Cisco NAM 2200 Series Appliances with Software 5.1

Overview

Q. What are the Cisco® NAM 2200 Series Appliances?

A. The Cisco NAM 2200 Series Appliances provide comprehensive network and application visibility that empowers network administrators to optimize network resources, troubleshoot performance issues, and help ensure a consistent end-user experience. An extension of the Cisco Network Analysis Module (NAM) blades, the Cisco NAM 2200 Series Appliances offer next-generation performance, superior scalability, and maximum deployment flexibility, providing consistent performance visibility throughout the Cisco Borderless Network.

The design of the Cisco NAM 2200 Series Appliances is founded on the Cisco Common Appliance Model, Cisco's computing-optimized platform, and includes purpose-built hardware to maximize packet processing in high-speed networking environments. The results are robust appliances that provide granular traffic analysis, rich application performance measurements, exceptional voice quality of experience monitoring, and deep insightful packet captures.

The Cisco NAM 2200 Series Appliances with Software 5 comes with a next generation web-based graphical user interface (GUI) that includes prepackaged reports, workflows, and contextual navigation to expedite problem resolution and optimization decisions. It also comes with a Performance Database that stores historical data, allowing you to review what happened in the past when an event that affected network performance requires investigation. Other NAM Software 5 innovations can be found in the Cisco Prime Network Analysis Module Q&A.

Q. How many models of Cisco NAM 2200 Series Appliances are available?

A. Cisco offers two Cisco NAM 2200 Series Appliances: the Cisco NAM 2220 Appliance and the Cisco NAM 2204 Appliance. The Cisco NAM 2220 Appliance includes two 10 Gigabit Ethernet monitoring interfaces and six 146 GB SAS hard disk drives with RAID for monitoring in high-speed, high-density environments. The Cisco NAM 2220 comes with an option for redundant power. To extend uptime, both the hard disk drives and the power supplies are hot-swappable. The Cisco NAM 2204 includes four 1 Gigabit Ethernet monitoring interfaces and two 250 GB SATA hard disk drives to meet diverse performance analysis needs in scalable multi-gigabit switching and routing environments. The Cisco NAM 2204 is available in two models: the NAM2204-RJ45 (copper connection) and the NAM2204-SFP (optical connection).

Q. What are the key features and benefits of the Cisco NAM 2200 Series Appliances?

A. The key features and benefits of the Cisco NAM 2200 Series Appliances are provided in Table 1.

Table 1. Key Features and Benefits of the Cisco NAM 2200 Series Appliances

Feature	Benefit
Application performance intelligence	Characterize the end-user experience for TCP-based applications and isolate application response time problems to the network, server, or the application, minimizing any triage process.
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.

Feature	Benefit
Visibility into WAN-optimized networks	Demonstrate how Cisco Wide Area Application Services (WAAS) has improved application delivery.
Monitoring virtual machine (VM) network traffic	Extend operational visibility to the virtual switching layer with Cisco Nexus 1000V switch deployments. Gain insight into VM-to-VM interactions, virtual network traffic behavior, and virtual interface statistics. Monitors the VMs uninterrupted by VM migration.
Detailed Flow- and Packet-based traffic analytics	View short- and long-term performance data on hosts, conversations, and applications that use critical network resources.
LAN and WAN monitoring in one solution	Obtain performance visibility into traffic from local and remote switches and routers for comprehensive traffic monitoring.
Deep, insightful packet captures	Solve complex performance issues 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, utilize external storage to collect extensive packet captures for offline analysis
Visibility into Virtual Switch System (VSS) deployments	Monitor both virtual switches in VSS environments, reducing management overhead while improving operational efficiency.
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 quality of service (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 9 for data export). Facilitates integration with customer in-house managed applications or third-party reporting application of choice.
Anytime, anywhere access	Access the embedded Traffic Analyzer 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.

Q. **What are the business benefits of deploying Cisco NAM 2200 Series Appliances?**

A. Table 2 provides an overview of the business benefits that the NAMs offer.

Table 2.   Business Benefits of Deploying Cisco NAMs

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/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	• 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. **What are the primary differences between the Cisco NAM 2220 Appliance and the Cisco NAM 2204 Appliance?**

A. The NAM 2220 and the NAM 2204 share the same software, but differ in the following important ways:

- The NAM 2220 includes a more powerful processor and a faster packet-processing engine that provides more than four times the monitoring performance of the NAM 2204.

