POWEREDGE M1000E
REDUNDANT I/O MODULES VIEW

A total of 6 I/O bays per M1000e blade enclosure

Redundant I/O modules provide high-availability

Fabric A¹
Reserved for GbE LOMs

Fabric B¹
Gb/10GbE, 4/8Gb FC, 20Gb IB

Fabric C¹
Gb/10GbE, 4/8Gb FC, 20/40Gb IB

Fabric A²
Reserved for GbE LOMs

Fabric B²
Gb/10GbE, 4/8Gb FC, 20Gb IB

Fabric C²
Gb/10GbE, 4/8Gb FC, 20/40Gb IB
Currently Available Server Models

Half Height
- M605
- M610

Full Height
- M710
- M805
- M905

Half Height Server Blade M610 shown here (above)

Half height servers include a LAN-On-Motherboard dual port GbE NIC and utilize Fabric I/O bays A1 and A2.

Full Height servers include two dual-port LAN-On-Motherboard GbE NICs and utilize Fabric I/O bays A1 and A2.

Blade I/O Mezzanine Card Form Factors

Dual port server blade mezzanine I/O cards map two ports/paths – one to each of the redundant I/O modules (eg. B1 & B2) providing high-availability.

(On M610 and M710 Mezz slot B MUST use SFF)
M-SERIES I/O MODULE OPTIONS

ETHERNET
- GbE
  - M6220
  - Pass
  - M6348
  - Pass

- 10GbE
  - M8024
  - Pass

FIBRE CHANNEL
- FC4
  - Pass
  - M4424
  - Thru
  - M5424

INFINIBAND
- M2401G
  - DDR
  - Infiniband
- M3601Q
  - QDR
  - Infiniband
**POWERCONNECT M6220**

**PE server blade I/O card**

Use Broadcom 5709 dual port server blade I/O Mezzanine Cards in PE blade servers for Gigabit Ethernet I/O connectivity

**Description**

Managed Layer 3 Gigabit Ethernet Switch for Dell M-Series blade enclosures

- 16 internal server blade Gigabit Ethernet ports
- 4 external fixed 10/100/1000Mb Gigabit Ethernet RJ-45 ports
- Up-to four 10Gb ports using up-to two uplink modules
  - 2 x 10Gb Optical XFP (SR/LR)
  - 2 x 10Gb Copper CX-4
  - 2 x 10GBASE-T Copper
  - 2 x 10Gb Twinax SFP+
- Stacking Capable using single 48Gb stacking uplink module
- Management console port

**Transceivers**

- XFP Optical Transceiver 10GBASE-LR, LC Connector
- XFP Optical Transceiver 10GBASE-SR, LC Connector

**Uplinks**

- PowerConnect 6xxx SFP+ Module

**Cables**

- CAT 5
- CAT 6A (shielded)

**PowerConnect 10GBase-T (Copper) Uplink Module**

**Mezz Card Slot B**

**Mezz Card Slot C**

**Stacking Module, 48Gbps (includes 1m Stacking Cable)**

**Management Port**

Cable included

**I/O bays**

**Fabric A1 & A2**

**Fabric B1 & B2**

**Fabric C1 & C2**
**Description**
Managed Layer 3 Gigabit Ethernet Switch for Dell M-Series blade enclosures

- 16 internal server blade Gigabit Ethernet ports
- Four 10/100/1000BASE-T ports
- 3032/3130G four SFP Gigabit ports (using Cisco TwinGig Converter Modules in the X2 slots)
- 3130X up-to four 10Gb ports using X2 transceiver modules
- 3130G/3130X stacking capable using single 64Gb StackWise licensed ports
- Management console port: RJ-45-to-DB9 cable for PC connections

**Models**
Cisco Catalyst 3032
Cisco Catalyst 3130G
Cisco Catalyst 3130X

**Software Upgrades**
IP Services Upgrade

**Transceivers**
- GbE SFP, RJ45 based Copper
- GbE SFP, LC connector, SWL (multimode)
- GbE SFP, LC connector, LWL (single mode)

**Cables**
CAT 5

**Pe server blade I/O card**
Use Broadcom 5709 dual port server blade I/O Mezzanine Cards in PE blade servers for Gigabit Ethernet I/O connectivity

