# Enterprise SONiC Distribution by Dell Technologies

Dell Technologies is Taking Open-Source software, mainstream

IT organizations around the globe strive to deliver superior business value by helping their organizations increase productivity, deliver services faster and remain flexible by incorporating the latest technology innovations like automation, containers and cloud. In addition, the use of modern applications and workloads like virtualization, cloud, IoT and AI are pushing the boundaries of existing data centers as more and more traffic moves from the edge of the network to the core and into the cloud. These organizations need a modern network infrastructure that can support these demands.

Software for Open Networking in the Cloud (SONiC) represents open source innovation at its finest, and as it evolves and matures, it is expanding beyond the public cloud, into large-scale enterprises, private clouds and service providers, empowering them to modernize their networks, easily address emerging IT scenarios, and overcome evolving business challenges.

Enterprise SONiC Distribution by Dell Technologies helps IT organizations to run their business with the innovation, automation and reliability that comes from a commercial offering of SONiC with production-ready enterprise feature enhancements, hardening and global support targeted for demanding cloud, data center and edge fabrics.

- **Open source innovation** – based on SONiC, Enterprise SONiC Distribution by Dell Technologies builds on Dell Technologies long history of contributing with and contributing to the open source SONiC community with new features and capabilities ranging across the protocol stack and management applications.

- **Edge, Enterprise and Cloud ready** – Enterprise SONiC Distribution by Dell Technologies is enterprise-class tested and validated across hardware and software, field-tested in hyper-scale environments, includes a centralized management platform, and is integrated with a growing ecosystem of partner automation/orchestration applications.
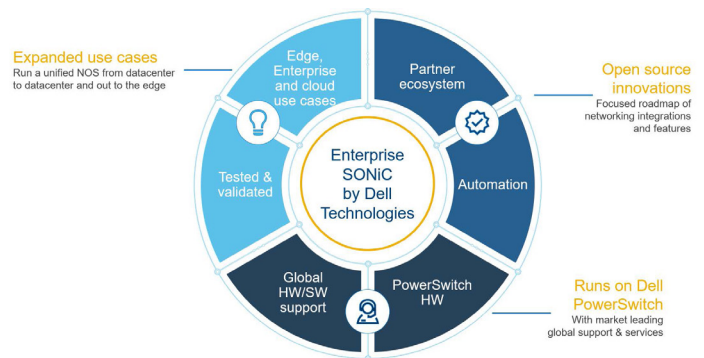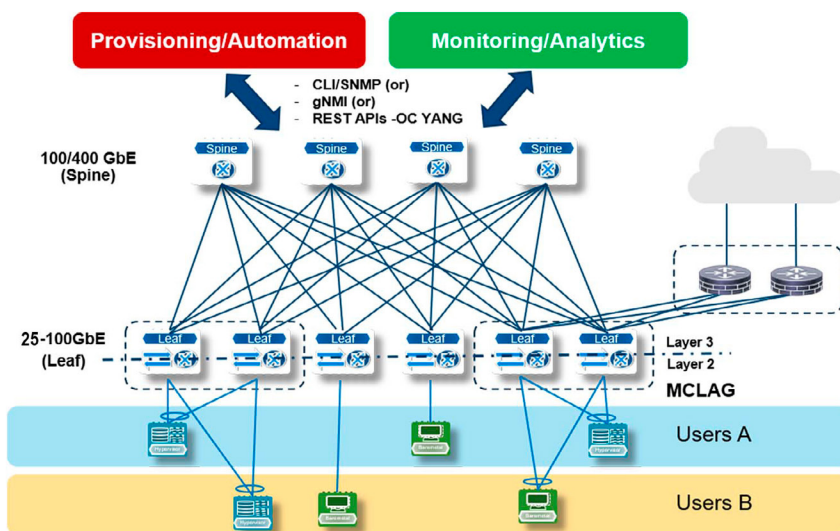

Open source networking made real

- **Flexible Hardware Options** – Dell Enterprise SONiC supports not only a broad portfolio of high performance data center and edge switching options with Dell PowerSwitch, but is also validated on select third-party switch options to provide greater choice and flexibility for your fabric architecture.

Key features and functions

- **Based on Open Source SONiC**: Enterprise SONiC Distribution by Dell Technologies is based on SONiC, an open source network operating system built on Debian Linux around a containerized architecture. SONiC is in production today at multiple web-scale companies for data center fabric deployments and has a thriving developer community and vendor ecosystem.

- **Edge, Enterprise and Cloud Data Center features**: Enterprise SONiC Distribution by Dell Technologies integrates a host of enterprise-ready features including select Layer 2 and Layer 3 protocols, Quality of Service capabilities, and key management protocols, along with support for edge use case features like port security (802.1x), POE, POE+ and UPOE. Version 4.2 expands upon QinQ use cases [Hairpin, Multiple switch VNF to CSP] and introduces EVPN multihoming. In addition, version 4.2 will support three new GenAI features: extended ROCEv2 on Z9432 and Z9664, cut through switching, and UDF hashing.

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- **Centralized management**: The Management Framework is designed to improve agility and visibility by adopting open industry standards such as OpenConfig, gNMI and REST, and end-to-end streaming telemetry to enable advanced analytics. It includes a centralized, intuitive and holistic command line interface (CLI) that helps integration with existing practices. With the latest version of Dell's Enterprise SONiC, customers have the capability to manage their fabric end-to-end, from the edge to the core to the cloud, through a unified network operating system (NOS).

