Application Performance Management
Intelligence for an Optimized WAN
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Abstract

Application performance management tools provide visibility across the enterprise, along with the intelligence that can be used to improve efficiency and enhance the end-user experience of employees, associates and customers using the network. This white paper discusses the benefits of application performance management tools and explains how organizations can take advantage of its benefits to deliver value.

Introduction

The demands on today’s enterprise and IT are unrelenting: enable a mobile workforce, migrate to the cloud, drive more revenue and growth, provide a better customer experience, find an application for it and get it online, do it faster, better and cheaper … 24x7x365. Often, the enterprise network is the conduit for those initiatives, and businesses are leaning on their networks—hard.

As the enterprise network becomes more critical, so does ensuring its performance. That task is neither simple nor insignificant. Network complexity has soared, applications are proliferating and more decentralized, traffic has increased. IT organizations are looking for ways to manage delivery and performance of key applications on the network, and ensure reliability, security, and cost-efficiency. Today, network problems can come with a devastating price tag.

The High Cost of Outages

RIM Blackberry - three-day network outage, costs the company $50 million, plus the lost trust and confidence in the company (September 2011)

Sony PlayStation network outage lasts nearly a month, costs $171.1 million (April 2011)

Amazon Web Services down, crippling popular Web sites and leaving customers with questions about its disaster recovery systems (April 2011)

To manage these challenges, companies are increasingly turning to application performance management solutions—tools and techniques for managing and monitoring applications across the wide area network (WAN). These tools may provide comprehensive, visual representations of happenings on the network, and offer the analysis needed to take action and make informed decisions. Application performance management can help monitor and manage the performance of the wide area network, and the business-critical applications that run over it, including Voice over Internet Protocol (VoIP).

With application performance management in place, businesses can identify (and resolve) issues on the network faster, provision the bandwidth to support applications more accurately, and plan network upgrades and other tasks with more efficiency.
Business Drivers for Better Network Performance

Today’s enterprise is facing a dramatically changed business environment—one that has evolved significantly even in the past few years. To meet the technological and economic demands of this new landscape, businesses must have better performance from their networks and applications. Among the forces driving that need for performance are:

Increased complexity of networks and applications
The complexity of the networks, the proliferation of applications, platforms, architectures, data, traffic and media types; and the enormous bandwidth requirements from applications that use voice, video, large data files (or any combination thereof)—it’s a lot to manage, especially in a time when hard economic realities mean doing much more with much less.

Requirement to increase profits, decrease spending
The pressure is on business to increase revenue, be competitive and grow. To get ahead, businesses are tasked with identifying efficiencies, lowering costs, and finding new revenue streams. IT organizations are also expected to be accountable in how they show value, and deliver high-quality services that are cost-aligned with finite corporate resources.

The globalization of business
The enterprise is extending its global reach to expand the customer base for current products and services. Digitized business transactions and communication have become core competitive advantages in reaching global markets. Also, increasing numbers of geographically distributed personnel and mobile workers need to stay connected—with headquarters, partners, vendors, customers, and each other—and access centralized data and applications.

IT Drivers for Application Performance Management
The IT organization’s drivers may aggregate up into the more broad-reaching business drivers. Among the typical IT drivers for application performance management are:

- Optimized bandwidth expenditures
- Improved identification and repair of virus and worm attacks
- Reduced application mean time to repair (MTTR)
- Reduced number of trouble tickets and support calls
- Reduced network configuration time
- Better planning for network upgrades and new applications
- Traffic managed at all network locations through one interface
- Prevention of business disruption

The Benefits of Application Performance Management: Analysis and Insight for WAN Optimization

As more enterprises move to a converged network environment, end-to-end monitoring and management of applications across the network becomes increasingly critical. Application performance management tools can help pinpoint when to make changes in bandwidth requirements and Class of Service (CoS) settings to improve end-user experiences; decrease operational costs by making the most of investments in network, applications and VoIP infrastructure; provide the insight needed to successfully introduce new business applications; improve productivity; assess readiness for a VoIP deployment; and assess the overall performance of the end-to-end network. There are numerous application performance management tools on the market, and capabilities will vary.

