



Release Notes for the Network Analysis Module Software Release 3.4

These release notes provide general information Cisco Network Analysis Module (NAM) software release 3.4 including system requirements, limitations and restrictions, and known and resolved anomalies.

Product Numbers:

SC-SVC-NAM-3.4

(Cisco Catalyst 6500 Series and Cisco 7600 Series Network Analysis Module Software 3.4)

NM-NAM-SW-3.4

(Cisco Branch Routers Series Network Analysis Module Software 3.4)

CCO Date: Release 3.4(1a), April 2005

Revised: February 6, 2008



Note

For detailed installation and configuration procedures for the NAM, see the *Quick Start Guide for the Catalyst 6500 Series and Cisco 7600 Series Network Analysis Module* or the *Quick Start Guide for the Cisco 2600, 2600XM, 2800, 3660, 3700, and 3800 Series Network Analysis Module, Installation and Configuration Note for the Catalyst 6500 Series and Cisco 7600 Series Network Analysis Module Release 3.4* and *User Guide for the Network Analysis Module Traffic Analyzer Release 3.4*.

Contents

These document includes the following sections:

- [Network Analysis Module Orderable Software Image Matrix, page 2](#)
- [New Features in NAM 3.4, page 2](#)
- [System Requirements, page 3](#)
- [Product Documentation, page 4](#)
- [Related Documentation, page 8](#)
- [Limitations and Restrictions, page 8](#)



Corporate Headquarters:

Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

© 2005 Cisco Systems, Inc. All rights reserved.

- [Caveats, page 8](#)
- [Open Source License Acknowledgements, page 12](#)
- [Obtaining Documentation, page 14](#)
- [Obtaining Technical Assistance, page 15](#)
- [Obtaining Additional Publications and Information, page 16](#)

Network Analysis Module Orderable Software Image Matrix

[Table 1](#) lists the software version and the applicable ordering information.

Table 1 Network Analysis Module Software Version/Orderable Product Number Matrix

Module	Software Release	NAM Maintenance Image Release	Orderable Product Number	Minimum Cisco IOS Software Versions	Minimum Catalyst OS Software Versions
WS-SVC-NAM-1 WS-SVC-NAM-2	3.4	1.1(1) 2.1(1)	SC-SVC-NAM-3.4	<ul style="list-style-type: none"> • Release 12.1(13)E¹ or later with a Supervisor Engine 2 with an MSFC2. • Release 12.1(19E)1 or later with a Supervisor Engine 1A with an MSFC2. • Release 12.2(14)SX1 or later with a WS-SUP720. • Release 12.2(18)SXF with SUP32 	<ul style="list-style-type: none"> • Release 7.3(1) or later with Supervisor Engine 1A or 2². • Release 8.2(1) or later with a WS-SUP720. • Release 8.5.1
NM-NAM	3.4		NM-NAM-SW-3.4	<ul style="list-style-type: none"> • Release 12.3(4) XD • Release 12.3(7)T or later³ • Release 12.4(5) 	Not applicable

1. If you are running a 12.1(13)E-based release, Cisco recommends a later 13E release such as 12.1(13)E11 over 12.1(13)E3.
2. Supervisor 1A with MSFC1 or MSFC2; Supervisor 2 with MSFC2 only
3. The NAM 3.4 feature NBAR-PD MIB is supported in the NM-NAM only at this time. Access to these features requires an NM-NAM running in a Branch Routers platform (see [Hardware Requirements](#)) with IOS Release 12.3(7)T or later.

New Features in NAM 3.4

This section lists the new features in NAM 3.4 software.

