



OptiView – The Complete Solution for Network Analysis

Executive Summary

The continued growth of complex technology in the face of creating new efficiencies is having a profound impact on organizations. The interdependencies that exist today due to these complexities in network technologies and services are unparalleled. Companies embracing these rapid changes are facing unprecedented challenges as they broaden their markets, engender new revenue opportunities, and create new levels of cost-effective operations. Consequently, IT is now a critical partner in the profitability of the business.

This increased reliance on leading-edge technology and infrastructure—in order to meet even basic organizational objectives—requires advanced IT tools to ensure the delivery of services across the networked infrastructure. While there are various methodologies to achieve success in this environment, the bottom line remains the same—minimizing total cost of ownership and increasing return on investment (ROI).

Customer satisfaction and improved efficiency for service delivery are two important factors that must be addressed in today's IT environment. It is necessary for IT organizations to employ the use of tools that not only improve the performance, availability, and reliability of their complex IT infrastructure, but aid in the identification of deviations that may occur within network operations. Identifying and understanding these deviations is essential to ensure optimal network performance in light of what may be a significant event, such as an outage.

Fluke Networks, with its OptiView™ integrated network monitoring solution, offers a product that provides significant value through its ability to efficiently identify trends that could result in performance degradation or, worse yet, a network outage. Fluke Networks' approach yields increased productivity and rapid return on investment. While many vendors may offer packet capture and troubleshooting capability, Fluke Networks discovers the network down to Layer 2 and maps out the topology. It also provides an integrated approach that allows data files to be shared across the broader solution suite, resulting in minimized data collection and maximum data analysis.



Introduction

Fluke Networks, a wholly owned subsidiary of Danaher Corporation, has a long history of building solutions that support the installation, analysis, and monitoring of enterprise and telecommunications networks. In May of 2000, Danaher Corporation recognized the value of this fast-growing segment of the industry and spun off Fluke Networks as a separate stand-alone company. Since then, Fluke Networks has grown to over 300 employees worldwide, with revenues in excess of \$150 million annually—producing and marketing network troubleshooting and testing solutions.

Network analysis and troubleshooting traditionally has involved a combination of rather basic network analysis tools in the hands of highly skilled and experienced network engineers. However, that model is now undergoing a transformation as a result of two forces—increasing network complexity and a reduction in technical resources.

The Challenge

What has been needed is a tool that local support can use in a day-to-day troubleshooting mode—one that allows for the sharing of performance-related data between a local and central support center.

Many IT environments are witnessing continual growth not only in the physical size of the infrastructures, but also in the number of network protocols and services crossing the network. While pundits once predicted that an industry-wide convergence to IP would simplify network troubleshooting, the opposite has happened. Legacy protocols have lingered, while new IP services and protocols are continually appearing. This combination presents network engineers with an ever-increasing number of applications, protocols, and services to configure, optimize, and troubleshoot.

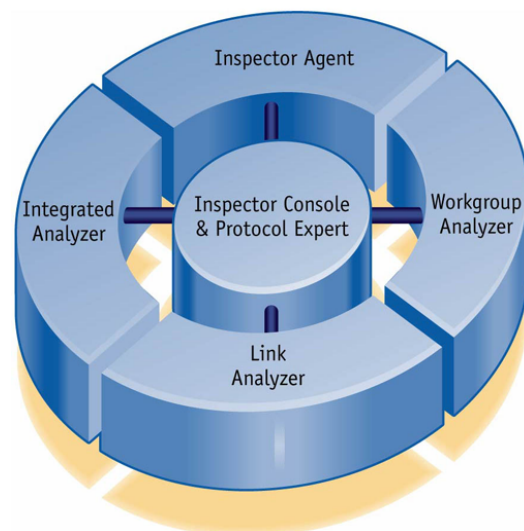
Typically IT departments are more focused on setting up centralized help desks and network operations centers (NOCs) than in providing onsite analysis. Such analysis may be both to solve local problems and to ensure quality of service (QoS) across the networked infrastructure. The departmental support technician is often left with little in the way of tools to assist in

troubleshooting. Many are reduced to pulling plugs in the wiring closet to determine the source of performance problems. What has been needed is a tool that local support can use in a day-to-day troubleshooting mode—one that allows for the sharing of performance-related data between a local and central support center.

The Resolution

Fluke Networks, with its OptiView family of network analysis tools, provides the means to resolve network performance issues that may affect the delivery of services across the networked infrastructure. With the OptiView Inspector Console and Protocol Expert at the core of the solution, together with other OptiView data sources such as the Inspector Agent, and the Analyzer products, Fluke Networks now brings to the market a toolset that is fully integrated.

