Cisco Prime Network Analysis Module Software 5.1 for Nexus 1010

As mission-critical workloads migrate to virtual servers, visibility into the virtual switching infrastructure 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, in terms of workload-driven dynamic resource allocation or virtual server migrations across hosts, poses a new set of management challenges. In this dynamic environment, network administrators are not only responsible for troubleshooting application performance issues but also for making sure that the network is ready to support resource scaling in real time. This demands deeper network visibility and analytics to present meaningful and consistent performance information for network administrators.

Product Overview

Cisco Prime Network Analysis Module (NAM) for Nexus 1010 allows network administrators to extend operational visibility into Cisco Nexus 1000V Switch deployments (Figure 1). The Cisco Nexus 1000V Switch is a software switch on a server that delivers Cisco Virtual Network Link (VN-Link) services to virtual machines (VMs) hosted on that server. This distributed switch has two major components: the Virtual Ethernet Module (VEM) and the Virtual Supervisor Module (VSM), which manages the VEMs. A VSM can itself be deployed as a virtual machine; as an alternate deployment scenario, the Cisco Nexus 1010 Virtual Services Appliance can host multiple Virtual Supervisor Modules (VSM) along with a number of Virtual Service Blades (VSBs) such as Cisco Prime Network Analysis Module (NAM) and Cisco Virtual Security Gateway (VSG).

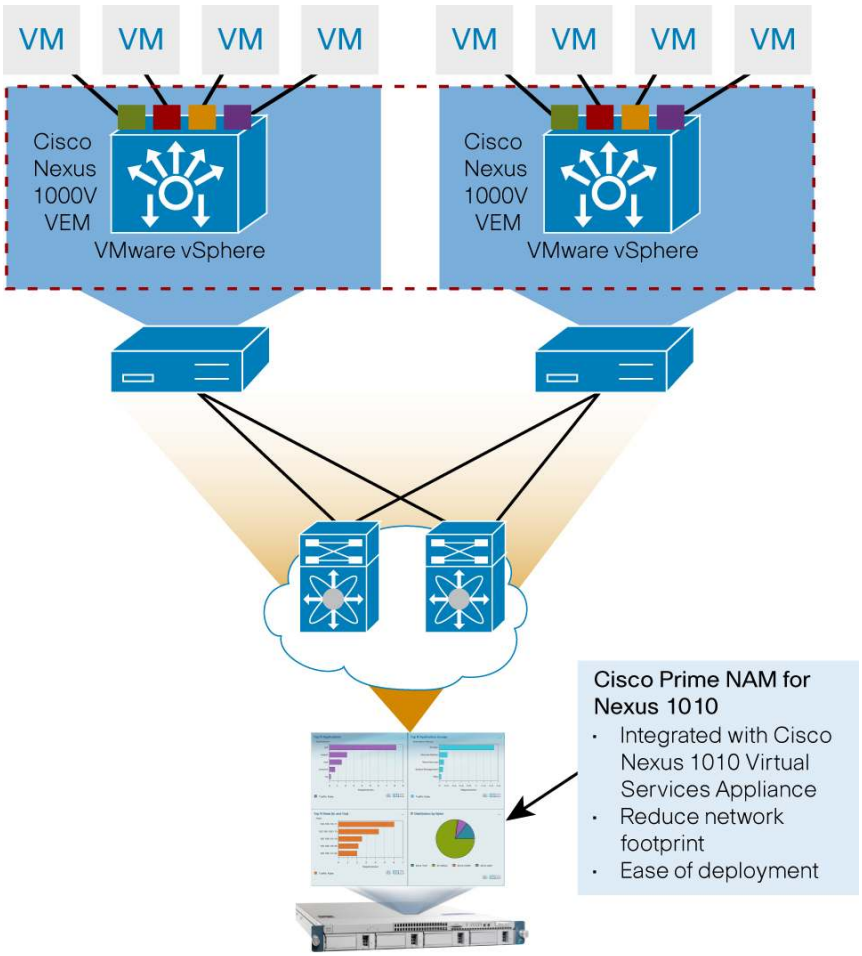
The Cisco Prime portfolio of enterprise and service provider management offerings supports integrated lifecycle management of Cisco architectures and technologies based on a service-centric framework. Built on an intuitive workflow-oriented user experience, Cisco Prime products help increase IT productivity and reduce operations costs through innovative management solutions for the network services, infrastructure, and endpoints.

