

# Lenovo B300 FC SAN Switch



## Small SAN Affordability with Growth Capabilities



As the value and volume of business data continue to rise, organizations need technology solutions that are easy to implement and manage, and that can grow and change with minimal disruption. The Lenovo B300 FC SAN Switch provides small to medium-sized enterprises with Storage Area Network (SAN) connectivity that simplifies their IT management infrastructures, improves system performance, maximizes the value of virtual server deployments, and reduces overall storage costs.

The 8 Gbps Fibre Channel B300 provides a simple, affordable, single-switch solution for both new and existing SANs. To simplify deployment, the B300 features the EZSwitchSetup wizard and other usability and configuration enhancements, as well as the optional Access Gateway mode of operation. Moreover, it provides state-of-the-art performance and Ports on Demand (PoD) scalability to support SAN expansion and enable long-term investment protection.

### Increased efficiency to manage business growth

The B300 significantly increases performance and functionality for SANs at an entry-level price. Based on Brocade technology, the B300 combines auto-sensing 1, 2, 4, and 8 Gbps throughput with features that greatly enhance fabric operation. The evolutionary design provides these capabilities while consuming less than 2.5 watts of power per port for exceptional power and cooling efficiency.

As a result, organizations can enjoy the advantages of entry-cost device connectivity and powerful capabilities that make SAN technology highly accessible and affordable. In addition, hot code load and activation help maximize application uptime with faster system software upgrades and maintenance to reduce the dependency on scheduled outages.

### Pay-as-you-grow scalability

The B300 integrates innovative hardware and software features that make it easy to deploy, manage, and integrate into a wide range of IT environments. With powerful yet flexible capabilities - such as PoD scalability from 8 to 16 or 24 ports in 8-port increments - the B300 enables organizations to start small and grow their storage networks in a non-disruptive manner. In addition, organizations can initially deploy 4 Gbps Small Form-Factor Pluggables (SFPs) and upgrade to 8 Gbps SFP+ when necessary.

### Backward and forward compatibility

The B300 operates seamlessly with existing Brocade switches through native E\_Port connectivity into Brocade Fabric OS (FOS) or M-Enterprise OS (M-EOS)\* environments. In addition, the B300 can enable future expansion to larger core-to-edge network architectures as business needs dictate.

To facilitate deployment, the B300 integrates easily into heterogeneous server environments such as Windows, UNIX, Linux, Solaris, and AIX, as well as virtual server environments. As a result, these capabilities make it ideal for SAN solutions such as virtual server deployment, LAN-free backup, and server and storage consolidation.

### A better way to improve business operations

One of the primary benefits of a SAN environment is the consolidation of hardware resources. This centralized approach helps increase operational efficiency and staff productivity, two critical requirements for small and medium-sized organizations. With fewer physical resources to manage, staff members can handle additional business growth or focus on other strategic initiatives.

High-performance 8 Gbps Fibre Channel capabilities speed data transfer to help keep data flowing and applications running. As a result, organizations can significantly improve storage utilization in distributed e-mail environments, for example. In addition, a SAN-based architecture enables LAN-free backup and more efficient data center resource management—increasing overall system performance and productivity (see Figure 1).

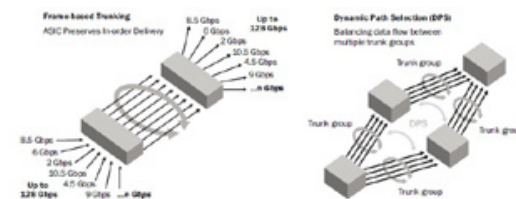


Figure 1. SAN-based consolidation solution can significantly improve data availability and resource utilization.

### Superior network performance

The B300 provides high performance with all ports capable of operating at 1, 2, 4, and 8 Gbps to enable up to 192 Gbps of uncongested throughput. Auto-sensing and speed-matching of data traffic provides interoperability with previous 1, 2, and 4 Gbps devices. To provide more targeted performance, enhanced Inter-Switch Link (ISL) Trunking combines up to eight ISLs between a pair of switches into a single, logical high-speed trunk capable of up to 64 Gbps of throughput.

## Simplified management

B300 setup and configuration is simplified with the EZSwitchSetup wizard, which makes switch configuration, deployment, and management an easy three-step point-and-click process. For multi-switch environments, Brocade Network Advisor provides comprehensive management of data center fabrics, including configuration, monitoring, and management of Brocade backbones and switches. The B300, which is Microsoft Simple SAN-compatible, also has a USB port that increases serviceability and error logging by facilitating firmware upgrades and downloads of system log files.

