



CHAPTER 5

Monitoring WAAS Using Cisco Network Analysis Module

This chapter describes Cisco Network Analysis Module (NAM), which you can use to monitor your WAAS devices.

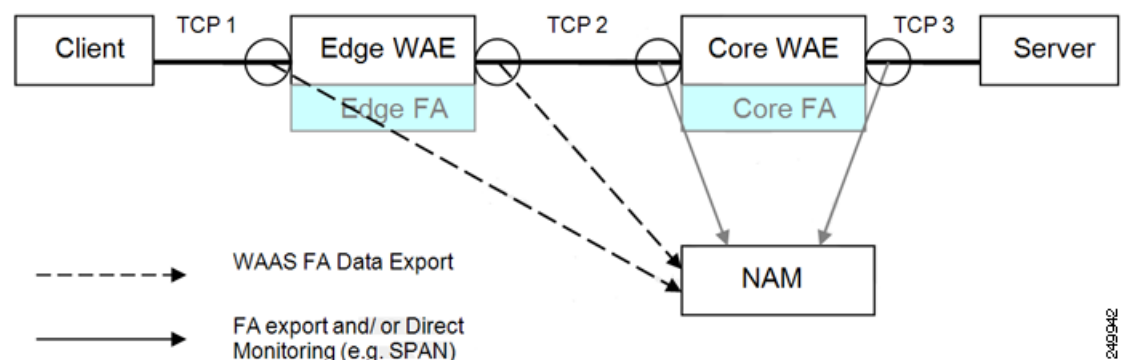
This chapter contains the following sections:

- [Information About NAM, page 5-1](#)
- [Configuring a WAAS Device to Export Data to NAM, page 5-2](#)
- [Configuring NAM to Monitor WAAS Devices, page 5-3](#)

Information About NAM

NAM monitors network and application response time (ART) by analyzing the exchanges of TCP packets between clients and application servers. NAM version 4 has been enhanced to process and analyze data received from the WAAS FlowAgent and accurately calculate the ART of WAAS optimized flows. A FlowAgent runs on WAAS devices to collect TCP packet data and send the flow data to NAM for analyzing and reporting ([Figure 5-1](#)).

Figure 5-1 NAM Monitoring of WAAS Devices



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NAM provides the following monitoring functions:

- **Monitoring Client-Edge Connections**—By monitoring the TCP connections between the clients and the WAAS edge device (Connection TCP-1 in the above picture), the following ART metrics can be measured:
 - Total Delay (TD) as experienced by the client
 - Total Transaction Time as experienced by the client
 - Bandwidth usage (bytes/packets) before compression
 - Number of transactions and connections
 - Network RTT broken down into two segment: client-edge and edge-server
- **Monitoring Edge-Core Optimized Connections**—By monitoring the spoofed TCP connections between the edge and core WAAS devices (Connection TCP-2 in the above picture), the following additional ART metric can be measured: Bandwidth usage (bytes/packets) after compression.
- **Monitoring Edge-Core Connections**—By monitoring the TCP connections between the core WAAS devices and the servers (Connection TCP-3 in the above picture), additional ART metrics can be measured:
 - Application (Server) Delay (without proxy acceleration/caching server)
 - Network RTT between the core WAAS device and the servers

The sections that follow show how to configure WAAS to enable monitoring by NAM and how to configure NAM to monitor specific WAAS functions.

For more information about NAM, see the following documentation URLs:

- Complete NAM documentation set:
http://www.cisco.com/en/US/products/sw/cscowork/ps5401/tsd_products_support_series_home.html
- *Cisco WAAS NAM Virtual Service Blade Installation and Configuration Guide*:
http://www.cisco.com/en/US/docs/net_mgmt/network_analysis_module_virtual_blade/4.2/install/guide/waas/waas42install.htm

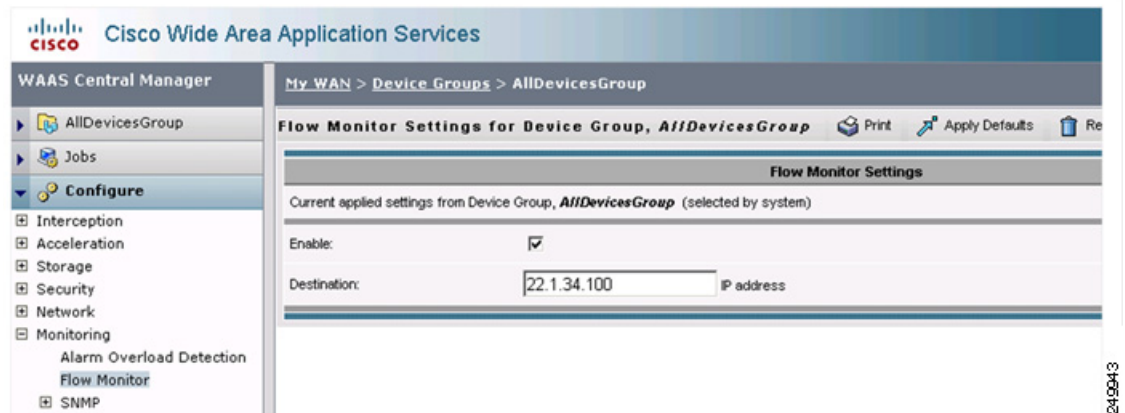
Configuring a WAAS Device to Export Data to NAM

This procedure describes how to configure a WAAS device to export WAAS flow record data to NAM.

