CONNECTRIX ED-DCX6 DIRECTORS

Delivering up to 32Gb/s Fibre Channel performance

Scalability, high availability and a rich feature set for your Storage Area Network (SAN)

Connectrix ED-DCX6 Directors enhance operational stability, maximize performance and increase business agility. The ED-DCX6 directors are delivered with the Enterprise software package which includes Fabric Vision, ISL Trunking, for port aggregation, Extended Fabric, for distance extension, and FICON Control Unit Port (CUP) for mainframe environments.

Fabric Vision provides monitoring, management, and diagnostic capabilities which enable administrators to avoid problems before they impact operations. It also provides diagnostic tools and Flow Vision, which enables administrators to monitor and analyze specific application flows. Other Fabric Vision capabilities include:

- **IO Insight:** Proactively monitors storage device IO performance

- **Flow Vision:** Enables administrators to identify, monitor, and analyze specific application flows in order to simplify troubleshooting, maximize performance, avoid congestion, and optimize resources

- **Monitoring and Alerting Policy Suite (MAPS):** Leverages pre-built, policy-based templates to simplify fabric-wide threshold configuration, monitoring, and alerting

- **Fabric Performance Impact (FPI) Monitoring:** Leverages predefined MAPS policies to automatically detect and alert administrators to different latency severity levels to identify slow drain devices that could impact network performance

SANnav Management Portal and SANnav Global View

SANnav Management Portal and SANnav Global View empower IT administrators to be more efficient and productive by providing comprehensive visibility into the SAN environment. These tools transform information about SAN behavior and performance into actionable insights, allowing administrators to quickly identify, isolate and correct problems before they impact the business. In addition, SANnav Management Portal and SANnav Global View accelerate administrative tasks by simplifying workflows and automating redundant steps, making it easier for organizations to realize their goal of an autonomous SAN.

Connectrix ED-DCX6 Chassis Models

There are two Connectrix ED-DCX6 models to address all your storage networking requirements. To accommodate the requirements of today's data centers, the ED-DCX6 director models provide two airflow options for each chassis. Having two airflow options extends the flexibility for hot/cold aisle network designs. Non-port-side intake to port-side exhaust or port-side intake to non-port-side exhaust options are available.

- **ED-DCX6-8B:** The 14U chassis supports eight vertical switching blades that accommodate the 48-port Fibre Channel blade, the 64-port blade and the FCiP switching blade for distance extension. In addition, the director supports up to 32 128 Gb/s Inter-chassis Link (ICL) ports for high-speed connections to other DCX6 Directors.

- **ED-DCX6-4B:** The 8U chassis supports four horizontal switching blades that accommodate the 48-port Fibre Channel blade, the 64-port blade and the FCiP switching blade for distance extension. In addition, the director supports up to 16 additional 128 Gb/s Inter-chassis Link (ICL) ports for high-speed connections to other DCX6 Directors.

