Dell EMC MX5108n Ethernet Switch

High performance 25 Gigabit Ethernet switch for single PowerEdge MX7000 chassis deployments

The Dell EMC Networking MX5108n Ethernet Switch is a high-performance, low latency single chassis 25Gbps Ethernet switch purpose-built for the PowerEdge™ MX platform providing enhanced capabilities and cost-effectiveness for enterprise and mid-market environments with traditional compute traffic environments.

Delivering industry leading performance in a blade switch, the non-blocking switching architecture in the MX5108n provides line-rate 25GbE L2 and L3 forwarding capacity with no oversubscription and a sub 800ns latency. In addition to 8 internal 25GbE ports, the MX5108n provides four 10G-BaseT, two QSFP28 100GbE, and one QSFP+ 40GbE port for uplinks.

Maximum performance and functionality

The Dell EMC Networking MX5108n is a high-performance, multi-function, 25GbE Ethernet switch designed for applications in demanding data center, cloud and computing environments. The MX5108n also supports the open source Open Network Install Environment (ONIE) for zero touch installation of alternate operating systems in future releases.

OS10 SmartFabric

SmartFabric OS10 is a Network Operating System supporting multiple architectures and environments. The networking world is moving from a monolithic stack to a pick-your-own world. The OS10 solution is designed to allow multi-layered disaggregation of network functionality. While OS10 contributions to Open Source provide users freedom and flexibility to pick their own 3rd party networking, monitoring, management and orchestration applications, OS10 bundles an industry hardened networking stack featuring standard L2 and L3 protocols over a standard and well accepted CLI interface.

SmartFabric Services

Included in SmartFabric OS10, SmartFabric Services provides single pane of glass management and automation across every fabric in a PowerEdge MX deployment, up to the 20 chassis Multi-Chassis Management group limit. SmartFabric Services key features include:

- I/O Aggregation to simplify connectivity to existing networks
- Integration of VLAN and automated QoS settings with Server Deployment Templates
- Fabric-wide firmware upgrades and configuration consistency checks
- Automatic topology validation – detects physical topology misconfigurations and provides corrective guidance
- Automatically heals fabric upon failure condition removal

Key applications

- Up to 960Gbps of switching I/O bandwidth (full duplex) available and non-blocking switching fabric delivering line-rate performance under full load with sub usec latency
- Scalable L2 and L3 Ethernet switching with QoS and a full complement of standards-based IPv4 and IPv6 features, including OSPF and BGP routing support
- L2 multipath support via Virtual Link Trunking (VLT) and multiple VLT (mVLT) multi-chassis link aggregation technology
- NVMe-oF ready to support the next generation of high performance storage
- Jumbo frame support for large data transfers
- 128 link aggregation groups with up to sixteen members per group, using enhanced hashing
- Converged network support for DCB, with priority flow control (802.1Qbb), ETS (802.1Qaz), DCBx and iSCSI TLV support
- Supports Routable RoCE to enable convergence of compute and storage

**Key features with OS10**
- Consistent DevOps framework across compute, storage and networking elements
- Standard networking features, interfaces and scripting functions for legacy network operations integration
- Standards-based switching hardware abstraction via Switch Abstraction Interface (SAI)
- Pervasive, unrestricted developer environment via Control Plane Services (CPS)
- Open and programmatic management interface via Common Management Services (CMS)

- OS10 software enables Dell EMC layer 2 and 3 switching and routing protocols with integrated IP Services, Quality of Service, Manageability and Automation features
- Platform agnostic via standard hardware abstraction layer (OCP-SAI)
- Unmodified Linux kernel and unmodified Linux distribution
- Leverage common open source tools and best-practices (data models, commit rollbacks)
- Scalable L2 and L3 Ethernet Switching with QoS, ACL and a full complement of standards based IPv4 and IPv6 features including OSPF, BGP and PBR
- Enhanced mirroring capabilities including local mirroring, Remote Port Mirroring (RPM), and Encapsulated Remote Port Mirroring (ERPM)
- Converged network support for DCB, with priority flow control (802.1Qbb), ETS (802.1Qaz), DCBx and iSCSI TLV
- Rogue NIC control provides hardware-based protection from NICs sending out excessive pause frames

