Cisco WAAS Network Analysis Module (NAM) Virtual Service Blade 5.0

Overview

Q. What is the Cisco® Wide Area Application Services (WAAS) Network Analysis Module (NAM) Virtual Service Blade (VSB)?

A. Using the existing Cisco WAAS footprint, the Cisco WAAS NAM virtual blade offers an integrated solution for network and application performance visibility in WAN optimized deployments. The NAM virtual blade runs within the virtual environment of the WAAS 574 and 674 appliances and is positioned for deployment in the data center. Its unique design combines a rich set of embedded data collection and analysis capabilities with a remotely accessible, web-based management console, all of which reside on a single virtual service blade. The Cisco WAAS NAM VSB with Software 5.0 introduces a next-generation graphical user interface (GUI) with prepackaged reports, workflows, and contextual navigation to expedite problem resolution and optimization decisions. It also includes a new Performance Database that preserves historical data, allowing you to understand what happened in the past when an event that affected network performance occurred. Other NAM 5.0 innovations are highlighted in the "Latest Release: NAM 5.0" section of this document.

Q. What are the key features and benefits of the Cisco WAAS NAM Virtual Service Blade?

A. Table 1 lists the key features.

Table 1. Key Features of Cisco WAAS NAM Virtual Service Blade

Feature	Benefit
Deployment flexibility	As a software solution integrated with WAAS devices, Cisco WAAS NAM VSB offers ease of installation and reduces the hardware footprint. It extends the NAM portfolio and offers flexible deployment options to meet specific network traffic loads and deployment requirements. As examples, Cisco WAAS NAM VSB is ideal for small data center deployments (fewer than 4000 optimized connections) or for proof-of-concept/pilot phases of WAAS deployments. In the latter case, it helps to accelerate the WAN optimization rollouts.
Visibility into WAN optimized networks	Provides end-to-end proof points demonstrating how WAAS has improved application delivery (Figure 2), for example, decreased application transaction times, improved WAN utilization. In the predeployment phase, Cisco NAM helps assess which applications and sites are good candidates for optimization. In addition, it provides real-time visibility for ongoing optimization improvements and for troubleshooting any performance degradation issues.
Granular flow- and packet-based traffic analytics	Identifies what applications are running over the network, how much network resources are being consumed and who is using the applications. Provides real-time and historical reports offering traffic statistics on applications, hosts, conversations, differentiated services code point (DSCP), and VLANs.
Historical analysis	Takes you back to the past using the Cisco NAM's Performance Database to understand what happened when an event affecting network performance occurred to accelerate problem resolution or advance optimization decision.
Open interface	Eases NAM configuration and export of computed NAM data using standards-based APIs (XML/REST for configuration, NetFlow Version 9 for data export).

Q. What are the business benefits of deploying the Cisco NAM products?

A. Table 2 summarizes the business benefits that the Cisco NAM products offer.

Table 2. Business Benefits of the Cisco NAM Products

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. • The Packet Capture Error 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.

Benefit	Description
	• 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 quality of service (QoS) and Cisco WAAS. • Preemption of performance issues with threshold-based proactive alerts reduces downtime and failures.
Reduce total cost of ownership	• Integrated with Cisco platforms, NAM delivers reduced network footprint, lower operational cost, and simplified manageability. • 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 target deployment scenarios for Cisco WAAS NAM Virtual Service Blade?

A. The Cisco WAAS NAM Virtual Service Blade is supported on Wide Area Virtualization Engine (WAVE) 574 and Wide Area Application Engine (WAE) 674 appliances. The Cisco WAAS NAM Virtual Service Blade is deployed in the data center and is typically used in the following scenarios:

- **Small data center deployments:** The WAAS NAM virtual service blade provides network and application performance visibility in WAN optimized deployments supporting up to 4000 optimized flows.
- **Proof of concept/predeployment scenarios:** The WAAS NAM virtual service blade accelerates the WAN optimization rollout by helping to identify candidate sites and application for optimization and validate the improvements as a result of optimization.

