Guide to IT Best Practices in Application-Aware Network Performance Management.

GUIDE TO IT BEST PRACTICES IN AANPM

This guide is intended for companies, organizations, and IT professionals who are looking for a network and application monitoring tool that provides a holistic view of application performance, including performance monitoring, from the end-user perspective.

Executive Summary

A fact of life in modern IT shops is that enterprise organizations are constantly being asked to do more work with fewer people, as the size and complexity of infrastructure and applications continue to grow unabated. In addition, most enterprise organizations have a proliferation of stand-alone monitoring tools for network, application, server, database, and end-user performance. Typically, these tools are not integrated with each other and offer no correlation of anomalies between discrete monitoring tools. Each IT team watches their monitoring tool(s) of choice, yet there is no holistic view of the performance of interdependent applications, servers, and networks. This disconnect leads to the familiar situation where IT infrastructure and application teams report "all green," that is, no issues are evident on their monitoring consoles, while end-users are lighting up the help desk lines with reports about poor application performance. The only effective way to manage and troubleshoot modern application performance starts from the end-user perspective, using an integrated management solution that understands the relationships between components of the application and the network. This performance management solution must be easy to use, include comprehensive alerting, and offer reporting that correlates data from each component of an application and the underlying infrastructure.

An introduction to Application-Aware Network Performance Management

What's in a name?

Network performance management has been around almost as long as computer networks. The relatively recent emphasis on applicationaware network performance management has created some acronym confusion in the industry. For instance, Gartner has announced a new magic quadrant in network performance management and diagnostics (NPMD) that will be released in 2014. Enterprise Management Associates uses the acronym ANPM when discussing application-aware network performance management, while the general IT community typically uses the abbreviation AANPM. All of these terms and abbreviations derive from the key concept of application-aware network performance management, correlating pertinent data from application performance management (APM) and network performance management (NPM) to create cross-platform visibility that enables all branches of IT to ensure high -performance delivery of critical business applications.

Application-Aware Network Performance Management (AANPM) is built upon the concept that your performance management and troubleshooting tools must understand more than just servers, storage, application components, and network devices. To quickly identify the root cause of performance issues in a complex application environment, AANPM performance management tools must also understand the relationships between application components and the underlying infrastructure. AANPM discovers and recognizes these relationships just as social networking is built around understanding the traits of individuals, as well as understanding the relationships that individuals have with other members of the social network. Monitoring and troubleshooting tools that are not aware of the components of an application, the underlying infrastructure, and the data flows between each are only giving you part of the performance picture. This concept of leveraging knowledge about the relationships and traffic flows between application components is what sets AANPM tools apart from traditional monitoring and troubleshooting tools.

AANPM Drivers and Trends

Application performance and network diagnostic tools have been around since the beginning of networking, so why is AANPM such an important approach to troubleshooting performance issues today? Traditional approaches to performance troubleshooting, that is, disparate monitoring tools for different application and infrastructure components, is not an effective strategy due to a lack of correlation of data between the various application components. Without data correlation, you cannot see the big-picture perspective of performance issues. Also, all performance monitoring must start with the end-user experience. If your AANPM tool doesn't monitor performance from the enduser perspective, you do not have a true AANPM solution.

Ease of use is an important consideration for troubleshooting application and network performance issues as well. A performance troubleshooting tool that is difficult to understand and operate is of little benefit in the modern IT tools arsenal. As highly experienced network and application engineers are becoming hard to find and even harder to retain, an intuitive tool can be a tremendous benefit for finding and resolving performance issues. The holistic view offered by AANPM now gives every engineer, regardless of training level and expertise, the ability to quickly locate the root cause of a performance problem and engage with the proper resources to remediate the issue.

Lastly, the importance of application-awareness in network management tools cannot be overstated. Traditional views of IT silos—network, server, database, and application—cannot possibly provide the big-picture view needed to effectively troubleshoot application and network performance issues. The outmoded strategy of each support team owning and operating its own monitoring tools, which lacked integration and infrastructure visibility, led to constant finger-pointing as each support team said, in effect, "Our monitoring console shows all green so our silo is clearly not the problem!" AANPM give organizations the knowledge and visibility to avoid staff conflicts and get performance issues resolved in the quickest way possible.

The True Cost of Downtime

According to an end-user survey on IT downtime, from an April 2012 Aberdeen Group analyst report entitled, "Why Mid-Sized Enterprises Should Consider Using Disaster Recovery-as-a-Service," the true cost of downtime for a company with 1,000+ employees is more than $1,000,000 per hour. And that per-hour cost of downtime is increasing by more than 15 percent per year as IT shops increasingly rely on complex, automated technology to do more work with less headcount. This same survey also indicates that enterprise companies suffer from an average of three significant IT outages per year.

