

Cisco Transport Manager 8.5

Server and Client

Q. When is Cisco® Transport Manager 8.5 scheduled for first customer shipment?

A. Cisco Transport Manager 8.5 first customer shipment is scheduled for December 14, 2007.

Q. Are hard copy manuals shipped with Cisco Transport Manager 8.5?

A. No, the Cisco Transport Manager 8.5 kit includes PDF documents on a CD that can also be ordered online. Hard copy documents cannot be ordered anymore. Cisco Transport Manager documentation is available:

- Online at http://www.cisco.com/en/US/products/sw/opticsw/ps2204/tsd_products_support_series_home.html
- On the documentation CD-ROM included in the Cisco Transport Manager software kit
- On the documentation CD-ROM available on Cisco Marketplace at <http://www.cisco.com/go/marketplace>, order number OL-80-8920-01.

Q. What are the major enhancements for Cisco Transport Manager 8.5?

A. Table 1 lists new features for Cisco Transport Manager 8.5,

Table 1. New Features in Cisco Transport Manager 8.5

Features	Description
Database	Cisco Transport Manager 8.5 requires Oracle 10g Standard Edition or Oracle 10g Enterprise Edition (based on network size) database installations.
Schedule inventory reports	Users can schedule export of the equipment inventory table contents to a flat file for all devices for which inventory retrieval is supported.
Basic external authentication	Cisco Transport Manager supports basic external username and password authentication through eTrust SiteMinder, a third-party application. Users with the appropriate privileges can enable or disable external authentication.

For more information about Release 8.5, please refer to the Cisco Transport Manager 8.5 product bulletin, available after first customer shipment at

http://www.cisco.com/en/US/products/sw/opticsw/ps2204/prod_bulletins_list.html

Q. Does the Cisco Transport Manager 8.5 Transaction Language One (TL1) Gateway support all the network elements?

A. No, it supports only elements with native TL1 protocol for communication with Cisco Transport Manager. The following network elements have a native TL1 protocol:

- Cisco ONS 15216 Erbium-Doped Fiber Amplifier 2 (EDFA2), EDFA3, 100-GHz Optical Add/Drop Multiplexer (OADM)
- Cisco ONS 15327 SONET Multiservice Platform
- Cisco ONS 15310-CL SONET Multiservice Platform
- Cisco ONS 15310-MA SONET Multiservice Platform
- Cisco ONS 15454 SONET Multiservice Platform

- Cisco ONS 15454 SDH Multiservice Platform (release 5.0 and later)
- Cisco ONS 15530 DWDM Multiservice Aggregation Platform
- Cisco ONS 15540 DWDM Extended Services Platform (ESP) and ESPx
- Cisco ONS 15600 SONET Multiservice Platform
- Cisco ONS 15600 SDH Multiservice Platform (from release 8.0)
- Cisco ONS 15800 DWDM ANSI Platform
- Cisco ONS 15801 DWDM ETSI Platform
- Cisco ONS 15808 DWDM Platform

Q. Is the Gateway/CORBA northbound interface available for all network element types?

- A.** Cisco Transport Manager 8.5 supports fault and inventory through the CORBA interface for all network element types. In addition the CORBA interface can be used for equipment and circuit provisioning on the Cisco ONS 15305, ONS 15327, ONS 15310-CL, ONS 15310-MA, ONS 15454 SONET, ONS 15454 SDH, ONS 15600 SONET, and ONS 15600 SDH. The CORBA interface can be used for performance monitoring for the Cisco ONS 15302, ONS 15305, ONS 15327, ONS 15454 SONET, ONS 15454 SDH, ONS 15600 SONET, and ONS 15600 SDH.

For further details on coverage, refer to the Cisco Transport Manager Gateway/CORBA Release 8.5 User Guide and Programmer Manual, available at

http://www.cisco.com/en/US/products/sw/opticsw/ps2204/products_programming_reference_guides_list.html.

Q. Is the Gateway/CORBA interface based on an industry standard?

- A.** Yes, Gateway/CORBA is based on and compliant with TMF 814 (Version 3.0) as published by the TeleManagement Forum.

Q. Does Cisco Transport Manager provide a Simple Network Management Protocol (SNMP) northbound API?

- A.** Yes, Cisco Transport Manager forwards traps from network elements that use SNMP to send traps northbound. Cisco Transport Manager also includes support for Reliable Transfer Mode (RTM) SNMP northbound interface for MGX[®] Voice Gateways. This northbound alarm interface provides a mechanism to forward and filter MGX alarms and events in a reliable (Cisco RTM) or nonreliable (standard User Datagram Protocol [UDP]) format.