- **Larger Capture Buffer Capacity**—Increases the capture buffer size to 300 MB on NAM-2, 125 MB on NAM-1, and 70 MB on NM-NAM
- **NetFlow v9**—Support for NetFlow version 9

- **NBAR-PD MIB**—Support for Cisco IOS Network-Based Application Recognition-Protocol Discovery (NBAR-PD) MIB in the Cisco Branch Routers Series NAM. NBAR is a classification engine in Cisco IOS Software that can recognize a wide variety of applications, including Web-based applications and client/server applications that dynamically assign TCP or UDP port numbers. The NAM can retrieve application protocol statistics from the NBAR-PD MIB for presentation and display within its Traffic Analyzer web interface. Data from the NBAR-PD MIB consist of application-layer statistics for each NBAR-activated interface.
- **Protocol Grouping**—Create, monitor, and report on a set of protocols grouped together under a single aggregate identifier (such as *web*)
- **MPLS-Tagged Traffic**—Monitor MPLS-tagged traffic as a single application protocol or as IP-based application protocols encapsulated within MPLS
- **Multiple Capture Sessions**: Perform multiple simultaneous captures
- **Capture to Disk**—Save full capture buffers as files on the NAM hard disk drive
- **URL Monitoring**—Recognize and monitor URL traffic including frequently visited Web sites and the hosts visiting them
- **Switch and Router Health Monitoring**—View the status of vital switch and router resources including CPU use, memory use, and so on
- **Capture Filters**—Enhancements include the capability to filter by TCP/UDP port(s) and the capability to OR multiple filters
- **Decode Filters**—Select (AND/OR) multiple criteria to apply to the decode filter, filter by protocol sub-fields) with logical expressions, perform pattern matching using any offset
- **Multiple Trace Files**—Save capture buffers to multiple capture files for viewing/downloading at a later time; merge multiple files
- **Protocol Classification**—Enhancements include new support for well-known ports, support for Gnutella, the capability to configure a user-defined number of auto-learned protocols, the capability to delete existing auto-learned protocols, and the capability to specify a range of TCP and/or UDP ports that should not be auto-learned
- **Protocol Directory Configuration**—Enhancements include the addition of a port/socket number search capability for each protocol, the capability to create custom protocols over encapsulations other than IPv4, and the capability to create custom protocols on a range of ports
- **International Decimal Notation**—Print numbers in any one of three different International Decimal Notation formats
- **Improved Formatting for Large Integers**: View integer values in appropriate units with prefixes such as Kilo (K), Mega (M), Giga (G), and Tera (T)
- **User-Customized Units**—Option of displaying values in units of bits or bytes

System Requirements

These sections describe the hardware and browser requirements for NAM 3.4.

- [Hardware Requirements, page 4](#)
- [Browser Requirements, page 4](#)

Hardware Requirements

Table 2 lists the NAM hardware versions supported by Cisco IOS software.

Table 2 NAM Hardware Compatibility

Module	Running Catalyst OS Software	Cisco IOS Software	Platforms
WS-SVC-NAM-1 WS-SVC-NAM-2	<ul style="list-style-type: none"> Supervisor Engine 1A or 2 WS-SUP720 	<ul style="list-style-type: none"> Supervisor Engine 1A or 2 with an MSFC2 WS-SUP720 SUP32 	<ul style="list-style-type: none"> Catalyst 6000 Series Catalyst 6500 Series Cisco 7600 Series
NM-NAM	Not applicable	Not applicable	<ul style="list-style-type: none"> Cisco 2691 Cisco 2600XM Series Cisco 2800 Series Cisco 3660 Cisco 3700 Series Cisco 3800 Series

Browser Requirements

Table 3 lists the web browsers supported by the NAM Traffic Analyzer.

Table 3 Browser Requirements

Supported Browsers	Version	Platform	Java Plug-In Support ¹
Internet Explorer		Windows 2000	<ul style="list-style-type: none"> 1.3.1_03 1.4.1_02 1.4.2_04
Netscape	7.0 and 7.1	Windows 2000 Solaris	<ul style="list-style-type: none"> 1.4.1_02 1.4.2_04
Netscape	7.0 and 7.1	Solaris	<ul style="list-style-type: none"> 1.4.0_01

1. Although Cisco NAM Traffic Analyzer does not require a Java plug-in, a plug-in might be required to use the Java Virtual Machine (JVM). The plug-in versions listed have been tested for browsers that require a plug-in for JVM.

Product Documentation



Note

We sometimes update the printed and electronic documentation after original publication. Therefore, you should also review the documentation on Cisco.com for any updates. You can find product documentation for all releases at the following location:

http://www.cisco.com/en/US/products/sw/cscowork/ps5401/tsd_products_support_series_home.html

This release includes the NAM Traffic Analyzer application, which you can use for monitoring and troubleshooting the availability and health of your network. The NAM Traffic Analyzer is embedded in the NAM and provides browser-based access to the NAM monitoring features.