The financial stakes to the business are huge. Having an effective, intuitive, easy-to-use AANPM tool at your disposal can be the difference between a few seconds or minutes of downtime or sub-par performance, versus hours—or even days—of troubleshooting and finger-pointing between IT support teams. AANPM gives you visibility and speed to resolve performance issues quickly, saving time and money while keeping end users satisfied and productive.

Best practices for implementing AANPM

If you are looking for a faster, less-expensive, more intuitive way to troubleshoot performance issues, the following are solution characteristics and best practices to keep in mind when evaluating AANPM tools:

- End-user perspective monitoring is a must-have for any performance monitoring tool. You need the capability of performing packet captures on an end user's desktop and time-correlating that information to the myriad of application and network components, pointing directly to the root cause of end-user performance issues.

- AANPM, by definition, leverages converged performance data for all of the components of an application and the underlying network infrastructure into a single, unified management console. This convergence of performance data improves the efficiency of troubleshooting efforts, while simplified workflows in an AANPM tool support quick identification and resolution of performance issues. Some solutions consist of multiple disparate tools that can be configured via a single console, and offer no correlation of data between the tools. Be sure that your AANPM tool of choice offers true integration and correlation of data between components.

- The convergence of performance data sets allows for advanced analytics and correlation of performance issues. Once again, this feature allows for efficient and timely identification of performance issues.

- The existence of converged data greatly enhances cross-team communication and collaboration. With a single performance management interface that offers a holistic view of application performance, IT support teams can work together to resolve performance issues. Converged data also reduces the total cost of ownership (TCO) by consolidating both the data and the troubleshooting diagnostics into a single tool.

- When evaluating the appropriate AANPM tool for your environment, remember the adage, "You get what you pay for." By choosing an AANPM tool that speeds the mean-time-to-know and the mean-time-to-resolve metrics for application performance issues, IT will save money in the long term by quickly restoring application performance issues so end users can achieve their business goals. Being able to monitor application performance from the end-user perspective is key.

Fluke Networks Makes AANPM a Reality

Visual TruView™ is Fluke Networks' flagship AANPM product and represents the easiest-to-use, most powerful application and network performance management solution on the market. Visual TruView presents a unified, time-correlated view of all aspects of application component performance, allowing troubleshooters to easily find the cause and effect of performance issues with just three clicks of the mouse.

Visual TruView achieves this holistic view of application performance by monitoring and correlating five critical aspects of IT infrastructure and applications: end-user response time, retrospective packet analysis, network traffic analysis, device performance monitoring, and voice over Internet Protocol (VoIP) quality of experience.

The OptiView® XG Network Analysis Tablet provides an in-depth, automated, portable tool for network and application analysis. The OptiView XG gives network engineers a hand-held network troubleshooting platform that supports 10/100 Mbps, 1/10 Gbps, and 802.11a/b/g/n wireless LANs. Sporting an intuitive, touch-screen interface, the OptiView XG also offers guided troubleshooting wizards, graphical path analysis, and a navigable schematic of the connections between network switches and connected devices. The OptiView XG supports network speeds up to full line-rate 10 Gbps, making it ideal for verification of network service provider service level agreements (SLAs).
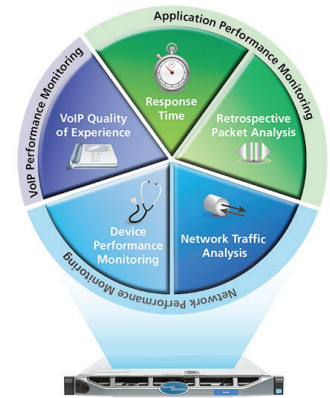
Benefits of Visual TruView and OptiView XG

