

# **Dell Enterprise SONiC Distribution**

## Compatibility Matrix Release 4.1.0

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# Revision history

**Table 1. Revision history**

Revision	Description
A02 (August 2023)	Updated the Scalability section with correct number of VLAN members per system
A01 (August 2023)	Fixed a bug
A00 (May 2023)	Initial release of 4.1.0

## Additional documentation

**Table 2. Additional documentation**

Document	Description
<i>Enterprise SONiC Distribution by Dell Technologies User Guide Release</i>	Software configuration
<i>Enterprise SONiC Distribution by Dell Technologies Quick Start Guide</i>	Installation and initial configuration
<i>Enterprise SONiC Distribution by Dell Technologies Management Framework CLI Reference Guide</i>	Management Framework CLI command syntaxes and examples
<i>Enterprise SONiC Distribution by Dell Technologies Release Notes</i>	Features, requirements, known issues, and fixed issues
<i>Enterprise SONiC Distribution by Dell Technologies High Power Optics Technical Sheet</i>	Information about high power optics

# Introduction

## What is SONiC

SONiC is an open-source, Linux-based network operating system (NOS) that runs on switches from multiple vendors and ASICs. SONiC stands for Software for Open Networking in the Cloud. It implements standard Layer 2 and Layer 3 protocols, and provides developers with a straightforward way to add new features.

SONiC offers teams the flexibility to create data center networking solutions, while using the collective strength of a large ecosystem with an active developer community. SONiC is designed for scalability and is in production today in large data center fabrics.

Benefits of SONiC include:

- Hardware independence
- Containerized architecture
- Open-sourced
- Access to a growing community

## SONiC and Dell Technologies

Dell Technologies introduces Enterprise SONiC Distribution as a hardened, validated, and supported version of SONiC for switch configuration and monitoring. It includes distribution of open-source community SONiC, and additional features to support the ecosystem and partners.

Enterprise SONiC supports an intuitive command-line interface, and object-based administration through a REST interface and gRPC Network Management Interface (gNMI) of Google.

### Enterprise SONiC Distribution by Dell Technologies

Enterprise SONiC is offered in bundles to meet customer network requirements.

- Cloud standard
- Cloud premium
- Enterprise standard
- Enterprise premium
- Edge Standard

 **NOTE:** For supported cables and optics support matrix, reach out to Dell Technologies designated sales representative.

**Table 3. Speeds supported in Enterprise SONiC on Dell PowerSwitch Platforms**

Platforms	10M	100M	1G	2.5G	5G	10G	25G	40G	50G	100G	200G	400G
N3248TE-ON	Yes	Yes	<b>Yes</b>	-	-	Yes	-	Yes	-	Yes	-	-
N3248PXE-ON*	Yes	Yes	Yes	Yes	Yes	<b>Yes</b>	Yes	Yes	-	Yes	-	-
N3248X-ON	Yes	Yes	Yes	Yes	Yes	<b>Yes</b>	Yes	Yes	-	Yes	-	-
E3248P-ON*	Yes	Yes	<b>Yes</b>	-	-	Yes	-	Yes	-	Yes	-	-
E3248PXE-ON*	Yes	Yes	Yes	Yes	Yes	<b>Yes</b>	Yes	Yes	-	Yes	-	-
S5212F-ON	-	-	Yes	-	-	Yes	<b>Yes</b>	Yes	-	Yes	-	-

**Table 3. Speeds supported in Enterprise SONiC on Dell PowerSwitch Platforms (continued)**

Platforms	10M	100M	1G	2.5G	5G	10G	25G	40G	50G	100G	200G	400G
S5224F-ON	-	-	Yes	-	-	Yes	<b>Yes</b>	Yes	-	Yes	-	-
S5232F-ON	-	-	Yes	-	-	Yes	Yes	Yes	Yes	<b>Yes</b>	-	-
S5248F-ON	-	-	Yes	-	-	Yes	<b>Yes</b>	Yes	-	Yes	-	-
S5296F-ON	-	-	Yes	-	-	Yes	<b>Yes</b>	Yes	-	Yes	-	-
S5448F-ON	-	-	Yes	-	-	Yes	Yes	Yes	-	<b>Yes</b>	Yes	Yes
Z9264F-ON	-	-	Yes	-	-	Yes	Yes	Yes	-	<b>Yes</b>	-	-
Z9332F-ON	-	-	Yes	-	-	Yes	Yes	Yes	-	Yes	Yes	<b>Yes</b>
Z9432F-ON	-	-	Yes	-	-	Yes	Yes	Yes	-	Yes	Yes	<b>Yes</b>
Z9664F-ON	-	-	Yes	-	-	Yes	Yes	Yes	-	Yes	Yes	<b>Yes</b>

