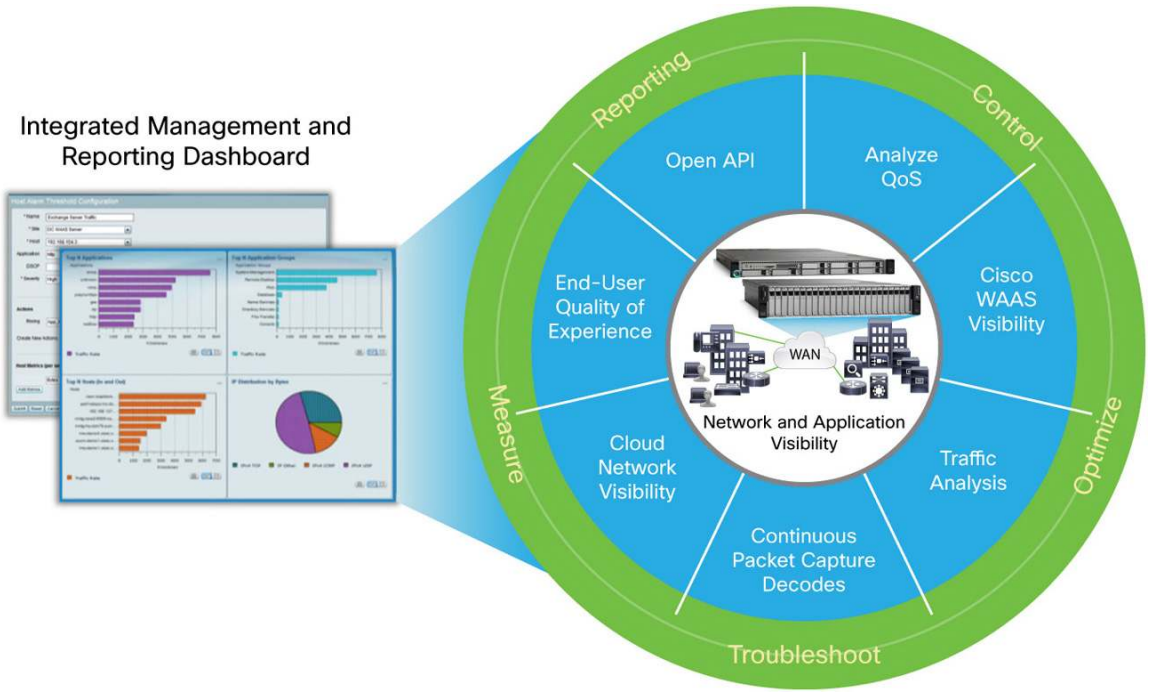
Cisco Prime NAM 2300 Series Appliances with Software Version 5.1.3

Consistent and accurate visibility across today's multigigabit networks is essential for managing the delivery of your business-critical applications and improving end-user experience. Knowing who is using the network, what applications are running on the network, how the applications are performing, and how traffic over the network is being used is the foundation for effective service delivery whether you are rolling out a new business application, undertaking WAN optimization, verifying quality of service (QoS) policies, optimizing network resources, or troubleshooting application performance issues.

Product Overview

Cisco Prime™ NAM 2300 Series Appliances are next-generation, purpose-built devices that uniquely combine packet- and flow-based network intelligence to help solve complex performance issues in your network. The integrated dashboard (Figure 1) allows you to undertake multidimensional analysis, dive deeper into the network, and quickly get access to critical information to help ensure that business-critical applications are able to meet committed service levels. And, when there's a problem, Cisco Prime NAM appliances can help you find it fast, reducing the time it takes to resolve the problem from days to just minutes.

Figure 1. Cisco Prime NAM 2300 Series Appliances Functional Overview



Cisco Prime NAM 2300 Series Appliances take full advantage of leading-edge Cisco Unified Computing System™ (Cisco UCS®) C220/240 M3 rack-server platforms to deliver unparalleled performance, reliability, and manageability. The series comprises two appliance models (Figure 2), the Cisco Prime NAM 2320 Appliance and the Cisco Prime NAM 2304 Appliance designed to meet diverse performance analysis needs in scalable multigigabit switching and routing environments.

