



Preface

This preface discusses the objectives, audience, organization, and conventions of this *user guide*.



Note

Use this document along with the documents listed in the [“Related Documentation” section on page xviii](#).

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Document Revision History

The Document Revision History table below records technical changes to this document. The table shows the document revision number for the change, the date of the change, and a brief summary of the change. Note that not all Cisco documents use a Document Revision History table.

Revision	Date	Change Summary
OL-7469-04	May 17, 2007	Updated the command clear logging slot , page 3
OL-7469-03	February 20, 2007	Updated Supported Applications , page 1-8. Added Configuring the MWAM Memory Allocation , page 6-17. Added the command memory-size iomem , page A-27
OL-7469-02	August 1, 2006	Added information to Memory , page 1-6 about allocating IO memory. Added note to AP and MP Upgrades , page 5-4 about AP and ROMMON images. Added new section: Recover from Session/Telnet Command after Reload , page 6-20.
OL-7469-01	October 25, 2005	Added new section: Feature Improvement , page 1-13. Added the following commands: <ul style="list-style-type: none"> boot-mode show boot-mode Modified the following command: <ul style="list-style-type: none"> mwam config-mode Reorganized document for clarity. Retired part number OL-4858-xx.
OL-4858-07	June 24, 2004	Added new section: Recovering from Session Loss , page 6-21. Added the following commands: <ul style="list-style-type: none"> show tech-support show version
OL-4858-06	June 1, 2004	Added information to Remote Console Support for the Processor Control Complex , page 1-15.
OL-4858-05	May 21, 2004	Added description of Multicast MAC Addressing , page 6-10.
OL-4858-04	March 12, 2004	Updated document to include support for 1 GB memory per MWAM processor.

Revision	Date	Change Summary
OL-4858-03	February 26, 2004	<p>Introduced the following features with Cisco IOS 12.3(5a)B:</p> <ul style="list-style-type: none"> • Remote Console Support for the Processor Control Complex, page 1-15 • Inline IOS Image Upgrades from AP, page 1-18 • Persistent Log Files, page 1-18 <p>Introduced the following feature with Cisco IOS 12.2(14)ZA7:</p> <ul style="list-style-type: none"> • Assigning MWAM Traffic to VLAN QoS Policies, page 6-5 <p>Added the following commands:</p> <ul style="list-style-type: none"> • show images • restore ios • show mwam • mwam module vlan-based <p>Added the following restriction on HSRP use with MWAMs:</p> <ul style="list-style-type: none"> • Hot Standby Router Protocol Configuration, page 6-10
OL-4858-02	January 12, 2004	<p>Most NTP/clock commands are now supported on MWAM; unsupported commands are listed in the Unsupported Commands, page 6-3. Introduced with Cisco IOS 12.3(3)B1.</p>
OL-4858-01	April 3, 2003	<p>First issue of this document.</p>

Objectives

This guide provides an overview of the Multiprocessor WAN Application Module (MWAM) and its features. Included in this guide are instructions on how to install, remove, load, and configure the module.



Note

This guide provides software configuration information, but it is not comprehensive. For detailed software configuration, refer to the Cisco IOS configuration guide and command reference publications (see the [“Obtaining Documentation, Obtaining Support, and Security Guidelines”](#) section on page xx for more information).

Audience

If you are an installer, technician, or administrator, this guide contains information you can use to install, configure, and administer your MWAM.

This guide is also appropriate for managers or planners who are thinking about installing an MWAM in a Catalyst 6500/Cisco 7600 chassis, as well as people who are interested in the MWAM in general.

This guide is designed with the assumption that you are already familiar with networking products, concepts, and terminology, but may not be familiar with Cisco products or the Cisco nomenclature.

Organization

This guide is made up of this preface and six major chapters with supplementary information provided in Appendix A and B.

Chapter	Chapter Title	Description
1	Multiprocessor WAN Application Module	Discusses the MWAM, its architecture, software, features, and system requirements.
2	Preparing to Install the MWAM	Describes general safety recommendations, site preparations, required tools and equipment, and includes the installation checklist.
3	Installing the MWAM	Provides steps to install, remove, and verify the MWAM.
4	Command-Line Interface (CLI) Basics	Provides basic information about the command-line interfaces (CLIs) used in loading, upgrading, and configuring the MWAM.
5	Loading the MWAM	Describes the image loading process, loading procedures, and steps to boot the application.
6	Configuring the MWAM	Provides a configuration overview, a list of configuration tasks, and configuration procedures.
Appendix A	Command Reference	Includes syntax, usage guidelines, and examples of MWAM-related commands.
Appendix B	Troubleshooting	Discusses general and specific MWAM problem solving, and provides MWAM error messages, explanations of messages, and recommended actions.

Conventions

This guide uses the following conventions:

Convention	Description
boldface font	Commands and keywords.
<i>italic font</i>	Variables for which you supply values.
[]	Keywords or arguments that appear within square brackets are optional.
{x y z}	A choice of required keywords appears in braces separated by vertical bars. You must select one.
screen font	Examples of information displayed on the screen.
boldface screen font	Examples of information you must enter.
< >	Nonprinting characters, for example passwords, appear in angle brackets.
[]	Default responses to system prompts appear in square brackets.

**Note**

Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the manual.

**Timesaver**

Means *the described action saves time*. You can save time by performing the action described in the paragraph.

**Tip**

Means *the following information will help you solve a problem*. The tips information might not be troubleshooting or even an action, but could be useful information, similar to a Timesaver.

**Caution**

Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

Safety Warnings

Safety warnings appear throughout this publication in procedures that, if performed incorrectly, might harm you. A warning symbol precedes each warning statement. The safety warnings provide safety guidelines that you should follow when working with any equipment that connects to electrical power or telephone wiring. Included in the warnings are translations in several languages. (Refer to the *Cisco Regulatory Compliance and Safety Information for the Catalyst 6500 Series Switches and Cisco 7600 Series Routers* for detailed information about compliance guidelines and translated safety warnings.)