System Architecture	ED-DCX6-8B	ED-DCX6-4B
Chassis	Includes redundant active/standby control processor modules, a non-blocking shared memory passive backplane, redundant active/active core switching blades, redundant WWN cards, and support for eight vertical switching blades. The chassis supports up to four power supplies and three fan tray assemblies. Each fan assembly contains two fans for a total of six fans. There are two airflow options available: non-port-side intake to port-side exhaust or port-side intake to non-port-side exhaust.	Includes redundant active/standby control processor modules, a non-blocking shared memory passive backplane, redundant active/active core switching blades, redundant WWN cards, and support for four horizontal switching blades. The chassis supports up to two power supplies and two fan tray assemblies. Each fan assembly contains two fans for a total of four fans. There are two airflow options available: non-port-side intake to port-side exhaust or port-side intake to non-port-side exhaust.
Fibre Channel ports	Choice of a 64-port 32Gb/s blade with up to 16 QSFP ports, a 48-port 32Gb/s blade and an FCiP blade for SAN Extension. The FCiP blade has 16 32Gb/s FC ports and 16 1/10GigE and two 40GigE ports	Choice of a 64-port 32Gb/s blade with up to 16 QSFP ports, a 48-port 32Gb/s blade and an FCiP blade for SAN Extension. The FCiP blade has 16 32Gb/s FC ports and 16 1/10GigE and two 40GigE ports
Performance	Autosensing 4/8/16/32 ports speeds (depending on SFPs used). 10 Gb/s port speeds with dedicated SFPs. Full duplex.	Autosensing 4/8/16/32 ports speeds (depending on SFPs used). 10 Gb/s port speeds with dedicated SFPs. Full duplex.
Chassis bandwidth	20 Tb/s of aggregate bandwidth including 4 Tb/s of ICL bandwidth	10 Tb/s of aggregate bandwidth including 2 Tb/s of ICL bandwidth
Slot bandwidth	1.5 Tb/s bandwidth per slot	1.5 Tb/s bandwidth per slot
Aggregate ICL bandwidth	4 Tb/s of ICL bandwidth, 32x128 Gb/s	2 Tb/s of ICL bandwidth, 32x128 Gb/s
Fabric latency (Including FEC)	Local switching: <780 ns Blade-to-blade: 2,7 us	Local switching: <780 ns Blade-to-blade: 2,7 us
Maximum frame size	2112-byte payload	2112-byte payload
Frame buffers	15,000 per switching ASIC	15,000 per switching ASIC
Classes	Class 2, Class 3, Class F (Inter-switch frames)	Class 2, Class 3, Class F (Inter-switch frames)
Security	DH_CHAP between switches and end devices, FCAP switch authentication, FIPS 140-2 L2 compliant, HTTPS, IPSec, IP filtering, LDAP with IPv6, Open LDAP, Port Binding, RADIUS, user-defined Role-based Access Control (RBAC), Service Copy (SCP), Secure RPC, SFTP, SSH v@, SSL, Switch Binding, TACACS+, Trusted Switch	DH_CHAP between switches and end devices, FCAP switch authentication, FIPS 140-2 L2 compliant, HTTPS, IPSec, IP filtering, LDAP with IPv6, Open LDAP, Port Binding, RADIUS, user-defined Role-based Access Control (RBAC), Service Copy (SCP), Secure RPC, SFTP, SSH v@, SSL, Switch Binding, TACACS+, Trusted Switch
Port types	48-port and 64-port switching blades: F_PORT, E_PORT, EX_PORT, M_PORT SIM, D_PORT FCiP Extension blade: F_PORT, E_PORT, EX_PORT on FC ports and VE_PORT on GbE ports	48-port and 64-port switching blades: F_PORT, E_PORT, EX_PORT, M_PORT SIM, D_PORT FCiP Extension blade: F_PORT, E_PORT, EX_PORT on FC ports and VE_PORT on GbE ports
Media types 48-port blade:	Hot-pluggable Fibre Channel SFP28 at 32Gb/s shortwave length (SWL) and long wavelength (LWL); at 16Gb/s SWL, LWL, Extra LWL; at 10Gb/s SWL/LWL SFP.	Hot-pluggable Fibre Channel SFP28 at 32Gb/s shortwave length (SWL) and long wavelength (LWL); at 16Gb/s SWL, LWL, Extra LWL; at 10Gb/s SWL/LWL SFP.
Media types 64-port blade:	Hot-pluggable QSFP connector; 4×32 Gb/s SWL and 4×16 Gb/s SWL, MPO 1×12 ribbon cable connector (66 m OM3, 100m OM4); 4×32 Gb/s 2 km QSFP (fixed 4×32 Gb/s speed and SMF LC); Brocade FC32-64 QSFPs support only 4/8/16/32 Gb/s (no 10 Gb/s Fibre Channel); 10GbE, 25GbE, or 40GbE FCoE QSFP	Hot-pluggable QSFP connector; 4×32 Gb/s SWL and 4×16 Gb/s SWL, MPO 1×12 ribbon cable connector (66 m OM3, 100m OM4); 4×32 Gb/s 2 km QSFP (fixed 4×32 Gb/s speed and SMF LC); Brocade FC32-64 QSFPs support only 4/8/16/32 Gb/s (no 10 Gb/s Fibre Channel); 10GbE, 25GbE, or 40GbE FCoE QSFP
Media types FCiP blade	FCiP Extension blade: Hot-pluggable Fibre Channel SFP28 at 32Gb/s shortwave length (SWL) and long wavelength (LWL); at 16Gb/s SWL, LWL, Extra LWL; at 10Gb/s SWL/LWL SFP. For Ethernet at 1GbE copper 1GbE 1000BASE-SX/LX/CWDM; at 10GigE SR/LR SFP+; QSFP at 40GbE SR4/LR4/ER4	FCiP Extension blade: Hot-pluggable Fibre Channel SFP28 at 32Gb/s shortwave length (SWL) and long wavelength (LWL); at 16Gb/s SWL, LWL, Extra LWL; at 10Gb/s SWL/LWL SFP. For Ethernet at 1GbE copper 1GbE 1000BASE-SX/LX/CWDM; at 10GigE SR/LR SFP+; QSFP at 40GbE SR4/LR4/ER4
USB	One USB per control processor for firmware downloads, support save, and configuration upload or download.	One USB per control processor for firmware downloads, support save, and configuration upload or download.

