

Fabric Vision Technology

Gain control and insight across storage networks

Highlights

- Built-in monitoring, management and diagnostics
 - Predefined, threshold-based rules, actions and policies
 - Automatic detection of degraded performance issues
 - Reduced maintenance costs and network problems
 - Tuning of device configurations with integrated I/O metrics
 - Dashboards with at-a-glance views of switch status
 - Deeper insights into the network performance
-

The benefits of IT virtualization, flash storage and automation have allowed applications and services to be deployed faster while shattering performance barriers. However, due to the unprecedented growth of application and service interactions, complexity has increased in IT ecosystem. This has resulted in greater risk and instability for mission-critical operations and in access to critical data on storage.

To embrace high-density virtualization, flash storage and cloud infrastructures, IT organizations need flexible storage networks that are both dynamic and high performing. Increased complexity and higher service level agreement (SLA) objectives mean that storage networks must respond with new tools to help ensure nonstop operations, access to critical data, quick identification of potential congestion points and maximized application performance—while simplifying administration.

Fabric Vision technology for IBM b-type Gen 5 and Gen 6 Fibre Channel products includes the IO Insight and VM Insight features that provide insight and visibility across the storage network, along with powerful built-in monitoring, management and diagnostic tools that enable organizations to simplify monitoring, increase operational stability and dramatically reduce costs.¹

Fabric Vision simplifies storage network monitoring by:

- Leveraging 20 years of best practices with predefined thresholds and actions, using just a single click
- Providing real-time monitoring, alerting and deep visibility into storage I/O health, performance and latency metrics

- Automatically detecting and alerting administrators to degraded storage performance to maintain SLA compliance
- Displaying comprehensive visibility into network health, performance, latency and congestion issues using browser-accessible dashboards with drill-down capabilities

Fabric Vision helps increase operational stability by:

- Avoiding up to 50 percent of common network problems² with proactive monitoring and advanced diagnostic tools
- Proactively identifying hotspots and automatically mitigating network problems through intuitive reporting, trend analysis and integrated actions
- Reporting I/O patterns that deviate from expected behaviors for fault isolation and troubleshooting
- Pinpointing resource contention, congestion and errant devices to resolve application performance problems

Fabric Vision helps reduce costs by:

- Eliminating nearly 50 percent of maintenance costs³ through automated testing and diagnostic tools that assess the health of the network prior to deployment
- Significantly reducing capital expenses required for third-party tools that perform the monitoring and diagnostics already built into the b-type network⁴
- Validating IT infrastructure to accelerate deployment, simplify support and reduce operational costs
- Optimizing storage performance and increasing return on investment by tuning device configurations with integrated I/O metrics

Simplify monitoring of mission-critical applications

Organizations often struggle to manage data growth, deliver actionable intelligence from raw data, and meet SLAs. The optional Fabric Vision technology license allows organizations to achieve unprecedented insight and visibility across the storage network with the following capabilities:

Monitoring and Alerting Policy Suite

Monitoring and Alerting Policy Suite (MAPS) provides an easy-to-use solution for the health and performance of the storage network (fabric). MAPS helps ensure application uptime and availability by offering the following features¹:

- *Predefined monitoring groups and pre-validated monitoring policies.* Predefined monitoring groups include switch ports attached to servers, storage, inter-switch links and more. Predefined policies include aggressive, moderate and conservative policies with specific thresholds and actions.
- *Flexible monitoring groups and rules.* Creating port groups for high-priority applications or low-priority applications allows monitoring each group according to its own unique rules, taking more severe steps as the situation degrades.
- *Monitoring multiple fabric categories.* MAPS monitors the overall switch status, switch ports, small form-factor pluggables (SFPs), port blades, core blades, switch power supplies, fans, temperature sensors, security policy violations, fabric reconfigurations, CPU and memory utilization, traffic performance within and across data centers, scalability limits, and more.
- *Support for multiple alerting mechanisms.* MAPS alerting includes RAS logs, SNMP traps and email notifications with actions such as port decommissioning, port fencing, port toggling, and slow-drain device quarantine when errors exceed the specified threshold.

Dashboards

Fabric Vision technology provides at-a-glance view “dashboards” of switch status and of conditions contributing to performance and health issues, allowing the visibility needed to take the proper corrective actions.¹

IO Insight

IO Insight proactively monitors I/O performance and behavior using built-in instrumentation.¹ These tools provide insight into potential problems and ensure service levels by gathering I/O statistics. IO Insight benchmarks application performance and detects degraded performance. It helps ensure greater operational stability by:

- *Monitoring individual storage device* performance over the network to maintain SLA compliance
- *Obtaining multiple I/O statistics*, including the maximum and average times for first responses, latency and outstanding I/Os for specific host or storage devices
- *Enabling tuning of device configurations* to optimize storage performance

VM Insight

VM Insight is a storage fabric VM performance monitor with standards-based, end-to-end VM tagging to help administrators quickly determine the source of VM/application performance anomalies, as well as provision and fine-tune the infrastructure based on VM/application requirements to meet service-level objectives.

