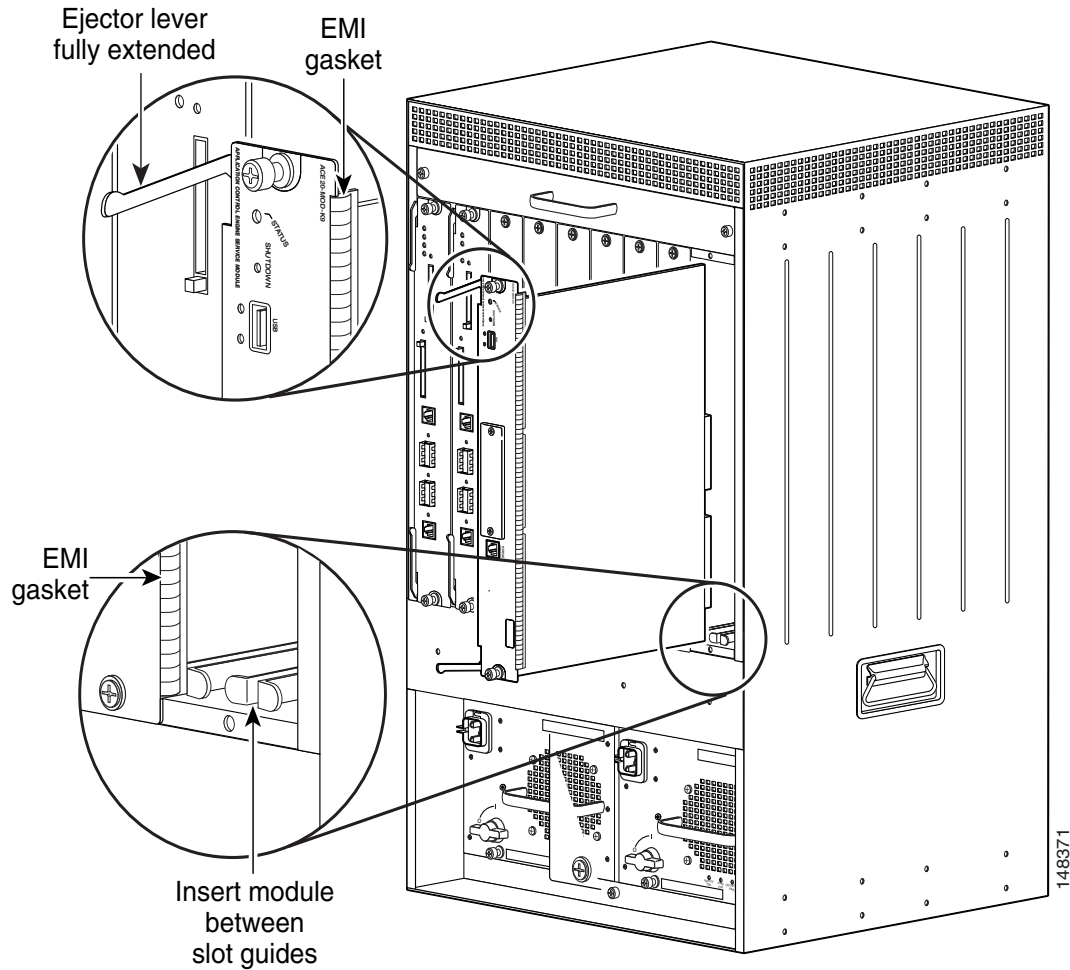
- e. Tighten the two captive installation screws on the module. Make sure that the ejector levers are fully closed before tightening the captive installation screws.

When you install an ACE module into a chassis, it runs a startup sequence that requires no intervention. At the successful conclusion of the startup sequence, the green Status LED lights and remains on. If the Status LED is not green or is off, see [Table 4](#) to determine the module status.

Vertical slots

- a. Position the module in the slot (see [Figure 6](#)). Make sure that you align the sides of the module carrier with the slot guides on the top and bottom of the slot.

