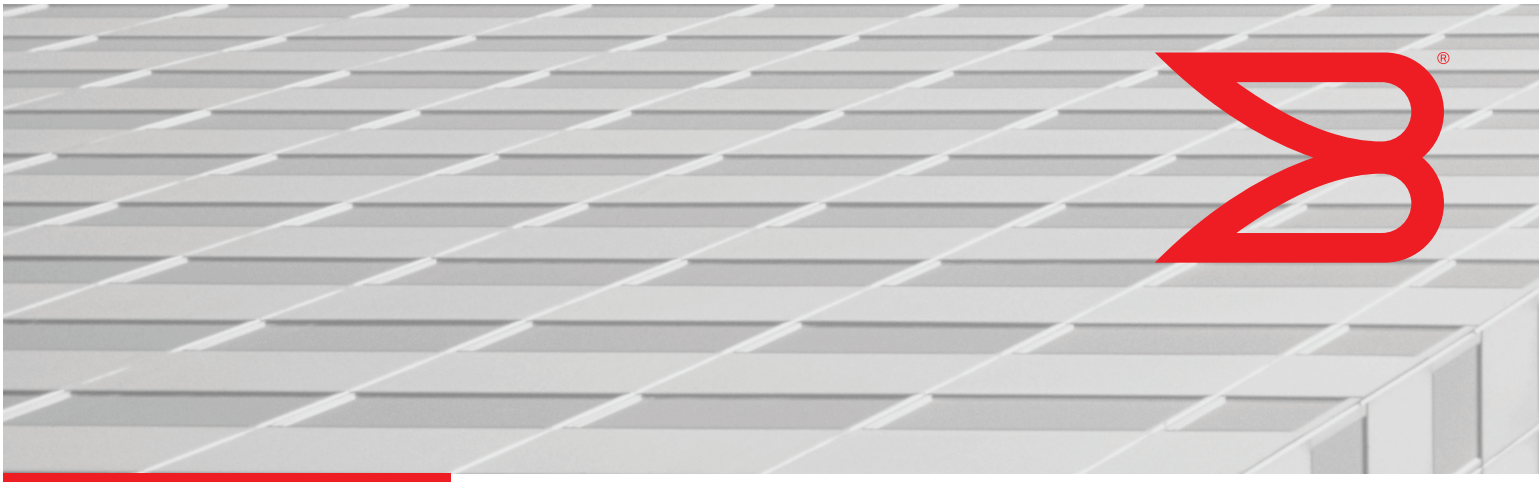
WHITE PAPER



SERVICES

Brocade Network Monitoring Service (NMS) Helps Maximize Network Uptime and Efficiency

Brocade monitoring service delivers business intelligence to help IT organizations meet SLAs, improve resource utilization, and reduce risk.

BROCADE

Data growth, virtual architectures, and new demands for high-availability and high-performance applications are adding complexity in the data center, putting increased pressure on IT organizations to keep their networks available 24×7 and operating at peak performance. Monitoring and managing these increasingly complex infrastructures is a growing problem. Existing management solutions are piecemeal, requiring too many applications and vendors to monitor the environment—complicating problem resolution. In addition, many management tools require multi-domain experience and specialized expertise—resources that many organizations simply do not have.

In contrast, Brocade® Network Monitoring Service (NMS) is a next-generation solution that can help organizations more effectively optimize network and application availability, performance, and efficiency across data center fabrics. Brocade NMS gives IT organizations the information and business intelligence to optimize resources and proactively manage their dynamic application environments to meet Service Level Agreements (SLAs). As a result, Brocade NMS offers organizations "peace of mind" that application availability and performance is maximized, downtime is minimized, and resources are optimized.

DATA GROWTH, AVAILABILITY, AND VIRTUALIZATION CHALLENGES

Enterprise IT organizations face unprecedented challenges in today's fast-paced and economically challenging business environment. Digital data continues to grow in the data center and on the edge of the network, and it is essential that this data is available to employees and customers when they need it, where they need it—in the most effective manner. Even one hour of downtime can seriously inhibit productivity or cost hundreds of thousands of dollars in lost revenue. For large enterprises, the missed opportunities can run into the millions of dollars, depending on the scope of the outage.

Virtualization has also been a significant change, dramatically increasing density in the data center and enhancing the flexibility of IT infrastructures in an attempt to keep up with dynamic business demands. What were once static systems are now fluid pools of IT resources that can be allocated automatically or on demand as traffic levels rise and fall. This new virtual architecture is driving the need for higher levels of application performance, availability, and scalability.