- The NAM 2220 includes higher density storage commensurate with its higher monitoring performance. Two of the NAM 2220's six SAS drives support RAID 1 to minimize downtime. The other four support RAID 0 to improve the speed at which capture data are written to the drives.

- The NAM 2220 includes an option for a redundant power supply. When a redundant power supply is available, the unit will continue to operate should a power supply fail. The failed power supply can then be replaced without having to power down the unit.
- The NAM 2220 supports up to two 10 Gigabit Ethernet optical connections.
- The NAM 2204 supports up to 1) four 10/100/1000 RJ-45 connections or 2) four 1 GbE optical connections.
- The form factor of the NAM 2220 is 2RU; the NAM 2204 is 1RU.
- As a result of the NAM 2220's higher monitoring performance, it offers higher scalability, supporting the monitoring of a larger number of conversations, Real Time Protocol (RTP) streams, WAAS connections, NetFlow records, and so on.

Q. **Is the Cisco NAM 2204 upgradeable to the Cisco NAM 2220?**

A. No. The NAM 2204 is a fixed configuration and cannot be upgraded to a NAM 2220.

Q. **What is the Cisco NAM Traffic Analyzer?**

A.

Q. **Where can the Cisco NAM 2200 Series Appliances be deployed in the network?**

A. The Cisco NAM 2200 Series Appliances are dedicated performance monitoring instrumentation and connect to the Switched Port Analyzer (SPAN) ports of a switch using copper or fiber optical interface modules. They can also connect to critical network links using third-party passive inline taps. They can be deployed in multiple places in the network and complement Cisco NAM blades to provide extensive network visibility. The Cisco NAM Appliances can be deployed at LAN aggregation points, for example, in the campus core and distribution layers, for always-on performance management; at services points, for example, in data centers or at Cisco Unified Communications Manager clusters in IP telephony networks, where assuring application delivery is critical; and in important access points, close to servers, key clients, in IP phone closets, where traffic monitoring is essential. They can also be deployed at WAN edges.

Technical Overview

Q. **How does the Cisco NAM with Software 5.0 work?**

A. The Cisco NAM offers an intuitive, web-based GUI with prepackaged reports, workflows, and contextual navigation to expedite problem resolution and optimization decisions. It provides quick access to the configuration menus and interactive reports on the performance of 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.

The Cisco NAM collects packets or flows (NetFlow Data Export [NDE]) being sent to it from the switch or router. The NAM parses the packets, gathers relevant data, and stores processed information in the Performance Database. This database provides valuable traffic information on voice, video, and data traffic, VLANs, Differentiated Services (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 interactive reports.

The packets that the Cisco NAM collects are defined by the user's selecting one or more data sources. Data sources, which are features of the switch, router, or WAAS device, are described in Table 3. The Cisco NAM has independent backplane interfaces to collect SPAN/VACL traffic and NDE/WAAS/ERSPAN.

Table 3. Cisco Catalyst 6500 Series and Cisco 7600 Series NAM Traffic Sources

Traffic Source	Description
SPAN, Remote SPAN (RSPAN), and Encapsulated RSPAN (ERSPAN)	Using the SPAN, RSPAN, and ERSPAN capabilities of Cisco Catalyst 6500 Series Switches, traffic from ports, VLANs, and EtherChannel links can be mirrored to the NAM. The NAM collects statistics on all layers of network traffic spanned to it. RSPAN allows traffic to be collected from other RSPAN-enabled devices in the same VLAN Trunk Protocol (VTP) domain. ERSPAN allows traffic to be sent to the NAM using generic routing encapsulation (GRE) tunnels from a Layer 3 network.
VACLs	The NAM uses VACLs to capture or "filter" selected VLANs and WAN traffic (on Cisco IOS® devices only) to the NAM ports. Additional filtering rules can also be applied to target specific data flows. The NAM must be specified as the capture destination for VACL entries when configuring the local supervisor.
NDE	NetFlow Data Export records offer an aggregate view of the network traffic. When enabled on the switch, the NetFlow data source becomes available on the Cisco NAM without the need to create any SPAN sessions. In addition, the NAM can receive NDE from remote devices for analysis.
WAAS	The NAM uses the built-in instrumentation on WAAS to gather information about the optimized and pass-through traffic to provide end-to-end application performance visibility in a Cisco WAAS environment. The information allows NAM to measure application response time, transaction time, bandwidth usage, and LAN/WAN data throughput to accurately quantify the impact of Cisco WAAS optimizations.