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
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| **Optics** | Transceiver, 100GbE, SR4 QSFP28  
Transceiver, 100GbE, LR4 QSFP28  
Transceiver, 100GbE, ESR4 QSFP28  
Transceiver, 100GbE, PSM4 500m QSFP28  
Transceiver, 100GbE, CWDM4 2Km QSFP28  
Transceiver, 100GbE, SWDM4 100m QSFP28  
Transceiver, 100GbE, BIDI optic QSFP28  
Transceiver, 40GbE, SR4 optic QSFP+  
Transceiver, 40GbE, eSR4 optic QSFP+  
Transceiver, 40GbE, LR4 optic QSFP+  
Transceiver, 40GbE, BIDI optic QSFP+  
Transceiver, 40GbE, PSM 10Km QSFP+  
Transceiver, 40GbE, LM4 Duplex QSFP+  
Transceiver, 40GbE, SM4 Duplex QSFP+ |
| **Cables** | 100GbE, QSFP28 to QSFP28, active optical, passive DAC  
100GbE, QSFP28 to 4xSFP28 (4x10/25GbE), active optical, passive DAC  
100GbE, MTP to MTP optical  
100GbE, MTP to 4xLC optical breakout  
40GbE, QSFP+ to QSFP+, active optical & passive DAC  
40GbE, QSFP+ to 4xSFP+ (4x10GbE), active optical & passive DAC |
| **Software** | SmartFabric OS10  
Select third-party operating system offerings (future) |
Technical specifications

Physical
Full featured 25/100GE switch in PowerEdge MX Fabric A/B I/O sled form factor
1 USB 2.0 type A storage port
1 micro USB type B port for console/management port access
Indicators:
Power/Health LED
ID LED
Link/activity LEDs
Size: 1.18’h x 17.11”w x 10.94”d
Weight: 7.72lbs (3.5kg)
Max. power consumption: 65 Watts
Typ. power consumption: 63.3 Watts
Max. operating specifications:
- Standard Operating Temperature: 10°C to 35°C (50°F to 95°F)
- Operating Relative Humidity: 5% to 85%, noncondensing
Max. non-operating specifications:
- Storage temperature: -40°C to 65°C (-40°F to 149°F)
- Storage humidity: 5 to 95% (RH), noncondensing

Expanded Operating Temperature, Continuous Operation: 5°C to 40°C at 5% to 85% RH with 29°C dew point
Note: Outside the standard operating temperature, the system can operate continuously in temperatures as low as 5°C and as high as 40C. For temperature between 35°C to 40°C, de-rate maximum allowable temperature by 1°C per 175m above 950m (1°F per 319 ft)

Redundancy
Redundant Power and Cooling provided by Dell EMC PowerEdge MX7000 Chassis

Performance
Switching I/O bandwidth: 960 Gbps
Forwarding capacity: 363 Mpps
Latency: Sub 800ns
MAC addresses: 273K
IPv4 Unicast routes: 200K
IPv6 Unicast routes: 160K
ARP entries: 48K
Layer 2 VLANs: 30K P*V in Full Switch mode
Layer 3 VLANs: 10K P*V in Full Switch mode
MST: 32instances
PVST+: 128 instances
LAG: 128 groups, 16 members per LAG group
ACL Entries-Layer 2 Ingress: 6144
ACL Entries-Layer 2 Egress: 6144
ACL Entries-VLAN Tagging: 3072
Jumbo Frames: 9K

IEEE Compliance
802.1AB LLDP
TIA-1057 LLDP-MED
802.3ad Link Aggregation
802.1D Bridging, STP
802.1p L2 Prioritization
802.1Q VLAN Tagging
802.1Qb PFC
802.1Qaz ETS
802.1X Network Access Control
802.3ac Frame Extensions for VLAN Tagging
802.3x Flow Control