FIGURE 1. OptiView Network Analysis Solution



The Suite

Fluke Networks has a history of developing solutions that meet customer requirements through providing innovative tools to help the network technician. The next step in this evolution is for Fluke Networks to take all those tools and integrate them to provide a single cohesive solution. The integrated approach that the OptiView suite takes provides significant value by delivering information collected from a variety of activities. Additionally, OptiView leverages the

investment the customer has already made in network management products by collecting data from, or providing information to, these systems.

The key differentiator with the OptiView solution is its cohesiveness as well as its comprehensiveness in delivering information collected from a variety of sources, including seven-layer protocol analysis, active network topology discovery, SNMP device analysis and configuration, RMON 2 traffic analysis, and physical layer testing.

Market Drivers

Economies of Scale

IT infrastructure is not an obstacle for growth, but an enabler for profitability and productivity.

Return on investment is increasingly important, adding to the pressure for effective service assurance and operational efficiency. Both enterprises and service providers are striving to do “more with less,” ensuring that IT infrastructure is not an obstacle for growth, but an enabler for profitability and productivity. This paradox of providing increased network “uptime” in the face of cutbacks in network personnel creates increased demands on IT managers—demands to deliver higher network availability with fewer qualified engineers available to identify and resolve problems when they occur.

As such, an integrated approach to network analysis and troubleshooting is needed to allow IT to keep pace with the accelerating demand for new services while helping to minimize management expenditures. Many network-monitoring products on the landscape today focus on monitoring a specific technology (e.g., RMON, RMON 2, and SNMP). Fluke Networks’ broad-brush approach to monitoring a multitude of technologies makes its solution particularly attractive.

IT Investment – Should I Wait?

To some degree, short technology life cycles have weakened IT investments made by corporate customers. This, combined with the constant drive to reduce costs and increase performance, has placed unprecedented demands on management tools to keep pace with a dynamic market and IT personnel

who need to respond quickly. To that end, the fundamental savings that needs to occur to differentiate products is the savings that results from ease of deployment and, more importantly, ease of use. Both are essential to address the implementation and ongoing administration of the IT environment, and contribute significantly to ensure companies are getting enough business value from their investment.

Performance Management and Network-Based Services

Many factors are playing a role in the link between e-business, performance management, and an increasingly challenging economic climate. Broader business initiatives and reliance on an Internet-based economy demand a solid foundation built on network-based services. This trend is reflected in the explosive growth of private and public networks, characterized by the provisioning and deployment of new services, such as managed applications, voice over IP (VoIP), and virtual private networks (VPNs). Efficiencies and cost savings must be sought on all levels to achieve desirable levels of service.

Convergence of voice and data technologies represents one area where efficiencies are needed. As businesses migrate towards improving processes and creating cost advantages through the convergence of voice and data networks, the need for protocol recognition and business-relevant analysis of packets flowing through a network is vital. Managing infrastructure device utilization statistics with SNMP is no longer sufficient. Tools now need to be able to differentiate between voice and data packets and provide metrics so that quality of service levels can be measured and validated. While this convergence creates technical complexities, both IT managers and business executives demand a view into this technology that is both easy-to-use and demonstrates value in the form of providing a rapid ROI.

Network monitoring solutions must be able to capture the data and provide the mechanism to depict clearly the non-linear behavior of networks. There are no substitutes for these solutions when it comes to network utilization, establishing a performance baseline, managing resources, and planning for future capacity. The difference between performance management products revolves around their ability to collect valuable network data, identify pertinent trends, and convey this information in the most

comprehensive, user-friendly way. The challenge is sorting through and aggregating the abundance of management data on the network—and generating useful business information.

The Competitive Landscape is Evolving

Due to the increasing market demand, many management software vendors are adding performance functionality to their product portfolio—further crowding an existing performance management market. Performance management tools range from traditional reporting tools, such as Concord Communications' Network Health and HP's Trend (formerly Trinagy), to analyzer-type products from such companies as Fluke Networks, Sniffer Technologies, and NetScout.

Solutions from vendors such as NetScout currently provide network troubleshooting tools through the distribution of its probes and software. NetScout differentiates itself through the full support of the RMON (remote monitoring) standards. While this is a strong selling point, it may be a limiting strategy depending upon the evolution of technology-based standards in the market. Another vendor within this market is Sniffer Technologies, with its Sniffer product. Sniffer was one of the first devices to monitor, evaluate, and diagnose network performance problems. Although Sniffer offers a leading solution in the analyzer marketplace, it has traditionally been known for providing a portable troubleshooting tool. With the establishment of recent relationships, Sniffer Technologies has begun the evolution from a network troubleshooting tool towards performance management.