Figure 2. NAM 2320 and NAM 2304 Appliances

The Cisco Prime NAM 2320 Appliance includes two 10 Gigabit Ethernet monitoring interfaces and sixteen 1 TB enterprise class Serial Advanced Technology Attachment (SATA II) hard disk drives with an option to upgrade to twenty-four drives at the time of ordering. The Cisco Prime NAM 2304 includes four 1 Gigabit Ethernet monitoring interfaces and eight 1 TB enterprise class Serial Advanced Technology Attachment (SATA II) hard disk drives.

The NAM 2320 Appliance is well suited for deployments in the data center, enterprise campus core, and service provider networks. The NAM 2304 Appliance caters well to the needs in enterprise unified access and campus, WAN edge, and managed remote sites.

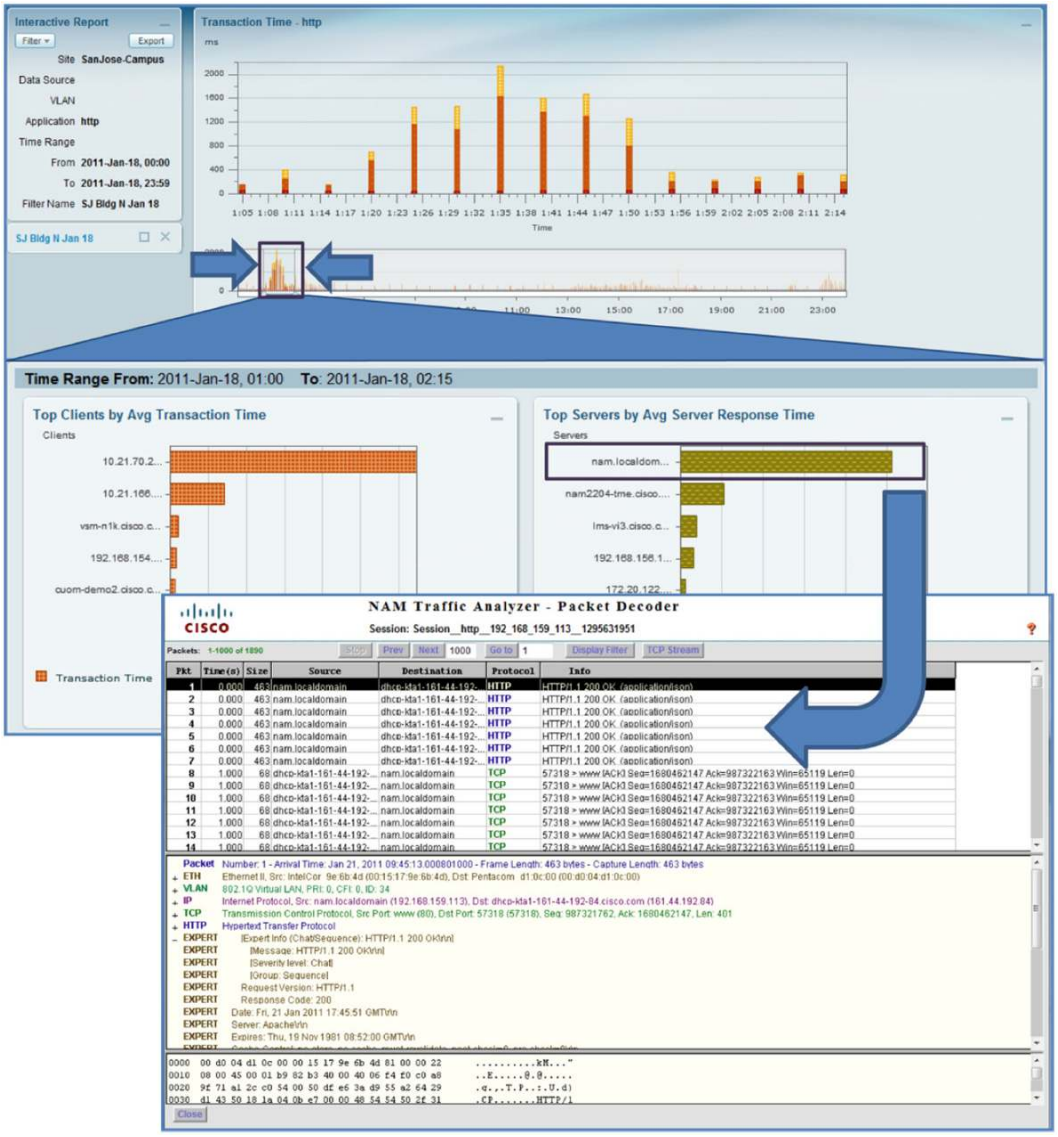
Cisco Prime NAM Improves Operational Efficiency