To address this growing complexity, IT organizations need more effective management tools that provide new levels of business intelligence. According to a survey of CIOs by Gartner, business intelligence will be a major technology priority for organizations in the next several years, helping IT make faster and better-informed decisions. According to the report, business

intelligence "can have a direct positive impact on a company's business performance, dramatically improving its ability to accomplish its mission by making smarter decisions at every level of the business from corporate strategy to operational processes."[1] Tools that monitor, analyze, and provide alerts based on business policies and priorities will be instrumental in helping IT organizations meet SLAs, optimize efficiency, and realize the full potential of business intelligence.

THE CHALLENGES OF EXISTING MANAGEMENT SOLUTIONS

Due to data growth and complexity, monitoring and managing heterogeneous data center infrastructures often requires significant resources, time, and in-depth, multi-domain expertise. As a result, organizations of all sizes often find it difficult to quickly identify bottlenecks or isolate issues, leading to persistent and costly performance problems and unacceptable service levels.

Typically, vendors and managed service providers require organizations to use specific equipment and management tools, whether or not they are best suited to the environment—all of which increases training and operational costs while reducing choice. At the same time, different tools are required for each subsystem—storage, networks, servers, application environments—because few true end-to-end solutions exist. This forces organizations to implement piecemeal management strategies based on multiple tools that leave management gaps or cause organizations to pay for functionality, features, and services they don't want or need.

Moreover, these management offerings typically provide mountains of raw data but not enough actionable information, forcing administrators to rely on time-consuming and unpredictable manual scripting and analysis. In addition, reporting tools are not customized to support business objectives—decoupling IT management from the business goals of the organization.

Without a coordinated, holistic view of their data center architectures—a necessity in today's virtual environments—organizations are forced to focus on equipment rather than on their applications, giving them a narrow view into bottlenecks that might occur. In addition, organizations are unable to support growing virtualization strategies that require a level of flexibility that is not inherent in traditional management solutions. For example, in a virtual environment, threshold values often change throughout the day as user needs evolve (for example, a trading application during market hours), requiring more granular insight into real-time resource utilization based on dynamic business requirements.

Having the ability to correlate network events to application performance through a complete view of their data center infrastructures would allow organizations to better identify and analyze recurring issues and give administrators the framework in which to proactively maintain application SLAs. In turn, this information would help organizations avoid performance degradation or downtime and enable well-informed decisions that are aligned with business goals.

Because many organizations simply do not have the tools or the resources for maintaining a complete and preventative IT management strategy, they are increasingly embracing outsourced network management and monitoring services to augment their existing IT staffing resources. This approach enables organizations to meet the demands of their growing data center environments without hiring incremental staff. According to Gartner, 60 percent of organizations will outsource some part of their network management to a third party by 2010.[2]

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1 Cearley, David. Gartner. *Gartner 2008 CIO Survey*. October 2008.

2 Tenneson, Christine, et al. Gartner. *Gartner's View of Enterprise Managed Communications Services*. May 3, 2007. ID# G00148369.

REQUIREMENTS OF A NETWORK MONITORING SERVICE

- Proactively address problems before they affect the network and applications
- Identify where a problem resides, not just that a problem exists
- Empower administrators with business intelligence to meet application SLAs
- Improve knowledge about data center fabrics with customizable reports and data views
- Optimize resource utilization, including infrastructure procurement and staffing
- Enable a secure, flexible, and highly scalable monitoring infrastructure
- Provide a reliable 24×7×365 service that is continuously monitored by experts

REQUIREMENTS OF A COMPLETE NETWORK MONITORING SERVICE

In order to develop the framework for a holistic and proactive IT monitoring service, third-party IT service providers need to enable end-to-end monitoring throughout the data center fabric. This would give administrators access to vital information on network health, problem points, traffic loads, resource utilization, and real-time application performance and availability. The network monitoring service then needs to provide a way to efficiently analyze that data, ensuring that major issues affecting availability are prevented before they occur, that recurring bottlenecks are proactively investigated, that issues are resolved in a timely manner, and that any problem events are correlated to the application so that appropriate actions can be taken.

In addition to managing much of the repetitive and basic IT monitoring and maintenance issues, outsourced service professionals should have the expertise and resources to maintain aggressive SLAs. These service professionals should also act as another pair of eyes in the data center, allowing in-house staff to focus on other strategic IT projects that help drive revenue.