**NOTE:**

- Entries that are highlighted in bold show default speed at access (user) ports.
- Platforms that are marked with the \* symbol support PoE.

## Dell PowerSwitches supported in each bundle

The Edge Standard bundle is supported only on N3248TE-ON, N3248PXE-ON, N3248X-ON, E3248P-ON, and E3248PXE-ON switches. These Dell PowerSwitch platforms cannot run the Cloud and Enterprise bundles. All other Dell PowerSwitch platforms cannot run the Edge bundle. For bundle-to-platform support, see the following table:

**Table 4. Dell PowerSwitches supported in each bundle**

Enterprise SONiC bundle	N3248PXE-ON N3248X-ON N3248TE-ON E3248P-ON E3248PXE-ON	S5448F-ON S5296F-ON S5248F-ON S5232F-ON S5224F-ON S5212F-ON	Z9664F-ON Z9264F-ON Z9332F-ON Z9432F-ON
Cloud Standard	Not Supported	<b>Supported</b>	<b>Supported</b>
Cloud Premium	Not Supported	<b>Supported</b>	<b>Supported</b>
Enterprise Standard	Not Supported	<b>Supported</b>	<b>Supported</b>
Enterprise Premium	Not Supported	<b>Supported</b>	<b>Supported</b>
Edge Standard	<b>Supported</b>	Not Supported	Not Supported

## Enterprise SONiC features in bundles

All software features described in the Enterprise SONiC User Guide are available in all Dell PowerSwitch bundles, except for the following features:

**Table 5. Features not available in all bundles**

<b>Enterprise SONiC feature</b>	<b>Cloud Standard</b>	<b>Cloud Premium</b>	<b>Enterprise Standard</b>	<b>Enterprise Premium</b>	<b>Edge Standard</b>
VXLAN	Not Supported	Not Supported	<b>Supported</b>	<b>Supported</b>	<b>Supported</b>
EVPN	Not Supported	Not Supported	<b>Supported</b>	<b>Supported</b>	<b>Supported</b>
Multisite data center interconnect	Not Supported	Not Supported	<b>Supported</b>	<b>Supported</b>	Not Supported
DHCP snooping	Not Supported	Not Supported	<b>Supported</b>	<b>Supported</b>	<b>Supported</b>
Network Address Translation (NAT)	<b>Supported</b>	<b>Supported</b>	<b>Supported</b>	<b>Supported</b>	Not Supported
IGMP and IGMP snooping	Not Supported	Not Supported	<b>Supported</b>	<b>Supported</b>	<b>Supported</b>
IPv4 PIM source-specific multicast (SSM)	Not Supported	Not Supported	<b>Supported</b>	<b>Supported</b>	<b>Supported</b>
Multiple Spanning Tree Protocol (MSTP)	Not Supported	Not Supported	<b>Supported</b>	<b>Supported</b>	<b>Supported</b>
PVST and RPVST+	Not Supported	Not Supported	<b>Supported</b>	<b>Supported</b>	<b>Supported</b>
gNMI	<b>Supported</b>	<b>Supported</b>	<b>Supported</b>	<b>Supported</b>	Not Supported *
Buffer thresholds	<b>Supported</b>	<b>Supported</b>	<b>Supported</b>	<b>Supported</b>	Not Supported
Debug application	Not Supported	Not Supported	Not Supported	<b>Supported</b>	Not Supported
Inband flow analytics (IFA)	Not Supported	<b>Supported</b>	Not Supported	<b>Supported</b>	Not Supported
Packet drop monitoring	Not Supported	Not Supported	Not Supported	<b>Supported</b>	Not Supported
Tailstamping	Not Supported	<b>Supported</b>	Not Supported	<b>Supported</b>	Not Supported
Dot1x authentication	Not Supported	Not Supported	Not Supported	Not Supported	<b>Supported</b>
MAC authentication bypass	Not Supported	Not Supported	Not Supported	Not Supported	<b>Supported</b>
Dynamic ACLs	Not Supported	Not Supported	Not Supported	Not Supported	<b>Supported</b>
RADIUS-provided VLANs	Not Supported	Not Supported	Not Supported	Not Supported	<b>Supported</b>
Power over Ethernet (PoE)	Not Supported	Not Supported	Not Supported	Not Supported	<b>Supported</b>
Voice VLANs	Not Supported	Not Supported	Not Supported	Not Supported	<b>Supported</b>
Unauthenticated VLANs	Not Supported	Not Supported	Not Supported	Not Supported	<b>Supported</b>
Guest VLANs	Not Supported	Not Supported	Not Supported	Not Supported	<b>Supported</b>

