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Brocade® G720 Switch

Maximize Performance and Simplify Daily Tasks with a Building-Block Switch

Overview

With the growing adoption of flash and the ramp-up of NVMe-based storage, organizations will move more data through a SAN than ever before, requiring an increase in I/O capacity to keep up with ever-increasing demand. Coupled with rising complexity and higher expectations for availability, organizations need a network that is capable of maximizing performance while simplifying and automating management. These capabilities are required to help enterprises increase the productivity and efficiency of their storage investments and resources.

To meet these requirements, the network needs to evolve. A Brocade® Gen 7 Fibre Channel infrastructure unleashes the performance of NVMe workloads with reduced latency and increased bandwidth. In addition, this infrastructure lays the foundation for an autonomous SAN by combining powerful analytics and advanced automation capabilities to maximize performance and ensure reliability. With autonomous SAN technology, organizations can realize a self-learning, self-optimizing, and self-healing SAN.

The Brocade G720 Switch with unmatched 64G performance and industry-leading port density provides a building block that supports data growth, demanding workloads, and data-center consolidation. With a 50% latency reduction compared to the previous generation, the Brocade G720 Switch enables the maximum performance of NVMe storage.

Highlights

- Provide high scalability with 56 ports in a 1U switch.

- Accelerate critical workloads with 64G links.

- Maximize performance of NVMe storage with 50% lower switching latency than Gen 6.

- Enable pay-as-you-grow scalability from 24 to 56 ports—for on-demand flexibility.

- Simplify troubleshooting by identifying and isolating issues.

- Collect comprehensive telemetry data across the fabric to enable powerful analytics.

- Visualize the data to easily understand the health and performance of the SAN.

- Automate repetitive tasks to save time and eliminate human error.

Gen 7 Fibre Channel

Brocade Gen 7 Fibre Channel is the modern storage network infrastructure for mission-critical storage, enabling organizations to realize a self-learning, self-optimizing, and self-healing autonomous SAN. It combines powerful analytics and advanced automation capabilities to accelerate data access, adapt to evolving requirements, and drive always-on business operations. The Brocade G720 with Gen 7 Fibre Channel is a building-block switch with ultra-low latency and unmatched 64G performance that simplifies deployment, configuration, and management of SAN resources in medium to large environments.

The Brocade G720 Switch utilizes built-in analytics to optimize performance and eliminate disruptions. This Gen 7 switch collects comprehensive telemetry data across the fabric to enable advanced analytics. To visualize the data, Brocade SANnav™ Management Portal enables organizations to easily understand the health and performance of the SAN. By leveraging automation, SAN admins gain the ability to automate repetitive tasks to save time and mitigate disruptions with limited expertise.

The Brocade G720 simplifies deployment, configuration, and management of SAN resources with a collection of easy-to-use tools. With EZSwitchSetup, organizations can reduce the number of steps to deploy and configure a switch. In addition, the simplified user interface of Brocade Web Tools makes the SAN easier to manage. To further simplify operations and increase visibility, the Brocade G720 includes Brocade Fabric Vision® technology to monitor and analyze the SAN. This technology provides visibility and insight to quickly identify problems and achieve critical service-level agreements (SLAs). To streamline management workflows, organizations can leverage Brocade SANnav Management Portal to accelerate the deployment of new applications, switches, servers, and storage. Furthermore, a modernized graphical user interface (GUI) improves operational efficiencies with visual dashboards for instant visibility and faster troubleshooting.

Autonomous SAN

The combination of SAN analytics and automation technologies unlocks the capabilities to deliver a self-learning, self-optimizing, and self-healing autonomous SAN.

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.

Scale Out Flash Storage Environments

The Brocade G720 is built for maximum flexibility, scalability, and ease of use. Organizations can scale from 24 to 56 SFP+ ports in an efficient 1U form factor that delivers industry-leading port density and space utilization.