Monitoring services should also be flexible enough to meet changing business requirements. They should be able to provide increased business intelligence as well as provide the flexibility to quickly adjust monitoring and reporting characteristics. The ability to customize these services is vital to meeting the requirements of today's dynamic business environment.

On the practical side, an effective network monitoring service needs to maintain a secure and reliable connection from the IT service provider's network operations center to remote customer environments. If an organization is going to trust its outsourced solution, it needs to be continuously available, enabling 24×7 monitoring without any planned or unplanned downtime. The connection also needs to be secure, ensuring that the organization's information is encrypted and impervious to malicious attacks.

Finally, it is essential that the network monitoring service is transparent to the organization, giving both in-house IT staff and management reliable access to detailed reports about the current state of their data center architectures and events that were diagnosed and resolved in the past. These reports should give specific information about the availability and performance of business applications as well as how IT is meeting SLAs and contributing to the organization's mission.

BROCADE NETWORK MONITORING SERVICE

Brocade offers a highly flexible next-generation remote monitoring service that can help organizations more effectively manage application and network performance across their data center fabrics, giving them the business intelligence to proactively manage their dynamic application environments. More than just a monitoring tool, the Brocade Network Monitoring Service (NMS) offers organizations "peace of mind" that uptime is maximized, downtime is minimized, and performance is optimized.

With Brocade NMS, expert support engineers perform around-the-clock monitoring of organizations' data center fabric architectures, collecting and analyzing performance data to maintain maximum network and application efficiency and availability. The solution also supplies vital statistical reports and provides proactive alerts to optimize application performance while providing a holistic view of data center application infrastructures as they evolve and grow.

With more than 26 years of experience in designing, implementing, and managing complex local and remote networks, Brocade NMS support engineers have the expertise and tools needed to review these statistics, determine which event messages are meaningful, and quickly identify potential issues before they become critical. Moreover, Brocade NMS can augment in-house monitoring personnel, allowing organizations to optimize staff resources and reduce training costs.

As the foundation for designing, building, and managing enterprise data centers, the Brocade Data Center Fabric (DCF) architecture provides Brocade NMS with a platform in which to listen, collect, and monitor important information about applications, networks, and devices in, across, and beyond data centers. Brocade NMS collects a variety of real-time performance information from the devices it monitors and will expand data collection to include the Brocade NMS onsite appliance, Brocade Data Center Fabric Manager (DCFM™), Brocade SAN Health™, Brocade Fabric OS®, and third-party management solutions.

This approach helps organizations better understand the current health and performance of data center fabrics and enables a proactive, preventative strategy for IT management—identifying minor problems and preventing them from becoming major issues that lead to downtime.

When issues do arise, they are quickly identified and resolved through the Brocade operations center that is staffed by a dedicated team of support engineers 24×7×365. These support engineers closely watch customer networks, continuously monitoring bandwidth and interface utilization, interface availability, compression ratios, quality of service, and other factors affecting the quality of the network.

Rather than relying on a variety of management point products that are difficult to use, are resource-intensive, and require in-depth expertise, organizations can utilize Brocade NMS as a flexible, consolidated service for proactive application and network monitoring of their data center fabrics. By relying on Brocade NMS to keep a close, attentive watch over their data center infrastructures, organizations can improve application and network availability; reduce recovery time in case something does go wrong; and optimize performance—all while improving efficiencies and reducing costs.

Improve Availability and Performance

Based on a holistic end-to-end monitoring approach, Brocade NMS helps organizations improve network and application availability and achieve overall efficiency in their efforts to meet aggressive SLAs. Brocade NMS focuses on the application as well as the underlying data center infrastructure, making sure that potential bottlenecks and problem points are isolated and resolved to minimize or avoid the impact on application availability and performance. As a result of this holistic application-focused strategy, IT organizations can focus on making sure users have access to the tools and information they need—the primary mission of any IT organization.

With in-depth expertise in the inter-relationship of each subsystem—including the network, data links, and multiprotocol environments—Brocade NMS support engineers continuously monitor traffic and performance according to established best-practice policies and defined thresholds. They then address "yellow-light" alerts when parameters go beyond established limits. These parameters are driven by unique application needs and dynamic business demands.