- \* - Supported only on the E3248PXE-ON and E3248P-ON platforms.

# Dell Technologies PowerSwitch specifications

**Table 6. PowerSwitch specifications**

Model	User ports	Uplinks	RAM/SSD	NPU
Z9664F-ON	64x400G QSFP56-DD	2x10G SFP+	32GB/128GB	Tomahawk4
Z9432F-ON	32x400G QSFP56-DD	2x10G SFP+	32GB/64GB	Trident4.x11
Z9332F-ON	32x400G QSFP56-DD	2x10G SFP+	16GB/64GB	Tomahawk3
Z9264F-ON	64x100G QSFP28	2x10G SFP+	16GB/32GB	Tomahawk2
S5448F-ON	48x100G SFP56-DD	8x400G QSFP56-DD	32G/128GB	Trident4.x9
		2x10G SFP+		
S5232F-ON	32x100G QSFP28	2x10G SFP+	16GB/64GB	Trident3.x7
S5296F-ON	96x25G SFP28	8x100G QSFP28	16GB/64GB	Trident3.x7
S5248F-ON	48x25G SFP28	4x100G QSFP28	16GB/64GB	Trident3.x7
		2x(2x100G) QSFP28-DD		
S5224F-ON	24x25G SFP28	4x100G QSFP28	8GB/32GB	Trident3.x5
S5212F-ON	12x25G SFP28	3x100G QSFP28	8GB/16GB	Trident3.x5
E3248P-ON	48x1GBase-T	4x10G SFP+	16GB/32GB	Trident3.x5
		2x100G QSFP28		
E3248PXE-ON	48x10GBase-T	4x25G SFP28	16GB/32GB	Trident3.x5
		2x100G QSFP28		
N3248X-ON	48x10GBase-T	4x25G SFP28	4GB/8GB	Trident3.x5
		2x100G QSFP28		
N3248PXE-ON	48x10GBase-T	4x25G SFP28	4GB/8GB	Trident3.x5
		2x100G QSFP28		
N3248TE-ON	48x1GBase-T	4x10G SFP+	4GB/32GB	Trident3.x3
		2x100G QSFP28		

# Standard and premium feature matrix

Table 7. Standard feature matrix

-	Features	Z9664F-ON	Z9432F-ON	Z9332F-ON	Z9264F-ON	S5448F-ON	S5232F-ON S5248F-ON S5296F-ON	S5224F-ON S5212F-ON	N3248X-ON N3248P E3248P-ON E3248P XE-ON	N3248TE-ON
Layer 2	STP - PVST/ RPVST+	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	PVST/RPVST+ over MCLAG	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
	Link aggregation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Link aggregation fallback	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	LLDP	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	UDLD	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	IGMP snooping	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	ACL-based Layer 2 forwarding	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	DHCP snooping	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Q-in-Q	No	Yes	No	No	Yes	Yes	Yes	No	No
	VLAN stacking	No	Yes	No	No	Yes	Yes	Yes	No	No
Layer 3	BGPv4/v6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	IPv4/v6 static routing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	BFD	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	VRRP	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	ECMP (128- way)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	DHCP relay	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
	OSPFv2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	NAT	No	No	No	Yes	No	Yes	Yes	No	No
	L3 IGMP	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	PIM SSM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	IP SLA (ICMP/ TCP track)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No