Q. **How does the Cisco NAM with Software 5use NetFlow?**

A. The Cisco NAM supports monitoring of both packet- and NetFlow-based traffic sources using independent backplane interfaces. These two data sources complement each other to provide a powerful and comprehensive monitoring solution. NetFlow can be used to gain an extensive view of the traffic to analyze who is using your network, what applications they're using, and how much bandwidth is being consumed. It can be combined with deeper investigation using packet analysis using traffic sources such as SPAN, VACL, ERSPAN, or RSPAN. Also, NetFlow can be used to obtain visibility into traffic where SPAN is not available (for example, WAN interfaces, remote router interfaces, and so on).

NetFlow can be enabled on interfaces of local or remote devices and sent to the NAM for analysis. As a consumer, the NAM can receive NetFlow packets on its management port from devices such as Cisco routers and switches. Those records are stored in its performance database as if that traffic had appeared on one of the NAM data ports. The NAM understands NetFlow versions 1, 5, 6, 7, 8, and 9. Incoming NetFlow data is parsed by the NAM, stored in its internal database, and presented in the GUI in the same way as traffic from other data sources.

Some network devices have more than one "engine" that is capable of independently exporting NetFlow. Depending upon features of the device, flows can be exported from multiple flow caches in the hardware and/or software. For example, supervisor and line cards may be able to independently export flows from their local caches. By default, NAM Software 5.0 will automatically create independent data sources for each engine exporting NetFlow records to NAM.

Q. **How do the Cisco NAM Appliances gain visibility into traffic from more than one switch or router?**

A. There are multiple ways to gain visibility into traffic from more than one device with the Cisco NAM Appliances:

- The NAM Appliances include more than one monitoring interface, which allow them to collect traffic from more than one device.
- The NAM Appliances can be used with a passive inline tap to monitor traffic from/between multiple devices.
- The LAN or WAN traffic from other devices can be directed to the NAM Appliances for analysis using RSPAN, ERSPAN, or NDE.

Q. **How many monitoring ports do the Cisco NAM Appliances support?**

A. The NAM Appliances support the following number of monitoring ports:

- Up to two 10 GbE monitoring ports on the NAM 2220
- Up to four 1 GbE monitoring ports on the NAM 2204

Q. **What data sources are received on the monitoring ports? On the management port?**

A. The following data sources are received on the:

- Monitoring ports: SPAN, RSPAN, VACL capture, tap
- Management port: ERSPAN, NDE, WAAS Flow Agent

Q. **Is there a limit on the number of SPAN sessions that the NAM Appliances can support?**

A. The NAM 2204 Appliance has four physical monitoring interfaces and can monitor up to four switches using SPAN at one time. The NAM 2220 has two physical monitoring interfaces and can monitor up to two switches using SPAN at one time. Check your switch documentation for the number of SPAN sessions it supports.

Q. **What are RAID 0 and RAID 1, and how do the appliances use RAID?**

A. RAID is a technology that employs the simultaneous use of two or more hard disk drives to achieve greater levels of performance, reliability, or larger data volume sizes. Redundancy is a way that extra data is written across the array, which is organized so that the failure of one disk (or sometimes more) in the array will not result in loss of data. A failed disk may be replaced by a new one, and the data on it reconstructed from the remaining data and the extra data. A redundant array allows less data to be stored. There are various combinations of these approaches giving different trade-offs of protection against data loss, capacity, and speed. RAID levels 0, 1, and 5 are the most commonly found, and cover most requirements. RAID 0 (striped disks) distributes data across several disks in a way that gives improved speed and full capacity, but all data on all disks will be lost if any one disk fails. RAID 1 (mirrored disks) could be described as a real-time backup solution. Two (or more) disks each store exactly the same data, at the same time, and at all times. Data is not lost as long as one disk survives. Total capacity of the array is simply the capacity of one disk. At any given instant, each disk in the array is simply identical to every other disk in the array.