Integrated with the Cisco Nexus 1010 appliance, the Cisco Prime NAM offers combined network and application performance visibility essential to address service delivery challenges in next-generation data centers. The Cisco Prime NAM for Nexus 1010 allows you to effectively use embedded management features, such as Encapsulated Remote Switched Port Analyzer (ERSPAN) and NetFlow, on the Cisco Nexus 1000V Switch 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 application 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, Cisco Prime NAM allows you to monitor the network and virtual machines uninterrupted by VMotion operations.

Figure 1. Cisco Prime NAM for Nexus 1010 Deployment



Cisco Prime NAM Software 5.1 for Nexus 1010 introduces next-generation graphical user interface that enable you to quickly access critical network information to accelerate performance troubleshooting and advance optimization decisions. The key new features as described in Table 1.

Table 1. New Features in Cisco Prime NAM Software 5.1 for Cisco Nexus 1010

Feature	Benefit
Reinspired user experience	Cisco Prime NAM Software 5.1 for Cisco Nexus 1010 introduces a next-generation GUI that helps accelerate troubleshooting and optimization decisions. It offers preconfigured dashboards that provide a comprehensive graphical overview of network performance so you can immediately grasp if all is well or if a problem is emerging. It also includes prepackaged interactive reports with helpful features such as contextual navigation, advanced filters, and one-click packet captures.
Flexible site-based monitoring	This feature allows you to view network and application performance by logical groupings or sites that you can create to mirror your network topology. For example, you can create sites by geographic locations, departments, or even managed customer networks and view performance data on a per site basis making it easier to obtain both a global and local view of how your applications are performing.
Historical analysis with embedded Performance Database	The new Performance Database stores computed data so you can go back to the past to learn what happened on your network when a particular event occurred. The data is available to troubleshoot unanticipated performance issues or to analyze optimization needs.
Packet Capture, Decodes and Error Scan	Cisco Prime NAM for Nexus 1010 implements packet capture on ERSPAN data source to help investigate and troubleshoot complex performance problems. Cisco NAM's capture and decode capability provides depth and insight into data analysis using trigger-based captures, filters, decodes, and a capture analysis toolset to quickly pinpoint and resolve problem areas. The new Packet Capture Error Scan automatically highlights packet-level anomalies eliminating the need to manually inspect the packet data to find the "needle in the haystack."
NetFlow Version 9 Data Export	By exporting analytics in a standardized format, this new capability allows you to use computed NAM data to feed in-house or third-party reporting applications that you already own, building up additional value and building out existing investments.

Features and Benefits

Traffic Analysis

As an integrated solution, Cisco Prime NAM for Nexus 1010 offers real-time traffic analysis views and long-term interactive reports to help enable network administrators to analyze and optimize the performance of the virtual and physical network. Cisco Prime NAM can analyze NetFlow data exports or ERSPAN packet streams from the Cisco Nexus 1000V Switch to gather information on applications, hosts, virtual machines, and conversations.

Application monitoring identifies applications on the network, reports how much bandwidth has been consumed, and detects which hosts or virtual machines are using which applications. Host and conversation pair monitoring provides bandwidth consumption per host or virtual machine and shows which hosts/virtual machines are talking to each other. Monitoring applications, hosts, virtual machines, and conversations can help to spot bottlenecks before the virtual network suffers blows to performance and availability.

Besides delivering a real-time snapshot of bandwidth usage and consumption, Cisco Prime NAM can also deliver a longer term view (Figure 2) of how the bandwidth was used so the network administrator can analyze trends.

