CHAPTER 22

Ensuring Consistent Application Experiences

Cisco Wide Area Application Services (WAAS) devices and software help to ensure high-quality WAN end-user experiences across applications at multiple sites. For WAAS deployments to be successful, however, network operations staff must share a common data resource that gives them complete visibility into network performance data throughout every stage of the optimization cycle, including:

- Identifying the sites and applications that are candidates for optimization, so that network designers can plan where WAAS optimization is critical.
- Establishing site and application performance baselines.
- Post-implementation validation that WAN performance and application stability have actually improved
- Ongoing monitoring and troubleshooting of the optimized flows.

Cisco Prime Assurance offers a consistent data resource for each of these stages in performance optimization.

Identifying Optimization Candidates

Follow these steps to identify your network's lowest performing applications, clients, servers, and network links.

Step 1 Select **Operate > WAN Optimization**.

Step 2 Click the **Traffic Analysis** tab. Use the dashlets on this page to identify optimization candidates:

- All the dashlets show the current traffic rate (in bytes per second), average number of concurrent connections, and average transaction time in milliseconds, for every application, client, server or network link.
- **Network Links** also shows the sites for the client and server endpoints of each link, and the average length of time the link exists .
- **Server Traffic** shows both the server IP address and the application it serves.

Step 3 Sort and filter the performance data as needed:

To sort on any column in any dashlet, click on the column heading.

To filter the data displayed in all the dashlets by **Time Frame**, **Site**, or **Application** , enter or select the filter criteria you want on the **Filters** line and click **Go**.

To filter within a dashlet, click on its Filter icon and specify a Quick or Advanced Filter, or use a Preset Filter.

Step 4 For a quick report of the same data, select **Tools > Reports > Report Launch Pad**. Then select **Performance > WAN Traffic Analysis Summary**. Specify filter and other criteria for the report, then click **Run**.

Establishing Performance Baselines

Flow these steps to establish the standard performance characteristics of your candidate applications and sites before implementing WAN optimizations.

Step 1 Select **Operate > Detail Dashboards**.

Step 2 Click the **Application** tab. Use the dashlets on this page to establish the performance characteristics of your optimization candidates as currently configured:

- **Worst N Clients by Transaction Time**: For the worst-performing clients and applications: Maximum and average transaction times, and 24-hour performance trend.
- **Worst N Sites by Transaction Time**: The same information for the worst-performing sites and applications.
- **App Server Performance**: For all application servers: the maximum and average server response time, and a 24-hour performance trend.
- **Application Traffic Analysis**: Gives 24-hour application traffic metrics in bytes per second and packets per second. Calculates statistical mean, minimum, maximum, median, and first and second standard deviation for the period,

You can sort by any column in any dashlet by clicking on the column heading.

Step 3 You can filter the data in the dashlets by **Time Frame**, **Site**, and **Application**.

Step 4 Click the **Site** tab and use **Top N Applications by Volume, Top N Devices with Most Alarms**, **Top N Clients (In and Out)** and **Worst N Clients by Transaction Time** as you did in Step 2.

Validating Optimization ROI

Once you have deployed your WAAS changes at candidate sites, follow these steps to validate the return on your optimization investment.

Step 1 Select **Operate > WAN Optimization**.

Step 2 Click the **Application Performance Analysis** tab. The dashlets on this page show:

- **Transaction Time (Client Experience)**: Graphs average client transaction times (in milliseconds) for the past 24 hours, with separate lines for optimized traffic and pass-through traffic (in which optimization is turned off). With optimization enabled, you should see a drop in the optimized traffic time when compared to the pass-through time.
- **Average Concurrent Connections (Optimized vs Passthru)**: Graphs the average number of concurrent client and passthrough connections over a specified time period.
- **Traffic Volume and Compression Ratio**: Graphs the bandwidth reduction ratio between the number of bytes before compression and the number of bytes after compression.
- **Multi-Segment Network Time (Client LAN-WAN - Server LAN)**: Graphs the network time between the multiple segments.

Step 3 You can filter the data in the dashlets by **Time Frame**, **Client Site**, **Server Site**, and **Application**.

Step 4 For a report, select **Tools > Reports > Report Launch Pad**. Then select **Performance > WAN Application Performance Analysis Summary**. Specify filter and other settings for the report, then click **Run**.

Monitoring Optimized Flows

Follow these steps to monitor WAAS-optimized WAN traffic.

Step 1 Select **Operate > WAN Optimization > Multi-Segment Analysis**.

Step 2 Click the **Conversations** tab to see individual client/server sessions, or the **Site to Site** tab to see aggregated site traffic. For each client (or client site) and server (or server site) pair and application in use, these pages show:

- Average and Max Transaction Time: The time between the client request and the final response packet from the server. Transaction time will vary with client uses and application types, as well as with network latency. Transaction Time is a key indicator in monitoring client experiences and detecting application performance problems.
- Average Client Network Time: The network time between a client and the local switch or router. In WAAS monitoring, Client Network Time from a WAE client data source represents the network RTT between the client and its edge WAE, while Client Network Time from the WAE server data source represents the WAN RTT (between the edge and core WAEs).
- Average WAN Network Time: The time across the WAN segment (between the edge routers at the client and server locations).
- Average Server Network Time: The network time between a server and NAM probing point. In WAAS monitoring, Server Network Time from a server data source represents the network time between the server and its core WAE.
- Average Server Response Time: The average time it takes an application server to respond to a request. This is the time between the client request arriving at the server and the first response packet being returned by the server. Increases in the server response time usually indicate problems with application server resources, such as the CPU, Memory, Disk, or I/O.
- Traffic Volume: The volume of bytes per second in each of the Client, WAN, and Server segments.

Step 3 Sort and filter the performance data as needed:

To sort on any column, click on the column heading.

You can filter the data displayed by **Time Frame**, Or click on the Filter icon and specify a Quick or Advanced Filter, or use a Preset Filter.