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Datasheet
Brocade DCX 8510 Backbone Family

The Brocade DCX 8510 Backbone is the strategic platform to unleash the full potential of cloud storage. 16 Gbps performance combined with well proven reliability and scalability continue to show the vitality of the dominant storage networking technology.

Brocade DCX 8510 Backbone Family

Brocade® DCX® 8510 Backbones are highly robust network switching platforms that combine breakthrough performance, scalability, and energy efficiency with long-term investment protection. Supporting open systems and mainframe environments, Brocade DCX 8510 Backbones are designed to meet the need for bandwidth growth and to address application demands of highly efficient data centers and business critical enterprise infrastructures. The new 16 Gbps Fibre Channel family supports the ongoing consolidation process in IT infrastructures and helps to save operational spending.

Today, Fibre Channel is the de facto standard for storage networking in the data center. The automated network requires low care in operation while providing unsurpassed availability thanks to its redundant double sited architecture approach. Superior backwards compatibility considers the long term utilization of proven customer solutions. Consistently improving the technology by adding features for upcoming data center needs Fibre Channel today is the choice for business critical and virtualized infrastructures. The introduction of Brocade DCX 8510 Backbones with 16 Gbps Fibre Channel extends the life of this robust, reliable, and high-performance technology.

Brocade DCX 8510-4 / DCX 8510-8

- Unleashes the full potential of private and public cloud storage
- Enables simpler, flatter, low-latency chassis connectivity to reduce network complexity, management, and costs
- Optimizes data center connectivity over distance with integrated support for long distance or telco connectivity
- Simplifies and centralizes end-to-end SAN management with comprehensive diagnostics, monitoring, and automation
- Maximizes performance for I/O- and bandwidth-intensive applications
- Protects investments in existing SAN fabrics and automation tools while reducing operational costs and minimizing business disruption

Green IT

Green Policy Innovation

Green Product
This product cleared our company's original evaluation standard which followed global environmental measures.

Features and benefits

Main features	Benefits
Robust, redundant and scalable multisite architecture	
■ Core - Edge design using highly consolidated systems	■ Simple and reliable reference architectures
	■ Enables consolidation for large, medium and small enterprises
	■ Low number of devices ensures low fabric delays
■ Systems with different number of slots for port blades Eight-slot DCX 8510-8 and four-slot DCX-8510-4	■ Low number of managed items in highly automated environment saves operational expenditures
	■ Different models enable "design to customer need"
■ Inter-Chassis-Links to form big cores (up to 6 directors)	■ Maximizes Number of end device ports
	■ Further reduces number of managed items
Highest performance and scalability	
■ All ports can operate simultaneously at full 16/8 Gbps speed	■ Maximizes network performance
■ Blade based local switching	■ Improves bandwidth, unload network traffic
■ Wide range for number of usable ports	■ Prepares for future extensions, support for "pay as you grow"
Superior products and features for seamless operation	
■ Brocade Network Advisor (BNA) Management for intuitive system configuration, administration and reporting	■ Provides optimal information about the current status of the SAN
	■ Simplifies deployment and add-change-move operations
	■ Delivers accounting, utilization and planning information
	■ Proactively alerts potential dropouts
■ Automated execution of periodic tasks and fleet tasks	■ Saves time and effort in add-change-move operations
■ Uninterrupted operation for most add-change-move activities	■ Maximizes uptime of storage network
■ Redundant dual/multi-sited reference architecture	■ Compensates up to 3 dropouts per component while maintaining fabric data transport
Powerful Fabric functions	
■ Identification of server traffic injection hot spots (Top Talkers) and bottlenecks within the fabric	■ Ensures fabric stability and avoids network congestion
■ Support for virtualized servers	■ Foundation for efficient operation of most recent DC / cloud architectures
■ Encryption and compression	■ Addresses security concerns of data owners
■ Virtual fabrics	■ Allow for customer individual isolated data transport in the fabric
Energy efficiency	
■ Highly energy efficient Brocade ASIC's & energy saving optical SFP's	■ Helps organizations reduce energy costs and achieve "green" initiative targets

Maximum flexibility and reliability

Brocade DCX 8510 Backbones are available in two modular form factors. Built for large enterprise networks, the 14U Brocade DCX 8510-8 has eight vertical blade slots to provide up to 384 16 Gbps or up to 512 8 Gbps Fibre Channel ports. Built for midsize networks, the 8U Brocade DCX 8510-4 has four horizontal blade slots to provide up to 192 16 Gbps or up to 256 8 Gbps Fibre Channel ports. The Brocade DCX 8510 family supports 2, 4, 8 and 16 Gbps Fibre Channel Technology.

