DELL EMC NETWORKING 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 Enterprise Edition

The Dell EMC Networking OS10 Enterprise Edition 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 Enterprise Edition bundles an industry hardened networking stack featuring standard L2 and L3 protocols over a standard and well accepted CLI interface.

SmartFabric Services

Included in OS10 Enterprise Edition, 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
- VRF-lite enables sharing of networking infrastructure and provides L3 traffic isolation across tenants
- 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 Dell EMC Networking 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 Enterprise Edition 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, CWDM4 2Km QSFP28 Transceiver, 100GbE, PSM4 500m 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	Dell EMC OS10 Enterprise Edition 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%, non-condensing

Max. non-operating specifications:
- Storage temperature: -40°C to 65°C (-40°F to 149°F)
- Storage humidity: 5 to 95% (RH), non-condensing

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: 4K
Layer 3 VLANs: 500
MST: 32instances
PVST+: 128 instances
LAG: 128 groups, 16 members per LAG group
ACL Entries-Layer 2 Egress: 1000
ACL Entries-Layer 2 Ingress: 3000
ACL Entries-IPv4 Egress: 3000
ACL Entries-IPv4 Ingress: 3000
ACL Entries-IPv6 Egress: 500
ACL Entries-IPv6 Ingress: 1500
iSCSI Number of sessions: 256
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+

VLT (Virtual Link Trunking)

VRRP Active/Active
RSTP & RPVST+
Port Mirroring on VLT ports
DCB, iSCSI, FSB on VLT
RPM/ERPM over VLT
VLT Minloss upgrade

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
2596	Assured Forwarding PHB Group
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

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)
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

draft-eitf-idr-add-paths-04.txt ADD PATH

Linux Distribution

Debian Linux version 8
Linux Kernel 3.16

MIBS

IP MIB
IP Forward MIB
Host Resources MIB
IF MIB
LDDP EXT1/3 MIB
Entity MIB
LAG MIB
Dell-Vendor MIB
TCP MIB
UDP MIB
SNMPv2 MIB

Network Management and Monitoring

SNMPv1/2c
IPv4/IPv6 Management support (Telnet, FTP, TACACS, RADIUS, SSH, NTP)
Syslog
Port Mirroring
RPM/ERPM
SFlow
Management VRF
Support Assist (Phone Home)
RestConf API (Layer 2 features)
XML Schema
CLI Commit (Scratchpad)
Uplink Failure Detection
Object Tracking
Management VRF

Automation

Control Plane Services APIs
Linux Utilities and Scripting Tools
CLI Automation (Multiline Alias)
Ansible, Puppet, Chef, SaltStack

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)
Fibre Channel
FCF F-Port
FC Zoning
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 S9999 components are EU RoHS compliant

* partial support

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.

Learn more at DellEMC.com/Services

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