Q. Can Cisco Transport Manager 8.5 support a network with mixed releases of the same network element?

- A.** Yes, it can; note anyway that Cisco Transport Manager 8.5 supports just the following releases:
- Cisco ONS 15216 100-GHz Optical Add/Drop Multiplexer (OADM) Releases 2.2.2, 2.2.3
 - Cisco ONS 15216 100-GHz DWDM Red/Blue filters
 - Cisco ONS 15216 Erbium-Doped Fiber Amplifier 2 (EDFA2) Releases 2.3, 2.4
 - Cisco ONS 15216 EDFA3 Release 1.1
 - Cisco ONS 15216 200-GHz OADM, EDFA1, DWDM filters, Optical Supervisory Channel (OSC), and Dispersion Compensation Unit (DCU)
 - Cisco ONS 15216 FlexLayer
 - Cisco ONS 15302 Multiservice Customer Access Platform Releases 2.0.2

- Cisco ONS 15305 Multiservice Customer Access Platform Releases 2.0.3, 3.0.5
- Cisco ONS 15310-CL SONET Multiservice Platform Releases 5.0.8, 6.0.1, 6.0.3, 6.2, 6.2.2, 7.0, 7.0.2, 7.0.4, 7.0.5, 7.2, 7.2.2, 7.2.3, 8.0, 8.5
- Cisco ONS 15310-MA SONET Multiservice Platform Releases 7.0, 7.0.2, 7.0.4, 7.0.5, 7.2, 7.2.2, 7.2.3, 8.0, 8.5
- Cisco ONS 15327 SONET Multiservice Platform Releases 4.1.4, 4.1.82, 4.6.6, 5.0.4, 5.0.8, 6.0.1, 6.0.3, 6.2, 6.2.2, 7.0, 7.0.2, 7.0.4, 7.2, 7.2.2, 7.2.3
- Cisco ONS 15454 SONET Multiservice Platform Releases 4.1.4, 4.1.82, 4.7 (MSTP only), 5.0.8, 6.0, 6.0.1, 6.0.3, 6.2, 6.2.2, 7.0, 7.0.1(MSTP only), 7.0.2, 7.0.3 (MSTP only), 7.0.4, 7.0.5, 7.0.6 (MSTP only), 7.2, 7.2.2, 7.2.3, 8.0, 8.5
- Cisco ONS 15454 SDH Multiservice Platform Releases 5.0.6, 6.0, 6.0.1, 6.0.3, 6.2, 6.2.2, 7.0, 7.0.1 (MSTP only), 7.0.2, 7.0.4, 7.0.5, 7.2, 7.2.2, 7.2.3, 8.0, 8.5
- Cisco ONS 15501 DC Release 4.1
- Cisco ONS 15501 AC Release 4.1
- Cisco IOS® Software Releases 12.2(29)SV3 and 12.2(30)S for the Cisco ONS 15530
- Cisco IOS Software Releases 12.2(29)SV3 and 12.2(30)S for the Cisco ONS 15540 Extended Services Platform (EXP)
- Cisco IOS Software Releases 12.2(29)SV3 and 12.2(30)S for the Cisco ONS 15540 ESPx
- Cisco ONS 15600 SONET Multiservice Switching Platform (MSSP) Releases 1.3.1, 5.0.8, 6.0.1, 6.2.4, 7.0, 7.0.4, 7.2, 7.2.2, 7.2.3, 8.0
- Cisco ONS 15600 SDH MSSP Release 1.4, 8.0
- Cisco ONS 15800 DWDM ANSI Platform Release 2.1
- Cisco ONS 15801 DWDM ETSI Platform Release 2.1
- Cisco ONS 15808 DWDM Platform Release 2.2
- Cisco MDS 9000 Series
- Cisco MGX 8880 Media Gateway Releases 5.2.10, 5.3.10, 5.4.00
- Voice-enabled Cisco MGX 8850 Multiservice Switch Releases 5.2.10, 5.3.10, 5.4.00
- Voice-enabled Cisco MGX 8830 Multiservice Switch Releases 5.2.10, 5.3.10, 5.4.00
- Cisco VISM-PR Releases 3.3.20, 3.3.25, 3.3.30
- Cisco VXSM Releases 5.2.10, 5.3.10, 5.4.00

Q. Does the Cisco Transport Manager product include the required hardware?

A. No. Cisco Transport Manager is a software-only application product that is based on industry-standard, off-the-shelf Sun and PC hardware platforms.

