

## Cisco Branch Routers Series Network Analysis Module 4.2

### Overview

#### Q. What is Cisco® Branch Routers Series Network Analysis Module (NAM)?

**A.** Cisco Branch Routers Series NAM is an integrated performance monitoring solution that delivers unparalleled insight into the operational performance of the borderless access network to help improve the delivery of applications and services to end users. Its unique design combines a rich set of embedded data collection capabilities and performance analytics with a remotely accessible, web-based management console, all of which reside on a single network module that is installed into Cisco 3900 Series, Cisco 2900 Series, Cisco 3800 Series or Cisco 2800 Series Integrated Services Routers (ISRs), or Cisco 3700 Series Multiservice Access Routers (MSRs). The Cisco NAM includes a Traffic Analyzer GUI, which provides quick access to the configuration menus and both real-time and historical performance reports.

#### Q. What are the key features and benefits of Cisco Branch Routers Series NAM?

**A.** Table 1 lists the key features and benefits.

**Table 1.** Key Features of Cisco Branch Routers Series NAM

Feature	Description
<b>Application performance monitoring</b>	Delivers application performance monitoring and real-time visibility for voice, video, and data applications. Cisco NAM helps improve the operational efficiency of IT organizations by proactively detecting performance degradations and their sources to minimize or even eliminate impact on end users.
<b>Transaction-aware application response time monitoring</b>	Analyzes TCP-based application packets as they travel from the client through the network to the data center and out again, providing insight into network round-trip time, server response time, data transfer time, transaction time, and so on, to improve application performance.
<b>Cisco Wide Area Application Services (WAAS) support</b>	Measures application response time, WAN bandwidth usage, LAN/WAN data throughput, and so on to provide end-to-end application performance visibility in WAAS deployments.
<b>Voice-over-IP (VoIP) and video packet quality analysis</b>	Analyzes voice and video packet streams and provides visibility into key network performance indicators to maximize the quality of the user experience.
<b>Comprehensive flow-based monitoring</b>	Automatically identifies hundreds of protocols and provides real-time and historical performance reports on hosts, conversations, and applications using critical network resources.
<b>LAN and WAN monitoring in one solution</b>	Provides visibility into traffic from local and remote switches and routers for comprehensive traffic monitoring.
<b>Web-based captures for deep, insightful data analysis</b>	Captures the packets to help resolve acute problems before they affect users. Captures can be performed using a web browser from any desktop, and the decodes can be viewed through the Traffic Analyzer GUI while the data is still being captured. Extensive capture features, including trigger-based captures, decodes, filters, and a capture analysis toolset, help to quickly pinpoint and resolve problem areas.
<b>Anytime, anywhere access</b>	Includes an embedded Traffic Analyzer web interface that can be accessed from any desktop, eliminating the need to send personnel to remote sites or haul large amounts of data over WAN links to the central site.
<b>Pre- and postdeployment metrics to quantify business changes</b>	Provides valuable "before and after" traffic analytics to help plan for and verify changes in network resources, such as new application rollouts, WAN optimization, server consolidation, segmenting the network, and deploying VoIP and video.
<b>Secure solution</b>	Offers TACACS+, Secure Sockets Layer (SSL), and Secure Shell (SSH) Protocol-based security.
<b>Deployment flexibility</b>	Cisco NAM can be deployed in blade form factor in Cisco Catalyst® 6500 Series Switches, Cisco 7600 Series Routers, and Cisco Integrated Services Routers; as multigigabit appliances; and as virtual service blades residing directly on WAAS devices or on the Nexus 1010 Virtual Service Appliance. The complement of physical and virtual blades and of appliances allows NAM instrumentation to be broadly deployed in the network for comprehensive performance monitoring.