Layer2 Protocols
802.1D Compatible
802.1p L2 Prioritization
802.1Q VLAN Tagging

VLT (Virtual Link Trunking)
VRPP Active/Active
RSTP, MSTP & RPVST+
Port Mirroring on VLT ports
DCB, iSCSI, FSB on VLT
RPM/ERPM over VLT
VLT Minloss upgrade
VxLAN with VLT
IGMPLS snooping over VLT
PIM SM/SSM over VLT

RFC Compliance
768 UDP
793 TCP
854 Telnet
959 FTP
1321 MD5
1350 FTP
2474 Differentiated Services
2698 Two Rate Three Color Marker
3164 Syslog
4254 SSHv2

General IPv4 Protocols
791 IPv4
792 ICMP
826 ARP
1027 Proxy ARP
1035 DNS (client)
1042 Ethernet Transmission
1191 Path MTU Discovery
1305 NTPv4
1519 CIDR
1812 Routers, Static Routes
1858 IP Fragment Filtering
1918 Address Allocation for Private Internets
2131 DHCPv4 (server and relay)
2474 DiffServ Field in IPv4 and IPv6 Headers
3021 31-bit Prefixes
3195 Reliable Delivery for Syslog
3246 Expedited Forwarding PHB Group
5798 VRRPv3

General IPv6 Protocols
1981 Path MTU for IPv6
2372 IPv6 Addressing
2460 IPv6 Protocol Specification
2461 Neighbor Discovery
2462 Stateless Address AutoConfig
2463 ICMPv6
2464 Ethernet Transmission
2675 IPv6 Jumbograms
2464 Transmission of IPv6 Packets over Ethernet Networks
2711 IPv6 Router Alert
3493 Basic Socket Interface
3542 Advanced Socket, API
3587 Global Unicast Address Format
3848 Default Address Selection
4007 IPv6 Scoped Address Architecture
4213 Basic Transition Mechanisms for IPv6
4291 IPv6 Addressing
3633 DHCPv6 Relay
IPv6 Static Routes

OSPF (v2/v3)
1745 OSPF/BGP interaction
1765 OSPF Database overflow
2154 OSPF with Digital Signatures

Multicast
2236 IGMPv2 Snooping
3810 MLDv2 Snooping

Security
1492 TACACS (Authentication, Accounting, Authorization)
2865 RADIUS
3162 RADIUS and IPv6
3579 RADIUS support for EAP
3580 802.1X with RADIUS
3826 AES Cipher in SNMP

Control Plane, VTY ACLs
IP Access Control Lists

BGP
1997 Communities
2385 MD5
2439 Route Flap Damping
2545 BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing
2796 Route Reflection
2858 Multiprotocol Extensions
2918 Route Refresh
3065 Confederations
4271 BGP-4
4360 Extended Communities
4853 4-byte ASN
5396 4-byte ASN Representation
5492 Capabilities Advertisement
5549 BGP Unnumbered
BGP ADD PATH
BGP to OSPF route distribution
BGP EVPN
L2 & L3 Gateway with VxLAN Tunnels
BGP EVVPN Asymmetric IRB
Symmetric IRB
Type 5 Routes

Linux Distribution
Debian version 8
Linux Kernel 3.16

MIBS
BRIDGE-MIB
ENTITY-MIB
EtherLike-MIB
HOST-RESOURCES-V2-MIB
IEEE8021-PFC-MIB
IEEE8023-LAG-MIB
IF-MIB
IP-FORWARDING-MIB
IP-MIB
LLDP-EXT-DOT-1-MIB
LLDP-EXT-DOT-3-MIB
LLDP-MIB
OSPF-MIB
OSPFV3-MIB
Q-BRIDGE-MIB (Get)
RFC1213-MIB
SFLOW-MIB
SNMP-FRAMEWORK-MIB
SNMP-MPD-MIB
SNMPv2-MIB
TCP-MIB
UDP-MIB
SNMP-USER-BASED-SM-MIB
SNMP-VIEW-BASED-ACM-MIB
SNMP-TARGET-MIB