Enterprises are quickly moving their high-performance, latency-sensitive workloads to NVMe flash-based storage. The Brocade G720 Switch supports NVMe over Fibre Channel, enabling organizations to integrate Brocade Gen 7 Fibre Channel networks with next-generation flash storage, without a disruptive rip-and-replace. This enables enterprises to achieve faster application response times and harness the performance innovation inherent in NVMe storage. NVMe, combined with the high performance and low latency of Brocade Gen 7 Fibre Channel, delivers the performance, application response time, and scalability needed for next-generation data centers.

Autonomous SAN Innovation

The Brocade G720 Switch with Fabric Vision technology provides a robust analytics architecture that delivers autonomous SAN technology through self-learning, self-optimizing, and self-healing capabilities. Brocade Fabric Vision technology is a suite of features that leverage comprehensive data collection capabilities with powerful analytics to quickly understand the health and performance of the environment and identify any potential impacts or trending problems.

Analyze the SAN to Optimize Performance and Reliability

IT organizations are responsible for delivering nonstop performance and reliability to ensure that SLAs are met. They need analytics to help extract actionable intelligence from their environment, and they need simplified management tools to quickly and easily understand the state of their environment. This requires an infrastructure that can automatically learn its performance and health characteristics, identify potential risks, and provide recommended actions to resolve issues.

Gen 7 Brocade technology enables a self-learning SAN that gathers and transforms millions of data points into actionable intelligence to make fast, informed decisions to optimize performance and ensure reliability. Brocade products proactively monitor I/O performance and behavior data points through integrated network sensors to gain deep insight into the environment. The information that is captured is displayed in Brocade SANnav Management Portal to quickly identify and isolate problems before they impact application availability. With built-in best practice recommendations, organizations can simplify troubleshooting by identifying and isolating issues to resolve them as fast as possible. Combining these tools with automation, Brocade technology can detect abnormal traffic behavior and degraded performance to automatically take corrective action, eliminating the potential impact of these issues. These new autonomous SAN technologies simplify SAN management and enable unparalleled network performance and reliability.

Automate the SAN to Simplify Management Complexity

IT organizations spend nearly half of their time performing repetitive daily management tasks, such as zoning, inventory reporting, and operational validation checks. By automating these repetitive tasks, IT organizations can significantly improve their efficiency and dramatically decrease the risk of operational mistakes. Automation in large-scale IT environments integrates diverse infrastructure components with consistency and predictability to deliver greater operational efficiency and agility.

With Brocade automation, the Brocade G720 Switch can automate actions to simplify management and resolve issues without intervention to avoid network disruptions and outages. Through open DevOps automation technology, organizations can reliably perform resource-intensive tasks, such as infrastructure deployment and provisioning, in a fraction of the time to expedite IT services while eliminating human error. In addition, automation proactively monitors the network to self-optimize performance and automatically mitigate fabric-related issues with self-healing capabilities.

With self-optimizing capabilities, Brocade technology utilizes actionable intelligence to maximize performance. Real-time monitoring of heath and performance characteristics enables the network to make smarter decisions on traffic prioritization, congestion management, and notification to ensure optimal network performance for applications and storage. Gen 7 delivers a traffic optimizer that guarantees critical application performance by automatically prioritizing traffic. This advanced capability classifies and separates traffic with similar characteristics.

Brocade Gen 7 raises the bar for network availability through automatic avoidance and recovery features, delivering a self-healing SAN. When potential disruptions are detected, the network will automatically mitigate or resolve issues without intervention. Brocade software identifies abnormal or unexpected behavior and automatically takes action to avoid a degradation in performance. If congestion occurs, it instantly notifies end devices of the congestion problem through an alerting and signaling process. Once the end devices are alerted, the software ensures data delivery with automatic failover or adjustment of traffic to mitigate the impact of the problem. Brocade SAN management tools can identify various latency severity levels, pinpointing exactly which devices are causing the issues or which devices are impacted by a bottleneck, and they can quarantine misbehaving devices automatically.