**Warning**

IMPORTANT SAFETY INSTRUCTIONS

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

SAVE THESE INSTRUCTIONS

Waarschuwing

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

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

BEWAAR DEZE INSTRUCTIES

Varoitus TÄRKEITÄ TURVALLISUUSOHJEITA

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

SÄILYTÄ NÄMÄ OHJEET**Attention IMPORTANTES INFORMATIONS DE SÉCURITÉ**

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

CONSERVEZ CES INFORMATIONS**Warnung WICHTIGE SICHERHEITSHINWEISE**

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung 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**Figyelem FONTOS BIZTONSÁGI ELOÍRÁSOK**

Ez a figyelmeztető jel veszélyre utal. Sérülésveszélyt rejte 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 重要 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 للصدمات 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 συνήθειες 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 במעגלים חשמליים ולהכיר את הנהלים המקובלים למניעת תאונות. השתמש במספר ההוראה המסופק בסופה של כל אזהרה כדי לאתר את התרגום באזהרות הבטיחות המתורגמות שמצורפות להתקן.

שמור הוראות אלה**Opomena VAŽNI BEZBEDNOSNI NAPATCTVIJA**

Симболот за предупредување значи опасност. Се наоѓате во ситуација што може да предизвика телесни повреди. Пред да работите со опремата, бидете свесни за ризикот што постои кај електричните кола и треба да ги познавате стандардните постапки за спречување на несреќни случаи. Искористете го бројот на изјавата што се наоѓа на крајот на секое предупредување за да го најдете неговиот период во prevedените безбедносни предупредувања што се испорачани со уредот.

ЧУВАЈТЕ ГИ ОБИЕ НАПАТСТВИЈА

Ostrzeżenie WAŻNE INSTRUKCJE DOTYCZĄCE BEZPIECZEŃSTWA

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

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

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

USCHOVAJTE SI TENTO NÁVOD

Related Documentation

The following sections describe the documentation available for Cisco IOS Release 12.3, the Catalyst 6500 Series Switch, and the Cisco 7600 Series Internet Router. These documents consist of release notes and platform related software and hardware installation guides, Cisco IOS configuration and command references, and other documents.

These documents are found in the following sections:

- Release-Specific Documents
- Platform-Specific Documents

Release-Specific Documents

The following release notes are specific to MWAM and Release 12.3 and are located on the Documentation DVD at:

- *Release Notes for Catalyst 6500 and Cisco 7600 Multi-Processor WAN Application Module Software*
- *Release Notes for Cisco IOS Release 12.2(14)ZA4 on the Catalyst 6500 Series and Cisco 7600 Series Supervisor Engine and MSFC*

**Note**

Cisco IOS Release 12.2(14)ZA5 is a Cisco early deployment release intended for customers deploying the MWAM (Multiprocessor Application Module).

- *Cross-Platform Release Notes and Caveats for Cisco IOS Release 12.3*

On Cisco.com (for MWAM), click:

Documentation>Routers>Cisco 7600 Series Routers>General Information>Release Notes>Release Notes for Cisco Multiprocessor WAN Application Module with Cisco IOS Release

On Cisco.com (for IOS), click:

Documentation>Cisco IOS Software>Cisco Software Releases 12.3 Mainline>General Information>Release Notes>Cisco IOS Release 12.3 Cross-Platform Release Notes and Caveats



Note

If you have an account with Cisco.com, you can use the Bug Toolkit to find caveats of any severity for any release. To reach the Bug Toolkit, log in to Cisco.com and click **Service & Support: Software Center: Cisco IOS Software: BUG TOOLKIT**. Another option is to go to http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl.

- For product bulletins, field notices, and other specific documents, on Cisco.com and click:

Technical Documentation

then, scroll down to “Other Resources” and select the desired item.

Platform-Specific Documents

The following is a list of platform-specific documents. These documents provide supplementary information for the *Multiprocessor WAN Application Module User Guide*. Copies of these manuals are available online at Cisco.com:



Note

The list is not all inclusive. It is a representative sampling of the manuals that are available. Depending on your particular model number, refer to that manual for proper installation, configuration, and provisioning information.

- *Regulatory Compliance and Safety Information for the Catalyst 6500 Series Switches*
- *Catalyst 6000 Series Switch Installation Guide*
- *Catalyst 6500 Series Switch Installation Guide*
- *Catalyst 6500 Series Switch Module Installation Guide*
- *Catalyst 6500 Series Module Installation and Configuration Documentation*
- *Catalyst Operating System Documentation for the Supervisor Engine and MSFC*
(Includes Software Configuration Guides, Command References, and System Message Guides.)
- *Regulatory Compliance and Safety Information for the Cisco 7600 Routers*
- *Cisco 7600 Series Router Installation Guide*
- *Cisco 7609 Series Router Installation Guide (OSR-7609)*
- *Cisco 7600 Series Router Module Installation Guide*
- *Cisco 7600 Series Cisco IOS Software Configuration Guide*
- *Cisco 7600 Series Cisco IOS Command Reference*

- *Site Preparation and Safety Guide*
- *Cisco Packet Data Serving Note (PDSN) Release 1.2*
- *Cisco Mobile Wireless Home Agent*
- *Service Selection Gateway*
- *GGSN Configuration Guide*

**Note**

If you plan to deploy IPSec services, please refer to the Documentation DVD or to these publications on Cisco.com for installation and configuration information:

http://www.cisco.com/en/US/products/hw/modules/ps2706/products_data_sheet09186a00800c4fe2.html

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>