	ED-DCX6-8B	ED-DCX6-4B
Fabric services	Adaptive Networking (Traffic Isolation, QoS) BB credit recovery; Advanced Zoning (default zoning, port/WWN zoning, peer zoning, target-driven zoning, broadcast zoning); Dynamic Path Selection (DPS); Extended Fabrics; FDMI; Flow Vision; Frame Redirection; FSPF; IPFC; ISL Trunking; Management Server; Monitoring and Alert Policy Suite (MAPS); N_Port Trunking; NPIV; NTP v3; Port Fencing; Registered State Change Notification (RSCN); Reliable Commit Service (RCS); Simple Name Server	Adaptive Networking (Traffic Isolation, QoS) BB credit recovery; Advanced Zoning (default zoning, port/WWN zoning, peer zoning, target-driven zoning, broadcast zoning); Dynamic Path Selection (DPS); Extended Fabrics; FDMI; Flow Vision; Frame Redirection; FSPF; IPFC; ISL Trunking; Management Server; Monitoring and Alert Policy Suite (MAPS); N_Port Trunking; NPIV; NTP v3; Port Fencing; Registered State Change Notification (RSCN); Reliable Commit Service (RCS); Simple Name Server
Optional license	The Integrated Routing license is an optional feature. This license allows you to enable Fibre Channel routing between connected switches.	The Integrated Routing license is an optional feature. This license allows you to enable Fibre Channel routing between connected switches.
Distance extension	Supports DWDM and CWDM devices; Fibre Channel in-flight compression (LZO) and encryption (AES-GCM-256); BB credit recovery; FCiP, IP Extension, Adaptive Rate Limiting (ARL), data compression, Fast Write, read/write Tape Pipelining, QoS.	Supports DWDM and CWDM devices; Fibre Channel in-flight compression (LZO) and encryption (AES-GCM-256); BB credit recovery; FCiP, IP Extension, Adaptive Rate Limiting (ARL), data compression, Fast Write, read/write Tape Pipelining, QoS.
Hot swappable components	Power supplies, fans, WWN cards, processors, core switching, port blades and optics	Power supplies, fans, WWN cards, processors, core switching, port blades and optics
Installation options	Customer-supplied EIA compliant 19" rack or Connectrix cabinet	Customer-supplied EIA compliant 19" rack or Connectrix cabinet

Connectivity Management	ED-DCX6-8B	ED-DCX6-4B
Interface	SANnav Management Portal and SANnav Global View, Web Tools, Command Line Interface (CLI)	SANnav Management Portal and SANnav Global View, Web Tools, Command Line Interface (CLI)
Cloud-based monitoring and analytics	CloudIQ	CloudIQ
Management access	10/100/1000 Ether (RJ-45) per control processor, in band over Fibre Channel serial port (RJ-45) and one USB per control processor module; DCCP/DHCPv6; call home, and SRS	10/100/1000 Ether (RJ-45) per control processor, in band over Fibre Channel serial port (RJ-45) and one USB per control processor module; DCCP/DHCPv6; call home, and SRS
Firmware upgrades	Non-disruptive firmware downloads and activation	Non-disruptive firmware downloads and activation
Compatibility	SMI-S compliant; RESTful API; trial license for add-on capabilities	SMI-S compliant; RESTful API; trial license for add-on capabilities
Diagnostics	IO Insight for IO Monitoring; ClearLink optics and cable diagnostics, including electrical/optical loopback, link traffic/latency/distance; built-in flow generator; POST and embedded online/offline diagnostics, including environmental monitoring, FC ping and Pathinfo (FC traceroute), flow monitoring, frame viewer, nondisruptive daemon restart, optics health monitoring, power monitoring, RAStrace logging, and rolling reboot detection (RRD)	IO Insight for IO Monitoring; ClearLink optics and cable diagnostics, including electrical/optical loopback, link traffic/latency/distance; built-in flow generator; POST and embedded online/offline diagnostics, including environmental monitoring, FC ping and Pathinfo (FC traceroute), flow monitoring, frame viewer, nondisruptive daemon restart, optics health monitoring, power monitoring, RAStrace logging, and rolling reboot detection (RRD)

