# Cisco Nexus 7000 Switches Network Analysis Module (NAM-NX1)

Virtualization and cloud technologies present exciting opportunities for business transformation, innovative service delivery models, and improved economics. At the same time, they introduce a new dimension of service delivery challenges that demand real-time application and network visibility to boost operational agility.

Product Overview

The Cisco Nexus® 7000 Network Analysis Module (NAM-NX1) is a high-performance services module (Figure 1) that offers comprehensive application awareness, rich performance analytics, and deep network visibility to simplify data center operations. It empowers network administrators with actionable details to characterize application experience, optimize use of network resources, and troubleshoot performance issues, improving service delivery in today's dynamic IT environment.

Figure 1.   Cisco Nexus 7000 Network Analysis Module (NAM-NX1)
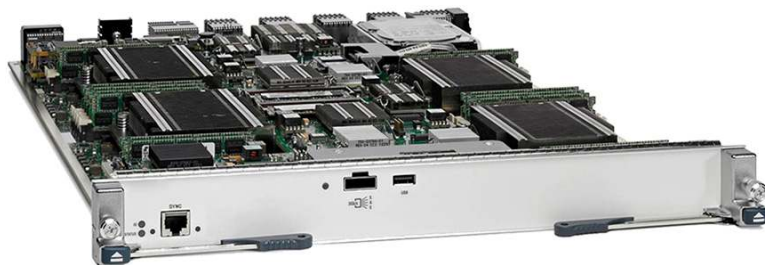
Integrated with Cisco Nexus 7000 Switches, the Cisco® NAM-NX1 delivers the visibility you need to take maximum advantage of the fabric for efficient service delivery in a distributed environment. It helps you to:

- Monitor application experience and isolate the cause of latency in the event of performance degradation.

- Gain deeper insight into virtualization and overlay technologies such as OTV, LISP, and VXLAN to optimally design the network for distributed and efficient services delivery. For instance, in OTV environments, Cisco NAM-NX1 can look inside each overlay to provide traffic statistics, application performance metrics, and their breakdown by host, applications, conversations, and ways to help you analyze and ensure effective use of these technologies.

- Accelerate troubleshooting with interactive reports and purpose-built workflows; you can analyze data in the context of the specific application, site, client, and server; and extend visibility consistently across physical and virtual environments.

- Preserve investment in existing management assets, supporting integration using standards-based API.

Designed to meet the rigorous demands of the data center, Cisco NAM-NX1 takes advantage of leading edge hardware and backplane integration with the Cisco Nexus 7000 Series chassis. The integration provides greater investment protection, lower total cost of ownership (TCO), improved power management, and reduced the network footprint saving premium rack space. It also enables collection of packets from the backplane, continuously or on demand, ensuring high reliability and accurate analytics.

Cisco Nexus 7000 NAM-NX1 Features and Benefits

The Cisco Nexus 7000 NAM-NX1 offers an extensive set of features that provide a multidimensional view into network and application performance to help you successfully tackle the service delivery challenges in today's dynamic IT environment (Table 1).

Table 1.   Cisco Nexus 7000 NAM-NX1 Features and Benefits

Feature	Benefit
Advanced application performance analytics	Characterize the application experience for TCP-based applications and isolate application response-time problems to the network, server, or application, to accelerate troubleshooting.
Application traffic analysis	View short-term and long-term network utilization by application, host, conversation, Differentiated Services Code Point (DSCP) group, and various overlay network technologies so you can make better network resource allocation decisions.
IEEE1588-based time synchronization	Packet capture from the backplane combined with a precise hardware time stamp improves accuracy of performance measurements such as jitter and application response time. The IEEE 1588 hardware time stamps also facilitate accurate packet capture analysis when merging captures from multiple NAMs to investigate complex application performance problems.
Visibility into Cisco OTV	Maximize the benefits of Cisco OTV-based extended Layer 2 implementations across data centers. The Cisco NAM deployed with Cisco Nexus 7000 Series Switches lets you profile traffic and troubleshoot OTV deployment problems.
Cisco TrustSec® policy validation	Validate Cisco TrustSec policy by using security group tags (SGTs) and evaluating the endpoints and hosts, applications, and conversations participating in one or more security groups.
Insight into data center protocols	Design data center overlay networks for optimal delivery of distributed applications. Supported protocols include OTV, LISP, MPLS, VXLAN, and so on.
Comprehensive voice quality monitoring and real-time troubleshooting	Gather real-time reports on mean opinion scores (MOSs) and other key performance indicators (KPIs) such as jitter and packet loss to understand and improve the way that the end user experiences the delivery of voice services. MOS is computed based on ITU-T Recommendation G.107, offering accurate characterization of voice quality. Combine monitoring with real-time troubleshooting using prepackaged dashboards to improve end-user service levels.
WAN-optimized network visibility	Obtain end-to-end proof points demonstrating how Cisco Wide Area Application Services (WAAS) has improved application delivery (for example, decreased application transaction times and improved WAN bandwidth utilization). Accelerate return on investment (ROI) by assessing the best site and application candidates for optimization as part of a phased rollout plan.
Deep, insightful packet analysis	Solve complex performance problems with trigger-based captures, scheduled captures, filters, decodes, and error scan features. Packet captures can be triggered based on performance thresholds, allowing you to focus on specific performance concerns. In addition, you can use external storage to collect extensive packet captures for offline analysis.
Advanced hardware and software filters	Reduce the time to gather critical network data, accelerating troubleshooting and analysis of network traffic behavior. Examples of the filter includes MPLS label, VLAN ID, Frame length, Layer 4 Protocol, Pattern Match.
Open interface	Preserve investment in existing management assets through integration based on a standards-based (REST/XML) API.