**Table 7. Standard feature matrix (continued)**

-	Features	Z9664F-ON	Z9432F-ON	Z9332F-ON	Z9264F-ON	S5448F-ON	S5232F-ON S5248F-ON S5296F-ON	S5224F-ON S5212F-ON	N3248X-ON N3248PXE-ON E3248P-ON E3248PXE-ON	N3248TE-ON
	Policy-based routing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
	Routed sub-interfaces	No	Yes	No	No	Yes	Yes	Yes	Yes	No
ACLs	L2 ACLs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	L3 ACLs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Receive ACLs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Route-maps	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
QoS	L2 QoS maps	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	L3 QoS maps	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Queue and buffer size configuration	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Traffic priority scheduling (strict, WFQ)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	WRED	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	ECN	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Priority flow control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	BUM/storm control	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
	RoCE V2	No	No	Yes	No	No	Yes	No	No	No
Mgmt and monitoring	Telnet	No	No	No	No	No	No	No	No	No
	SSH	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	SCP	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	TFTP	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	FTP	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	NTP	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	SNMPv2/v3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	ZTP	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	sFlow	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
MCLAG	L2	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
	L3	No	Yes	No	Yes	Yes	Yes	Yes	Yes	No
	L2 Logical VTEP	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes
	L3 Logical VTEP	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes

**Table 7. Standard feature matrix (continued)**

-	Features	Z9664F-ON	Z9432F-ON	Z9332F-ON	Z9264F-ON	S5448F-ON	S5232F-ON S5248F-ON S5296F-ON	S5224F-ON S5212F-ON	N3248X-ON N3248PXE-ON E3248P-ON E3248PXE-ON	N3248TE-ON
	IGMP snooping	No	Yes	No	Yes	Yes	Yes	Yes	No	No
	MCLAG graceful shutdown	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
	MCLAG fallback	No	Yes	No	Yes	Yes	Yes	Yes	No	No
EVPN	L2 VXLAN	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes
	L3 VXLAN	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes
Security	TACACS+	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	RADIUS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	RBAC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
System	Dynamic port breakout	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
	Interface aliasing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Display running configuration using CLI	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	User container management	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Telemetry	Thresholds	No	No	Yes	Yes	No	Yes	Yes	No	No
	Snapshots	No	No	Yes	Yes	No	Yes	Yes	No	No

**Table 8. Premium feature matrix**

-	Features	Z9664F-ON	Z9432F-ON	Z9332F-ON	Z9264F-ON	S5448F-ON	S5232F-ON S5248F-ON S5296F-ON	S5224F-ON S5212F-ON	N3248X-ON N3248PXE-ON N3248X-ON N3248PXE-ON	N3248TE-ON
Silicon telemetry	Drop monitor	No	No	Yes	Yes	No	Yes	No	No	No
	Inband flow analyzer (IFA v2.0)	No	No	No	No	No	Yes	No	No	No
	Tailstamping	No	No	Yes	Yes	No	Yes	No	No	No

# Scalability

**Table 9. Scalability**

-	S5448F-ON	Z9664F-ON	Z9432F-ON	Z9332F-ON	Z9264F-ON	S5232F-ON S5248F-ON S5296F-ON	S5224F-ON S5212F-ON	N3248TE-ON	E3248P-ON E3248PX E-ON N3248X-ON N3248PX E-ON
Number of port channels per system	128	128	128	128	128	128	128	128	128
Number of port channel members per system	128	128	128	128	128	128	128	128	128
Maximum number of port channel members per port channel	32	32	32	32	32	32	32	32	32
Maximum number of PVST instances	254	62	254	64	510	510	510	64	64
Maximum number of RPVST instances	254	62	254	510	510	510	510	510	510
Maximum number of RPVST VLAN ports	5000	5000	5000	5000	5000	5000	5000	1000	5000
Number of VLANs per system	3965	3965	3965	3965	3965	3965	3965	512	512
Maximum number of VLAN members per VLAN	Depends on the maximum number of switch ports.								
Number of VLAN members per system	24k	15K(with vlan stacking) 24K(with out vlan stacking)	15K(with VLAN stacking) 24K(with out VLAN stacking)	24k	24k	24k/12k *	24k	24k/4k *	24k/12k *

