

# Datasheet

## Brocade 6520 Fibre Channel switch

### Scalable Enterprise-Class SAN Switch for Highly Virtualized, Cloud Environments

To meet dynamic and growing business demands, data centers are evolving into highly virtualized environments and cloud-based architectures. This approach enables organizations to consolidate and simplify their IT resources, resulting in increased business agility and lower capital and operating expenses. However, enterprise data centers must keep pace with the changes driven by increasingly virtualized workloads and storage resources. Selecting the right network is therefore key to realizing the full benefits of these cloud-based architectures. By treating the network as a strategic part of a highly virtualized environment, organizations can increase optimization and efficiency even as they rapidly scale their environments.

Today, Brocade® Fibre Channel switches are the de facto storage networking standard for mission-critical workloads and highly virtualized environments. Based on years of successful deployment in enterprise data centers around the globe, Brocade Fibre Channel SANs provide highly resilient, scalable, and simplified network infrastructure for storage.

The Brocade 6520 Switch meets the demands of growing, dynamic workloads and private cloud storage environments by delivering market-leading 16 Gbps Fibre Channel

technology and capabilities. The Brocade 6520 is a high-density, purpose-built, foundational building block for large and growing Storage Area Network (SAN) infrastructures. It provides industry-leading scalability, reliability, and performance in a flexible, easy-to-deploy enterprise-class switch, enabling greater data center consolidation, operational efficiency, and business continuity. In addition to increased throughput, it helps improve bandwidth utilization, security, and network visibility and management through in-flight data compression and encryption and advanced diagnostics. It's an ideal switch for bandwidth-intensive workloads, evolving virtualized data centers, and private cloud architectures.



# Features and benefits

Main features	Benefits
<ul style="list-style-type: none"><li>■ High scalability in an ultra-dense 96-port switch</li><li>■ Ports on Demand (PoD) capabilities</li><li>■ Up to eight in-flight encryption and compression ports</li><li>■ ISL trunking and Dynamic Path Selection (DPS)</li><li>■ Reducing overall operational expenses with D_Ports</li><li>■ Dynamic Fabric Provisioning (DFP), monitoring, and advanced diagnostics</li></ul>	<ul style="list-style-type: none"><li>■ Support highly virtualized, private cloud storage and data center consolidation</li><li>■ Enables “pay-as-you-grow” flexibility from 48 to 96 ports with speeds up to 16 Gbps</li><li>■ Delivering data center-to-data center security and bandwidth savings</li><li>■ Optimizes link and bandwidth utilization</li><li>■ Helps maximize application uptime and performance</li><li>■ Accelerates deployment and troubleshooting</li></ul>

### EXCEPTIONAL SCALABILITY FOR DEMANDING WORKLOADS AND DATA CENTER CONSOLIDATION

The Brocade 6520 features 96 Fibre Channel ports in a 2U form factor, delivering industry-leading port density and space utilization for data center consolidation. Designed for maximum flexibility, this enterprise-class switch offers “pay-as-you-grow” scalability with Ports on Demand (PoD). Organizations can quickly, easily, and cost-effectively scale from 48 to 96 ports in 24-port increments, each supporting 2, 4, 8 or 16 Gbps. In addition, flexible, high-speed 16 Gbps and 8 Gbps optics allow organizations to deploy bandwidth on demand to meet growing data center needs..

### ENTERPRISE-CLASS RELIABILITY, AVAILABILITY, AND SERVICEABILITY

The Brocade 6520 leverages proven enterprise-class technology to deliver unmatched reliability to support non-stop operations for mission-critical workloads. It features advanced monitoring, diagnostics, and RAS capabilities to maximize availability, optimize performance, and simplify administration. These enterprise-class features include:

- Critical diagnostic and monitoring capabilities to help ensure early problem detection and recovery
- Non-intrusive and non-disruptive monitoring on every port to provide a comprehensive end-to-end view of the entire fabric
- Forward Error Correction (FEC) to recover from bit errors on links, enhancing transmission reliability and performance
- Additional buffers to overcome performance degradation and congestion due to buffer credit loss
- Monitoring of real-time bandwidth consumption by hosts/applications on Inter-Switch Links (ISLs) to easily identify hot spots and potential network congestion

### INDUSTRY-LEADING PERFORMANCE FOR GROWING WORKLOADS

The Brocade 6520 delivers exceptional performance for growing and dynamic workloads through a combination of market-leading throughput and bandwidth utilization. With the unpredictability of virtualized workloads and cloud services, throughput becomes critical to ensuring that the network does not become the bottleneck. With 96 ports, the Brocade 6520 provides an aggregate 1536 Gbps full-duplex throughput. Up to eight ISLs can be combined together in a 128 Gbps frame-based trunk. In addition, exchange-based Dynamic Path Selection (DPS) optimizes fabric-wide performance and load balancing by automatically routing data to the most efficient, available path in the fabric. This augments ISL trunking to provide more effective load balancing in certain configurations. Moreover, the enterprise-class capabilities of this switch yield 40 percent higher performance compared to 10 Gigabit Ethernet (GbE) alternatives at a similar cost.

### SIMPLIFIED DEPLOYMENT AND CENTRALIZED MANAGEMENT

Automating and simplifying SAN management enables data centers to quickly adapt to change and overcome disruptions in a private cloud infrastructure. Brocade 6520 advanced diagnostics, monitoring, and management reduce end-to-end SAN management complexity and costs.

The Brocade 6520 helps reduce operating costs through simplified server provisioning and change management, advanced cable and optics diagnostics, and comprehensive management. Several technologies support these capabilities, including:

- **Dynamic Fabric Provisioning (DFP):**  
Combines Brocade switch and adapter technology to reduce or eliminate the need to reconfigure zoning and Logical Unit Number (LUN) masking when adding or replacing servers.
- **Diagnostic Ports (D\_Ports):**  
Help identify and isolate optics and cable problems, reducing fabric deployment and diagnostic times.
- **Brocade Network Advisor:**  
Provides comprehensive management of data center fabrics, including configuration, monitoring, and management of Brocade backbones, switches, and adapters.

### A BUILDING BLOCK FOR VIRTUALIZED, PRIVATE CLOUD STORAGE

The Brocade 6520 provides a critical building block for today's highly virtualized, private cloud storage environments. It simplifies server virtualization and Virtual Desktop Infrastructure (VDI) management while meeting the high-throughput demands of Solid State Disks (SSDs). The Brocade 6520 also supports multitenancy in cloud environments through Virtual Fabrics, Quality of Service (QoS), and fabric-based zoning features.

The Brocade 6520 enables secure metro extension to virtual private or hybrid clouds with Dense Wavelength Division Multiplexing (DWDM) link support, as well as in-flight encryption and data compression to optimize bandwidth and minimize the risk of unauthorized access. With four times more in-flight encryption and compression ports than the Brocade 6510 Switch, the Brocade 6520 supports higher data volumes over long distance. The switch also features on-board data security and acceleration, minimizing the need for separate acceleration appliances to support distance extension. Internal fault-tolerant and enterprise-class RAS features help minimize downtime to support mission-critical cloud environments.

