M-Series Blade I/O Guide

I/O Connectivity Options for the Dell PowerEdge M1000e Blade Enclosure

September 2017

Send feedback to: andrew.hawthorn@dell.com

DELL EMC

Contents

DELL EMC

Blade Interconnects

M-Series Blade I/O Guide

Transform your Dell M1000e blade server enclosure.

Ethernet Switching						
Models	**MXL**	**I/O Aggregator**	**M8024-k**	**M6348**	**M6220**	**10Gb Pass-Through**
	10/40GbE Switch High performance blade provides maximum throughput, flexibility, and iSCSI/FCoE convergence.	**10GbE Plug and Play** Converge infrastructure and connect easily to third-party networks with this flexible Layer 2 blade.	**10GbE Basic** Transition to 10GbE connectivity and extend an available iSCSI/FCoE fabric with this Layer 2/3 switch.	**1GbE High-density** Leverage existing Ethernet cabling to enable broader scalability in the data center with this Layer 2/3 switch.	**1GbE Basic** Flexible Layer 2/3 switch with dual expansion slots allowing you to customize connectivity options.	**Direct connection** Transparently connect 16 Dell blade servers into the LAN of your choice at 10Gb speeds.
Performance						
Speeds	1, 10, or 40GbE	1 and 10GbE	1 and 10GbE	1 and 10GbE	1 and 10GbE	10GbE
Switch fabric capacity	1.28Tbps	1.28Tbps	480Gbps	184Gbps	128Gbps	-
Forwarding capacity (Mpps)	960	960	357	160	95	-
Buffer size	9MB	9MB	2MB	4MB	768KB	-
Latency (Microseconds)	0.68 µs	0.68 µs	1.85 µs	3.6 µs	6.3 µs	0.1 µs
Ports						
Internal blade server ports	32 (10GbE)	32 (10GbE)	16 (10GbE)	32 (1GbE)	16 (1GbE)	16 (10GbE)
External 1/10GbE (Base-T)	4 (using module)	4 (using module)	2 (using module)	16 fixed (1GbE)	4 fixes (1GbE)	-
External 10GbE	8 ports using QSFP+ breakout cables (up to 24 using modules)	8 ports using QSFP+ breakout cables (up to 16 using modules)	4 fixed SFP+ ports (1/10Gb) (Add 4 more 10Gb ports using module)	2 fixed SFP+ and 2 fixed CX4	4 (using modules)	16 fixed SFP+ (supports 10GbE only)
External 40GbE (QSFP+)	2 integrated QSFP+ (up to 6 using modules)	2 integrated QSFP+ fixed in breakout mode (up to 6 using modules)	-	-	-	-
Native Fibre Channel support	Up to 8 FC ports (8Gb)	Up to 8 FC ports (8Gb)	-	-	-	-
Expansion modules (FlexIO)	2 slots and 4 options (mix or match) ∞ 2 port QSFP+ (10/40GbE)[1] ∞ 4 port SFP+ (1/10GbE) ∞ 4 port Base-T (1/10GbE)[2] ∞ 4 port FC8 (2/4/8Gb) [1]QSFP+ port on I/O Aggregator runs breakout mode 4x10GbE only [2]Both devices limited to one Base-T module only. Populate second slot with another module of your choice.		1 slot and 2 options ∞ 4 port SFP+ (10Gb only) ∞ 2 port Base-T (1/10Gb)	-	2 slots and 4 options (mix or match) ∞ 2 port SFP+ (1/10GbE) ∞ 2 port Base-T (10GbE only) ∞ 2 port CX4 (1/10GbE) ∞ Stacking module (48Gbps)	-
Features						
DCB: PFC, DCBx and ETS	Yes	Yes	Yes (PFC and DCBx)	-	-	Support DCB/CEE and FCoE
FCoE	FCoE transit or direct connect	FCoE transit or direct connect	Transit	-	-	Transit
Storage fabric services	Zoning, F_Port, NPIV	Zoning, F_Port, NPIV				
Converged iSCSI (LAN and SAN)	Yes	Yes	Not suitable for iSCSI over DCB	-	-	Yes
Stacking	Up to 6 using QSFP ports	2 via CLI only	Up to 6 using SFP+ ports or SFP+ module	Up to 12 using CX4 ports	Up to 6 using module	-
PSVT+	Yes	-	-	-	-	-
Simplified Networking Mode	-	Default	Simple Mode	Simple Mode	Simple Mode	-
Accepts Cisco Twin-ax cables	Yes		Yes	Yes	Yes	Yes
Optical transceivers supported	QSFP+ (SR only) SFP+ (SR or LR) SFP (SX, LX, and SFP to RJ45)		SFP+ (SR, LR, LRM) SFP*: (SX, LX, or SFP to RJ45) *Optics work in fixed ports only	SFP+ (SR, LR, LRM)	SFP+ (SR, LR, LRM)	SFP+ (SR, LR)
Max L2 and L3 VLANs	4094/511	4094 (Layer 2 only)	1024/128	1024/128	1024/128	-
Link Aggregation (Groups/Members)	128/16	1/16	12/8	48/8	18/8	-
Jumbo frames (Bytes)	12000	12000	9216	9216	9216	-
Max Routes (IPv4/IPv6)	16000/8000	-	8160/4096	10000/3000	224/128	-
IPv4 Routing	RIP, OSPF	-	RIP, OSPF	RIP, OSPF	RIP, OSPF	-
IPv6 Routing	OSFP/OSFP v3	-	OSPF	OSPF	OSPF	-
Multicast Routing	IGMP	IGMP snooping only	IGMP, PIM, DVMRP	IGMP, PIM, DVMRP, MLD	IGMP, PIM, DVMRP	

Blade Interconnects

M-Series Blade I/O Guide

Transform your Dell M1000e blade server enclosure.

Fibre Channel Switching



Models	Brocade M6505	Brocade M5424	Dell 8/4Gbps Pass-Through
	High performance 16Gb Switch Transform SAN connectivity with maximum throughput and advanced management features for virtualized environments.	**Advanced 8Gb Switch** Connect directly to the Fibre Channel SAN, bypassing any external switches and reducing cables, optics, and management.	**Basic 8/4Gb Pass-Through Module** Directly connect and isolate bandwidth between servers and any Fibre Channel SAN infrastructure.
Performance			
Speeds	16Gbps (multi-speed 2, 4, 8, or 16Gbps)	8Gbps (multi-speed 2, 4, or 8Gbps)	8Gbps (multi-speed 2, 4, or 8Gbps)
Switch capacity (Gbps)	384 (768 full duplex)	192 (384 full duplex)	256 (full duplex)
Max Buffer to Buffer Credit	8106	688	-
Latency (Microseconds)	0.7 µs	0.7 µs	-
Ports			
Total ports	24 (16 internal and 8 external)	24 (16 internal and 8 external)	32 (16 internal and 16 external)
Port model options	∞ 24 ports with eight SFP+ transceivers ∞ 24 ports with four SFP+ transceivers ∞ 12 ports with two SFP+ transceivers (12 port model expands to 24 ports with on-demand license)	∞ 24 ports with eight SFP+ transceivers ∞ 24 ports with four SFP+ transceivers ∞ 12 ports with two SFP+ transceivers (12 port model expands to 24 ports with on-demand license)	16 ports with 16 SFP+ transceivers
Port types	D_Port (Diagnostic Port), E_Port, F_Port, M_Port (Mirror Port); self discovery based on switch type (U_Port); optional port type control in Brocade Access Gateway mode: F_Port and NPIV-enabled N_Port	FL_Port, F_Port, M_Port (Mirror Port), and E_Port; self-discovery based on switch type (U_Port); optional port type control in Brocade Access Gateway mode: F_Port and NPIV-enabled N_Port	N_Port
Features			
Security	SSL, SSH v2, HTTPS, LDAP, RADIUS, Role-Based Access Control (RBAC), DH-CHAP (between switches and end devices), Port Binding, Switch Binding, Secure RPC, Secure Copy (SCP), Trusted Switch, IPSec, IP Filtering		-
Management	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	Telnet, HTTP, SNMP v1/v3 (FE MIB, FC Management MIB); Auditing, Syslog, Change Management tracking; EZSwitchSetup wizard; Brocade Advanced Web Tools; Brocade DCFM Professional/Enterprise; SMI-S compliant, SMI-S scripting toolkit, Administrative Domains	Module is unmanaged – all management occurs via HBA firmware or external switches
Enterprise Performance Pack	Software license option that includes Adaptive Networking, ISL Trunking, Fabric Watch, and Advanced Performance Monitoring		-
ISL Trunking (for Brocade FC devices only)	Inter-Switch Link (ISL) Trunking allows all eight external SAN ports to be combined to form a single, logical ISL, delivering scalable I/O bandwidth utilization and load balancing with an aggregate bandwidth of 128Gbps (M6505 model) and 64Gbps (M5424 model)		-
Maximum frame size	2112-byte payload		-
Classes of service	Class 2, Class 3, and Class F (inter-switch frames)		-
Data traffic types	Fabric Switches supporting unicast	Fabric switches supporting unicast and broadcast	-
Brocade optical transceivers (requires SFP LC connector)	16Gbps: SWL, LWL, or ELWL	8Gbps: SWL or LWL 4Gbps: SWL, LWL, or ELWL	8Gbps: SWL (16 included)
Fabric Services	Simple Name Server (SNS); Registered State Change Notification (RSCN), NTP v3, Reliable Commit Service (RCS), Dynamic Path Selection (DPS), Brocade Advanced Zoning (default zoning, port/WWN zoning, broadcast zoning), NPIV, and FDMI		-

Blade Interconnects

M-Series Blade I/O Guide

Transform your Dell M1000e blade server enclosure.

Cisco	
Models	**B22DELL FEX**
	10GbE Fabric Extender Acts as a remote line card of the parent Nexus switch fabric.
Performance	
Speeds	1 and 10GbE
Switch fabric capacity	160Gbps
Forwarding capacity (Mpps)	297
Latency (Microseconds)	0.8 µs
Ports	
Internal blade server ports	16 (1 or 10GbE)
External 10GbE	8 ports SFP+
Features	
DCB: PFC, DCBx and ETS	Yes
FCoE	Yes
Converged iSCSI (LAN and SAN)	Yes
Stacking	No
PSVT+	Yes
Simplified Networking Mode	Managed at top-of-rack
Twin-ax cables	1m: SFP-H10GB-CU1M 3m: SFP-H10GB-CU3M 5m: SFP-H10GB-CU5M 7m: SFP-H10GB-ACU7M 10m: SFP-H10GB-ACU10M
Optical transceivers supported	FET-10G[1] SFP-10G-SR SFP-10G-LR SFP-10G-ER [1]FET-10G optic can only be used to connect FEX to Nexus
Max L2 and L3 VLANs	4013
Link Aggregation (Groups/Members)	96/16
Jumbo frames (Bytes)	9216
Max Routes (IPv4/IPv6)	Managed at top-of-rack
IPv4 Routing	Managed at top-of-rack
IPv6 Routing	Managed at top-of-rack
Multicast Routing	Managed at top-of-rack

InfiniBand		
Models	**Mellanox 4001F**	**Mellanox 4001T**
	High performance InfiniBand switch	Mainstream InfiniBand switch
Performance		
Speed / Bit rate	FDR/56 Gbps	FDR10/40Gbps
Data rate	56Gbps	40Gbps
Switch capacity	3.58Tbps	2.56Tbps
Features		
Total ports	32 (16 internal and 16 external)	
IBTA compliance	Meets InfiniBand Trade Association specification 1.21 and 1.3	
Quality of Service (QoS)	Advanced scheduling engine supports QoS for up to 9 traffic classes and 9 virtual lanes (8 data + 1 management)	
Linear forwarding table	256 to 4Kbyte MTU (Maximum Transmission Unit)	
Multicast subnet addresses	48K	
Unicast subnet addresses	16K	
Management	Mellanox OpenFabrics Enterprise Distribution (OFED) software stack contains a subnet manager and switch management tools to include: diagnostics, debugging, port mirroring, and OpenSM or third-party subnet manager capability	
Optics/cables	QSFP active optical or passive fiber	

Dell Services

Whether you are seeking product support or complete IT outsourcing, Dell can deliver services based on your need. Ask about a free business consultation.

Consulting services
Achieve improved business outcomes with professional guidance pertaining to your infrastructure. Improve network performance, add functionality, and leverage existing infrastructure to maximize your investment.

Deployment services
Let us install and correctly optimize your data center infrastructure with a comprehensive set of remote and onsite deployment services.

Managed services
Free yourself to focus on your business and allow Dell to fully manage your multi-vendor network with triage, resolution, and tier 2 and 3 engineering support.

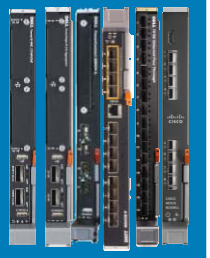
Support services*
Gain access to professionals 24 hours a day who help you configure, troubleshoot, and diagnose your data center infrastructure. Dell ProSupport™ experts can also help resolve complex issues related to third-party connectivity to Cisco, Brocade, Juniper, HPE, and Aruba.

*Availability and terms of Dell Services vary by region. For more information, visit Dell.com/servicedescriptions

M-Series I/O Modules

Converged Ethernet

MXL
PowerEdge M I/O Aggregator
M8024-k
10 Gb Pass-Through
Cisco B22DELL FEX

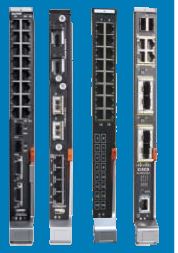


Fibre Channel

Brocade M6505
Brocade M5424
Pass Through FC8/4

1Gb Ethernet

M6348
M6220
1Gb Pass-Through
Cisco Catalyst Blade

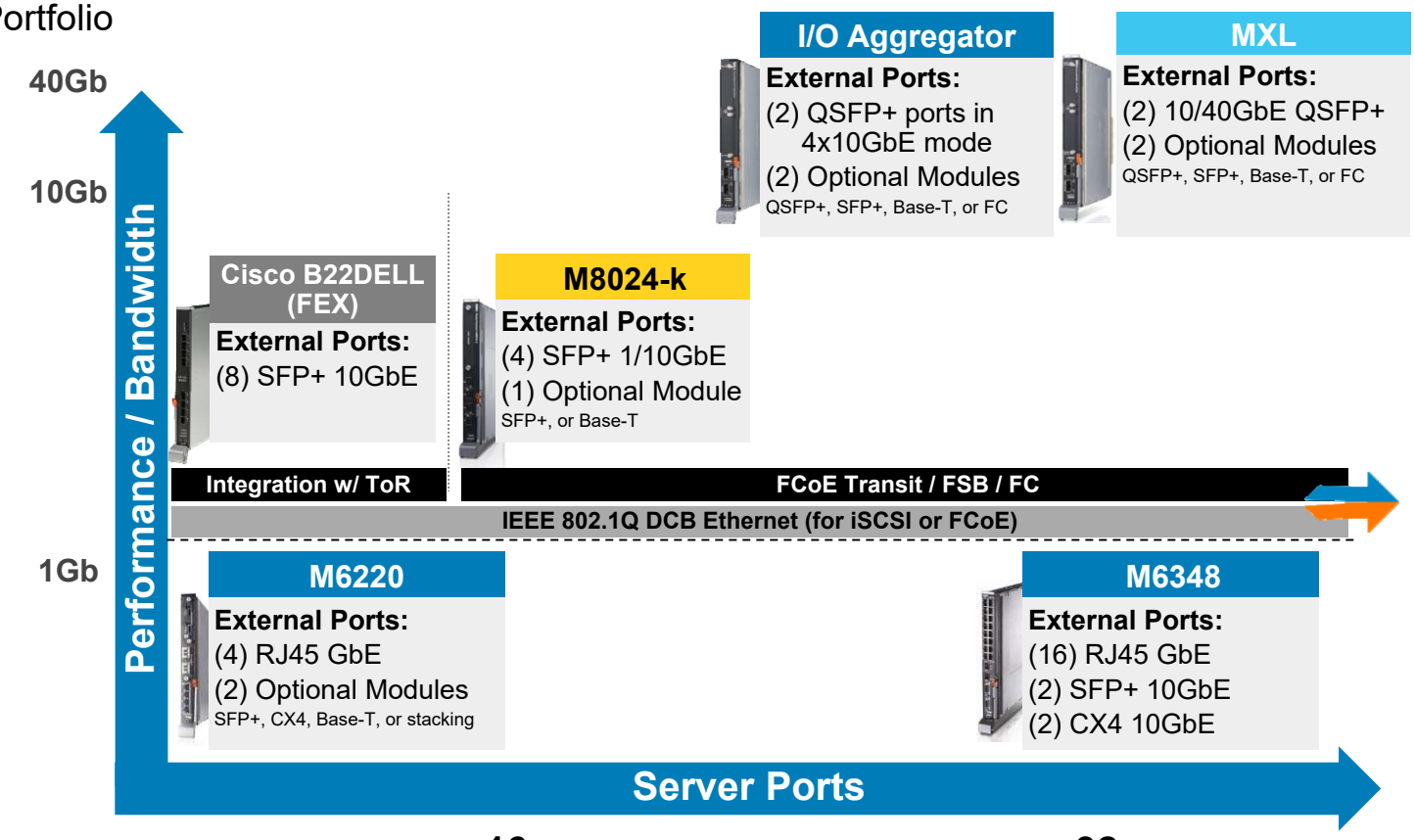


InfiniBand

Mellanox M4001F
Mellanox M4001T

Ethernet Blade I/O Modules

Product Portfolio



DELL EMC

Converged Ethernet

10/40Gb Switch MXL

10Gb Plug and Play M-IOA

10Gb Basic M8024-k

10Gb Pass-Through

Cisco B22DELL FEX

DELL EMC

MXL – 10/40GbE blade

Converged

Industry leading 56 port design

- 32x 10Gb internal server ports
- Up to 6 external 40Gb ports
- Up to 24 external 10Gb ports (6 QSFP+ ports with breakout cables)

Two FlexIO bays enable choice (Modules can be different)

- 2-port 40GbE QSFP+ module (can convert to 8-port 10GbE SFP+ using breakout cables)
- 4-port 10GbE SFP+ module
- 4-port 10GBASE-T module (If running Base-T module then second IO slot must be of different type due to power constraints)
- 4-port FC module
- Stack up to 6 devices
- VLT 2 peers

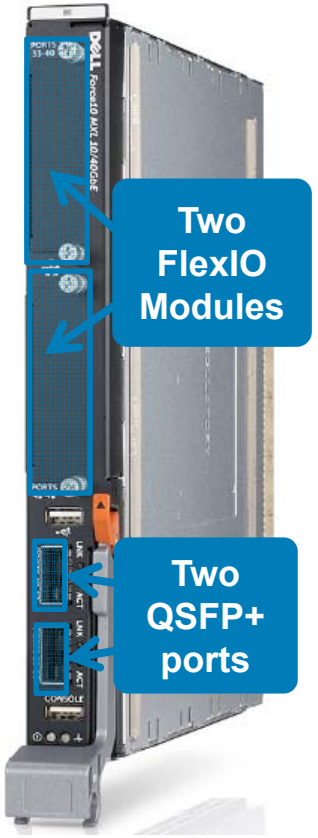
PVST+ protocol for easy integration into Cisco environments

Converged

- Supports DCB (protocols PFC, ETC and DCBx)
- Converged iSCSI with EqualLogic (supports iSCSI TLV)
- Two FCoE Options
  - Native Fibre Channel uplinks with FC FlexIO module (FCoE on internal ports to the servers)
  - FCoE transit to top of rack switch with IOM acting as a FIP Snooping Bridge

Industry standard CLI

Enterprise class OS (FTOS)



DELL EMC

MXL – 10/40GbE blade

Converged

Adapters

13G
Cavium QLogic 57810S-k
Cavium QLogic 57840S-k
Emulex OCm14102-N5-D
Emulex OCm14102B-N5-D
Emulex OCm14102-N6-D
Emulex OCm14102B-N6-D
Emulex OCm14102-U4-D
Emulex OCm14102B-U4-D
Emulex OCm14102-U5-D
Emulex OCm14102B-U5-D
Intel X520-x/k
Intel X710-k
Mellanox CX-3 DP 10GbE
Mellanox CX-3 Pro DP 10GbE

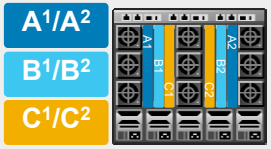
14G
Cavium QLogic 57810S-k
Intel X520-x/k
Intel X710-k
Mellanox CX-3 Pro DP 10GbE

Supports connectivity to 10Gb-KR adapters, all of which are notated with "-k." It does not provide connectivity to legacy 10Gb-XAUI NICs/CNAs

If connected to 1Gb Ethernet Mezzanine cards or LOMs, device will auto-negotiate individual internal ports to 1Gb

