

EMC Connectrix ED-DCX-4S-B



The EMC® Connectrix® ED-DCX-4S-B provides a highly robust network switching platform that combines breakthrough performance, scalability, and energy efficiency with long-term investment protection. Built for midsize networks, the DCX-4S has four horizontal blade slots to provide up to 192 8 Gb/s Fibre Channel ports. Ultra-high-speed Inter-Chassis Link (ICL) ports can be added to connect two DCX directors, providing extensive scalability and flexibility at the network core. Additional options are also available, including Fibre Channel Integrated Routing, Fibre Channel over IP (FCIP) for SAN extension and FICON support, and fabric-based application support. With redundant power supplies, fans, control processor blades, and core switching blades, the DCX-4S provides enterprise-class levels of availability, reliability, and performance.

System Architecture

Chassis

Single chassis: Up to 192 8 Gb/s universal (E, F, FL, M, EX) Fibre Channel ports using up to four 16-, 32-, or 48-port Fibre Channel blades

Dual chassis: Up to 384 8 Gb/s universal Fibre Channel ports; ICL ports (four per chassis, copper pin) connect two DCX-4S chassis or a DCX-4S chassis to a DCX chassis

Control Processor

Redundant (active/standby) control processor modules

Scalability

Full fabric architecture of 239 switches

Certified Maximum

6,000 active nodes; 56 switches, 19 hops in Connectrix FOS-based fabrics; 31 switches, 3 hops in Connectrix EOS based fabrics; larger fabrics certified as required

Special-Purpose Blades

PB-48K-10G-6 Blade provides six 10 Gb/s Fibre Channel ports (up to 4 blades)

PB-48K-18i SAN Extension Blade provides Fibre Channel routing and SAN extension over IP networks (16 4Gb Fibre Channel ports and two Gigabit Ethernet ports per blade; up to eight blades and 64 EX_Ports)

PB-48K-AP4-18 Application Blade is integrated with EMC RecoverPoint to provide continuous data protection (16 4Gb Fibre Channel ports and two Gigabit Ethernet ports per blade; up to four blades)

Performance

2.125 Gb/s line speed, full duplex;

4.25 Gb/s line speed, full duplex;

8.50 Gb/s line speed, full duplex;

Auto sensing of 2, 4, and 8 Gb/s port speeds; optionally programmable 2, 4, and 8 Gb/s ports; 10.5 Gb/s line speed, full duplex

ISL Trunking

Frame-based trunking with up to eight 8 Gb/s ports per ISL trunk; up to 64 Gb/s per ISL trunk

Exchange-based load balancing across ISLs with DPS included in Fabric OS

Chassis Bandwidth

1.536 Tb/s per chassis (192 ports × 8 Gb/s data rate)

Slot Bandwidth

256 Gb/s (data rate)

Local Switching Bandwidth

128 Gb/s for 16-port Fibre Channel blade: 16 ports × 8 Gb/s (data rate)

256 Gb/s for 32-port Fibre Channel blade: 32 ports × 8 Gb/s (data rate)

384 Gb/s for 48-port Fibre Channel blade: 48 ports × 8 Gb/s (data rate)

ICL Bandwidth

256 Gb/s; 4 ICLs × 8 8 Gb/s Fibre Channel connections ICL bandwidth is load-balanced using eight 8-port frame-based trunks and DPS

Switch Latency

Locally switched ports 700 ns; blade-to-blade latency is 2.1 µsec

Maximum Frame Size

2,112-byte payload

Frame Buffers

2,048 per 16-port group on 16/32-port blades and up to 2,048 per 24-port group on 48-port blades, dynamically allocated

Classes of Service

Class 2, Class 3, Class F (inter-switch frames)

Port Types

FL_Port (except 48-port FC blade), F_Port, M_Port (Mirror Port), E_Port, EX_Port (Fibre Channel Integrated Routing); self-discovery based on switch type (U_Port); optional port type control

Data Traffic Types

Fabric switches supporting unicast, multicast (255 groups), and broadcast

Media Types

4 Gb/s: 16-, 32-, and 48-port Fibre Channel blades; PB-48K-18i; PB-48K-AP4-18; and PB-DCX-16EB blades require Brocade hot-pluggable, Small Form-factor Pluggable (SFP), LC connector; 4 Gb/s Short-Wavelength Laser (SWL); 4 Gb/s Long-Wavelength Laser (LWL); 4 Gb/s Extended Long-Wavelength Laser (ELWL)