Instant Visibility and Simplified Processes

Brocade SANnav Management Portal and SANnav Global View empower IT administrators with comprehensive visibility across the entire SAN, from a global view down to local environments. SANnav contextualizes data into visual dashboards and topology views, which allows administrators to quickly detect and isolate points of interest to increase operational efficiencies. In addition, Brocade SANnav streamlines management workflows to accelerate the deployment of new applications, switches, servers, and storage.

Brocade Access Gateway Mode

The Brocade G720 can be deployed as a full-fabric switch or as a Brocade Access Gateway, which simplifies fabric topologies and allows heterogeneous fabric connectivity (the default mode setting is a switch). Brocade Access Gateway mode utilizes N_Port ID Virtualization (NPIV) switch standards to present physical and virtual servers directly to the core of SAN fabrics. Brocade Access Gateway allows you to configure your fabric to handle additional devices without increasing the number of switch domains.

Key benefits of Brocade Access Gateway mode include the following:

- Improved scalability for large or rapidly growing server and virtual server environments
- Reduced management of the network edge, since Brocade Access Gateway does not have a domain identity and appears transparent to the core fabric
- Support for heterogeneous SAN configurations without reduced functionality for server connectivity

Brocade Global Support

Brocade Global Support has the expertise to help organizations build resilient, efficient SAN infrastructures. Leveraging 25+ years of expertise in storage networking, Global Support delivers world-class technical support, implementation, and migration services to enable organizations to maximize their hardware and software investments, accelerate new technology deployments, and optimize the overall performance of their network.

Maximizing Investments

To help optimize technology investments, Brocade, a Broadcom company, and its partners offer complete solutions that include professional services, technical support, and education.

For more information, contact a Brocade sales partner or visit:

www.broadcom.com/brocade

For information about supported SAN standards, visit:

