

The Mandate for More Effective Application Performance Management



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Introduction

The last few years have seen some very significant changes in Information Technology (IT). For example, network management used to be somewhat simple. It no longer is. Network management used to focus on managing the uptime of network equipment. Today, network management is increasingly focused on managing the performance of applications. That does not mean that managing the availability of network equipment is not important. It is. However, the importance of managing the availability of network equipment, or any other component of the IT infrastructure, has to be seen in the broader context of managing application performance.

One goal of this brief is to describe how managing application performance is increasing in both importance and in difficulty and how this presents a mandate to IT managers. That mandate is to ensure that their organization is continually getting better at managing application performance. Another goal of this brief is to discuss the functionality that IT managers should demand be part of an application performance management tool in order for them to successfully respond to this mandate.

In order to achieve these goals, three IT professionals were interviewed. These professionals were the senior director for engineering and operations at a service provider, the manager of capacity management and engineering at a service provider and a network capacity and performance engineer at a company that provides services to organizations in the health care industry. The interviewees will be referred to in this brief as The Director, The Manager, and The Engineer.

Today's Performance Challenges

As noted, both the importance and the difficulty associated with managing application performance are increasing. The importance is increasing for service providers in part because they are offering more application focused services and it is increasing for enterprise IT organizations in part because of the requirement to increase the productivity of employees who use the applications.

The Director stated that the importance associated with managing application performance "is absolutely more important than it was two years ago because we are offering customers applications, such as personal web pages, that require close management." The Engineer added that his organization provides SLAs to the health organizations that they service and so need to have a detailed grasp of the customer experience. He gave the example of where nurses are using an application to monitor key medical information on their patients. According to The Engineer, "The last thing we want is for the nurse to have to wait for a response."

One of the sources of the growing difficulty associated with managing application performance is the fact that organizations have been adding more functionality to their IT infrastructure. This includes firewalls,

Intrusion Detection Systems (IDSs), Intrusion Protection Systems (IPSS), Quality of Service (QoS), WiFi access points, WAN optimization controllers (WOCs) and application delivery controllers.

The engineer stated that they are currently evaluating WOCs as a possible means to improve application performance. He added that if the WOC tunnels traffic, it could cause them to lose visibility into the traffic running over their network. The Director stated that adding new functionality sometimes causes there to be places in the network that are no longer reachable, but he added that these instances are typically easy to fix. The Director said that the toughest problems occur when the new functionality adds some overhead and hence delay to a composite application. He gave the example of where multiple applications have to interact with each other and with multiple databases. According to The Director, in many cases the extra overhead causes some transaction that is far removed from the where the delay was introduced to malfunction and that this is “next to impossible to track down”.

Another source of difficulty relative to managing application performance is the evolving approach that many IT organizations are taking to application design. For example, during the mainframe era, the majority of applications were monolithic. Monolithic applications are self-contained, which means they can perform every step needed to complete a particular function. While it is still possible to find monolithic applications¹, applications are increasingly less likely to be monolithic and are increasingly more likely to be n-tier applications² that are distributed over a WAN.

Driven by the desire to reduce cost, many IT organizations have already begun to deploy some form of virtualization; i.e., server, desktop or storage. In addition, driven by the requirement to increase the agility of application development, many IT organizations have begun to develop applications based on a Service-Oriented Architecture (SOA). The movement to deploy a virtualized IT infrastructure as well as the movement to deploy applications based on an SOA will further increase the difficulty associated with managing application performance³.

Characteristics of an Effective Application Performance Management Tool

In order to successfully respond to the mandate to ensure that their organization is continually getting better at managing application performance, IT managers must drive their organization to choose an application performance management tool that can respond to the current and emerging challenges.

Two of the key characteristics of an effective application performance management tool were alluded to in the preceding section of this brief. In particular, the preceding section commented on the fact that IT organizations are implementing virtualization in order to reduce cost. Given that the vast majority of IT organizations are under constant budget pressure, a key characteristic of an effective application performance management tool is that it is cost effective.

