Cisco Branch Routers Series Network Analysis Module with Software 5.1

General Questions

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 with a remotely accessible, web-based management and performance reporting console, all of which reside on a single network module that is installed into Cisco 3900, 2900, 3800, or 2800 Series Integrated Services Routers (ISRs), or Cisco 3700 Series Multiservice Access Routers (MSRs). With Cisco Prime NAM 5 software, the Cisco Branch Routers Series NAM's graphical user interface (GUI) provides with prepackaged reports, workflows, and contextual drill-downs to expedite problem resolution and optimization decisions.

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	Benefit
LAN and WAN monitoring in one solution	Obtain performance visibility into traffic from local and remote switches and routers for comprehensive traffic monitoring.
Detailed flow- and packet-based traffic analytics	View short- and long-term performance data on hosts, conversations, and applications that use critical network resources.
Deep, insightful packet captures	Solve complex performance problems with trigger-based captures, filters, decodes, and Packet Capture Error Scan features. Packet captures can be triggered based on performance thresholds, allowing you to focus on specific performance issues. In addition, you can use external storage to collect extensive packet captures for offline analysis.
Application performance intelligence	Analyze transaction-aware analytics to help characterize the end-user experience and isolate application response time problems to the network, server or the application itself.
Comprehensive voice quality monitoring and real-time troubleshooting	Gather real-time reports on Mean Opinion Score (MOS) and other key performance indicators (KPIs) such as jitter and packet loss to understand and improve how the end user experiences the delivery of voice services. MOS is computed based on ITU-T Recommendations G.107, offering accurate characterization of voice quality. Combine monitoring with real-time troubleshooting using prepackaged dashboards to improve end-user service levels.
Historical analysis	Look back to the past with the embedded Performance Database to understand what happened when an event that affects network performance occurred to accelerate root-cause analysis and prevent any reoccurrence. Use historical analysis for advancing optimization and capacity decisions.
Visibility into WAN-optimized networks	Demonstrate how Cisco Wide Area Application Services (WAAS) has improved application delivery.
Pre and post-deployment metrics	Glean valuable before and after traffic analytics to help plan for and verify changes in network resources, such as introducing new applications, establishing (QoS) policies, consolidating servers, and deploying voice over IP (VoIP).
Secure solution	Use TACACS+, Secure Sockets Layer (SSL), and Secure Shell (SSH) Protocol–based security.
Standards-based northbound interface	Ease NAM configuration and export of computed NAM data using standards-based APIs (REST/XML for configuration, NetFlow Version v9 for data export). Facilitate integration with customer in-house managed applications or third-party reporting application of choice.
Anytime, anywhere access	Access the embedded web interface 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.

Feature	Benefit
Deployment flexibility	Cisco Prime NAM can be deployed as blade form factors 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 select Cisco WAAS devices or on the Cisco 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
Improve operational efficiency with faster problem resolution and greater productivity.	• Rapid problem isolation with prepackaged reports, visual correlation, contextual navigation, and one-click packet captures. • Packet Capture Scan feature highlights observed protocol- and packet-level anomalies, accelerating complex root-cause analysis. • Combined packet and flow analysis reduces time to noteworthy and actionable information to expedite troubleshooting. • Remote management eliminates the need to travel to remote sites.
Enhance service levels with consistent application performance visibility across the network.	• Accurate characterization of performance with advanced analytics for voice and TCP applications. • Consistent application recognition using new application classification architecture. • Improved end-user experience with effective use of control and optimization techniques such as QoS and Cisco WAAS. • Preemption of performance issues with threshold-based proactive alerts reduces downtime and failures.
Reduce total cost of ownership	• Integrated with Cisco ISRs, Cisco NAM delivers reduced network footprint, lower operational cost, and simplified manageability. • Cisco NAM form-factors offer cost-effective options and deployment flexibility to address location-specific network instrumentation needs. • Open standards–based API preserves investment in existing management assets.

Q. Why deploy Cisco NAM in the branch office?

A. The value propositions for 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 quality and video stream analysis: Deployed in the branch, Cisco NAM analyzes both Real-time Transport Protocol (RTP) streams and associated signaling traffic to facilitate 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, error scans, and filters, 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 to gather relevant data and then stores the processed information in the Performance Database. The database stores valuable traffic information on about voice, video, and data traffic, VLANs, DiffServ configurations, hosts, conversation pairs, application usage, and application response times. The information is presented in the NAM's GUI in easy-to-read interactive reports. The information can also be exported to third-party or in-house reporting applications using NetFlow v9.

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 interface 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.