#### Q. What are the business benefits of deploying Cisco Branch Routers Series NAM?

**A.** Table 2 summarizes the business benefits that Cisco Branch Routers Series NAM offers.

**Table 2.** Business Benefits of Cisco Branch Routers Series NAM

Benefit	Description
<b>Improve application performance</b>	Gain comprehensive visibility into network services and applications that make up the business. Improve network performance by effectively using control and optimization mechanisms such as quality of service (QoS) and Cisco WAAS.
<b>Manage application delivery</b>	Use the combination of application performance monitoring, traffic analysis, and advanced troubleshooting for managing effective and reliable delivery of applications in the borderless access network.
<b>Increase operational efficiency</b>	Accelerate problem isolation and minimize the amount of time IT dedicates to constantly troubleshooting problems.
<b>Enhance service levels delivered to end users</b>	Preempt performance issues with threshold-based proactive alerts. Reduce downtime and failures.
<b>Improve network security</b>	Prevent unauthorized or frivolous use of network resources.

**Q. Why deploy Cisco NAM in the branch?**

**A.** The value propositions of deploying Cisco Branch Routers Series NAM include:

- Characterizing the end-user experience in the borderless access network, the place in the network closest to the end users. Deployed in the branch, Cisco NAM can provide full visibility into the traffic entering or leaving the branch, offering comprehensive views of how users are experiencing the delivery of voice, video, and TCP-based applications.
- Profiling all traffic in and out of the branch to help plan for and verify changes in network resources, such as new application rollouts, WAN optimization, server consolidation, VoIP and video deployments, and so on. Cisco NAM deployed in the branch singularly offers visibility into both branch-to-data-center traffic and branch-to-branch traffic.
- Performing VoIP and video packet quality analysis. Deployed in the branch, Cisco NAM analyzes both Real-time Transport Protocol (RTP) streams and associated signaling traffic to facilitate both timely and comprehensive reporting of voice and video quality.
- Troubleshooting application performance issues locally and remotely. The Cisco Branch Routers Series NAM provides extensive packet capture features, including trigger-based captures, decodes, filters, and a capture analysis toolset, to help quickly pinpoint and resolve problem areas. The feature can be used remotely to troubleshoot a branch from a centralized location, eliminating the need to send personnel to the branch or haul large amounts of data over WAN links to a central site.

**Q. How does Cisco Branch Routers Series NAM work?**

**A.** Cisco Branch Routers Series NAM receives copies of packets in a passive or promiscuous mode from the router backplane or from an external Gigabit Ethernet interface. The NAM parses the packets and extracts data to populate standards-based management information bases (MIBs) included in the NAM such as remote monitoring (RMON/RMON2) and RMON extensions. The MIBs provide valuable traffic information on voice, video, and data traffic, VLANs, Differentiated Services (DiffServ) configurations, hosts, conversation pairs, application usage, and application response times. This information is presented in the NAM Traffic Analyzer GUI in easy-to-read real-time and historical reports or can be accessed using a standards-based centralized Simple Network Management Protocol (SNMP) console.

**Q. What is Cisco NAM Traffic Analyzer?**

**A.** Cisco NAM includes embedded software, called Cisco NAM Traffic Analyzer, which analyzes and stores the data. It presents the data to clients using a supported web browser.

**Q. Where is Cisco Branch Routers Series NAM deployed?**

**A.** Cisco Branch Routers Series NAM is deployed in the Cisco 2800, 2900, 3700, 3800, and 3900 Series Routers at WAN edges or at remote branch offices. It uses features of both local and remote switches and routers to provide combined visibility into WAN and LAN traffic in the borderless access network. Traffic from selected WAN ports can be copied by the router using a special packet-monitoring feature in Cisco IOS® Software and then sent by an internal backplane interface to Cisco NAM for analysis. Traffic from LAN ports in the router or from nearby switches can be sent to Cisco NAM through an external Gigabit Ethernet interface. By using the web-based Traffic Analyzer embedded in Cisco NAM, network managers can perform remote traffic analysis, performance monitoring, and troubleshooting without having to send personnel to remote offices or haul large amounts of data across the WAN to the central site.

**Q. What branch router models support the second-generation Cisco Branch Routers Series NAM?**

**A.** The second-generation Cisco Branch Routers Series NAM, NME-NAM-80S and NME-NAM-120S, is supported on the branch router models indicated in Table 3. An NM Adapter Card is required to successfully integrate the NME-NAM into Cisco 2900 Series and Cisco 3900 Series ISRs.