For additional information about the NAM Traffic Analyzer, see these publications:

- For information about enabling the NAM Traffic Analyzer, see the *Quick Start Guide for the Catalyst 6500 Series and Cisco 7600 Series Network Analysis Module* and the *User Guide for the Network Analysis Module Traffic Analyzer Release 3.4*.
- For information about using the NAM Traffic Analyzer, use the application online help or see the PDF version of the *User Guide for the Network Analysis Module Traffic Analyzer Release 3.4* in the online help.
- For information about configuring the NAM for the Real-Time Monitor (RTM), see *Configuring the Catalyst 6000 Network Analysis Module with nGenius Real-Time Monitor* at this location:
http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/fam_mod/rel2_1_2/ol_2428.htm

Table 4 describes all of the product documentation that is available.

Table 4 Product Documentation

Document Title	Available Formats
<i>Quick Start Guide for the Catalyst 6500 Series and Cisco 7600 Series Network Analysis Module</i>	<ul style="list-style-type: none"> • Printed document included with the product. • On Cisco.com: <ul style="list-style-type: none"> a. Log into Cisco.com. b. Select Technical Support and Documentation > Technical Support and Documentation > Network Management > Network Management Services Module > Cisco Network Analysis Module Software > Install and Upgrade Guides
<i>Catalyst 6500 Series and Cisco 7600 Series Network Analysis Module Installation and Configuration Note Release 3.4</i>	<ul style="list-style-type: none"> • Printed document included with the product. • On Cisco.com: <ul style="list-style-type: none"> a. Log into Cisco.com. b. Select Technical Support and Documentation > Technical Support and Documentation > Network Management > Network Management Services Module > Cisco Network Analysis Module Software > Install and Upgrade Guides
<i>User Guide for the Network Analysis Module Traffic Analyzer Release 3.4</i>	<ul style="list-style-type: none"> • PDF in the product online help. • On Cisco.com: <ul style="list-style-type: none"> a. Log into Cisco.com. b. Select Technical Support and Documentation > Technical Support and Documentation > Network Management > Network Management Services Module > Cisco Network Analysis Module Software > End User Guides • Printed document available by order (part number DOC-7815958=).¹

Table 4 Product Documentation (continued)

Document Title	Available Formats
Context-sensitive online help	<ul style="list-style-type: none"> • Select an option from the navigation tree, then click Help in the upper right-hand corner of the browser window.
<i>Network Analysis Module Command Reference, 3.4</i>	<ul style="list-style-type: none"> • On Cisco.com: <ol style="list-style-type: none"> a. Log into Cisco.com. b. Select Technical Support and Documentation > Technical Support and Documentation > Network Management > Network Management Services Module > Cisco Network Analysis Module Software > Command References

1. See the [“Obtaining Documentation”](#) section on page 14.

Upgrading NAM Software

NAM 3.5.1a is a complete software release, not a patch. To upgrade NAM 3.4 to version 3.5.1a, enter the NAM CLI command **upgrade** while in maintenance mode. For information about the **upgrade** command see the Network Analysis Module 3.5 Command Reference Release at the following URL:

http://www.cisco.com/en/US/products/hw/switches/ps708/products_command_reference_chapter09186a00805e34f0.html#wp1048351

You can apply the NAM 3.5.1 Crypto K9 patch, **nam-app.3-5.cryptoK9.patch.1-0.bin**, on top of NAM 3.5.1a using NAM CLI command **patch**.

NAM Disk Partitioning

NAMs that shipped prior to NAM 3.3 might still be using an older and less efficient disk partitioning system. The NAM 3.3 release increased the size of the **/storage** partition to 12 gigabytes to handle the NAM's increased data capture capabilities.



Note

This condition affects the NAM-1 and NAM-2 but not the NM-NAM.

If your NAM's **/storage** partition is only 3.4 GB, you can increase its size to 12 GB by reloading the NAM software with the 3.5(1) image using the **--install** option.