With wired/wireless convergence, growing complexity in application deployment architectures, rapid adoption of virtualization and cloud, and increasing network traffic rates, network teams are constantly challenged with the task of ensuring that the network performs to the rigorous needs of the business. Cisco Prime NAM 2300 Appliances deliver the performance and agility needed to tackle this challenge.

Cisco Prime NAM 2300 Appliances exploit their high-performance packet acquisition capability, line-rate hardware filters, and advanced analytics to deliver granular traffic statistics, rich application performance metrics, voice quality metrics, and deep, insightful packet captures. Extensive storage allows you to go back in time to understand what happened in the past when an event that affected network performance occurred. The capability can be utilized at critical observation points across the network to improve the operational effectiveness of Cisco® Borderless Networks and the Cisco Data Center Fabric Path solution architectures. For example, Cisco Prime NAM can help you get the most from your WAN optimization investment, assess the impact of virtual machine (VM) mobility, or troubleshoot network bottlenecks in the data center.

Cisco Prime NAM includes integrated dashboards (Figure 1) that provide an at-a-glance view of network and application performance and intuitive workflows that help you speed up problem detection and resolution. Using techniques such as contextual navigation, interactive reports, and one-click packet captures (Figure 3) you can get to the root cause of the issue highlighted on the dashboard. All of this can be remotely accessed from anywhere so that you can know how the network is performing at any time. The visibility helps to accelerate troubleshooting, advance resource optimization decisions, and deliver consistent end-user experience.

Figure 3. Application Performance Troubleshooting Workflow



Cisco Prime NAM 2300 Series Appliances Features and Benefits

The Cisco Prime NAMs offer an extensive set of features (Table 1) that provide a multilayer view of network performance to help you successfully navigate the labyrinth of application delivery challenges in today's hyperconnected world. They provide the foundation of knowing, giving you the edge in managing and improving network and application performance. Detailed descriptions of software feature and benefits can be obtained from the Cisco Prime NAM Software data sheet.

Table 1. Cisco Prime NAM 2300 Series Appliances Features and Benefits

Feature	Benefit
Application Performance Intelligence	Tracks up to 400,000 concurrent client-server transactions to characterize end-user experience and isolate application latency issues to the network, server, or the application to minimize any triage process.
Voice/Video Monitoring and Troubleshooting	Monitors up to 20,000 concurrent Real-time Protocol (RTP) streams to troubleshoot voice quality issues in real time. Mean Opinion Score (MOS) is computed based on ITU-T Recommendation G.107, which offers accurate characterization of voice quality.
Traffic Analytics	Analyzes traffic trends by hosts, conversations, and applications that consume critical network resources. Validates differentiated services code point (DSCP)/QoS profile and detects anomalous behavior that may indicate inappropriate use of network resources or imminence of performance degradation.
Extensive Packet Captures	Solve complex performance issues, taking advantage of rich capture filters, trigger-based captures, and built-in error scan.
Combined Flow- and Packet-Analytics	Gains multidimensional perspective by analysis of NetFlow and packet data in the same solution.
WAN Optimized Network Visibility	Obtains proof points that demonstrate how Cisco Wide Area Application Services (WAAS) has improved application delivery.
Cloud Network Visibility	Extends visibility into the VM network, including interactions across virtual machines and virtual interfaces. Monitors the virtual machine even while being migrated.
Site-Based Monitoring	Tracks site-specific performance data for troubleshooting, optimization, or capacity decisions. A site can be used to represent geographic locations, departments, or even managed customer networks.
Monitoring of Virtual Switching System (VSS) Deployments	Monitors both virtual switches in VSS environments, reducing management overhead while improving operational efficiency.
Open Interface (REST/XML)	Configures NAMs and exports computed data to feed in-house or third-party reporting applications that you already own, preserving investments into existing assets.