The Fluke Networks integrated family of network monitoring and testing products allows the IT manager to see how all the elements across the networked infrastructure are behaving in relation to the various physical layers and topologies.

Product Description

Functional Overview

Fluke Networks has developed an integrated solution that targets the needs of the enterprise and service provider segments. The Fluke Networks integrated

family of network monitoring and testing products allows the IT manager to see how all the elements across the networked infrastructure are behaving in relation to the various physical layers and topologies.

Features

The Fluke Networks OptiView solution suite, with the OptiView Inspector Console forming the foundation, provides the following benefits:

Flexible, Scaleable Architecture

A complete, system that monitors every aspect of the network is an excellent goal, but most customers wisely choose to implement network analysis on an incremental basis. OptiView supports this approach by offering a system that is flexible and scaleable. All components can be used effectively as stand-alone tools or bundled together as a complete network analysis solution. Customers can start by installing any OptiView analyzer and accessing it locally and/or remotely. Multiple users can operate the analyzers to identify different problems or collaborate to solve ones that are more complex.

By adding the Inspector Console, monitoring and reporting can be performed at a central location, without losing the ability to use the solution remotely. Since the Console supports all the analyzers, there is no need to replace it as more analyzers are added or even learn a new user interface. Portable analyzers (such as the Integrated Analyzer or even Protocol Expert on a PC) can be used as an extenuation of the system, making it easy for customers to install them temporarily to solve emergent problems.

Performance

Discovery of the networked infrastructure is essential to provide effective protocol analysis, as well as insights into trends that are occurring across the networked infrastructure. OptiView's discovery algorithm supports both physical layer (Layer 2) and logical layer (Layer 3) network discoveries. This provides a view into both physical interdependencies and logical connectivity relevant to, for instance, the path of a service across the network. It is this topological insight that forms the basis for OptiView's ability to provide packet trace-route capability, enhanced model analysis, and effective QoS monitoring. All of which are significant attributes when

ensuring the performance of services being delivered across the networked infrastructure.

Switched Network Capability

The OptiView Solution Suite provides the capability to facilitate the monitoring of switched networks. As a result of the discovery process, traffic can be traced across the network with the use of the Trace Switch Route functionality. The use of this capability aids in the identification of how two devices are connected within a switched Ethernet network. When used in conjunction with details such as link speed and traffic utilization, Trace Switch Route functionality contributes to the identification network contention that may be the result of auto-negotiation problems.

Architecture Overview

The OptiView integrated solution is made up of multiple components that are fully integrated in a seamless fashion. At the core of the solution is the Inspector Console and the Protocol Expert products. This new architecture now positions Fluke Networks as a supplier of a fully integrated and distributed network analysis, monitoring, and troubleshooting tool. The major benefits of this architecture are:

- Advanced network discovery on remote sites
- Remote packet capture

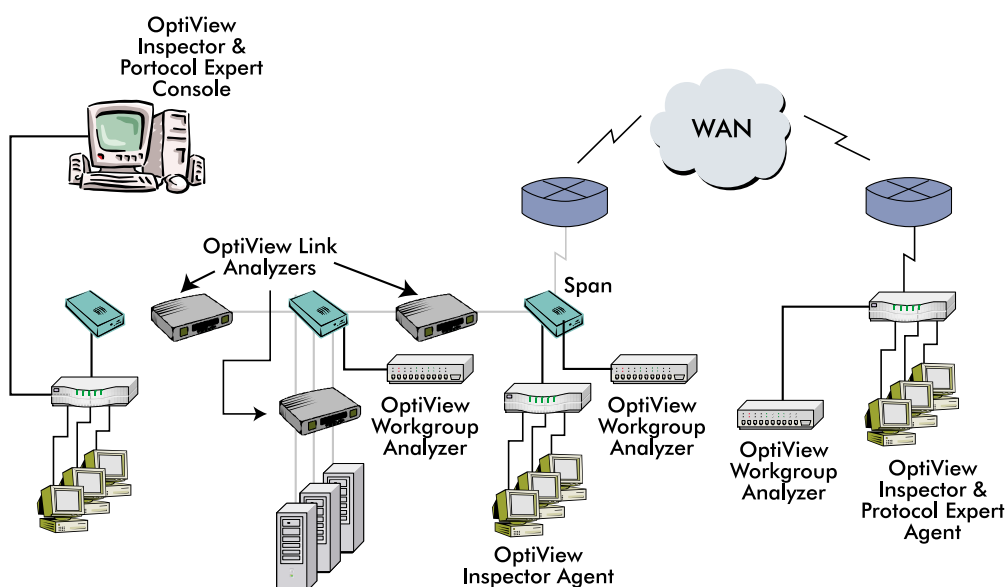
- Ability to upload data into the Inspector Console for the purpose of generating reports and Visio network maps of remote sites
- Ability to upload packet capture files for the purpose of analyzing traffic trends through Protocol Expert

