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 the 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 industry hardened networking stack featuring standard L2 and L3 protocols over a standard and well accepted CLI interface.

Key Features of Dell EMC Networking OS10

- Standard networking features, interfaces and scripting functions for legacy network operations integration
- Standards-based switching hardware abstraction via Switch Abstraction Interface (SAI)
- Consistent DevOps framework across compute, storage and networking elements
- Pervasive, unrestricted developer environment via Control Plane Services (CPS)
- Layer 2 and 3 switching and routing protocols, along with Multicast and integrated IP services, quality of service, manageability and automation features
- Unmodified Linux kernel and unmodified Linux distribution
- Leverage common open source tools and best practices (YANG data models, commit scratchpad)
- Programmatic APIs, CLI automation using batch and aliases to simplify configuration management.
- Scalable L2 and L3 Ethernet Switching designed for Highly Scalable Data Center fabric with state-of-the-art implementation of Multi-Chassi LAG (VLT) QoS, ACL and standards based IPv4, IPv6, and Multicast features
- Multi-tenancy support using VRF LITE, VMWare NSX integrations, and standards based Overlays (BGP EVPN)
- Datacenter Interconnect & optimizations using BGP EVPN Symmetric IRB, unnumbered, ARP suppression, Type 5 routes. Dynamic route leaking across VRFs using route map based policies and RT mechanisms available in EVPN.
- Increase VM Mobility region by stretching L2 VLAN within or across two DCs with VxLAN & VLT capabilities.
- Converged network support for Data Center Bridging, with priority flow control (802.1Qbb), ETS (802.1Qaz), DCBx and iSCSI TLV
- Software Defined Networking using Openflow 1.0/1.3 standards with Multiple controllers support for HA
- Enhanced debugging & troubleshooting capabilities including local mirroring, Encapsulated Remote Port Mirroring (ERPM), Flows Sampling (sFLOW)
- Network Streaming Telemetry monitoring sensors, transmitting telemetry data using gPB and gRPC transport.
- OpenConfig gNMI interface for system Management, Symmetric Hashing support for LAG & ECMP
- Microsoft NLB cluster support, PTP G.8275.2 telecom profile support, SyncE and Hybrid PTP
SmartFabric Services

Dell EMC SmartFabric OS10 includes SmartFabric Services (SFS). With SFS, customers can quickly and easily deploy and automate data center networking fabrics.

There are two types of SFS:

- SFS for Leaf and Spine – supported on selected PowerSwitch S and Z series switches
- SFS for PowerEdge MX – supported on selected modular switches

How **SmartFabric Services** simplifies IT Transformation

**User experience**
- Simple to orchestrate and manage
- Standalone App for other solutions e.g. KVM, storage only
- One application, same look and feel for Dell Technologies solutions

**Fabric Operations**
- Self-forming fabric
- Deployment consistency and predictability – two switch to max scale
- Fabric level lifecycle management & operations
- Zero touch fabric expansion
- Dynamic switch replacement

**Solutions Operations**
- Dynamic onboarding of select devices
- Static onboarding for non-integrated devices
- Dynamic underlay provisioning for virtual environments
- Qualified for typical use cases
- Faster time to productivity, better overall customer experience
- Natural fit for pay as you grow solutions
**Technical specifications**

**IEEE Compliance**
- 802.1AB: LLDP
- 802.1Q: VLAN Tagging
- 802.1p: L2 Prioritization
- 802.1Q: VLAN Tagging
- 802.1Qaz: ETS
- 802.1X: Network Access Control
- 802.2ac: Frame Extensions for VLAN Tagging
- 802.3x: Flow Control

**Layer2 Protocols**
- 802.1D: Compatible
- 802.1Q: VLAN Tagging
- 802.1s: MSTP
- 802.1w: RSTP
- 802.1t: RPVST+
- 7348: VxLAN
- 5517: PVLAN
- VLT (Virtual Link Trunking): VRRP Active/Active, RSTP, MSTP, RPVST+, Port Mirroring on VLT ports, DGB, ISCSI, FSB, FCoE on VLT, RPR/ERPRM over VLT, VLT Minloss upgrade
- Ethernet Networks: VxLAN with VLT, VRF with VLT, IGMP/MLD snooping over VLT, PIM SM/SSM over VLT, PVLAN with VLT, Anycast Gateway with Virtual IP for VLT & eVLT, Delay restore ports and Delay restore orphan ports

**RFC Compliance**
- 768: UDP
- 793: TCP
- 854: Telnet
- 959: FTP
- 1321: MDS
- 1350: TFTP
- 2474: Differentiated Services
- 2698: Two Rate Three Color Marker
- 3164: sFlow
- 4213: Transition Mechanisms for IPv6 Hosts and Routers
- 4363: DHCPv6 Relay
- 4861: Neighbor Discovery for IPv6
- 5175: IPv6 RA flag options