The NAM 2220 Appliance uses both RAID 0 and RAID 1. RAID 0 is used on the four drives that support the storage of packet capture data. RAID 1 is used on the two drives that store the NAM operating system and reports data. The NAM 2204 Appliance does not use RAID.

Q. **What is a managed device?**

A. Typically, performance monitoring appliances have little to no knowledge of the devices that they are monitoring. The NAM blade on the other hand, as integrated instrumentation, automatically exchanges information with the device hosting it to learn about that device. This simplifies a number of configuration and monitoring tasks and also allows the NAM blade to provide critical health information about the hosted device. To duplicate this experience with the NAM 2200 Series Appliances, the concept of a managed device has been introduced. The managed device concept permits the creation of a communications channel between one of the devices being monitored and the NAM appliance. When a device is specified as the managed device, various configuration and monitoring tasks, such as configuring SPAN using the NAM GUI, can be more readily implemented, thus improving the user experience.

Q. **What interface modules are supported for each NAM Appliances platform?**

A. The interface modules supported for each NAM Appliance platform are indicated in Table 4.

Table 4.   Supported Interface Modules

NAM Model	Monitoring Ports	Interface Modules Part Number	Description
NAM 2220	Up to two	**XFP-10GBASE-SR**	10 GE XFP 850 nm SR
		XFP-10GBASE-LR	10 GE XFP 1310 nm LR
NAM 2204-SFP	Up to four	**GLC-T**	1000BASE-T SFP
		GLC-SX-MM	GE SFP SX Transceiver
		GLC-LH-SM	GE FP LX/LH Transceiver
NAM2204-RJ45	Up to four	-	RJ45 10/100/1000

Q. Must I purchase the XFPs from Cisco or can I purchase them elsewhere?

A. They can be purchased elsewhere, if desired. The qualified manufacturers of the XFPs are included in Appendix B of the Installation and Configuration Guide for the Cisco NAM 2220 Appliance at http://www.cisco.com/en/US/docs/net_mgmt/network_analysis_module_appliance/2220/installation/guide/instcfg .html. It should be noted that if the XFPs are not purchased Cisco, they would not be covered by Cisco SMARTnet.

Q. Can you provide more information on the use of a tap as a data source?

A. Yes. A tap device can be used to obtain a copy of traffic flows between two network devices. Passive taps, such as optical tap devices, help ensure that the flowing traffic is not altered regardless of its connection to the NAM Appliance and provide a very low point of failure. Traffic flows will be interrupted while you connect a tap, but doing so should take less than a minute and can be done during a network maintenance window. NAM Appliances are designed to receive tapped network traffic from both directions and from multiple links simultaneously, and accurately merge received traffic into a single stream for high precision analysis.

Q. What taps does Cisco recommend that I use with my NAM Appliances?

A. Cisco has tested several taps that can be used with the NAM 2204 and NAM 2220 Appliances. These taps are identified in Appendix B of the Installation and Configuration Guide for the Cisco NAM 2204 Appliance and Appendix B of the Installation and Configuration Guide for the Cisco NAM 2220 Appliance. These documents can be found at http://www.cisco.com/en/US/docs/net_mgmt/network_analysis_module_appliance/2204/installation/guide/instcfg .html and http://www.cisco.com/en/US/docs/net_mgmt/network_analysis_module_appliance/2220/installation/guide/instcfg .html, respectively. Additional taps from the same vendors or taps from other vendors may also support the NAM Appliances, but they have not specifically been tested by Cisco.

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

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

Q. Can multiple VLANs be spanned to the Cisco NAM?

A. Yes. The NAM is fully compatible with the switch monitoring (SMON) MIB and supports the monitoring of multiple VLANs.

Q. Does the NAM support Virtual Switch System (VSS) on the Catalyst 6500?

A. Yes, all Catalyst 6500 NAMs and NAM Appliances support VSS.

Q. Are there specific capabilities that NAM provides in a VSS environment that are distinct from the capabilities provided in a non-VSS environment?