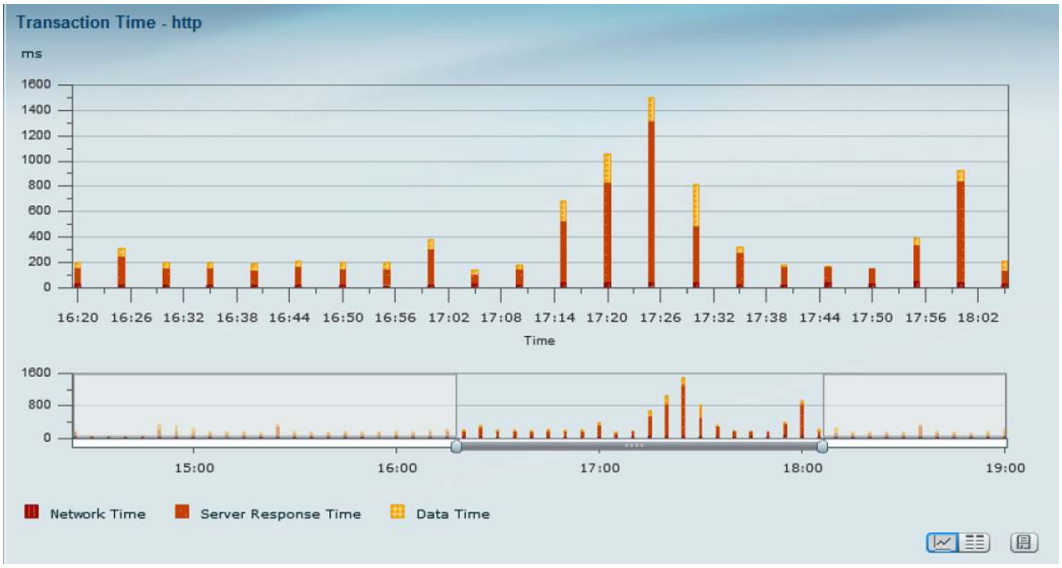
Figure 2. Granular Analysis of Application Traffic on the Network

Application Performance Intelligence

Cisco Prime NAM analyzes the TCP-based network transactions to provide comprehensive set of statistics to help troubleshoot application response time issues. It allows network administrators to analyze performance metrics, such as network delay, round-trip time, retransmission time, and so on, to identify the cause of degradation. For example, server resource issues affecting application performance can be identified by network metrics such as application delay and server response time. Figure 3 provides a glimpse into application response time analysis

report which shows increase in the transaction time for HTTP application attributing the cause to be increase in server response time.