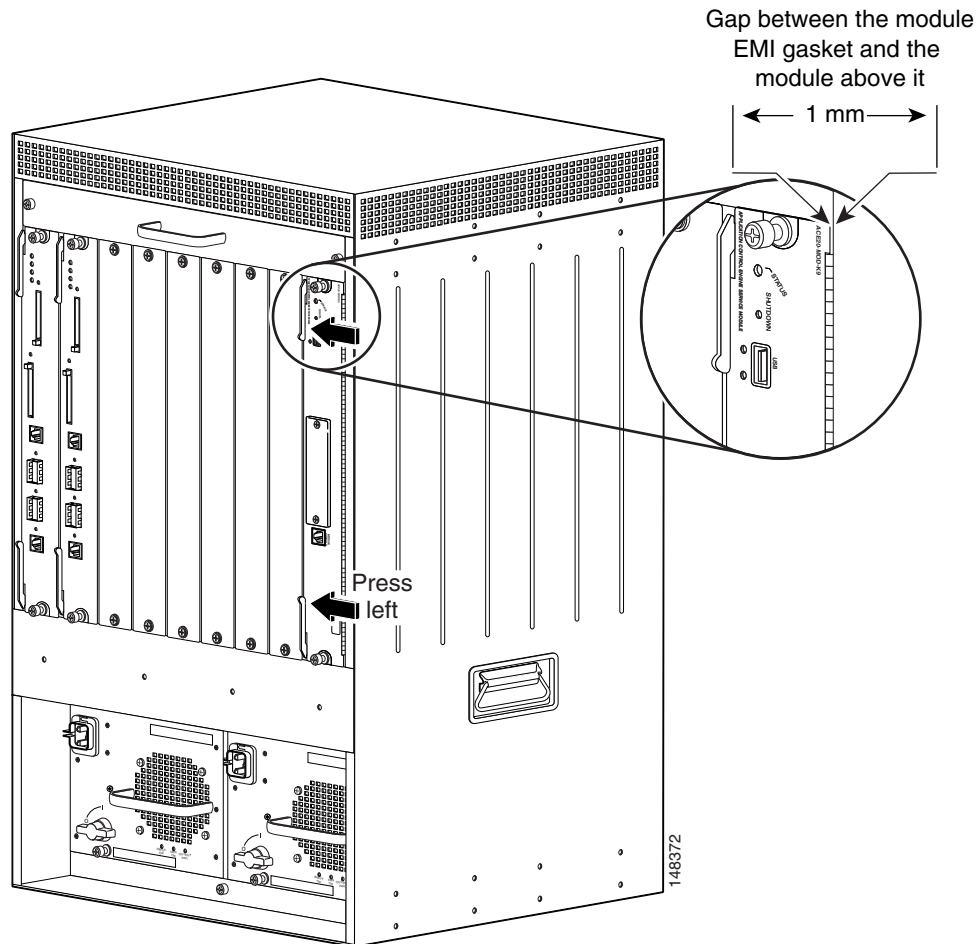
Figure 6 Positioning the Module in a Vertical Slot Chassis



- b. Carefully slide the module into the slot until the EMI gasket along the right edge of the module makes contact with the module in the slot adjacent to it. Close both ejector levers to approximately 45 degrees with respect to the module faceplate (see [Figure 6](#)).

- c. Using the thumb and forefinger of each hand, grasp the two ejector levers and exert a slight pressure to the left, deflecting the module approximately 0.040 inches (1 mm) to create a small gap between the module EMI gasket and the module adjacent to it (see [Figure 7](#)).

