

Enterprise SONiC Distribution by Dell Technologies

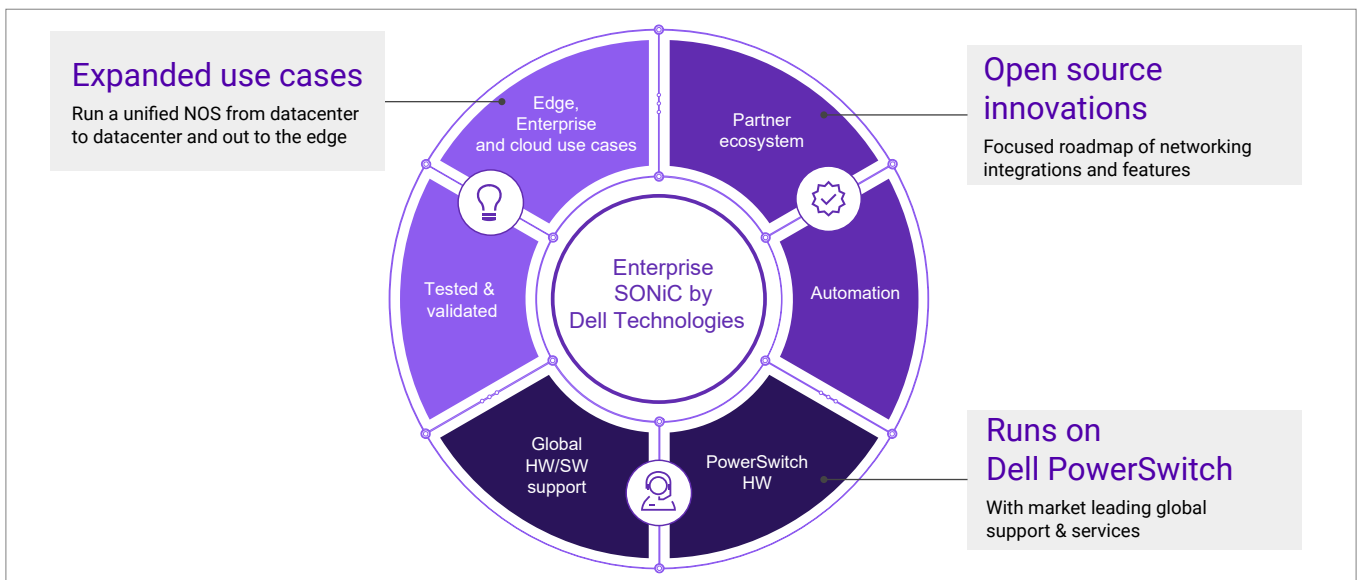
Dell Technologies is Taking Open-Source software, mainstream

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.
- **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.
- **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, environmental, 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 4.4, SONiC will expand VxRail support to include VCF vSAN and vSAN stretched cluster.
- **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 4.4 is supported on the following PowerSwitch switches:**
 - PowerSwitch Z series: Z9332F-ON, Z9264F-ON, Z9432F-ON, Z9664F-ON, Z9864F-ON
 - PowerSwitch S series: S5448F-ON, S5296F-ON, S5248F-ON, S5232F-ON, S5224F-ON, S5212F-ON, S3248T
 - PowerSwitch N series: N3248TE-ON, N3248P
 - PowerSwitch E series: E3248PXE (TD3-X5), E3248P (TD3-X5)
- Enterprise SONiC Distribution by Dell Technologies 4.4 is based on Azure SONiC Version: 202012 and SAI version 11.0.0.12.



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Management

Regain control of operations with flexible IT management options. Our Residency Services help you adopt and optimize new technologies and our Managed Services allow you to outsource portions of your environment to us.