Cisco NAM offers an intuitive web-based GUI that includes prepackaged reports, workflows, and contextual drill-downs to expedite problem resolution and optimization decisions. The GUI also provides quick access to the configuration menus and interactive performance reports on voice, video, and TCP-based traffic. In addition, Cisco NAM has an embedded web server that enables remote access from anywhere so that network performance can be viewed, managed, and improved at any time, eliminating the need to travel to remote sites or haul large amounts of data over WAN links to a central site.

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 GUI 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 Cisco Branch Routers Series NAM (NME-NAM-120S)?

A. The Cisco Branch Routers Series NAM, NME-NAM-120S, is supported on the branch router models indicated in Table 3. An NM Adapter Card is required to use the NME-NAM in a Cisco 2900 or 3900 Series ISR. Cisco NAM software is also supported on the Cisco Integrated Services Router Generation Two (ISR G2) Services-Ready Engine services module. See the Cisco Prime NAM for ISR G2 SRE page for details.

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

Router Models	NM Adapter Card Required
Cisco 3825 ISR	No
Cisco 2851 ISR	No
Cisco 2821 ISR	No
Cisco 2811 ISR	No
Cisco 3745 MSR	No
Cisco 3725 MSR	No

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 in 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 (with IP Security [IPsec]) on the interface that I want 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 are 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. It is hot-swappable on online insertion and removal (OIR)–capable router platforms.

Q. If Cisco Branch Routers Series NAM fails, will network traffic be affected?

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

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

A. Table 4 lists the hardware specifications for Cisco Branch Routers Series NAM.

Table 4. Hardware Specifications for 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 SATA hard disk drive
Network interfaces	One internal Gigabit Ethernet port to router backplane, plus one external Gigabit Ethernet port

Hardware Feature	Specifications
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 depends on the router model in which the NME-NAM is installed. Table 5 summarizes the Cisco IOS Software requirements to support Cisco Branch Routers Series NAM.

Table 5. Cisco IOS Software Requirements to Support Cisco Branch Routers Series 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, was first introduced in Cisco NAM Software 3.6.1b. It supports Cisco NAM Software 3.6.1b or later.

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

A. Cisco Prime NAM software offers a common user experience, but there are differences because of the capabilities of host platforms and NAM hardware platforms. For example, Remote SPAN (RSPAN) and Encapsulated RSPAN (ERSPAN) configurations are unique to the Cisco Catalyst switches and are not supported on the branch routers.

Q. What are the software features and functionality of Cisco Branch Routers Series NAM, NME-NAM-120S?

A. For any questions related to Cisco Prime software functionality, please refer to the Cisco Prime NAM Software Q&A.

Ordering Information

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

A. Table 6 lists the part numbers for the NAMs.

Table 6. 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 5.1	NME-NAM-SW-5.1
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 software be obtained?

A. The NAM software can be obtained in either of two ways. To obtain the latest NAM software with your new hardware order, order NME-NAM-SW-5.1 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 Cisco SMARTnet® Services 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:

- 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-120S, running Cisco NAM Software 4.2 or later and web browser running Firefox 3.6 or Microsoft Internet Explorer 8 or later (Microsoft Internet Explorer 7 is not supported)
- 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 and the other enabling the monitoring 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 7 provides the physical specifications.

Table 7. Physical Specifications for 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 to 85 percent (noncondensing)
Operating temperature	41 to 104℉ (5 to 40℃)
Nonoperating temperature	–40 to 158℉ (–40 to 70℃)
Operating altitude	–197 ft to 6000 ft (–60 to 1800 m)
Safety	• 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. • CSA 60950-1, Second Edition, Safety of Information Technology Equipment - Safety - Part 1: General Requirements (Canada). • 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. • EN 60950-1, Second Edition, Safety of Information Technology Equipment - Safety - Part 1: General Requirements (European Union) incorporating all deviations, as applicable. • GB 4943-95, Safety of Information Technology Equipment (Including Electrical Business Equipment) (standard for China, equivalent to IEC 60950).

Physical Specification	Description
	• AS/NZS 60950.1, Information Technology Equipment, Safety part 1: General Requirements (Australia).
Compliance	**Emissions** • 47 CFR Part 15 Class A • CISPR22 Class A • EN300386 Class A • EN55022 Class A • EN61000-3-2 • EN61000-3-3 • SD/EMI (India) • KN22 (Korea) • VCCI Class I • AS/NZS CISPR 22 Class A **Immunity** • CISPR24 • EN300386 • EN50082-1 • EN55024 • SD/EMI (India) • KN22 (Korea) • EN61000-6-1

For More Information

Q. Where can I find additional information about Cisco NAM?

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.

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