Q. How does the Cisco WAAS NAM Virtual Service Blade help WAN optimization rollouts?

A. The Cisco WAAS NAM Virtual Service Blade is an integrated solution providing network and application performance visibility in WAN optimization environments. The key value propositions of the NAM Virtual Service Blade are:

- Characterizes the end-user experience to easily assess application performance in the pre- and post-WAN optimization phases.
- Accelerates the rollout of WAAS by providing immediate visibility into pre-WAAS deployment or WAAS proof-of-concept scenarios.
- Provides throughput analysis of LAN/WAN bandwidth in a WAN optimization deployment to help ascertain the return on investment (ROI). Network engineers can use this critical information to better support future investment planning decisions in WAN optimization technologies.
- Offers top-N reports that help to determine potential candidates, such as servers and applications, for WAN optimization. The reports help in prioritizing WAN optimization rollouts, and traffic from top talkers can be targeted, resulting in a lower cost of ownership.
- Delivers real-time visibility into both optimized and pass-through application traffic to support ongoing optimization improvements and to troubleshoot any performance degradation issues.

Q. How does Cisco WAAS NAM Virtual Service Blade work?

A. Cisco WAAS NAM Virtual Service Blade runs within a virtual environment on the WAAS appliances, WAVE-574 and WAE-674. The WAAS NAM VSB utilizes the built-in instrumentation on WAAS devices as a data source to obtain visibility into optimized and pass-through application traffic flows. WAAS devices provide information about packet streams of interest traversing through both of their LAN and WAN interfaces. Traffic of interest includes specific servers and types of transactions to be monitored. NAM uses the information received from the WAAS devices in the data center as well as the remote sites to compute performance metrics such as application response time, WAN bandwidth usage, and LAN and WAN data throughput that are essential for

assessing the performance improvements as a result of optimization This information is presented in the NAM's Traffic Analyzer web-based GUI.

Q. What is the Cisco NAM Traffic Analyzer?

A. The Cisco NAM comes with the Traffic Analyzer application. This embedded application offers an intuitive web-based GUI that includes prepackaged reports, workflows, and contextual navigation to expedite problem resolution and optimization decisions. The GUI also provides quick access to the configuration menus and interactive performance reports on voice, video, and TCP-based traffic. In addition, the Traffic Analyzer application hosts an embedded web server that facilitates remote access from anywhere so that network performance can be viewed, managed, and improved at any time.

Q. Where is the Cisco WAAS NAM Virtual Service Blade deployed?

A. Cisco WAAS NAM Virtual Service Blade runs within a virtual environment on the WAAS appliances, WAVE-574 and WAE-674, and is deployed in the data center.

Q. How is the Cisco WAAS NAM Virtual Service Blade installed in the network?

A. The Cisco WAAS NAM Virtual Service Blade can be installed in two ways:

- Using WAAS Central Manager (WCM), the virtual environment can be configured on the WAVE-574 and WAE-674. The NAM virtual blade image can then be loaded using a standard TFTP/FTP mechanism.
- The virtual environment can be manually configured and partitioned and then the NAM virtual service blade can be loaded onto the virtual disks.

Once the installation is completed, the web-based Traffic Analyzer GUI allows quick access to the configuration menus and interactive reports to allow monitoring and analysis of network and application performance.

Q. Does heavy CPU usage on the NAM virtual blade adversely affect the host WAAS?

A. No. The virtual infrastructure prioritizes CPU usage so that the host is given higher priority, minimizing any impact due to a heavy load being placed on the virtual service blade.

Q. What WAAS platforms support the Cisco WAAS NAM Virtual Service Blade?

A. The Cisco WAAS NAM Virtual Service Blade is supported on the Cisco WAVE-574 and WAE-674 appliances. Table 3 highlights the details of the WAAS appliances.

Table 3. Virtualization-Capable Cisco WAAS Appliances

Platform	Hardware	Deployment Scenarios	Images
Cisco WAVE-574	• 3 or 6 GB DRAM • 500 GB hard disk drive • RAID-1 optional • 2- and 4-port inline card options • WAAS Software 4.1.1 and later	• Edge deployments at enterprise branch offices • Core deployments at small data centers	
Cisco WAE-674	• 4 or 8 GB DRAM • 600 GB hard disk drive • RAID-5 optional • 4-port inline card optional • WAAS Software 4.1.1 and later	• Edge deployments at large enterprise branch offices • Core deployments at medium-sized data centers	

Note: More information about the Cisco WAE-674 can be found at http://www.cisco.com/en/US/prod/collateral/contnetw/ps5680/ps6474/product_data_sheet0900aecd80329e39.html
More information on the Cisco WAVE appliances can be found at http://www.cisco.com/en/US/prod/collateral/contnetw/ps5680/ps6474/data_sheet_c78-495801.html.