You can check your disk's partitioning using the GUI by clicking **Admin > Diagnostics > Tech Support** and checking the **df** heading. The following shows an example of the old partitioning with only 3.4GB of space **/storage**:

Filesystem	1K-blocks	Used	Available	Use%	Mounted on
LABEL=/	4128320	243476	3675108	7%	/
/dev/hdc2	1032056	33460	946156	4%	/nvram
/dev/hdc3	3451192	183208	3092668	6%	/storage
/dev/hda1	15860	10089	4947	68%	/mnt/mp

The following shows an example of the newer partitioning with only 12 GB of space **/storage**:

Filesystem	1K-blocks	Used	Available	Use%	Mounted on
LABEL=/	4128320	243912	3674672	7%	/
/dev/hdc2	1032056	34284	945332	4%	/nvram
/dev/hdc3	12385072	197792	11558112	2%	/storage
/dev/hda1	15860	10102	4934	68%	/mnt/mp



Note

You can also check your disk partition sizes using the OS shell command **df**.

To increase your disk partitioning to the correct size, you can reload the 3.5(1) image using a command like the following:

```
upgrade ftp://ftpusername@ftp-server-ip/path/nam-image-filename --install
```

Where:

ftpusername is the username of the individual performing the FTP access.

ftp-server-ip is the IP address or hostname of the FTP server.

path is the path to the image on the FTP server.

nam-image-filename is the filename of the NAM image to install.

Related Documentation

For additional information about this and previous releases of Cisco NAM software, see:

http://www.cisco.com/en/US/products/sw/cscowork/ps5401/tsd_products_support_series_home.html

For additional information about Cisco Catalyst 6500 Series Switches, see:

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

For specific information about how to upgrade Cisco NAM software, see:

http://www.cisco.com/en/US/products/hw/switches/ps708/products_installation_and_configuration_guide09186a00800f56d6.html#38403

Limitations and Restrictions

Before using the NAM, read the *Quick Start Guide for the Catalyst 6500 Series and Cisco 7600 Series Network Analysis Module* and *Installation and Configuration Note for the Catalyst 6500 Series and Cisco 7600 Series Network Analysis Module Release 3.4*.

The following are limitations and restrictions for NAM software release 3.4 users:

- You must now configure the local time zone for the NAM regardless of the time synchronization source (switch or NTP). For more information on configuring the local time zone using Traffic Analyzer, see the *User Guide for the Network Analysis Module Traffic Analyzer Release 3.4*.
- If you change the NAM IP address, the default gateway resets to 0.0.0.0. Enter the new default gateway for the new IP address to an address other than one on the current subnet.
- If your NAM release is 3.1 or earlier, please use *install* option when upgrading to NAM 3.4 to enable a larger disk partition for the capture and reports. The NAM upgrade procedures are described in the *Installation and Configuration Note*.

Before using the NM-NAM, please read the *Cisco Network Modules Quick Start Guide*, *NM-NAM Feature Module*, and the *Quick Start Guide for the Cisco 2600, 2800, 3660, 3700 and 3800 Series Network Analysis Module*.

The following are limitations and restrictions for NM-NAM software release 3.4 users:

- If you change the NAM IP address, the default gateway resets to 0.0.0.0. Enter the new default gateway for the new IP address.
- The NBAR-PD feature is supported in the NM-NAM only and requires the IOS version 12.3(7)T or later.

Caveats

This section provides information about anomalies known to exist in the NAM 3.4 software and anomalies from previous versions of Cisco NAM software that have been resolved in this release.

**Note**

To obtain more information about known problems, access the Cisco Software Bug Toolkit at <http://www.cisco.com/cgi-bin/Support/Bugtool/home.pl>. (You will be prompted to log into Cisco.com.)

Known Anomalies in NAM 3.4

Table 5 lists anomalies known to exist in NAM 3.4 software. Each anomaly listed includes symptoms, conditions, and any workaround available.