Visual TruView offers unparalleled, centralized application performance, network performance, and VoIP performance monitoring. The TruView interface gives IT the big-picture, holistic view of applications and network performance at a glance, and consolidates and correlates real-time and historical performance metrics and alerts into a single, unified console. This integrated view of network and application performance, congestion, delays, and related issues offers an intuitive, easy-to-use performance and troubleshooting tool to IT shops of any size, from small to midsize businesses (SMBs) to enterprise customers and service providers. Visual TruView users have the ability to observe the path between end users and the server via the Graphical Path Analysis feature, shown in Figure 1. Graphical Path Analysis offers three-click drill-down capabilities to locate and address performance bottlenecks in a matter of seconds. Visual TruView is also an excellent production application performance monitoring tool, tracking and reporting on the health of devices along that path on an ongoing basis.
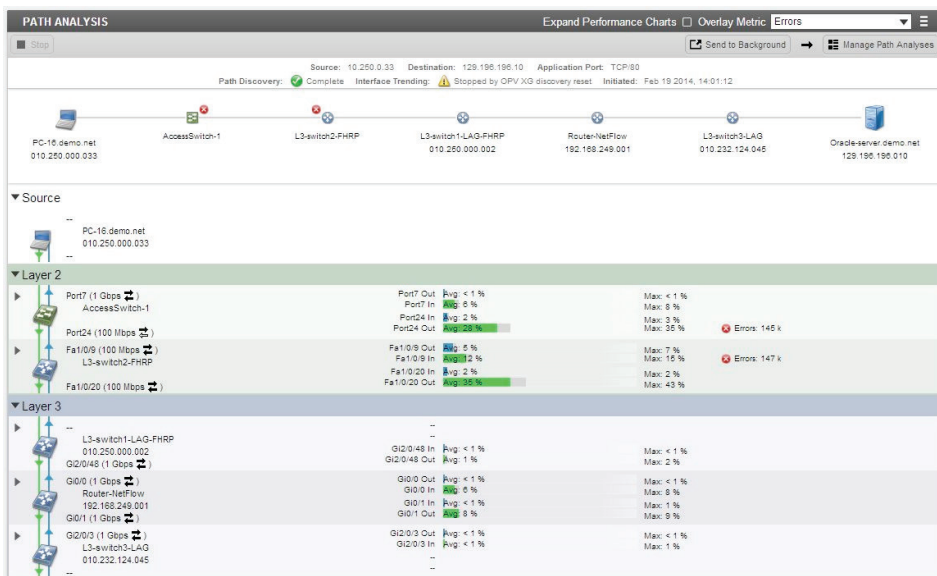
Figure 1: Visual TruView Graphical Path Analysis

Visual TruView and OptiView XG combine for an integrated solution offering unparalleled visibility for remote and centralized performance monitoring and troubleshooting. OptiView XG users gain the ability to understand current and historical end-user response time while troubleshooting on a mobile platform at line rates of up to 10 Gbps.

Enterprise Use Cases

For companies interested in implementing an AANPM tool to cut their time-to-resolution for application performance issues, nothing is more insightful than real-world use cases that show the value an AANPM tool brings to IT.

GLOBAL CALL CENTER

A global call center that fields more than 20 million calls annually struggled to troubleshoot end-user performance issues in a timely fashion. With silos of network, application and database, and server support teams, and no big-picture troubleshooting tool available within IT, efforts to address performance issues were usually performed slowly and inefficiently.

Degraded performance issues were typically addressed via long conference calls or meetings among the IT teams. In addition, troubleshooting would typically start at Layer 1 and work up the stack, trying to pinpoint the root cause. This bottom-up approach to troubleshooting wasted precious time in an environment that handles tens of thousands of incoming customer service calls per day.

With 5,000 end users and a complex application suite that includes customer relationship management (CRM) software, interactive voice response (IVR), custom integration software between the IVR system and the CRM system, and an extensive VoIP implementation, this global call center saw application availability and performance as a significant advantage in a very competitive industry. Implementation of Visual TruView stopped the finger-pointing between IT support teams and broke down the walls between the company's silos of IT expertise, each using their own point monitoring tool.

Visual TruView offers a holistic view of application performance that was previously missing, and the IT support teams have become enthusiastic supporters and users of AANPM. Visual TruView allows troubleshooting efforts to be more focused, and the visibility offered by Visual TruView has converted finger-pointing to collaboration among the teams tasked with keeping IT operations running at optimum performance. The mission-critical application that supports the company's daily operations is the custom integration software between the CRM software and the IVR system. Availability and performance of this software is crucial to the call center agents being able to quickly and efficiently address caller requests. Visual TruView now plays a significant role in keeping this critical software running at peak performance, 24/7/365, via end-user perspective monitoring and a three-click architecture that quickly locates the root cause of application and network performance issues.

> The Senior Network Manager of this global call center offers his opinion: "We used to waste a lot of time and manpower chasing the wrong problems when the network is to blame less than 10% of the time. TruView has radically changed our approach from reactive firefighting to proactive analysis and monitoring. Instead of guessing what might be happening, we can address the actual problem and fix it out of the gate. The visibility into our own network infrastructure has been a huge benefit."