Q. Are there different configurations for the Cisco Transport Manager server?

A. Yes, the Cisco Transport Manager server can be installed in different configurations depending on the number of nodes managed and the hardware configuration available. The Cisco Transport Manager server can be installed in small, medium, large, and high-end configurations. For further details refer to the Installation Guide for Cisco Transport Manager 8.5 at www.cisco.com/univercd/cc/td/doc/product/rtrmgmt/optnet/ctm/ctminst/index.htm.

Additionally, during the upgrade, users can change the configuration size to the next available

(that is, medium to large and large to high-end; upgrade from the small configuration to the medium configuration is not supported).

Q. Does Cisco Transport Manager 8.5 support a high availability configuration?

A. Yes, Cisco Transport Manager 8.5 can be installed on redundant servers in a failover configuration. The redundant servers can either be co-located or geographically separated. Information on the High Availability Solution can be found later in the document and at http://www.cisco.com/en/US/products/sw/opticsw/ps2204/prod_white_papers_list.html.

Q. Can I download Cisco Transport Manager 8.5 from Cisco.com?

A. No, you must order the software, which is delivered on CD. Documentation is available for download through Cisco.com.

Q. Is Cisco Transport Manager 8.5 demonstration software available?

A. Yes, you can obtain Cisco Transport Manager 8.5 for evaluation from your Cisco sales representative.

Q. Is Cisco Transport Manager 8.5 compatible with earlier versions of the Cisco Transport Manager client, such as Release 6.0 or Release 7.2?

A. No, all Cisco Transport Manager clients must be upgraded to the new Cisco Transport Manager 8.5 client.

Q. Can the same Cisco Transport Manager client and network element right-to-use (RTU) licenses obtained for use with earlier versions of Cisco Transport Manager be used with Release 8.5?

A. Yes, all network element and client RTU licenses that have been purchased in the past are still valid for Cisco Transport Manager 8.5 with no upgrade charge. Application (Server and Client), CORBA, and High Availability licenses must be upgraded.

Q. What warranty is included with Cisco Transport Manager 8.5?

A. Cisco Transport Manager 8.5 includes a standard software warranty from Cisco that warrants for 90 days from the date of delivery to you that (a) the media on which the software is furnished will be free of defects in materials and workmanship under normal use; and (b) the software substantially conforms to its published specifications.

Q. Is there a service contract available for Cisco Transport Manager 8.5?

A. Yes, you must purchase a Cisco Software Application Support (SAS) contract to receive access to technical assistance through the Cisco Technical Assistance Center (TAC) or Cisco.com. Cisco SAS also provides you with Cisco Transport Manager software updates (maintenance, minor) as they are made available for the duration of your contract. Current Cisco Software Application Support plus Upgrades (SASU) service contracts, which are no longer available for Cisco Transport Manager 8.5, will be valid until their expiration.

Q. Does Cisco Transport Manager 8.5 support all the configuration and provisioning features provided in the Cisco Transport Controller for the Cisco ONS Family?

A. No, there are some feature differences between Cisco Transport Manager 8.5 and Cisco Transport Controller for the Cisco ONS 15305, ONS 15310-CL, ONS 15310-MA, ONS 15327, ONS 15454 SONET, ONS 15454 SDH, ONS 15600 SONET, and ONS 15600 SDH. These differences are identified in the Cisco Transport Manager 8.5 User Guide.

Q. What TCP and SNMP ports does Cisco Transport Manager use?

A. This information is documented in the Cisco Transport Manager 8.5 User Guide, which can be found at

<http://www.cisco.com/univercd/cc/td/doc/product/rtrmgmt/optnet/ctm/usergde/index.htm>.

Q. Is the Cisco Transport Manager database schema published?

A. Yes, the database schema is published for each Cisco Transport Manager release and can be found at

www.cisco.com/en/US/products/sw/opticsw/ps2204/prod_technical_reference_list.html.

Q. Does Cisco Transport Manager support external authentication?

A. Starting from Cisco Transport Manager 8.5, Cisco Transport Manager supports external basic authentication. Cisco Transport Manager supports basic external username and password authentication only through eTrust, and details on the SiteMinder version supported and the setup required can be found at

[/www.cisco.com/en/US/products/sw/opticsw/ps2204/prod_technical_reference_list.html](http://www.cisco.com/en/US/products/sw/opticsw/ps2204/prod_technical_reference_list.html).