- **Integration with PowerSwitch platforms**: Enterprise SONiC Distribution by Dell Technologies has been fully qualified on select Dell PowerSwitch Z series and S series platforms for full hardware support including LEDs, power, PHYs, environmentals, documentation, etc.

- **Testing and validation**: Enterprise SONiC Distribution by Dell Technologies is tested and validated across PowerSwitch and select 3rd-party hardware platforms with the full set of software features including Layer 2 and Layer 3 functionality, congestion control, power consumption, address capacities, scalability and more. In version 4.2, SONiC will be validated with VxRail and PowerFlex.

- **Dell Technologies global support & services**: Enterprise SONiC Distribution by Dell Technologies is backed by a world-class supply chain and industry leading support and services spanning 170 countries and 60K+ partner professionals.

- Enterprise SONiC Distribution by Dell Technologies 4.2 is supported on the following PowerSwitch switches:

    - PowerSwitch Z series: Z9332F-ON, Z9264F-ON, Z9432F-ON, Z9664F-ON

    - PowerSwitch S series: S5448F-ON, S5296F-ON, S5248F-ON, S5232F-ON, S5224F-ON, S5212F-ON

    - PowerSwitch N series: N3248TE-ON

    - PowerSwitch E series: E3248PXE (TD3-X5), E3248P (TD3-X5)

- Enterprise SONiC Distribution by Dell Technologies 4.2 is based on Azure SONiC Version: 202012 and SAI version 10.0.0.6.

Enterprise SONiC Distribution by Dell Technologies Example Topology

Ethernet

- IEEE 802.1Q Virtual LAN (VLAN) Tagging
- IEEE 802.1p Class-of-Service Prioritization and Tagging
- IEEE 802.1v VLAN Classification by Protocol
- IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
- IEEE 802.3z 1000BASE-X
- IEEE 802.1X
- IEEE 802.3af (POE)/IEEE 802.3at (POE+)/IEEE 802.3bt and pre-802.3bt (POE-bt)

Layer 2 and Layer 3 Protocols

- EVPN-VxLAN
- Border Gateway Protocol (BGP) (v4, v6)
- iBGP
- eBGP
- BGP unnumbered
- BGP-Allow Autonomous System (AS)
- BGP Peer Auto-shutdown
- OSPFv2
- Route Reflector
- Route policies
- Static routes
- BGP EVPN Control Plane (Type 2, 3, and 5)
- L2 and L3 VxLAN Symmetric and Asymmetric
- Anycast gateways
- Layer 3 Access Control Lists (ACL)
- IPv4 ACL
- Bidirectional Forwarding Detection (BFD)
- Unidirectional Link Detection (UDLD)
- 64-Way Equal-cost Multi-path (ECMP)
- Virtual Routing and Forwarding (VRF) Lite
- Virtual Router Redundancy Protocol (VRRP) (IPv4/IPv6)
- IPv4/IPv6 Dual Stack Internet Control Message Protocol (ICMP) v6 Route-Advertisement
- IPv6 routing
- Wire-speed routing for IPv4 and IPv6
- IGMP Snooping (v1, v2, v3)
- IPv4 PIM-SSM
- EVPN Multihoming
- Cut through switching

- Multi-chassis LAG (MCLAG)
- PVST
- RPVST+
- IEEE 802.1S Multiple Spanning Tree Protocol (MST)
- Network Address Translation (NAT)
- CoPP (Control Plane Policing) Policy Based Routing for IPv4 and IPv6
- Routed subinterfaces
- IPv4 unnumbered interfaces
- QinQ
- RoCEv2

Manageability, Automation, and Monitoring

- Zero-touch Provisioning (ZTP)
- IPv4/IPv6 management
- Management Framework Command Line Interface (CLI)
- Programmatic Interfaces: REST and gNMI
- OpenConfig data models
- Dynamic Port Breakout
- Secure Socket Shell (SSH)/SSHv2
- Role-based Access Control (RBAC)
- Link Layer Discovery Protocol (LLDP) IEEE 802.1AB
- Management Information Base (MIB) II
- RFC 1213
- Syslog
- SNMPv2/v3
- Out-of-band management
- Network Time Protocol (NTP) Client and Server
- Management Access Control Lists (ACL)
- RADIUS
- Dynamic Host Configuration Protocol (DHCP) Relay
- IP helper
- TACACS+
- sFlow
- Everflow/ERSPAN
- Inband Flow Analyzer* (IFA 2.0)
- Drop Monitor*

Ordering Information

Enterprise SONiC Distribution by Dell Technologies is now available via three bundles: Enterprise, Cloud and Edge For more information please contact your local Dell Technologies sales representative.

For a comprehensive list of features and supported platforms, please view the Enterprise SONiC Features and Supported Platforms Matrix

Quality of Service

- Class of Service (CoS) IEEE 802.1p
- Differentiated Services to Code Point (DSCP) to Traffic Class Mapping
- VxLAN-aware DSCP
- Random Early Discard
- Scheduling: Strict Priority (SP), Deficit Weighted Round-Robin (DWRR)
- IEEE 802.1Qbb - Priority Flow Control (PFC)
- IEEE 802.1Qaz - ETS
- IEEE 802.1Qau Explicit Congestion Notification (ECN)
- UDF Hashing

Learn More at Dell.com/EnterpriseSONiC

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