More details in Adapter Portfolio section

Designed for I/O bays



FlexIO modules do not have to be the same

4 port SFP+ Module

- **Optical Transceivers**
  SFP+ 10Gb: SR, LR
  SFP 1GbE: SX, LX
- **SFP to RJ45 converter**
  1000Base-T (only capable of 1Gbps)
- **SFP+ Direct Attach Cable (Twinax)**
  (0.5m, 1m, 2m, 3m, 5m, 7m available)
  Can operate at 10Gb and 1Gb

4 port 10GBASE-T Module
Limited to only one 10GBASE-T module . The other module bay can be populated

- **RJ45 / Cat6a Copper**
  10Gb/1Gb
  (supports auto-negotiation)

4 port FC Module

- **Optical Transceivers**
  SFP+ 8Gbps (will connect at 4/2 Gbps)
  SW 150m, LW 4km

2 port QSFP+ Module

- **QSFP+ to 4xSFP+ Breakout Cables**
  5m Passive Copper
  40GBASE-CR4 10Gb
- **QSFP+ to QSFP+ Direct Attach**
  1m, and 5m, Passive Copper
  40GBASE-CR4 40Gb
- **Optical Transceivers**
  SFP+ 40Gb: SR only

Two Integrated QSFP+ ports
Ports are defaulted to stacking mode but mode can be changed

Secondary Management Serial Port (Cable included)

USB Port

- **QSFP+ to QSFP+ Fiber Cables**
- **QSFP+ to 4xSFP+ Fiber Breakout Cables**

DELL EMC

PowerEdge M I/O Aggregator

Plug & Play

Easy Deployment

- Simplified layer 2 connectivity (no spanning tree)
- Faster Deployment: All VLANs on all ports with the option to set VLANs
- No touch DCB and no touch FCoE
  - DCB and FCoE settings detected from top of rack switch through DCBx protocol

Simple GUI Integrated into Chassis Management Controller (CMC)
(Note: CMC GUI will not function if the IOA is stacked. IOA must be managed through CLI when stacked. Maximum stacking capability is 6)

High Port Count:

- 32x 10GbE internal server ports
- Up to 16 external 10GbE ports (4 QSFP+ ports with breakout cables)

Two FlexIO bays enable choice

- 2-port 40GbE QSFP+ module (converts to 8-port 10GbE SFP+ using breakout cables)
- 4-port 10GbE SFP+ module
- 4-port 10GBASE-T module
  (If running Base-T module then second IO slot must be of different type due to power constraints)
- 4-port FC module

Converged

- Supports DCB (protocols PFC, ETC and DCBx)
- Converged iSCSI with EqualLogic and Compellent
- Two FCoE Options
- Native Fibre Channel uplinks with FC FlexIO module (FCoE on internal ports to the servers)
- FCoE transit to top of rack switch with IOM acting as a FIP Snooping Bridge

Industry standard CLI. Standard troubleshooting commands via CLI

VLT up to 2 peers

DELL EMC

PowerEdge M I/O Aggregator

Converged

Adapters

13G
Cavium QLogic 57810S-k
Cavium QLogic 57840S-k
Emulex OCm14102-N5-D
Emulex OCm14102B-N5-D
Emulex OCm14102-N6-D
Emulex OCm14102B-N6-D
Emulex OCm14102-U4-D
Emulex OCm14102B-U4-D
Emulex OCm14102-U5-D
Emulex OCm14102B-U5-D
Intel X520-x/k
Intel X710-k
Mellanox CX-3 DP 10GbE
Mellanox CX-3 Pro DP 10GbE

14G
Cavium QLogic 57810S-k
Intel X520-x/k
Intel X710-k
Mellanox CX-3 Pro DP 10GbE

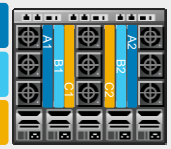
Supports connectivity to 10Gb-KR adapters, all of which are notated with "-k." It does not provide connectivity to legacy 10Gb-XAUI NICs/CNAs

If connected to 1Gb Ethernet Mezzanine cards or LOMs, device will auto-negotiate individual internal ports to 1Gb

More details in Adapter Portfolio section

Designed for I/O bays

A1/A2
B1/B2
C1/C2



FlexIO modules do not have to be the same

4 port SFP+ Module

- **Optical Transceivers**
  SFP+ 10Gb: SR, LR
  SFP 1GbE: SX, LX
- **SFP to RJ45 converter**
  1000Base-T (only capable of 1Gbps)
- **SFP+ Direct Attach Cable (Twinax)**
  (0.5m, 1m, 2m, 3m, 5m, 7m available)
  Can operate at 10Gb and 1Gb

4 port 10GBASE-T Module
Limited to only one 10GBASE-T module. The other module bay can be populated

- **RJ45 / Cat6a Copper**
  10Gb/1Gb
  (supports auto-negotiation)

4 port FC Module

- **Optical Transceivers**
  SFP+ 8Gbps (will connect at 4/2 Gbps)
  SW 150m, LW 4km

2 port QSFP+ Module

- **QSFP+ to 4xSFP+ Breakout Cables**
  5m Passive Copper
  40GBASE-CR4 10Gb
- **QSFP+ to QSFP+ Direct Attach**
  1m, and 5m, Passive Copper
  40GBASE-CR4 40Gb
- **Optical Transceivers**
  SFP+ 40Gb: SR only

Two Integrated QSFP+ ports
All QSFP+ ports and modules for this device are fixed in 4x10Gb breakout mode

Secondary Management Serial Port (Cable included)

USB Port

- **QSFP+ to QSFP+ Fiber Cables**
- **QSFP+ to 4xSFP+ Fiber Breakout Cables**

DELL EMC

M8024-k

Fully modular full wire-speed 10GbE managed Layer 2/3 Ethernet switching

Converged

- Supports DCB (protocols PFC and DCBx)
- FCoE Transit Switch via FIP Snooping Bridge
  (not supported in Simple Switch Mode)
- Stack up to 6 devices using SFP+ fixed ports or SFP+ module
  (not supported in Simple Switch Mode)

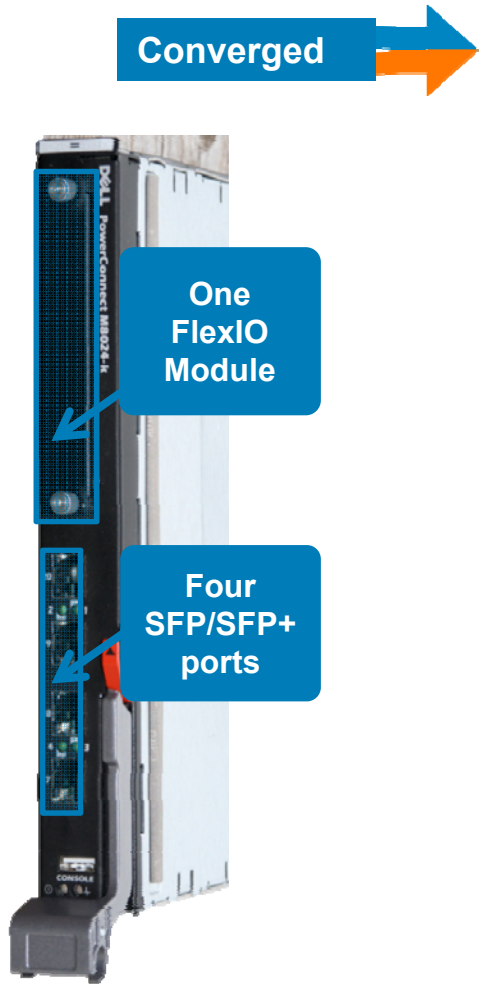
24 port design features:

- 16 internal 10Gb server ports
- 4 integrated external SFP+ ports (multi-speed 1/10Gb)
- Up to 4 additional external ports via FlexIO modules

FlexIO fully modular design enables connectivity choices including SFP+, and 10GBASE-T

Default mode of operation is Simple Switch Mode (port aggregator); user-configurable to full switch mode

Provides connectivity for the latest 10Gb-KR NICs and CNAs, including those supporting Switch Independent Partitioning



M8024-k

Converged

Adapters

13G
Cavium QLogic 57810S-k
Cavium QLogic 57840S-k (links 2 ports)
Emulex OCm14102-N5-D
Emulex OCm14102B-N5-D
Emulex OCm14102-N6-D
Emulex OCm14102B-N6-D
Emulex OCm14102-U4-D
Emulex OCm14102B-U4-D
Emulex OCm14102-U5-D
Emulex OCm14102B-U5-D
Intel X520-x/k
Intel X710-k
Mellanox CX-3 DP 10GbE
Mellanox CX-3 Pro DP 10GbE

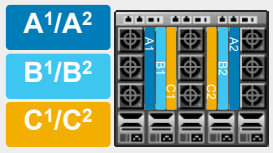
14G
Cavium QLogic 57810S-k
Intel X520-x/k
Intel X710-k
Mellanox CX-3 Pro DP 10GbE

Supports connectivity to 10Gb-KR adapters, all of which are notated with "-k." It does not provide connectivity to legacy 10Gb-XAUI NICs/CNAs

If connected to 1Gb Ethernet Mezzanine cards or LOMs, device will auto-negotiate individual internal ports to 1Gb

More details in Adapter Portfolio section

Designed for I/O bays



Uplinks

10GBASE-T **Copper** Module

(supports auto-negotiation to 100Mb/1Gb)

Cables

RJ45 / Cat6a

Uplinks

10GbE SFP+ Module (10Gb only)

SFP+ Direct Attach Cable (Twinax)
(0.5m, 1m, 3m, 5m, 7m available)
Operate at 10Gb only

10GbE Optical Transceivers
SFP+ 10Gb: SR, LR, LRM
SFP 1Gb: none
FlexIO modules cannot support both SFP and SFP+ optics while the fixed ports can

Secondary Management Serial Port (Cable included)

4 external SFP/SFP+ ports (multi-speed 1/10Gb)

SFP+ Direct Attach Cable (Twinax)
(0.5m, 1m, 3m, 5m, 7m available)
Can operate at 10Gb and 1Gb

10GbE Optical Transceivers
SFP+ 10Gb: SR, LR, LRM
SFP 1Gb: SX, LX
Fixed ports can support both SFP and SFP+ optics

SFP to RJ45 converter
1000Base-T (only capable of 1Gbps)

1GbE Optical Transceivers
SFP 1GbE: SX, LX

Fixed ports can support both SFP and SFP+ optics.

DELL EMC

10Gb Ethernet Pass Through -k

Converged

16 ports correspond to 16 server blades

- Only supports –k mezz cards

16 external 10GbE SFP+ ports

- Supports 10Gb connections ONLY

Supports DCB/CEE and FCoE

- Connect to top-of-rack FCoE switches and Converged Network Adapters (CNA's) in individual blades

Transparent connection between blade servers and external LAN

10Gb Ethernet Pass Through -k

Converged

Adapters

13G
Cavium QLogic 57810S-k
Cavium QLogic 57840S-k (Links 2 ports)
Emulex OCm14102-N5-D
Emulex OCm14102B-N5-D
Emulex OCm14102-N6-D
Emulex OCm14102B-N6-D
Emulex OCm14102-U4-D
Emulex OCm14102B-U4-D
Emulex OCm14102-U5-D
Emulex OCm14102B-U5-D
Intel X520-x/k
Intel X710-k
Mellanox CX-3 DP 10GbE
Mellanox CX-3 Pro DP 10GbE

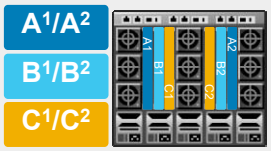
14G
Cavium QLogic 57810S-k
Intel X520-x/k
Intel X710-k
Mellanox CX-3 Pro DP 10GbE

Supports connectivity to 10Gb-KR adapters, all of which are notated with "-k." It does not provide connectivity to legacy 10Gb-XAUI NICs/CNAs

1Gb Ethernet mezzanine cards and LOMs are not supported.

More details in Adapter Portfolio section

Designed for I/O bays



10Gb Optical Transceivers
SR & LR

Cables

SFP+ Direct Attach Cable (Twinax)
(0.5m, 1m, 3m, 5m, 7m available)

DELL EMC

Cisco Nexus B22DELL Fabric Extender

Converged

Cisco 10GbE offering for the Dell M1000e Blade System

- The 16 internal 10Gb or 1Gb ports and 8 external 10Gb ports enables customers to connect via 10GbE to a Cisco Nexus 5500 series Top of Rack switch

The B22DELL FEX is only supported with specific Cisco Nexus models:

- Cisco Nexus 5500, 5600, 6000, and 9000 Series switches

It cannot connect to Cisco Nexus 5010, 5020, 2000 or 7000 series switches.

Managed from the Nexus Top of Rack

- B22DELL FEX is managed at the top of rack and not managed at the M1000e nor the FEX device itself
- Acts as a line card to supported Nexus Series switches

Cisco Nexus B22DELL Fabric Extender

Converged

Adapters

13G
Cavium QLogic 57810S-k
Cavium QLogic 57840S-k (Links 2 ports)
Emulex OCm14102-N5-D
Emulex OCm14102B-N5-D
Emulex OCm14102-N6-D
Emulex OCm14102B-N6-D
Emulex OCm14102-U4-D
Emulex OCm14102B-U4-D
Emulex OCm14102-U5-D
Emulex OCm14102B-U5-D
Intel X520-x/k
Intel X710-k
Mellanox CX-3 DP 10GbE
Mellanox CX-3 Pro DP 10GbE

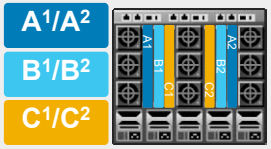
14G
Cavium QLogic 57810S-k
Intel X520-x/k
Intel X710-k
Mellanox CX-3 Pro DP 10GbE

Supports connectivity to 10Gb-KR adapters, all of which are notated with "-k." It does not provide connectivity to legacy 10Gb-XAUI NICs/CNAs

If connected to 1Gb Ethernet Mezzanine cards or LOMs, device will auto-negotiate individual internal ports to 1Gb

More details in Adapter Portfolio section

Designed for I/O bays



This is not a usable port.
There is no management serial port on the B22DELL (external nor internal). The B22DELL is managed from the Cisco Nexus top of rack switch.

Cisco Direct Attach Copper (Twinax)
(1m, 3m, 5m, 7m, 10m)

Can only operate at 10Gb

Cisco branded cables only

Optical Transceivers
SFP+ 10Gb: FET, SR, LR, ER
SFP 1GbE: Not supported

FET-10Gb Optic
(Distance up to 100m with OM3 fiber)

A FET is a new optic provided by Cisco. A FET can only be used on FEX devices and Nexus switch ports that connect to a FEX.

FET optics are sold with FEX at time of purchase. You CANNOT purchase these optics separately

Compatible Parent Switches

Nexus 5548P Switch
Nexus 5548UP Switch
Nexus 5596UP Switch
Nexus 56128P Switch
Nexus 5624Q Switch
Nexus 5648Q Switch
Nexus 5672-16G Switch
Nexus 5672UP Switch
Nexus 5696Q Switch
Nexus 6001P Switch
Nexus 6004 Switch
Nexus 6004-EF Switch
Nexus 93180YC-EX Switch
Nexus 9372PX Switch
Nexus 9372PX-E Switch
Nexus 9396PX Switch

The minimum Cisco Nexus software versions to support the B22DELL FEX are:
-5.2(1)N1(3)
-6.0(2)N1(2)
Customers should verify parent switch compatibility with Cisco.

DELL EMC

Comparison of Converged Blade options

Model	Dell MXL Switch	Dell PowerEdge M I/O Aggregator	Cisco Nexus B22DELL FEX	Dell M8024-k
Overview	10/40GbE Switch	10GbE Plug & Play	10GbE Extender	10GbE Basic
Server Ports Supported	32 (10GbE)	32 (10GbE)	16 (10GbE)	16 (10GbE)
External 40G Ports (QSFP+)	2 Fixed – 6 Total	2 Fixed – 6 Total (Note: QSFP+ ports run in breakout mode 4x10GbE only)	None	None
External 10G Ports	24 (16 per LAG)	24 (16 in a single LAG)	8	8
Flex I/O Expansion Modules	Two slots and four options (Mix or match) • 2 port QSFP+ (10/40GbE) [1] • 4 port SFP+ (1/10GbE) • 4 port Base-T (1/10GbE) [2] • 4 port FC8 (2/4/8Gb) [1]QSFP+ port on I/O Aggregator runs breakout mode 4x10GbE [2]Both devices limited to one Base-T module only. Populate second slot with another module of your choice.		None	One slot & 2 options • 4 port SFP+ (10Gb only) • 2 port Base-T (1/10Gb)
Stacking	6	6	n/a	6
East-west traffic support	Yes	Yes	No (All traffic is forwarded to Nexus Top-of-Rack / End-of-Row)	Yes
Support for M420 Quarter-Height Blades on Fabric A	Yes	Yes	Not in a redundant manner	Not in a redundant manner
Support for MLAG (vLT/vPC)	Yes	Yes (Enabled via CLI)	Yes	No
Support for quad-port GbE and 10Gb LOM/Mezz	Yes	Yes	No	No

1Gb Ethernet

1/10Gb High-density M6348

1/10Gb Basic M6220

1Gb Pass-Through

DELL EMC

1/10GbE

M6348

High-density 1GbE copper with 10GbE uplinks

Managed Layer 2/3 Gigabit Ethernet switch for M1000e blade enclosure

Industry leading port availability

- 32 internal (server) GbE ports; offering support of up to two ports per blade mezz card or Select Network Adapter (i.e. with quad-port 1GbE NICs)
- 16 external fixed 10/100/1000Mb Ethernet RJ-45 ports
- Up to four 10Gb uplink ports
  - 2x 10Gb Optical SFP+ (SR/LR) and/or SFP+ DAC
  - 2x 10Gb Copper CX4 or 32Gb stacking for M6348
- Management console port

Supports Dell Simple Switch Mode

Stackable with rack-mount PowerConnect 7000 Series

For optimized use (full internal-port utilization), pair with: Quad-port GbE mezz cards or Quad-port Fabric A adapters

DELL EMC

M6348

1/10GbE

Adapters

Works with all 1Gb Mezzanine cards and LOMs. Optimal use is with quad-port 1Gb adapters.

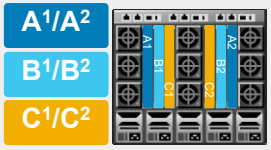
Functions with all 10Gb Mezzanine cards and Select Network Adapters with the exception of the:
QLogic 8242-k, 8262-k, and Brocade BR1741M-k.

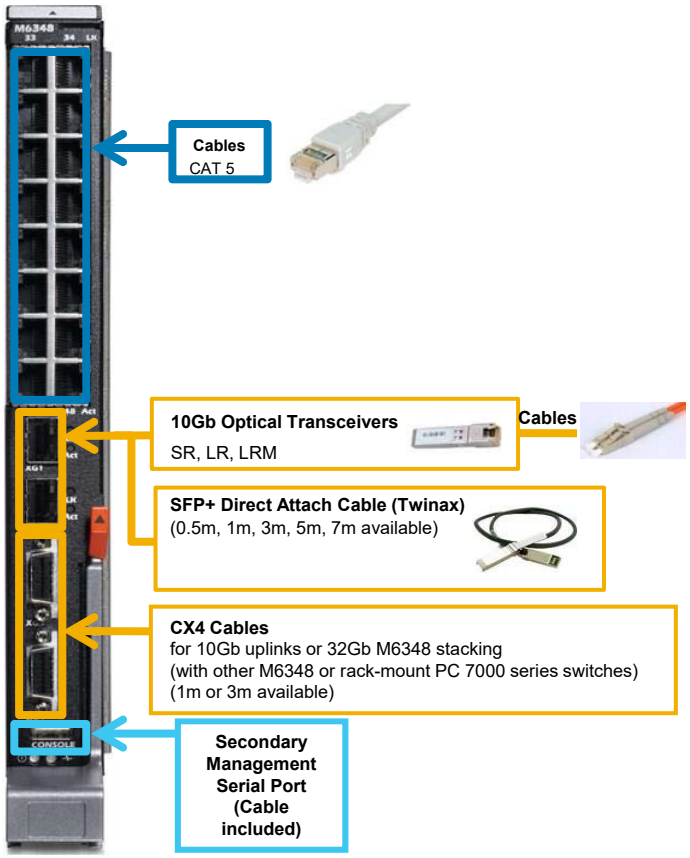
Dual port Mezzanine cards or LOMs/ Select Network Adapters will function and are fully supported with this IO module.

In such configurations, only half of the switch's internal ports will be used since the dual port Mezzanine card only has one port out to each IO module.