Management

Cisco Integrated Management Controller (IMC) is a built-in management service with the Cisco Prime NAM 2300 Series Appliances. IMC uniquely differentiates the solution with simplified management through a web-based GUI to access, configure, administer, and monitor the appliance. Some of the IMC functions include:

- Power on, power off, power cycle, reset, and shut down the appliance
- Toggle the locator LED to locate the NAM appliance with blinking blue LED in the lab
- Manage remote presence with the keyboard, video, and mouse (KVM) console. The console is an interface accessible from IMC and emulates a direct KVM connection to the appliance. The KVM console allows you to connect to the appliance from a remote location. It also provides the Virtual Media feature that is used for recovery/ISO install

Cisco Prime Integration

Cisco Prime for Enterprise is an innovative strategy and portfolio of management products that empower IT departments to more effectively manage their networks and the services they deliver. Cisco Prime is built upon a network services management foundation and a set of common attributes. It delivers an intuitive workflow-oriented user experience across Cisco architectures, technologies, and networks. Cisco Prime simplifies network management, improves operations efficiency, reduces errors, and makes the delivery of network services more predictable.

Cisco Prime supports integrated lifecycle management of networks, services, and endpoints for Cisco borderless network, data center, and collaboration architectures with end-to-end assurance. Cisco Prime Infrastructure can centrally manage the Cisco Prime NAM appliance with functions such as inventory, configuration, and image and fault management. It can also roll up the performance intelligence from NAMs deployed across the network into a consolidated dashboard.

Product Specifications

Table 2 lists the product specifications.

Table 2. Product Specifications

NAM2304 Feature	Description
Chassis	One rack unit (RU)
Processor	Two Intel Xeon E5-2609 processors
Memory	48 GB (6x8GB) industry-standard double data rate (DDR3) main memory
Hard Disk Drive	8 TB (8x1TB) hot-swappable, enterprise class SATA II; RAID 1 on two drives (hosting the operating system and embedded performance database) and RAID 5 on the rest of the drives used for packet capture storage
Monitoring Ports	Four 1 Gbps 10/100/1000Base-T RJ-45 or four 1 Gbps Small Form-Factor Pluggable (SFP) including multimode 850 nm SR, single-mode 1310 nm LR, 1000BASE-T, 10/100/1000BASE-T
Management Port	10/100/1000 RJ-45
Monitoring and Capture Performance	Traffic monitoring throughput (sustained)*: 3.8+ Gbps Full packet capture to disk (sustained)*: Up to 1.9 Gbps Number of monitored RTP streams (concurrent): 20,000 Number of monitored client-server transactions (concurrent): 400,000 * Characterized based on typical traffic conditions simulated on the test bed
Physical Dimensions (H x W x D)	One RU: 1.7 x 16.9 x 28.5 in. (4.32 x 43 x 72.4 cm)
Temperature: Operating	32 to 104℉ (0 to 40℃) (operating, sea level, no fan fail, no CPU throttling, turbo mode)
Temperature: Nonoperating	-40 to 158℉ (-40 to 70℃)
Humidity: Operating	10 to 90 percent noncondensing
Humidity: Nonoperating	5 to 93 percent noncondensing
Altitude: Operating	0 to 10,000 ft (0 to 3000m); maximum ambient temperature decreases by 1℃ per 300m)
Altitude: Nonoperating	0 to 40,000 ft (12,000m)
NAM2320 Feature	**Description**
Chassis	Two RU
Processor	Two Intel Xeon E5-2640 processors
Memory	48 GB (6x8GB) industry-standard double data rate (DDR3) main memory
Hard Disk Drive	24 TB (24x1TB) or 16 TB (16x1TB), hot-swappable, enterprise class SATA II; RAID 1 on two drives (hosting the operating system and embedded performance database) and RAID 5 on the rest of the drives used for packet capture storage
Monitoring Ports	Two 10 Gbps Small Form-Factor Pluggable plus (SFP+) including multimode 850 nm SR, single-mode 1310 nm LR, single-mode 1550 nm ER, passive direct attach copper CR
Management Port	10/100/1000 RJ-45
Monitoring and Capture Performance	Traffic monitoring throughput (sustained)*: 17+ Gbps Full packet capture to disk (sustained)*, **: Up to 11.5 Gbps Number of monitored RTP streams (concurrent): 20,000 Number of monitored client-server transactions (concurrent): 400,000 * Characterized based on typical traffic conditions simulated on the test bed ** Achieved with 24x1TB HDD configuration
Physical Dimensions (HxWxD)	Two RU: 3.4 x 17.5 x 28.0 in. (8.7 x 44.5 x 71.2 cm)
Temperature: Operating	32 to 104℉ (0 to 40℃) (operating, sea level, no fan fail, no CPU throttling, turbo mode)