## Traffic measurement and adaptive networking

The B300 offers Bottleneck Detection, Top Talkers (part of Advanced Performance Monitoring), and Adaptive Networking, a suite of tools including Ingress Rate Limiting, Traffic Isolation, and Quality of Service (QoS). These advanced capabilities help optimize fabric behavior and ensure ample bandwidth for mission-critical applications.

Bottleneck Detection identifies and alerts administrators to “slow drain” storage devices causing latency and I/O timeouts, particularly in highly virtualized server environments. Top Talkers measures the top bandwidth-consuming traffic (including by individual virtual machine) in real time over a physical device connection or throughout a network switch. Ingress Rate Limiting restricts data flow from less-critical hosts at preset bandwidths. Traffic Isolation dedicates paths in the fabric to high-bandwidth data flows. And QoS expedites critical traffic in the event of congestion while keeping all traffic flowing.

## Why Lenovo

Lenovo is the leading provider of x86 systems for the data center. The portfolio includes rack, tower, blade, dense and converged systems, and supports enterprise class performance, reliability and security. Lenovo also offers a full range of networking, storage, software and solutions, and comprehensive services supporting business needs throughout the IT lifecycle.

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\* Brocade M-EOS fabrics are McDATA switches and directors running McDATA Enterprise OS in McDATA Fabric mode or McDATA Open Fabric mode.

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## HIGHLIGHTS

- Provides an affordable, flexible foundation for entry-level SANs, and an edge switch for core-to-edge SAN environments
- Delivers up to 24 ports of 8 Gbps performance in an energy-efficient, optimized 1U form factor to support the most demanding server and virtual server deployments
- Simplifies configuration and management with easy-to-use tools such as the Brocade EZSwitchSetup wizard, and is Microsoft Simple SAN-compatible
- Enables “pay-as-you-grow” expansion with Ports On Demand (PoD) scalability from 8 to 16 or 24 ports in 8-port increments (also includes eight 8Gbps SWL transceivers with each PoD)
- Offers dual functionality as either a full-fabric SAN switch or as an NPIV-enabled Access Gateway that simplifies server connectivity in heterogeneous enterprise fabrics
- Protects existing device investments with auto-sensing 1, 2, 4, and 8 Gbps capabilities and native operation with Brocade and Brocade M-Series fabrics
- Future-proofs investments by enabling organizations to use 4 Gbps SFPs today and upgrade to 8 Gbps SFP+ when required

## ACCESS GATEWAY MODE

The B300 can be deployed as a full-fabric switch or as an Access Gateway, which simplifies server connectivity into heterogeneous SANs (the default mode setting is a switch). Access Gateway mode utilizes N\_Port ID Virtualization (NPIV) switch standards to present physical and virtual servers directly to the core of SAN fabrics. This makes it transparent to the SAN fabric, greatly reducing management of the network edge. The B300 in Access Gateway mode can connect servers to NPIV-enabled Brocade B-Series, M-Series, or other SAN fabrics.

Organizations can easily enable Access Gateway mode via Brocade Network Advisor, Brocade Web Tools, or a Command Line Interface (CLI). Key benefits of Access Gateway mode include: Improved scalability for large or rapidly growing server and virtual server environments  
Reduced management of the network edge since 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

Note: Access Gateway mode for the B300 is supported only in 24-port configurations.