More details in Adapter Portfolio section

Designed for I/O bays





Cables
CAT 5

10Gb Optical Transceivers
SR, LR, LRM

Cables

SFP+ Direct Attach Cable (Twinax)
(0.5m, 1m, 3m, 5m, 7m available)

CX4 Cables
for 10Gb uplinks or 32Gb M6348 stacking
(with other M6348 or rack-mount PC 7000 series switches)
(1m or 3m available)

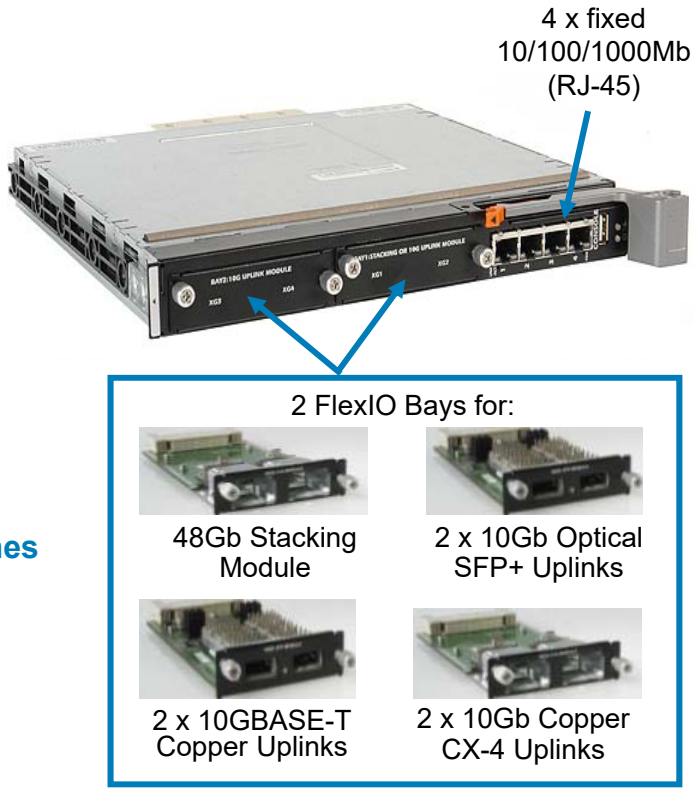
Secondary Management Serial Port (Cable included)

DELL EMC

1/10GbE

M6220

Basic 1GbE copper with FlexIO and 10GbE uplinks



Gigabit Ethernet Layer 2/3 Switch

Optional 10Gb uplinks and resilient stacking

IPv6 support

24 port switch

- 16 internal ports corresponding to 16 blade servers (1Gbps)
- 4 external fixed RJ-45 connections (10/100/1000Mbps)
- 2 FlexIO bays for:
  4 external 10Gbps uplink ports
  – or –
  2 external 10Gbps uplink ports and 2 external stacking ports

Same software image features as PowerConnect 6224/6248 switches

- Routing protocols
- Multicast routing protocols
- Advanced QoS
- Advanced Security
- IPv6

Supports Dell Simple Switch Mode

DELL EMC

M6220

1/10GbE

Adapters

Works with all 1Gb Mezzanine cards and LOMs.

Functions with all 10Gb Mezzanine cards and Select Network Adapters with the exception of the: QLogic 8242-k, 8262-k, and Brocade BR1741M-k.

Quad port GbE Mezzanine cards or LOMs will function and are fully supported with this IO module. In such configurations, only half of the card's ports will be used since the switch only has one internal port per adapter.

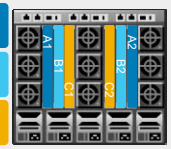
More details in Adapter Portfolio section

Designed for I/O bays

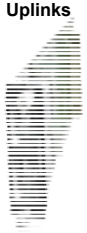
A1/A2

B1/B2

C1/C2



Uplinks



Stacking Module, 48Gbps

Cables

Stacking Cable (1m included; 3m available)

Uplinks

PowerConnect 6xxx **SFP+** Module

10Gb Optical Transceivers

SR & LR

Cables

SFP+ Direct Attach Cable (Twinax)

(0.5m, 1m, 3m, 5m, 7m available)

Uplinks

10GBase-T (Copper) Uplink Module

(10Gb speed only)

Cables

RJ45 / Cat6a

Cables

CX4 Cable for 10GbE Uplink, 12m

Uplinks

10GbE Uplink Module for **CX4 Copper**

Cables

CAT 5

Secondary Management Serial Port (Cable included)

DELL EMC

Gb Ethernet Pass-Through

1/10GbE

Adapters

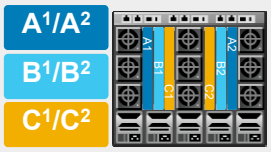
Works with all 1Gb Mezzanine cards and LOMs.

Functions with all 10Gb Mezzanine cards and Select Network Adapters with the exception of the: QLogic 8242-k, 8262-k, and Brocade BR1741M-k.

Quad port GbE Mezzanine cards or LOMs will function and are fully supported with this IO module. In such configurations, only half of the card's ports will be used since the switch only has one internal port per adapter.

More details in Adapter Portfolio section

Designed for I/O bays



1GbE Pass Through Module

- 16 ports correspond to 16 server blades
- Supports 10/100/1000Mb connections with all 1Gb Broadcom adapters
  (All other supported adapters provide 1Gb connection only)
  - Ethernet media speed is configured through the blade LOM firmware or by the operating system
- Transparent connection between LAN and server blades

DELL EMC

Fibre Channel

DELL EMC

Fibre Channel

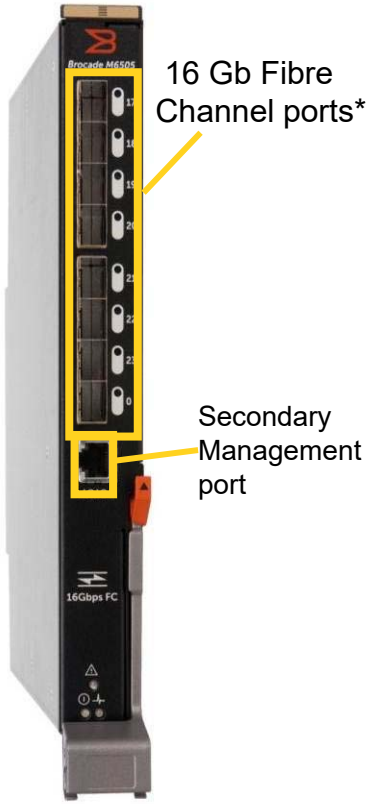
M-Series Fibre Channel Comparison

	BROCADE **M5424** 8Gbps FC SAN Switch		BROCADE **M6505** 16Gbps FC SAN Switch	
Model Choices	12-port, 24-port 24-port (Ent Perf Pk)		12-port, 24-port 24-port (Ent Perf Pk)	
Scalable Ports Upgrade	+12-ports (for 12-port SKU)		+12-ports (for 12-port SKU)	
Factory pre-installed SFP+ Transceivers	2 of 8 - 4 of 8 - 8 of 8		2 of 8 - 4 of 8 - 8 of 8	
Connect to Brocade FC SAN	Brocade Switch (default) Access Gateway (selectable)		Access Gateway (default) Brocade Switch (selectable)	
Connect to Cisco MDS FC SAN	Access Gateway (selectable)		Access Gateway (default)	
Direct connect to SAN disk/tape controller	Brocade Switch Mode Connect direct to Compellent		Brocade Switch Mode Connect direct to Compellent	
FC Blade Mezzanine Cards	QLogic & Emulex - 8Gb & 4Gb		QLogic & Emulex - 16Gb & 8Gb	
Brocade ISL-Trunking (License option)	Switch & NPIV modes connecting to Brocade FC SAN devices 64Gb/s		Switch & Access Gateway modes connecting to Brocade FC SAN devices 128Gb/s	
Brocade Advanced Performance Monitoring & Brocade Fabric Watch	Optional Available a-la-carte		Switch & NPIV modes connecting to Brocade FC SAN devices only	
Brocade Enterprise Performance Pack (license option bundle)	Optional		Included	
Diagnostic Ports, Hardware Buffer Credit Loss Detection/Recovery, Forward Error Correction	Not Supported		Included	

Brocade M6505

16Gb switch

Fibre Channel



- **24 Fibre Channel ports**
  - Up to 16 internal 16/8Gb server ports*
  - Up to 8 external 16/8/4Gb SAN ports**

  *The M6505 requires the enhanced midplane 1.1. The M6505 will not function with the original 1.0 midplane.

  **For connection to storage devices and/or other FC switches only
- **Zero footprint, hot-pluggable design with no additional fans or power supplies**
- **Complete redundancy, up to 4 switches per chassis**
- **Dynamic Ports on Demand (PoD) and "pay-as-you-grow" port upgrades for 12-port configurations**
- **Heterogeneous SAN fabric interoperability**
- **Access Gateway (NPIV) or fabric switch connectivity**
- **Auto-sensing and speed-matching connections to 16/8/4 Gbps to Fibre Channel devices**

DELL EMC

Brocade M6505 16Gb switch

Fibre Channel

Adapters

13G
Emulex LPe1205-M FC8
Emulex LPm15002B-D FC8
Emulex LPm16002B FC16
QLogic QME2572 FC8
QLogic QME2662 FC16

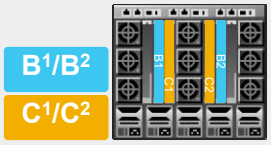
14G
Emulex LPe1205-M FC8
Emulex LPm16002B FC16
QLogic QME2572 FC8
QLogic QME2662 FC16

*The M6505 requires the enhanced midplane (1.1). The switch will not function with the original midplane (1.0).

Does not support 4Gb Mezzanine cards.

More details in Adapter Portfolio section

Designed for I/O bays



Brocade Transceivers
Brocade SWL, LWL or ELWL 16Gb SFP+ Optics
Brocade SWL, LWL or ELWL 8Gb SFP+ Optics
Brocade SWL, LWL or ELWL 4Gb SFP+ Optics

Note: Requires SFP LC connector

Cables

Secondary Management Serial Port

Available Models - Brocade M6505

- (16) internal and (8) SFP+ external FC16 ports with (8) FC16 SWL transceivers and Enterprise Performance Pack
- (16) internal and (8) SFP+ external FC16 ports with (4) FC16 SWL transceivers
- (8) internal and (4) SFP+ external FC16 ports with (2) FC16 SWL transceivers (12 port model expands to 24 ports with on-demand license)

DELL EMC

Brocade M5424

8Gb switch

Fibre Channel

- **8/4 Gbps Fibre Channel SAN solution**
- **Provides up to 24 8/4Gb FC ports**
  - Up to 16 internal 8/4Gb server ports
  - Up to 8 external 8/4Gb SAN ports*
    *For connection to storage devices and/or other FC switches only
- **One management console port**
- **Configurable as Brocade full fabric switch or Access Gateway Mode (NPIV) for multi-vendor interoperability**
- **Auto-negotiates between 4Gbps and 8Gbps based on linked mezzanine cards and top-of-rack switches**
- **Supports future FOS features and upgrades**

DELL EMC

Brocade M5424 8Gb switch

Fibre Channel

Adapters

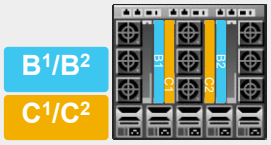
13G
Emulex LPe1205-M FC8
Emulex LPm15002B-D FC8
Emulex LPm16002B FC16
QLogic QME2572 FC8
QLogic QME2662 FC16

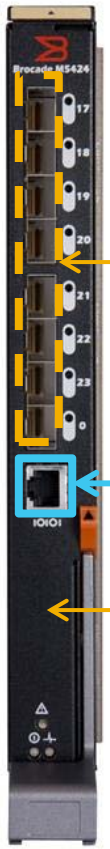
14G
Emulex LPe1205-M FC8
Emulex LPm16002B FC16
QLogic QME2572 FC8
QLogic QME2662 FC16

FC4 mezzanine cards are also supported with this switch at 4Gbps.

More details in Adapter Portfolio section

Designed for I/O bays





Brocade Transceivers
Brocade SWL or LWL 8Gb SFP+ Optics
Brocade SWL, LWL or ELWL 4Gb SFP+ Optics

Note: Requires SFP LC connector

Cables

Secondary Management Serial Port

Available Models - Brocade M5424

- (16) internal and (8) SFP+ external FC8 ports with (8) FC8 SWL transceivers and Enterprise Performance Pack
- (16) internal and (8) SFP+ external FC8 ports with (4) FC8 SWL transceivers
- (8) internal and (4) SFP+ external FC8 ports with (2) FC8 SWL transceivers
  (12 port model expands to 24 ports with on-demand license)

DELL EMC

Dell 8/4Gbps FC Pass-Through

Fibre Channel

- 16 ports correspond to 16 server blades
- 8, 4, or 2 Gbps connections
- Transparent connection between SAN and server blades
- As an alternative to this FC8 Pass-Through, the M IOA populated with FC Flex IO Modules (NPIV aggregator) provides the simplicity of a pass-through with the aggregation/redundancy benefits of a switch.

DELL EMC

Dell 8/4Gbps FC Pass-Through

Fibre Channel

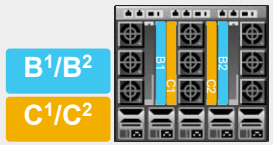
Adapters

13G & 14G
Emulex LPe1205-M FC8
QLogic QME2572 FC8

FC4 Mezzanine cards will function with this pass-through. Doing so will cause the pass-through to run at 4Gbps rather than the full-capability 8Gbps.

More details in Adapter Portfolio section

Designed for I/O bays

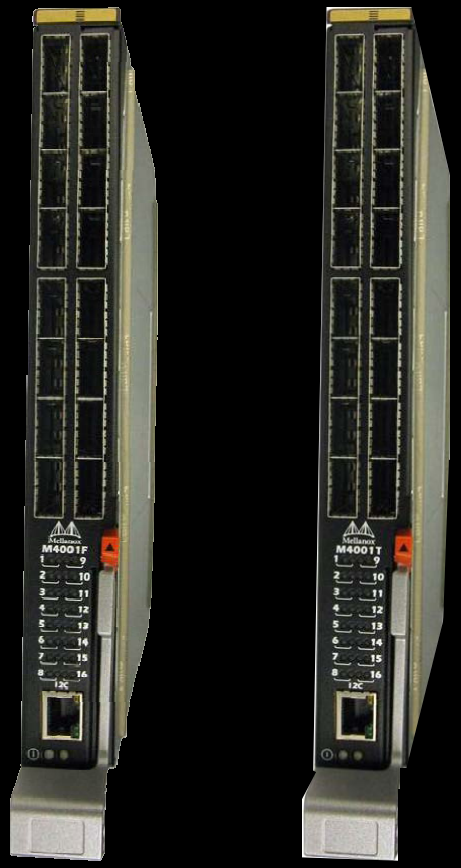


Brocade Transceivers
16 pre-installed 8Gbps SWL SFP+ transceivers (one per port)

Cables

DELL EMC

InfiniBand



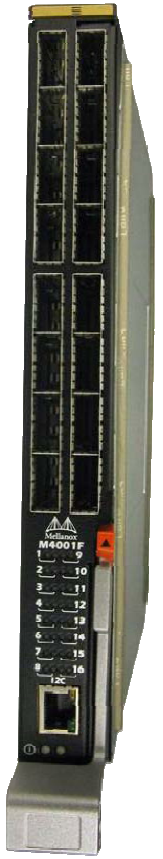
DELL EMC

Mellanox Blades

InfiniBand

- For high performance computing (HPC) & low latency applications
- Available in redundant switch configuration
- Full non-blocking throughput

	M4001F	M4001T
Speed	FDR	FDR10
Data rate	56Gbps	40Gbps
Total ports	32 (16 internal and 16 external)	



DELL EMC

Mellanox M4001F & M4001T

InfiniBand

Adapters

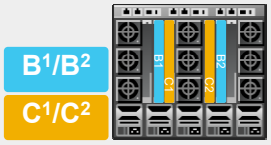
Combine the with Mellanox ConnectX3 InfiniBand mezz cards for end to end FDR or FDR10.

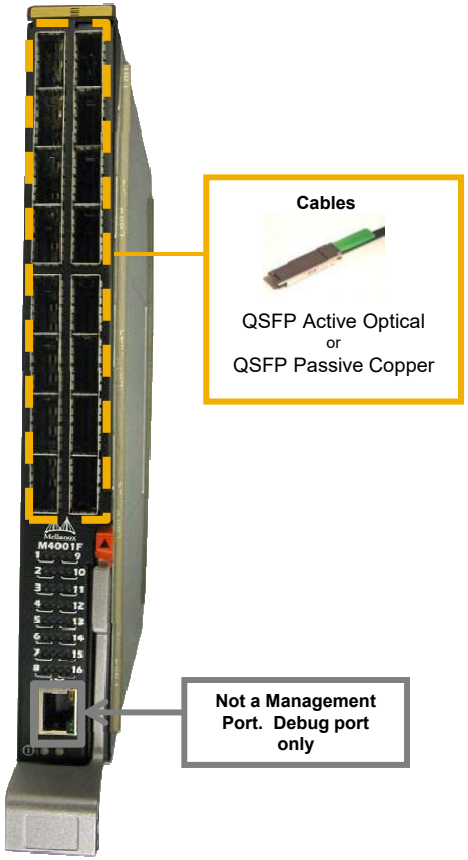
FDR10 not supported on 14G servers.

QDR ConnectX3 and QDR ConnectX2 cards are fully supported with these switches. They will connect at QDR speeds.

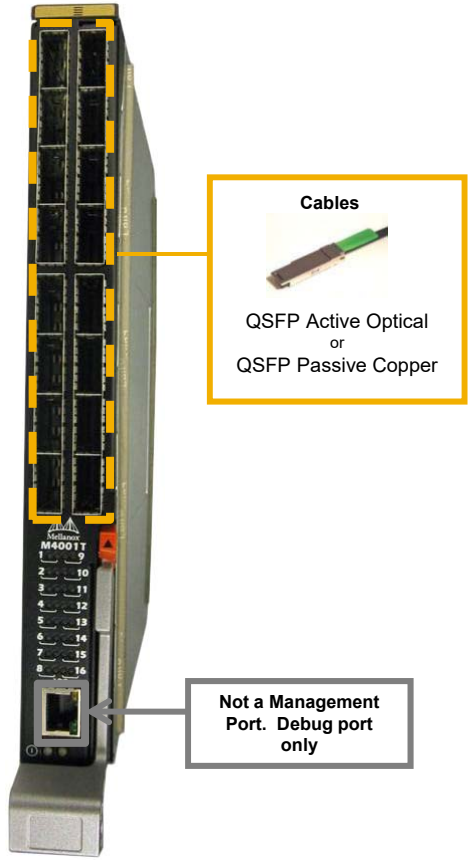
More details in Adapter Portfolio section

Designed for I/O bays





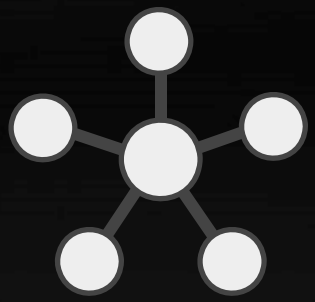
M4001F FDR



M4001T FDR10

DELL EMC

Fabric Topologies



Find more topologies and guides here:

Dell Storage Compatibility Matrix
http://en.community.dell.com/dell-groups/dtcmedia/m/mediagallery/20438558

Dell Storage Networking I/O Guide
http://en.community.dell.com/techcenter/networking/m/networking_files/20440701

Dell PS Series Configuration Guide
http://en.community.dell.com/techcenter/storage/w/wiki/2639.equallogic-configuration-guide.aspx

Rapid EqualLogic Configuration Portal
http://en.community.dell.com/techcenter/storage/w/wiki/3615.rapid-equallogic-configuration-portal-by-sis.aspx