Temperature: Nonoperating	-40 to 158℉ (-40 to 70℃)
Humidity: Operating	10 to 90 percent noncondensing
Humidity Nonoperating	5 to 93 percent noncondensing
Altitude: Operating	0 to 10,000 ft (0 to 3000m); maximum ambient temperature decreases by 1℃ per 300m)
Altitude: Nonoperating	40,000 ft (12,000m)
All NAM Appliances	**Description**
Supported Topologies and Data Sources	• LAN: Switched Port Analyzer (SPAN), Remote SPAN (RSPAN), Encapsulated RSPAN (ERSPAN), VLAN access control list (VACL)-based captures, NetFlow (versions 1, 5, 6, 7, 8, and 9), and WAAS Flow Agent, Performance Agent (PA) • WAN: NetFlow (versions 1, 5, 6, 7, 8, and 9) from local and remote devices, VACL-based captures for FlexWAN/Optical Service Module (OSM) and Shared Port Adapter (SPA) interfaces, and WAAS Flow Agent, Performance Agent (PA)
Managed Device Support	Cisco Prime NAM 2300 Series Appliances can be deployed with any network device that can be configured with a standard data source (see above) such as SPAN, RSPAN, ERSPAN, NetFlow. The implementation of the Managed Device feature differs by the type of network device. Please read the NAM 5.1.3 Release Notes for any limitations that may apply. The Managed Device feature allows Cisco Prime NAM to poll the device health and interface/port statistics using Simple Network Management Protocol (SNMP).
Time Synchronization	Network Time Protocol (NTP)
Supported Interfaces	• HTTP/HTTPS with embedded web-based Cisco Prime NAM Software • SNMPv1, v2c, and v3, with standards-based applications
Cisco Prime Network Analysis Module Software	• Cisco Prime NAM Software 5.1.3 • Web based: Requires Microsoft Internet Explorer 9 or Firefox ESR (version 10) • 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 Prime 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. The 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 • Voice over IP (VoIP) including H.323, 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 Packet Radio 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

Regulatory Standards

Table 3 lists regulatory standards compliance information.

Table 3. Regulatory Standards Compliance: Safety and EMC

Specification	Description
Safety	• UL 60950-1 No. 21CFR1040 Second Edition • CAN/CSA-C22.2 No. 60950-1 Second Edition • IEC 60950-1 Second Edition • EN 60950-1 Second Edition • IEC 60950-1 Second Edition • AS/NZS 60950-1 • GB4943 2001
EMC: Emissions	• 47CFR Part 15 (CFR 47) Class A • AS/NZS CISPR22 Class A • CISPR2 2 Class A • EN55022 Class A • ICES003 Class A • VCCI Class A • EN61000-3-2 • EN61000-3-3 • KN22 Class A • CNS13438 Class A
EMC: Immunity	• EN55024 • CISPR24 • EN300386 • KN24

Warranty Information

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

Ordering Information

To place an order, visit the Cisco Ordering Homepage. See Table 4 for part numbers. When ordering the Cisco Prime NAM 2320 Series Appliance, you have the option to upgrade the hard disk drives to maximize the performance of full packet capture to disk. The default hard disk drive configuration (16x1TB) can be upgraded to 24x1TB drives using the upgrade pack (8x1TB) part number NAM-8PD1TBSATA.