Physical Specifications	ED-DCX6-8B	ED-DCX6-4B
Height	61.23 cm (24.11 inches), 14U rack-mountable chassis	34.45 cm (13.56 inches), 8U rack-mountable chassis
Width	43.74 cm (17.23 inches)	43.74 cm (17.23 inches)
Depth	61.04 cm (24.04 inches)	61.04 cm (24.04 inches)
Weight	35.61 kg (78.5 pounds) for chassis only; 145.8 kg (321.5 pounds) for 384-port configuration, fully populated	24.5 kg (54 pounds) for chassis only; 68.95 kg (152 pounds) for 192-port configuration, fully populated

| Environment	ED-DCX6-8B	ED-DCX6-4B
Temperature	Operating: 0°C to 40°C (32°F to 104°F) Non-operating: -25°C to 70°C (-13°F to 158°F)	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: 5% to 93% RH non-condensing at 40°C (104°F) with a maximum gradient of 10% per hour Non-operating: 10% to 93% RH non-condensing at 70°C (158°F)	Operating: 5% to 93% RH non-condensing at 40°C (104°F) with a maximum gradient of 10% per hour Non-operating: 10% to 93% RH non-condensing at 70°C (158°F)
Altitude	Up to 3000 meters (9,842 feet)	Up to 3000 meters (9,842 feet)
Shock	Operating: 10 g, 11ms, half sine wave Non-operating: 20g, 11ms, half sine wave	Operating: 10 g, 11ms, half sine wave Non-operating: 20g, 11ms, half sine wave
Vibration	Operating: 5 Hz to 10 Hz @ +5 db/Oct; 10 Hz to 200 Hz @ 0.0005 Grms; 200 Hz to 500 Hz @ -5 db/Oct, scale 0.05 Grms	Operating: 5 Hz to 10 Hz @ +5 db/Oct; 10 Hz to 200 Hz @ 0.0005 Grms; 200 Hz to 500 Hz @ -5 db/Oct, scale 0.05 Grms
Heat dissipation	512-port configuration: Typical: 10,010 BTU/hr; Max: 18,362 BTU/hr Power consumed: Typical: 2933W; Max: 5380W Note: Input power is at 200V AC with full PSU redundancy.	512-port configuration: Typical: 10,010 BTU/hr; Max: 18,362 BTU/hr Power consumed: Typical: 2933W; Max: 5380W Note: Input power is at 200V AC with full PSU redundancy.

Power Requirements	ED-DCX6-8B	ED-DCX6-4B
Supported power range	Standard AC Power Supplies Input Voltage Standard AC input: Range: 90V AC to 264V AC auto-volt Nominal: 100V AC to 240V AC Power 85V AC to 132V AC: 1450W 180V AC to 264V AC: 2870W 80 PLUS Platinum certified	Standard AC Power Supplies Input Voltage Standard AC input: Range: 90V AC to 264V AC auto-volt Nominal: 100V AC to 240V AC Power 85V AC to 132V AC: 1450W 180V AC to 264V AC: 2870W 80 PLUS Platinum certified
In rush current	35 AMPS maximum peak	35 AMPS maximum peak
Frequency	50 Hz to 60 Hz (Nominal 50 Hz to 60 Hz)	50 Hz to 60 Hz (Nominal 50 Hz to 60 Hz)

Regulatory Requirements for ED-DCX6-8B and ED-DCX6-4B

Country	Safety	EMI/EMC
United States	Bi-Nat UL/CSA 60950-1	FCC Part 15, Subpart B
Canada	Bi-Nat UL/CSA 60950-1	ICES-3 (A) / NMB-3(A)
Japan		CISPR22 and JEIDA (Harmonics)
European Union	EN60950-1 or latest	EN55022 and EN55024
Australia/New Zealand	EN 60950-1 or IEC 60950-1	EN55022 or CISPR22 or AS/NZS CISPR22
Russian Federation	IEC60950-1 or latest	KN22 and KN24
Korea		
China	Not required on blade system	Not required on blade system
Taiwan	IEC60950-1 or latest	EN55022 Class A

Agency Certifications for ED-DCX6-8B and ED-DCX6-4B

Country		
United States	cCSAus	FCC Class A and Statement
Canada	cCSAus	ICES-3/ NMB-3
Japan		VCCI-A
European Union	TUV-GS, CE	CE marking
Australia/New Zealand		RCM
Argentina	"S" mark	
Russia	EAC Mark	EAC Mark
Korea		KCC Mark Class A
China (PS only)	Not required on blade system	Not required on blade system
Taiwan (PS only)	BSMI mark	BSMI mark
Ukraine	UKSEPRO	UKSEPRO
Serbia	Kvalitet	Kvalitet
Mexico	NYCE NOM	
Vietnam		ICTQC
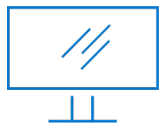
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