**Table 3.** NME-NAM Supported Router Models

Router Models	NM Adapter Card Required
Cisco 3945 ISR	Yes
Cisco 3925 ISR	Yes
Cisco 2951 ISR	Yes
Cisco 2921 ISR	Yes
Cisco 2911 ISR	Yes
Cisco 3845 ISR	No
Cisco 3825 ISR	No
Cisco 2851 ISR	No
Cisco 2821 ISR	No
Cisco 2811 ISR	No
Cisco 3745 MSR	No
Cisco 3725 MSR	No

**NAM 4.2****Q. What features does NAM Software 4.2 offer?**

**A.** Cisco NAM 4.2 offers the features described in Table 4.

**Table 4.** Features in Cisco NAM 4.2

Feature	Benefit
<b>Visibility into Nexus 1000V deployments</b>	Extends the NAM into Cisco Nexus 1000V switch environments to simplify the operational manageability of virtual machine networks.
<b>New Cisco Nexus 1000V NAM Virtual Service Blade (VSB)</b>	Integrated with the Cisco Nexus 1010 Virtual Service Appliance, the NAM VSB reduces the network footprint and offers investment protection for Cisco Nexus 1010 customers. As a dedicated solution, it provides network and application performance visibility essential to addressing service delivery challenges in next generation data centers.

**Q. When is NAM 4.2 available?**

**A.** Cisco NAM software 4.2 will start shipping in May 2010 as part of Cisco Branch Routers Series NAM orders. Starting in April current Cisco NAM customers can download the new release from the Cisco.com Software Center at no charge using their Cisco SMARTnet® contract access privileges.

**Q. Which NAM hardware platforms support NAM 4.2?**

- A.** NAM 4.2 is supported on the NAM hardware platforms listed in Table 5. The platforms marked by an asterisk (\*) include memory configurations that optimize NAM 4.2 performance.

**Table 5.** NAM Hardware Platforms Supported with NAM 4.2

Description	Hardware Part Number
Cisco NAM 2200 Series Appliances	NAM2204-RJ45*
	NAM2204-SFP*
	NAM2220*
Cisco Catalyst 6500 Series and Cisco 7600 Series NAM-1	WS-SVC-NAM-1-250S*
	WS-SVC-NAM-1 with MEM-C6KNAM-2GB=*
	WS-SVC-NAM-1
Cisco Catalyst 6500 Series and Cisco 7600 Series NAM-2	WS-SVC-NAM-2-250S*
	WS-SVC-NAM-2 with MEM-C6KNAM-2GB=*
	WS-SVC-NAM-2
Cisco Branch Routers Series NAM	NME-NAM-120S*
	NME-NAM-80S

**Hardware Features****Q. How does the router send traffic to the Cisco Branch Router Series NAM internal interface?**

- A.** The host router forwards traffic from user-selected interfaces to Cisco NAM using the router's internal PCI bus. Both inbound and outbound traffic are forwarded to Cisco NAM.

**Q. Can Cisco Branch Routers Series NAM monitor traffic on multiple LAN or WAN interfaces simultaneously?**

- A.** Yes, it can be used to monitor traffic from multiple interfaces within the router. Traffic statistics are processed and displayed using the following data sources on the module: NetFlow-based data sources and the two Cisco NAM interfaces - internal and external.

**Q. Can packets be sent to the NAM before the traffic is encrypted (that is, IP Security [IPsec]) on the interface that I wish to monitor?**

- A.** Yes. Packets are copied to the NAM by Cisco Express Forwarding. If the router is the endpoint of the IPsec tunnel, the packets will be decrypted before they reach Cisco Express Forwarding; the outgoing packets will be processed by Cisco Express Forwarding before they're encrypted. In this scenario Cisco Express Forwarding can copy the decrypted packets to the NAM for analysis.

**Q. Is Cisco Branch Routers Series NAM restricted to a particular slot in the branch router chassis?**

- A.** No. Cisco NAM can be inserted into any of the network module slots in the branch router chassis. Only one Cisco NAM is supported in each chassis.

**Q. Is Cisco Branch Routers Series NAM compatible with all other network modules that can reside in the branch routers?**

- A.** Yes. Cisco NAM is compatible with the other network modules offered for the Cisco 2800, 2900, 3700, 3800, and 3900 Series Routers.