Figure 7 Clearing the EMI Gasket in a Vertical Slot Chassis

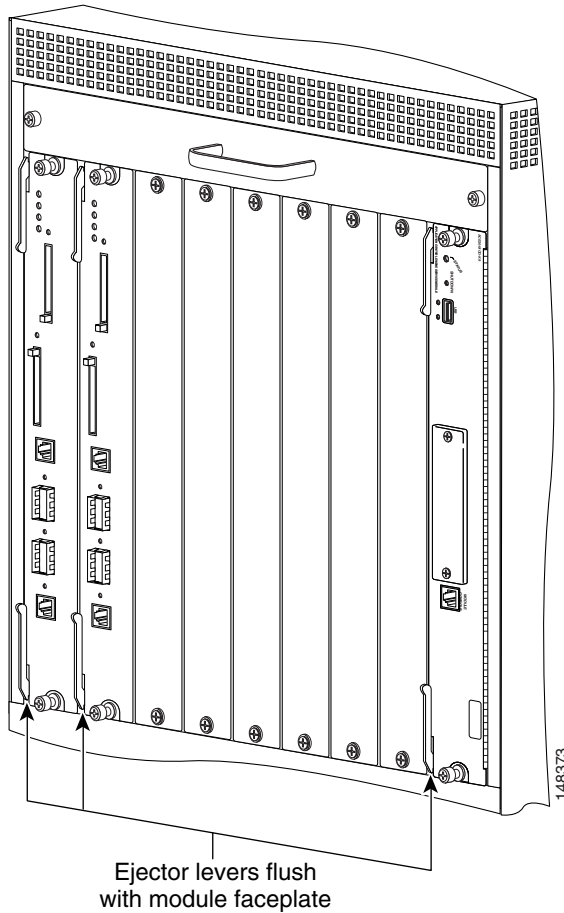


Caution

Do not exert excessive pressure on the ejector levers because you may bend or damage them.

- d. While pressing on the ejector levers, simultaneously close them to fully seat the module in the backplane connector. The ejector levers are fully closed when they are flush with the module faceplate (see [Figure 8](#)).

Figure 8 Ejector Levers Fully Closed in a Vertical Slot Chassis



- e. Tighten the two captive installation screws on the module. Make sure that the ejector levers are fully closed before tightening the captive installation screws.

When you install an ACE module into the chassis, it runs a startup sequence that requires no intervention. At the successful conclusion of the startup sequence, the green Status LED lights and remains on. If the Status LED is not green or is off, see [Table 4](#) to determine the module status.

Removing a Module

This section describes how to remove an existing module from a chassis slot.



Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.



During this procedure, wear grounding wrist straps to avoid ESD damage to the module.



Do not directly touch the backplane with your hand or any metal tool or you may shock yourself.

To remove a module from the chassis, perform these steps:

Step 1 Before you remove the module from the chassis, enter the **no power enable module** command in configure mode at the switch or router CLI to properly shut down the module to prevent data loss.

Step 2 Verify that the captive installation screws on all of the modules in the chassis are tight.

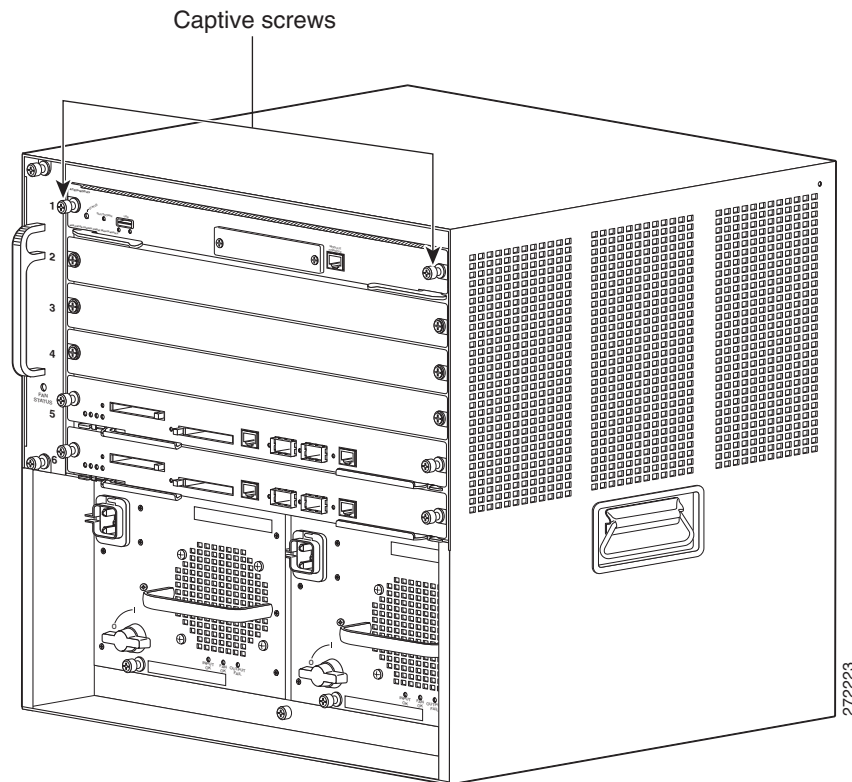
This step assures that the space that is created by the removed module is maintained.



Note If the captive installation screws are loose, the electromagnetic interference (EMI) gaskets on the installed modules push the modules toward the open slot, reducing the opening size and making it difficult to reinstall the module.

Step 3 Loosen the two captive installation screws on the *standby* module. See [Figure 9](#).