**Table 9. Scalability (continued)**

-	S5448F-ON	Z9664F-ON	Z9432F-ON	Z9332F-ON	Z9264F-ON	S5232F-ON S5248F-ON S5296F-ON	S5224F-ON S5212F-ON	N3248TE-ON	E3248P-ON E3248PX E-ON N3248X-ON N3248PX E-ON
Maximum number of SAG and MCLAG unique IP VLAN L3 interfaces (SVI) per system	4k	512	4k	512	1k	4k	4k	4k	4k
Maximum number of VLAN L3 interfaces (SVI) per system (if VRRP, SAG, and MCLAG unique IP interfaces are not configured)	4k	4k	4k	4k	4k	4k	4k	4k	4k
Maximum number of L3 interfaces supported per system	1k	512	1k	1k	1k	1k	1k	1k	1k
Maximum number of MAC addresses per system	32K (L3 profile) 224K (L2 profile)	8k	32k	8k	64k/224k*	64k/224k*	64k/224k*	16k	64k/224k*
Maximum number of VRFs per system	1000	1000	1000	512	1000	1000	1000	100	100
Maximum number of IPv4 routes per system (default mode)	1M	1M	1M	176k	196k	81k	81k	8k	8k
Maximum number of IPv6 routes per system (default mode by prefix length)	1M	1M	1M	32k (<=64b)	32k (<=64b)	32k (<=64b)	32k (<=64b)	8k (<=64b)	8k (<=64b)
				25k (>64b)	25k (>64b)	25k (>64b)	25k (>64b)	4k (>64b)	4k (>64b)
Maximum number of	N/A	N/A	N/A	280k	280k	160k	160k	Not supported	Not supported

**Table 9. Scalability (continued)**

-	S5448F-ON	Z9664F-ON	Z9432F-ON	Z9332F-ON	Z9264F-ON	S5232F-ON S5248F-ON S5296F-ON	S5224F-ON S5212F-ON	N3248TE-ON	E3248P-ON E3248PX E-ON N3248X-ON N3248PX E-ON
IPv4 routes per system (route scale maximum mode)									
Maximum number of IPv6 routes per system (route scale maximum mode)	N/A	N/A	N/A	32k (<=64b, >64b)	32k (<=64b, >64b)	65k (<=64b, >64b)	65k (<=64b, >64b)	Not supported	Not supported
Maximum number of static routes per system	2k	2k	2k	2k	2k	2k	2k	512	512
Maximum number of BGP routes per system	1M	1M	1M	1M	1M	1M	1M	8k	8k
Maximum number of BGP routes RIB IN	1M	1M	1M	1M	1M	1M	1M	8k	8k
Maximum number of BGP neighbors	512	512	512	512	512	512	512	128	128
Maximum number of paths in an ECMP group	128	128	128	128	128	128	128	16	16
Maximum number of BFD sessions	128	128	128	128	128	128	128	64	64
IP SLA - ICMP tracker	50	50	50	50	50	50	50	25	50
IP SLA - TCP tracker	50	50	50	50	50	50	50	25	50
Maximum number of ARP supported per system	28k	16k	30k	16k	32k	16k	32k	6k	6k
Maximum number of ND	15k	8k	15k	8k	16k	16k	16k	2.5k	2.5k

**Table 9. Scalability (continued)**

-	S5448F-ON	Z9664F-ON	Z9432F-ON	Z9332F-ON	Z9264F-ON	S5232F-ON S5248F-ON S5296F-ON	S5224F-ON S5212F-ON	N3248TE-ON	E3248P-ON E3248PX E-ON N3248X-ON N3248PX E-ON
supported per system									
Maximum number of OSPF routers per OSPF area	50	50	50	50	50	50	50	50	50
Maximum number of OSPF-enabled L3 interfaces	128	128	128	128	128	128	128	64	64
Maximum number of OSPFv2 neighbors	128	128	128	128	128	128	128	64	64
Maximum number of OSPF intra area routes	5,000	5,000	5,000	5,000	5,000	5,000	5,000	2,500	2,500
Maximum number inter-area summary routes	5,000	5,000	5,000	5,000	5,000	5,000	5,000	2,500	2,500
Maximum number of OSPF external (type-5) routes	40,000	40,000	40,000	40,000	40,000	40,000	40,000	8k	8k
Maximum number of VRRP instances	128	128	128	128	128	128	128	64	64
Maximum number of VRRP enabled interfaces	128	128	128	128	128	128	128	64	64
Maximum number of VRRP instances per interface	16	16	16	16	16	16	16	16	16
Maximum number of tracked interfaces per VRRP instance	8	8	8	8	8	8	8	8	8