To help minimize downtime costs, Brocade DCX 8510 Backbones build upon years of innovation and leverage the core technology from Brocade. Brocade systems perform in fabric designs at a greater than 99.999 percent uptime in the world's most demanding data centers.

Simplified scale-out network design

The operation of a redundant datacenter in sufficient distance is a base requirement for disaster tolerance. To keep a huge and increasing amounts of data simultaneously updated over long distance is a challenge and needs powerful data replication to ensure business continuity and disaster recovery – if needed. Connecting distributed data centers also offers improved data availability for mobile users. Brocade DCX 8510 Backbones include integrated support for Fibre Channel based SAN extension using metro and long distance connections . This includes in-flight compression and encryption to optimize bandwidth and minimize the risk of unauthorized access. Using the Extension blade FX8-24 two fabrics can be connected using 1 Gbps or 10 Gbps Ethernet connections.

Simplified deployment and centralized management

Automating and simplifying SAN management enables data centers to quickly adapt to change and overcome disruptions in a cloud infrastructure. Brocade DCX 8510 advanced diagnostics, monitoring, and management reduce end-to-end SAN management complexities and costs.

The Brocade DCX 8510 helps reduce operating costs through simpler server provisioning and change management, advanced cable and optics diagnostics, and comprehensive management. Several technologies support these capabilities, including:

• Dynamic Fabric Provisioning: Reduces or eliminates 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.

Industry-leading performance

Emerging and evolving critical workloads and higher density virtualization are continuing to push the limits of SAN infrastructure. The Brocade DCX 8510 features industry-leading 16 Gbps performance and 8.2 Tbps chassis bandwidth to address next-generation I/O- and bandwidth-intensive applications.

Brocade DCX 8510 Backbones provide unmatched chassis, slot-to-slot, and port performance. In addition, local switching capabilities ensure that data traffic within the same port group does not consume slot bandwidth, maximizing the number of line-rate ports.

SAN Fabric investment protection

Data centers worldwide have invested more than $50 billon in Fibre Channel technology. With new 16 Gbps Fibre Channel products, Brocade offers a compelling, long-term solution for mission-critical applications that require high-performance, low-latency storage networks. The Brocade DCX 8510 offers maximum investment protection by:

• Seamlessly integrating with 30 million existing 2, 4, and 8 Gbps Fibre Channel ports

• Providing a simple upgrade path to 16 Gbps for 8 Gbps Brocade DCX Backbone users

• Providing a unified network management solution. Brocade Network Advisor (BNA) integrates with leading data center server and storage automation solutions to bridge operational gaps across server, network, and storage administrators.

Industry-leading energy efficiency

Brocade DCX 8510 Backbones are highly efficient at reducing power consumption, cooling, and the carbon footprint in data centers. While providing unmatched performance and scale, they use less than one watt per Gbps—making them 15 times more efficient than competitive offerings.

Technical details

System Architecture	
Chassis	Single chassis:
	Brocade DCX 8510-8: Up to 384 Fibre Channel ports using 32/48 port 16 Gbps FC blades
	Up to 512 Fibre Channel ports using 64-port 8 Gbps FC blades.
	Brocade DCX 8510-4 Up to 192 Fibre Channel ports using 32/48 port 16 Gbps FC blades
	Up to 256 Fibre Channel ports using 64-port 8 Gbps FC blades.
	Brocade DCX 8510-4: Up to 192 universal Fibre Channel ports 16 Gbps
	Ports can have the following identities: E, F, D, M, and EX
	Multi-chassis:
	Brocade DCX 8510-8: 32 ICL ports (optical QSFP/MTP) connect up to six DCX 8510 chassis
	Up to 2304 Fibre Channel ports using 32/48 port 16 Gbps FC blades
	Up to 512 Fibre Channel ports using 64-port 8 Gbps FC blades.
	Brocade DCX 8510-4 16 ICL ports (optical QSFP/MTP) connect up to six DCX 8510 chassis
	Up to 3072 Fibre Channel ports using 32/48 port 16 Gbps FC blades
	Up to 1280 Fibre Channel ports using 64-port 8 Gbps FC blades.
Control processor	Redundant (active/standby) control processor modules
Scalability	Full-fabric architecture of 239 switches
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
Performance	Fibre Channel (all links in full duplex mode): FC16Gbps: 14.025 Gbps line speed; FC 8Gbps: 8.5 Gbps line speed; FC4Gbps: 4.25 Gbps line speed FC2Gbps: 2.125 Gbps line speed; all ports auto-sensing of 2, 4, 8, and 16 Gbps port speeds; Options: FC 10 Gbps and optionally programmable to fixed port speed
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
Chassis bandwidth	Brocade DCX 8510-8: 8.2 Tbps per chassis (384 ports × 16 Gbps + 2.048 Tbps ICL bandwidth) Brocade DCX 8510-4: 4.1 Tbps per chassis (192 ports × 16 Gbps + 1.024 Tbps ICL bandwidth)
Slot bandwidth	512 Gbps (data rate)
Local switching bandwidth	512 Gbps for Brocade FC16-32:32 ports × 16 Gbps (data rate) 768 Gbps for Brocade FC16-48:48 ports × 16 Gbps (data rate) 512 Gbps for Brocade FC8-64:64 ports × 8 Gbps (data rate)
ICL bandwidth	Each ICL port provides 64 Gbps bandwidth over a QSFP (4×16 Gbps) link. Brocade DCX 8510-8: 2.048 Tbps; 32 ICL ports provide the equivalent of 128 16 Gbps ports. Brocade DCX 8510-4: 1.024 Tbps; 16 ICLs provide the equivalent of 64 16 Gbps ports. Both models: Frame-based trunking is enabled between four ICLs. DPS distributes exchanges across all frame trunks.
Switch latency	Locally switched port latency: 300 - 800 ns (data transfer between same port group on blade) Blade-to-blade latency: 0.9 - 2.4 μsec; Delay from use of Encryption/compression: 5.5 μsec per node; Delay from use of Forward Error Correction (FEC): 400 ns between E_Ports (enabled by default)
Maximum frame size	2112-byte payload
Frame buffers	8192 per 16-port group on 32-port blades and up to 8192 per 24-port group on 48-port blades, dynamically allocated
Classes of service	Class 2, Class 3, Class F (inter-switch frames)
Fibre Channel 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
Data traffic types	Fabric switches supporting unicast