Figure 3. Isolating Application Response Time Issues

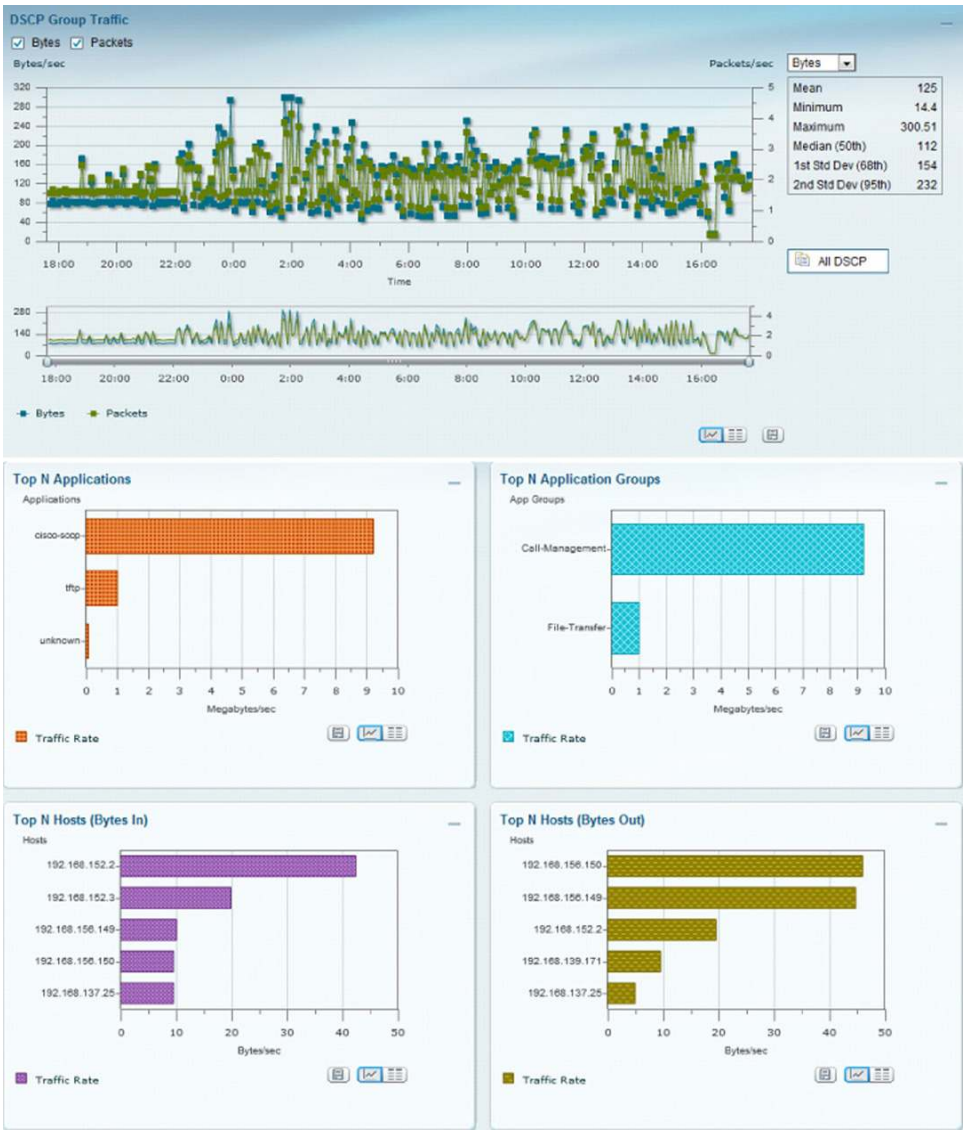


The application performance data can also be analyzed over time to identify trends. The capability allows administrators to assess the impact on application performance due to changes such as dynamic virtual machine creation, virtual machine migration, port profile updates, and so on.

Quality of Service Analysis

Using the Cisco Prime NAM DiffServ monitoring capabilities, applications, hosts, and conversations participating in each grouping of DiffServ classes can be identified (Figure 4). This information can be used to validate and fine-tune QoS planning assumptions when creating or updating port profiles. It can also be used to detect whether an application is misclassified or contending for limited virtual network resources with non-business critical traffic.

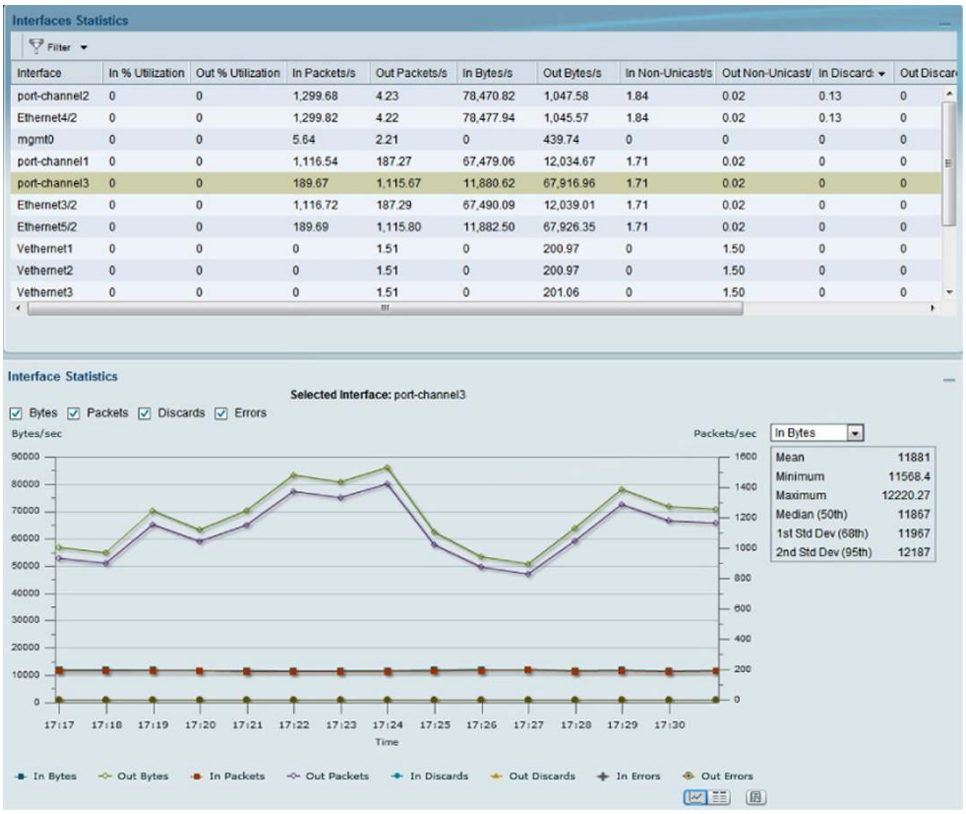
Figure 4. DiffServ monitoring capabilities to validate QoS Policy



Interface Monitoring

The Cisco Prime NAM for Nexus 1010 offers visibility into traffic statistics (Figure 5) for both virtual and physical interfaces in order to quickly troubleshoot application performance issues. Network administrators can configure any of the Cisco VSMs coresiding on the Cisco Nexus 1010 or 1010-X Virtual Services Appliance as managed device to 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.