Enterprise-class application performance management tools will provide the following benefits:

End-to-end, panoramic visibility across the WAN

Application performance management tools can monitor application performance across the wide area network and provide end-to-end, panoramic visibility. They should also be able to provide granular focus into specific LAN, hardware, application or call details to help resolve issues when necessary.

Determine usage by applications to optimize the network

Tools that offer data collection and rapid pre-processing at the hardware level can identify, at a minimum, the ‘top-talkers,’ (the most frequently used applications and the most frequent users of the network) if not all applications and users; as well as specific protocol traffic flow distribution. The ideal tool combines broad coverage with granular data across the WAN. This information helps determine utilization by application, incorporate policies to help improve the performance of distributed applications and optimize the network and other infrastructure investments.

Isolate domains faster—reduce fingerpointing

“Is it the network, or is it the application?” The analysis of distributed application performance data reduces the guesswork, and reports can serve as a collaborative vehicle for the network operations center and application performance teams to resolve problems.

Most IT groups monitor key network and system components, but a lack of visibility into the end-to-end health of applications often results in IT managers spending too much time trying to isolate problems. Meanwhile, users are frustrated, the organization’s mission is suffering and revenue is being lost.¹
Data-driven insights for better planning:

Historical behavior profiles can be used for network resource planning to minimize over-provisioning while preserving service quality.

Enable WAN optimization:

Application performance management tools are an essential component of WAN optimization (tools and techniques used by businesses to get the best performance from their networks).

What's on your network today?

Application performance management data can provide a snapshot of what is happening on your network – and where it’s happening. For example:

- New applications
- Rogue applications
- Top applications by Class of Service
- End-to-end network performance
- Physical aspects of your network
- Logical aspects of your network
- Bandwidth use by Class of Service
- Real time metrics
- Historical data
- Class of Service validation
- Throughput by application
- User information
- Service level metrics such as delay, packet delivery ratio, jitter, and availability
Not Just Another Application: Special Considerations for VoIP and Other Real-Time Applications

Companies of all shapes and sizes are increasingly taking advantage of the benefits of a business VoIP service, which can offer greater flexibility, ease of management, and a pathway to fully unified communications. In VoIP, applications performance management has special relevance.

Unlike data, voice leaves no margin for error. Critical voice communications, whether it’s a video conference with a critical client, or a 911 emergency call, must come through at the level of quality that people have come to expect from their legacy technologies. Companies must be equipped to proactively address those unique performance requirements and ensure levels of reliability well above those required with data applications.

Applications performance management solutions enable enterprises to successfully deploy and manage VoIP to leverage its benefits without negatively impacting data performance within a converged network.

The link between applications performance management and VoIP success

Organizations deploying VoIP find that having a strategic plan in place for VoIP performance management helps to ensure a more successful VoIP deployment. A comprehensive, enterprise approach lets network managers manage the entire VoIP lifecycle – from pre-deployment assessment, to ongoing monitoring and management, to optimizing and planning for future growth. Each phase in the lifecycle is supported by applications performance management.

Assess pre-deployment readiness for VoIP

A successful VoIP rollout requires voice traffic to coexist with business-critical data. A complete assessment of network infrastructure, from LAN and WAN to desktops and phones, is required to temper the risk of major performance issues – both with existing applications and with your VoIP rollout. Assessment is a wise best practice. The changes made to optimize VoIP during this phase will lead to a smoother deployment, higher performance and fewer problems throughout the rest of the VoIP lifecycle.
Monitor quality to identify degradation before end users are impacted
The key to proactive monitoring is to identify potential issues before performance is actually degraded. For example, identifying a huge spike in web traffic that could impact voice quality or a higher than expected number of concurrent calls impacting another business critical application. It is essential to identifying and resolving performance issues before they can impact end users. Having a standing monitoring solution in place also gives you a complete performance history. This enables you to go back and see what happened at any given time, so you can quickly identify root causes and reduce MTTR. Ongoing monitoring can be conducted at several points on the network: from the core, individual routers, distributed points on the network, and WAN links.