Media types	Blades 16 Gbps (32 or48 port):: SFP+ 16 Gbps SWL or LWL (hot-pluggable), LC connector (Brocade branded) or SFP+ 8 Gbps SWL or LWL (hot-pluggable), LC connector (Brocade branded) Blades 16 Gbps with 8Gbps functionality (32 or48 port): SFP+ 8 Gbps SWL or LWL (hot-pluggable), LC connector (Brocade branded) Blade FC8G-64 port mSFP 8 Gbps SWL only (hot-pluggable), mSFP require special cabling Core switsching/routing blade with ICL-Ports(CR16-8 or CR16-4): QSFP 4×16 Gbps SWL, (hot-pluggable), MTP connector Available for projects: Brocade certified 3rd party products for large distances, CWDM/DWDM
USB	1 USB port per control processor for firmware download, support save, and configuration upload/download
Fabric services	Packets which can be purchased: Brocade **Fabric Watch**; Brocade **ISL Trunking** (always needed for distances exceeding 10km); Brocade **Extended Fabrics**; Brocade **Advanced Performance Monitoring** (APM) (including Top Talkers); Brocade **Adaptive Networking** (Ingress Rate Limiting, Traffic Isolation, QoS); **Integrated Routing**; Brocade **Server Application Optimization** (SAO); other fabric services available in Brocade Fibre Channel switches Brocade Advanced Zoning (default zoning, port/WWN zoning, broadcast zoning); Virtual Fabrics (Logical Switch, Logical Fabric);Bottleneck Detection;; Dynamic Fabric Provisioning (DFP); Dynamic Path Selection (DPS);Enhanced BB credit recovery; FDMI; Frame Redirection; Frame-based Trunking; FSPF; IPoFC; Management Server; NPIV; NTP v3; Port Fencing; Registered State Change Notification (RSCN); Reliable Commit Service (RCS); Simple Name Server (SNS);
Extension	Supports DWDM, CWDM, and FC-SONET devices; Fibre Channel, in-flight compression (Brocade LZO) and encryption (AES-GCM-256); BB credit recovery

High Availability

Architecture	Passive backplane; redundant active/passive control processor; redundant active/active core switching blades; redundant WWN cards
Chassis power	Two 2000 W AC power supply modules (100 to 240 V auto-sensing), 2N redundancy; Brocade DCX 8510-8 supports two additional power modules
Cooling	Brocade DCX 8510-8: Three blower assembly modules (two required for operation) Brocade DCX 8510-4: Two blower assembly modules (one required for operation)
Solution availability	Designed to provide 99.999 percent uptime capabilities; hot-pluggable redundant power supplies, fans, WWN cards, processors, core switching, port blades, and optics; online diagnostics; non-disruptive firmware download and activation