A. Yes, there are three key differentiators:

- Monitoring port statistics on both switches using one NAM. The NAM can provide mini-RMON statistics on both switches and identifies these statistics by chassis, slot, and port. In this way, a complete view of Layer 2 traffic utilization can be obtained to assist in quickly identifying potential bottlenecks.
- Using SPAN on one NAM to obtain visibility into traffic on both virtual switches. Typically, RSPAN or NetFlow would need to be used to obtain visibility into the traffic running on an adjacent switch.
- Monitoring the health of both switches using a single NAM.

Q. How is the NAM appliance connected to the switch/switches in a VSS environment?

A. The NAM 2204 has four monitoring interfaces. One or more of these interfaces can be connected to one or more ports on each switch to provide full visibility. The NAM 2220 has two 10 Gigabit Ethernet monitoring interfaces. One of the two interfaces can be connected to a 10 Gigabit Ethernet port on each switch to analyze

traffic from multiple VLANs/1 Gigabit Ethernet ports (spanned to the 10 Gigabit Ethernet port) in a VSS environment.

Q. What device do the Cisco NAM 2200 Appliances monitor in the virtualized data center?

A. The Cisco NAM Appliances can extend their visibility into the Cisco Nexus 1000V switch in the virtualized data center. The Cisco Nexus 1000V switch is a software switch on a server that delivers Cisco Virtual Network Link (VN-Link) services to VMs hosted on the server. This distributed switch has two major components: the Virtual Ethernet Module (VEM) and the Virtual Supervisor Module (VSM), which manages the VEMs. The Cisco Nexus 1000V can be configured to direct NetFlow Data Export from virtual or physical interfaces on the Nexus VEM to the Cisco NAM Appliances. Also, ERSPAN can be configured to enable the Cisco NAM Appliances to remotely monitor the traffic in the VM network.

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

A. As previewed in the answer above, the Cisco NAM Appliances can monitor the Cisco Nexus 1000V using ERSPAN and NetFlow data sources (for more information about these NAM data sources, please refer to Table 5 of this Q&A). ERSPAN can be configured on the Cisco Nexus 1000V to allow the Cisco 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), IAP analytics, and QoS and VLAN monitoring statistics. NetFlow Data Export can be configured on select virtual and physical interfaces of the Cisco Nexus 1000V. The data made available by NetFlow permits the NAM to provide core traffic analytics and QoS monitoring statistics.

Q. When would I purchase a Cisco NAM Appliance vs. a Cisco Nexus 1000V NAM Virtual Service Blade (VSB)?

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

Third-Party Reporting

Q. Does Cisco NAM include an API to allow third-party reporting applications to use NAM as a source of data?

A. Yes, the Cisco NAM includes multiple mechanisms, such as NetFlow Version 9, SNMP, and comma-separated value (CSV)/HTTP to enable third-party reporting applications to collect data for networkwide reporting, trending, baselining, and capacity planning. The API 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. NAM Software 5.0 introduces an XML/REST-based API for NAM configuration and NetFlow Version 9 as a flexible and standard mechanism for data export.

Q. How can a third party apply for approval to use the Cisco NAM API for integration?

A. A third party can enroll in the Cisco Developer Network Program at http://www.cisco.com/go/cdn. During the enrollment process, the third party must select Network and Service Management as the solution technology and Cisco NAM as the network management product for integration. Once approved and the nondisclosure agreement (NDA) and NAM developer license agreement signed, the third party will receive the API for integration.

Q. **Are there currently third parties who have joined this program? How can a list of these vendors be obtained?**

A. Yes. Today, reporting applications from third parties such as NetQoS, Compuware, Infovista, and others offer support for NAM. These reporting applications complement the NAM by using its rich metrics to build end-to-end views of application usage and performance and also to streamline the number of collection points in the network. A list of third parties supporting NAM can be found at http://www.cisco.com/go/cdn, under Find a Partner, Network and Services Management, and Network Management Services Modules.