DELL EMC

FCoE transit

Direct traffic to the Top-of-Rack via FIP Snooping Bridge

Topology / Configuration

Topology

Fabric Inside Chassis: FCoE

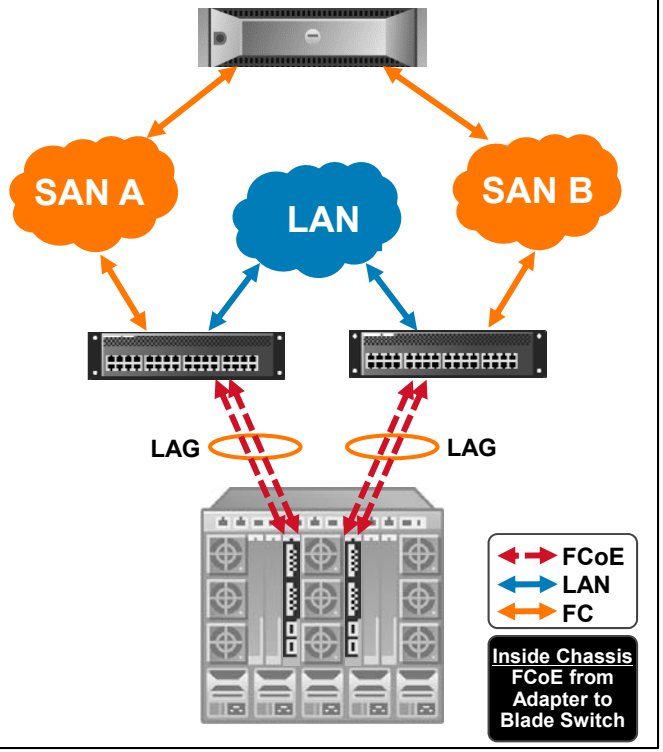
Blade models: MXL, IOA, M8024-k

Top-of-Rack switch: Dell S5000 as well as the Cisco Nexus 5000

Configuration

- All FCoE traffic moves from the adapters, to the IOM, then to the Top-of-Rack switch
- FC is broken out at the Top-of-Rack switch and moves to the SAN or directly to the storage array

Topology Diagram



Fibre Channel Breakout at Edge of Chassis

Topology / Configuration

Topology

Fabric Inside Chassis: FCoE

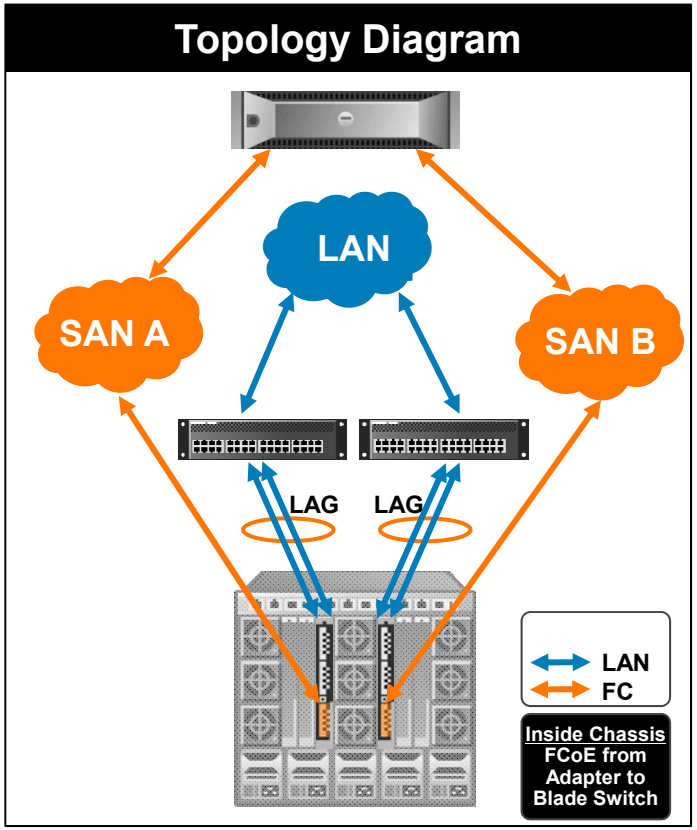
Blade model: MXL, IOA

Top-of-Rack switch: Dell S5000, S6000, S6000-ON, S6010-ON, S4810, S4810-ON, S4820T, S4048-ON, S4048T-ON

Configuration

- FCoE inside chassis (from adapter to blade switch) and native FC outside the chassis

Topology Diagram



iSCSI and LAN Converged Storage Traffic

Topology / Configuration

Topology

Fabric Inside Chassis: Converged iSCSI

Blade models: MXL or IOA

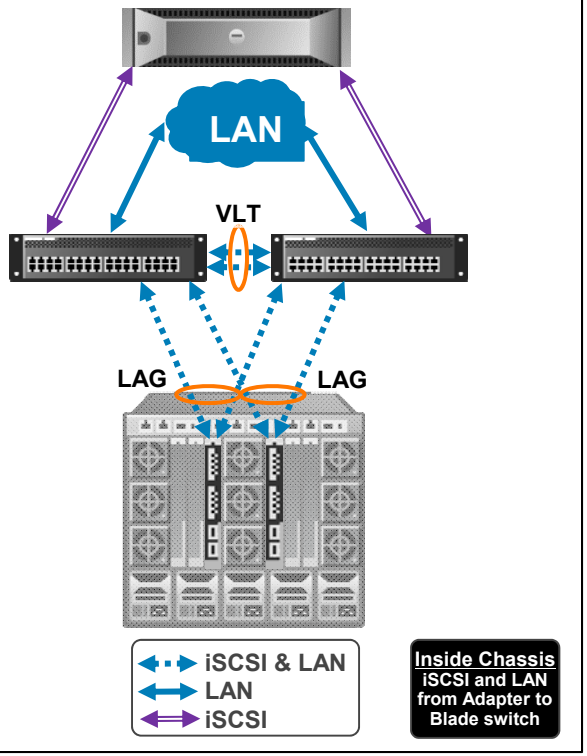
Top-of-Rack switch: Dell S5000, S6000, S6000-ON, S6010-ON, S4810, S4810-ON, S4820T, S4048-ON, S4048T-ON

Storage: iSCSI External Array

Configuration

- Converged iSCSI traffic (LAN and iSCSI) up to the Top-of-Rack switch

Topology Diagram



DELL EMC

Storage Blade with Optional External Array

Topology / Configuration

Topology

Fabric Inside Chassis: Converged iSCSI

Blade model: MXL, IOA

Top-of-Rack switch: Dell S5000, S6000, S6000-ON, S6010-ON, S4810, S4810-ON, S4820T, S4048-ON, S4048T-ON

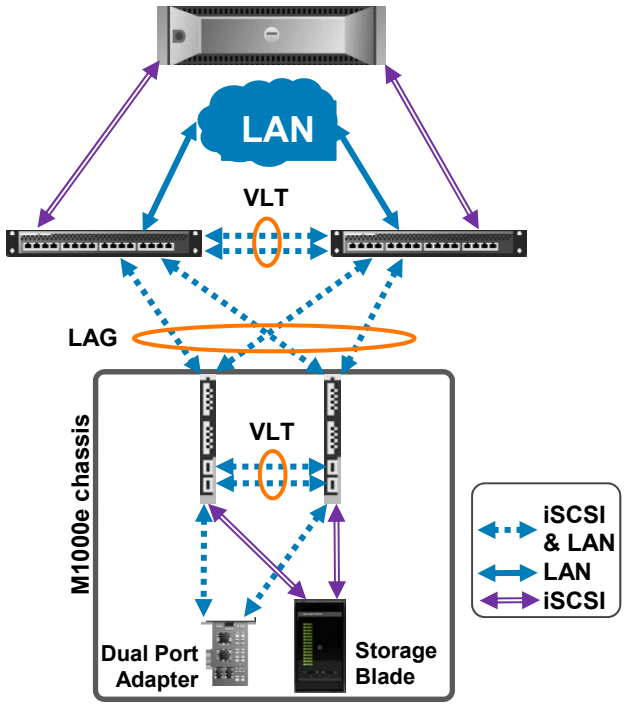
Storage: PS4410 storage blade

Optional Storage: EqualLogic External Array

Configuration

- Converged iSCSI to the blades and up to the Top-of-Rack switch
- Blade IOMs are using VLT so that array to array traffic can stay inside the M1000e chassis

Topology Diagram



Cross Chassis Stacking

Topology / Configuration

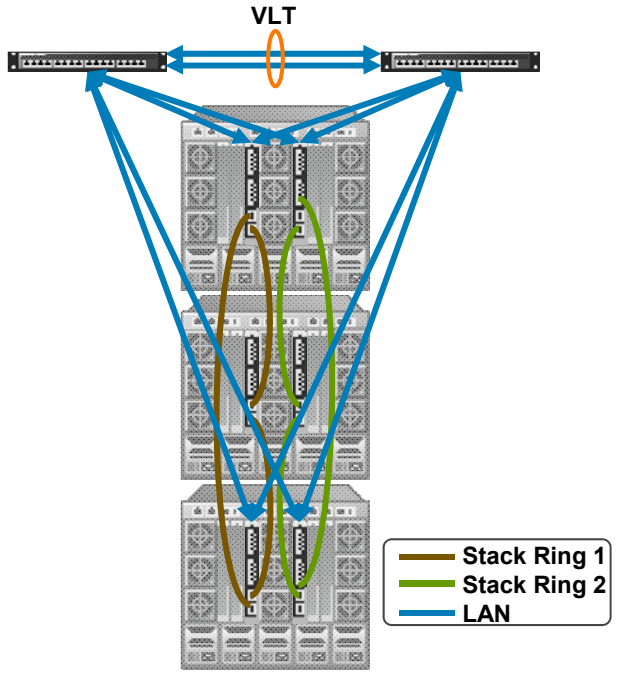
Topology

Blade models: MXL, M8024-k, M6348, M6248, IOA (using CLI)

Configuration

- Blade switches are stacked vertically so that there are two independent stacking rings. Switches on the left of the chassis form a ring and switches on the right side of the chassis form a ring. Independent stack rings allow each ring to be upgraded independently.
- Note that IOA is limited to a two unit stack. IOA has a simplified CLI command for stacking and IOA must be managed via CLI when stacked.

Topology Diagram



Benefits of Stacking

Single point of management for each stack

Increase of East/West traffic so less traffic goes to Top of Rack

- Save on Top of Rack ports
- Reduced Cables
- Less Congestion at Top of Rack

Use blade switches as the aggregation layer eliminating the need for Top of Rack switches

Topology / Configuration

Topology

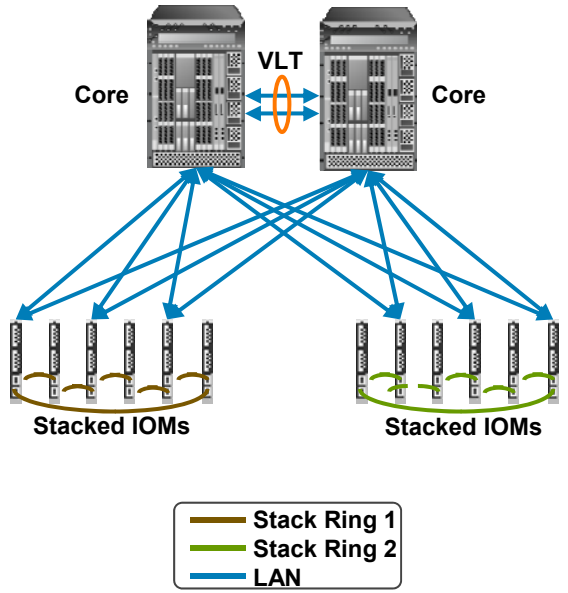
Stacked blade switches connected directly to the Network Core switches

Configuration

Stacked blade switches act as the aggregation layer. No need for Top of Rack switches.

Topology Diagram

Stack and Connect Directly to Core



DELL EMC

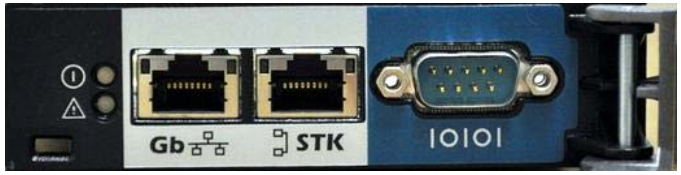
Automation and Management

Enhanced management of the M1000e

Simplifying blade server and I/O connectivity

The M1000e blade enclosure helps reduce the cost and complexity of managing computing resources with innovative management features.

The **Chassis Management Controller (CMC)** is an integrated hardware module with embedded system management. The simplified software interface, pictured below, gives administrators greater control of the chassis components and automates tasks to improve monitoring and management.



Pictured above, the Dell Chassis Management Controller (CMC) is a hot-pluggable hardware module that resides in the back of a Dell blade chassis and allows you to manage up to nine fully loaded Dell blade server chassis using a robust management software system.

CMC features

- Inventory of servers, I/O modules, & iDRAC cards
- Perform configuration and monitoring tasks
- Back up, clone settings and apply BIOS profiles
- Remotely power on or off blades
- Configure power and thermal settings
- Receive email or alert notifications if errors arise

CMC Software provides configuration of:

- Network and security settings of the M1000e
- Power redundancy & power ceiling settings
- I/O switches and iDRAC network settings
- First boot device on the server blades
- User access security

FlexAddress Plus

Intelligent Network Addressing

- The CMC offers simple interface for enabling FlexAddress by chassis, by slot, or by fabric, assigning WWN/MAC values in place of factory-assigned WWN/MAC
- User-configurable enablement of iSCSI MAC, Ethernet MAC, and/or WWN Persistence which allows blades to be swapped without affecting SAN Zoning, iSCSI zoning, or any MAC-dependent functions
- FlexAddress Plus SD card provisioned with unique pool of 3136 MACs/WWNs

WWN/MAC Addresses — Slot 1: SLOT-01 ▲ Back to top

Location	Fabric	Server-Assigned	Chassis-Assigned
Note:	• This server is present • FlexAddress is enabled for this slot.		
iDRAC	Management	00:26:B9:FF:C3:A0	✔ 00:23:AE:59:70:0B
A1	Gigabit Ethernet	00:26:B9:FF:B4:88	✔ 00:23:AE:59:70:0C
	iSCSI	00:26:B9:FF:B4:89	✔ 00:23:AE:59:70:0D
	Gigabit Ethernet	00:26:B9:FF:B4:8C	✔ 00:23:AE:59:70:DE
	iSCSI	00:26:B9:FF:B4:8D	✔ 00:23:AE:59:70:DF
A2	Gigabit Ethernet	00:26:B9:FF:B4:8A	✔ 00:23:AE:59:70:0E
	iSCSI	00:26:B9:FF:B4:8B	✔ 00:23:AE:59:70:0F
	Gigabit Ethernet	00:26:B9:FF:B4:8F	✔ 00:23:AE:59:70:E0
	iSCSI	00:26:B9:FF:B4:8F	✔ 00:23:AE:59:70:E1
B1	None		
B2	None		
C1	None		
C2	None		

Original hardware-assigned MACs

FlexAddress-assigned MACs

DELL EMC

SimpleConnect for LAN

Easy deployment feature

What is SimpleConnect?

- Feature included on all PowerConnect blade switches (M8024-k/M6348/M6220); “SimpleConnect” (locked) models also available (M6348S/M6220S)
- Aggregate traffic from multiple downlinks to one or more uplinks by mapping internal (server) NIC ports to external (top-of-rack) switch ports
- Based on port aggregation industry standards

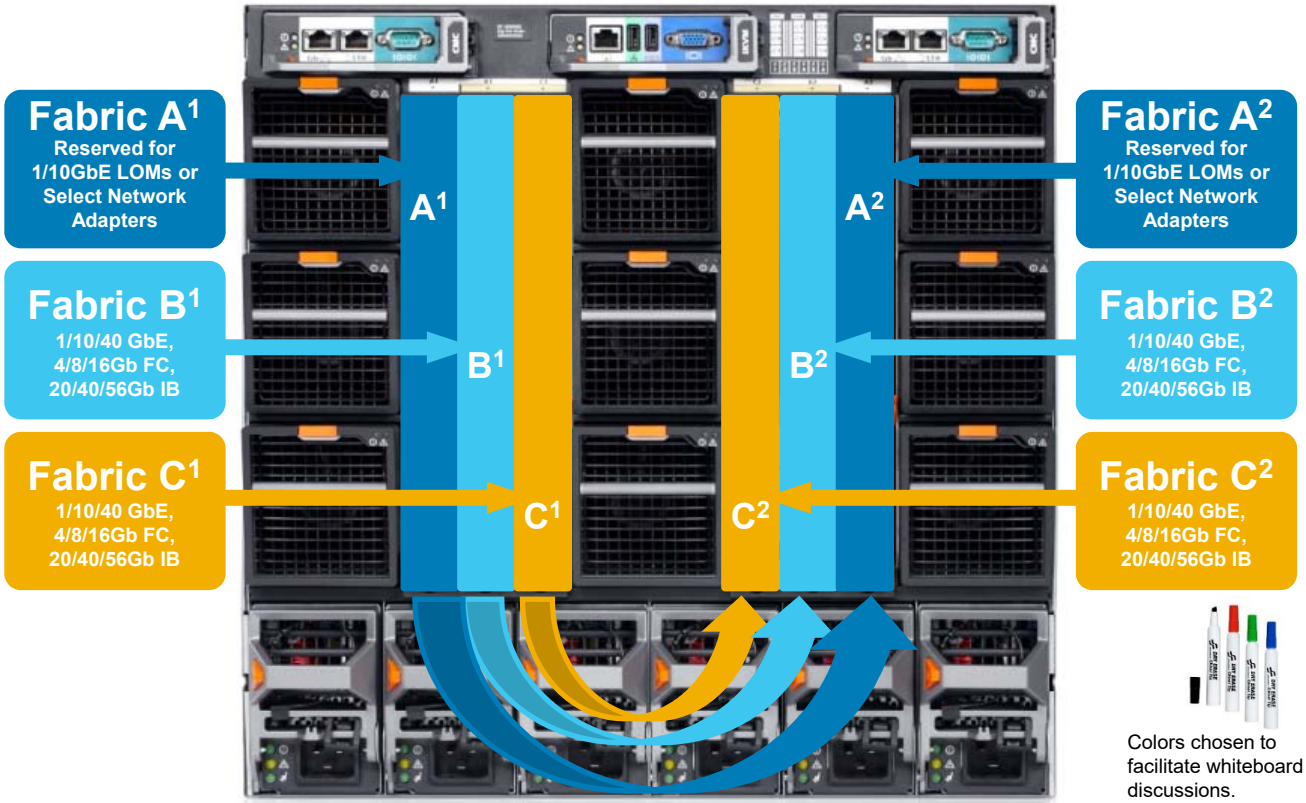
Benefits of Simple Switch Mode?

- Ease of deployment/management for in-chassis blade switches
- Ease of integration of PowerConnect blade switches with 3rd party networking H/W (Cisco, etc.)
- Provide cable aggregation benefit offered by integrated blade switches
- Reduce involvement of network admin in blade deployments by eliminating the need to understand STP (Spanning Tree Protocol), VLANs (Virtual Local Area Networks), & LACP (Link Aggregation Control Protocol) groups

For an overview demo of Simple Switch mode, visit:
http://www.delltechcenter.com/page/PowerEdge+Blade+Demos (English only)

Fabrics and Port Mapping

PowerEdge M1000e Chassis Fabrics and Capabilities



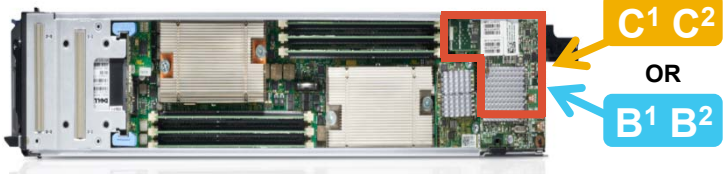
Colors chosen to facilitate whiteboard discussions.