Procedure

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- Step 1** From the WAAS Central Manager, choose **My WAN > Device Group > AllDevicesGroup > Configure > Monitoring > Flow Monitor**.

The Flow Monitoring Settings window appears (Figure 5-2).

Figure 5-2 WAAS Central Manager: Flow Monitoring Settings

Step 2 From the Flow Monitoring Settings window, do the following:

- a. Check the Enable check box to enable data export.
- b. In the Destination box, enter the NAM IP address.
- c. Click **Submit**.

The WAAS is now ready to export flow record data. To specify the WAAS data that NAM is to monitor, see the [“Configuring NAM to Monitor WAAS Devices”](#) section on page 5-3.

Configuring NAM to Monitor WAAS Devices

This section provides an overview of the WAAS data source functions that NAM can monitor and describes how to specify the WAAS data that NAM monitors.



Note

You do not need to add any export-enabled WAAS devices in to NAM because NAM can detect them.

This section contains the following topics:

- [Information About Using NAM to Monitor WAAS Devices, page 5-3](#)
- [Specifying WAAS Device Data Sources to Monitor, page 5-6](#)

Information About Using NAM to Monitor WAAS Devices

NAM uses WAAS data sources to monitor traffic collected from different WAAS segments: Client, Client WAN, Server WAN, and Server. Each WAAS segment is represented by a data source. You can set up NAM to monitor and report other traffic statistics of the WAAS data sources (such as application, host, and conversation information) in addition to the monitored ART metrics.

The use of data source depends upon on the WAAS deployment scenario. [Table 5-1](#) describes several common WAAS deployment scenarios and their applicable data sources.

Table 5-1 WAAS Deployment Scenarios

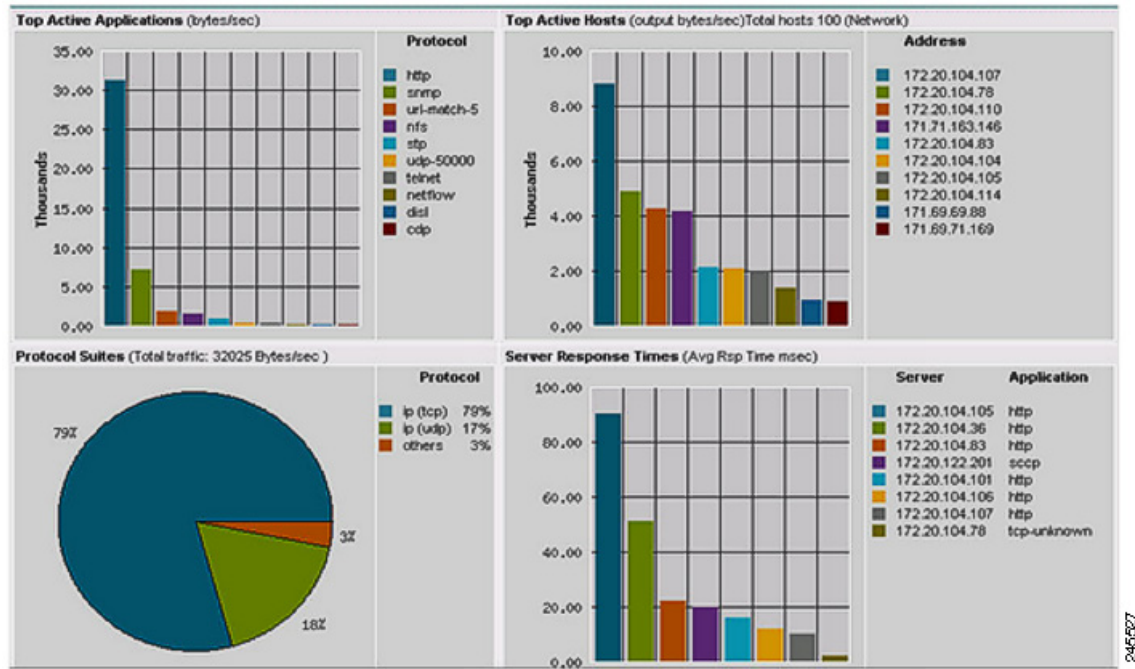
Deployment Scenario	Edge WAE Data Source	Core WAE Data Source
- Clients in the branch - Servers in the core (data center) - NAM in the core	Client	Server Server WAN
- Clients in the branch - Servers in the core (data center) - NAM in the core	Client Client WAN	Server
- Servers in the branch - Clients in the core (data center) - NAM in the core	Server	Client Client WAN
- Servers in the branch - Clients in the core (data center) - NAM in the branch	Server Server WAN	Client
- Servers and clients in the branch and the core (data center) - NAM in the core	Client Server	Client Server Client WAN Server WAN
- Servers and clients in the branch and the core (data center) - NAM in the branch	Client Server Client WAN Server WAN	Client Server

In NAM version 4.1 and later, correlated data and combined segments are displayed as one row per client-server as shown in [Figure 5-3](#).