**Q. Is Cisco Branch Routers Series NAM hot-swappable?**

- A.** Yes, on online insertion and removal (OIR) - capable router platforms.

**Q. Should Cisco Branch Routers Series NAM fail, will network traffic be affected?**

- A.** No. Failure of Cisco NAM will not affect network traffic.

**Q. What are the hardware specifications of Cisco Branch Routers Series NAM?**

**A.** Table 6 lists the hardware specifications for Cisco Branch Routers Series NAM.

**Table 6.** Hardware Specifications of Cisco Branch Routers Series NAM

Hardware Feature	Specifications
Processor	1.0 GHz Intel Celeron M CPU
Synchronous dynamic RAM (SDRAM)	1 GB
Internal disk storage	120 GB 24x7 SATA hard disk drive
Network interfaces	One internal Gigabit Ethernet port to router backplane, plus one external Gigabit Ethernet port
Flash memory	64 MB internal

**Software Features****Q. What release of Cisco IOS Software is required to support Cisco Branch Routers Series NAM?**

**A.** The minimum Cisco IOS Software required will depend on the router model in which the NME-NAM is installed.

Table 7 summarizes the Cisco IOS Software requirements to support NME-NAM.

**Table 7.** Cisco IOS Software Requirements to Support NME-NAM

NME-NAM Installed in:	Minimum Cisco IOS Software Version Required
Cisco 3945 ISR	Cisco IOS Software 15.0(1)M
Cisco 3925 ISR	Cisco IOS Software 15.0(1)M
Cisco 2951 ISR	Cisco IOS Software 15.0(1)M
Cisco 2921 ISR	Cisco IOS Software 15.0(1)M
Cisco 2911 ISR	Cisco IOS Software 15.0(1)M
Cisco 3845 ISR	Cisco IOS Software 12.4(9)T
Cisco 3825 ISR	Cisco IOS Software 12.4(9)T
Cisco 2851 ISR	Cisco IOS Software 12.4(9)T
Cisco 2821 ISR	Cisco IOS Software 12.4(9)T
Cisco 2811 ISR	Cisco IOS Software 12.4(9)T
Cisco 3745 MSR	Cisco IOS Software 12.4(9)T
Cisco 3725 MSR	Cisco IOS Software 12.4(9)T

**Q. What Cisco NAM software version does the latest Cisco Branch Routers Series NAM, NME-NAM-120S, support?**

**A.** The Cisco Branch Routers Series NAM, NME-NAM-120S, is first introduced in Cisco NAM Software 3.6.1b. It supports NAM Software 3.6.1b or later.

**Q. Are all of the features included in Cisco Catalyst 6500 Series and Cisco 7600 Series NAMs also included in Cisco Branch Routers Series NAM?**

**A.** All of the Cisco NAMs offer a common user experience, but some functional disparities exist because of the distinctions in the capabilities of both the host platforms and the NAM hardware platforms. For example, Remote SPAN (RSPAN) and Encapsulated RSPAN (ERSPAN) configurations are unique to the Catalyst switches and are not supported on the branch routers.

**Q. What versions of NetFlow does Cisco Branch Routers Series NAM support?**

**A.** Cisco NAM supports versions 1, 5, 6, 7, 8, and 9.

**Q. Can NetFlow Data Export (NDE) be collected from remote WAN routers?**

**A.** Yes, Cisco Branch Routers Series NAM can collect and analyze NDE from remote devices, including WAN routers.

**Q. Can historical traffic analysis be performed with Cisco Branch Routers Series NAM?**

**A.** Yes. Cisco NAM Traffic Analyzer can display, store, and retrieve historical statistics on selected network traffic for up to 100 days.

**Q. How is Cisco NAM Traffic Analyzer secured?**

**A.** The Cisco NAM Traffic Analyzer can be secured with up to 256-bit encryption. This requires users to download a K9-designated patch for the NAM software from the Cisco.com Software Center. Cisco NAM also supports role-based user authorization and authentication locally or using TACACS+.