**Gb / 10Gb Ethernet**

**TwinGig Converter (2 x SFP)**
Std in each switch module

**3130X 10-Gigabit Ethernet X2 Transceiver Modules**

**I/O bays**
Fabric A¹ & A²
Fabric B¹ & B²
Fabric C¹ & C²

**Management Port**

**Fabric**

**Gbe ports**

**Cables (3130G & 3130X only)**

**Converter s**

**GbE X2 Transceiver Modules**

**Cables**

**CAT 5 Cables**

**GbE X2 Transceiver Modules**

**10GBASE-SR X2 Module**
MMF, dual SC connector

**10GBASE-LRM X2 Module**
MMF, dual SC connector

**10GBASE-CX4 X2 Module**
CX4 cable, InfiniBand 4x connector

**10GbE X2 Transceiver Modules**

**Cables**

**Gb /**

Gb /
Managed Layer 3 Gigabit Ethernet Switch for Dell M-Series blade enclosures

- 32 internal server blade Gigabit Ethernet ports
- 16 external fixed 10/100/1000Mb Gigabit Ethernet RJ-45 ports
- Up-to four 10Gb ports
  - 2 x 10Gb Optical SFP+ (SR/LR) and/or SFP+ DAC
  - 2 x 10Gb Copper CX4 or 32Gb M6348 stacking
- Management console port

Use 4 port LOM on FH server blades or Quad Port Mezz NICs from Broadcom & Intel in PE blade servers for Gigabit Ethernet I/O connectivity

**Description**

**GbE LOM**

**Mezz Card Slot B**

**Mezz Card Slot C**

**Uplinks**

**Transceivers**
- Short Range, Multi-Mode SFP+ Optics
- Long Range, Multi-Mode SFP+ Optics
- Long Range, Single-Mode SFP+ Optics

**SFP+ DA Cables (cable + transceivers)**
- 1meter, 3meter, 5meter, 7meter

**Cables**
- CX4 cables: 1m, 3m, 12m, 15m (for 10GE uplinks or 32Gb M6348 stacking)

**Management Port**

Cable included

**I/O bays**

**Fabric A1 & A2**

**Fabric B1 & B2**

**Fabric C1 & C2**
**Description**
Gigabit Ethernet Pass-Through Module for Dell M-Series blade enclosures

- 16 internal server blade GbE host ports
- 16 external GbE ports

**Usage**
Use Broadcom 5709 dual port server blade I/O Mezzanine Cards in PE blade servers for Gigabit Ethernet I/O connectivity

**Models**
Dell 16-port Gb Ethernet Pass-Through Module

**Diagram**
- **Cables**: CAT 5
- **I/O bays**: Fabric A\(^1\) & A\(^2\), Fabric B\(^1\) & B\(^2\), Fabric C\(^1\) & C\(^2\)
- **Mezz Card Slot B**
- **Mezz Card Slot C**
**Description**

Fully modular managed Layer 3 10Gb Ethernet Switch for Dell M-Series blade enclosures

- 16 internal server blade 10Gb Ethernet host ports
- Up-to two 10Gb uplink modules (mix or match)
  - 10GBASE-T (2 x 10Gb Copper RJ45)
  - 10GE CX4 (3 x 10Gb Copper CX4)
  - 10GE SFP+ (4 x 10Gb Twinax SFP+)
- Management console port

Combine the 10Gb M8024 switch with the Broadcom 57710 & 57711 Dual Port 10Gb Ethernet Server Blade I/O Mezzanine Card in PE blade servers for 10Gb from server to LAN.
**Description**

10 Gigabit Ethernet Pass-Through Module for Dell M-Series blade enclosures

- 16 internal server blade 10 GbE host ports
- 16 external 10 GbE SFP+ optical ports

**PE server blade I/O cards**

Combine the 10Gb pass-through with the Broadcom 57710 & 57711 Dual Port 10Gb Ethernet Server Blade I/O Mezzanine Card in PE blade servers for 10Gb from server to LAN switch

**QME8142**
Converged Network Adapter from QLogic. No blade limitations. FCoE and iSCSI on 10Gb network. Connect 10Gb pass-thru to “top of rack” converged network switch.

