Q&A

Cisco Prime Network Analysis Module Software 5.1 for Cisco Nexus 1100 Series

General Overview

Q. What is the Cisco Prime™ Network Analysis Module (NAM) for Cisco Nexus® 1100 Series and what does it do?

A. The Prime NAM for Nexus 1100 Series is integrated software that resides on the Cisco Nexus 1100 Series and Cisco Nexus 1010 Virtual Services Appliances. It extends operational visibility into Cisco Nexus 1000V Switch deployments and provides the combined network and application performance visibility essential to address service delivery challenges in next-generation data centers. It allows network administrators to effectively use embedded management features, such as Encapsulated Remote Switched Port Analyzer (ERSPAN) and NetFlow, on the Cisco Nexus 1000V Switch to gather operational data, and combines the collected data with rich analytics to produce actionable information remotely accessible from a web-based management console. The Prime NAM includes an embedded, web-based Traffic Analyzer GUI that provides quick access to the configuration menus, traffic statistics, and application performance views.

Q. Why is operational visibility into the Nexus 1000V Switch essential for network administrators?

A. As mission-critical workloads migrate to virtual servers, visibility into the virtual switching infrastructure (Nexus 1000V) becomes critical to manage end-to-end service delivery. The virtual switching layer extends the network to the virtual servers. Lack of insight into this layer affects the ability of network administrators to manage application services. In addition, the fluidity of the virtual infrastructure poses a new set of management challenges. In this dynamic environment, network administrators are responsible not only for troubleshooting application performance issues but also for making sure that the network is ready to support workload-driven dynamic resource allocations or virtual server migrations.

Q. What is the Cisco Prime NAM for Nexus 1100 Series value proposition for network administrators?

A. The Prime NAM for Nexus 1100 Series allows network administrators to effectively manage virtual machine (VM) networks to:

- Analyze network usage behavior by application, host/VM, and conversation to identify bottlenecks that may affect performance and availability
- Troubleshoot performance issues with extended visibility into VM-to-VM traffic, virtual interface statistics, and transaction response times
- Assess impact on network behavior due to changes such as VM migration, new application deployment, and port profile update
- Improve the efficiency of your virtual infrastructure and distributed application components with comprehensive traffic analysis

As a distinctive advantage, Prime NAM allows you to monitor the network and virtual machines uninterrupted by vMotion operations.

Q. What are the key features and benefits of the Cisco Prime NAM for Nexus 1100 Series?

A. The features supported with the Prime NAM are provided in Table 1. Note that not all NAM software features are supported by the Prime NAM for Nexus 1100 Series.

Table 1. Key Features and Benefits of the Cisco Prime NAM

Feature	Benefit
Integrated solution	Integrated with Nexus 1100 Series and Nexus 1010 Virtual Services Appliances, Prime NAM provides greater investment protection, lower total cost of ownership, and reduced footprint to save premium rack space.
Traffic analysis	Real-time traffic analysis views and targeted long-term reports help enable network administrators to analyze and optimize the performance of the virtual and physical network. Monitoring applications, hosts, virtual machines, and conversations can help to spot bottlenecks before the virtual network suffers blows to performance and availability.
Application performance intelligence	Analyzes the TCP-based messages across the servers (virtual or physical) to provide comprehensive transaction- and session-based statistics to help troubleshoot application response time issues. Network administrators can analyze performance metrics, such as network delay, round-trip time, retransmission time, and so on, to identify the source of degradation.
Quality of service (QoS) analysis	Validate and fine-tune QoS planning assumptions when creating or updating port profiles or use it to detect whether an application is misclassified or contending for limited virtual network resources with non-business-critical traffic.
Interface monitoring	Visibility into traffic statistics for both virtual and physical interfaces allows administrators to quickly troubleshoot application performance issues. They can monitor statistics such as percent utilization, throughput, packet discards, and errors for each interface, along with the ability to navigate to gather more details including top-N applications, hosts, and conversations.
Secure solution	Offers TACACS+, Secure Sockets Layer (SSL), and Secure Shell (SSH) Protocol-based security.
Standards-based northbound interface	Third-party applications gather application and network performance information from Prime NAMs deployed across the network for consolidated networkwide reporting. Such applications complement the granular performance visibility offered by Prime NAMs to help enable you to monitor how applications are being delivered enterprisewide, yet isolate and resolve delivery problems proactively and promptly at their source.
Deployment flexibility	Prime 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 Cisco Wide Area Application Services (WAAS) devices or on the Cisco Nexus 1100 Series and 1010 Virtual Services Appliances. The complement of physical and virtual blades and appliances allows NAM instrumentation to be broadly deployed in the network for comprehensive performance visibility across the Cisco borderless network and data center.