**Q. What MIBs are supported on Cisco Branch Routers Series NAM?**

**A.** Cisco Branch Routers Series NAM is standards compliant and supports RMON and RMON2 MIBs, as well as several extensions. The major MIB groups supported in Cisco Branch Routers Series NAM include the following:

- MIB-II (RFC 1213)
- RMON (RFC 2819)
- RMON2 (RFC 2021)
- DSMON (RFC 3287)
- HC-RMON (RFC 3273) (High-Capacity RMON)
- NBAR-PD
- ART (Application Response Time) extension

**Q. Does Cisco NAM support voice monitoring for Cisco VoIP deployments only?**

**A.** No. Cisco NAM monitors Real-time Transport Protocol and thus, by extension, can provide reporting on any VoIP protocol that runs on top of RTP, a Layer 4 protocol.

**Q. Which VoIP signaling protocols does the Cisco NAM support?**

**A.** Cisco NAM supports a breadth of VoIP signaling protocols, namely, Skinny Client Control Protocol (SCCP), Session Initiation Protocol (SIP), Media Gateway Control Protocol (MGCP), and H.323.

**Q. What are the key performance indicators for monitoring voice?**

**A.** Cisco NAM offers real-time voice quality monitoring using standards-based Mean Opinion Score (MOS) and key performance indicators such as jitter and packet loss. It calculates MOS based on ITU-T G.107 recommendations.

**Q. Can I identify the phones affected due to voice quality degradation?**

**A.** Yes. Cisco NAM allows the administrator to pinpoint the individual RTP stream experiencing voice quality degradation. By correlating the RTP and signaling streams, Cisco NAM can report the phone numbers and alias for each endpoint.

**Q. What Cisco Unified Communications Management Solutions support NAM?**

**A.** The solutions are Cisco Unified Service Monitor and Cisco Unified Operations Manager.

**Q. What Cisco Unified Service Monitor and Cisco Unified Operations Manager versions first support NAM 4.x? Are these versions available today?**

**A.** The versions are Cisco Unified Service Monitor 2.2 and Cisco Unified Operations Manager 2.2. They are available as of August 2009.

**Q. How do Cisco Unified Service Monitor and Cisco Unified Operations Manager support NAM?**

- A.** Cisco Unified Service Monitor collects voice metrics from multiple NAMs to provide enterprisewide visibility into voice quality. Cisco Unified Service Monitor generates alerts on voice quality degradation that is reported by Cisco Unified Operations Manager. Based on these alerts, Cisco Unified Operations Manager helps enable the user to navigate into NAM to glean near real-time views of both voice and network performance to perform rapid troubleshooting.

**Q. What is the Cisco NAM IAP feature?**

- A.** Intelligent application performance (IAP) offers comprehensive performance measurements for TCP-based applications to accurately characterize the end-user experience. This NAM 4.x feature offers a number of useful application performance indicators to facilitate faster problem identification. For example, the source of network latency affecting the end-user experience can be isolated by analyzing network delay metrics, namely client network delay, server network delay, and network delay. Similarly, server resource issues can be identified by network metrics such as application delay and server response time. In addition, the administrator can configure thresholds on these metrics to proactively detect performance degradations before they affect end users,

**Q. How does Cisco NAM support Cisco Wide Area Application Services?**

- A.** Cisco NAM uses the built-in instrumentation of the Cisco Wide-Area Application Engine (WAE) devices as a data source to gather information on the optimized traffic to provide end-to-end application performance visibility in a Cisco WAAS environment. It measures application response time, transaction time, bandwidth usage, LAN/WAN data, and so on to provide end-to-end application performance metrics, accurately quantifying the impact of WAAS optimization and helping to validate ongoing optimization improvements. NAM is also able to identify the applications that would benefit the most from deploying Cisco WAAS. Analyzing response time data over a period of time, the administrator can identify the applications for which optimization can result in a material increase in available bandwidth.

**Third-Party Reporting****Q. Does Cisco NAM include an API to allow third-party reporting applications to use NAM as a source of data?**

- A.** Yes, the Cisco NAM includes mechanisms, such as comma-separated value (CSV)/HTTP, to enable third-party reporting applications to collect data for networkwide reporting, trending, baselining, and capacity planning. The third-party applications can retrieve performance and monitoring data such as IAP, voice /video, traffic usage, and packet captures to deliver added and complementary value to NAM.