Latest Release: NAM 5.0

Q. What key innovations does NAM Software 5.0 offer?

A. The key Cisco NAM 5.0 innovations are described in Table 4.

Table 4. New Features in Cisco NAM Software 5.0

Feature	Benefit
Redesigned user experience	NAM Software 5.0 introduces a next-generation GUI that helps accelerate troubleshooting and optimization decisions by providing access to critical information at your fingertips. It offers preconfigured dashboards to give you a comprehensive graphical overview of network performance. It also includes prepackaged interactive reports with helpful features such as contextual navigation, advanced filters, and one-click packet captures. The new GUI not only reduces the time it takes to solve problems, but also the time it takes to learn the product giving you more time to spend on advancing new business initiatives.
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 Cisco NAM's new Performance Database stores computed data so you can go back to the past to troubleshoot unanticipated performance issues or to analyze optimization needs.
Prepackaged analysis workflows	Prepackaged workflows help to streamline and accelerate problem resolution. Not only do they improve operational efficiency, they also validate and improve optimization decisions.
NetFlow and packet data analysis in one box	NetFlow and packet data complement each other to provide a powerful monitoring solution, all in one box. With expanded NetFlow reporting capabilities, you can obtain an extensive view of the traffic to see who is using your network, what applications they're using, and how much bandwidth is being consumed. Pinpointing traffic of interest, you can use packet-based data to perform a "deeper dive" to quickly spot and address issues that affect performance.
Network-Based Application Recognition (NBAR)	The Cisco NAM now supports standardized application identifiers generated by Cisco's homegrown application classification technology, NBAR, to discover and identify applications, simplifying your user experience by helping bring consistency to application recognition across the network.
Packet Capture Error Scan	The new Packet Capture Error Scan feature automatically highlights packet-level anomalies to accelerate root-cause analysis and avoid having 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.

Q. When is NAM Software 5.0 available?

A. Cisco WAAS NAM Virtual service blade with NAM Software 5.0 will be available starting in late January 2011.

Q. Will I be able to perform a software upgrade from NAM 4.x to NAM 5.0, or do I need to freshly install NAM Software 5.0?

A. NAM Software 5.0 introduces a new embedded performance database and a new internal data schema. As a result, a fresh install will be needed.

Q. Will I lose any data when I migrate from NAM 4.x to NAM Software 5.0?

A. Since NAM Software 5.0 introduces a new "backend," installing NAM Software 5.0 will result in loss of data and configuration settings. The configuration settings can be exported prior to upgrade and reimported after the upgrade to minimize the loss. The "config upload" and "config network" commands to perform these tasks are documented in the command reference guide. Note that some of the configuration settings are no longer applicable.

Functionality

Q. How does Cisco NAM support Cisco WAAS?

A. Cisco NAM uses the built-in instrumentation of the Cisco Wide-Area Application Engine devices as a data source to gather information on the optimized traffic to provide end-to-end application performance visibility in a Cisco WAAS environment. It measures application response time, transaction time, bandwidth usage, LAN/WAN data, and so on to provide end-to-end application performance metrics, accurately quantifying the impact of WAAS optimization and helping to validate ongoing optimization improvements. NAM is also able to

identify the applications that would benefit the most from deploying Cisco WAAS. Analyzing response time data over a period of time, the administrator can identify the applications where optimization can result in a material increase in available bandwidth.

Q. What release of Cisco WAAS is supported for the Cisco WAAS NAM Virtual Service Blade?

A. The Cisco WAAS NAM Virtual Service Blade is supported on Cisco WAAS Software Release 4.1.1 and later.

Q. What versions of NetFlow does the Cisco Branch Routers Series NAM support?

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

Q. Can NetFlow Data Export (NDE) be collected from remote WAN routers?

A. Yes, the Cisco WAAS NAM Virtual Service Blade can collect and analyze NDE from remote devices, including WAN routers. However, sending NDE from remote devices over congested WAN links is not recommended.

