WHITE PAPER
Application Aware

The Untapped Treasure

Mining Value Out of Current Network and Application Assets

Introduction: Gaining Visibility into the Network

It's one of the heaviest holiday shopping days of the season, and a major online bookseller experiences a spike in failed payments as its credit card transaction application falters. Each minute of downtime costs the company revenue dollars, as well as lost transactions and repeat customers.

All levels of the company shift into high gear. IT scrambles to find the nature of the problem and get the application back online. Customer service steps up to handle frustrated customers before they leave for competitor sites. The PR department issues a statement. C-level executives seek immediate answers to what happened, why it happened, when it will be resolved, and how much it will cost.

Today's global organizations increasingly depend on their network infrastructure and essential applications. Mission-critical business processes rely on the performance of applications, hosts, networks, WAN infrastructure, and end-user systems. These elements must work together to consistently deliver the level of performance employees need to do their jobs effectively and customers need to purchase goods and services. As the example above shows, application failure can be fast and furious with devastating results. Without visibility into the network and applications, it's difficult to see this coming.

Fortunately, it doesn't have to be this way. An efficient network helps decrease the risk of downtime and resulting financial losses, and it streamlines the experience of users, vendors, and customers. To benefit from the promise of efficient networks and the sophisticated, bandwidth-intensive applications that run on them, organizations need insight into their networks. That's where application aware networking comes in.

An application aware networking solution provides a view of how internal and external applications, such as e-commerce Web sites, Voice over Internet Protocol (VoIP), and customer relationship management (CRM), perform on the network and how network performance affects end users. As a result, organizations can quantify the effect of performance problems. Tools and services that deliver visibility into network and application usage help organizations get more value out of their networks.

Application aware networking is *working:* those organizations that are using visibility solutions experience an 83 percent success rate in resolving application performance issues and a 90 percent success rate in resolving network performance issues before they affect end users.[1] These organizations are succeeding with visibility strategies that gauge the impact of network and application performance on the end user and improve the utilization of available network capacity.[2]

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1 Debarros, Jeffrey and Hyoun Park, Benchmarking Network and Application Visibility: Reduce Downtime to Keep the Enterprise Running. Aberdeen Group, August 2009.
2 Ibid.

Challenges from a Lack of Visibility

An ordering system slows down. An email server crashes. Voice quality deteriorates. When it comes to solving network and application performance problems, what you can't see **can** hurt you. And if you can't see clearly enough into the network, application, and VoIP infrastructure, you can't spot trouble early, pinpoint its cause, and provide the appropriate fix. Before you spend money to revamp your network or rework your applications, you need a solution that offers comprehensive visibility into your network assets.

Prioritizing applications to support business-critical processes

Application performance issues can interfere with employee productivity. Often organizations deal with network slowdowns by adding more bandwidth. If the extra bandwidth doesn't solve the problem, they'll be unprepared to take next steps unless they have tools that offer insight. If employees are consuming 60 percent of your bandwidth visiting social media sites, adding bandwidth won't address your problem. In fact, it might encourage it. To measure performance, organizations need to know what applications, both critical and non-essential, are running across the network and how those applications impact user experience.

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Determining the true cost of legacy applications

Maintaining and upgrading legacy systems are among the most difficult challenges organizations face today. These older solutions—prone to inefficiencies and breakdowns—can result in higher operational costs. Constant technological change often weakens the business value of legacy systems, which have been developed over the years through huge investments.[3] Legacy applications often exchange large amounts of redundant data over the network, which monopolizes valuable bandwidth needed for business-critical applications. Without visibility, trying to determine the performance issues that legacy systems cause and their true cost to the business can be frustrating—and expensive.

Getting an organization-wide view of savings and costs

Consolidating resources, such as reducing the total number of servers or server locations, is a proven method for cutting unnecessary cost and increasing return on investment. But when an organization lacks visibility into networks and applications, it cannot properly evaluate actual cost savings.

Consider a Chinese organization that, seeking to reduce contact center costs through optimizing its applications servers in the Asia Pacific region, moves servers from Sydney to Hong Kong. However, the 150 millisecond delay between the two cities causes users previously served out of Sydney to experience noticeable delays.

Within many businesses, the management of applications, infrastructure, and support desks are distinct responsibilities, so different teams across the organization feel the effect of the consolidation. Without the means to observe and effectively measure the effects of change across the organization, businesses cannot fully evaluate the success of their efforts to eliminate waste.