High Availability Solution for Cisco Transport Manager

General

Q. Is there a high availability version of Cisco Transport Manager 8.5?

A. The Cisco Transport Manager 8.5 software used in the standalone version and in the High Availability Solution is the same. For the Cisco Transport Manager High Availability Agent 2.3, both Veritas high availability clustering software and third-party hardware are needed to set up a high availability environment.

Q. Where can I obtain the Cisco Transport Manager High-Availability Agent 2.3?

A. It is included on the installation CD with Cisco Transport Manager 8.5 and also available for evaluation from your Cisco sales representative. The product part numbers are CTM-8.5-HA and CTM-8.5-HA-UPG.

Q. Is there a migration mechanism for standalone Cisco Transport Manager 7.x customers to migrate to Cisco Transport Manager 8.5 in a high availability configuration?

A. You can migrate your current standalone Cisco Transport Manager to the standalone Cisco Transport Manager 8.5, provided you follow the correct migration steps outlined in the installation guide. It is not possible to migrate from a standalone to a high availability configuration.

Q. What is the virtual IP address?

A. The virtual IP address hides or masks the physical IP addresses normally assigned to the Sun server Ethernet ports. By masking the physical IP address, all network elements, clients, and OSSs target the virtual IP address. In the event of a hardware failover, the standby UNIX server assumes this virtual IP address. Only the active UNIX server has the virtual IP address, so all entities are communicating with the same IP address.

Q. Does a high availability design affect the functionality of the Cisco Transport Manager clients, network-element access, or OSS?

A. All services and features are designed to operate identically to a standalone configuration.

Q. Can the High Availability Solution be installed on an existing standalone server?

A. No. There is no migration path from a standalone Cisco Transport Manager configuration to a high availability configuration. The Veritas File System and Volume Manager software

technologies (included in Veritas Database Edition/High Availability for Oracle) need to be installed immediately after the Solaris 10 operating system is installed.

Q. What licenses will I need with Cisco Transport Manager in a high availability environment?

A. You will need to purchase the Cisco Transport Manager High Availability Agent 2.3 RTU license. When the license is purchased, all high availability documentation will be shipped to you on a CD. Please refer to Cisco.com to download the latest electronic copy of the Cisco Transport Manager release notes.

Q. Is any other Cisco software necessary, other than Cisco Transport Manager 8.5 and the Cisco Transport Manager High Availability Agent 2.3?

A. No.

Q. Is there any customization needed in the high availability environment?

A. You may wish to modify specific aspects of the high availability configuration to fit your environment, such as adding more Ethernet modules, not mirroring internal disks, or modifying steps that are documented in the Cisco Transport Manager High Availability Installation Guide.

Q. What does the Cisco Transport Manager High Availability Agent do?

A. It is a software module that monitors processes and assesses the status of the primary server to help ensure that Cisco Transport Manager is operating correctly.

Q. Will Cisco provide information on how to back up Cisco Transport Manager in a high availability environment?

A. Cisco provides an application note similar to the one provided for the Cisco Transport Manager standalone servers.

Q. What options do I have for backing up data?

A. For more information, please see the Cisco Transport Manager 8.5 User Guide where all the options for backing up data are reported. The Cisco Transport Manager 8.5 User Guide can be found at <http://www.cisco.com/univercd/cc/td/doc/product/rtrmgmt/optnet/ctm/usergde/index.htm>.

Q. What information is included in the Cisco Transport Manager High Availability Installation Guide?

A. The document discusses all the reference hardware, part numbers, diagrams, and the references to the installation instructions for all the software (Solaris, all hardware and software patches, Veritas, Oracle, Cisco Transport Manager 8.5, and Cisco Transport Manager High Availability Agent 2.3).

Q. Where can I find other documentation about the Cisco Transport Manager and High Availability Agent?

A. The complete High Availability Solution package—all documentation on the Cisco Transport Manager High Availability Agent—is available on Cisco.com at a password-protected location. After you have purchased a license to operate the Cisco Transport Manager High Availability Agent, you will receive a complete printed copy of all High Availability Solution documents and a password to access Cisco.com. This Website also contains the most up-to-date Cisco Transport Manager release notes.