Q. Can historical traffic analysis be performed with the Cisco WAAS NAM Virtual Service Blade?

A. Yes, NAM 5.0 takes you back to the past to understand what happened when a network event that affected performance occurred. It supports historical data analysis to accelerate problem resolution and to advance optimization and capacity planning decisions.

Q. What is the REST/XML API and how does it help me?

A. The NAM API provides a mechanism for provisioning and retrieving data from the NAM server using an XML interface. The API utilizes the Representational State Transfer (REST) methodology to execute requests (web services) over HTTP or HTTPS by sending the XML data to the API server. The REST XML interface is capable of configuring a subset of the software features through create, read, update, and delete operations mapped to a particular HTTP or HTTPS method. APIs are provided for sites, data sources, applications, application groups, actions, thresholds, packet captures, WAAS monitored servers, system information, and NetFlow Data Export. The interface also lets you create an outgoing stream of exported performance data from NAM as NetFlow records.

Q. Is Simple Network Management Protocol Version 3 (SNMPv3) supported in NAM 5.0?

A. With NAM 5.0, you have the ability to manage devices with SNMPv3. Note that for the WS-SVC-NAM-1 and WS-SVC-NAM-2 platforms, SNMPv3 is not required. SNMP requests and responses are communicated over an internal interface within the chassis, and SNMPv3 is not used.

Q. How can I recognize and configure applications reported as unknown by NAM?

A. NAM recognizes applications on the basis of port number, port number range, or standardized application identifiers exported by Cisco platforms with NDE. If NAM is not able to recognize an application using any of these mechanisms, the application type of the traffic is reported as unknown. You can configure the application reported as unknown using the application configuration table on the Traffic Analysis dashboard (**Analyze->Traffic-Application**). When selecting an unknown application, the table will list all protocol/port combinations that were not recognized by NAM and allow you to configure them as custom applications.

Q. Can I define my own application or application groups?

A. NAM identifies applications/protocols based on the TCP/User Datagram Protocol (UDP) port number; thus, if there are any applications using custom ports, the NAM can be configured to identify those applications by name instead of by port number. Custom applications can be defined combining a select protocol with port or port-range definitions. Custom application groups can be defined as a set of existing applications that can be monitored together. Please refer to the NAM Software 5.0 User Guide (Chapter 2) for instructions on how to create a custom application or application group.

Q. How can I understand various response time metrics and how do they help me in troubleshooting application performance issues?

A. Please refer to NAM software 5.0 User Guide (Chapter 3).

Q. Why do I need custom filters for interactive reports?

A. Interactive reports use advanced filters to help enable you to focus on information of interest and create a context for further analysis. For example, when analyzing application performance, you can create a filter to focus on a select site, application, time range, client, server, or a combination of the foregoing, offering a powerful mechanism to isolate performance issues. In addition, the custom filter allows you to save a specific context for ongoing analysis. Typically, this is valuable when watching a recurring performance issue. In such cases, you would create a custom filter having the appropriate filter attributes. When you select the custom filter, the interactive report will load the data as per the context defined in the custom filter.

Q. When would I define a site using data sources or VLANS?

A. NAM Software 5.0 introduces the concept of logical sites as a collection of network endpoints. A site can be defined as a set of subnets specified by an address prefix and mask. In addition, a site can be defined using a remote device data source (such as a remote WAAS device, NDE from a remote network device) or VLANs. As examples, a site can be defined as a remote WAAS device representing the collection of endpoints for which an application is being optimized, or in the case of managed service delivery, a site can be defined as a VLAN representing the customer premises A combination of these mechanisms offers a granular way to define a site.

Q. Can more than one user concurrently use NAM?

A. Cisco NAM allows multiple users to access NAM concurrently. However, depending on what information the users are accessing, an increase in the number of concurrent users can result in a suboptimal user experience in terms of interface response times.

