

M4001

16-port 40 and 56Gb/s InfiniBand Blade Switches

The SwitchX® M4001Q QDR and M4001F FDR InfiniBand blade switches for Dell PowerEdge M-series chassis delivers superior performance for applications that demand the highest bandwidth and lowest latency.

The powerful combination of industry leading blade systems and InfiniBand networking technologies provides an ideal solution for scale-out computing fabrics such as data centers and cloud environments. Faster servers based on PCIe Gen3, combined with high-performance storage and applications that use increasingly complex computations, are causing data bandwidth requirements to spiral upward. As servers are deployed with next generation processors, High-Performance Computing (HPC) environments and Enterprise Data Centers (EDC) will need every last bit of bandwidth delivered by Mellanox's next generation of FDR InfiniBand high-speed smart switches.

High Performance Switch Module

Providing 16 internal ports that are connected to the blades and 16 QSFP+ external ports, Mellanox's high-speed switch module provides full connectivity to the entire chassis. The M4001 is a fully non-blocking blade switch that maximizes I/O utilization in between server blades or between server and storage. QDR or FDR bandwidth is available to each node regardless of the traffic on any other port. When used in conjunction with ConnectX®-3 InfiniBand dual-port mezzanine I/O cards, clustered data bases and parallelized applications will achieve significant performance improvements.

Easy Management

The M4001 is easily managed through any IBTA compliant subnet manager. Mellanox recommends installing and running on each server blade the Mellanox OpenFabrics software stack. Any server can then run the subnet manager along with the switch management tools. Port configuration and data paths can be set up automatically or customized to meet the needs of the application. Firmware can be updated in-band for simple network maintenance. Additionally, the blade switch supports Dell's interface to CMC (management manager) to monitor and control the switch.

Mellanox Advantage

Mellanox Technologies is a leading supplier of end-to-end servers and storage connectivity solutions to optimize data center performance and efficiency. Mellanox InfiniBand and Ethernet adapters, switches, and software are powering Fortune 500 data centers and the world's most powerful supercomputers.



M4001Q and M4001F InfiniBand Switch for Dell PowerEdge M1000e-series Blade Enclosures

HIGHLIGHTS

BENEFITS

- Industry-leading server blade switch in performance and power
- Full cross-sectional bandwidth from server blades to fabric
- Maximizes performance by removing fabric congestion

KEY FEATURES

- 32 InfiniBand ports; 16 internal (server) and 16 external QSFP ports
- Up to 56Gb/s performance for scale-out computing fabrics and cloud environments
- Up to 3.584Tb/s switching capacity
- Low latency access for each server blade
- Reliable connectivity, low power and easy to deploy and use
- Complemented by Mellanox's SX6000 switch family
- Full support for copper and fiber cabling solutions
- RoHS-6



HARDWARE

SWITCH SPECIFICATIONS

- IBTA 1.21 and 1.3 compliant
- 32 non-blocking ports (16 internal, 16 external)
- Up to 56Gb/s (FDR) per port
- Port-to-port latency 170ns
- Congestion control*
- Adaptive Routing*
- QoS
- Port mirroring
- 9 virtual lanes: 8 data + 1 management
- 256 to 4Kbyte MTU

MANAGEMENT

- I2C interface RJ45 connector
- Supports OpenSM or third party subnet managers

CONNECTORS AND CABLING

- 16 QSFP+ connectors
- Passive/Active copper or fiber cables

INDICATORS

- Per port status LEDs: Link, Activity
- System status LEDs

DIMENSIONS (H x W x D)

- 12.2" x 1.34" x 10.7"

POWER CONSUMPTION

- M4001Q - power consumption:
 - 60W Typical
 - 75W Max
- M4001F - power consumption:
 - 80W Typical
 - 85W Max

COMPLIANCE

SAFETY

- US/Canada: cTUVus
- EU: IEC60950
- International: CB

EMC (EMISSIONS)

- USA: FCC, Class A
- Canada: ICES, Class A
- EU: CE Mark (EN55022 Class A, EN55024, EN61000-3-2, EN61000-3-3)
- Japan: VCCI, Class A
- Korea: RRL (MIC), Class A
- Australia/New Zealand: C-Tick Class A

ENVIRONMENTAL

- EU: IEC 60068-2-64: Random Vibration
- EU: IEC 60068-2-29: Shocks, Type I / II
- EU: IEC 60068-2-32: Fall Test

OPERATING CONDITIONS

- Operating temperature: 0 to 40° C
- Humidity: 10-90% non-condensing

*Available in a future firmware release

Ordering Part Number	Description
225-2442	M4001Q - Bulk Pack, Factory Installed, QDR Infiniband Switch
225-2441	M4001Q - Customer Kit, QDR Infiniband Switch
225-2439	M4001F - Bulk Pack, Factory Installed, FDR Infiniband Switch
225-2438	M4001F- Customer Kit, FDR Infiniband Switch



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