**Q. How can a third-party apply for approval to use the Cisco NAM CSV/HTTP API for integration?**

- A.** A third-party can enroll in the Cisco Developer Network at <http://www.cisco.com/go/cdn>. During the enrollment process, the third-party must select Network and Service Management as the solution technology and Cisco NAM as the network management product for integration. Once approved and the nondisclosure agreement (NDA) and NAM developer license agreement signed, the third-party will receive the API for integration.

**Q. Are there currently third-parties who have joined this program? How can a list of these vendors be obtained?**

- A.** Yes. Today, reporting applications from third-parties such as NetQoS, Compuware, and others offer support for NAM. These reporting applications complement the NAM by using its rich metrics to build end-to-end views of application usage and performance and also to streamline the number of collection points in the network. A list of third-parties supporting NAM can be found at the Cisco Developer Network URL.



## Ordering Information

### Q. What are the part numbers for the Cisco Branch Routers Series NAM?

A. Table 8 lists the part numbers for the NAMs.

**Table 8.** Cisco Branch Routers Series NAM Part Numbers

Product Name	Part Number
Cisco Branch Routers Series NAM (Spare)	NME-NAM-120S(=)
Cisco Branch Routers Series NAM Software 4.2	NME-NAM-SW-4.2
Voice Monitoring Software License for NME-NAM-120S, 50 RTP Streams (Spare)	SNAM-50VOICE(=)
Voice Monitoring Software License for NME-NAM-120S, 100 RTP Streams (Spare)	SNAM-100VOICE(=)
NM Adapter Card for integration of NME-NAM into C2900 and C3900 platforms (Spare)	SM-NM-ADPTR(=)

### Q. How can the Cisco NAM Traffic Analyzer software be obtained?

A. The NAM software can be obtained in one of two ways. To obtain the latest NAM software with your new hardware order, order NME-NAM-SW-4.2 when ordering the NAM hardware NME-NAM-120S. The software will then be delivered preloaded on the hardware. If you already own the hardware, download the latest software from the Cisco.com Software Center using your SMARTnet access privileges.

### Q. What components are required to implement a network monitoring solution with Cisco Branch Routers Series NAM?

A. The following are required to implement Cisco Branch Routers Series NAM, including NAM Traffic Analyzer:

- Cisco 2800, 3700, or 3800 Series Router running Cisco IOS Software Release 12.4(9)T or later, or Cisco 2900 or 3900 Series ISR running Cisco IOS Software Release 15.0(1)M or later
- Cisco Branch Routers Series NAM, NME-NAM-80S or NME-NAM-120S, running Cisco NAM Software 4.1 or later, Web browser running Microsoft Internet Explorer 6.0 (with Service Pack 2), Internet Explorer 7.0, Firefox 2.0, or Firefox 3.0
- Voice Monitoring Software license for NME-NAM-120S if RTP stream (voice) monitoring is desired. Two licenses are offered, one enabling the monitoring of 50 RTP streams; the other of 100 RTP streams
- NM Adapter Card for integration of NME-NAM into Cisco 2900 or 3900 Series ISR

### Q. Are maintenance services for Cisco Branch Routers Series NAM purchased separately or are they included in the router's maintenance services?

A. Maintenance services for Cisco Branch Routers Series NAM are included with the purchase of maintenance services for the router in which Cisco Branch Routers Series NAM is installed.

## Specifications

### Q. What are the physical specifications of Cisco Branch Routers Series NAM?

A. Table 9 provides the physical specifications.

**Table 9.** Physical Specifications of Cisco Branch Routers Series NAM

Physical Specification	Description
Dimensions (H x W x D)	1.55 x 7.10 x 7.2 inches (3.9 x 18.0 x 18.3 centimeters)
Weight	1.5 pounds (0.7 kilograms) maximum
Operating humidity	5 percent to 85 percent (noncondensing)
Operational temperature	41 to 104°F (5 to 40°C)
Nonoperating temperature	-40 to 158°F (-40 to 70°C)
Operational altitude	-197 ft to 6,000 ft (-60 to 1,800 m)