Figure 9 Loosening the Captive Installation Screws on the ACE



Step 4 Depending on the orientation of the slots in the chassis (horizontal or vertical), perform one of the following sets of substeps:

- [Removing the ACE from a Horizontal Slot](#)
- [Removing the ACE from a Vertical Slot](#)

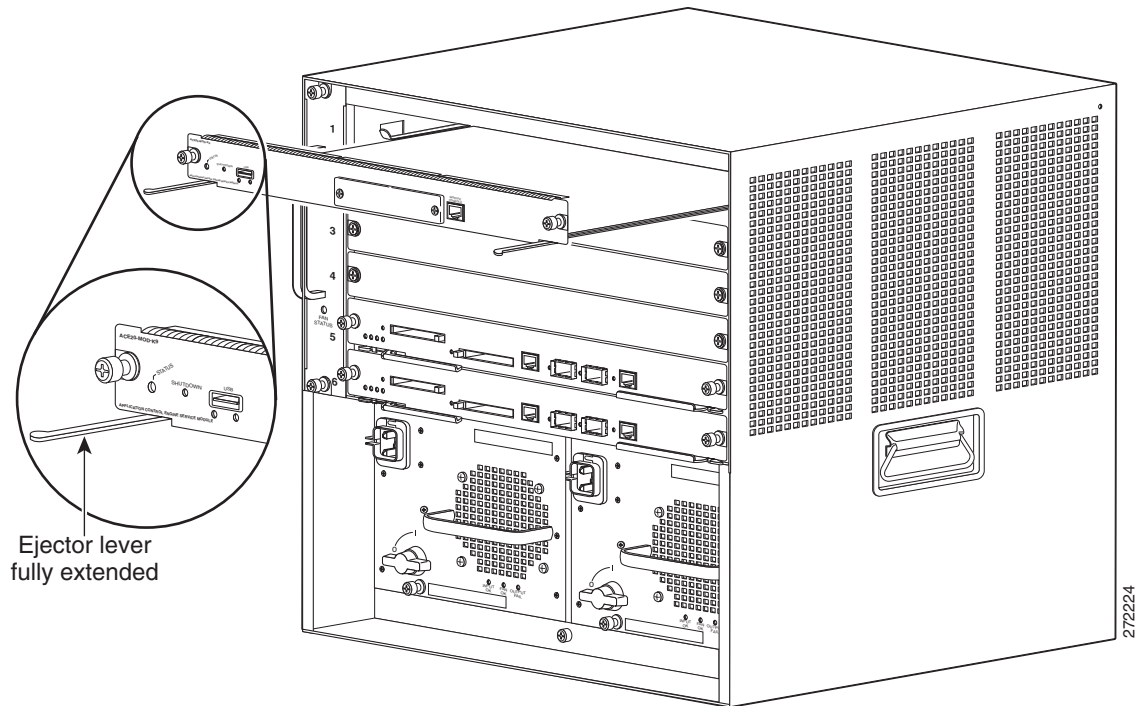
Removing the ACE from a Horizontal Slot

- a. Place your thumbs on the left and right ejector levers, and simultaneously rotate the levers outward to unseat the module from the backplane connector.
- b. Grasp the front edge of the module with one hand, and slide the module part of the way out of the slot. Place your other hand under the module to support its weight. Do not touch the module circuitry. See [Figure 10](#).

Removing the ACE from a Vertical Slot

- a. Place your thumbs on the ejector levers that are located at the top and bottom of the module, and simultaneously rotate the levers outward to unseat the module from the backplane connector.
- b. Grasp the edges of the module, and slide the module straight out of the slot. Do not touch the module circuitry.

Figure 10 Removing the Module from a Horizontal Slot Chassis



- Step 5** Place the module on an antistatic mat or antistatic foam, or immediately reinstall it in another slot.
- Step 6** If the slot from which you removed the module is to remain empty, install a filler panel to keep dust out of the chassis and to maintain proper airflow through the chassis.



Warning

Blank faceplates (filler panels) serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards and faceplates are in place.

Accessing the ACE Command-Line Interface

The software interface for the ACE module is the command-line interface (CLI). You access the ACE module CLI by performing one of these tasks:

- Establishing a direct serial connection between your terminal and the ACE by making a serial connection to the console port on the front of the ACE.
- Establishing a remote connection using the SSH or Telnet protocols from a PC.