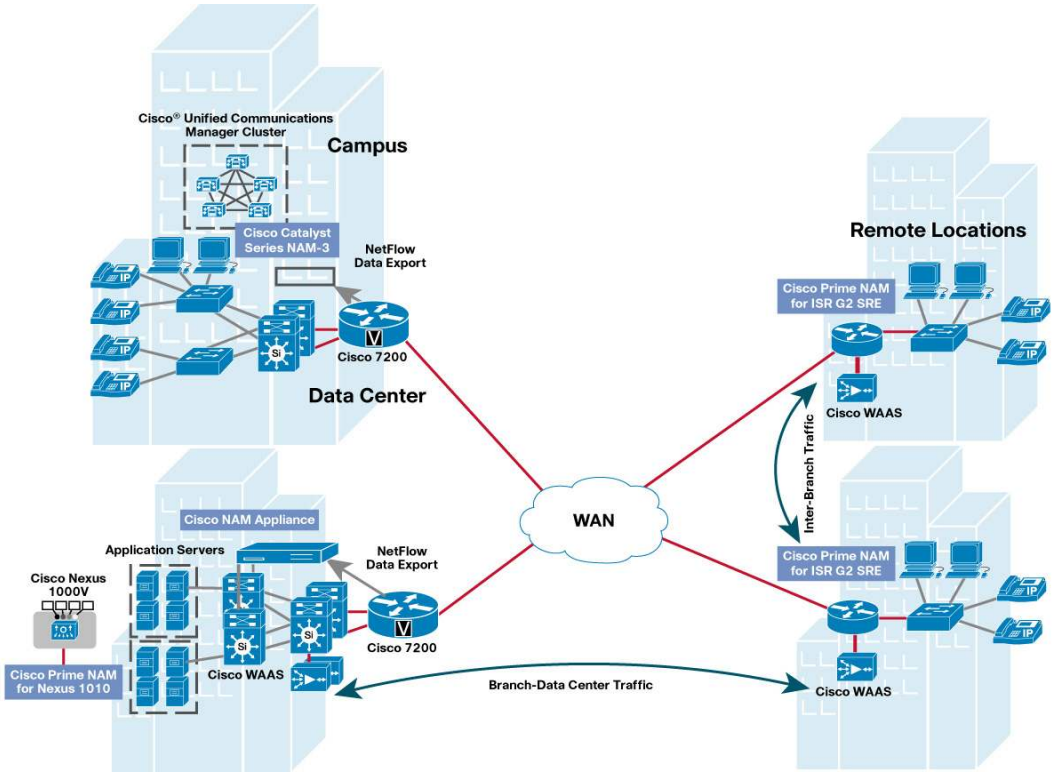
Figure 5. Monitoring Interfaces with Cisco Prime NAM



Bring It All Together

As flexible advanced Cisco instrumentation, the Cisco NAMs can be deployed at places in the network necessary for end-to-end network and application performance visibility. In an example scenario illustrated in Figure 6, Cisco Prime NAM for Nexus 1010 is deployed with the Cisco Nexus 1010 or 1010-X appliance in the data center for operational visibility into Cisco Nexus 1000V deployments. This integrated solution allows you to monitor virtual network behavior and analyze communication across virtual machines to gain performance visibility into applications deployed in virtual computing environment.

Figure 6. Integrated Network and Application Performance Visibility Across the Network



The intelligence from Cisco Prime NAM for Nexus 1010 can optionally be combined with other NAM form factors such as Cisco Catalyst® 6500 Series NAM, Cisco NAM appliance, or Cisco Prime NAM for ISR G2 SRE deployed in the data center, campus, or remote sites to provide enterprisewide visibility.

Using standards-based API, Third-party applications can gather application and network performance information from Cisco Prime NAMs deployed across the network for consolidated networkwide reporting. Such applications complement the granular performance visibility offered by Cisco 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.

Licensing

Cisco Prime NAM for Nexus 1010 licensing is based on Cisco Software Licensing. Additional details can be obtained at http://www.cisco.com/go/clm. The Cisco Prime NAM for Nexus 1010 is available preloaded on the Cisco Nexus 1010 or 1010-X appliance with a 60-day evaluation license. Customers can also download the Cisco Prime NAM for Nexus 1010 at Cisco Software Center.