Dramatically streamline SAN administration

IT organizations with large, complex or highly virtualized data center environments often require advanced tools to help them more effectively manage their storage infrastructures. Fabric Vision technology¹ was developed for these organizations and simplifies day-to-day storage networking administration while increasing visibility across the storage network. It includes:

Configuration and Operational Monitoring Policy Automation Services Suite (COMPASS)

COMPASS is designed to simplify switch deployment into a fabric, safeguard fabric-wide configuration consistency and increase operational efficiencies of large environments by automating switch and fabric configuration services. Administrators can create a configuration template to deploy across the fabric and thus ensure that configuration settings do not drift over time.

Fabric Performance Impact (FPI) Monitoring

FPI Monitoring is designed to automatically detect and alert administrators to different I/O latency severity levels. It also identifies slow-drain storage devices that could impact overall network performance, reports other impacted devices, and enables quarantining of the slow-drain devices.

Increase fabric resiliency

Fabric Vision technology includes troubleshooting and diagnostic capabilities that help increase fabric resiliency, reduce downtime and optimize application performance, including:

Flow Vision

Flow Vision helps administrators maximize performance, avoid congestion and optimize resources with these features:

- *Flow Monitoring* provides comprehensive visibility into data flows within the fabric between server hosts and storage targets and across inter-switch links, including the ability to learn (discover) flows automatically and nondisruptively identify resource contention or congestion

that is impacting application performance.

- *Flow Learning* enables administrators to discover all flows that go to or come from a specific host port or a storage port, or traverse ISLs/IFLs to monitor fabric-wide application performance.
- *Flow Generator* provides a built-in traffic generator for pretesting and validating data center infrastructure—including route verification and integrity of optics, cables, ports, back-end connections and ISLs.
- *Flow Mirroring* creates copies of specific application data flows and captures for in-depth analysis.

ClearLink Diagnostics

ClearLink helps ensure optical and signal integrity for optics and cables, simplifying the deployment and support of high-performance Fibre Channel fabrics.

Forward Error Correction (FEC)

FEC enables recovery from bit errors in Fibre Channel frames, enhancing data transmission reliability and performance by minimizing retransmissions.

Credit Loss Recovery

Credit Loss Recovery provides protection against performance degradation and enhances application availability by automatically detecting and recovering buffer credit loss.

Simplified management and reporting

The IBM Network Advisor storage area network (SAN) management product simplifies Fibre Channel network management and helps organizations reduce deployment and configuration times, and accelerate troubleshooting by allowing fabrics, switches and ports to be managed as groups with customizable dashboards that graphically display performance and health indicators.⁵

Simple migration from older monitoring tools

Organizations that have older monitoring tools such as Advanced Performance Monitoring and Fabric Watch installed will automatically receive Fabric Vision technology capabilities with Fabric Operating System (FOS) v7.2.0 or higher. Organizations with either Fabric Watch or Advanced Performance Monitoring installed (but not both) and who want Fabric Vision

technology capabilities simply need to purchase and install the missing Advanced Performance Monitoring or Fabric Watch license.

¹ Review the [Fabric Vision Technology Redbooks Product Guide](#) for the most up-to-date information.

² Based on Brocade Global Support analysis of customer support issues that have been escalated to Brocade.

³ Based on Brocade analysis of typical maintenance costs.

⁴ Based on a price comparison against competitors with tool for auto-registered phones support (TAPS) to provide monitoring.

⁵ For more information refer to the [IBM Network Advisor product page](#).

Why IBM?

Innovative technology, open standards, excellent performance, and a broad portfolio of proven storage software, hardware and solutions offerings—all backed by IBM with its recognized industry leadership—are just a few of the reasons to consider storage solutions from IBM, including Fabric Vision technology. In addition, IBM delivers some of the best storage products, technologies, services and solutions in the industry without the complexity of dealing with different hardware and software vendors.

For more information

To learn more about Fabric Vision technology, please contact your IBM representative or IBM Business Partner, or visit: ibm.com/storage/san/b-type

Additionally, IBM Global Financing provides numerous payment options to help you acquire the technology you need to grow your business. We provide full lifecycle management of IT products and services, from acquisition to disposition. For more information, visit: ibm.com/financing

© Copyright IBM Corporation 2019.

IBM, the IBM logo, and ibm.com are trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at <https://www.ibm.com/legal/us/en/copytrade.shtml>, and select third party trademarks that might be referenced in this document is available at https://www.ibm.com/legal/us/en/copytrade.shtml#section_4.

This document contains information pertaining to the following IBM products which are trademarks and/or registered trademarks of IBM Corporation:

IBM®, System Storage®, IBM FICON®, IBM z/OS®, IBM®



All statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.