The capabilities of the enhanced midplane (1.1) are shown above

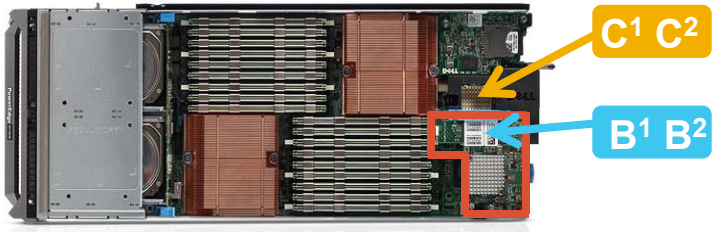
DELL EMC

M-Series Blade I/O Fabrics

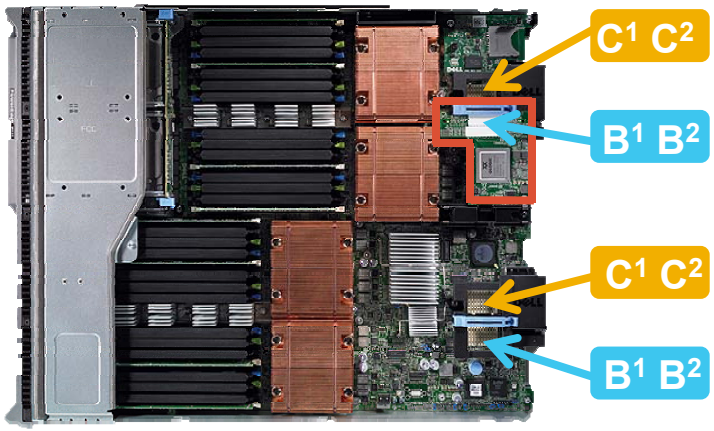
Quarter Height



Half Height



Full Height



Quarter Height Blades

One dual port LOM

- IOM with 32 internal ports (M6348 or Dell Force10 MXL) is needed to connect all LOM ports on all blades
- 2 x 32 port IOMs needed to connect the 2 LOM ports on each blade

One fabric B OR fabric C mezzanine card

Half Height Blades

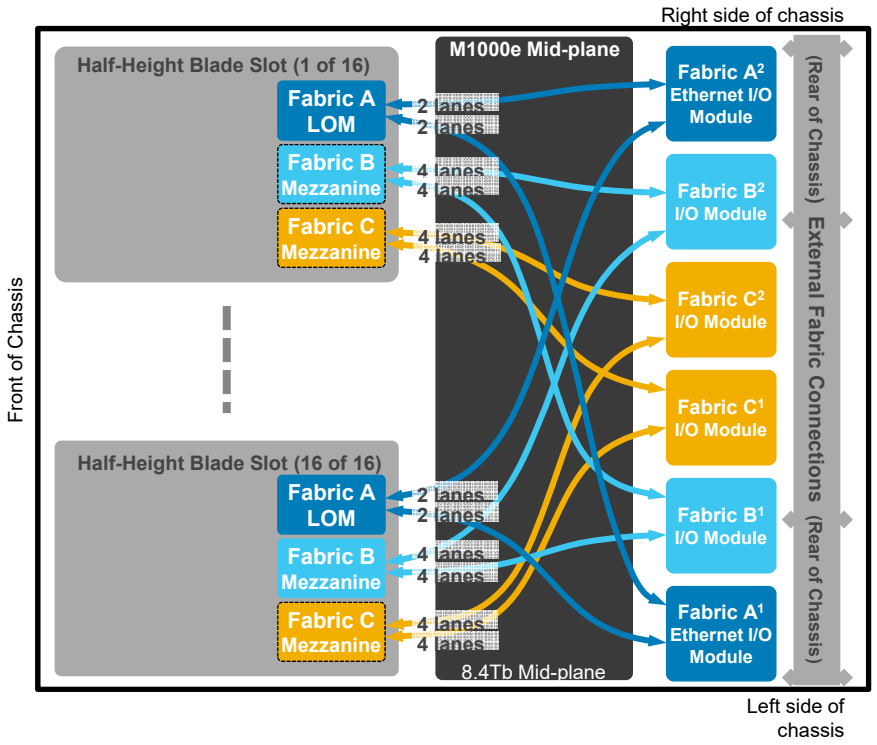
One Select Network Adapter or LOM
One fabric B mezzanine card
One fabric C mezzanine card

Full Height Blades

Two Select Network Adapters or LOMs
Two fabric B mezzanine cards
Two fabric C mezzanine cards

DELL EMC

M1000e Midplane Mapping and Capabilities



Fabric A Capabilities:

- Up to 2 lanes to each IOM
- 1Gb or 10Gb Ethernet per each lane

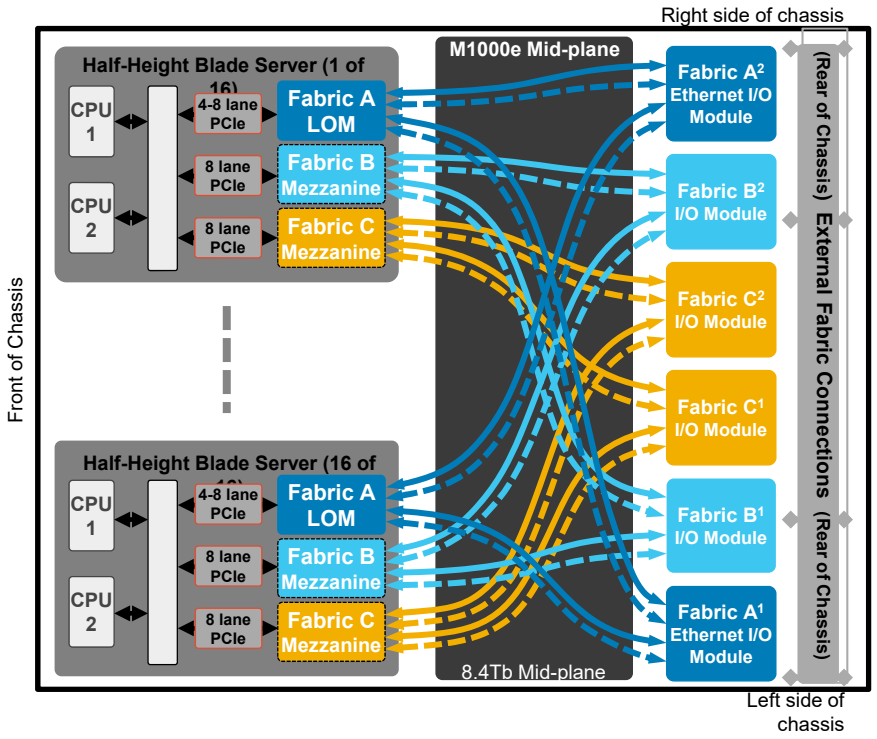
Fabric B & C Capabilities:

- Up to 4 lanes to each IOM
- 1Gb or 10Gb Ethernet per each lane or 40Gb Ethernet using all 4 lanes
- 4Gb, 8Gb, or 16Gb Fibre Channel over 1 lane to each IOM
- 40Gb QDR, 40Gb FDR10, or 56Gb FDR InfiniBand using all 4 lanes. 20Gb DDR InfiniBand using 2 lanes.

A lane represents a single link between an adapter and an IOM. Each port will utilize 1, 2 or 4 lanes depending on the communication protocol.

DELL EMC

I/O Fabric Architecture for Half-Height Blades



Fabric A:

- Ethernet only
- Dual port and Quad port 1Gb or 10Gb Ethernet adapters

Fabric B & C:

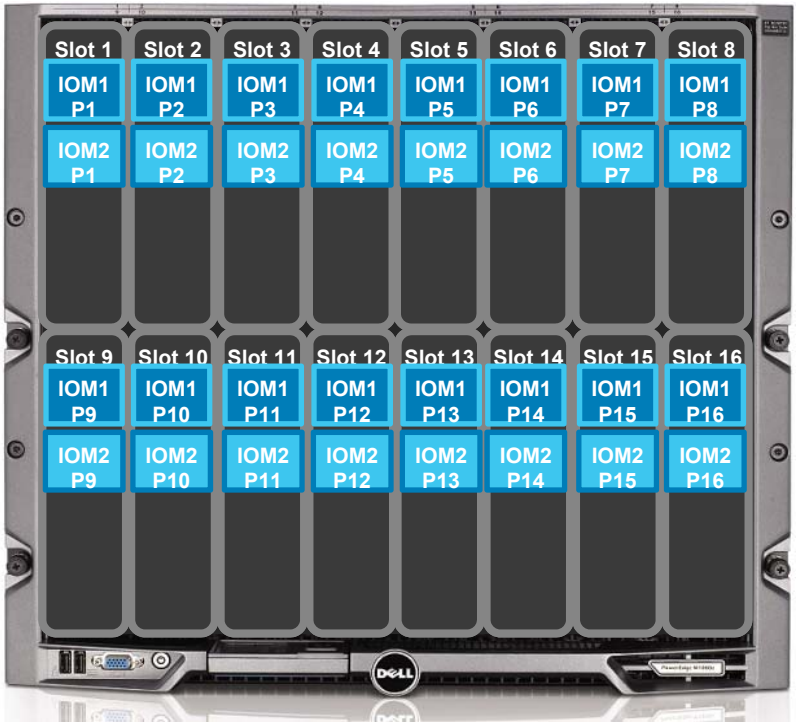
- Ethernet, Fibre Channel, &/or InfiniBand mezzanine cards
- Dual port 1Gb and 10Gb Ethernet mezzanine cards
- Quad port 1Gb Ethernet mezz. and capable of quad port 10Gb Ethernet mezzanine
- Dual port Fibre Channel mezz.
- Dual port InfiniBand mezzanine

Link between a dual port adapter and switch of same fabric type

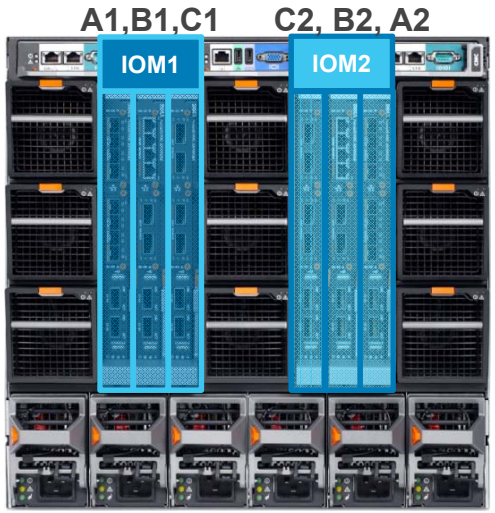
Additional link provided by quad-port adapter cards and an IOM with 32 internal ports

Port Mapping of Half Height blades with **Dual Port Adapters** to IOMs with 16 or 32 Internal Ports

IOM ports mapped to half height blade slots



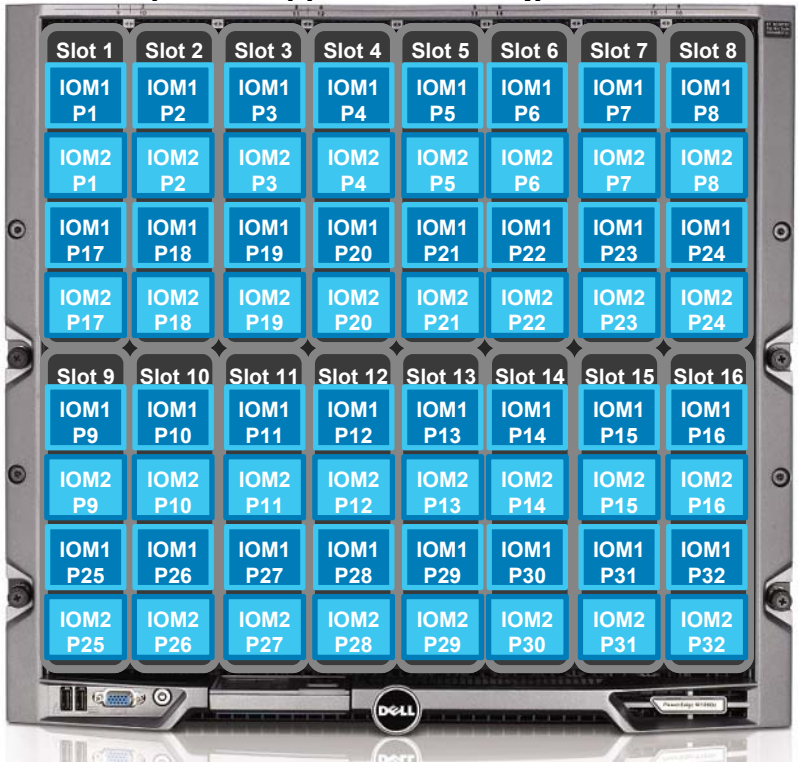
- All six IOMs have the same port mapping for half height blades
- IOMs with 32 internal ports will only connect with 16 internal ports when using dual port adapters



DELL EMC

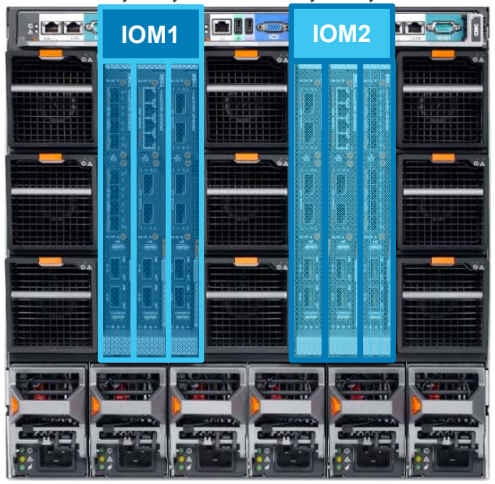
Port Mapping of Half Height blades with **Quad Port Adapters** to IOMs with 32 Internal Ports

IOM ports mapped to half height blade slots



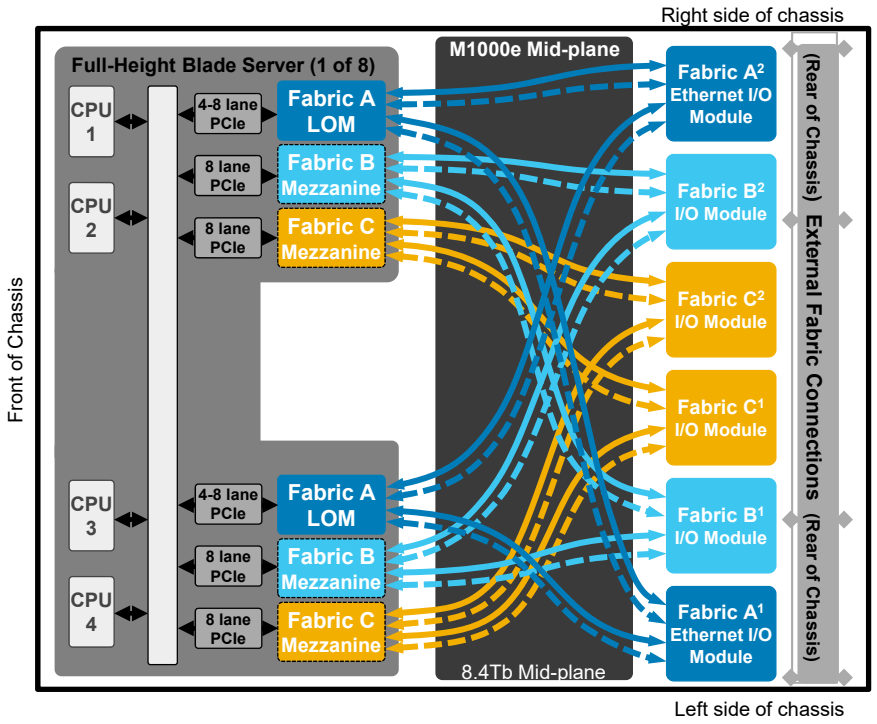
- All six IOMs have the same port mapping for half height blades
- An IOM with 32 internal ports is required to connect to all quad port adapters

A1,B1,C1 **C2, B2, A2**



DELL EMC

I/O Fabric Architecture for Full-Height Blades



Fabric A:

- Ethernet only
- Dual port and Quad port 1Gb or 10Gb Ethernet adapters

Fabric B & C:

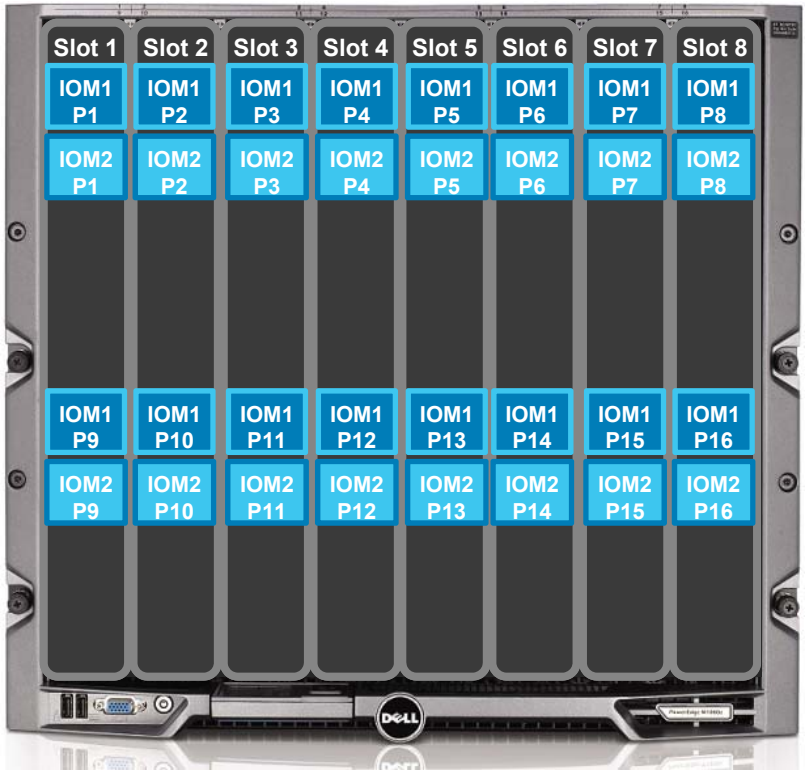
- Ethernet, Fibre Channel, &/or InfiniBand mezzanine cards
- Dual port 1Gb and 10Gb Ethernet mezzanine cards
- Quad port 1Gb Ethernet mezz. and capable of quad port 10Gb Ethernet mezzanine
- Dual port Fibre Channel mezz.
- Dual port InfiniBand mezzanine

Link between a dual port adapter and switch of same fabric type

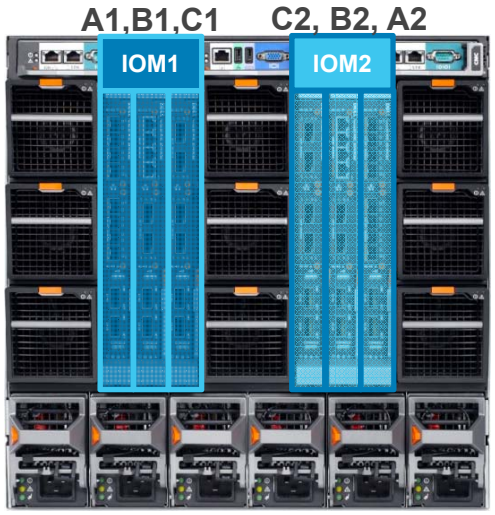
Additional link provided by quad-port adapter cards and an IOM with 32 internal ports

Port Mapping of Full Height blades with **Dual Port Adapters** to IOMs with 16 or 32 Internal Ports

IOM ports mapped to full height blade slots



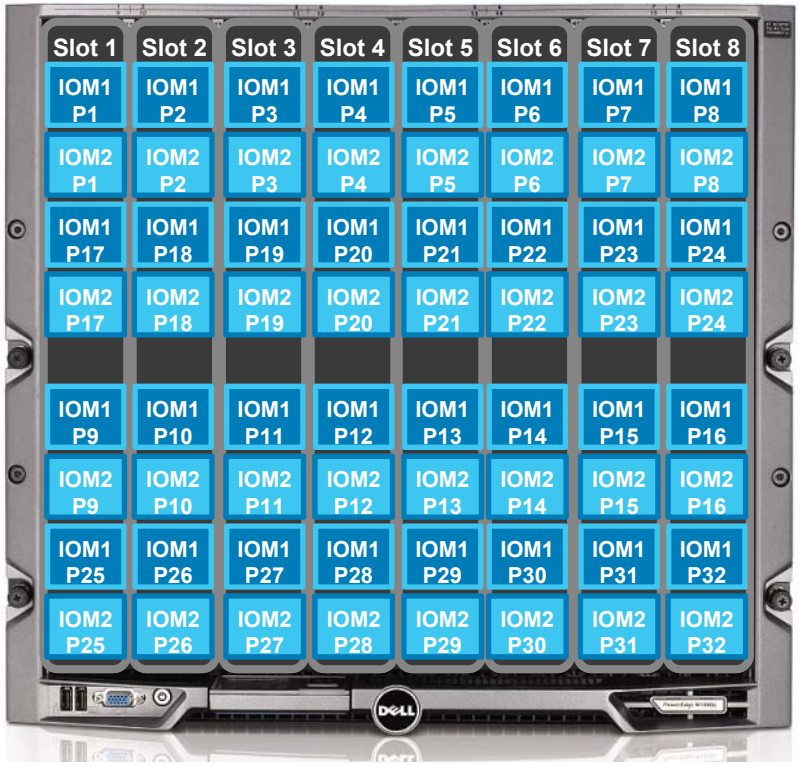
- All six IOMs have the same port mapping for half height blades



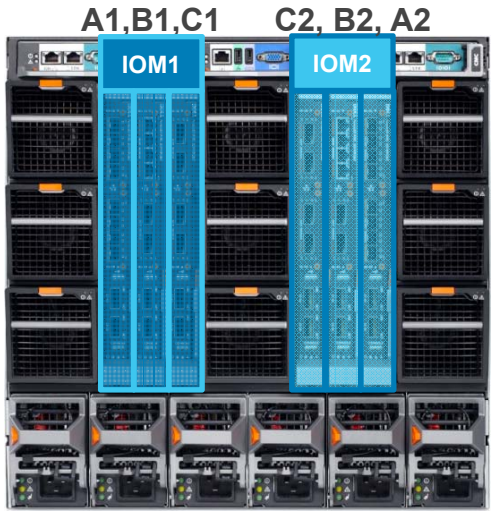
DELL EMC

Port Mapping of Full Height blades with **Quad Port Adapters** to IOMs with 32 Internal Ports