The engineer stated that when they did a comparison of application performance management tools they compared the cost per managed element and found a wide variance. He added that in addition to cost per managed element, they also looked at the various application performance management tools from the perspective of the value they provided. For example, how much time did it take a network administrator using the tools to perform basic management tasks? Similar to The Engineer, The Director pointed out that he does not focus unduly on the cost per managed element, but he also looks at the

¹ A word processing application is an example of a contemporary monolithic application.

² The typical 3-tier application is comprised of the user interface, the business logic, and the database.

³ The Perfect Storm, <http://www.networkworld.com/newsletters/frame/2008/051208wan1.html>

value the tool provides. The example he gave is that he looks closely at factors such as does the tool help his organization to identify an issue before it impacts the end user. The Manager was in agreement with the idea that while cost is important, so is the value the tool provides and stated that he looks at factors such as will he have access to real time data, back in time as far as he needs it, without that data being aggregated.

The preceding section of this brief also commented on the fact that driven by the need to become more agile, many IT organizations have begun to develop applications based on an SOA. Given that the development of applications is becoming more agile, it is incumbent on IT managers to ensure that the tools that their organization uses to manage applications enable management agility. One of the ways that an application performance management tool enables agility is by allowing the vendor to add new functionality to the tool quickly. In particular, IT managers should look for tools where new functionality can be added in a matter of days. IT management should also look for tools that implement open Application Programming Interfaces (APIs) in part because open APIs make it easy to import third party data into the tool.

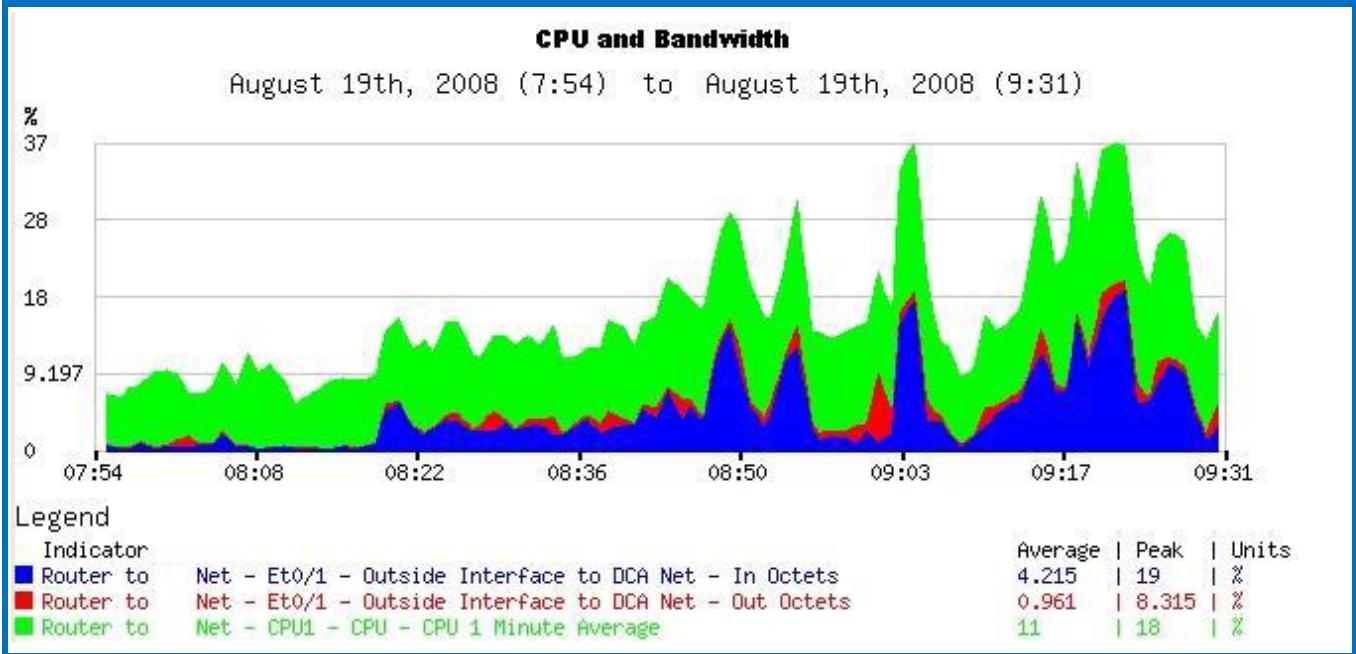
The Engineer summarized the feelings of the three interviewees relative to the need to add new functionality to an application performance management tool quickly when he stated that “If new functionality can be added to a tool in a week, I am overjoyed. If it takes three months, I am frustrated.” The Director highlighted the importance of implementing an application performance management tool that supports an open API. According to The Director, his organization uses the data that is collected by their application performance management tool in four applications. He stated that part of the value of their application performance management tool is that it allows them to “collect data one time and use it four times.”