Unless your Catalyst 6500 series switch or Cisco 7600 series router is located in a fully trusted environment, we recommend that you configure the ACE module using SSH encryption.

See the *Cisco Application Control Engine Module Administration Guide* for details about accessing the ACE module, performing initial set up, and establishing remote access.

Related Documentation

For information about caveats for the ACE module, see the *Release Note for the Cisco Application Control Engine Module*.

For information about the configuration of the ACE module, refer to the following documents:

- *Cisco Application Control Engine Module Getting Started Guide*
- *Cisco Application Control Engine Module Administration Guide*
- *Cisco Application Control Engine Module Virtualization Configuration Guide*
- *Cisco Application Control Engine Module Routing and Bridging Configuration Guide*
- *Cisco Application Control Engine Module Server Load-Balancing Configuration Guide*
- *Cisco Application Control Engine Module Security Configuration Guide*
- *Cisco Application Control Engine Module SSL Configuration Guide*
- *Cisco Application Control Engine Module System Message Guide*
- *Cisco Application Control Engine Module Command Reference*
- *Cisco CSM-to-ACE Conversion Tool User Guide*
- *Cisco CSS-to-ACE Conversion Tool User Guide*
- [Cisco Application Control Engine \(ACE\) Troubleshooting Guide \(wiki\)](#)
- [Cisco Application Control Engine \(ACE\) Configuration Examples \(wiki\)](#)

To understand the Cisco IOS command-line interface and Cisco IOS command modes, see the *Catalyst 6500 Series Switch Cisco IOS Software Configuration Guide* or the *Cisco 7600 Series Router Cisco IOS Software Configuration Guide*.

Translated Safety Warnings



Warning

Invisible laser radiation present. Statement 1016

Waarschuwing

Onzichtbare laserstraling aanwezig.

Varoitus

Näkymättömiä lasersäteitä.

Attention

Rayonnement laser actif mais invisible.

Warnung

Unsichtbare Laserstrahlung.

Avvertenza

Radiazione laser invisibile.

Advarsel

Usynlig laserstråling.

Aviso

Radiação laser invisível presente.

¡Advertencia! Existe radiación láser invisible.

Varning! Nu pågående osynlig laserstrålning.

Láthatatlan lézersugárzás van jelen.

Предупреждение Заглушки передней панели и защитные панели выполняют три важные функции: помогают избежать поражения электротоком высокого напряжения при прикосновении к внутренним элементам, экранируют электромагнитное излучение, которое может нарушить работу другого оборудования, а также направляют охлаждающий воздушный поток внутри корпуса. Не пользуйтесь устройством со снятыми крышками, заглушками, передними и задними защитными панелями.

警告 还存在不可见的激光辐射。

警告 目に見えないレーザー光線が放射されています。



Warning

Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.
Statement 1029

Waarschuwing Lege vlakplaten en afdekpanelen vervullen drie belangrijke functies: ze voorkomen blootstelling aan gevaarlijke voltages en stroom binnenin het frame, ze bevatten elektromagnetische storing (EMI) hetgeen andere apparaten kan verstoren en ze leiden de stroom van koellucht door het frame. Het systeem niet bedienen tenzij alle kaarten, vlakplaten en afdekkingen aan de voor- en achterkant zich op hun plaats bevinden.

Varoitus Tyhjiä tasolaikoilla ja suoja-paneelilla on kolme tärkeää käyttötarkoitusta: Ne suojaavat asennuspohjan sisäisille vaarallisille jännitteille ja sähkövirralle altistumiselta; ne pitävät sisälläan elektromagneettisen häiriön (EMI), joka voi häiritä muita laitteita; ja ne suuntaavat tuuletusilman asennuspohjan läpi. Järjestelmää ei saa käyttää, elleivät kaikki tasolaikat, etukannet ja takakannet ole kunnolla paikoillaan.

Attention Ne jamais faire fonctionner le système sans que l'intégralité des cartes, des plaques métalliques et des panneaux avant et arrière ne soient fixés à leur emplacement. Ceux-ci remplissent trois fonctions essentielles : ils évitent tout risque de contact avec des tensions et des courants dangereux à l'intérieur du châssis, ils évitent toute diffusion d'interférences électromagnétiques qui pourraient perturber le fonctionnement des autres équipements, et ils canalisent le flux d'air de refroidissement dans le châssis.