Table 5 Known Problems in NAM 3.4

Bug ID	Description
CSCeh48590	<p>Symptoms: On the Monitor > Switch > Port Stats screen, if you do a Real-Time graph on a port that has a description name associated with it, the graph does not work.</p> <p>Conditions: This only applies to ports with a description name.</p> <p>Workaround: Delete the port description from the switch CLI.</p>
CSCeh47638	<p>Symptoms: SPAN delete/edit function does not work in NAM SPAN GUI if the supervisor is running CATOS 8.4(x).</p> <p>Conditions: This behavior will occur if the SPAN session number for the SPAN session is other than 1.</p> <p>Workaround: Use the supervisor CLI to delete or edit an existing SPAN session.</p>
CSCeh40618	<p>NBAR Interface Details filter is not working properly.</p> <p>Symptom: Interface Type filtering does not work on the Setup > Router Parameters > NBAR Protocol Discovery window. However, filtering on the Interface Name does work correctly.</p> <p>Conditions: This occurs on Setup > Router Parameters > NBAR Protocol Discovery Interface Details window.</p> <p>Workaround: None</p>

Table 5 Known Problems in NAM 3.4 (continued)

Bug ID	Description
CSCeh34341	<p>Unable to change the owner string for a Diffserv Aggregate from the command-line interface (CLI)</p> <p>Symptom: This problem occurs when you do the following:</p> <ol style="list-style-type: none"> 1. Session or telnet to the NAM. 2. Login as root 3. Create a diffserv aggregation as follows: <ol style="list-style-type: none"> a. Issue the command diffserv aggregate to get into the subcommand mode. b. Issue the command descr <description-string>. c. Issue the command exit to create a diffserv entry. 4. The diffserv entry will be created in NAM with the default owner equal to <i>monitor</i>. 5. Modify the diffserv entry as follows: <ol style="list-style-type: none"> a. Issue the command diffserv aggregate to enter subcommand mode. b. Issue the command control-index <index-#> and set index-# to the control index value of the entry created in step 3c. c. Issue the command owner <owner-string> to modify the owner string. d. Issue the command exit to apply the modification. <p>After completing the steps above, the CLI indicates that the modification was successful. However, the command show diffserv aggregate indicates that the owner string is still <i>monitor</i>.</p> <p>Conditions: This problem applies to NAM1, NAM2, and NM-NAM software.</p> <p>Workaround: From the NAM CLI, delete the entry to be modified as follows:</p> <ol style="list-style-type: none"> 1. Delete any diffserv profile associated with the aggregation entry with the CLI command no diffserv profile <index> 2. Delete the diffserv aggregation to be modified with the CLI command no diffserv aggregate <control-index> 3. Recreate the diffserv aggregation entry with the CLI command diffserv aggregate Apply the subcommand owner <owner-string> to set the owner string to desired value. 4. Recreate the diffserv profile with the CLI command diffserv profile (if applicable).
CSCeh33543	<p>Should not allow deletion of a protocol when in the protocol is used by Applications Group</p> <p>Symptom: If you delete a protocol that exists in a protocol group, the protocol group will no longer report traffic on the deleted protocol. No warning message is given.</p> <p>Conditions: This problem applies to NAM1, NAM2, and NM-NAM software.</p> <p>Workaround: Ensure that a protocol being deleted is not part of a protocol group.</p>

Table 5 Known Problems in NAM 3.4 (continued)

Bug ID	Description
CSCeh16637	<p>Decode screen does not highlight the ETH Header hexadecimal field</p> <p>Symptom: When you click the ETH line on the Decode screen, occasionally the corresponding Ethernet header hexadecimal field is not highlighted.</p> <p>Conditions: This problem applies to NAM1, NAM2, and NM-NAM software.</p> <p>Workaround: Click another field, then click the ETH line. The ETH hex header should then be highlighted.</p>
CSCeh36630	<p>The show monitor ifstats CLI command incorrectly indicates router interface statistics are enabled/disabled.</p> <p>Symptom: From NM-NAM GUI, when you click Setup > Monitor > Core Monitoring > Data Source Router, both Interface Statistics and NBAR Statistics check boxes are checked.</p> <p>However, the NAM CLI command show monitor ifstats returns a message that does not indicate Interface Statistics are enabled.</p> <p>Conditions: This problem applies only to NM-NAM software.</p> <p>Workaround: Do the following:</p> <p>Login to NAM GUI.</p> <p>Click Setup > Monitor > Core Monitoring > Data Source Router.</p> <p>Click on Apply button.</p>

NAM 3.3 Issues Resolved in NAM 3.4

Table 6 lists anomalies that were found in NAM 3.3 that have been resolved in NAM 3.4.

