BROADCOM

Solution Brief

The Autonomous SAN

Eliminate Complexity and Save Money

Autonomous SAN Highlights

Self-Learning

- Gather and transform millions of data points into network intelligence.
- Visualize application and device-based performance and health metrics.
- Detect abnormal traffic behaviors and degraded performance.
- Eliminate operational steps by automatically learning application flows.

Self-Optimizing

- Optimize critical application performance by automatically prioritizing traffic.
- Guarantee application performance by proactively monitoring and actively shaping traffic.
- Eliminate human errors and performance impacts through open DevOps automation technology.
- Optimize administrative resources with cloud-like SAN orchestration.

Self-Healing

- Instantly notify end devices of congestion for automatic resolution.
- Ensure data delivery with automatic failover from physical or congestion issues.
- Detect and automatically reconfigure out-of-compliance fabrics.
- Eliminate performance impacts by automatically taking corrective action on misbehaving devices.

Overview

As technology evolves, IT organizations are held to a higher set of standards. Not only are IT organizations responsible for delivering nonstop reliability, they are now judged on how quickly they can deploy new services to the business. The only way to accelerate IT delivery and keep pace with ever-increasing demands on existing infrastructure is to automate. The infrastructure must be able to monitor application performance, identify network congestion, and prioritize bandwidth. The infrastructure also needs to isolate configuration errors or malfunctioning devices automatically, regardless of the source of the issue in the data center.

Brocade® Fabric Vision® technology delivers a collection of features that combine comprehensive data collection capabilities with powerful analytics to quickly understand the health and performance on the environment and identify potential impact or trending problems. These features are the foundation for realizing a self-learning, self-optimizing, and self-healing autonomous SAN. Brocade Fabric Vision technology provides unprecedented visibility and actionable intelligence across the storage network. The information captured is displayed in Brocade SANnav™ Management Portal to quickly identify and isolate problems before they impact application availability. The combination of these features gives IT administrators the ability to quickly enable an autonomous infrastructure.

Self-Learning

Brocade technology proactively monitors millions of I/O performance and behavior data points through integrated network sensors to gain deep insight into the environment. These data points are transformed into actionable intelligence that can monitor and alert when there are any abnormal changes. Through these capabilities, an admin can identify individual applications and their performance characteristics across the fabric, as well as identify the performance of the various devices that comprise the fabric: the switches, hosts, and targets.

- **IO Insight:** Proactively monitors I/O performance and behavior through integrated network sensors to baseline application performance and ensure operational stability. By combining the instrumentation of IO Insight with the ability to self-learn the traffic flows, the Brocade autonomous SAN technology can generate performance and health metrics on each component as well as the applications to monitor for changes and alert the administrator with MAPS.
- **Monitoring and Alerting Policy Suite (MAPS):** Provides an easy-to-use solution for policy-based threshold monitoring and alerting. MAPS proactively monitors the health and performance of any SCSI or NVMe storage infrastructure to ensure application uptime and availability.

By leveraging prebuilt rule-based and policy-based templates, MAPS simplifies fabric-wide threshold configuration, monitoring, and alerting.

- **Automatic Flow Learning:** Provides automatic learning of all traffic flows from a specific host to storage across the SAN fabric. With this information, an admin can automatically identify resource contention or congestion that is impacting application performance.
- **Fabric Performance Impact:** Leverages predefined MAPS policies to automatically detect and alert administrators to different congestion severity levels and to identify credit-stalled devices (for example, misbehaving slow drain devices) or oversubscribed ports that could impact network performance. This feature pinpoints exactly which devices are causing or are impacted by the congested port, and it quarantines the misbehaving devices.

Self-Optimizing

Utilizing actionable intelligence gathered from self-learning capabilities, Brocade Fibre Channel SANs automatically apply priorities for specific data traffic to help guarantee performance levels and monitor for traffic pattern shifts. Learning traffic behavior enables the network to make smarter decisions on traffic prioritization, congestion avoidance, and adjustment to ensure optimal network performance for applications and storage. When something does change, the Brocade autonomous SAN technology will isolate the port traffic for the misbehaving device to a virtual channel in the fabric and allow all other traffic to go around to maintain optimal performance. In addition, Brocade SANnav Management Portal has automated manual activities such as infrastructure deployment and provisioning to expedite IT services. Self-optimizing features include the following:

- **Traffic Optimizer:** Automatically classifies and separates traffic with similar characteristics to optimize performance for most common SAN configurations. It identifies and isolates traffic flows to prevent negative impact to overall SAN performance.
- **Advanced traffic shaping:** Guarantees application performance by proactively monitoring and actively shaping traffic.
- **REST APIs:** Eliminate human errors and performance impacts through open DevOps.
- **SAN Automation and Ansible:** Gain cloud-like SAN orchestration for optimizing administration resources through Brocade REST API automation technology.

Self-Healing

When potential disruptions are detected, the network will automatically mitigate or resolve issues without manual intervention. This is done by proactively monitoring the network to automatically identify abnormal or unexpected infrastructure behavior and then taking immediate action. These actions include alerting the end devices of the issue through a notification and signaling process within a SAN. End devices can automatically adjust traffic or fail over to a healthy path to mitigate impact until a further infrastructure change solution can be implemented. In addition, these capabilities detect and automatically reconfigure fabric misconfigurations that fall outside best practices Self-healing features include:

- **Fabric congestion notification:** Automatically detects congestion and notifies end devices to automatically mitigate congestion.
- **Slow drain device quarantine:** Automatically quarantines credit-stalled devices to prevent the misbehaving device from impacting the rest of traffic.
- **Automatic actions:** Ensure data delivery with automatic failover from physical or congestion issues such as port decommissioning, port toggling, and port fencing.
- **COMPASS:** Detects and automatically reconfigures out-of-compliance configurations.
- **SANnav Management Portal:** Reduces troubleshooting steps with built-in best practice recommendations to quickly resolve issues.

Summary

Through the modernization process, enterprises are facing the reality that their revenue is intertwined with the success or failure of the IT organization. To succeed, IT needs to automate as much as possible to eliminate complexity and reduce costs. IT organizations need to remove tedious, time-consuming, and labor-intensive tasks so they can focus on delivering services to the business that can help deliver additional revenue. Brocade's autonomous SAN delivers automation and intelligence to admins so they do not have to worry about the SAN and instead can focus on initiatives that are strategic to their organization.

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