Management

Management	Fujitsu ETERNUS SF Storage Cruiser Brocade Network Advisor SAN Enterprise (Brocade DCX 8510-8,Brocade DCX 8510-4) or Brocade Network Advisor SAN Professional/Professional Plus (Brocade DCX 8510-4 only) Brocade Advanced Web Tools, Brocade APM, Brocade Fabric Watch Command Line Interface (CLI) HTTP, SNMP v1/v3 (FE MIB, FC Management MIB), SSH; Auditing, Syslog;; SMI-S compliant; Administrative Domains; trial licenses for add-on capabilities
Security	Encryption: AES-GCM-256 encryption on ISLs; AAA: DH-CHAP (between switches and end devices); RADIUS, User-defined Role-Based Access Control (RBAC); FCAP switch authentication FIPS 140-2 L2-compliant, HTTPS, IPsec, IP filtering, LDAP with IPv6, Port Binding, , Secure Copy (SCP), Secure RPC,SFTP, SSH v2, SSL, Switch Binding, Trusted Switch
Management access	One interface 10/100/1000 Ethernet (RJ-45) per control processor, one USB per control processor module; in-band over Fibre Channel; serial port (RJ-45) Call-home integration enabled through Brocade Network Advisor
Diagnostics	POST and embedded online/offline diagnostics, including environmental monitoring; mirroring (SPAN port); D_Port offline diagnostics, including electrical/optical loopback, link traffic/latency/distance; , FCping and Pathinfo (FC traceroute), frame viewer, non-disruptive daemon restart port; optics health monitoring, power monitoring (16 Gbps blades-only), RAStrace logging, and Rolling Reboot Detection (RRD)

Mechanical Specification

Enclosure	Port side exhaust (Rear panel-to-door airflow); Brocade DCX 8510-4 ships with 1U exhaust shelf
Mounting	Rack-mountable in a standard 19-inch EIA cabinet

Size	Brocade DCX 8510-8		
	Width:	43.74 cm	(17.22 in.)
	Height: 14HU	61.24 cm	(24.11 in.)
	Depth (without door):	61.19 cm	(24.09 in.)
	Depth (with door):	73.20 cm	(28.82 in.)
	Brocade DCX 8510-4		
	Width:	43.74 cm	(17.22 in.)
	Height: 8HU+1HU	35.00 cm + 4.37 cm	(13.78 in. + 1.72in.)
	exhaust shelf 1U	4.37 cm	(1.72 in.)
	Depth without door:	61.19 cm	(24.09 in.)
	Depth with door:	73.20 cm	(28.82 in.)

System weight	Brocade DCX 8510-8		
	fully populated (384-port config)	103.50 kg	(228.20 lb)
	Empty chassis	39.55 kg	(82.20 lb)
	Brocade DCX 8510-4		
	fully populated (192-port config)	68.04 kg	(150.00 lb)
	Empty chassis	25.76 kg	(56.80 lb)

Environment

Temperature	Operating:	0° C to 40° C	(32° F to 104° F)
	Non-operating:	−25° C to 70° C	(−13° F to 158° F)

Humidity	Operating:	20% to 85% RH non-condensing at 40° C (104° F)
	Non-operating and storage (non-condensing): 10% to 93% at 70° C (158° F)	

Altitude	Up to 3000 meters (9842 feet)

Shock	Operating:	20 g, 6 ms, half sine
	Non-operating:	33 g, 11 ms, half sine

Vibration	Operating:	0.5 g p-p, 5 to 500 to 5 Hz
	Non-operating:	2.0 g p-p, 5 to 500 to 5 Hz

Heat dissipation	Brocade DCX 8510-8		
	Min: 32-port configuration (no QSFP)	873 W	2982 BTU/hr
	Max: 384-port configuration (fully-loaded w/QSFPs)	2242 W	7654 BTU/hr
	Brocade DCX 8510-4		
	Min: 32-port configuration (no QSFP),	618 W	2111 BTU/hr
	Max: 192-port configuration (fully-loaded w/QSFPs)	1195 W	4078 BTU/hr

CO_2 emissions (per year)	Brocade DCX 8510-8		
	with 384 ports at 0.42 kg/kWh	7.8 metric tonnes	0.95 kg per Gbps
	Brocade DCX 8510-4		
	with 256 ports at 0.42 kg/kWh	4.3 metric tonnes	1.04 kg per Gbps

Power

Supported power range	Voltage Range:	85 to 264 VAC Auto-volt
	Nominal:	100 to 240 VAC
	Power	
	85 to 132 VAC:	1000 W
	180 to 264 VAC:	2000 W

In-rush current	60 Amps maximum, peak
Frequency	47 to 63 Hz

More information

Fujitsu platform solutions

In addition to Brocade DCX Backbones, 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/
- PRIMERGY: Industry standard server
- SPARC Enterprise: UNIX server
- PRIMEQUEST: Mission-critical IA server
- ETERNUS: Storage system
Software
www.fujitsu.com/software/
- Interstage: Application infrastructure software
- Systemwalker: System management software

More information

Learn more about Brocade DCX Backbones, please contact your Fujitsu sales representative, Fujitsu business partner, or visit our website.
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/

Green Policy Innovation

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