Cisco Prime NAM Software version 5.1.3 will be delivered preloaded with your NAM 2300 Series Appliance. To download software and software updates, visit the Cisco Software Center.

Table 4. Ordering Information

Cisco Prime NAM 2304-RJ45 Appliance	Part Number
Cisco Prime NAM 2304 Appliance, Four 1 Gb Ethernet, RJ-45	NAM2304-RJ45-K9
Cisco Prime NAM Software 5.1(3)	NAM-APPL-SW-51U-K9
Cisco Prime NAM 2304-SFP Appliance	**Part Number**
Cisco Prime NAM 2304 Appliance, Four 1 Gb Ethernet, SFP	NAM2304-SFP-K9
Cisco Prime NAM Software 5.1(3)	NAM-APPL-SW-51U-K9

Cisco Prime NAM 2320 Appliance	Part Number
Cisco Prime NAM 2320 Appliance (With 16x1TB SATA II Drives)	NAM2320-K9
Hard Disk Drive Upgrade Pack (8x1TB SATA II Drives) - Optional	NAM-8PD1TBSATA
Cisco Prime NAM Software 5.1(3)	NAM-APPL-SW-51U-K9

For ordering convenience, the SFP and SFP+ module part numbers (Table 5) are available on the Cisco Ordering Homepage when ordering Cisco Prime NAM 2300 Appliances.

Table 5. SFP Ordering Information

For Cisco Prime NAM 2320 Appliance

Product Name	Part Number	Ordering Information
10GBASE-SR SFP+ Module for MMF	SFP-10G-SR=	Refer to the Cisco 10GBASE SFP+ Modules data sheet for ordering information related to these Cisco SFP+ modules and related cables.
10GBASE-LR SFP+ Module for SMF	SFP-10G-LR=	
10GBASE-ER SFP+ Module for SMF	SFP-10G-ER=	

For Cisco Prime NAM 2304 Appliance with SFP Modules

Product Name	Part Number	Ordering Information
1000BASE-T Standard	GLC-T=	Refer to the Cisco SFP Modules data sheet for ordering information related to these Cisco SFP modules.
1000BASE-SX Short Wavelength; With DOM	GLC-SX-MMD=	
1000BASE-LX/LH Long-Wavelength; With DOM	GLC-LH-SMD=	

Cisco Services

Services from Cisco and Our Partners

Realize the full business value of your technology investments with smart, personalized services from Cisco and our partners. Backed by deep networking expertise and a broad ecosystem of partners, Cisco Services help enable you to successfully plan, build, and run your network as a powerful business platform. Whether you are looking to quickly seize new opportunities to meet rising customer expectations, improve operational efficiency to lower costs, mitigate 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 6 shows the technical support service recommended for NAM 2300 Series Appliances.

Table 6. Cisco Technical Services

Technical Services
Cisco SMARTnet® provides: • Global 24-hour access to Cisco Technical Assistance Center (TAC) • Access to online knowledge base, communities, and tools • Hardware replacement options, including 2-hour, 4-hour, and next business day* • Ongoing operating system software updates** • Smart, proactive diagnostics and real-time alerts on devices enabled with Smart Call Home

* Advance hardware replacement is available in various service-level combinations. For example, 8x5xNBD indicates that shipment will be initiated during the standard 8-hour business day, 5 days a week (the generally accepted business days within the relevant region), with next business day (NBD) delivery. Where NBD is not available, same day shipment is provided. Restrictions apply; please review the appropriate service descriptions for details.

** Cisco operating system updates include maintenance releases, minor updates, and major updates within the licensed feature set.

For More Information

For more information about Cisco Prime NAM 2300 Series Appliances, visit http://www.cisco.com/go/nam, contact your local account representative, or email the Cisco Prime NAM product marketing group at nam-info@cisco.com.

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