**Table 9. Scalability (continued)**

-	S5448F-ON	Z9664F-ON	Z9432F-ON	Z9332F-ON	Z9264F-ON	S5232F-ON S5248F-ON S5296F-ON	S5224F-ON S5212F-ON	N3248TE-ON	E3248P-ON E3248PX E-ON N3248X-ON N3248PX E-ON
Maximum IP address per VRRP instance	4	4	4	4	4	4	4	4	4
Maximum number of IPv4 only ACL tables that are applied to interfaces at ingress	2	2	2	3	3	3	3	2	2
Maximum number of IPv4 ACL rules per applied ACL table at ingress	1023	255	1023	256**	256	768	768	512	512
Maximum number of IPv6 only ACL tables that are applied to interfaces at ingress	2	2	2	3	3	3	3	2	2
Number of IPv6 ACL rules per applied ACL table at ingress	1023	255	1023	256**	256	768	768	512	512
Maximum number of IPv4 only ACL tables applied to interfaces at egress	1	1	1	1	1	1	1	1	1
Maximum number of IPv4 ACL rules per applied ACL tables at egress	511	127	510	512	256	512	512	512	512
Maximum number of IPv6 only ACL tables applied to interfaces at egress	1	1	1	1	1	1	1	1	1
Number of IPv6 ACL rules	511	127	510	256	256	512	512	256	256

**Table 9. Scalability (continued)**

-	S5448F-ON	Z9664F-ON	Z9432F-ON	Z9332F-ON	Z9264F-ON	S5232F-ON S5248F-ON S5296F-ON	S5224F-ON S5212F-ON	N3248TE-ON	E3248P-ON E3248PX E-ON N3248X-ON N3248PX E-ON
per applied ACL tables at egress									
Maximum number of NAT entries (static plus dynamic)	0	0	0	1024	1024	1024	1024	0	0
Maximum number of port mirroring sessions per system	4	4	4	4	4	4	4	4	4
Maximum number of SPAN/ERSPAN mirroring sessions per system	4	4	4	4	4	4	4	4	4
Maximum number of BGP EVPN sessions	256	256	256	256	256	256	256	128	128
Maximum EVPN MAC addresses	40k/288k*	Not supported	40k/288k*	Not supported	Not supported	40k/288k*	40k/288k*	8k	8k
Maximum VXLAN tunnels	512 (Without primary IP addresses (PIP)) 256 (With PIP)	Not supported	512 (Without primary IP addresses (PIP)) 256 (With PIP)	Not supported	Not supported	512	512	256 (Without primary IP addresses (PIP)) 128 (With PIP)	512 (Without primary IP addresses (PIP)) 256 (With PIP)
Maximum number of L2 VNIs	4k	Not supported	4k	Not supported	Not supported	4k	4k	1k	1k
Maximum number of L3 VNIs (VRF)	1k	Not supported	1k	Not supported	Not supported	1k	1k	25	25