# Technical Details

## System Architecture

<b>Fibre Channel ports</b>	Switch mode (default): 48-, 72-, and 96-port configurations (24-port increments through Ports on Demand [PoD] licenses); (E, F, M, D, EX) ports
<b>Scalability</b>	Full fabric architecture with a maximum of 239 switches
<b>Certified maximum</b>	6000 active nodes; 56 switches, 19 hops in Brocade Fabric OS® fabrics; larger fabrics certified as required
<b>Performance</b>	Auto-sensing of 2, 4, 8, and 16 Gbps port speeds
<b>ISL trunking</b>	Frame-based trunking with up to eight 16 Gbps ports per ISL trunk; up to 128 Gbps per ISL trunk. Exchange-based load balancing across ISLs with DPS included in Brocade Fabric OS.
<b>Aggregate bandwidth</b>	1536 Gbps end-to-end full duplex
<b>Fabric latency</b>	Latency for locally switched ports is 700 ns; latency between port groups is 2.1 µsec, cut-through routing at 16 Gbps between locally switched groups. Encryption/compression is 5.5 µsec per node; Forward Error Correction (FEC) adds 400 ns between E_Ports (enabled by default).
<b>Maximum frame size</b>	2112 byte payload
<b>Frame buffers</b>	8192 dynamically allocated
<b>Classes of service</b>	Class 2, Class 3, Class F (inter-switch frames)
<b>Port types</b>	D_Port (Diagnostic Port), E_Port, EX_Port, F_Port, M_Port (Mirror Port); optional port type control
<b>Data traffic types</b>	Fabric switches supporting unicast
<b>Media types</b>	Hot-pluggable, industry-standard Small Form-Factor Pluggable (SFP+), LC connector; Short-Wavelength (SWL), Long-Wavelength (LWL); Extended Long-Wavelength (ELWL); distance depends on fiber optic cable and port speed. Supports SFP+ (2, 4, 8, 16 Gbps) optical transceivers.
<b>USB</b>	One USB port for system log file downloads or firmware upgrades
<b>Fabric services</b>	Brocade Advanced Performance Monitoring (APM) (including Top Talkers for E_Ports, F_Ports, and Fabric mode); Brocade Adaptive Networking (Ingress Rate Limiting, Traffic Isolation, QoS); Bottleneck Detection; Brocade Advanced Zoning (default zoning, port/WWN zoning, broadcast zoning); Dynamic Fabric Provisioning (DFP); Dynamic Path Selection (DPS); Brocade Extended Fabrics; Enhanced BB credit recovery; Enhanced Group Management (EGM); Brocade Fabric Watch; FDMI; Frame Redirection; Frame-based Trunking; FSPF; Integrated Routing; IPoFC; Brocade ISL Trunking; Management Server; NPIV; NTP v3; Port Fencing; Registered State Change Notification (RSCN); Reliable Commit Service (RCS); Server Application Optimization (SAO); Simple Name Server (SNS); Virtual Fabrics (Logical Switch, Logical Fabric)
<b>Extension</b>	Fibre Channel, in-flight compression (Brocade LZO) and encryption (AES-GCM-256)

**Management**

<b>Supported management Software</b>	HTTP, SNMP v1/v3 (FE MIB, FC Management MIB), SSH v2; Auditing, Syslog; Brocade Advanced Web Tools, APM, Brocade Fabric Watch; Brocade Network Advisor SAN Enterprise or Brocade Network Advisor SAN Professional/Professional Plus; Command Line Interface (CLI); SMI-S compliant; Administrative Domains; trial licenses for add-on capabilities; Fujitsu ETERNUS SF Storage Cruiser
<b>Security</b>	AES-GCM-256 encryption on ISLs; 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
<b>Management access</b>	10/100/1000 Mbps Ethernet (RJ-45), in-band over Fibre Channel, serial port (RJ-45), and one USB port
<b>Diagnostics</b>	D_Port offline diagnostics, including electrical/optical loopback, link traffic/latency/distance; POST and embedded online/offline diagnostics, including environmental monitoring, Fcping and Pathinfo (FC traceroute), frame viewer, non-disruptive daemon restart, port mirroring, optics health monitoring, power monitoring, RAStrace logging, and Rolling Reboot Detection (RRD)

**Mechanical**

<b>Enclosure</b>	Front-to-back airflow; power from back, 2U
<b>Size</b>	Width: 429.25 mm (16.90 in.) Height: 86.74 mm (3.42 in.) Depth: 609.75 mm (24.01 in.)
<b>System weight</b>	16.92 kg (37.3 lb) with two power supply FRUs, without transceivers