Q. What are the business benefits of deploying Cisco Prime NAM for Nexus 1100 Series?

A. Table 2 provides an overview of the business benefits that the NAM offers.

Table 2. Business Benefits of Deploying Cisco Prime NAM for Nexus 1100 Series

Benefit	Description
Improve service levels	Help ensure consistent service delivery with applications deployed in a virtual computing environment.
Improve operational efficiency	Extended visibility into virtual switching infrastructure allows network administers to manage the virtual switch like any physical switch.
Effective use of virtual network resources/Network readiness for virtualization	Real-time traffic analysis views and targeted long-term reports facilitate analysis of network usage patterns by network administrators and allows them to: • Improve efficiency of virtual networks to support dynamic resource allocations and virtual machine migrations • Plan transition from physical to virtual server deployment • Align usage of virtual network resources with business needs

Q. What NAM data sources can be used to monitor traffic in the Cisco Nexus 1000V Switch environment?

A. As previewed in the first answer, the Prime NAM can monitor the Nexus 1000V using ERSPAN and NetFlow data sources. ERSPAN can be configured on the Nexus 1000V to help enable the NAM to obtain visibility into specific ports or VLANs. The data made available by ERSPAN permits the NAM to provide core traffic usage metrics (on applications, hosts, and conversations), application performance analytics, and QoS and VLAN monitoring statistics. NetFlow Data Export (NDE) can be configured on select virtual and physical interfaces of the Nexus 1000V. The data made available by NetFlow permits the NAM to provide core traffic analytics and QoS monitoring statistics.

Q. What is the Cisco Prime NAM Traffic Analyzer?

A. The Prime NAM includes embedded Traffic Analyzer software, which analyzes and stores the collected data using standards-based MIBs and extensions (remote monitoring [RMON], DiffServ monitoring [DSMON], switch monitoring [SMON], and application performance monitoring). The NAM also hosts an embedded web server that presents the configuration menus and traffic reports to clients using a supported web browser.

Q. Where is the Cisco Prime NAM for Nexus 1100 Series deployed in the network?

A. The Prime NAM is deployed as an integrated service with Nexus 1100 Series or Nexus 1010 Virtual Services Appliances.

Q. Can the Prime NAM be used for visibility into the Nexus 1000V Switch where Virtual Supervisor Module is deployed as a virtual machine (software-only installation)?

A. Yes, the NAM (select form factors) with software release 4.2 or later can be used for visibility into software-only installations of Nexus 1000V. For example, the Catalyst 6500 Series NAM can be used with the Catalyst 6500 Series Switch deployed in virtual data center access or NAM appliances can generally be used for deployments that require higher performance and scalability.

Q. Can the Cisco Prime NAM for Nexus 1100 Series monitor VMs during migration with vMotion?

A. VMware vMotion is a technology that helps enable server administrators to perform live migrations of virtual machines with zero downtime. Typically, this operation is used both to facilitate optimization of the virtual computing infrastructure and to perform hardware maintenance without scheduling downtime or disrupting business operations, thereby improving IT service levels. Deploying the Nexus 1000V as the virtual switching platform along with a NAM, the VMs can be monitored uninterrupted by vMotion operations. Thus, application traffic destined or originating on a specific VM along with corresponding traffic statistics can be continuously monitored even when the VM is being migrated from one physical server to another. This feature is critical when monitoring the response time of applications running on the VM being migrated or monitoring live conversations in the same scenario. This important insight allows IT to make sure that application response times are not being affected due to VM migrations. It also lets IT assess any impacts on network behavior due to such operations.