www.broadcom.com/sanstandards

Brocade G720 Switch Specifications

System Architecture	
Fibre Channel ports	Switch mode (default): Minimum of 24 ports and maximum of 56 ports. Ports are enabled in increments of 8 ports up to 56 ports via Ports on Demand (PoD) licenses; E_Ports, F_Ports, M_Port, D_Ports, EX_Ports. Brocade Access Gateway default port mapping: 48 F_Ports, 8 N_Ports.
Scalability	Full-fabric architecture with a maximum of 239 switches.
Certified maximum	4K active nodes; 56 switches, 19 hops in Brocade Fabric OS® fabrics.
Performance	Fibre Channel: 8.5Gb/s line speed, full duplex; 10.53Gb/s line speed, full duplex; 14.025Gb/s line speed, full duplex; 28.05Gb/s line speed, full duplex; 57.8Gb/s line speed, full duplex; auto-sensing of 8, 10, 16, 32, and 64G port speeds. 10G optionally programmable to fixed-port speed.
ISL trunking	Frame-based trunking with up to eight SFP+ ports per ISL trunk; up to 512Gb/s per ISL trunk. Exchange-based load balancing across ISLs with Dynamic Path Selection (DPS) included in Brocade Fabric OS.
Aggregate bandwidth	3.584Tb/s
Maximum fabric latency	Latency for locally switched ports is 460 ns (including FEC)
Maximum frame size	2112-byte payload
Frame buffers	24K per switching ASIC
Classes of service	Class 2, Class 3, Class F (inter-switch frames)
Port types	D_Port (ClearLink® Diagnostic Port), E_Port, EX_Port, F_Port, M_Port; optional port-type control Brocade Access Gateway mode: F_Port and NPIV-enabled N_Port.
Data traffic types	Fabric switches supporting unicast
Media types	64G FC SFP+ LC connector: SWL 32G FC SFP+ LC connector: SWL, LWL, ELWL 10G FC SFP+ LC connector: SWL, LWL
USB	One standard USB port for firmware download, support save, and configuration upload or download.
Fabric services *Note: Some fabric services do not apply or are unavailable in Brocade Access Gateway mode.*	BB Credit Recovery; Brocade Advanced Zoning (Default Zoning, Port/WWN Zoning, Peer Zoning); Congestion Signaling; Dynamic Path Selection (DPS); Extended Fabrics; Fabric Performance Impact Notification (FPIN); Fabric Vision; FDMI; FICON CUP; Flow Vision; F_Port Trunking; FSPF; Integrated Routing; ISL Trunking; Management Server; NPIV; NTP v3; Port Decommission/Fencing; QoS; Registered State Change Notification (RSCN); Name Server; Target-Driven Zoning; Traffic Optimizer; Virtual Fabrics (Logical Switch, Logical Fabric); VMID and AppServer.
Extension	Fibre Channel, in-flight compression (Brocade LZO) and encryption (AES-GCM-256 encryption on FC ISLs [E_Port]); integrated optional 10G Fibre Channel for DWDM MAN connectivity.
Management	
Management	HTTP/HTTPS; SNMP v1/v3 (FE MIB, FC Management MIB); SSH; Brocade Advanced Web Tools; Brocade SANnav Management Portal and SANnav Global View; EZSwitchSetup; Command Line Interface (CLI); RESTful API; trial licenses for add-on capabilities.
Security	DH-CHAP (between switches and end devices); FCAP switch authentication; HTTPS; IP filtering; LDAP with IPv6; OpenLDAP; Port Binding; RADIUS; TACACS+; user-defined Role-Based Access Control (RBAC); Secure Boot, Secure Copy (SCP); Secure Syslog; SFTP; SSH v2; SSL; Switch Binding; Trusted Switch.
Management access	10/100/1000Mb/s Ethernet (RJ-45), serial console port (mini-USB).
Diagnostics	Active Support Connectivity (ASC) and Brocade Support Link (BSL); built-in flow generator; ClearLink optics and cable diagnostics, including electrical/optical loopback, link traffic/latency/distance; Fabric Performance Impact Monitoring (FPI); flow mirroring; Forward Error Correction (FEC); frame viewer; IO Insight for SCSI and NVMe monitoring; Monitoring and Alerting Policy Suite (MAPS); nondisruptive daemon restart; optics health monitoring; POST and embedded online/offline diagnostics, including environmental monitoring, FCping and Pathinfo (FC traceroute); power monitoring; RAStrace logging; Rolling Reboot Detection (RRD); Syslog/Audit Log; VM Insight.
Mechanical	
Enclosure	Front-to-back airflow; non-port-side exhaust; power from back, 1U Back-to-front airflow; non-port-side intake; power from back, 1U
Size	Width: 440.00 mm (17.32 in.) Height: 43.90 mm (1.73 in.) Depth: 355.60 mm (14.00 in.)
System weight	7.17 kg (15.8 lb) with two power supply FRUs, without transceivers

Environment	
Operating environment	Temperature: 0°C to 40°C (32°F to 104°F) Humidity: 8% to 90% (noncondensing)
Nonoperating environment	Temperature: –25°C to 70°C (–13°F to 158°F) Humidity: 8% to 90% (noncondensing)
Operating altitude	Up to 3000m (9842 ft)
Storage altitude	Up to 12 km (39,370 ft)
Shock	Operating: Up to 20G, 6 ms half-sine Nonoperating: Half-sine, 33G, 11 ms, 3/eg axis
Vibration	Operating: 0.25 Grms sine, 0.40 Grms random, 5 Hz to 500 Hz Nonoperating: 5 Hz at 0.5 Grms; 10–500 Hz at 1.0 Grms (sine vibration); 3–500 Hz at 1.12 Grms (random vibration)
Heat dissipation	56 ports at 901 Btu/hr
Power	
Power supply	Dual, hot-swappable redundant power supplies with integrated system cooling fans. 80 Plus Gold.
AC input	90V to 264V, maximum input current 4.5A
AC input line frequency	50 Hz to 60 Hz nominal, 47 Hz to 63 Hz range
AC power consumption	318W with all 56 ports operating at 64G (56 ports populated with 64G SWL optics). 264W with all 56 ports operating at 32G (56 ports populated with 32G SWL optics). 58W for an empty chassis with no optics.