Managing bandwidth to control costs

For the extended enterprise, wide area networks (WANs) are an integrated part of doing business. Exercising control over bandwidth use allows organizations to control their cost. Today's business networks tend to carry a mix of essential and less-critical traffic. Bandwidth tends to be dynamic, meaning that it will change daily or even hourly as network traffic ebbs and flows. With so many applications running across a network, the load of those applications will shift with the number of people using them.

When an organization deploys a CRM technology on a specific data center or server, the network traffic will expectedly increase for that location, along with a potential decrease in bandwidth in other areas. Bandwidth also fluctuates when software vendors push out patches for their applications. Without visibility into the network, an organization cannot control costs by effectively analyzing bandwidth and maintaining appropriate policies for its use.

3 Dawn of the App Aware Network. Information Week, February 16, 2008, http://www.informationweek.com/story/showArticle.jhtml?articleID=206504108.

Making traffic optimization work

Gaining acceptable levels of WAN application performance is becoming a major concern for remote workers attempting to access centralized data. Some organizations, seeking to avoid the high cost of WAN optimization controllers, focus on bandwidth to solve the problem. Others have improved business-critical response times by a factor of more than 12 with WAN optimization that accelerates and prioritizes traffic.[4]

To determine if WAN optimization addresses the inefficiencies and, if so, whether buying a solution or outsourcing to an experienced third party is the best investment, IT teams need visibility into the causes of slowdowns. User complaints can point to a problem but are too subjective for decision-making. Without quantifiable insight into poor application response times, it's nearly impossible to identify where traffic optimization is solving slowdowns and where it's merely hiding them. Making this distinction is fundamental to measuring the ROI of traffic optimization.

Addressing compliance hurdles

To meet the information security requirements of regulations and standards like HIPAA, Basel II, the Gramm-Leach-Bliley Act (GLBA), and the rigorous EU Data Protection Directive 95/46/EC, organizations must aggressively monitor and consistently control internal and external threats to sensitive data. Without visibility, organizations can't gauge their response and risk tightening network access in overly restrictive ways that could harm business relationships.

Uncover Hidden Value with Application Aware Networking

Making a major investment into new networks and applications is not necessarily the answer to improving application performance. But the visibility provided by application aware networking can be. The right set of monitoring and reporting functions can help IT teams identify potential network threats and determine where they can and can't take action regarding the applications running on their network. Organizations employing application aware networking identify particular tools as critical, including tools for analyzing packet flow data, network anomaly detection, and deep packet inspection.[5]

The following best practices can help you uncover the hidden value within your network and application assets and achieve better performance through an application aware networking environment.

To get a full picture into application health, you'll need a set of advanced tools capable of providing distinct but complementary functions.

Get the full picture of application performance

Today's applications are more modular, distributed, interdependent, and sensitive to their execution environments than ever before. To get a full picture into application health, you'll need a set of advanced tools capable of providing distinct but complementary functions.

Monitor end user experiences—Synthetic transaction generation, which simulates the end user experience by assessing keyboard-to-eyeball response time, provides a useful benchmark for evaluating user experience. But you'll also need to understand individual user experience that differs from the benchmark. One way to capture actual end user experience is through passive network traffic monitoring. This form of monitoring lets you perform real-time tracking of who is using an application, for what purpose, when, and where. The latest advances can also play back and analyze an end user's interactions with an application interface.

Map application dependencies—Dependency maps are valuable aids in discovering the source of performance problems, especially when you build them to cross departmental boundaries inside your organization. These maps show you the infrastructure and stack components an application touches as it uses the network, so you can discover if any of these will impact service delivery to the end user.

Monitor component health—While mapping application dependency reveals the static structure of a complex application stack, you also need to track the health and performance of the components that form the stack to determine their ability to actually execute current and future transaction flows effectively. Today, you can find various technologies that target the components of the application stack or its supporting infrastructure. These resemble the tools for monitoring end user experience.

4 Simic, Bojan, WAN Optimization Services: The Demand is Increasing and So are the Expectations. Aberdeen, January 20, 2009.

5 Debarros, Jeffrey and Hyoun Park. Benchmarking Network and Application Visibility: Reduce Downtime to Keep the Enterprise Running, Aberdeen Group, August 2009.

Trace business transactions—When a problem with application availability surfaces, you need to know now, not 15 minutes from now. Business transaction tracing continuously traces all individual transactions—even in around-the-clock production environments under high traffic load.