The Simple Network Management Protocol (SNMP) is one of the protocols used by application performance management tools in order to monitor the myriad devices the impact application performance. Unfortunately, many application performance management tools either have a high SNMP polling interval, a limited ability to store data, or both. Having a high polling interval (i.e., polling once a minute) means that key events such as spikes in traffic are not seen. In order to be able to observe these types of events, application performance management tools must be able to poll frequently – as often as once a second.

The Director pointed out that his company provides lifeline services such as 911 service and that it is critical that they can poll these lifeline services every second. The Engineer and The Manager stated that their organizations use a low polling interval primarily for troubleshooting. While The Manager added that they typically troubleshoot using five second polling, The Engineer pointed out that they often need to be able to poll once a second to identify spikes on WAN circuits.

Another way that an application performance management tool enables agility is by storing volumes of data that can be used for both troubleshooting and planning. The interviewees were unanimous in asserting that storing volumes of management data is important, but that the data must not be aggregated. The Engineer stated that it is important to be able to go back months, in part due to compliance requirements. The Manager added that “If I need to correlate an event that occurred six months ago, I need that data and aggregated data does not show me much.” The Director pointed out that if his organization needs to identify what is normal traffic for a Sunday afternoon that they may need to go back six to twelve months and that aggregated data is “completely useless”.

Figure 1: Multiple KPIs on a Single Graph



Related to the issue of the agility that is enabled by a network management tool is the issue of ease of use of the tool itself. In particular, any management tool that is difficult to use will either not be used, or will be used in a sub-optimal fashion. Many characteristics of a management tool impact its ease of use. One of these characteristics is the concept that is often referred to as a *single pane of glass*. In this context, single pane of glass refers to having all of the relevant information on the factors that impact application performance available on a single screen. Having a single pane of glass not only reduces complexity, but it also speeds the time to trouble resolution because it eliminates the need for network managers to have to go back and forth between screens.

Another key characteristic of a management tool that determines whether or not the tool is easy to use is the tool's ability to present meaningful information on a single report. Similar to the case with a single pane of glass, this eliminates the need for network managers to manually extract information from several reports in order to compare trends and look for relationships amongst those trends. Figure 1 exemplifies the ability of an application performance management tool to graph multiple key performance indicators (KPIs) on a single report. In particular, [Figure 1](#) shows the two-way bandwidth utilization between a router and a network as well as the CPU utilization of that router.

Summary and a Call to Action

As demonstrated in this brief, managing application performance is growing in both difficulty and importance. In order to be successful, IT managers must make sure that their organization chooses a tool that can respond to the current and the emerging challenges that are associated with managing application performance. In particular, this tool must:

- Be low cost
- Make it easy to add new functionality
- Support open APIs
- Support flexible polling intervals
- Maintain large volumes of management data that are not aggregated
- Support a single pane of glass view into all of the relevant management data
- Provide meaningful reports such as multiple KPIs on a single graphic
- Allow network managers to see as many of the MIB variables as they want
- Access data from a variety of sources including SNMP, NetFlow, NBAR, IPSLA
- Utilize a distributed architecture that eliminates single points of failure and which scales in both performance and in terms of the number of elements that can be supported

About SevOne

SevOne delivers the most scalable and robust network and application performance management system available today - and at a price point notably lower than the competition. Built using a Point-to-Point (P2P) architecture to keep pace with today's constantly evolving networks, SevOne delivers blazing fast, fully customizable reports and graphs that are specific to the technologies that matter to you including VOIP and virtualized servers.

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