

BROCADE 6505 SWITCH

DATA CENTER

HIGHLIGHTS

- Provides exceptional price/performance value, combining flexibility, simplicity, and enterprise-class functionality in a 24-port, 1U entry-level switch
- Enables fast, easy, and cost-effective scaling from 12 to 24 ports using Ports on Demand (PoD) capabilities
- Maximizes resiliency with non-disruptive software upgrades and an optional redundant power supply
- Simplifies deployment with the Brocade EZSwitchSetup wizard
- Streamlines deployment and troubleshooting time with dynamic fabric provisioning, critical monitoring, and advanced diagnostic features
- Simplifies server connectivity and SAN scalability by offering dual functionality as either a full-fabric SAN switch or an NPIV-enabled Brocade Access Gateway
- Simplifies and centralizes management through Brocade Network Advisor, reducing operational costs and complexity

The Brocade One™ strategy helps simplify networking infrastructures through innovative technologies and solutions. The Brocade 6505 Switch supports this strategy by delivering price/performance value within a flexible, cost-effective, and easy-to-use 1U form factor.

Flexible, Easy-to-Use Entry-Level SAN Switch for Private Cloud Storage

To keep pace with growing business demands, data centers are transitioning to highly virtualized, private cloud storage environments. This approach enables organizations to consolidate and simplify their IT resources, resulting in increased business agility and lower capital and operating expenses. But virtualization is not without its challenges. Data centers must keep up with the explosive data growth and dynamic changes driven by virtualized workloads. Selecting the right network is key to realizing the full benefits of these cloud-based architectures.

The Brocade® 6505 Switch provides exceptional price/performance value, combining flexibility, simplicity, and enterprise-class functionality in an

entry-level switch. Designed to enable maximum flexibility and reliability, the Brocade 6505 is configurable in 12 or 24 ports and supports 2, 4, 8, or 16 Gbps speeds in an efficiently designed 1U package. It comes standard with a single power supply with integrated fans. A second, optional power supply provides additional redundancy for increased resiliency.

A simplified deployment process and a point-and-click user interface make the Brocade 6505 both powerful and easy to use. Moreover, the Brocade 6505 offers low-cost access to industry-leading Storage Area Network (SAN) technology while providing “pay-as-you-grow” scalability to meet the needs of an evolving storage environment.



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ACCELERATING FABRIC DEPLOYMENT WITH DIAGNOSTIC PORTS

Diagnostic Ports (D_Ports) are a new port type that enables administrators to quickly identify and isolate optics and cable problems, reducing fabric deployment and diagnostic times. Organizations also can use D_Ports to run a variety of tests through Brocade Network Advisor or Command Line Interface (CLI) to test ports, Small Form-Factor Pluggables (SFPs), and cables for faults, latency, and distance.

SIMPLIFYING SERVER DEPLOYMENT WITH DYNAMIC FABRIC PROVISIONING

Dynamic Fabric Provisioning (DFP) allows organizations to eliminate fabric reconfiguration when adding or replacing servers through the virtualization of host World Wide Names (WWNs). It also reduces or eliminates the need to modify zoning or Logical Unit Number (LUN) masking. In addition, DFP enables pre-provisioning of virtual WWNs, helping organizations eliminate time-consuming steps when deploying new equipment or moving devices within a switch.

EXCEPTIONAL PRICE/PERFORMANCE FOR GROWING SAN WORKLOADS

The Brocade 6505 combines market-leading throughput with an affordable switch form factor, making it ideal for growing SAN workloads. The 24 ports produce an aggregate 384 Gbps full-duplex throughput; any eight ports can be trunked for 128 Gbps Inter-Switch Links (ISLs). Exchange-based Dynamic Path Selection (DPS) optimizes fabric-wide performance and load balancing by automatically routing data to the most efficient and available path in the fabric (see Figure 1). It augments Brocade ISL Trunking to provide more effective load balancing in certain configurations.

In addition, the Brocade 6505 provides a low Total Cost of Ownership (TCO) thanks to a 12-port base configuration, easy administration, 1U footprint, and low-energy consumption—0.22 watts per Gbps and 3.3 watts per port. Enterprise-class capabilities combined with a low TCO yield 40 percent higher performance compared to 10 Gigabit Ethernet (GbE) alternatives at a similar cost.