3 Dell EMC Networking MX5108n Spec Sheet
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## Technical specifications

### Network Management and Monitoring
- SNMPv1/v2c/v3
- IPv4/IPv6 Management support (Telnet, FTP, TACACS, RADIUS, SSH, NTP)
- Port Mirroring
- RPM/ERPM
- 3176 SFlow
- Support Assist (Phone Home)
- RestConf APIs, Auto-docs
- XML Schema
- CLI Commit (Scratchpad)
- Uplink Failure Detection
- Object Tracking
- FarEnd Failure Detection
- Bidirectional Forwarding Detection (BFD) – BGPv4/6, OSPFv2/3, Static Routes
- Streaming Telemetry
- System, Buffers, Data monitoring
- gRPC Transport with gPB encoding

### Automation
- Control Plane Services APIs
- Linux Utilities and Scripting Tools
- CLI Automation (Multiline Alias)
- Ansible, Puppet, Chef, SaltStack
- Zero Touch Deployment (ZTD)
- 3rd party packages support on Docker Container

### Quality of Service
- Prefix List
- Route-Map
- Rate Shaping (Egress)
- Rate Policing (Ingress)
- Scheduling Algorithms
  - Round Robin
  - Weighted Round Robin
  - Deficit Round Robin
  - Strict Priority
  - Weighted Random Early Detect

### Data center bridging
- 802.1Qbb Priority-Based Flow Control
- 802.1Qaz Enhanced Transmission Selection (ETS)
- Explicit Congestion Notification
- Data Center Bridging eXchange (DCBx)
- DCBx Application TLV (iSCSI, FCoE)
- RoCEv2

### Fibre Channel
- FIP Snooping

### Regulatory compliance

#### Safety
- UL/CSA 60950-1, Second Edition
- EN 60950-1, Second Edition
- IEC 60950-1, Second Edition Including all National Deviations and Group Differences

#### Emissions & Immunity
- Australia/New Zealand: AS/NZS CISPR 32:2015, Class A
- Canada: ICES-3/NMB-3, Class A
- Europe: EN 55024:2010 (CISPR 24:2010), Class A
- Japan: VCCI V-3/2010.04 Class A
- USA: FCC CFR 47 Part 15, Subpart B:2011, Class A
- EN 300 386 V1.6.1 EMC for Network Equipment
- EN 55024:2010
- EN 61000-3-2: Harmonic Current Emissions
- EN 61000-3-3: Voltage Fluctuations and Flicker
- EN 61000-4-2: ESD
- EN 61000-4-3: Radiated Immunity
- EN 61000-4-4: EFT
- EN 61000-4-5: Surge
- EN 61000-4-6: Low Frequency Conducted Immunity

#### RoHS
- EN 50581:2012 All MX5108n components are EU RoHS compliant

FDA Regulation 21 CFR 1040.10 and 1040.11
IT Lifecycle Services for Networking

Experts, insights and ease
Our highly trained experts, with innovative tools and proven processes, help you transform your IT investments into strategic advantages.

**Plan & Design**
Let us analyze your multivendor environment and deliver a comprehensive report and action plan to build upon the existing network and improve performance.

**Deploy & Integrate**
Get new wired or wireless network technology installed and configured with ProDeploy. Reduce costs, save time, and get up and running fast.

**Educate**
Ensure your staff builds the right skills for long-term success. Get certified on Dell EMC Networking technology and learn how to increase performance and optimize infrastructure.

**Manage & Support**
Gain access to technical experts and quickly resolve multivendor networking challenges with ProSupport. Spend less time resolving network issues and more time innovating.

**Optimize**
Maximize performance for dynamic IT environments with Dell EMC Optimize. Benefit from in-depth predictive analysis, remote monitoring and a dedicated systems analyst for your network.

**Retire**
We can help you resell or retire excess hardware while meeting local regulatory guidelines and acting in an environmentally responsible way.

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