8 Gb/s: 16-, 32-, and 48-port Fibre Channel blades; and PB-DCX-16EB blades require Brocade hot-pluggable SFP+, LC connector; 8 Gb/s SWL; 8 Gb/s LWL

10 Gb/s: PB-48K-10G-6 blades utilize non-Brocade hot-pluggable, 10 Gb/s Small Form-factor Pluggable (XFP), LC connector; 10 Gb/s SWL; 10 Gb/s LWL

Distance subject to fiber-optic cable and port speed

USB

1 USB port per control processor for firmware download, support save, and configuration upload/download

Fabric Services

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); Dynamic Path Selection (DPS); Extended Fabrics; Fabric Watch; FDMI; Frame Redirection; FSPF; Integrated Routing (PB-48K-18i SAN Extension blade not required for routing); IPoFC; ISL Trunking; Management Server; N_Port Trunking; 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; FCIP, data compression, Fast Write, Tape Write and Read Pipelining, QoS, BB credit recovery

FICON

FICON, FICON cascading (FOS: DCX, DCX-4S; and M-EOS: DCX only), FICON CUP; Accelerator for FICON (FICON XRC emulation and read/write Tape Pipelining)

High Availability**Architecture**

Passive backplane; separate and redundant control processor and core switching blades (two of each); redundant WWN cards

Chassis Power

Two 2,000 W AC power supply modules (100 to 240 V auto-sensing), 2N redundancy;

Cooling

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

HTTP, SNMP v1/v3 (FE MIB, FC Management MIB), Telnet; Auditing, Syslog; Advanced Web Tools, Fabric Watch; Connectrix Manager Data Center Edition (Enterprise or Professional), Fabric Manager (optional, FOS environments only), EFCM 9.x (optional), command line interface; SMI-S compliant; Administrative Domains; trial licenses for add-on capabilities

Security

DH-CHAP (between switches and end devices), FIPS 140-2 L2-compliant, HTTPS, IPsec, IP filtering, LDAP, Port Binding, RADIUS, Role-Based Access Control (RBAC), Secure Copy (SCP), Secure RPC, SSH v2, SSL, Switch Binding, Trusted Switch

Management Access

10/100/1000 Ethernet (RJ-45) per control processor, in-band over Fibre Channel; serial port (RJ-45) and one USB per control processor module; call-home integration enabled through Connectrix Manager Data Center Edition, EFCM, and Fabric Manager

Diagnostics

POST and embedded online/offline diagnostics, including RAStrace logging, environmental monitoring, non-disruptive daemon restart, FCping and Pathinfo (FC traceroute), port mirroring (SPAN port)

Mechanical Specifications

Enclosure

Rear panel-to-door airflow; DCX-4S ships with 1U exhaust shelf

Mounting

Rack-mountable in a standard 19-inch EIA cabinet

Size

Width: 43.74 cm (17.22 in)

Height: 35.00 cm (13.78 in, 8U) plus 4.37 cm exhaust shelf (1.72 in, 1U)

Depth without door: 61.19 cm (24.09 in)

Depth with door: 73.20 cm (28.82 in)

System Weight

68.04 kg (150.00 lb) for 192-port configuration fully populated

25.26 kg (56.80 lb) for chassis

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 3,000 meters (9,842 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

Min: 16-port configuration of 363 W, 1,239 Btu/hr

Max: 192-port configuration of 753 W, 2,570 Btu/hr

CO₂ Emissions

2.8 metric tonnes per year (with 192 ports at 0.42 kg/kWh)

1.8 kg per Gb/s per year

Power

Supported Power Range

Voltage: Range: 85 to 264 VAC Auto-volt
Nominal: 100 to 240 VAC

Power: 85 to 132 VAC; 1,000 W
180 to 264 VAC; 2,000 W

In-rush current

20 Amps maximum, peak

Frequency

47 to 63 Hz

Regulatory Requirements

	Safety	EMI
United States	UL 60950	FCC Part 15 Class A
Canada	CSA No. 60950	ICES-003 Class A
Australia/New Zealand	-	EN550022 Level A
Japan	IEC 60950	VCCI Class A
International	IEC 60950	CSPR22 Class A
European Community	EN60950 TUV, NEMKO	EN55022 Level A EN55024
Taiwan	CNS	13438 Class A



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