The Integration of Management, Planning and Network Optimization

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Introduction

Up until a few years ago, few network organizations paid much attention to ensuring the successful performance of applications. In the current environment, ensuring the successful performance of applications is a top of mind issue for the vast majority of network organizations.

As I wrote in a recent Kubernan Brief [1], the heightened focus on application management is potentially very positive for network managers. I say that because it is often very difficult for a network manager to show value to the company's senior business managers based on managing technologies such as Ethernet and MPLS. The fact of the matter is that the vast majority of senior business managers don't care about technologies such as these. They do care, however, about a small set of applications that they use to run their business units. This presents an opportunity for network managers to show business value by demonstrating how they ensure that the company's key business applications exhibit acceptable performance.

Unfortunately, ensuring acceptable application performance is very difficult in part because it involves multiple functions. As is widely acknowledged in the industry press, WAN optimization is an important component of ensuring acceptable application performance. WAN optimization on its own, however, is not sufficient. Some of the other functionality that must be part of an integrated application delivery solution are planning and management. As simple as this sounds, most application delivery solutions do not provide a rich set of well integrated planning, optimization and management functionality. In fact, some WAN optimizations products can cause existing planning and management functionality to break.

This brief will identify some of the shortcomings of the existing WAN optimizations products and will describe a recent announcement by NetQoS® and Cisco that discussed how the two companies have worked together to integrate NetQoS's SuperAgent® with Cisco's Wide Area Application Services® (WAAS) devices. In particular, this brief will describe what these companies accomplished and how this integration overcomes some of the current shortcomings in the market.

Creating Multiple TCP Sessions

Many IT organizations have deployed WAN optimization products in order to enable them to optimize the performance of applications delivered to branch offices. These products implement technologies such as compression, caching and protocol acceleration and are often referred to as WAN Optimization Controllers (WOCs).

Figure 1 depicts a typical deployment of a WAN optimization product. Before deploying the product, there was a single TCP session between the user's PC and the application server. After deploying a WOC in the branch office and a corresponding WOC in the data center, there are now three TCP sessions. One session runs on the client segment between the PC and the branch office WOC. Another session runs on the WAN segment between the branch office WOC and the WOC in the data center. The third session runs on the server segment between the Data Center WOC and the application server.

[1] The Performance Management Mandate, http://www.webtorials.com/abstracts/KubernanBrief-1-1.htm