**General IPv4 Protocols**
- 791: IPv4
- 792: ICMP
- 826: ARP
- 1027: Proxy ARP
- 1035: DNS (client)
- 1042: Ethernet Transmission
- 1191: Path MTU Discovery
- 1305: NTPv4 (with DST support)
- 1519: CIDR
- 1812: Routers, Static Routes
- 1858: IP Fragment Filtering
- 2311: DHCPv4 (server and relay)
- 3527: Link-selection (5)
- 5017: Server Override (11)
- 6607: Classful Routing
- 5798: VRRPv3
- 3021: 31-bit Prefixes
- 1812: Requirements for IPv4 Routers

**General IPv6 Protocols**
- 1918: Address Allocation for Private Internets
- 2474: DiffServ field in IPv4 and IPv6 Headers
- 2597: Assured Forwarding PHB Group
- 3195: Reliable Delivery for Syslog
- 3246: Expedited Forwarding PHB Group
- 1961: Path MTU for IPv6
- 2372: IPv6 Addressing
- 2460: IPv6 Protocol Specification
- 2461: Neighbor Discovery
- 2462: Stateless Address AutoConfig
- 2463: ICMPv6
- 2464: IPv6 Transmission
- 2675: IPv6 Jumbograms
- 3484: Default Address Selection
- 3493: Basic Socket Interface
- 4007: IPv6 Scoped Address Architecture
- 4213: Transition Mechanisms for IPv6 Hosts and Routers
- 4271: BGP-4
- 4291: IPv6 Scoping Address Architecture
- 5340: OSPF for IPv6 (OSPFv3)
- 5360: OSPFv3 Authentication

**General BGP Protocols**
- 1997: Communities

**OSPF Protocols**
- 1745: OSPF/IGP interaction
- 1765: OSPF Database overflow
- 2154: OSPF with DigitalSignatures
- 2328: OSPFv2
- 2370: Opaque LSA
- 3101: OSPF NSSA
- 4552: OSPFv3 Authentication

**BGP Protocols**
- 2385: MD5
- 2439: Route Flap Damping
- 2796: Route Reflection
- 2918: Route Refresh
- 3065: Confederations
- 4271: BGP-4
- 4893: 4-byte ASN
- 5396: 4-byte ASN Representation
- 5492: Capabilities Advertisement

**Network Management and Monitoring**
- SNMPv1/v2c/v3
- IPv4/IPv6 Management support (Telnet, FTP, TACACS, RADIUS, SSH, NTP)
- Port Mirroring
- Remote Port Monitoring
- Port Mirroring (RPM)/Enhanced RPM (aka SPAN/RSPAN/ERSSPAN by some vendors)
- SFlow
- 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)
- Zero Touch Deployment (ZTD)
- Ansible, Puppet, Chef, SaltStack
- 3rd Party Packages support on Docker
- Container
## Technical specifications

<table>
<thead>
<tr>
<th>Quality of Service</th>
<th>Security</th>
<th>FibreChannel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prefix List</td>
<td>2865  RADIUS</td>
<td>FCF F-Port</td>
</tr>
<tr>
<td>Route-Map</td>
<td>3162  Radius and IPv6</td>
<td>FC Zoning</td>
</tr>
<tr>
<td>Rate Shaping (Egress)</td>
<td>3579  Radius support for EAP</td>
<td>FIP Snooping</td>
</tr>
<tr>
<td>Rate Policing (Ingress)</td>
<td>3580  802.1X with RADIUS</td>
<td>Multihop FSB, N Port, E Port</td>
</tr>
<tr>
<td>Scheduling Algorithms</td>
<td>3826  AES Cipher in SNMP</td>
<td>Optimizie FC rebalance (1 FCF per vFabric)</td>
</tr>
<tr>
<td>Round Robin</td>
<td>1492  TACACS (Authentication, Accounting, Authorization)</td>
<td></td>
</tr>
<tr>
<td>Weighted Round Robin</td>
<td>6187  CAC/PIV – X.509v3 Certificates for SSH</td>
<td></td>
</tr>
<tr>
<td>Deficit Round Robin</td>
<td>Control Plane, VTY &amp; SNMP ACLs</td>
<td></td>
</tr>
<tr>
<td>Strict Priority</td>
<td>IP Access Control Lists</td>
<td></td>
</tr>
<tr>
<td>Weighted Random Early Detect</td>
<td>Port Security</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Digitally signed OS10 images</td>
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<tbody>
<tr>
<td>2236</td>
<td>IGMPv2 Snooping</td>
</tr>
<tr>
<td>3810</td>
<td>MLDv2 Snooping</td>
</tr>
<tr>
<td>4604</td>
<td>IGMPv3</td>
</tr>
<tr>
<td>4601</td>
<td>PIM SM, PIM ACLs</td>
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<td>Anycast RP using PIM-SM</td>
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IT Lifecycle Services for Networking

Experts, insights and ease
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