Support

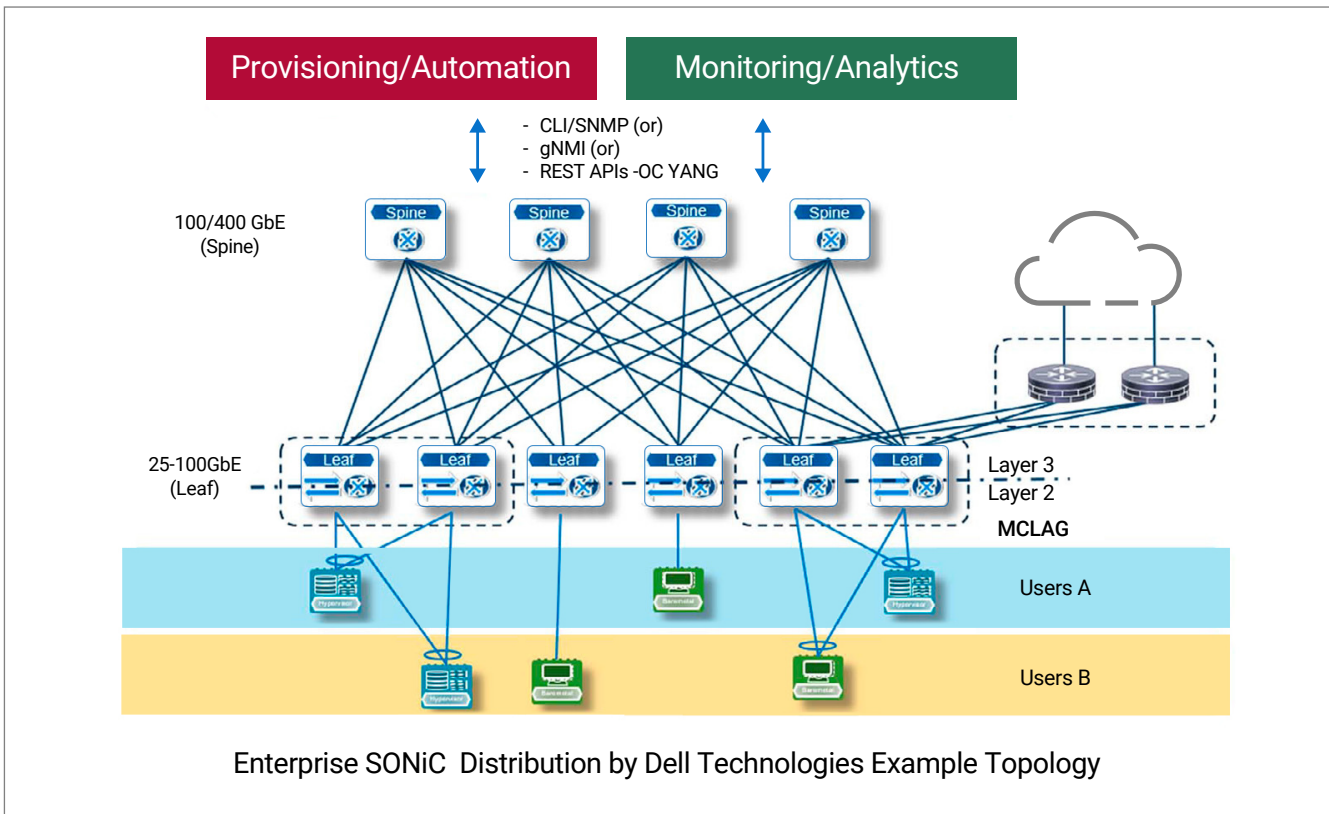
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Technical specifications

IEEE Compliance

- 802.1AB: LLDP Link Layer Discovery Protocol
- 802.1p: Class-of-Service Prioritization and Tagging
- 802.1Q: VLAN Tagging
- 802.1Qaz: ETS Enhanced Transmission Selection
- 802.1Qbb: PFC Priority-based Flow Control
- 802.1s: MSTP Multiple Spanning Trees
- 802.1v: VLAN Classification by Port
- 802.3ad: Link Aggregation
- 802.1X: Port-Based Network Access Control
- 802.1w (RPVST+ Rapid Per-VLAN Spanning Tree Protocol)
- 802.3ac: Frame Extensions for VLAN Tagging
- 802.3ae: 10G Ethernet
- 802.3z: 1000BASE-X
- 802.3af (POE)/IEEE 802.3at (POE+)/IEEE 802.3bt and pre-802.3bt (POE-bt)

Layer 2 Protocols

- 802.1p L2 Prioritization
- 802.1Q VLAN Tagging
- 802.1s MSTP
- 802.1t RPVST+
- 7348 VxLAN
- 5517 PVLAN
- EVPN-VxLAN
- BGP Allow Autonomous System (AS)
- BGP Peer Auto-shutdown
- L2 and L3 VxLAN Symmetric and Asymmetric
- Anycast gateways
- IGMP Snooping (v1, v2, v3)
- PVST
- RPVST+
- IEEE 802.1S Multiple Spanning Tree Protocol (MST)
- QinQ
- Multi-chassis LAG (MCLAG)
- Cut-through switching
- LACP, LACP Individual

RFC Compliance

- 768: UDP User Datagram Protocol
- 793: TCP
- 959: FTP
- 1321: MD5
- 1350: TFTP
- 2474: Differentiated Services
- 2698: Two Rate Three Color Marker
- 3164: Syslog (with TLS support)
- 4254: SSHv2

Layer 3 Protocols

- Border Gateway Protocol (BGP) (v4, v6)
- iBGP
- eBGP
- BGP unnumbered
- Route Reflector
- Route policies
- Static routes
- BGP EVPN Control Plane (Type 2, 3, and 5)
- 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
- ICMPv6 Route-Advertisement
- IPv6 routing
- Wire-speed routing for IPv4 and IPv6
- IPv4 PIM-SSM
- EVPN Multihoming
- Network Address Translation (NAT)
- CoPP (Control Plane Policing)
- Routed subinterfaces
- IPv4 unnumbered interfaces
- RoCEv2