Hardware Configuration

Q. Can I deviate from this reference architecture?

A. Absolutely. In fact, Cisco anticipates that you will use your own disk arrays, fiber channel adapter cards, or Sun servers. If you deviate from the Cisco referenced architecture, however, you will need to establish your own high availability support infrastructure and make sure the hardware you plan to deploy (such as disk arrays and Sun servers) is supported by Veritas.

Q. If I deploy the high availability hardware infrastructure exactly as referenced, does this ensure qualification for high availability support from Cisco?

A. The purpose of the reference architecture is to provide a template from which to build the high availability infrastructure. You will still be responsible for establishing your own high availability support from Cisco, as well as from the third-party vendor whose components you deploy.

Q. What is RAID?

A. RAID stands for Redundant Array of Independent Disks. Essentially, it allows customers to use a combination of hardware and software to configure a multitude of disk drives in various configurations (for example, RAID 0, 1, 1+0, 5, and so on). Each numeric value represents mirroring, striping, parity striping, or a combination (“+”).

Q. What RAID configuration can I use?

A. You may select any RAID configuration you would like to deploy. The reference configuration used has been set up as RAID 5+0 in the Cisco Transport Manager High Availability Installation Guide.

Installation and Support

Q. What maintenance contracts are required for a high availability configuration?

A. The maintenance contracts required are:

- External high availability support from third-party vendors (consists of support for Sun servers, Veritas software, and Oracle).
- Annual Cisco Transport Manager maintenance contract from Cisco
- Disk array support (EMC, Hitachi, and so on)
- Tape or system backup support

Q. What are the options for external high availability support?

A. You can obtain support from the individual third-party vendors mentioned previously, through joint support alliances, or rely on your own in-house expertise.

Q. Does the annual Cisco Transport Manager maintenance contract differ for installation on high availability servers versus standalone servers?

A. Yes. For installation on high availability servers, you need to purchase the standard Cisco Software Application Support (SAS) contract for Cisco Transport Manager, along with a high availability SAS. The minimum baseline joint support alliance contract is also required, but you can purchase higher levels of support—such as 2-hour hardware replacement, fly-to-site, priority queuing, and more—from each vendor.

Q. Because the Cisco Transport Manager High Availability Solution consists of two Sun servers, does this require the purchase of two copies of Cisco Transport Manager and two maintenance contracts?

A. No. Only the Cisco Transport Manager software and a single maintenance contract are required.

Q. Why has Cisco chosen to recommend outsourced support for my high availability infrastructure?

- A.** Because timely resolution of critical problems is best managed by those with the expertise to assist with these third-party products.

Third-Party Hardware and Software

Q. Can I deviate from the specified Sun Solaris and Oracle releases with Cisco Transport Manager in a high availability environment?

- A.** No. Cisco Transport Manager 8.5 has been validated on specific Solaris 10 and Oracle 10g releases, as specified in the installation guide. Deviation from the specified Solaris or Oracle release in the standalone or high availability architecture may cause problems that the Cisco TAC team would be unable to reproduce.

Q. What hardware release of Solaris is used in the high availability and standalone Cisco Transport Manager configurations?

- A.** Both have been validated with Solaris 10 11/06 OS.

Q. What software is required to run on the high availability configuration?

- A.** The software requirements for the high availability configurations are as follows:

- Solaris 10 11/06 OS
- Cisco Transport Manager 8.5
- Cisco Transport Manager High Availability Agent 2.3
- Oracle Enterprise Database Edition 9i Release 2 64-bit production (Oracle10g) for Sun Solaris 10
- Veritas Storage Foundation High Availability 5.0 for Oracle on Solaris

For geographic redundancy, add:

- Veritas Volume Replicator 5.0
- Veritas Cluster Server VVR Agent 5.0
- Veritas Global Cluster Manager 5.0 (with data-replication option)

In addition, all software patches for Solaris, Veritas, PCI adapters, and Oracle are required.

Q. How many licenses are required?

- A.** Table 2 lists the required software licenses for the Cisco Transport Manager High Availability Solution.

Table 2. Software Licenses for the Cisco Transport Manager High Availability Solution

Software	Number of Required Licenses
Cisco Transport Manager 8.5	1 license
Cisco Transport Manager High Availability Agent 2.3	1 license
Oracle Database 10g	See vendor for options
Veritas Storage Foundation High Availability 5.0 for Oracle on Solaris	1 license per server
Veritas Volume Replicator 5.0	1 license per server
Veritas Cluster Server VVR Agent 5.0	1 license per server
Veritas Global Cluster Manager 5.0	1 license (with data-replication option) per site

Please contact your Veritas sales representative for more details on configurations and pricing of the Veritas Global Clustering solutions.