Ordering

Q. **What are the part numbers for the Cisco NAM Appliances?**

A. Table 5 lists the part numbers for the NAM Appliances.

Table 5. Cisco NAM 2200 Series NAM Appliances Part Numbers

Part Number	Cisco NAM 2204-RJ45 Appliance
NAM2204-RJ45	Cisco NAM 2204 Appliance, four 1 Gigabit Ethernet, RJ-45
NAM-APPL-SW-5.1-K9	Cisco NAM Software 5.1 with Recovery CD
NAM2204-RAILS=	Rail Kit Four Post Spare
NAM2204-BRKTS=	Rail Kit Two Post Spare
Part Number	Cisco NAM 2204-SFP Appliance
NAM2204-SFP	Cisco NAM 2204 Appliance, four 1 Gigabit Ethernet, SFP
GLC-T(=)	1000BASE-T SFP (Spare)
GLC-SX-MM(=)	GE SFP, LC Connector SX Transceiver (Spare)
GLC-LH-SM(=)	GE SFP, LC Connector LX/LH Transceiver (Spare)
NAM-APPL-SW-5.1-K9	Cisco NAM Software 5.1 with Recovery CD
NAM2204-RAILS=	Rail Kit Four Post Spare
NAM2204-BRKTS=	Rail Kit Two Post Spare
Part Number	Cisco NAM 2220 Appliance
NAM2220	Cisco NAM 2220 Appliance, two 10 Gigabit Ethernet
NAM2220-HDD-6X146G	Hard Disk Drive, six 146 GB
NAM2220-DIMM-16GB	RAM DIMM, 16 GB
NAM2220-AC-PS(=)	AC Power Supply (Spare)
XFP-10GBASE-SR(=)	XFP, 10 Gigabit Ethernet, Short Range (Spare)
XFP-10GBASE-LR(=)	XFP, 10 Gigabit Ethernet, Long Range (Spare)
NAM-APPL-SW-5.1-K9	Cisco NAM Software 5.1 with Recovery CD
NAM2220-RAILS=	Rail Kit Four Post Spare
NAM2220-BRKTS=	Rail Kit Two Post Spare

Q. **How can the Cisco NAM software be obtained?**

A. The NAM software is included in the NAM appliance price and can be obtained in one of two ways. To obtain the latest NAM software with your new hardware order, order NAM-APPL-SW-5.1-K9 when ordering the NAM Appliance. 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 SMARTnet access privileges.

Q. **Must Cisco NAM software be downloaded from the Cisco.com Software Center when first deploying a Cisco NAM 2200 Series Appliance?**

A. No. Cisco NAM comes with the latest NAM Software release. There is no need to download the software when first deploying the Cisco NAM 2200 Series Appliance.

Q. **How do I obtain access to a new Cisco NAM software release?**

A. Customers who have purchased SMARTnet for their NAM are entitled to download new software releases from the Cisco.com Software Center.

Q. **Do the Cisco NAM Appliances have their own software image? Where can I find it?**

A. The Cisco NAM Appliances share a common software image that is loaded on the Cisco NAM during its manufacture. The images are also available in the Software Center on Cisco.com. When new releases are available, the NAM can be upgraded using FTP. For details regarding compatibility, download location, and so on, visit http://www.cisco.com/go/nam.

Q. **What is required to deploy the Cisco NAM Appliance solution?**

A. The following are required to deploy the NAM Appliance solution:

- A Cisco NAM 2220 or Cisco NAM 2204 Appliance

- NAM Software 4.2 or later

- Web browser running English Firefox 3.6+ or Microsoft Internet Explorer 8+ or later (Microsoft Internet Explorer 7 is not supported)

Additional Information

Q. **Are any components of the NAM Appliances field replaceable?**

A. For the NAM 2204 Appliances, the answer is no. If a NAM 2204 Appliance fails, the whole chassis is replaced. Interface modules though are field replaceable. For the NAM 2220 Appliance, the hard disk drives and the power supplies are field replaceable. For example, if a power supply fails, a new one will be shipped from the services depot for replacement assuming a valid SMARTnet services contract is in place. Interface modules supporting the NAM 2220 are also field replaceable.

Q. **Where is additional information about the Cisco NAM 2200 Series Appliance found?**

A. For more information about the 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.