OptiView Inspector Console

The tool at the core of Fluke Networks Network's solution suite is a network monitoring application called OptiView Inspector Console (IC). The IC console architecture supports monitoring of a local agent (i.e., on the same desktop) as well as remote agents. This distributed architecture allows remote data to be collected and stored in local Microsoft Access databases for use at a later date.

Of interest to note is the IC's IT discovery capability. The OptiView IC automatically discovers all the active devices in the broadcast domain. This discovery process supports both Layer 2 and Layer 3 network discoveries and includes the OptiView Integrated Network Analyzer and OptiView Workgroup Analyzer. The knowledge that is gained as a result of this discovery process contributes significantly to the Switch Trace Route capability that the IC possesses. The Trace Route tool provides a means of informing the user how two devices are connected within a switched Ethernet network. Details such as link speed

FIGURE 2. OptiView Solution Suite Deployment Example



and traffic utilization contribute to the identification of bottlenecks that may be the result of an auto-negotiation problem.

This discovery encompasses:

- Device type/names: DNS, IPX login and NetBIOS machine names
- Device addresses: all IP addresses associated with the node and the MAC address
- Device services running: switching, routing, email, Web, and print
- Device interfaces: speed and type
- Device protocols supported: IP, IPX, and NetBIOS

If the IC encounters devices that are not configured properly, such as duplicate IP addresses, or if pre-set thresholds are exceeded, it will automatically inform the end user by generating an alert to the console. Additionally, remote notification is available via email or paging.

OptiView Protocol Expert

The OptiView Protocol Expert (PE) product is another integrated tool in the OptiView suite. It provides packet capture and decoding capability. The decoding capability extends to provide seven-layer analysis of captured data files that have been uploaded. The PE can also run in continuous mode, whereby users can define alarms that can trigger data capture sessions or automatically email or page a technician.

The PE is designed to be flexible in its configuration, so the remote control option allows users to monitor or control other PE consoles. The PE also provides insight into switched segments as well as VLAN infrastructures. Significant attributes that can be monitored include:

- MAC or network layer host tables
- Protocol distribution conversation matrices
- VoIP QoS characteristics

OptiView Link Analyzer

The OptiView Link Analyzer (LA) is yet another piece of the OptiView solution suite. It is a dedicated hardware device that provides the capability to monitor two network segments simultaneously. This functionality is further augmented by synchronizing the data streams captured to analyze timing and events

of the two-way conversation in a full-duplex link. This is a significant point since the industry has historically lacked a cost-effective way to monitor full-duplex links. Since a full-duplex connection consists of two devices, there has been no economical way to introduce a LAN analyzer into a full-duplex link without altering the connection to half-duplex.

The innovative hardware design of the LA enables it to capture and analyze in real time every frame on an Ethernet segment at line speed. This is essential since QoS analysis in a VoIP environment requires accurate inter-frame arrival time measurement and frame count for precise jitter, latency, and packet drop measurement.

OptiView Workgroup Analyzer

The Fluke integrated family of network monitoring and testing products allows the IT manager to see how all the elements across the networked infrastructure are behaving in relation to the various physical layers and topologies.

The OptiView Workgroup Analyzer (WA) is in essence a rack-mounted version of the OptiView Integrated Network Analyzer. Unlike its portable sister product, the OptiView Integrated Network Analyzer, the Workgroup Analyzer is designed for use in a distributed environment. As such, in order to make full use of such as device in a distributed environment, out-of-band access to the OptiView Inspector Console is available so network bandwidth is not consumed. In addition, Fluke Networks has also bundled additional value into this product by architecting it in such a fashion that it can act as remote agents for the OptiView IC product. The OptiView PE product can retrieve data files captured by the OptiView WA for seven-layer decoding and analysis. This further substantiates the value-add of the integrated approach that Fluke Networks has taken with the development of the OptiView suite of solutions.