Buy according to your company's strengths (and weaknesses)

As a first step, determine what application assets you own and what tools you possess for monitoring application and network health. By assessing which applications are critical for measurement and which can wait, you can begin to define and prioritize your need for additional tools. The most effective solutions provide flexible reporting features that speak to the needs of both technical and non-technical stakeholders in your organization. They deliver improved problem-solving capability, effective information flow, and increased collaboration across functional departments.

You can better grow with the flow when you take advantage of visibility solutions that enable short, middle, and long-term approaches to network and application visibility challenges. You can choose from a tool to resolve a specific issue, a scaled solution that grows with you, or a fully integrated platform.

However, it's important to connect the capacity of the solution to the expected results at a granular level. As challenging as it can be, organizations must ensure that their visibility solutions actually deliver the information they need to solve the problem they uncover, whether that's identifying traffic patterns that contribute to spikes in bandwidth, protocol mismatches, or the degradation of application performance.

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Explore emerging cloud services like Software-as-a-Service

To make an informed choice, be sure to look into cloud-based solutions, such as Software as a Service. SaaS allows organizations to replace up-front capital expenditures with a pay-as-you-go model of managed services that typically costs less than on-premises implementations. Organizations of all sizes benefit from a SaaS delivery model that offers a la carte purchasing options and the ability to increase capacity as needed. According to a recent independent research report, "SaaS eliminates the need for firms to acquire their own instance of hardware as well as associated testing."[6] SaaS can also ease the burden of adoption by controlling the licensing, training, and support costs of adding new users.

SaaS combats low user adoption rates with user-friendly interface designs that mimic the natural flow of web programs. The SaaS model should combine device monitoring, alarming, fault isolation, root-cause analysis, service-level reporting, and IT service management, so organizations can isolate the cause of incidents and quickly remediate issues across their infrastructures. The best solutions provide features that serve both the IT manager and the senior executive.

Choose a vendor with a proven track record

When choosing a vendor, look for strengths that align with your company's network goals. Vendors that take a modular approach can scale their services to match current and future system needs. The vendor should offer an integrated suite of fault management and monitoring tools with reporting capabilities that provide a cost-effective, secure solution for global network device management. The tool package should provide insight into the IT infrastructure through detailed views into network devices and their inter-dependencies, and it should include a portal for companies to perform troubleshooting, impact analysis, remediation, and other operational tasks.

With modular solutions, the technology can grow right along with your organization, so you don't have to commit to more tools than you need. The chosen solution should feature powerful tools for both passive and active network monitoring. Passive monitoring allows real-time tracking of who is using an application, for what purpose, when, and where. Active monitoring can employ software agents, hardware probes, or a combination of both to generate synthetic network traffic for benchmarking and measuring network availability and performance.

Use visibility to plan for the future

By improving your application and network visibility tools, you can make better use of such capabilities as multi-vendor support, improved business intelligence, and management information. You can also learn valuable lessons that will help you determine how to structure the infrastructure in the future. And you can identify the functionalities you will need to glean the most value from your networks and applications now and in the future.

6 The ROI of Software-as-a-Service, Forrester Research, Inc, July, 2009.

Conclusion: Visibility Untaps the Treasure

Managing network and application performance, traffic optimization, and bandwidth needs can prove complex. Successful organizations are focusing on gaining real-time visibility and analytical capabilities for a wide variety of network traffic. They are developing this visibility into performance thresholds and capabilities to dynamically adjust their network and application standards. And they're aligning data collection and information outputs from network and application visibility with critical business processes that focus on increasing uptime and improving end user experience.[7]

To mine the untapped treasure in your existing IT assets, you'll need to understand how your applications and networks interact with each other. You can facilitate this understanding by deploying solutions that provide visibility across the infrastructure.

Application failures don't announce themselves. They can hit with the speed and unpredictability of a thunderbolt and leave you floundering for fixes, unless your organization has the tools to thwart them. Application aware networking tools would help our online bookseller determine if a crash was on the horizon and—better yet—take the necessary steps to prevent it.

As a trusted partner, Verizon can help you make application aware networking a success in your organization. For information, visit www.verizonbusiness.com or contact your Verizon Account Manager.

7 Debarros, Jeffrey and Hyoun Park, Benchmarking Network and Application Visibility: Reduce Downtime to Keep the Enterprise Running, Aberdeen Group, August 2009.

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