



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

- Organizations looking to enter the software-defined data center era with a choice of networking technologies designed to deliver the flexibility they need
- Native 25 GbE server access in high-performance data center environments
- 25 GbE backward compatible to 10G and 1G for future proofing and data center server migration to faster uplink speeds.
- iSCSI storage deployment including DCB converged lossless transactions

Key features

- 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

Product	Description
MX5108n Ethernet Switch	
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, PSM4 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)

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 40°C.
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: 256

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

VRF 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

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

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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