One of the key benefits of the OptiView Workgroup Analyzer is that it integrates all the features presently found in the OptiView Integrated Network Analyzer. The OptiView Workgroup Analyzer provides the capability of monitoring and analyzing 10/100/1000 Ethernet networks. The flexibility that is the result of the distributed capability of the OptiView Workgroup

Analyzer allows an end user to have a “virtual presence” anywhere on the network. Of significance in both the OptiView Workgroup Analyzer and the Integrated Network Analyzer is:

- Traffic generation capability
- Trace Switch Route capability showing the path between any two devices within the broadcast domain
- Standard 64 MB capture buffer

Pricing and Availability

The Fluke Networks OptiView Network Analysis Solution is available beginning January 2002 from select Fluke Networks sales channel partners worldwide. Pricing for the OptiView solutions range from \$5995 for the OptiView Inspector Console to \$18,995 for the OptiView Link Analyzer. When optional modules are added in, the price can rise significantly.

Summary

Product Name:

OptiView Network Analysis Family

Product Function:

The OptiView suite of solutions provides:

- Advanced network discovery, including remote sites
- Remote packet capture capability
- Uploading of data for the purpose of generating maps of local and remote sites
- Uploading of packet data for further analysis
- Line rate, full-duplex packet capture for 10/100/1000 Mbps Ethernet

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Availability: January 2002

Customer Perspective

“Using the OptiView solution, troubleshooting time was reduced dramatically.”

Customer feedback within the enterprise market was very positive. End users that Enterprise Management

Associates (EMA) spoke with used the OptiView family of solutions to troubleshoot intermittent problems in the network as well as track the overall performance. One particular customer regarded OptiView as an essential part of his overall IT management strategy. He went so far as to emphasize what he felt were key attributes that the OptiView solution provided—ease of use and deployment, both of which contribute to accelerated ROI through improved performance of the infrastructure. This customer went on to note how significant ease of use was: When the company turned the OptiView solution over to its IT support person, who had no prior knowledge of OptiView, this person was able to bring up the OptiView Integrated Network Analyzer in just fifteen minutes and isolate a number of faults shortly thereafter. “Using the OptiView solution, troubleshooting time was reduced dramatically.” As the end user indicated, “this was done out-of-the-box, with no training or instruction; it took ten minutes to figure out and complete.

EMA’s Perspective

Network Monitor or Manager

While the OptiView suite provides extensive capability in the areas of network topology discovery and generation, event notification, and thresholding, it is not a complete network management solution. It is, however, an appealing adjunct to a more complete infrastructure management solution, such as CiscoWorks, Distributed Sniffer, or HP OpenView.

Its integrated approach can provide information collected from a variety of activities, including seven-layer protocol analysis, active discovery, SNMP device analysis, RMON 2 traffic analysis, and physical layer testing. Because of OptiView’s integrated architecture, its deployed components provide significant value and improve efficiencies and productivity within the IT

infrastructure. The result of these improvements is increased return on investment for the Fluke Networks solution.

Industry Impact

The current marketplace for network monitoring and analysis software is replete with sophisticated applications for monitoring an assortment of network infrastructures. However, the cost and complexity of implementing these solutions often exceeds the budgets of many enterprises. What the marketplace lacks is a cohesive solution that ties all the analysis and monitoring products together.

The OptiView solution raises the bar for troubleshooting tools. Its integrated approach and ability to share data across a broader number of applications, combined with its distributed nature, creates an appealing value proposition. While not a complete management solution in and of itself, it still provides valuable capabilities, such as protocol analysis, trace route capability, and link traffic profiling, to mention a few. Such capabilities provide valuable tools that IT managers may want to include in their overall support plans.

About Fluke Networks

Only a year old, **Fluke Networks, Inc.** is already the leading provider of mission critical Network SuperVision solutions™ for those IT visionaries keeping the Net Economy up and running. Each Fluke Networks solution delivers a view into the network users won't find anywhere else, allowing quick resolution of problems or quick identification of where action needs to be taken.

Until May 2000, Fluke Networks was recognized simply as a fast-growing division at **Fluke Corporation**, a \$450 million business acknowledged worldwide as the top manufacturer of electronic test tools. In early 2000, Fluke Corporation's parent company – the **Danaher Corporation** – recognized an opportunity to leverage the networking division into a stand-alone company.

The new company, Fluke Networks, Inc. markets state-of-the-art *Network SuperVision* solutions that support the installation, analysis and monitoring of enterprise and telecommunications networks and the installation and certification of the fiber and copper forming the backbone for those networks.

About Enterprise Management Associates, Inc.

Enterprise Management Associates, Inc. is the fastest growing analyst firm focused on the management software and services market. EMA brings strategic insights to both vendors and IT professionals seeking to leverage areas of growth across e-business, network, systems and application management. Enterprise Management's vision and insights draw from its ongoing research and the perspectives of an experienced team with diverse, real-world backgrounds in the IT, service provider, ISV and publishing communities.

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