**Environmental**

<b>Operating environment</b>	Temperature: 0°C to 40°C/32°F to 104°F Humidity: 10% to 85% (non-condensing)
<b>Non-operating environment</b>	Temperature: -25°C to 70°C/-13°F to 158°F Humidity: 10% to 90% (non-condensing)
<b>Operating altitude</b>	Up to 3000 m (9842 ft)
<b>Storage altitude</b>	Up to 12 km (39,370 ft)
<b>Shock</b>	Operating: Up to 20 G, 6 ms half-sine Non-operating: Half sine, 33 G 11 ms, 3/eg axis
<b>Vibration</b>	Operating: 0.5 g sine, 0.4 grms random, 5 Hz to 500 Hz Non-operating: 2.0 g sine, 1.1 grms random, 5 Hz to 500 Hz
<b>Heat dissipation</b>	96 ports at 1582 BTU/hr
<b>Airflow</b>	Three hot-swappable, redundant fans; maximum 109 CFM (cu. ft./min); nominal 33 CFM

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<b>Power</b>	
<b>Power supply</b>	Dual, hot-swappable redundant power supplies with integrated system cooling fans
<b>AC input</b>	85 V to 264 V ~5 A to 2.5 A
<b>Input line frequency</b>	47 Hz to 63 Hz
<b>Power consumption</b>	464 W with all 96 ports populated with 16 Gbps SWL optics 350 W for empty chassis with no optics

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### Safety Compliance

- Bi-Nat UL/CSA 60950-1 2nd Ed or latest
  - EN60950-1 2nd Ed or latest
  - IEC60950-1 2nd Ed or latest
  - GB4943-2001 and GB9254-1998 or latest
  - CNS 14336(94) or latest
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### EMC

- FCC Class A
  - ICES A
  - VCCI-A
  - CE
  - C
  - BSMI
  - GOST
  - KC Class A
  - CCC
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### Immunity

- ANSI C63.4
  - ICES-003 Class A
  - CISPR22 and JEIDA (Harmonics)
  - EN55022 and EN55024
  - EN55022 or CISPR22 or AS/NZS CISPR22
  - CNS 13438(95)
  - 51318.22-99 and 51318.24-99
  - KN22 and KN24
  - GB17625.1-2003
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# More information

## Fujitsu OPTIMIZATION Services

In addition to Brocade 6520 Fibre Channel switch, Fujitsu provides a range of platform solutions. They combine reliable Fujitsu products with the best in services, know-how and worldwide partnerships.

### Dynamic Infrastructures

With the Fujitsu Dynamic Infrastructures approach, Fujitsu offers a full portfolio of IT products, solutions and services, ranging from clients to datacenter solutions, Managed Infrastructure and Infrastructure as a Service. How much you benefit from Fujitsu technologies and services depends on the level of cooperation you choose. This takes IT flexibility and efficiency to the next level.

### Computing products

[www.fujitsu.com/global/services/computing/](http://www.fujitsu.com/global/services/computing/)

- PRIMERGY: Industrial standard server
- SPARC Enterprise: UNIX server
- PRIMEQUEST: Mission-critical IA server
- ETERNUS: Storage system
- BS2000 mainframes

### Software

[www.fujitsu.com/software/](http://www.fujitsu.com/software/)

- Interstage: Application infrastructure software
- Systemwalker: System management software

## More information

Learn more about Brocade 6520 Fibre Channel switch, please contact your Fujitsu sales representative, Fujitsu business partner, or visit our website.  
[www.fujitsu.com/eternus/](http://www.fujitsu.com/eternus/)

## Fujitsu green policy innovation

Fujitsu Green Policy Innovation is our worldwide project for reducing burdens on the environment. Using our global know-how, we aim to resolve issues of environmental energy efficiency through IT. Please find further information at:  
[www.fujitsu.com/global/about/environment/](http://www.fujitsu.com/global/about/environment/)



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