## Systems Architecture

Fibre Channel ports	Switch mode (default): 8-, 16-, and 24-port configurations (8-port increments through Ports on Demand [PoD] licenses); E_, F_, M_, and FL_Ports 8-port 8Gbps activation license with SW FC transceivers (Part # 00WF814) Access Gateway default port mapping: 16 F_Ports, 8 N_Ports
Scalability	Full fabric architecture with 239 switches maximum
Certified maximum	Single Brocade FOS fabric: 56 domains, 19 hops Single Brocade M-EOS fabric*: 31 domains, 3 hops Larger fabrics certified as required; consult Lenovo or Brocade SAN design documents for configuration details
Performance	1.063 Gbps line speed, full duplex; 2.125 Gbps line speed, full duplex; 4.25 Gbps line speed, full duplex; 8.5 Gbps line speed, full duplex; auto-sensing of 1, 2, 4, and 8 Gbps port speeds; optionally programmable to fixed port speed; speed matching between 1, 2, 4, and 8 Gbps ports
ISL Trunking (optional SW license)	Frame-based Trunking with up to eight (8 Gbps) ports per ISL trunk with optional license; up to 64 Gbps per ISL trunk (8 ports x 8 Gbps [data rate]) Exchange-based load balancing across ISLs with DPS included in Brocade Fabric OS (FOS)
Aggregate bandwidth	192 Gbps: 24 ports x 8 Gbps (data rate)
Maximum fabric latency	700 ns with no contention, cut-through routing at 8 Gbps
Maximum frame size	2112-byte payload
Frame buffers	700 dynamically allocated, 484 maximum per port
Classes of service	Class 2, Class 3, Class F (inter-switch frames)
Port types	FL_Port, F_Port, M_Port (Mirror Port), and E_Port; optional port type control Access Gateway mode: F_Port and NPIV-enabled N_Port
Data traffic types	Fabric switches supporting unicast, multicast (255 groups), and broadcast
Media types	8 Gbps SWL SFP Transceivers come included standard with the base switch or with Ports on Demand Software license packs. 8Gbps LWL (Part # 00MY764) and ELWL (Part # 00MY766) SFP's are available as individual options Fibre Channel distance subject to fiber-optic cable and port speed
USB	1 USB port for firmware download, supportSave, and configuration upload/download
Fabric services (Some require purchase of separate SW licenses)  Note: Some fabric services do not apply or are unavailable in Access Gateway mode	Advanced Performance Monitoring (including Top Talkers); Adaptive Networking (Ingress Rate Limiting, Traffic Isolation, QoS); BB credit recovery; Advanced Zoning (default zoning, port/WWN zoning, broadcast zoning); Bottleneck Detection; Dynamic Path Selection (DPS); F_Port Trunking; Extended Fabrics; Fabric Watch; FDMI; Frame Redirection; FSPF; IPoFC; ISL Trunking; Management Server; NPIV; NTP v3; Port Fencing; Registered State Change Notification (RSCN); Reliable Commit Service (RCS); Simple Name Server (SNS)
Rack-mount rail kits	Fixed rail kit is included standard with the B300 Lenovo B300 Slide rack mount kit (Part # 00MY794) – available as an option

## Management

Management	HTTP, SNMP v1/v3 (FE MIB, FC Management MIB), Telnet; auditing, change management tracking, Syslog; Advanced Web Tools, Brocade Fabric Watch; EZSwitchSetup wizard, Brocade Network Advisor SAN Enterprise, or Brocade Network Advisor SAN Professional/ Professional Plus; command line interface; SMI-S compliant, SMI-S scripting toolkit; Administrative Domains; trial licenses for add-on capabilities
Security	DH-CHAP (between switches and end devices), FCAP switch authentication, FIPS 140-2 L2-compliant, HTTPS, IPsec, IP Filtering, LDAP with IPv6, OpenLDAP, Port Binding, RADIUS, TACACS+, User-defined Role-Based Access Control (RBAC), Secure Copy (SCP), Secure RPC, SFTP, SSH v2, SSL, Switch Binding, Trusted Switch
Management access	10/100 Mbps Ethernet (RJ-45), in-band over Fibre Channel; serial port (RJ-45); USB
Diagnostics	POST and embedded online/offline diagnostics, including RAStrac logging, environmental monitoring, non-disruptive daemon restart, FCping and Pathinfo (FC traceroute), port mirroring (SPAN port)

## Mechanical

Enclosure	Non-port to port side airflow; 1U, 19-inch EIA-compliant, power from port side
Size	Width: 42.88 cm (16.88 in.) Height: 4.29 cm (1.69 in.) Depth: 30.66 cm (12.07 in.)
System weight	4.2 kg (9.30 lb), without SFP/SFP+ media

## Environment

Temperature	Operating: 0°C to 40°C (32°F to 104°F) Non-operating and storage: -25°C to 70°C (-13°F to 158°F)
Humidity	Operating: 10% to 85% non-condensing Non-operating and storage: 10% to 95% non-condensing
Altitude	Operating: Up to 3000 meters (9842 feet) Non-operating and storage: Up to 12 km (39,370 feet)
Shock	Operating: 20 g, 6 ms half-sine Non-operating and storage: Half sine, 33 g 11 ms, 3/eg Axis
Vibration	Operating: 0.5 g sine, 0.4 grms random, 5 to 500 Hz Non-operating and storage: 2.0 g sine, 1.1 grms random, 5 to 500 Hz
Heat dissipation	Maximum 24 ports: 195 BTU/hr
CO <sub>2</sub> emissions	210 kg per year (with 16 ports at 0.42 kg/kWh) 1.09 kg per Gbps per year
Airflow	Maximum 23 CFM (cu. ft./min); nominal 18 CFM

## Power

Power supply	Single, fixed power supply
Power inlet	C13
Input voltage	85 to 264 VAC nominal
Frequency	47 to 63 Hz
Power consumption	Nominal 48 watts; maximum 57 watts with 24 ports at 8 Gbps
Warranty	1-year hardware and 3-year firmware/ FOS (upgrades available)

Associated Options: For details on transceivers, cables, Software or other associated options and technical details, refer to the [Lenovo B300 Product Guide](#)

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