In the future, Brocade NMS will collect data from mission-critical business applications—including SAP, Oracle, and backup and recovery solutions—monitoring and measuring the performance of each transaction as it "travels" through the data center fabric. Brocade will then analyze the performance data and report against defined application SLAs.

BROCADE NETWORK MONITORING SERVICE

- Real-time monitoring, predictive support, and diagnosis
- Real-time event notification
- Problem resolution management for Brocade device-related issues
- Real-time corrective action notification and documentation
- Real-time and historical network performance and resource utilization statistics for capacity planning and optimization
- Trending and analysis to identify potential bottlenecks before they lead to downtime
- Web portal access for service request information and flexible reports
- Planned support for event correlation and policy-based monitoring

BROCADE NMS USE CASES

- **Capacity planning:** Analyze utilization and throughput reports to determine how resources are being used and deployed; ensures that storage network resources are optimized before additional expenditures are made.
- **Verification:** Leverage retransmission and percent error packet reports to ensure that an implementation is not negatively impacting the storage network; helps validate solution design and implementation and verifies that there is sufficient bandwidth to support the applications.
- **Comparison:** Compare expected and actual resource utilization statistics before and after configuration changes to determine the impact on data center fabrics; verifies that the predicted effects of planned changes actually took place.
- **Trending:** Leverage usage and traffic reports over time to provide trending information; helps forecast growth requirements and future capacity planning.
- **Problem resolution:** Analyze traffic usage and error reports to pinpoint issues and achieve faster problem resolution; reduces downtime in the case of an actual event.

Reduce Recovery Time

Using the information gathered from monitoring application performance and network traffic, Brocade NMS can identify potential bottlenecks or other availability issues before they occur, giving network engineers a head start on troubleshooting the problem quickly or avoiding downtime altogether. This dramatically reduces the time to resolution and decreases downtime to minimize the impact of disruptions. On average, this early-warning system reduces downtime by almost one hour, a major cost savings to the organization and a significant boost to productivity.

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The expertise of the Brocade NMS support engineers enables them to collect and analyze a wide variety of performance statistics and, based on that expertise, quickly identify problems. When an issue is detected, the Brocade NMS support engineers immediately turn over the problem to the appropriate product technical support specialist, who quickly troubleshoots and fixes it. Other solutions simply alert administrators that there is a problem without providing the additional analysis. This extra step allows Brocade NMS to facilitate a fast and appropriate response to network events.

Brocade NMS also leverages historical reporting for faster resolution of network issues. Support engineers can analyze past events and performance metrics to identify any persistent behavior that might be causing an issue or that might cause a problem in the future.

Increased Resource Utilization

Brocade NMS supports organizations' growing virtualization initiatives by helping them optimize existing resources, ensuring that network components are running at full capacity before additional infrastructure is provisioned and deployed. The service leverages data collection and reporting that tracks traffic load, throughput, and latency—and matches them to performance SLAs set by the organization.

In addition, Brocade NMS helps organizations with capacity planning and verification that the data center design meets any proposed objectives. Organizations can access the Brocade NMS Web Portal—a powerful password-protected site designed to provide event information in real time—giving them a snapshot of the current state of the environment, what work has been done, and what work still needs to be done. Through the portal, they can access flexible reports on real-time discovery, health checks, and historical performance for equipment and connectivity.

Brocade NMS can also help organizations optimize another valuable resource—people. With Brocade supplying another pair of eyes in the data center and taking proactive actions to ensure that applications are available and performing optimally, the in-house IT staff can focus on other strategic projects that improve operational efficiencies or drive revenue. This new resource allocation enables better alignment to business objectives, making sure that IT is on the same page as the rest of the organization.

CONCLUSION

Organizations are facing extraordinary pressure to maximize application availability and performance while enhancing operational efficiencies and mitigating risk. However, complex data center architectures are forcing them to rethink how they manage their IT infrastructures and how best to allocate operational resources. Unfortunately, existing monitoring solutions do not provide the business intelligence needed to proactively identify potential bottlenecks and meet aggressive SLAs.

In contrast, the Brocade Network Monitoring Service (NMS) helps organizations ensure efficiency, high performance, and maximum application and network availability across data center fabrics. Brocade NMS provides organizations with the information and business intelligence to proactively manage their dynamic application environments. And as data center infrastructures grow in size and complexity, Brocade NMS helps reduce the costs associated with monitoring and management. Through this service, Brocade provides organizations peace of mind, allowing in-house IT staffing resources to focus on other strategic projects.

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