IOM ports mapped to full height blade slots

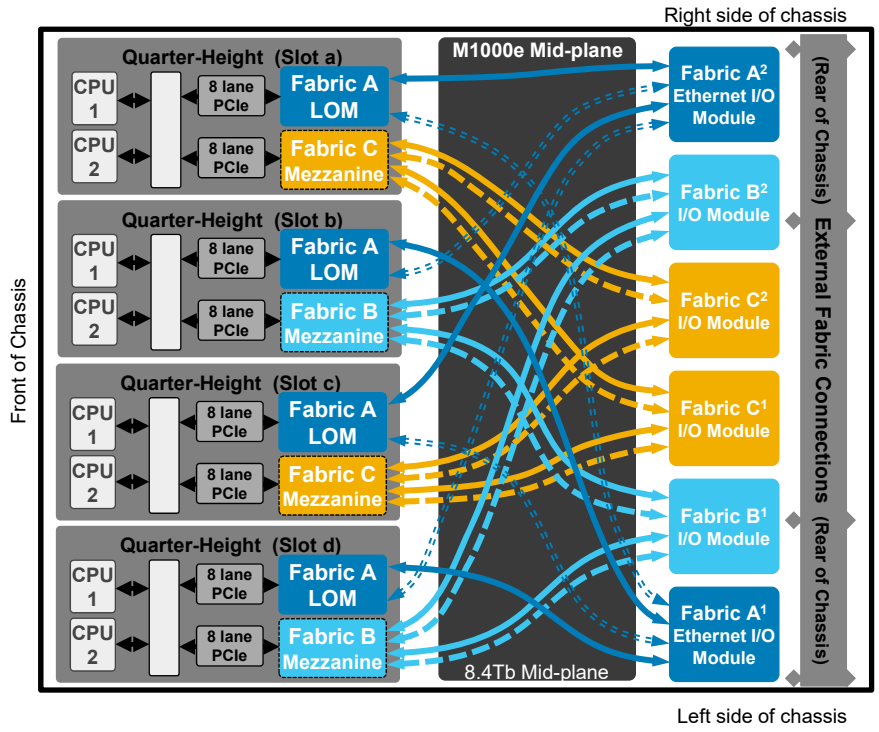


- All six IOMs have the same port mapping for half height blades
- An IOM with 32 internal ports is required to connect to all quad port adapters



DELL EMC

I/O Fabric Architecture for Quarter-Height Blades



Fabric A:

- Dual port 10Gb Ethernet LOM
- Connectivity for both LOM ports requires IOMs with 32 internal ports
- Two IOMs with only 16 internal ports will only provide a connected to a single LOM port on each blade

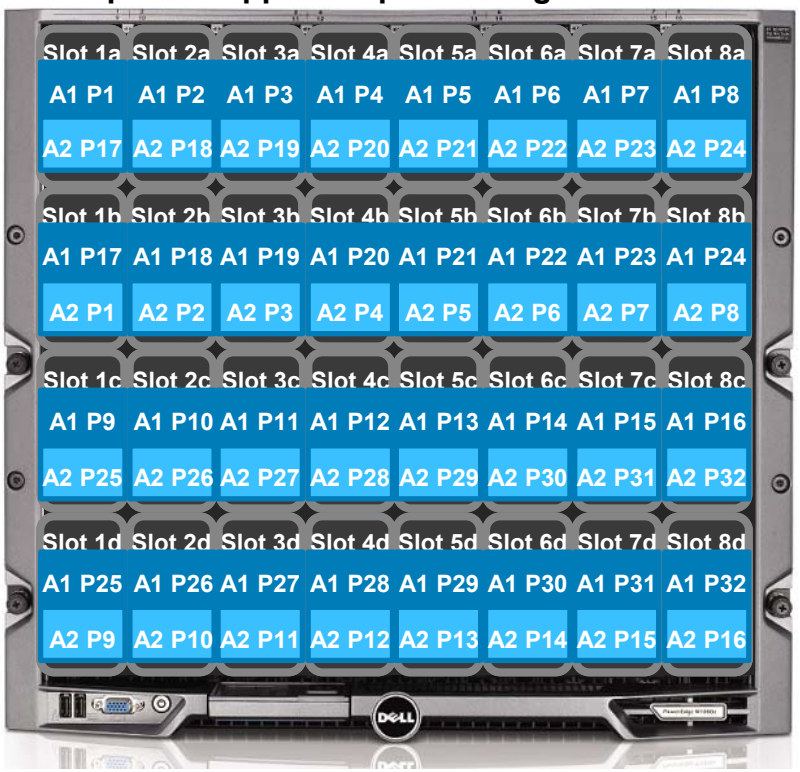
Fabric B & C:

- Ethernet, Fibre Channel, &/or InfiniBand mezzanine cards
- Each quarter height blade only has one mezzanine card

▬	Link between a dual port adapter and switch of same fabric type
▬▪▬▪	Additional link provided by quad-port adapter cards and an IOM with 32 internal ports
▪▪▪▪	Redundant LOM link that requires an IOM with 32 internal ports. There will be no connection on this link with IOMs with only 16 ports

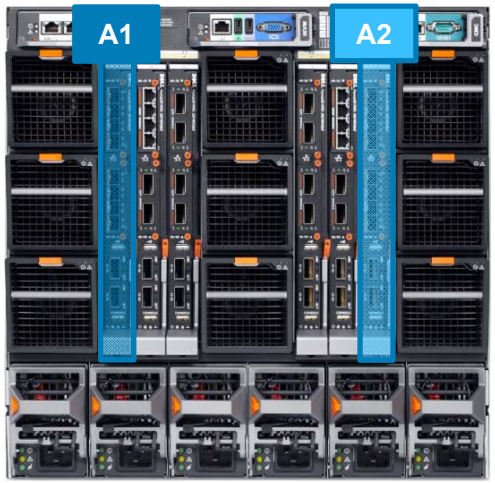
Port Mapping of Quarter Height blades to two IOMs with 32 Internal Ports on Fabric A: Full LOM Port Redundancy

IOM ports mapped to quarter height blade slots



- On fabric A, two IOMs with 32 internal ports provide connectivity to two ports of the LOM on each quarter height blade.
- Full LOM port redundancy

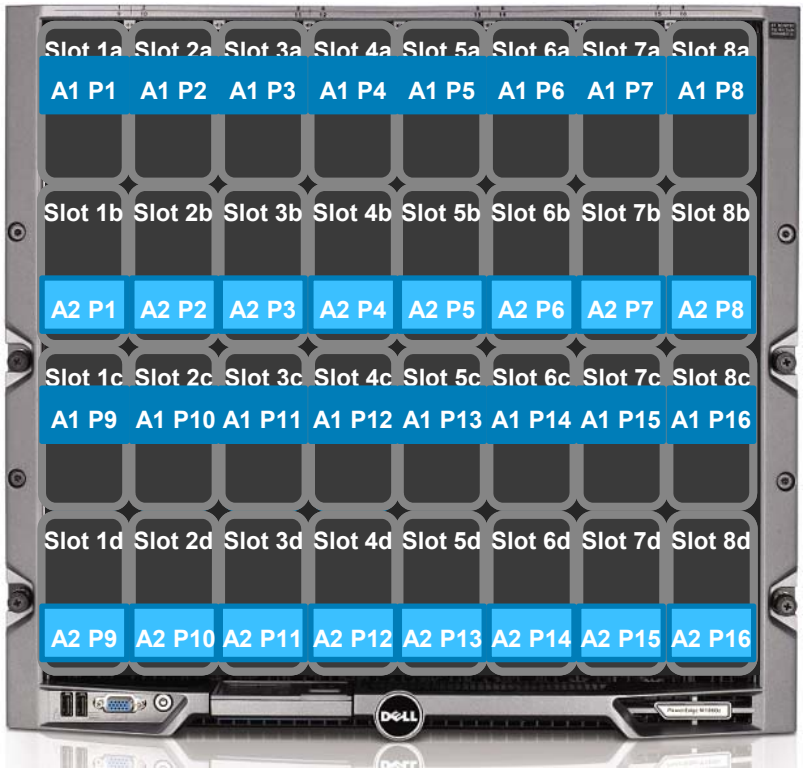
IOM A1 and A2



DELL EMC

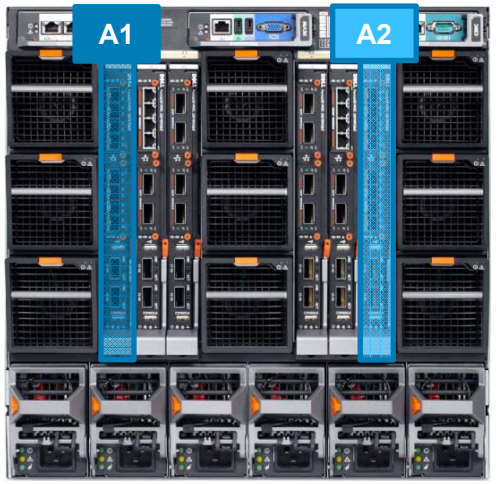
Port Mapping of Quarter Height blades to two IOMs with 16 Internal Ports on Fabric A: No LOM Port Redundancy

IOM ports mapped to quarter height blade slots



- On fabric A, two IOMs with 16 internal ports provide connectivity to one port of the LOM on each quarter height blade.
- Connectivity but not redundancy (only 1 LOM port per blade is connected)

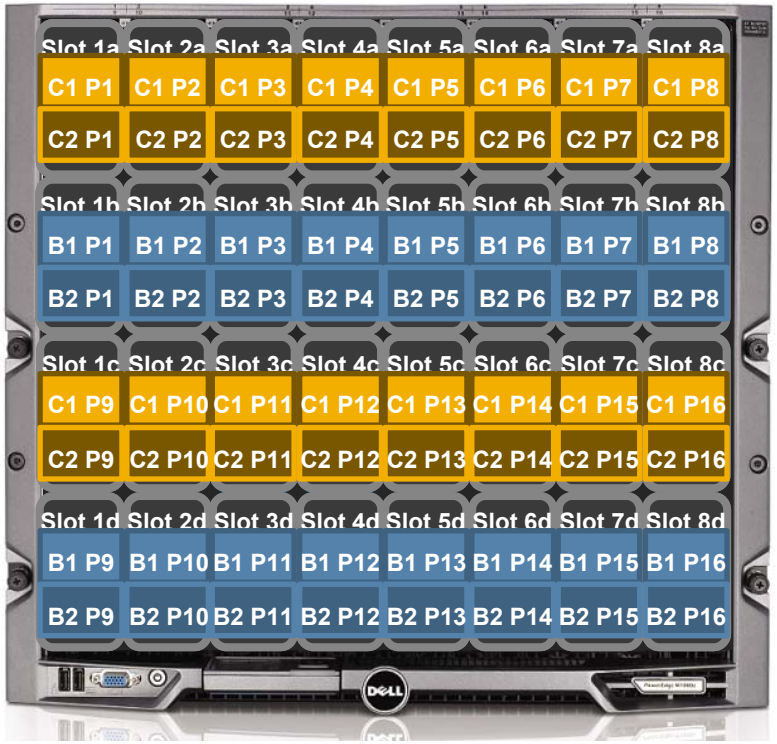
IOM A1 and A2



DELL EMC

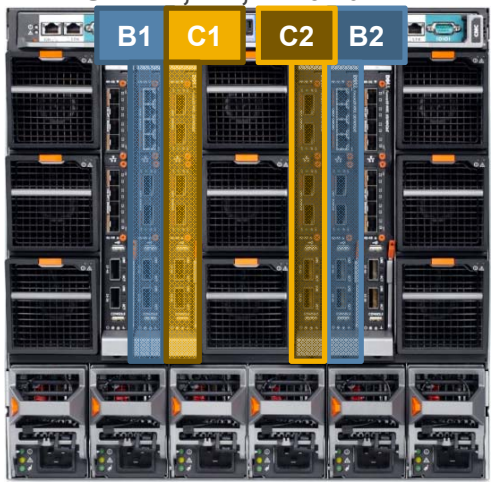
Port Mapping of Quarter Height blades to four IOMs on Fabric B & C: Full Mezz Card Redundancy

IOM ports mapped to quarter height blade slots



- On fabric A, two IOMs with 32 internal ports provide connectivity to two ports of the LOM on each quarter height blade.
- Full LOM port redundancy

IOM B1, B2, C1 and C2



DELL EMC

Dell PowerEdge M1000e I/O Interoperability Guide

DELL EMC

PowerEdge M1000e 1Gb Ethernet I/O Interoperability

1Gb Ethernet I/O Modules							
		1GbE Pass-Through	M6348	M6220	Cisco 3032 (EOL)	Cisco 3130G (EOL)	Cisco 3130X (EOL)
Adapters	Broadcom 5708 Mezz	✓	✓	✓	✓	✓	✓
	Broadcom 5709 LOM/Mezz	✓	✓	✓	✓	✓	✓
	Broadcom 5709 4-port NDC/Mezz	✓	✓	✓	✓	✓	✓
	Intel ET 4-port Mezz	✓	✓	✓	✓	✓	✓
	1Gb Intel I350 4-port NDC/Mezz	✓	✓	✓	✓	✓	✓
	Broadcom 5719 4-port Mezz	✓	✓	✓	✓	✓	✓
	Broadcom 5720 4-port LOM/NDC	✓	✓	✓	✓	✓	✓

PowerEdge M1000e 10Gb Ethernet I/O Interoperability

		10Gb Ethernet I/O Modules								
		MXL	PowerEdge M I/O Aggregator	M8024-k	M8024 (EOL)	M8428-k (EOL)	10Gb Pass-Through (Original Model/ EOL)	10Gb Pass-Through II (EOL)	10Gb Pass-Through-k	Cisco B22DELL
NDC Adapters	Broadcom 57712-k NDC	✓	✓	✓	Not Compatible	✓	Not Compatible	Not Compatible	✓*	✓
	Broadcom 57810-k NDC	✓	✓	✓	Not Compatible	✓	N/A	N/A	✓*	✓
	Cavium QLogic 57840S-k NDC	✓	✓	✓	Not Compatible	✓	N/A	N/A	✓*	✓
	Emulex OCm14102-U2-D NDC (12G only) Emulex OCm14102-N6-D NDC (13G only) Emulex OCm14102B-N6-D NDC (13G only) Emulex OCm14102-U4-D NDC (13G only) Emulex OCm14102B-U4-D NDC (13G only)	✓	✓	✓	Not Compatible	✓	Not Compatible	✓	✓	✓
	Intel X520-k NDC	✓	✓	✓	Not Compatible	✓	N/A	N/A	✓*	✓
	Intel X710-k NDC	✓	✓	✓	Not Compatible	✓	N/A	N/A	✓*	✓
	QLogic QMD8272-k NDC	✓	✓	✓	Not Compatible	✓	N/A	N/A	✓*	✓

10GbE on fabric 'A' with original mid-plane (1.0) will shift down to 1Gb. Fabrics B and C will remain 10Gb with original mid-plane (1.0).

N/A This combination is not possible

Not Compatible This combination will not link

✓* In fabric 'A' with original mid-plane (1.0), this combination will not link

PowerEdge M1000e 10Gb Ethernet I/O Interoperability

	10Gb Ethernet I/O Modules								
		MXL	PowerEdge M I/O Aggregator	M8024-k	M8024 (EOL)	M8428-k (EOL)	10Gb Pass-Through (Original Model/EOL)	10Gb Pass-Through II (EOL)	10Gb Pass-Through-k	Cisco B22DELL
Mezzanine Cards	Broadcom 57710 Mezz Broadcom 57711 Mezz	Not Compatible	Not Compatible	Not Compatible	✓	Not Compatible	✓	✓	Not Compatible	Not Compatible
	Brocade BR1716M-k Mezz	✓*	✓*	✓*	✓*	✓*	Not Compatible	Not Compatible	✓*	✓*
	Cavium QLogic 57810S-k Mezz	✓	✓	✓	Not Compatible	✓	N/A	N/A	✓*	✓
	Emulex OCm14102-U3-D Mezz (12G only) Emulex OCm14102-N5-D Mezz (13G only) Emulex OCm14102B-N5-D Mezz (13G only) Emulex OCm14102-U5-D Mezz (13G only) Emulex OCm14102B-U5-D Mezz (13G only)	✓	✓	✓	Not Compatible	✓	Not Compatible	✓	✓	✓
	Emulex OC10102-f-m Mezz Intel X520 Mezz	Not Compatible	Not Compatible	Not Compatible	✓	Not Compatible	✓	✓	Not Compatible	Not Compatible
	Intel X520-x/k Mezz	✓	✓	✓	✓	✓	✓	✓	✓*	✓*
	Mellanox ConnectX-3 DP 10Gb KR Mezz Mellanox ConnectX-3 Pro DP 10Gb KR Mezz	✓	✓	✓	✓	✓	✓	✓	✓*	✓
	QLogic QME8142 Mezz	Not Compatible	Not Compatible	Not Compatible	✓	Not Compatible	✓	✓	Not Compatible	Not Compatible
	QLogic QME8242-k Mezz	✓*	✓*	✓*	✓*	✓*	Not Compatible	Not Compatible	✓*	✓*
	QLogic QME8262-k Mezz	✓*	✓*	✓*	Not Compatible	✓*	N/A	N/A	✓*	✓*

10GbE on fabric 'A' with original mid-plane (1.0) will shift down to 1Gb. Fabrics B and C will remain 10Gb with original mid-plane (1.0).

N/A This combination is not possible

Not Compatible This combination will not link

✓* In fabric 'A' with original mid-plane (1.0), this combination will not link

DELL EMC

PowerEdge M1000e InfiniBand I/O Interoperability

		InfiniBand I/O Modules				
		M2401G Mellanox DDR (EOL)	M3601Q Mellanox QDR (EOL)	M4001Q Mellanox QDR (EOL)	M4001T Mellanox FDR10	M4001F Mellanox FDR
Mezzanine Cards	Mellanox DDR ConnectX	✓ DDR	✓ DDR	Not Supported	Not Supported	Not Supported
	Mellanox QDR ConnectX-2	✓ DDR	✓ QDR	✓ QDR	✓ QDR	✓ QDR
	Mellanox QDR ConnectX-3	Not Supported	✓ QDR	✓ QDR	✓ QDR*	✓ QDR
	Mellanox FDR10 ConnectX-3	Not Supported	✓ QDR	✓ QDR	✓ FDR10	✓ FDR10
	Mellanox FDR ConnectX-3	Not Supported	✓ QDR	✓ QDR	✓ FDR10	✓ FDR**

✓ **QDR***: Requires switch firmware version “fw-sx_0JP9G6_9_1_6562” and adapter version “fw-ConnectX3-rel_0J05YT_B1_2_11_0550_Flexboot-3_4_000.bin”.
Customers with this combination can call Dell Support if they would like it to function on the M420, M820

✓ **FDR****: Not supported with original mid-plane (1.0)

PowerEdge Blade Servers and InfiniBand Adapters

		InfiniBand Mezzanine Cards				
		Mellanox DDR ConnectX	Mellanox QDR ConnectX-2	Mellanox QDR ConnectX-3	Mellanox FDR10 ConnectX-3	Mellanox FDR ConnectX-3
Blade Servers	M420	Not Supported	Not Supported	✓	✓	Not Supported
	M520	Not Supported	Not Supported	✓	✓	Not Supported
	M620	Not Supported	Not Supported	✓	✓	✓
	M630	Not Supported	Not Supported	Not Supported	✓	✓
	M640	Not Supported	Not Supported	Not Supported	Not Supported	✓
	M820	Not Supported	Not Supported	✓	✓	Not Supported
	M830	Not Supported	Not Supported	Not Supported	✓	Not Supported
	M910	✓	✓	✓	✓	Not Supported
	M915	✓	✓	✓	✓	Not Supported

PowerEdge M1000e Fibre Channel I/O Interoperability

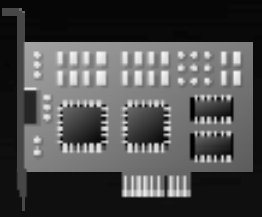
Fibre Channel I/O Modules							
		FC4 Passthrough (EOL)	M4424 Brocade FC4 (EOL)	FC8 Passthrough	Dell 8/4Gbps FC SAN Module (EOL)	M5424 Brocade FC8	M6505 Brocade FC16*
Mezzanine Cards	Emulex FC4	✓ FC4	✓ FC4	✓ FC4	✓ FC4	✓ FC4	Not Compatible
	QLogic FC4	✓ FC4	✓ FC4	✓ FC4	✓ FC4	✓ FC4	Not Compatible
	Emulex LPe1205-M FC8	✓ FC4	✓ FC4	✓ FC8	✓ FC8	✓ FC8	✓ FC8
	Emulex LPm15002B-D FC8	Not Compatible	Not Compatible	Not Compatible	Not Compatible	✓ FC8	✓ FC8
	QLogic QME2572 FC8	✓ FC4	✓ FC4	✓ FC8	✓ FC8	✓ FC8	✓ FC8
	Emulex LPm16002B-D FC16	Not Compatible	Not Compatible	Not Compatible	✓ FC8	✓ FC8	✓ FC16*
	QLogic QME2662 FC16	Not Compatible	Not Compatible	Not Compatible	✓ FC8	✓ FC8	✓ FC16*