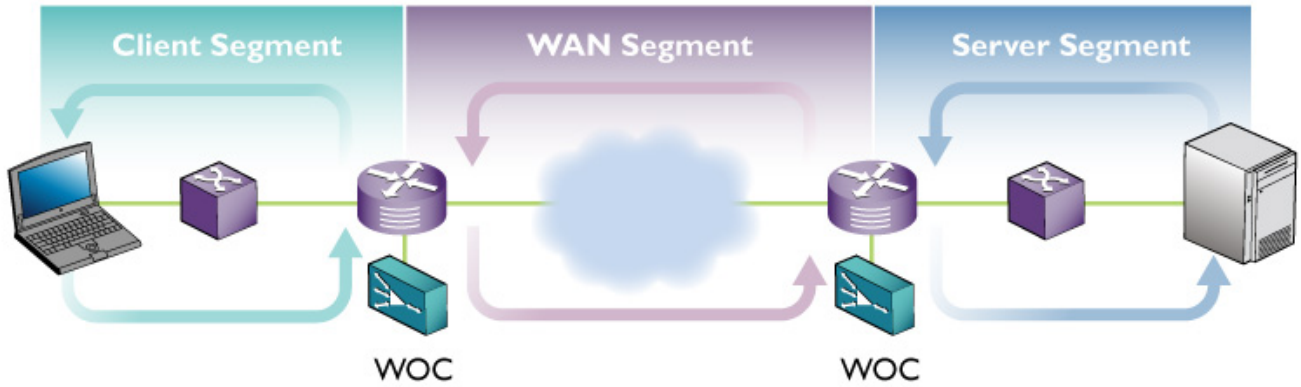

Figure 1: Three TCP Groups

The Lack of Transparency

Transparency is an important goal for any networking professional. Put another way, one of the most important rules of networking is that you should not implement anything that causes things to break. Unfortunately, the creation of three TCP sessions as depicted in Figure 1 causes some things to break. For example, assume that before the WAN optimization solution was deployed, there was a device in the data center that was monitoring the end-to-end performance of applications. This monitoring device relied on information in the TCP header and this worked well when there was a single TCP session between the PC and the application server. However, once the WOCs have been deployed that device in the data center is now only monitoring the TCP session between the data center WOC and the application server. As a result, the IT organization has lost the ability that it had to monitor the end-to-end performance of applications.

What did NetQoS and Cisco Accomplish?

Cisco refers to its version of a WOC as Wide Area Application Services (WAAS). Cisco has two types of WAAS devices - Wide Area Application Engines (WAE) and Wide Area Application Engine Network Modules (NM-WAE). NetQoS and Cisco have collaborated to develop a software interface that will be integrated onto all WAAS devices. As a result of this integration, SuperAgent, the end-to-end performance monitoring module of the NetQoS Performance Center, can now capture the TCP header information from the WAAS devices and calculate end-to-end response times between the client and server over an optimized link.

In the example depicted in Figure 2, the software that NetQoS and Cisco have developed is integrated into the Cisco WAE in the branch office with optimization and into the Cisco WAE in the data center. Information from each of these devices is exported to a NetQoS SuperAgent Aggregator, typically deployed in the data center. This information, along with information that is gathered off the span port in the switch in the data center is fed into the SuperAgent Management Console.

As mentioned, the integration of the NetQoS and Cisco software allows IT organizations to calculate end-to-end response times between the client and server over an optimized link. It also provides full end-to-end and segment visibility without the addition of collectors in the WAN segment or the many client segments. The integration that NetQoS and Cisco performed only affects the SuperAgent product. NetQoS's ReporterAnalyzer, by virtue of its reliance on Cisco IOS® Netflow data as an input, works seamlessly when WAAS is introduced in the network.

Why do you Care?

As mentioned in the introduction, network managers have the opportunity to show business value by demonstrating how they ensure that the company's key business applications exhibit acceptable performance. However, prior the integration of the NetQoS and Cisco software, network managers were often faced with a choice – they could either have end-to-end visibility into application performance or they could have an optimized WAN. They couldn't have both without incurring the very significant cost associated with implementing additional probes in every optimized remote location. This choice makes it very difficult for network managers to be perceived as demonstrating business value.

In addition to enabling network managers to continue to have visibility into application