Q. What are the options for Oracle licenses?

A. You can pay Oracle based on the number of CPUs installed in your system or based on the number of named users. The Cisco Transport Manager 8.5 Standalone Installation Guide provides detailed information on the number of named users required. Full Oracle licensing is required for the primary Sun server; no additional Oracle licenses are required for the secondary Sun server. An Oracle sales representative can offer the best advice on exact licensing fees, based on your hardware configuration.

Q. Are extra Oracle named users licenses required with the data-replication option in the High Availability Solution?

A. As specified earlier, the Cisco Transport Manager 8.5 software used in the High Availability Solution is identical to the standalone Cisco Transport Manager 8.5 software. There are no extra named users or licenses needed to operate in a high availability configuration.

Q. What does Veritas Storage Foundation High Availability 5.0 for Oracle on Solaris consist of?

A. Veritas Storage Foundation High Availability 5.0 for Oracle on Solaris comprises the following:

- Veritas Volume Manager (VxVM) 5.0
- Veritas File System (VxFS) 5.0
- Veritas Cluster Server (VCS) 5.0
- Veritas Cluster Server Oracle Agent 5.0

Q. Will the Cisco Transport Manager High Availability Agent work with any Sun hardware?

A. Yes, if the Sun hardware is configured with Solaris 10. Customers should make sure the hardware they plan to deploy (servers and disk arrays) has been validated and will be supported by Veritas. Confirmation of this can be found at:

<http://www.symantec.com/business/theme.jsp?themeid=datacenter>

Q. Is Sun Cluster Server or Oracle Parallel Server part of the High Availability Solution?

A. No. There are a variety of ways that high availability can be deployed using a multitude of vendor software and hardware. The goal is to provide customers with an architecture that has been tested using Cisco Transport Manager High Availability Agent 2.3. Veritas was selected because it is a leading software high availability solution integrator and uses best-in-class Sun hardware and Oracle Relational Database Management System (RDBMS).

Failover

Q. What causes the secondary server to assume the role of the primary server?

A. The secondary server assumes the load of the primary server in the event of primary server failure. Essentially, a number of criteria parameters must be met for the high availability setup to determine that the primary server has failed. When the high availability setup has detected a failure, the primary system is shut down in an orderly sequence (assuming no system failures on the CPU, motherboard, and so on), and the secondary server activates all appropriate daemons, launches Oracle, activates the virtual IP, and restarts Cisco Transport Manager.

Q. What is the impact on the network in the case of a primary server failure?

A. Any alarms sent to the primary server when the systems are switching to the secondary server will be lost until Cisco Transport Manager resynchronizes with the network element and receives an updated alarm status. When the secondary Cisco Transport Manager server comes online, Cisco Transport Manager can synchronize either manually or automatically to every network element to obtain the latest alarm status.

Q. Will the secondary server toggle back to the primary server if the Cisco Transport Manager High Availability Agent detects a failure in the secondary server?

A. No. This requires a platform manager intervention and prevents the systems from toggling back and forth until someone investigates what caused the initial failover situation.



Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
168 Robinson Road
#28-01 Capital Tower
Singapore 068912
www.cisco.com
Tel: +65 6317 7777
Fax: +65 6317 7799

Europe Headquarters
Cisco Systems International BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: +31 0 800 020 0791
Fax: +31 0 20 357 1100

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

©2007 Cisco Systems, Inc. All rights reserved. CCVP, the Cisco logo, and Welcome to the Human Network are trademarks of Cisco Systems, Inc.; Changing the Way We Work, Live, Play, and Learn is a service mark of Cisco Systems, Inc.; and Access Registrar, Aironet, BPX, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, CCSP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Enterprise/Solver, EtherChannel, EtherFast, EtherSwitch, Fast Step, Follow Me Browsing, FormShare, GigaDrive, HomeLink, Internet Quotient, IOS, iPhone, IP/TV, IQ Expertise, the iQ logo, iQ Net Readiness Scorecard, iQuick Study, LightStream, Linksys, MeetingPlace, MGX, Networkers, Networking Academy, Network Registrar, PIX, ProConnect, ScriptShare, SMARTnet, StackWise, The Fastest Way to Increase Your Internet Quotient, and TransPath are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0710R)