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Product Brief

Brocade® G720 Switch

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

Highlights

- Build high-performance fabrics with a powerful, ultra-dense 64-port 1U switch with double-density optical transceivers.
- Accelerate critical workloads with 64G links.
- Maximize the performance of NVMe storage with 50% lower switching latency than Gen 6.
- Enable pay-as-you-grow scalability from 24 to 64 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.
- Safeguard mission-critical workloads from vulnerabilities with Gen 7 integrated security.

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, advanced automation, and integrated security 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.

Overview

With the growing adoption of flash and the ramp-up of NVMe-based storage, organizations are moving more data through a SAN than ever before, requiring an increase in I/O capacity to keep up with ever-increasing demand. Coupled with higher expectations for availability and the need to protect their enterprise against disruptions, outages, and cybersecurity vulnerabilities, organizations need a network that is capable of maximizing performance while simplifying management and protecting against cybersecurity threats. These capabilities are required to help enterprises increase the productivity, efficiency, and resiliency of their storage investments and resources.

To meet these requirements, the network must 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. In addition, the Brocade G720 Switch provides cyber-resiliency with integrated security technology that protects mission-critical operations by validating the integrity of Gen 7 hardware and software. With enhanced security and autonomous SAN technology, organizations can take the guesswork out of protecting and managing a network.

The Brocade G720 Switch is a Gen 7 switch with 64 ports in an ultra-dense 1U design. Delivering unmatched 64G performance and 50% lower latency compared to the previous generation, this switch delivers a fixed-port building block designed to maximize the performance of flash and NVMe environments to meet demanding workloads. With Brocade Gen 7 technology, the Brocade G720 delivers far more than just speed and latency improvements. It can eliminate the pain of managing your data center, with autonomous SAN technology to deliver a network that can self-learn, self-optimize, and self-heal without intervention.

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 streamline management workflows, organizations can leverage Brocade SANnav™ Management Portal to accelerate the deployment of new applications, switches, servers, and storage. With a modernized graphical user interface (GUI), Brocade SANnav 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 billions 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.

Build High-Performance Fabrics

The Brocade G720 is designed for maximum flexibility and value. This enterprise-class switch offers pay-as-you-grow scalability with Ports on Demand (PoD). Organizations can quickly, easily, and cost-effectively scale from 24 ports to 64 ports to support higher growth. The Brocade G720 provides 48 64G SFP+ ports and 8 2x64G double-density SFP-DD ports, all in an efficient 1U package. Each SFP-DD transceiver provides 2 ports, making 16 ports available for device or ISL connectivity. The Brocade G720 base configuration comes with 24 ports enabled and can scale to 64 ports by installing SFP and SFP-DD POD licenses in any order and any combination. Each SFP-DD port can accommodate either SFP+ or SFP-DD transceivers, providing the flexibility to use either transceiver in those ports when needed.

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.

Protect Mission-Critical Workloads with Gen 7 Integrated Security

The sophistication and volume of cybercriminal behavior have dramatically increased as a direct result of the added reliance on digital data by businesses. Counterfeiting and tampering with hardware and software have become a lucrative illegal trade that leads to billions of dollars in losses across all industries. This counterfeiting and tampering within the data center can cause serious damage and risk to your environment.

A Brocade Gen 7 cyber-resilient network protects against security threats, enables nonstop operations, and maximizes management automation. Fibre Channel fabrics are secure by design based on controlled access between servers and storage and isolation within the data center. Brocade Gen 7 technology further reduces the risk of vulnerabilities from malware and hijacking attacks by validating the integrity of the switch operating system, security settings, and hardware.

Brocade Fabric OS® (FOS) adds additional security enhancements to validate the integrity and security of Brocade hardware and software. These features include Secure Boot, Brocade Trusted FOS (TruFOS) Certificates, FOS hardening with removal of root access, and automated distribution of SSL certificates via SANnav Management Portal. Brocade TruFOS Certificates ensure that enterprises running Brocade directors and switches are currently

covered with support and securely enabled to perform critical operations without having to worry about whether the operating system has been tampered with. In addition, Brocade FOS has been hardened by removing root-level access to the operating system to protect the SAN against malware and hijacking attacks.

Those enterprises using Brocade SANnav Management Portal have the ability to automatically distribute SSL certificates across the SAN to ensure authenticity and encryption settings. In addition, Brocade SANnav Management Portal has built-in security features to help protect the network. With Brocade SANnav, administrators can set up monitoring and alerting for security configuration changes, customize security thresholds, give proper access control to individual admins, and view switch security events.

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 billions 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. Brocade Traffic Optimizer guarantees critical application performance by automatically prioritizing traffic. This advanced capability classifies and separates traffic with similar characteristics, such as protocol, speed, and latency.

In addition, Traffic Optimizer can help avoid application performance impacts by automatically isolating traffic that is adversely impacting other flows.

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, the software 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. All of the SAN telemetry data collected by SANnav Management Portal can also be streamed to third-party applications via Kafka streaming.

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): 64 ports (48 64G SFP+ ports, plus 8 2x64G SFP-DD ports), each supporting E_Ports, F_Ports, M_Ports, D_Ports, and EX_Ports. 24-port base configuration; additional ports are enabled with three 8-port SFP+ PODs (Ports on Demand), plus a 16-port SFP-DD POD (8 2x64G SFP-DD transceivers), scaling the switch from 24 ports to 64 ports. Brocade Access Gateway default port mapping: 56 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	4.096Tb/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 2x64G FC SFP-DD SN connector: SWL
USB	One standard USB port for firmware download, SupportSave, 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; Name Server; NPIV; NTP v3; Port Decommission/Fencing; QoS; Registered State Change Notification (RSCN); Slow Drain Device Quarantine (SDDQ); 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	Brocade Advanced Web Tools; Brocade SANnav Management Portal and SANnav Global View; Command Line Interface (CLI); EZSwitchSetup; HTTP/HTTPS; RESTful API; SNMP v1/v3 (FE MIB, FC Management MIB); SSH.
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) port and 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, 3G axis
Vibration	Operating: 0.25 Grms sine, 0.40 Grms random, 5 Hz to 500 Hz Nonoperating: 5 Hz at 0.50 Grms; 10–500 Hz at 1.00 Grms (sine vibration); 3–500 Hz at 1.12 Grms (random vibration)
Heat dissipation	64 ports at 1192 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	349W with all 64 ports operating at 64G (48 ports populated with 64G SWL transceivers and 8 ports populated with 2x64G SFP-DD SWL transceivers). 57W for an empty chassis with no transceivers.

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For product information and a complete list of distributors, visit our website at: broadcom.com

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