Q. How many simultaneous captures does the NAM support?

A. Cisco NAM can support up to 10 simultaneous packet capture sessions.

Q. How can I replicate my site definitions and application definitions across all my NAMs?

A. The REST/XML API introduced with NAM Software 5.0 allows you to create, update, and delete site definitions. It also allows you to retrieve all site definitions from a given NAM. Using these functions you can replicate site definitions programmatically across all NAMs deployed in the network. A similar API exists for the definitions of application and application groups.

Q. How is the Cisco NAM Traffic Analyzer secured?

A. The Cisco NAM Traffic Analyzer can be secured with up to 256-bit encryption. This requires users to download a crypto patch for the NAM software from the Cisco.com Software Center. The NAM also supports role-based user authorization and authentication locally or using TACACS+.

Q. What MIBs are supported on the Cisco WAAS NAM Virtual Service Blade?

A. Cisco Branch Routers Series NAM is standards compliant and supports 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)

Third-Party Reporting

Q. Does Cisco NAM include an API to allow partner reporting applications to use NAM as a data source?

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 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 partner apply for approval to use the Cisco NAM API for integration?

A. A third party can enroll in the Cisco Developer Network 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 the Find a Partner, Network and Services Management, and Network Management Services Modules.

Licensing and Ordering

Q. Is there an evaluation version of the Cisco WAAS NAM Virtual Service Blade available?

A. Yes. The Cisco WAAS NAM Virtual Service Blade is available as a fully functional version for a period of 60 days. Existing customers of WAVE-574 and WAE-674 can download the software from the Software Center.

Q. How do I activate the feature license?

A. The evaluation license is included along with the downloadable version of the software. The permanent license for the NAM virtual blade requires that customers license their software at http://www.cisco.com/go/license

Q. What are the part numbers for the Cisco WAAS NAM Virtual Service Blade?

A. Table 5 lists the part numbers for the Cisco WAAS NAM Virtual Service Blade.

Table 5. Cisco WAAS NAM Virtual Blade Part Numbers

Product Name	Part Number
Cisco NAM Virtual Blade on WAAS appliances (Top Level)	NAM-WAAS-VB
Cisco NAM Software 5.0 for WAAS 574/674	WAAS-VB-NAM-5.0
Cisco NAM Virtual Blade on WAAS appliances (eDelivery Top Level)	L-NAM-WAAS-VB
Cisco NAM Software 5.0 for WAAS 574/674 (eDelivery License Only)	L-WAAS-VB-NAM-5.0
Cisco NAM Software Upgrade from 4.x to 5.0 for WAAS 574/674	WAAS-VB-NAM-50UP=
Cisco NAM Software Upgrade from 4.x to 5.0 for WAAS 574/674 (eDelivery License Only)	L-WAAS-VB-NAM-50UP

Q. What is eDelivery for the Cisco WAAS NAM Virtual Service Blade?

A. The Cisco WAAS NAM Virtual Service Blade can be fulfilled using the eDelivery mechanism in addition to the regular physical delivery of the CD kit. The eDelivery mechanism offers a quicker turnaround time for customers wishing to roll out their WAN optimization deployments.

Additional information about eDelivery can be found at http://www.cisco.com/web/partners/tools/edelivery.html

Q. What components are required to implement a Cisco WAAS monitoring solution with the Cisco WAAS NAM Virtual Service Blade?

A. The following are required to implement the Cisco WAAS NAM Virtual Service Blade:

- Cisco WAAS Appliances: WAVE-574 and/or WAE-674 running Cisco WAAS Software Release 4.1.3 or later
- Cisco WAAS Virtual Service Blade License
- Cisco WAAS NAM Virtual Service Blade software
- Web browser running English Firefox 3.6+ or Microsoft Internet Explorer 8+ or later (Microsoft Internet Explorer 7 is not supported)

Q. What maintenance services are available for the Cisco WAAS NAM Virtual Service Blade?

A. Software Application Support (SAS) maintenance services are available for the Cisco WAAS NAM Virtual Service Blade. The maintenance services offered include Technical Assistance Center (TAC) support and access to new, minor NAM virtual blade software feature and maintenance releases.

Information Resources

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

A. For more information about the Cisco 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.

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV Amsterdam,
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at **www.cisco.com/go/offices.**

Printed in USA C67-644092-00 01/11