Physical Specification	Description
<b>Safety</b>	<ul style="list-style-type: none"> <li>• UL 60950-1, Second Edition Safety of Information Technology Equipment - Safety - Part 1: General Requirements (USA). Plastic materials that are exposed to the end user shall meet the requirements of fire enclosure (UL94V-1) as defined in UL 60950.</li> <li>• CSA 60950-1, Second Edition, Safety of Information Technology Equipment - Safety - Part 1: General Requirements (Canada)</li> <li>• IEC 60950-1, Second Edition, Safety of Information Technology Equipment - Safety - Part 1: General Requirements, including all national deviations as specified in the current CB Bulletin</li> <li>• EN 60950-1, Second Edition, Safety of Information Technology Equipment - Safety - Part 1: General Requirements (European Union) incorporating all deviations, as applicable</li> <li>• GB 4943-95, Safety of Information Technology Equipment (Including Electrical Business Equipment) (standard for China, equivalent to IEC 60950)</li> <li>• AS/NZS 60950.1, Information Technology Equipment, Safety part 1: General Requirements (Australia)</li> </ul>
<b>Compliance</b>	<p><b>Emission:</b></p> <ul style="list-style-type: none"> <li>• 47 CFR Part 15 Class A</li> <li>• CISPR22 Class A</li> <li>• EN300386 Class A</li> <li>• EN55022 Class A</li> <li>• EN61000-3-2</li> <li>• EN61000-3-3</li> <li>• SD/EMI (India)</li> <li>• KN22 (Korea)</li> <li>• VCCI Class I</li> <li>• AS/NZS CISPR 22 Class A</li> </ul> <p><b>Immunity:</b></p> <ul style="list-style-type: none"> <li>• CISPR24</li> <li>• EN300386</li> <li>• EN50082-1</li> <li>• EN55024</li> <li>• SD/EMI (India)</li> <li>• KN22 (Korea)</li> <li>• EN61000-6-1</li> </ul>

## Information Resources

### Q. Where is additional information about Cisco NAM found?

For more information about Cisco NAM, visit <http://www.cisco.com/go/nam> or contact either your local account representative or the NAM product marketing group at [nam-info@cisco.com](mailto:nam-info@cisco.com).



Americas Headquarters  
Cisco Systems, Inc.  
San Jose, CA

Asia Pacific Headquarters  
Cisco Systems (USA) Pte. Ltd.  
Singapore

Europe Headquarters  
Cisco Systems International BV  
Amsterdam, The Netherlands

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](http://www.cisco.com/go/offices).

CCDE, CCENT, CCSI, Cisco Eos, Cisco Explorer, Cisco HealthPresence, Cisco IronPort, the Cisco logo, Cisco Nurse Connect, Cisco Pulse, Cisco SensorBase, Cisco StackPower, Cisco StadiumVision, Cisco TelePresence, Cisco TrustSec, Cisco Unified Computing System, Cisco WebEx, DCE, Flip Channels, Flip for Good, Flip Mino, Flipshare (Design), Flip Ultra, Flip Video, Flip Video (Design), Instant Broadband, and Welcome to the Human Network are trademarks; Changing the Way We Work, Live, Play, and Learn, Cisco Capital, Cisco Capital (Design), Cisco-Financed (Stylized), Cisco Store, Flip Gift Card, and One Million Acts of Green are service marks; and Access Registrar, Aironet, AllTouch, AsyncOS, Bringing the Meeting To You, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, CCSP, CCVP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Lumin, Cisco Nexus, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Collaboration Without Limitation, Continuum, EtherFast, EtherSwitch, Event Center, Explorer, Follow Me Browsing, GainMaker, iLYNX, IOS, iPhone, IronPort, the IronPort logo, Laser Link, LightStream, Linksys, MeetingPlace, MeetingPlace Chime Sound, MGX, Networkers, Networking Academy, PCNow, PIX, PowerKEY, PowerPanels, PowerTV, PowerTV (Design), PowerVu, Prisma, ProConnect, ROSA, SenderBase, SMARTnet, Spectrum Expert, StackWise, WebEx, and the WebEx logo are registered trademarks of Cisco 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. (1002R)