Figure 5-3 NAM Sample Data Source Display

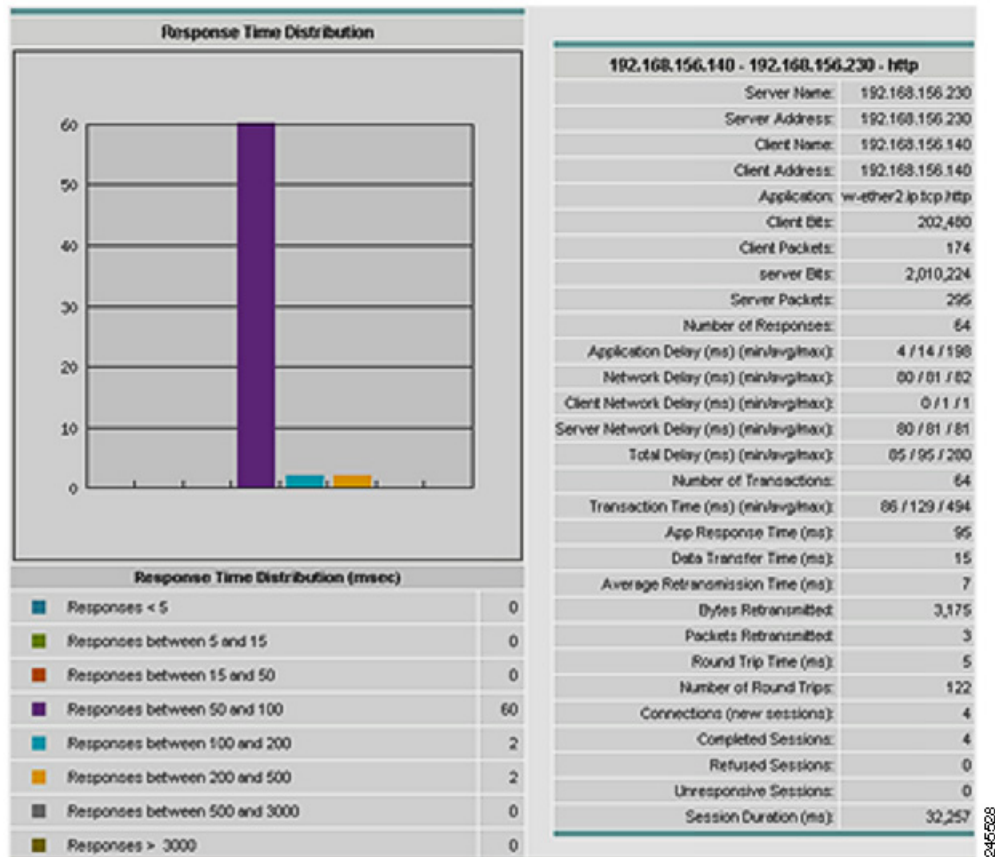
#	Branch	Server	Client	App	Network Delay (ms)			App Delay (ms)	Total Delay (ms)	Transaction Time (ms)		Traffic Volume (bytes)		
					Client	WAN	Server			Avg	Max	Client	WAN	Server
1.	WAE-172.20.107.117	172.20.107.123	171.69.155.57	http	2	8	2	7	99	170	3455	764,852	71,585	761,735

NAM can display data about the network applications, protocols in use, and the most active or highly utilized clients and servers (see [Figure 5-4](#)).

Figure 5-4 NAM Network Application, Protocol, Host, and Server Report

You can generate various reports to view client, server, or application response times and top active applications, active hosts, and so forth (see [Figure 5-5](#)).

Figure 5-5 NAM Response Time Report



Specifying WAAS Device Data Sources to Monitor

You can configure NAM to monitor the following WAAS data sources:

- **Client**—Export the original (LAN side) TCP flows originated from its clients to NAM for monitoring.
- **Client WAN**—Export the optimized (WAN side) TCP flows originated from its clients to NAM for monitoring.
- **Server WAN**—Export the optimized (WAN side) TCP flows from its servers to NAM for monitoring.
- **Server**—Export the original (LAN side) TCP flows from its servers to NAM for monitoring.
- **Pass-Through**—(NAM 4.1 and later only) Export the flows that traverses WAAS without being optimized.

For information about how to configure NAM to monitor a WAAS device, see the [Using Cisco NAM 4.1 Reporting with Cisco WAAS](#) whitepaper on Cisco.com:

For additional information about configuring and using NAM, see the [User Guide for Cisco Network Analysis Module Traffic Analyzer](#).