Table 6 Anomalies in NAM 3.3 Resolved in NAM 3.4

Bug ID	Summary
CSCeh52901	<p>The length checks for parsing Gnutella packets are insufficient. The parsing code can run off the end of the packet and crash.</p> <p>Symptoms: NAM SNMP agent and Web GUI are intermittently inaccessible. The show tech-support command shows rmond being restarted.</p> <p>Conditions: Gnutella file-sharing packets are present in traffic sent to NAM (either by SPAN or VACL).</p> <p>Workaround: None</p>
CSCeb05132	<p>The report selector applet occasionally does not work properly with certain Netscape-Java/JVM combinations.</p> <p>Symptoms: When viewing historical reports, the report selector applet occasionally does not work properly with certain Netscape-Java/JVM combinations. The check marks in some folders might not be properly displayed.</p> <p>Conditions: This problem occurs only with certain browser/Java plugin combinations.</p> <p>Workaround: Close the browser window and reopen it.</p>

Table 6 *Anomalies in NAM 3.3 Resolved in NAM 3.4 (continued)*

Bug ID	Summary
CSCeb17633	Cannot enable collections for DiffServ on a profile created in the NAM CLI. Symptoms: Cannot enable collections for DiffServ on a profile created in the NAM CLI. Conditions: When the DiffServ Aggregate and the Profile are created using the NAM CLI command then on trying to enable the collections using web interface an error message is displayed indicating the aggregate groups have to be defined. Workaround: The collections can be created only after submitting the Profile configuration from the NAM web interface.
CSCee14443	The switch module occasionally does not appear on the Create Port Stats Report screen.

NAM 3.2 Issues Resolved in NAM 3.4

Table 7 lists anomalies that were found in NAM 3.2 that have been resolved in NAM 3.4.

Table 7 *Anomalies in NAM 3.2 Resolved in NAM 3.4*

Bug ID	Description
CSCec86960	When the CLI command <code>ip http tacacs+ enable <tacacs-server></code> is used with <code><back-up-server></code> , option, the <code>en-secret-key</code> is not a valid option.
CSCec89711	The NAM CLI does not support spaces for custom NetFlow data source names.
CSCeb17633	You cannot enable collections for DiffServ on a profile created in the NAM CLI.
CSCeb05132	When viewing historical reports, the report selector applet occasionally does not work properly with certain Netscape-Java/JVM combinations. The check marks in some folders might not be properly displayed.

Open Source License Acknowledgements

The following acknowledgements pertain to this software license.

OpenSSL/Open SSL Project

© 1998-2008 The OpenSSL Project. All rights reserved.

© 1995-1998 Eric Young (eay@cryptsoft.com). All rights reserved.

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>).

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com).

This product includes software written by Tim Hudson (tjh@cryptsoft.com).

License 1:

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the following acknowledgment: "This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>)."
4. The names "OpenSSL Toolkit" and "OpenSSL Project" must not be used to endorse or promote products derived from this software without prior written permission. For written permission, please contact openssl-core@openssl.org.
5. Products derived from this software may not be called "OpenSSL" nor may "OpenSSL" appear in their names without prior written permission of the OpenSSL Project.
6. Redistributions of any form whatsoever must retain the following acknowledgment: "This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>)."

THIS SOFTWARE IS PROVIDED BY THE OpenSSL PROJECT "AS IS" AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE OpenSSL PROJECT OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

License 2:

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions, and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the following acknowledgement: "This product includes cryptographic software written by Eric Young (eay@cryptsoft.com)."