* The M6505 requires the enhanced midplane (1.1) for the M1000e chassis. The switch will not function with the original midplane (1.0)

PowerEdge Blade Servers and Fibre Channel Adapters

Fibre Channel Mezzanine Cards						
		Emulex LPe1205-M FC8	QLogic QME2572 FC8	Emulex LPm15002B-D FC8	Emulex LPm16002B-D FC16	QLogic QME2662 FC16
Blade Servers	M420	✓	✓	✓	Not Supported	Not Supported
	M520	✓	✓	✓	Not Supported	Not Supported
	M620	✓	✓	✓	✓	✓
	M630	✓	✓	✓	✓	✓
	M640	✓	✓	Not Supported	✓	✓
	M820	✓	✓	✓	✓	✓
	M830	✓	✓	✓	✓	✓
	M910	✓	✓	Not Supported	✓	✓
	M915	✓	✓	Not Supported	✓	✓

Server Adapter Portfolio



Includes: Server Adapter products, features, compatibility and software support matrix

DELL EMC

11G/12G/13G/14G M1000e Server Adapter Portfolio

Ethernet, Fibre Channel, and InfiniBand

10Gb Ethernet

Emulex OCm14102-N5-D Mezz
Emulex OCm14102B-N5-D Mezz
Emulex OCm14102-N6-D NDC
Emulex OCm14102B-N6-D NDC
Intel X710 NDC
Intel X520-k 2P NDC
Intel X520-k 2P Mezz
Mellanox ConnectX-3 Mezz
Mellanox ConnectX-3 Pro Mezz

Fibre Channel

Emulex LPe1205-M FC8
Emulex LPm15002B-D FC8
Emulex LPm16002B-D FC16
QLogic QME2572 FC8
QLogic QME2662 FC16

10Gb Converged Ethernet

Brocade BR1741M-k Mezz
Cavium QLogic 57810S-k 2P NDC
Cavium QLogic 57810S-k 2P LOM
Cavium QLogic 57810S-k 2P Mezz
Cavium QLogic 57840S-k 4P NDC
Emulex OCm14102-U2-D NDC
Emulex OCm14102-U3-D Mezz
Emulex OCm14102-U4-D NDC
Emulex OCm14102B-U4-D NDC
Emulex OCm14102-U5-D Mezz
Emulex OCm14102B-U5-D Mezz
QLogic QMD8262-k KR NDC
QLogic QME8262-k KR Mezz

1Gb Ethernet

Broadcom 5720 4P LOM
Broadcom 5719 4P Mezz
Intel I350 4P NDC
Intel I350 4P Mezz

QDR/FDR InfiniBand

Mellanox ConnectX-3 FDR10 Mezz
Mellanox ConnectX-3 FDR Mezz

10Gb Select Network Adapters (NDC) for blade servers

Intel and QLogic

Features	Intel X520-k NDC	Intel X710-k NDC	Cavium QLogic 57810S-k NDC	Cavium QLogic 57840S-k NDC	QLogic QMD8262-k NDC
Ports x Link speed	2x10Gb	2x10Gb or 4x10Gb	2x10Gb	4x10Gb	2x10Gb
Supported speed	1Gb, 10Gb	10Gb	1Gb, 10Gb	1Gb, 10Gb	10Gb
Chipset	X520/82599	X710	57810S	57810S	P3+
Interface	KR	KR	KR	KR	KR
iSCSI HBA	No	No	Yes	Yes	Yes
iSCSI Boot	Yes	Yes	Yes	Yes	Yes
FCoE	Yes	No	Yes	Yes	Yes
FCoE Boot	Yes	No	Yes	Yes	Yes
Switch independent NIC partitioning	No	Yes 8 or 16 per device	Yes 4 per 10Gb port	Yes 2 per 10Gb port	Yes
DCB	Yes	Yes	Yes	Yes	Yes
SR-IOV	Yes[1]	Yes[1]	Yes	No	Yes
WOL	Yes	Yes	Yes	Yes	Yes
PXE	Yes	Yes	Yes	Yes	Yes
EEE	No	No	No	No	No
Multi-queue[2] (per port)	64 TX, 64 RX	128 TX, 128 RX	128 TX, 128 RX	128 TX, 128 RX	64 TX, 64 RX
Supported servers	M620, M820 M630, M830, M640	M630, M830, M640	M620, M820 M630, M830, M640	M620, M820 M630, M830	M620, M820
Strengths	Preference for Intel Ethernet solutions Software iSCSI and FCoE	Preference for Intel Ethernet solutions Software iSCSI and FCoE	Continuity from older server designs Convergence features FCoE, iSCSI HBA, and NPAR	High port count Convergence features FCoE, iSCSI HBA, and NPAR	Trusted storage driver stack Convergence features FCoE, iSCSI HBA, and NPAR

[1]Citrix XenServer 6.0 and Linux KVM only. 63 VFs per port.
[2]Number of queues will vary depending on hypervisor memory limitations.

10Gb Select Network Adapters (NDC) for blade servers

Emulex

Features	Emulex OCm14102-U2-D NDC	Emulex OCm14102-U4-D NDC	Emulex OCm14102B-U4-D NDC	Emulex OCm14102-N6-D NDC	Emulex OCm14102B-N6-D NDC
Ports x Link speed	2x10Gb	2x10Gb	2x10Gb	2x10Gb	2x10Gb
Supported speed	10Gb	10Gb	10Gb	10Gb	10Gb
Chipset	Skyhawk	Skyhawk	Skyhawk	Skyhawk	Skyhawk
Interface	KR	KR	KR	KR	KR
iSCSI HBA	Yes	Yes	Yes	No	No
iSCSI Boot	Yes	Yes	Yes	Yes	Yes
FCoE	Yes	Yes	Yes	No	No
FCoE Boot	Yes	Yes	Yes	No	No
Switch independent NIC partitioning	Yes 4 per 10Gb port	Yes 8 per 10Gb port	Yes 8 per 10Gb port	Yes 8 per 10Gb port	Yes 8 per 10Gb port
DCB	Yes	Yes	Yes	Yes	Yes
SR-IOV	Yes	Yes	Yes	Yes	Yes
WOL	Yes	Yes	Yes	Yes	Yes
PXE	Yes	Yes	Yes	Yes	Yes
EEE	No	No	No	No	No
Multi-queue[1] (per port)	128 TX, 128 RX	128 TX, 128 RX	128 TX, 128 RX	128 TX, 128 RX	128 TX, 128 RX
Supported servers	M620, M820	M630, M830	M630, M830	M630, M830	M630, M830
Strengths	Convergence features FCoE, iSCSI HBA, and NPAR	NPAR EP, RoCE support Convergence features FCoE, iSCSI HBA, and NPAR	NPAR EP, RoCEv2 support Convergence features FCoE, iSCSI HBA, and NPAR	NPAR EP, RoCE support 10Gb NIC Only	NPAR EP, RoCEv2 support 10Gb NIC Only

[1]Number of queues will vary depending on hypervisor memory limitations.

10Gb mezzanine cards for blade servers

Intel / Mellanox / QLogic

Features	Intel X520-x/k	Mellanox ConnectX-3-k	Mellanox ConnectX-3 Pro-k	Cavium QLogic 57810S-k
Ports x Link speed	2x10Gb	2x10Gb	2x10Gb	2x10Gb
Supported speed	10Gb	10Gb	10Gb	10Gb
Chipset	X520	ConnectX-3	ConnectX-3	57810S
Interface	XAUI/KR	KR	KR	KR
iSCSI HBA	No	No	No	Yes
iSCSI Boot	Yes	Yes	Yes	Yes
FCoE	Yes	No	No	Yes
FCoE Boot	Yes	No	No	Yes
Switch independent NIC partitioning	No	No	No	Yes 4 per 10Gb port
DCB	Yes	No	No	Yes
SR-IOV	Yes[1]	Yes	Yes	Yes
WOL	Yes	Yes	Yes	Yes
PXE	Yes	Yes	Yes	Yes
EEE	No	No	No	No
RoCE	No	Yes	Yes, RoCEv2	No
Multi-queue[2] (per port)	64 TX, 64 RX	128 TX, 128 RX	128 TX, 128 RX	128 TX, 128 RX
Supported servers	M420, M520 M620, M820 M910, M915 M630, M830, M640	M420, M520 M620, M820 M630, M830	M630, M830 M640	M420, M520 M620, M820 M630, M830 M640

[1]Citrix XenServer 6.0 and Linux KVM only. 63 VFs per port.
[2]Number of queues will vary depending on hypervisor memory limitations.

10Gb mezzanine cards for blade servers

Emulex

Features	Emulex OCm14102-U3-D	Emulex OCm14102-U5-D	Emulex OCm14102B-U5-D	Emulex OCm14102-N5-D	Emulex OCm14102B-N5-D
Ports x Link speed	2x10Gb	2x10Gb	2x10Gb	2x10Gb	2x10Gb
Supported speed	10Gb	10Gb	10Gb	10Gb	10Gb
Chipset	Skyhawk	Skyhawk	Skyhawk	Skyhawk	Skyhawk
Interface	KR	KR	KR	KR	KR
iSCSI HBA	Yes	Yes	Yes	No	No
iSCSI Boot	Yes	Yes	Yes	Yes	Yes
FCoE	Yes	Yes	Yes	No	No
FCoE Boot	Yes	Yes	Yes	No	No
Switch independent NIC partitioning	Yes 4 per 10Gb port	Yes 8 per 10Gb port	Yes 8 per 10Gb port	Yes 8 per 10Gb port	Yes 8 per 10Gb port
DCB	Yes	Yes	Yes	Yes	Yes
SR-IOV	Yes	Yes	Yes	Yes	Yes
WOL	No	No	No	Yes	Yes
PXE	Yes	Yes	Yes	Yes	Yes
EEE	No	No	No	No	No
RoCE	Yes	Yes	Yes, RoCE v2	Yes	Yes, RoCE v2
Multi-queue[1] (per port)	128 TX, 128 RX	128 TX, 128 RX	128 TX, 128 RX	128 TX, 128 RX	128 TX, 128 RX
Supported servers	M420, M520 M620, M820	M630, M830	M630, M830	M630, M830	M630, M830

[1]Number of queues will vary depending on hypervisor memory limitations.

10Gb mezzanine cards for blade servers

End-of-Life Cards

Features	Brocade BR1741M-k (EOL)	Qlogic QME8262-k (EOL)
Ports x Link speed	2x10Gb	2x10Gb
Supported speed	1Gb, 10Gb	10Gb
Chipset	Catapult I	P3+
Interface	KR	KR
iSCSI HBA	No	Yes
iSCSI Boot	No	Yes
FCoE	Yes	Yes
FCoE Boot	Yes	Yes
Switch independent NIC partitioning	No	Yes
DCB	Yes	Yes
SR-IOV	No	No
WOL	No	Yes
PXE	Yes	Yes
EEE	No	No
RoCE	No	No
Multi-queue[1] (per port)	128 TX, 128 RX	128 TX, 128 RX
Supported servers	M420, M520 M620, M820 M910, M915	M420, M520 M620, M820 M910

[1]Number of queues will vary depending on hypervisor memory limitations.

1Gb and 10Gb LOMs for Blade Servers

Features	QLogic 57810S-k 2 port 10Gb LOM	Broadcom 5720 4 port 1Gb LOM
Ports x Link speed	2x10Gb	4x1Gb
Supported speed	1Gb, 10Gb	1Gb
Chipset	57810S	5720
Interface	KR	Serdes
iSCSI HBA	Yes	No
iSCSI Boot	Yes	Yes
FCoE	Yes	No
FCoE Boot	Yes	No
Switch independent NIC partitioning	Yes 4 per 10Gb port	No
DCB	Yes	No
SR-IOV	Yes	No
WOL	Yes	Yes
PXE	Yes	Yes
EEE	No	Yes
Multi-queue[1] (per port)	128 TX, 128 RX	8 TX, 8 RX
Supported servers	M420	M520

[1]Number of queues will vary depending on hypervisor memory limitations.

1Gb Select Network Adapters (NDC) for blade servers

Features	Intel I350 4 port 1Gb NDC	Broadcom 5720 4 port 1Gb NDC
Ports x Link speed	4x1Gb	4x1Gb
Supported speed	1Gb	1Gb
Chipset	I350	5720
Interface	Serdes	Serdes
iSCSI HBA	No	No
iSCSI Boot	Yes	Yes
FCoE	No	No
FCoE Boot	No	No
Switch independent NIC partitioning	No	No
DCB	No	No
SR-IOV	No	No
WOL	Yes	Yes
PXE	Yes	Yes
EEE	Yes	Yes
Multi-queue[1] (per port)	8 TX, 8 RX	8 TX, 8 RX
Supported servers	M630, M830 M640	M620, M820 M630, M830 M640

[1]Number of queues will vary depending on hypervisor memory limitations.

1Gb mezzanine cards for blade servers

Features	Intel I350 4 port mezz	Broadcom 5719 4 port mezz
Ports x Link speed	4x1Gb	4x1Gb
Supported speed	1Gb	1Gb
Chipset	I350	5719
Interface	Serdes	Serdes
iSCSI HBA	No	No
iSCSI Boot	Yes	Yes
FCoE	No	No
FCoE Boot	No	No
Switch independent NIC partitioning	No	No
DCB	No	No
SR-IOV	No	No
WOL	Yes	Yes
PXE	Yes	Yes
EEE	Yes	Yes
Multi-queue[1] (per port)	8 TX, 8 RX	8 TX, 8 RX
Supported servers	M420, M520 M620, M820 M630, M830 M640	M420, M520 M620, M820 M630, M830 M640

[1]Number of queues will vary depending on hypervisor memory limitations.

Fibre Channel mezzanine cards for blade servers

Features	QLogic QME2572 FC8	Emulex LPe1205-M FC8	Emulex LPm15002B-D FC8	QLogic QME2662 FC16	Emulex LPm16002B-D FC16
Ports x Link speed	2x8Gb	2x8Gb	2x8Gb	2x16Gb	2x16Gb
Supported speed	4Gb, 8Gb	4Gb, 8Gb	4Gb, 8Gb	8Gb, 16Gb	8Gb, 16Gb
Chipset	2500	LightPulse	Lancer G5	2600	Lancer G5
FC Boot	Yes	Yes	Yes	Yes	Yes
Supported servers	M420, M520 M620, M820 M630, M830 M640	M420, M520 M620, M820 M630, M830	M420, M520 M620, M820 M630, M830	M620, M820 M910, M915 M630, M830	M620, M820 M630, M830

InfiniBand mezzanine cards for blade servers

Features	Mellanox ConnectX-3 FDR10	Mellanox ConnectX-3 FDR
Ports x Link speed	2x40Gb	2x56Gb
Chipset	CX-3	CX-3
Supported Protocols	InfiniBand	InfiniBand
Supported servers	M420, M520 M620, M820 M630, M830	M620, M630 M640
Great for	Real time market data distribution	HFT, co-located investment banks, algorithmic trading, low latency applications

Select Network Adapters – 11G, 12G, 13G, 14G

Speed	Form Factor	11G	12G	13G	14G
1Gb	Blade NDC	Broadcom 5709 4P 1Gb Blade NDC (M710HD, M915 only)	Broadcom 5720 4P 1Gb	Broadcom 5720 4P 1Gb	Broadcom 5720 4P 1Gb
				Intel I350 4P 1Gb	Intel I350 4P 1Gb
10Gb	Blade NDC	Broadcom 57712-k 2P 10Gb KR NDC (M710HD, M915 only)	QLogic 57810S-k 2P 10Gb NDC	QLogic 57810S-k 2P 10Gb NDC	Cavium QLogic 57810S-k 2P 10Gb NDC
			QLogic 57840S-k 4P 10Gb NDC	QLogic 57840S-k 4P 10Gb NDC	
			Intel X520-k 2P 10Gb NDC	Intel X520-k 2P 10Gb NDC	Intel X520-k 2P 10Gb NDC
			QLogic QMD8262-k 2P 10Gb NDC	Intel X710-k 2P/4P 10Gb NDC	Intel X710-k 2P/4P 10Gb NDC
			Emulex OCm14102-U2-D 2P 10Gb NDC	Emulex OCm14102-U4-D 2P 10Gb NDC	
				Emulex OCm14102B-U4-D 2P 10Gb NDC	
				Emulex OCm14102-N6-D 2P 10Gb NDC	
				Emulex OCm14102B-N6-D 2P 10Gb NDC	

Ethernet Mezzanine Cards – 11G, 12G, 13G, 14G

Speed	Form Factor	11G	12G[1]	13G	14G
1Gb	Blade Mezz	Broadcom 5709 4P 1Gb Adapter Mezz	Broadcom 5719 4P 1Gb Adapter Mezz	Broadcom 5719 4P 1Gb Adapter Mezz	Broadcom 5719 4P 1Gb Adapter Mezz
		Intel ET 4P 1Gb Adapter Mezz	Intel I350 4P 1Gb Adapter Mezz	Intel I350 4P 1Gb Adapter Mezz	Intel I350 4P 1Gb Adapter Mezz
10Gb	Blade Mezz	QLogic 57711 2P 10Gb XAUI Mezz	QLogic 57810S-k 2P 10Gb Mezz	QLogic 57810S-k 2P 10Gb Mezz	Cavium QLogic 57810S-k 2P 10Gb Mezz
		QLogic QME8242-k 2P 10Gb Mezz	QLogic QME8262-k 2P 10Gb Mezz	Mellanox ConnectX-3-K 2P 10Gb Mezz	
		Brocade BR1741M-k 2P 10Gb Mezz	Brocade BR1741M-k 2P 10Gb Mezz	Mellanox ConnectX-3 Pro 2P 10Gb Mezz	Mellanox ConnectX-3 Pro 2P 10Gb Mezz
		Intel X520 x/k 2P 10Gb Mezz	Intel X520 x/k 2P 10Gb Mezz	Intel X520 x/k 2P 10Gb Mezz	Intel X520 x/k 2P 10Gb Mezz
		Emulex OCm10102-F-M 2P XAUI Mezz	Emulex OCm14102-U3-D 2P 10Gb Mezz	Emulex OCm14102-U5-D 2P 10Gb Mezz	
			Mellanox ConnectX-3-K 2P 10Gb Mezz	Emulex OCm14102B-U5-D 2P 10Gb Mezz	
				Emulex OCm14102-N5-D 2P 10Gb Mezz	
				Emulex OCm14102B-N5-D 2P 10Gb Mezz	

[1]No iSCSI offload support with 1Gb devices

Fibre Channel Mezzanine Cards – 11G, 12G, 13G, 14G

Speed	Form Factor	11G	12G, 13G	14G
8Gb	Blade Mezz	QLogic QME2572 2P FC8 HBA	QLogic QME2572 2P FC8 HBA	QLogic QME2572 2P FC8 HBA
		Emulex LPe1205-M 2P FC8 HBA	Emulex LPe1205-M 2P FC8 HBA	Emulex LPe1205-M 2P FC8 HBA
			Emulex LPm15002B-D 2P FC8 HBA (13G only)	
16Gb	Blade Mezz		QLogic QME2662 2P FC16 HBA	QLogic QME2662 2P FC16 HBA
			Emulex LPm16002B-D 2P FC16 HBA	Emulex LPm16002B-D 2P FC16 HBA

Systems Management
Network Device Support Matrix

Form Factor	Vendor/Chipset	Speed	LC configuration and update	Monitoring support
Blade NDC	Emulex OCm14102-U2-D	10GbE	Yes	Yes
	Emulex OCm14102-N6-D	10GbE	Yes	Yes
	Emulex OCm14102B-N6-D	10GbE	Yes	Yes
	Emulex OCm14102-U4-D	10GbE	Yes	Yes
	Emulex OCm14102B-U4-D	10GbE	Yes	Yes
	Intel X520-k	10GbE	Yes	Yes
	Intel X710-k	10GbE	Yes	Yes
	QLogic 57840S-k	10GbE	Yes	Yes
	QLogic QMD8262-k	10GbE	Yes	Yes
	QLogic 57810S-k	10GbE	Yes	Yes
Blade LOM	Broadcom 5720	1GbE	Yes	Yes
	QLogic 57810S-k	10GbE	Yes	Yes

Systems Management
Network Device Support Matrix

Form Factor	Vendor/Chipset	Speed	LC configuration and update	Monitoring support
Blade Mezz	Broadcom 5719 Serdes	1GbE	Yes	Yes
	Brocade BR1741M-k	10GbE	No	No
	Emulex OCm14102-U3-D	10GbE	Yes	Yes
	Emulex OCm14102-N5-D	10GbE	Yes	Yes
	Emulex OCm14102B-N5-D	10GbE	Yes	Yes
	Emulex OCm14102-U5-D	10GbE	Yes	Yes
	Emulex OCm14102B-U5-D	10GbE	Yes	Yes
	Emulex LPe1205-M	FC8	No	No
	Emulex LPm15002B-D	FC8	Yes	Yes
	Emulex LPm16002B-D	FC16	Yes	Yes
	Intel I350 Serdes	1GbE	Yes	Yes
	Intel X520 x/k	10GbE	Yes	Yes
	Mellanox ConnectX-3	10GbE	Yes	Yes
	Mellanox ConnectX-3	FDR	No	No
	Mellanox ConnectX-3	FDR10	No	No
	Mellanox ConnectX-3 Pro	10GbE	Yes	Yes
	QLogic 57810S-k	10GbE	Yes	Yes
	QLogic QME8262-k	10GbE	Yes	Yes
	QLogic QME2572	FC8	Yes	No
	QLogic QME2662	FC16	Yes	Yes


XAUI – KR Transition
Midplane Enhancement
DELL EMC

10GbE KR Midplane for the M1000e

- M1000e chassis shipped after January 2011 utilize new 10GbE technology
- M-series technology transition from 10Gb XAUI to 10Gb KR. Switches and mezzanine cards/LOMs must be the same type to talk to each other (i.e., all XAUI or all KR)
- 10GbE LOM/NDC (Fabric A) on M710HD blade server is only supported with M1000e chassis shipped after January 2011

XAUI-XAUI and KR-KR Interoperability

- All 10GbE I/O Modules launched prior to 2011 are XAUI-based
  - M8024, 10Gb Pass-through, 10Gb Pass-through II
- All 10GbE mezzanine cards launched prior to 2011 are XAUI-based
  - Broadcom 57711, QLogic QME8142, Emulex OCm10102-f-m, Intel X520
  - Intel X520-x/k can function as XAUI or as KR
- All 10GbE IOMs launched in 2011 or later are KR-based
  - Dell M8428-k, PowerConnect M8024-k
- All 10GbE mezzanine cards and LOMs launch in 2011 or later are KR-based
  - M710HD LOM risers
  - Brocade BR1741M-k, QLogic QME8242-k
- All KR-based products include the notation “-k”
- For detailed 10Gb NIC/LOM compatibility with XAUI/KR, refer to the Dell PowerEdge M1000e I/O Interoperability Guide

Frequently Asked Questions

Q: Can I upgrade my existing chassis with the new midplane?