Warnung Blanke Faceplates und Abdeckungen haben drei wichtigen Funktionen: (1) Sie schützen vor gefährlichen Spannungen und Strom innerhalb des Chassis; (2) sie halten elektromagnetische Interferenzen (EMI) zurück, die andere Geräte stören könnten; (3) sie lenken den kühlenden Luftstrom durch das Chassis. Das System darf nur betrieben werden, wenn alle Karten, Faceplates, Vorder- und Rückabdeckungen an Ort und Stelle sind.

Avvertenza Le piattaforme bianche e i pannelli di protezione hanno tre funzioni importanti: Evitano l'esposizione a voltaggi e correnti elettriche pericolose nello chassis, trattengono le interferenze elettromagnetiche (EMI) che potrebbero scombussolare altri apparati e dirigono il flusso di aria per il raffreddamento attraverso lo chassis. Non mettete in funzione il sistema se le schede, le piattaforme, i pannelli frontali e posteriori non sono in posizione.

Advarsel Blanke ytterplater og deksler sørger for tre viktige funksjoner: de forhindrer utsettelse for farlig spenning og strøm inni kabinettet; de inneholder elektromagnetisk forstyrrelse (EMI) som kan avbryte annet utstyr, og de dirigerer luftavkjølingsstrømmen gjennom kabinettet. Betjen ikke systemet med mindre alle kort, ytterplater, frontdeksler og bakdeksler sitter på plass.

Aviso As faces furadas e os painéis de protecção desempenham três importantes funções: previnem contra uma exposição perigosa a voltagens e correntes existentes no interior do chassis; previnem contra interferência electromagnética (EMI) que poderá danificar outro equipamento; e canalizam o fluxo do ar de refrigeração através do chassis. Não deverá operar o sistema sem que todas as placas, faces, protecções anteriores e posteriores estejam nos seus lugares.

¡Advertencia! Las placas frontales y los paneles de relleno cumplen tres funciones importantes: evitan la exposición a niveles peligrosos de voltaje y corriente dentro del chasis; reducen la interferencia electromagnética (EMI) que podría perturbar la operación de otros equipos y dirigen el flujo de aire de enfriamiento a través del chasis. No haga funcionar el sistema a menos que todas las tarjetas, placas frontales, cubiertas frontales y cubiertas traseras estén en su lugar.

Varning! Tomma framplattor och skyddspaneler har tre viktiga funktioner: de förhindrar att personer utsätts för farlig spänning och ström som finns inuti chassit; de innehåller elektromagnetisk interferens (EMI) som kan störa annan utrustning; och de styr riktningen på kylflödet genom chassit. Använd inte systemet om inte alla kort, framplattor, fram- och bakskydd är på plats.

Az előlapok és burkolópanelek három fontos funkciót töltenek be: biztosítják a veszélyes feszültségű és áramerősségű területek érintésvédelmét; elnyelik a más berendezések működésében működési zavarokat okozó elektromágneses interferenciát (EMI); a gépházon belül terelik a hűtőlevegőt. Csak úgy működtesse a rendszert, ha minden kártya, lemez, előlő és hátulsó burkolat a helyén van.

Предупреждение Заглушки передней панели и защитные панели выполняют три важные функции: помогают избежать поражения электротоком высокого напряжения при прикосновении к внутренним элементам, экранируют электромагнитное излучение, которое может нарушить работу другого оборудования, а также направляют охлаждающий воздушный поток внутри корпуса. Не пользуйтесь устройством со снятыми крышками, заглушками, передними и задними защитными панелями.

警告 空白面板和盖板具有三个重要的功能：它们可以防止接触到底盘内危险的电压和电流；它们将可能破坏其它设备的电磁干扰 (EMI) 封闭起来；它们可以使冷气流从底盘通过。请勿在全部卡、面板、前盖和后盖未安装完毕时操作系统。

警告 ブランクの前面プレートおよびカバー パネルは、3つの重要な役割を果たします。シャーシ内部の危険な電圧および電流に接触しないように防御の役割を果たします。他の機器に悪影響を与えるEMI(電磁波干渉)を外に出しません。さらに、シャーシ全体に冷却用の空気を流します。カード、前面プレート、前面カバー、および背面カバーがすべて取り付けられてから、システムを稼働させてください。

Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, obtaining support, providing documentation feedback, security guidelines, and also recommended aliases and general Cisco documents, 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>

This document is to be used in conjunction with the documents listed in the “Related Documentation” section.

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