Manage VoIP to resolve problems
Many factors can cause problems with VoIP – from physical problems on the local loop, to an over-utilized port, to mis-configured CoS settings or high levels of jitter within the voice application itself.

For a management and troubleshooting strategy to be effective, it also needs to be broad – offering visibility from the edge phone to the WAN link, between remote locations, and from the core across the distributed network. This is critical to identifying and isolating the cause of degradation to reduce the MTTR. Intermittent issues can be a greater challenge than real-time issues because they come and go, often increasing and causing more havoc over time. With VoIP, it is especially important to find and resolve intermittent problems before they grow and impact an increasing number of users. To do so, network managers must be able to troubleshoot issues ranging from the local loop to the port to service level parameters across every site.

Optimize to make the most out of VoIP
Making the most of VoIP is an ongoing process that requires capacity planning and traffic management, baselining performance, and continuous improvement. For an IT manager with a converged network, the management information ranging from the edge to the core is critical to making control decisions that improve performance.

Granular visibility can help make decisions such as:

- Increasing bandwidth to handle additional VoIP usage
- Leveraging and fine-tuning CoS capabilities with an MPLS deployment
- Improving service level parameters from the service provider
- Building out the physical infrastructure to meet the new demands for a converged network
- Eliminating recreational file sharing and streaming media applications
- Shaping traffic so the most business-critical and delay-sensitive applications have priority
Applications Performance Management as a Managed Solution

The exploding complexity and volume of technologies in the IT landscape is driving demand for tools that help manage it all—and yet the tools themselves must be managed. Having a service provider manage the applications performance management solution can be helpful.

This is particularly true for businesses using MPLS to deploy VoIP because of the additional, ongoing configuration tasks and requirements for fine-tuning CoS settings to manage and prioritize network traffic. Historically, an enterprise often requires at least three configuration attempts for initial setup and semi-annual fine-tunings of CoS settings. Each configuration pulls resources from the network organization. Some vendors offer managed services for both the network and the applications performance management solution for managing that network.

Managed applications performance management is an option for businesses that cannot, or prefers not to, allocate IT resources to training, monitoring and ongoing application configuration tasks. A managed applications performance management service offers particular value if customer and provider can access the same views of the same data, and everyone can work from the same information.

What’s Next?

Application performance management is a key element in the WAN optimization initiative, and enterprises looking to make the most of their resources are increasingly adopting application performance management solutions. Gaining a view across applications on the network and information about their use and performance lets you troubleshoot and manage the network infrastructure more effectively, pinpoint performance problems for faster troubleshooting, prioritize traffic and measure application performance trends to determine consumption of network resources.

Enterprises using applications performance management and WAN optimization initiatives have already seen large gains in productivity and efficiency, reduced expenses and more contented end users. As the IT organization takes on an increasingly strategic role in the enterprise, and as organizations become more proactive in preventing issues from occurring in the first place, applications performance management will be an investment in which companies will realize ROI quickly.
About XO Communications

XO Communications is a leading nationwide provider of advanced broadband communications services and solutions for businesses, enterprises, government, carriers and service providers. Its customers include more than half of the Fortune 500, in addition to leading cable companies, carriers, content providers and mobile network operators. Utilizing its unique combination of high-capacity nationwide and metro networks and broadband wireless capabilities, XO Communications offers customers a broad range of managed voice, data and IP services with proven performance, scalability and value in more than 85 metropolitan markets across the United States. For more information, visit www.xo.com.


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