INDUSTRY-LEADING TECHNOLOGY THAT IS FLEXIBLE, SIMPLE, AND EASY TO USE

The Brocade 6505 delivers industry-leading SAN technology within a flexible, simple, and easy-to-use solution. The base configuration includes 12 ports, with up to 24 ports on demand. In addition to providing best-in-class scalability, the Brocade 6505 is easy to deploy with the Brocade EZSwitchSetup wizard and the new “D_Port” feature, which simplifies setup.

A BUILDING BLOCK FOR VIRTUALIZED, PRIVATE CLOUD STORAGE

The Brocade 6505 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 6505 also supports multi-tenancy in cloud environments through Quality of Service (QoS) and fabric-based zoning features.

BROCADE ACCESS GATEWAY MODE

The Brocade 6505 can be deployed as a full-fabric switch or as a Brocade Access Gateway, which simplifies fabric topologies and heterogeneous fabric connectivity (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 Access Gateway transparent to the SAN fabric, greatly reducing management of the network edge. The Brocade 6505 in Access Gateway mode* can connect servers to NPIV-enabled Brocade B-Series, Brocade M-Series, and other SAN fabrics.

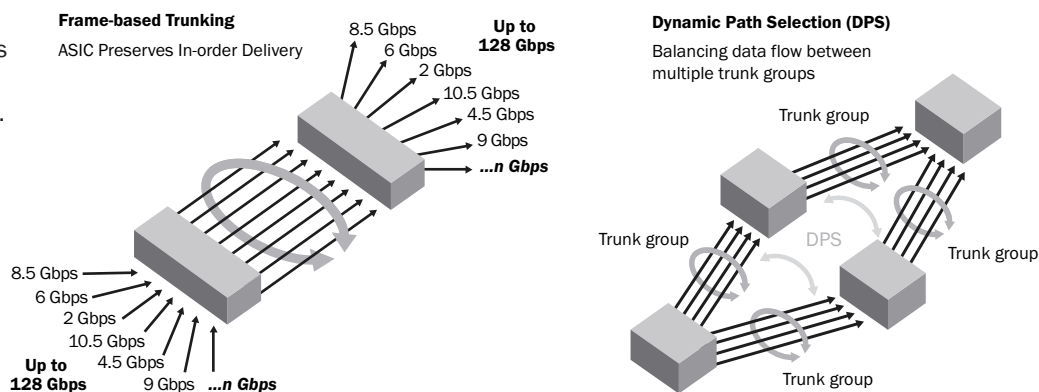
Organizations can easily enable Access Gateway mode via Brocade Network Advisor or a CLI. Key benefits of Access Gateway mode include:

- 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

* Access Gateway mode for the Brocade 6505 is supported only in 24-port configurations.

Figure 1.

Dynamic Path Selection (DPS) augments Brocade ISL Trunking to route data efficiently between multiple trunk groups.



ENTERPRISE-CLASS FEATURES IN AN ENTRY-LEVEL SWITCH

The Brocade 6505 features advanced monitoring, diagnostics, RAS, and redundancy capabilities in an entry-level switch 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 in ISLs, enhancing transmission reliability and performance
- Additional buffers to overcome performance degradation and congestion due to buffer credit loss
- Real-time bandwidth consumption by hosts/applications on ISLs to easily identify hot spots and potential network congestion
- An optional second power supply to enable dual power redundancy, enhancing availability

BROCADE GLOBAL SERVICES

Brocade Global Services has the expertise to help organizations build scalable, efficient cloud infrastructures. Leveraging 15 years of expertise in storage, networking, and virtualization, Brocade Global Services delivers world-class professional services, technical support, network monitoring services, and education, enabling organizations to maximize their Brocade investments, accelerate new technology deployments, and optimize the performance of networking infrastructures.

MAXIMIZING INVESTMENTS

To help optimize technology investments, Brocade 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.brocade.com.