**Transceivers**

- 10GbE SFP+ Optical Transceiver, SR, LC Connector
- 10GbE SFP+ Optical Transceiver, LRM, LC Connector

**Cables**

- SFP+ DA Cables (cable + transceivers) 1meter, 3meter, 5meter, 7meter

**I/O bays**

- Fabric B1 & B2
- Fabric C1 & C2
**BROCADE M4424**

**Description**
4Gb Full Fabric Fibre Channel SAN switch for Dell M-Series blade enclosures

- 16 internal server blade 4Gbps host ports
- Up-to eight 8Gb external SAN ports
- Management console port

**Combination**
Combine the M4424 with the Qlogic QME2472 or Emulex LPe1105 Server Blade I/O Mezzanine Card in PE blade servers for end-to-end 4Gbps I/O

**Transceivers**
Brocade SWL 4Gb SFP+ Optics

**Cables**

**Models**
- Brocade M4424 12port Access Gateway w/ four 4Gb SFPs
- Brocade M4424 12port Full Fabric SAN Switch w/ four 4Gb SFPs

**Upgrades**
- Full Fabric switch upgrade
- 12port upgrade with four 4Gb SFPs
- ISL Trunking license
BROCADE M5424

PE server blade I/O cards

Combine the M5424 with the Qlogic QME2572 or Emulex LPe1205 Server Blade I/O Mezzanine Card in PE blade servers for end-to-end 8Gbps I/O

Description
8Gb Full Fabric Fibre Channel SAN switch for Dell M-Series blade enclosures
•16 internal server blade 8/4Gbps host ports
•Up-to eight 8Gb external SAN ports
•Management console port

Models
Brocade M5424 24port w/ eight 8Gb SFPs plus Enterprise Performance Pack Software
Brocade M5424 24port w/ four 8Gb SFPs
Brocade M5424 12port w/two 8Gb SFPs

Transceivers
Brocade SWL 8Gb SFP+ Optics
Brocade SWL 4Gb SFP+ Optics

I/O bays

Fabric B1 & B2

Fabric C1 & C2

Management Port

Cables
**Description**

4Gbps Fibre Channel Pass-Through Module for Dell M-Series blade enclosures

- 16 internal server 4Gbps host ports
- 16 external 4Gbps external SAN ports

**Transceivers**

- 16 Pre-installed 4Gbps SWL SFPs (one per port)

**Models**

Dell 16-port 4Gb Fibre Channel Pass-Through

Combine the FC Pass-Through with the Qlogic QME2472 or Emulex LPe1105 Server Blade I/O Mezzanine Card in PE blade servers for end-to-end 4Gbps I/O
MELLANOX M2401G

Description
20Gbps InfiniBand switch for Dell M-Series blade enclosures
• 16 internal server blade 20Gbps host ports
• Up-to eight 20Gbps external ports

Combine the M2401G with the Mellanox ConnectX MDI DDR or QDR InfiniBand Server Blade I/O Mezzanine Cards in PE blade servers for end-to-end 20Gbps I/O
**MELLANOX M3601Q**

**Description**
20/40Gbps InfiniBand switch for Dell M-Series blade enclosures

- 16 internal server blade 20/40Gbps host ports
- Up-to sixteen 20/40Gbps external ports

Combine the M3601Q with the Mellanox ConnectX MDI QRD InfiniBand Server Blade I/O Mezzanine Card in PE blade servers for end-to-end 40Gbps I/O or 20Gbps using the MDI DDR card.

**Ordering Part Number**

<table>
<thead>
<tr>
<th>Ordering Part Number</th>
<th>Length (m)</th>
<th>Wire AWG</th>
<th>Cable Type</th>
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<tr>
<td>QSN3800-2.5</td>
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<td>28</td>
<td>QSFP Non-Equalized Cable Assembly</td>
</tr>
<tr>
<td>QSN7600-4</td>
<td>4</td>
<td>26</td>
<td>QSFP Non-Equalized Cable Assembly</td>
</tr>
</tbody>
</table>

One QDR mezzanine card per server blade and one M3601Q QDR switch module per blade enclosure. Installation for both the mezz card and switch module is limited to Fabric C only.