Q. When would I purchase a Cisco Catalyst 6500 NAM versus a Cisco Prime NAM for Nexus 1100 Series?

A. The Catalyst 6500 NAM is a hardware module integrated in the Catalyst 6500 that provides visibility into both physical and virtual networks. It comes with a feature set and level of performance commensurate with providing wide-ranging monitoring and troubleshooting capabilities in the campus or data center. The Cisco Prime NAM for Nexus 1100 Series is a software module integrated in the Nexus 1100 Series and 1010 Virtual Services Appliances. The Cisco Prime NAM for Nexus 1100 Series comes with a feature set that is specifically targeted for monitoring and troubleshooting the Nexus 1000V environment. The Cisco Prime NAM for Nexus 1100 Series is a perfect fit for customers who are deploying the Nexus 1100 Series or Nexus 1010 Appliances, offering both ease of deployment and investment value. Those customers who have Catalyst 6500s, who may want to monitor more than the Nexus 1000V environment, who require higher overall performance, or who perform extensive captures and decodes will want to consider the Catalyst 6500 NAM.

Q. When would I purchase a Cisco Prime NAM Appliance versus a Cisco Prime NAM for Cisco Nexus 1100 Series?

A. The NAM Appliances extend the reach of NAM into places and platforms not currently served by service modules or virtual service blades. The appliances offer high performance and maximum deployment flexibility. In addition, the appliances offer wide-ranging monitoring and troubleshooting capabilities across both physical and virtual networks. The Cisco Prime NAM for Nexus 1100 Series is a software module integrated in the Nexus 1100 Series and Nexus 1010 Virtual Services Appliances. The Cisco Prime NAM for Nexus 1100 Series comes with a feature set that is specifically targeted for monitoring and troubleshooting the Nexus 1000V environment. The Cisco Prime NAM for Nexus 1100 Series is a perfect fit for customers who are deploying the Nexus 1100 Series or Nexus 1010 Appliances, offering both ease of deployment and investment value. Those customers who may want to monitor more than the Nexus 1000V environment, who require higher overall performance, or who perform extensive captures and decodes will want to consider a NAM Appliance.

Technical Overview

Q. How does the Cisco Prime NAM work?

A. In general, the NAM collects packets or flows (NetFlow Data Export) being sent to it from the switch or router. The NAM parses the packets and extracts data to populate standards-based management information bases (MIBs) included in the NAM such as RMON/RMON2 and RMON extensions. The MIBs provide valuable traffic information on voice, video, and data traffic, VLANs, DiffServ configurations, hosts, conversation pairs, application usage, and application response times. This information is presented in the NAM's 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 to build additional value for enterprisewide performance assurance and reporting.

Cisco Prime NAM for Nexus 1100 Series uses data sources supported by Nexus 1000V as listed in Table 3.

Table 3. Cisco Prime NAM for Nexus 1100 Series Data Sources

Data Source	Description
ERSPAN	Using ERSPAN capabilities of Nexus 1000V Series Switches, traffic from ports or VLAN can be sent to the NAM using generic routing encapsulation (GRE) tunnels.
NDE	NDE records offer an aggregate view of the network traffic. When enabled on the switch, the NetFlow data source becomes available on the Cisco NAM.

Q. Does the Cisco Prime NAM require a separate NetFlow data collector for monitoring?

A. No. The NAM collects and consumes NetFlow data for network monitoring purposes.

Q. What versions of NetFlow does the Cisco Prime NAM for Nexus 1100 Series support?

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

Q. How is the Cisco Prime NAM Traffic Analyzer secured?

A. The Cisco Prime NAM Traffic Analyzer can be secured with up to 256-bit encryption. The NAM also supports role-based user authorization and authentication locally or using TACACS+.

Q. Can multiple Cisco Prime NAMs for Nexus 1100 Series be installed on Nexus 1100 Series and Nexus 1010 Virtual Services Appliances?

A. Only a single instance of the NAM can be installed on a Virtual Services Appliance.

Q. Can two Cisco Prime NAMs for Nexus 1100 Series be configured in redundant mode so that when one fails the other one takes over automatically, or do NAMs function independently?

