

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
- 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

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)

Product	Description
MX5108n Ethernet Switch	
Optics	<ul style="list-style-type: none"> 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, PSM4 10Km QSFP+ Transceiver, 40GbE, LM4 Duplex QSFP+ Transceiver, 40GbE, SM4 Duplex QSFP+
Cables	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 Egress: 1020

ACL Entries-Layer 2 Ingress: 6144

ACL Entries-IPv4 Egress: 1020

ACL Entries-IPv4 Ingress: 6144

ACL Entries-IPv6 Egress: 512

ACL Entries-IPv6 Ingress: 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

802.1Qbb 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

802.1s MSTP
802.1w RSTP
802.1t RPVST+
7348 VxLAN

VLT (Virtual Link Trunking)

VRRP 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
IGML/MLD snooping over VLT
PIM SM/SSM over VLT

RFC Compliance

768 UDP
793 TCP
854 Telnet
959 FTP
1321 MD5
1350 TFTP
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
Hosts and Routers
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

2328 OSPFv2
2370 Opaque LSA
3101 OSPF NSSA
4552 OSPFv3 Authentication

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
4893 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 EVPN Asymmetric IRB
Symmetric IRB
Type 5 Routes

Linux Distribution

Debian Linux 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-FORWARD-MIB
IP-MIB
LLDP-EXT-DOT1-MIB
LLDP-EXT-DOT3-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

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
EN 60825-1 Safety of Laser Products Part 1: Equipment Classification Requirements and User's Guide
EN 60825-2 Safety of Laser Products Part 2: Safety of Optical Fiber Communication Systems

FDA Regulation 21 CFR 1040.10 and 1040.11

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 Immunity
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

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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

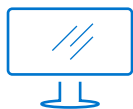
Maximize performance for dynamic IT environments with Dell EMC Optimize. Benefit from in-depth predictive analysis, remote monitoring and a dedicated systems analyst for your network.



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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