Technical specifications

<p>IPv4 Protocols</p> <ul style="list-style-type: none"> • 791: IPv4 • 792: ICMP • 826: ARP • 1035: DNS client • 1042: Ethernet Transmission • 1191: Path MTU Discovery • 1305: NTPv4 • 1519: CIDR • 1812: Requirements for IPv4 Routers • 2131: DHCPv4 • 2474: Differentiated Services 	<p>Multicast Protocols</p> <ul style="list-style-type: none"> • 2236: IGMPv2 Snooping • 3810: MLDv2 Snooping • 4541: IGMPv1/v2/v3 and MLDv1/v2 Snooping (Partial Support) • 4601: PIM SM - IPv4 & IPv6 (IPv4 supported, IPv6 tentatively in 5.0) • 4604: IGMPv3 and MLDv2 for SSM (IGMPv3 supported) • 4607: PIM SSM - IPv4 • 5059: BSR for PIM - IPv4
<p>IPv6 Protocols</p> <ul style="list-style-type: none"> • 2372: IPv6 Addressing • 2460: IPv6 Protocol Specification • 2461: Neighbor Discovery • 2462: Autoconfiguration IPv6 • 2463: ICMPv6 • 2464: Ethernet Transmission • 2675: IPv6 Jumbograms • 2711: IPv6 Router Alert • 3484: Default Address Selection • 3493: Basic Socket Interface • 3542: Advanced Sockets API • 4007: IPv6 Scoped Address Architecture • 4291: IPv6 Addressing • 3587: IPv6 Global Unicast Address Format • 3633: DHCPv6 Relay • 4191: Default Router Preference and Specific Routes • 4861: Neighbor Discovery for IPv6 • 4862: IPv6 Stateless Address Autoconfiguration • 5175: IPv6 RA Flag Options • 5424: Syslog • 5798: VRRP v3 • 5880: Bidirectional Forwarding Detection • 6085: Transmission of IPv6 over Ethernet Networks • 5171: Uni-Directional Link Detection • 5176: Dynamic Authorization Extensions to RADIUS 	<p>EVPN Protocols</p> <ul style="list-style-type: none"> • 8365: A Network Virtualization Overlay Solution Using Ethernet VPN (EVPN) • 9014: Interconnect Solution for Ethernet VPN (EVPN) Overlay Networks
<p>OSPF Protocols</p> <ul style="list-style-type: none"> • 2328: OSPFv2 • 2370: LSA • 3623: OSPF Graceful Restart 	<p>Security Protocols</p> <ul style="list-style-type: none"> • 2865: RADIUS • 3162: Radius and IPv6 • 3579: Radius Support for EAP • 3580: 802.1x with RADIUS • 2385: Protection of BGP Sessions via the TCP MD5 Signature Option • 1492: TACACS (Authentication, Accounting, Authorization) • 3826: AES Cipher in SNMP
<p>BGP Protocols</p> <ul style="list-style-type: none"> • 1997: Communities • 1321: MD5 • 2439: Route Flap Damping • 2796: Route Reflection • 2918: Route Refresh • 4271: BGP-4 • 2545: BGP-4 Multiprotocol Extensions for IPv6 IDR • 2858: Multiprotocol Extensions for BGP-4 • 3065: Autonomous System Confederations for BGP • 4360: Extended Communities • 4893: 4-byte ASN Support for BGP • 5492: BGP-4 Capabilities Advertisement • 5549: BGP Unnumbered • 4724: Graceful Restart Mechanism for BGP • 7911: Advertisement of Multiple Paths in BGP • 7432: BGP MPLS-Based Ethernet VPN 	<p>Data Center Bridging</p> <ul style="list-style-type: none"> • 588v2: PTP Precision Time Protocol • 802.1AB: LLDP Link Layer Discovery Protocol • 802.1p: Class-of-Service Prioritization and Tagging • 802.1Q: VLAN Tagging • 802.1Qaz: ETS Enhanced Transmission Selection • 802.1Qbb: PFC Priority-based Flow Control
<p>Network Management and Monitoring</p> <ul style="list-style-type: none"> • SNMPv1/v2/v3 • 3176: SFlow • IPv4/IPv6 Management support (FTP, TACACS, RADIUS, SSHv2, NTPv4) 	<p>PTP & SyncE Profile</p> <ul style="list-style-type: none"> • 1588v2: PTP Precision Time Protocol • G. 8273.2, G. 8275.1, G. 8275.2, IEEE 1588-2008 (Coming in 4.5) • G. 8261, G. 8262, G. 8262.1, G. 8264 (Coming in 5.0)
	<p>Manageability, Automation, and Monitoring</p> <ul style="list-style-type: none"> • 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*

Technical specifications

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
- Versatile Hashing (Z9664F-ON)

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