Product Specifications

Table 2 lists the specifications for the Cisco Nexus 7000 Series NAM-NX1.

Table 2.   Product Specifications

Feature	Description
High-performance architecture	• Two x86 CPU clusters, with a total of four 8-core CPUs and hardware-based packet acceleration, offering high-performance Gigabit Ethernet monitoring performance • Backplane connection for Switched Port Analyzer (SPAN) and Encapsulated Remote SPAN (ERSPAN) data sources • Inband management interfaces for NetFlow, ERSPAN, Cisco WAAS, and Cisco Performance Agent data sources • 64 GB DDR3 RAM • 900 GB SAS onboard hard disk drive • Mini SAS (front-panel connector), and Small Computer System Interface over IP (iSCSI) options for external storage interface • RJ-45 Gigabit Ethernet IEEE 1588 time synchronization port
Supported platforms	• Can be deployed in a slot on a Cisco Nexus 7000 Series Switch with the Cisco Nexus 7000 4-Slot, 9-Slot, 10-Slot, or 18-Slot Switch chassis supporting both the Cisco Nexus 7000 Series Supervisor 1 and 2 Modules • Supported with Cisco NX-OS Software version 6.2(2)
Supported topologies and data sources	• LAN: SPAN, Remote SPAN (RSPAN), ERSPAN, NetFlow (Versions 5 and 9), Cisco WAAS, and Cisco Performance Agent • WAN: NetFlow (Versions 5 and 9) from local and remote devices, VACL-based captures, and Cisco WAAS Flow Agent
Supported communication protocols	• HTTP and HTTPS with embedded web-based Cisco Prime NAM Software • Simple Network Management Protocol Version 1 (SNMPv1) and Version 2c, with standards-based applications
Cisco Prime™ NAM Software	• Cisco Prime NAM Software 6.0 • Web-based: Requires Microsoft Internet Explorer 9.0 or later or Mozilla Firefox ESR 10.0 or later • Support for SSL security with up to 256-bit encryption • Role-based user authorization and authentication locally or using TACACS+ **Note:** Refer to the Cisco Prime NAM 6.0 release notes for more information about supported system software versions
MIBs	The Cisco NAM is 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)
Applications and protocols	Cisco Prime NAM identifies hundreds of unique protocols (Layers 2 through 4) and automatically detects unknown protocols. It also supports URL-based application definition. Supported protocols include, but not limited to: • TCP and User Datagram Protocol (UDP) over IP, including IPv6 • HTTP and HTTPS • Voice over IP (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) • SAN protocols • Database protocols • Peer-to-peer protocols • Switch and router protocols • Cisco proprietary protocols • Unknown protocols by TCP/UDP ports and Remote Procedure Call (RPC) program numbers It allows customization of the protocol engine by defining protocols based on a single port or a range of ports. The custom application definition can be augmented by including the IP address in addition to port and port range.

Feature	Description
Physical dimensions	Dimensions (H x W x D): 1.733 x 15.3 x 21.9 in. (4.4 x 38.9 x 55.6 cm); occupies one slot in the chassis
Operating environment	• Operating temperature: 32 to 104°F (0 to 40°C) • Operational relative humidity: 5 to 90 percent, noncondensing • Storage temperature: –40 to 158°F (–40 to 70°C) • Storage relative humidity: 5 to 95 percent, noncondensing

Warranty Information

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

Ordering Information

Please see Table 3 for ordering information. To place an order, visit the Cisco Ordering homepage. Cisco Prime NAM Software Version 6.0 is preloaded with the service module. To download the software or updates, visit the Cisco Software Center.

Table 3.   Ordering Information

Description	Part Number
Cisco Nexus 7000 Series Network Analysis Module (NAM-NX1) (Spare)	N7K-SM-NAM-9G-K9(=)
Cisco Prime NAM Software version 6.0	N7K-NAM-SW-6.0-K9

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 4 shows the Technical Support Service recommended for the NAM Blade on the Cisco Nexus 7000 NAM-NX1.

Table 4.   Cisco Technical Services

Cisco SMARTnet
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

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[*] 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 ship 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 the Cisco Nexus 7000 NAM-NX1, visit http://www.cisco.com/go/nxnam, contact your local account representative, or email the Cisco NAM product marketing group at nam-info@cisco.com.

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