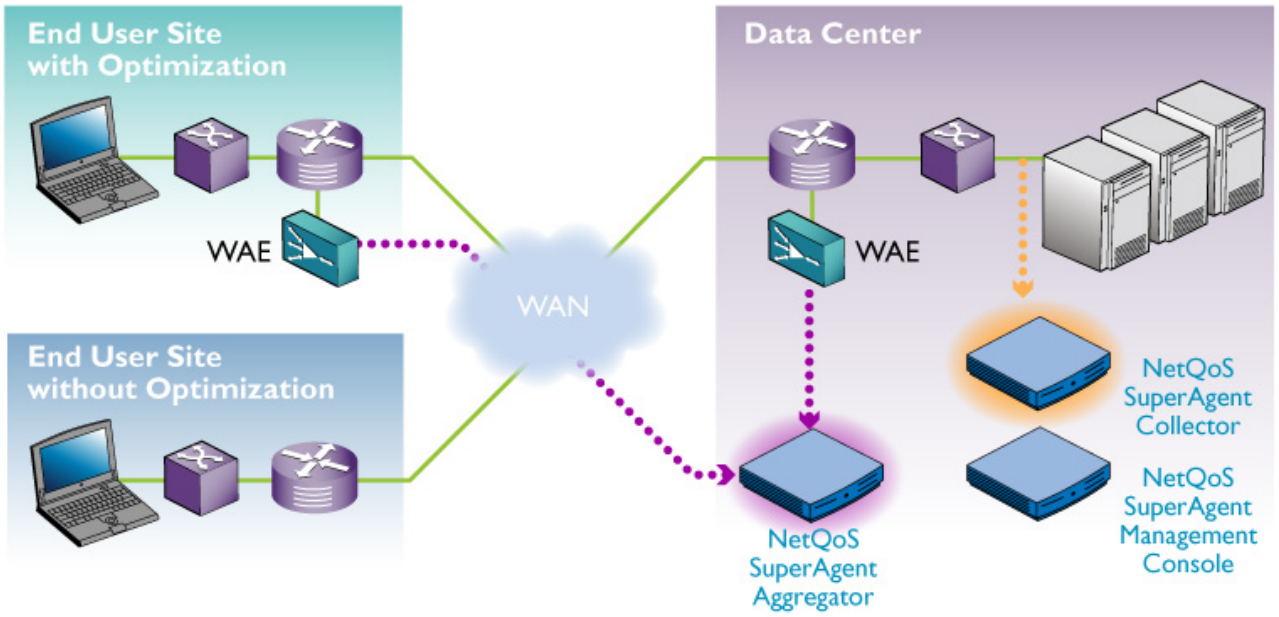

Figure 2: NetQoS SuperAgent and WAAS Integration

performance, the integration of the NetQoS and Cisco software allows network managers to do a better job of planning. In particular, one of the challenges facing network managers is being able to build the business case for deploying a WAN optimization solution. In some instances, the business case is based strictly on either reducing the cost of the WAN or eliminating the need to increase the size of the WAN by deploying techniques such as compression or caching. In other instances, the business case is predicated on making some key application, such as SAP or Oracle, run more effectively.

In order to create either type of business case, network managers need the ability to predict how much of an improvement will be made as a result of deploying a WAN optimization product. Using a tool such as SuperAgent, network managers have historically been able to quantify application performance prior to deploying a WAN optimization solution. However, for the reasons previously discussed, network managers were not able to use their existing tools to quantify application performance after deploying a WAN optimization solution. Many network managers resorted to inaccurate manual approaches, such as timing application response time with a stopwatch. As a result of the integration of the NetQoS and Cisco software, network managers can use SuperAgent to quantify application performance after deploying a WAN optimization product and use this information to build a fact based business case – which is a very good way to show business value.

A Word from the Sponsor – NetQoS

NetQoS and Cisco collaborated to create the industry's first comprehensive end-to-end response time measurement software for WAN Optimization. Users of Cisco Wide Area Application Services (WAAS) devices can now use NetQoS products to overcome the performance monitoring limitations created by WAN Optimization and calculate accurate TCP application response times in a WAAS environment.

With the NetQoS Performance Center, IT organizations can:

- Ensure confident investment decision making with accurate end-to-end visibility
- Accurately quantify end-to-end response time, WAN bandwidth utilization and protocol distribution
- Measure LAN/WAN data throughput before and after Cisco WAAS implementation
- Enable rapid isolation of network and server bottlenecks in a WAN Optimized environment
- Protect and leverage existing investments made in NetQoS and other network and application performance monitoring tools with straightforward third party integration.

For more information, visit www.netqos.com/waas

About Kubernan™

Kubernan™, a joint venture of industry veterans Steven Taylor and Jim Metzler, is devoted to performing in-depth analysis and research in focused areas such as Metro Ethernet and MPLS, as well as in areas that cross the traditional functional boundaries of IT, such as Unified Communications and Application Delivery.

Kubernan's focus is on providing actionable insight through custom research with a forward looking viewpoint. Through reports that examine industry dynamics from both a demand and a supply perspective, the firm educates the marketplace both on emerging trends and the role that IT products, services and processes play in responding to those trends.

Kubernan is the Greek root word for *helmsman* as well as the phrases to guide and to steer. As such, the name Kubernan reflects our mission of guiding the innovative development and usage of IT products and services.

Kubernan Notes
Vol.1, Number 2

Published by Kubernan
www.Kubernan.com

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