A: To help customers get the most out of their existing blade deployments, we generally do not recommend an upgrade. There is a “customer kit” of the enhanced midplane with service installation available for customers who require the upgrade and for whom it makes sense.

Q: Will XAUI and KR components interoperate at 1Gb?

A: In many cases, yes, but to avoid the exceptions and potential negative experiences, we recommend only matching up XAUI mezzanine cards with XAUI I/O modules and KR LOMs and mezzanine cards with KR I/o modules.

Q: Will I be able to tell whether a chassis has the standard or enhanced midplane?

A: Yes, via the CMC on the Chassis Health Summary screen. IOM bay labels on the rear of the cassis will also change to reflect 10Gb support on Fabric A.

Q: Can I use KR-based mezzanine cards and switches on fabrics B and C of my existing chassis?

A: Yes. Fabrics B and C fully support 10GbE KR on any midplane.

Q: Do these midplane and XAUI-KR changes impact any other currently shipping I/O modules?

A: No. Gigabit Ethernet switches, FC4/8 switches, and QDR/DDR IB switches are not affected by the XAUI to KR transition or the midplane transition. Note that these changes do not impact support for the M710HD when configured with 4x1GbE LOMs.

Why should I not upgrade my existing chassis?

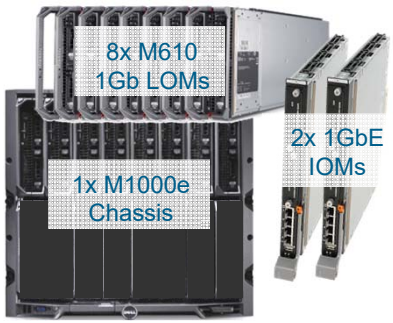
Maximize ROI of existing chassis/blades/switches by maintaining 1Gb Fabric A on existing chassis and deploying 10Gb Fabric A solutions on new installations.

For customers with installed M-series blades:

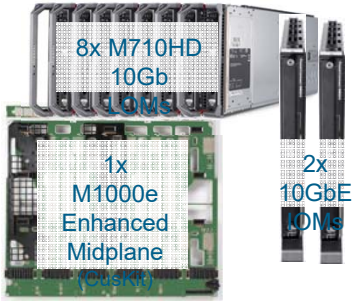
- Existing 1Gb Fabric A switches and LOMs will see no benefit from a midplane upgrade
- An upgrade would require a new midplane, Services installation, new 10Gb Fabric A switches resulting in unused 10Gb capability on ports used by existing 1Gb LOMs

Considerations for customers interested in a midplane upgrade:

Customers starting with this:

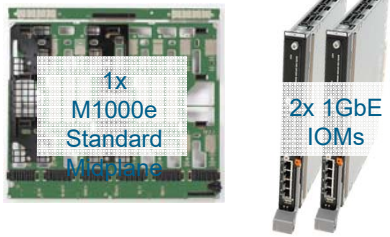


Add:



+Midplane Installation Service

Discard / Re-purpose:

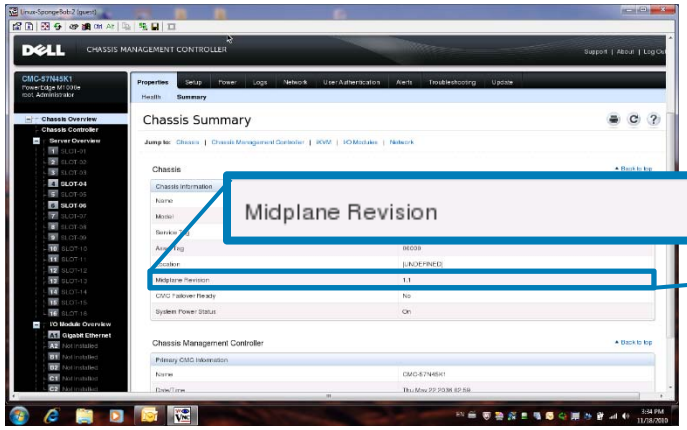


- Half the internal ports of 10GbE IOM will run at 1Gb (with installed M610 1Gb LOMs), i.e. diminished benefit of 10Gb upgrade
- Enhanced midplane can be replaced by customer on-site, but will require chassis downtime (including all installed servers)

DELL EMC

Identifying the Midplane Version

CMC GUI (Chassis Summary)

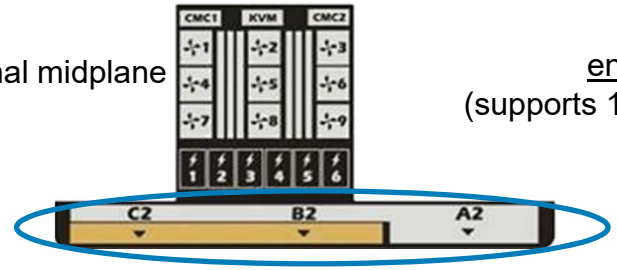


1.0 = original midplane
1.1 = enhanced midplane
(supports 10Gb on Fabric A)

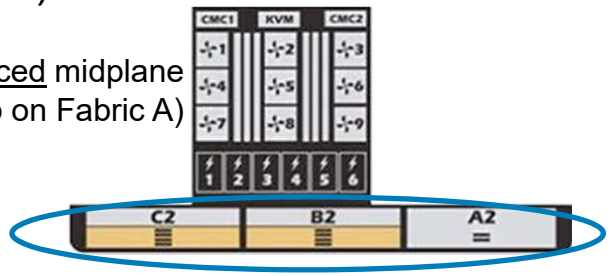
via CLI:
racadm getsysinfo # search/grep for 'Midplane Revision

M1000e I/O bay labeling (rear of chassis)

original midplane



<u>enhanced</u> midplane
(supports 10Gb on Fabric A)



DELL EMC

Deployment and Technical Guides

Deployment and Technical Guides

Detailed guides to help you get connected

Product Focus	Document Title	Link
M6220	Stacking PowerConnect M6220 Blade Switch	http://del.ly/m6220stacking
M6220 and Cisco	MSTP Interoperability of the Dell 6200 & M6220 Series Switches	http://del.ly/m6200mstp
M6220 and Cisco	VLAN Interoperability of the Dell M6220	http://del.ly/m6220vlan
M6220, M6348	Sizing and Best Practices for Deploying VMware with Dell EqualLogic Storage	http://del.ly/vmwareoneql
M6220, M6348, M8024	CLI Transition Guide for Dell 7000, 8024, M8024, M6348, M6220 switches	http://del.ly/cli_transition
M6220, M6348, M8024, M8024-k	Simple Switch Mode Port Aggreation Feature	http://del.ly/portaggregator
M6348 and Cisco Catalyst	Deployment of Dell M6348 Blade Switch With Cisco 4900M Catalyst Switch (using Simple Mode)	http://del.ly/m6448tociscocatalyst
M6348, 1GbE Pass-Through & Cisco Catalyst	SAN Design Best Practices for the M1000e Blade Enclosure and EqualLogic PS Series Storage (1GbE)	http://del.ly/bladeeqlintegration
M8024-k	End-to-end deployment using SIP and M8024-k	http://del.ly/m8024kend2endsip
M8024-k, 8024, 8024F	Stacking 10G Switches	http://del.ly/m8024kstacking
M8024-k, 8024, 8024F	Deploying FCoE (FIP Snooping) on Dell 10G Switches	http://del.ly/m8024kfipsnooping
M8024-k and Cisco Nexus	Deployment of Dell M8024-k Blade Switch with Cisco Nexus 5000 Series Switch (in Simple Mode)	http://del.ly/m8024kcisconexussimple
M8024-k and Cisco Nexus	Deployment of Dell M8024-k Blade Switch with Cisco Nexus 5000 Series Switch	http://del.ly/m8024kcisconexus
MXL	Stacking the Dell MXL blade switch	http://del.ly/mxlstacking
MXL	Deploying FCoE (FIP Snooping) on Dell Force 10 MXL	http://del.ly/mxlfipsnooping
MXL, IOA, M8024-k, M8428-k, 10GbE PTM	Dell PowerEdge M1000e Blade and EqualLogic PS Series SAN Design Best Practices Using Force10	http://del.ly/sandesignbestpractices
PowerEdge M I/O Aggregator (IOA)	Dell PowerEdge M I/O Aggregator Configuration Quick Reference	http://del.ly/ioaconfigquickref
Dell EqualLogic	EqualLogic Compatibility Matrix	http://del.ly/eqlcompatmatrix
Dell EqualLogic	EqualLogic Configuration Guide	http://del.ly/eqlconfigguide
Dell EqualLogic	Rapid EqualLogic Configuration Portal	http://del.ly/eqlconfigportal
Dell EqualLogic and Cisco Nexus FEX	Best Practices for Dell EqualLogic SANs Using Cisco Nexus 2248TP 1Gb Fabric Extender	http://del.ly/eqlciscofex

Interactive 3D Blade Server and Networking Demos

- Get a closer look at the 13th Generation PowerEdge Server portfolio and explore the innovative technologies inside the servers with the new Dell Interactive Rack, Tower and Blade 3D demo tool. Using the tool, you can turn, spin, and pull out components of our servers to better understand Dell's product and solution offerings. Simply go online or download the new Interactive tool and you are ready to begin.
- Dell Enterprise Demo Page: dellenterprisedemos.com

Legacy Products

This product is End of Life. This page is for historical reference.

1/10GbE

Cisco Catalyst Blade Switches

Cisco Catalyst 3130X – 1/10Gb Switch

- Two 10GbE uplinks (X2 – CX4, SR, LRM optics)
- Four fixed 1GbE uplinks - 4xRJ45
- Virtual Blade Switch interconnect enabled

Cisco Catalyst 3130G – GbE Switch

- Up to eight GbE uplinks – fixed 4xRJ45 + up to four optional 1GbE SFPs (copper or optical)
- Virtual Blade Switch interconnect enabled

Virtual Blade Switch

- Interconnect up to 9 CBS 3130 switches to create a single logical switch
- Simplifies manageability & consolidates uplinks to lower TCO

Software

- IP base software stack included in each SKU
  - Advanced L2 switching + basic IP routing features
- Optional IP Services available ONLY for CBS 3130
  - Add advanced IP routing and IPvt6 compatibility

This product is End of Life. This page is for historical reference.

1/10GbE

Cisco Catalyst Blade Switches

Adapters

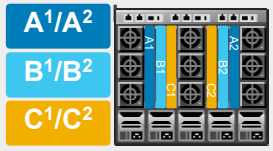
Works with all 1Gb Mezzanine cards and LOMs.

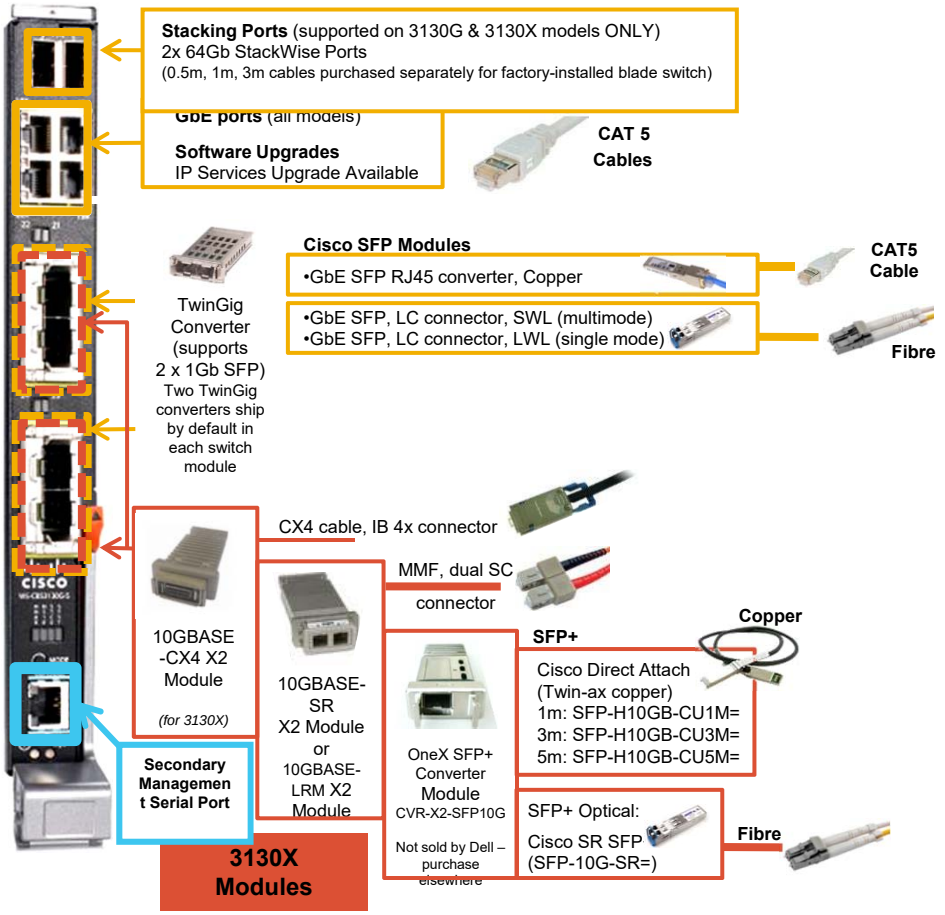
Functions with all 10Gb Mezzanine cards and Select Network Adapters with the exception of the: QLogic 8242-k, 8262-k, and Brocade BR1741M-k.

Quad port GbE Mezzanine cards or LOMs will function and are fully supported with this IO module. In such configurations, only half of the card's ports will be used since the switch only has one internal port per adapter.

More details in Adapter Portfolio section

Designed for I/O





DELL EMC

This product is End of Life. This page is for historical reference.

M8428-k

Converged Ethernet and Fibre Channel switch

Converged

Dell 10GbE Converged Network Switch

- DCB compliant design accommodates both NIC and Fibre Channel Over Ethernet I/O

Single wide blade I/O module supporting all 10GbE capable M1000e fabric bays

Robust I/O bandwidth solution with 28 active fixed ports

- 16 internal server ports
- 8 external 10GbE SFP+ uplinks (10Gb speed only)
  - Brocade Short-wave optical transceivers / fiber
  - Brocade Long-wave optical transceivers / fiber
  - Brocade Direct-Attach copper (TwinAx) transceiver+cable (1m, 3m, and 5m)

4 external 8Gbps SFP+ native Fibre Channel uplinks

- Pre-installed 8Gbps short-wave SFP+ optical transceivers enable quick and easy cable-and-go connections
- Long-wave SFP+ optical transceivers also available
- Access Gateway (NPIV) or Brocade Full Fabric modes

DELL EMC

This product is End of Life. This page is for historical reference.

M8428-k

Converged

Adapters

11G
-Broadcom 57712-k
-Brocade BR1741M-k
-Intel X520-x/k
-QLogic QME8242-k

12G
-Brocade BR1741M-k
-Emulex OCm1402-U2-D
-Emulex OCm1402-U3-D
-Intel X520-x/k
-QLogic 57810S-k
-QLogic 57840S-k
-QLogic QME8262-k

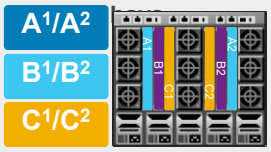
13G
-Emulex OCm1402-U4-D
-Emulex OCm1402-U5-D
-Intel X710-k
-Mellanox CX-4 DP 10GbE
-QLogic 57810S-k
-QLogic 57840S-k

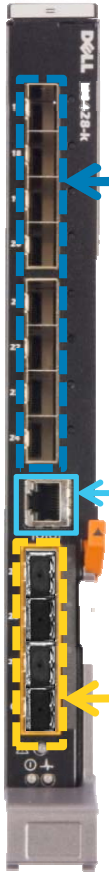
Supports connectivity to 10Gb-KR adapters, all of which are notated with "-k." It does not provide connectivity to legacy 10Gb-XAUI NICs/CNAs

1Gb Ethernet mezzanine cards and LOMs are not supported.

More details in Adapter Portfolio section

Designed for I/O





8 ports 10Gb Ethernet (DCB)

Brocade Optical Transceivers

Short Wave, Multi-Mode SFP+ Optics
Long Wave, Multi-Mode SFP+ Optics

Cables

Brocade SFP+ Direct Attach (Copper)
Twin-ax cable with SFP+ connector
(1m, 3m, 5m available)
Switch requires Active transceiver cables from Brocade.

10Gb speed only

Secondary Management Serial Port

4 ports 8Gbps Fibre Channel

Brocade Optical Transceivers
Speeds: 8, 4, 2 Gbps

Short Wave, Multi-Mode SFP+ Optics
(Four included with every M8248-k)

Long Wave, Multi-Mode SFP+ Optics

Cables

DELL EMC

Revision History

Date	Changes
September 20, 2017	• Updated Cisco B22DELL FEX parent switch compatibility on pages 17 and 18 • Added 14G adapter compatibility
September 19, 2016	• Published with Dell-EMC branding • Corrected M6505 midplane requirement on page 68. • Corrected a numerical reference in the FlexIO heading on pages 3 and 19.
July 1, 2016	• Removed 11G adapters from switch pages for space • Added new Emulex adapters • Added Mellanox ConnectX-3 Pro adapter • Minor updates and corrected errors. Graphical formatting. Reworked tables.
July 14, 2015	• Removed verbiage “12G adapters” on page 69.
June 26, 2015	• Corrected the number of stack units for M/IOA to 6 • Updated Systems Management Matrix
June 9, 2015	• Updated Broadcom naming of 10Gb cards to QLogic • Updated additional cards for 13G launch (Mellanox ConnectX-3, Intel 710-K)
May 1, 2015	• Corrected QME8626-K on 13G • Added 13G compatibility • Made changes to Emulex OCm14102-xx-x for consistency • Added 13G section to each blade
December 17, 2014	• Mellanox ConnectX-3 information updated
December 8, 2014	• Added NEW section on 1.0 to 1.1 mid-plane upgrade recommendation • Removed references to Dell 8/4 Gbps SAN Module (EOL) • Added 12G and 13G related NDC and Mezz to 10Gb interop matrix (Emulex)


DELL EMC