BROCADE 6505 SPECIFICATIONS

System Architecture			
Fibre Channel ports	Switch mode (default): 12- and 24-port configurations (12-port increment through Ports on Demand [PoD] license); universal (E, F, M, D, EX) ports Brocade Access Gateway default port mapping: 16 F_Ports, 8 N_Ports	Port types	D_Port (Diagnostic Port), E_Port, EX_Port, F_Port, M_Port (Mirror Port); self-discovery based on switch type (U_Port); optional port type control Brocade Access Gateway mode: F_Port and NPIV-enabled N_Port
Scalability	Full-fabric architecture with a maximum of 239 switches	Data traffic types	Fabric switches supporting unicast
Certified maximum	6000 active nodes; 56 switches, 19 hops in Brocade Fabric OS® fabrics; 31 switches, three hops in Brocade M-EOS fabrics; larger fabrics certified as required	Media types	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+ (8 and 16 Gbps) optical transceivers.
Performance	Auto-sensing of 2, 4, 8, and 16 Gbps port speeds	USB	One USB port for system log file downloads or firmware upgrades
ISL trunking	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. There is no limit to how many trunk groups can be configured in the switch.	Fabric services	Brocade Advanced Performance Monitoring (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; Brocade Fabric Watch; FDMI; Frame Redirection; Frame-based Trunking; FSPF; 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)
Aggregate bandwidth	384 Gbps end-to-end full duplex	<i>Note: Some fabric services do not apply or are unavailable in Brocade Access Gateway mode.</i>	
Maximum fabric latency	Latency for locally switched ports is 700 ns; Forward Error Correction (FEC) adds 400 ns between E_Ports (enabled by default).		
Maximum frame size	2112 byte payload		
Frame buffers	8192 dynamically allocated		
Classes of service	Class 2, Class 3, Class F (inter-switch frames)		

BROCADE 6505 SPECIFICATIONS (CONTINUED)

Management		Environment	
Supported management software	HTTP, SNMP v1/v3 (FE MIB, FC Management MIB), SSH; Auditing, Syslog; Brocade Advanced Web Tools, Advanced Performance Monitoring, 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	Operating environment	Temperature: 0°C to 40°C/32°F to 104°F Humidity: 10% to 85% (non-condensing)
Security	DH-CHAP (between switches and end devices), FCAP switch authentication; FIPS 140-2 L2-compliant, HTTPS, IPsec, IP filtering, LDAP with IPv6, Port Binding, RADIUS, User-defined Role-Based Access Control (RBAC), Secure Copy (SCP), Secure RPC, SFTP, SSH v2, SSL, Switch Binding, Trusted Switch	Non-operating environment	Temperature: -25°C to 70°C/-13°F to 158°F Humidity: 10% to 90% (non-condensing)
Management access	10/100 Mbps Ethernet (RJ-45), in-band over Fibre Channel, serial port (RJ-45), and one USB port	Operating altitude	Up to 3000 m (9843 ft)
Diagnostics	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)	Storage altitude	Up to 12 km (39,370 ft)
Mechanical		Shock	Operating: Up to 20 G, 6 ms half-sine Non-operating: Half sine, 33 G 11 ms, 3/eg axis
Enclosure	Back-to-front airflow (port-side exhaust); power from back, 1U	Vibration	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
Size	Width: 437.64 mm (17.23 in.) Height: 43.18 mm (1.7 in.) Depth: 443.23 mm (17.45 in.)	Heat dissipation	24 ports at 338 BTU/hr
System weight	7.82 kg (17.25 lb) with one power supply, without transceivers 9.16 kg (20.19 lb) with two power supply FRUs, without transceivers	Power	
		Power supply	Base switch includes a single, hot-swappable power supply with integrated system cooling fans. Optional dual redundant hot-swappable power supply.
		AC input	85 V to 264 V ~5 A to 2.5 A
		Input line frequency	47 Hz to 63 Hz
		Power consumption	80 watts with all 24 ports populated with 16 Gbps SWL optics 60 watts for empty chassis with no optics

For information about supported SAN standards, visit www.brocade.com/sanstandards.

For information about switch and device interoperability, visit www.brocade.com/interoperability.

For information about hardware regulatory compliance, visit www.brocade.com/regulatorycompliance.

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