Product Specifications

Table 2 provides the specifications for the Cisco Prime NAM for Nexus 1010.

Table 2. Product Specifications

Feature	Description
Supported Platforms	Cisco Prime NAM for Nexus 1010 can be installed on the Cisco Nexus 1010 or 1010-X appliance. For more information on the Cisco Nexus 1010 appliance, please refer to the http://www.cisco.com/en/US/products/ps10785/index.html.
Supported Data Sources	• ERSPAN • NetFlow (versions 1, 5, 6, 7, 8, and 9)

Feature	Description
Supported Interfaces	• HTTP/HTTPS with embedded web-based Cisco Prime NAM Software • Simple Network Management Protocol Version 1 (SNMPv1) and SNMPv2c, with standards-based applications
Performance	• Using the ERSPAN data source, traffic monitoring throughput of up to 520 Mbps has been characterized at an average packet size of 512 bytes for the Cisco Prime NAM Software installed on Cisco Nexus 1010 Virtual Services Appliance. Your monitoring performance may differ based on factors such as packet size, traffic burstiness, and collections enabled on the NAM. Contact your Cisco sales representative to obtain further information about Cisco Prime NAM for Nexus 1010 performance characteristics
NAM Traffic Analyzer	• Web-based: Requires Microsoft Internet Explorer 8.0+ or Firefox 3.6+; Supports both English and Japanese versions • Supports Secure Sockets Layer (SSL) security with up to 256-bit encryption • Role-based user authorization and authentication locally or using TACACS+
MIBs	The Cisco NAMs are standards compliant and support the following major MIB groups: • MIB-II (RFC 1213) - All groups except Exterior Gateway Protocol (EGP) and transmission • RMON (RFC 2819) - Alarm and Event groups only • RMON2 (RFC 2021) - trapDestTable only • Cisco Discovery Protocol • EntityMIB (RFC 2737)
Protocols	Cisco Prime NAM identifies hundreds of unique protocols and automatically detects unknown protocols. Cisco Prime NAM also allows customization of the protocol engine by defining protocols on a single port or on a range of ports. Protocols supported include (this list is not all-inclusive): • 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 protocols • Mobile IP protocols including General Radio Packet Service (GPRS) Tunneling Protocol (GTP) • Storage area network protocols • Database protocols • Peer-to-peer protocols • Switch and router protocols • Cisco proprietary protocols • Unknown protocols by TCP/UDP ports, Remote Procedure Call (RPC) program numbers and so on

Warranty Information

Find warranty information on Cisco.com at the Product Warranties page.

Ordering Information

Cisco Prime NAM for Nexus 1010 is available for purchase through regular Cisco sales and distribution channels worldwide. To place an order, visit the Cisco Ordering Homepage. To download software, visit the Cisco Software Center. Table 3 provides ordering information for Cisco Prime NAM.

Table 3. Ordering Information for Cisco Prime NAM for Nexus 1010

SKU	Description
N1K-C1010NAM51-K9	Cisco Prime NAM Software 5.1 for Nexus 1010
N1K-C1010NAM51-K9=	Cisco Prime NAM Software 5.1 for Nexus 1010 Spare
L-N1KC10NAM51-K9=	Cisco Prime NAM Software 5.1 for Nexus 1010 (eDelivery)
N1K-C10NAM5UP-K9=	Cisco Prime NAM Software Upgrade from 4.x to 5.1 for Nexus 1010
L-N1KC10NAM5UP-K9=	Cisco Prime NAM Software Upgrade from 4.x to 5.1 for Nexus 1010 (eDelivery License Only)

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risk, or accelerate growth, we have a service that can help you. For information about Cisco Services, go to http://www.cisco.com/go/services. Table 4 shows the technical support services available for NAM for Cisco Nexus 1010 and NAM for WAAS VB.

Table 4. Cisco Technical Services

Technical Services
Cisco Software Application Support Service • Access to application software maintenance and minor updates • Around-the-clock, global access to Cisco TAC engineers with specialized application software expertise • Unrestricted access to the extensive Cisco.com resources, communities, and tools

For More Information

For more information about Cisco Prime NAM for Nexus 1010, visit: http://www.cisco.com/go/1000nam, contact your local account representative, or email the Cisco Prime NAM product marketing group at nam-info@cisco.com. For additional information about the Cisco Nexus 1000V Series, visit http://www.cisco.com/go/nexus1000v. For more information about the Cisco Prime NAM product family, visit http://www.cisco.com/go/nam.

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