THIS SOFTWARE IS PROVIDED BY ERIC YOUNG "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOOD OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY

THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Obtaining Documentation

Cisco documentation and additional literature are available on Cisco.com. Cisco also provides several ways to obtain technical assistance and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

Cisco.com

You can access the most current Cisco documentation on the World Wide Web at this URL:

<http://www.cisco.com/univercd/home/home.htm>

You can access the Cisco website at this URL:

<http://www.cisco.com>

International Cisco websites can be accessed from this URL:

http://www.cisco.com/public/countries_languages.shtml

Ordering Documentation

You can find instructions for ordering documentation at this URL:

http://www.cisco.com/univercd/cc/td/doc/es_inpk/pdi.htm

You can order Cisco documentation in these ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Ordering tool:
<http://www.cisco.com/en/US/partner/ordering/index.shtml>
- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, USA) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

Documentation Feedback

You can submit e-mail comments about technical documentation to bug-doc@cisco.com.

You can submit comments by using the response card (if present) behind the front cover of your document or by writing to the following address:

Cisco Systems
Attn: Customer Document Ordering
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Obtaining Technical Assistance

For all customers, partners, resellers, and distributors who hold valid Cisco service contracts, the Cisco Technical Assistance Center (TAC) provides 24-hour-a-day, award-winning technical support services, online and over the phone. Cisco.com features the Cisco TAC website as an online starting point for technical assistance. If you do not hold a valid Cisco service contract, please contact your reseller.

Cisco TAC Website

The Cisco TAC website provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The Cisco TAC website is available 24 hours a day, 365 days a year. The Cisco TAC website is located at this URL:

<http://www.cisco.com/tac>

Accessing all the tools on the Cisco TAC website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a login ID or password, register at this URL:

<http://tools.cisco.com/RPF/register/register.do>

Opening a TAC Case

Using the online TAC Case Open Tool is the fastest way to open P3 and P4 cases. (P3 and P4 cases are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Case Open Tool automatically recommends resources for an immediate solution. If your issue is not resolved using the recommended resources, your case will be assigned to a Cisco TAC engineer. The online TAC Case Open Tool is located at this URL:

<http://www.cisco.com/tac/caseopen>

For P1 or P2 cases (P1 and P2 cases are those in which your production network is down or severely degraded) or if you do not have Internet access, contact Cisco TAC by telephone. Cisco TAC engineers are assigned immediately to P1 and P2 cases to help keep your business operations running smoothly.

To open a case by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)

EMEA: +32 2 704 55 55

USA: 1 800 553-2447

For a complete listing of Cisco TAC contacts, go to this URL:

<http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml>

TAC Case Priority Definitions

To ensure that all cases are reported in a standard format, Cisco has established case priority definitions.

Priority 1 (P1)—Your network is “down” or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Priority 2 (P2)—Operation of an existing network is severely degraded, or significant aspects of your business operation are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Priority 3 (P3)—Operational performance of your network is impaired, but most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Priority 4 (P4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- Cisco Marketplace provides a variety of Cisco books, reference guides, and logo merchandise. Go to this URL to visit the company store:
<http://www.cisco.com/go/marketplace/>
- The Cisco *Product Catalog* describes the networking products offered by Cisco Systems, as well as ordering and customer support services. Access the Cisco Product Catalog at this URL:
<http://cisco.com/univercd/cc/td/doc/pcat/>
- *Cisco Press* publishes a wide range of general networking, training and certification titles. Both new and experienced users will benefit from these publications. For current Cisco Press titles and other information, go to Cisco Press online at this URL:
<http://www.ciscopress.com>
- *Packet* magazine is the Cisco quarterly publication that provides the latest networking trends, technology breakthroughs, and Cisco products and solutions to help industry professionals get the most from their networking investment. Included are networking deployment and troubleshooting tips, configuration examples, customer case studies, tutorials and training, certification information, and links to numerous in-depth online resources. You can access Packet magazine at this URL:
<http://www.cisco.com/packet>

- *iQ Magazine* is the Cisco bimonthly publication that delivers the latest information about Internet business strategies for executives. You can access iQ Magazine at this URL:
<http://www.cisco.com/go/iqmagazine>
- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:
<http://www.cisco.com/ipj>
- Training—Cisco offers world-class networking training. Current offerings in network training are listed at this URL:
<http://www.cisco.com/en/US/learning/index.html>

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, 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. (0711R)

Copyright © 2005-2006, Cisco Systems, Inc. All rights reserved.