Cimarex

Cimarex is an energy exploration and production company based in Denver, Colorado, with over 1,000 employees located in Texas, New Mexico, Oklahoma, and Kansas. With three major offices, multiple data centers, and more than 25 satellite locations, Cimarex relies on an extensive, complex WAN and LAN architecture to support its daily business. With just three network engineers on staff, the Cimarex IT department was struggling to keep up with the rapid growth of its network, which supports the company's constantly expanding business activities. With the Cimarex network team highly focused on maintaining and expanding the networking infrastructure, they did not have time to properly diagnose and resolve the end-user performance issues that cropped up daily.

Cimarex runs a variety of business applications and a video-over-IP implementation that allows their geologists working at remote sites to participate in virtual team meetings. When reports of an end-user performance issue would arise, the network team typically had no idea where to start looking for the root cause of the slowdown. Cimarex purchased an OptiView XG tablet and installed it in the largest Cimarex data center located in Tulsa, Oklahoma. Initially, OptiView XG was used to baseline current network performance levels for comparison purposes during future performance degradation events. Now that network baselines are established, the OptiView XG is used as a continuously running tool that confirms service provider SLAs, provides deep visibility into network operations, and offers end-to-end troubleshooting of performance issues.

The company's positive experience with OptiView XG led Cimarex to implement AANPM via Visual TruView. With Visual TruView and OptiView XG, Cimarex is now able to remotely diagnose, test, and resolve application and network performance issues in a fraction of the time the network team would have spent previously. Cimarex even used OptiView XG to document an ill-behaved third-party application by taking a packet capture from the end-user's perspective and sending the data back to the application vendor, documenting a performance issue of which the vendor was unaware. Visual TruView and OptiView XG have become indispensable performance troubleshooting and monitoring tools on which Cimarex now relies for the mission-critical work of day-to-day IT operations.

Cimarex Network Systems Engineer Kurt Carlson offers this insight into his experience working with TruView and OptiView XG: "Using Fluke Networks' TruView and the OptiView XG together allows us to shed light on issues that pop up when managing a nationwide network. It gives the entire team insight we've never had before and enables us to differentiate between normal traffic and bigger problems. It's a great tool for not only day-to-day network monitoring, but also troubleshooting and effectively leading us to issue resolution."

About Fluke Networks

Fluke Networks is the world-leading provider of network test and monitoring solutions to speed the deployment and improve the performance of networks and applications. Leading enterprises and service providers trust Fluke Networks' products and expertise to help solve today's toughest issues and emerging challenges in WLAN security, mobility, unified communications and datacenters. Based in Everett, Washington, the company distributes products in more than 50 countries.

For more information, visit **www.flukenetworks.com/content/versiv**

Solutions from Fluke Networks

Fluke Networks offers a range of complementary network and performance management solutions: TruView and OptiView. These are dedicated custom hardware with support and interfaces that provide both 1Gbps and 10Gbps connectivity.

Visual **TruView™** Appliance

TruView provides the ability to track, baseline, trend and monitor individual application performance of every end user experience, enterprise-wide through a highly customizable dashboard. It also provides high volume packet archival at 10Gbps line rate and comprehensive VoIP/Video monitoring and troubleshooting.

More information at **www.flukenetworks.com/truview**

OptiView XG® – Automated network and application analysis

The OptiView XG is the first tablet specifically designed for the Network Engineer. It automates root-cause analysis of network and application problems allowing the user to spend less time on troubleshooting and more time on other initiatives. It is designed to support deployment of new technologies, including unified communications, virtualization, wireless and 10 Gbps Ethernet. The result is that new initiatives get up and running faster and network stay productive even in these days of smaller teams.

More information at **www.flukenetworks.com/xg**

OneTouch AT™ – Client to Cloud troubleshooting in 60 seconds

The OneTouch™ AT Network Assistant greatly reduces troubleshooting time through a streamlined, three-step approach:

1. The unique AutoTest replaces multiple tools and an hour of troubleshooting time.
2. A powerful set of network performance measurements to troubleshoot wired and Wi-Fi networks.
3. It enhances team collaboration through a simple web-remote interface and easy-to-use inline packet capture capabilities.

More information at **www.flukenetworks.com/OneTouchAT**

Fluke Networks operates in more than 50 countries worldwide. To find your local office contact details, go to **www.flukenetworks.com/contact**

Corporate Office:
Fluke Networks
P.O. Box 777 Everett, WA USA 98206-0777
1-800-283-5853
e-mail: **info@flukenetworks.com**

European Office:
Fluke Networks
P.O. Box 1550, 5602 BN Eindhoven
Germany **0049-(0)682 2222 0223**
France **0033-(0)1780 0023**
UK **0044-(0)207 942 0721**
e-mail: **sales.core@flukenetworks.com**