A. The NAMs function independently even in scenarios where Cisco Prime NAM for Nexus 1100 Series is deployed on each Nexus 1100 Series Appliance configured in High Availability mode.

Q. What protocols does the Cisco Prime NAM monitor?

A. The NAM monitors several hundred unique protocols, including those defined in RFC 2896 and several Cisco proprietary protocols. In addition, the NAM can automatically detect unknown protocols and offers users the flexibility to customize the protocol directory to meet their specific requirements. Examples of protocols supported by the NAM for monitoring follow:

- TCP and User Datagram Protocol (UDP) over IP including IPv6
- HTTP and HTTPS
- VoIP including Skinny Client Control Protocol (SCCP), Real time Protocol/Real Time Control Protocol (RTP/RTCP), Media Gateway Control Protocol (MGCP), and Session Initiation Protocol (SIP)
- SigTran and Mobile IP protocols including General Radio Packet Service (GPRS) Tunneling Protocol (GTP)
- Storage area network (SAN) protocols including Fibre Channel over TCP/IP
- AppleTalk, DECnet, Novell, Microsoft
- Database protocols, including Oracle and Sybase
- Peer-to-peer protocols such as Gnutella, Fasttrack, and WinMX
- Bridge and router protocols
- Cisco proprietary protocols
- Unknown protocols by TCP/UDP ports, Remote Procedure Call (RPC) program numbers, and so on

Software Features

Q. Does Cisco Prime NAM for Nexus 1100 Series support the packet capture and decode feature?

A. Yes, Cisco Prime NAM for Nexus 1100 Series supports the packet capture and decode capability with software 5.1 or later.

Q. Does the Cisco Prime NAM for Nexus 1100 Series perform historical traffic analysis?

A. Yes, the NAM Traffic Analyzer can display, store, and retrieve historical statistics on selected network traffic. Historical reports can be scheduled for export or exported on demand. Reports can be sent by email or through FTP, and export formats can include comma-separated value (CSV), XML, PDF, and HTML.

Q. Does Cisco Prime NAM for Nexus 1100 Series support voice monitoring?

A. No. It does not support the voice monitoring feature.

Ordering

Q. What are the part numbers for the Cisco Prime NAM on Nexus 1100 Series?

A. Table 4 lists the part numbers.

Table 4. Cisco Prime NAM for Nexus 1100 Series Part Numbers

Cisco Part Number	Description
N1K-C1110NAM51-K9	Cisco Prime NAM Software 5.1 for Cisco Nexus 1100 Series
L-N1KC11NAM51-K9=	Cisco Prime NAM Software 5.1 for Cisco Nexus 1100 Series (eDelivery)
N1K-C1010NAM51-K9	Cisco Prime NAM Software 5.1 for Cisco Nexus 1010
N1K-C1010NAM51-K9=	Cisco Prime NAM Software 5.1 for Cisco Nexus 1010 Spare
L-N1KC10NAM51-K9=	Cisco Prime NAM Software 5.1 for Cisco Nexus 1010 (eDelivery)
N1K-C10NAM5UP-K9=	Cisco Prime NAM Software Upgrade from 4.x to 5.1 for Cisco Nexus 1010
L-N1KC10NAM5UP-K9=	Cisco Prime NAM Software Upgrade from 4.x to 5.1 for Cisco Nexus 1010 (eDelivery)

Q. What is the licensing model of the Cisco Prime NAM for Nexus 1100 Series?

A. The Cisco Prime NAM for Nexus 1100 Series licensing is node-locked and based on Cisco Software Licensing. Only one instance of the NAM can be installed on a single Nexus 1100 Series or Nexus 1010 Appliance. The NAM image will be preloaded (not installed) on the Nexus Appliance with a 60-day evaluation license.

Additional Information

Q. Where is additional information about the Cisco Prime NAM found?

A. For more information about the Cisco Prime NAM for Nexus 1100 Series, visit http://www.cisco.com/go/1000nam or contact the NAM product-marketing group at nam-info@cisco.com.

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