**Table 9. Scalability (continued)**

-	<b>S5448F-ON</b>	<b>Z9664F-ON</b>	<b>Z9432F-ON</b>	<b>Z9332F-ON</b>	<b>Z9264F-ON</b>	<b>S5232F-ON</b> <b>S5248F-ON</b> <b>S5296F-ON</b>	<b>S5224F-ON</b> <b>S5212F-ON</b>	<b>N3248TE-ON</b>	<b>E3248P-ON</b> <b>E3248PXE-ON</b> <b>N3248X-ON</b> <b>N3248PXE-ON</b>
Overlay routes	IPv4 - 340k, IPv6 - 340k	Not supported	IPv4 - 340k, IPv6 - 340k	Not supported	Not supported	IPv4 - 81k IPv6 - 25k	IPv4 - 81k IPv6 - 25k	IPv4 - 81k IPv6 - 25k	IPv4 - 8k IPv6 - 4k
Maximum number of IPMC (L3) forwarding entries	8k	512	8k	512	8k	8k	8k	512	512
Maximum number of flow groups for silicon telemetry features	Not supported	Not supported	253	253	Not supported	253	253	Not supported	Not supported
Maximum number of IFA sessions	Not supported	Not supported	Not supported	253	253	253	253	Not supported	Not supported
Maximum number of drop monitor sessions	Not supported	Not supported	Not supported	253	253	253	253	Not supported	Not supported
Maximum number of tailstamping sessions	Not supported	Not supported	Not supported	253	-	253	253	Not supported	Not supported
Maximum number of IGMP Snooping entries	512	512	512	512	512	512	512	512	512
Max number of DHCPv4 Snooping entries (dynamic/static)	3k / 1k	3k / 1k	3k / 1k	3k / 1k	3k / 1k	3k / 1k	3k / 1k	3k / 1k	3k / 1k
Max number of DHCPv6 Snooping entries (dynamic/static)	3k / 1k	3k / 1k	3k / 1k	3k / 1k	3k / 1k	3k / 1k	3k / 1k	3k / 1k	3k / 1k
PAC : Maximum Clients (802.1x/MAB)	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	512	512

**Table 9. Scalability (continued)**

-	S5448F-ON	Z9664F-ON	Z9432F-ON	Z9332F-ON	Z9264F-ON	S5232F-ON S5248F-ON S5296F-ON	S5224F-ON S5212F-ON	N3248TE-ON	E3248P-ON E3248PX E-ON N3248X-ON N3248PX E-ON
supported on the Switch									
PAC : Maximum Clients (802.1x/MAB) supported per-port	Not supported	Not supported	48	48					
PAC : Maximum ACL rules supported per (802.1x/MAB) Client	Not supported	Not supported	30	30					

\* The first value corresponds to Layer 3 switch profile mode (default mode) and the second value corresponds to Layer 2 switch profile mode.

\*\* For the Z9332F-ON, one ACL table can have 512 entries while the other can have 256. It is not deterministic which table will be 512 when tables are added and deleted (marked as 256).

## Interface specifications

**Table 10. Interface specifications**

-	400G QSFP56-DD	2x100G QSFP28-DD	100G SFP56-DD	100G QSFP28	25G SFP28	10G SFP+	10GBase-T	1GBase-T
Z9664F-ON	64	-	-	-	-	2	-	-
Z9432F-ON	32	-	-	-	-	2	-	-
Z9332F-ON	32	-	-	-	-	2	-	-
Z9264F-ON	-	-	-	64	-	2	-	-
S5448F-ON	8	-	48	-	-	2	-	-
S5232F-ON	-	-	-	32	-	2	-	-
S5296F-ON	-	-	-	8	96	-	-	-
S5248F-ON	-	2	-	4	48	-	-	-
S5224F-ON	-	-	-	4	24	-	-	-
S5212F-ON	-	-	-	3	12	-	-	-
E3248P-ON	-	-	-	2	-	4	-	48
E3248PXE-ON	-	-	-	2	4	-	48	-
N3248X-ON	-	-	-	2	4	-	48	-
N3248PXE-ON	-	-	-	2	4	-	48	-
N3248TE-ON	-	-	-	2	-	4	-	48

# Breakout modes on Dell PowerSwitch platforms

This information lists the breakout modes for each supported switch.

**Table 11. Breakout modes on Dell PowerSwitch platforms**

Platform	Breakout modes	Default breakout mode
S5212F-ON	1x100G, 1x40G, 4x25G, 4x10G	The listed breakout modes are supported on port 1/13 - 1/15. Port 1/1 to 1/12 do not support breakout and are 25G by default. You can use them at 10G or 1G using the speed command.
S5224F-ON	1x100G, 1x40G, 4x25G, 4x10G	The listed breakout modes are supported on port 1/25 - 1/28. Port 1/1 to 1/24 do not support breakout and are 25G by default. You can use them at 10G or 1G using the speed command.
S5232F-ON	1x100G, 1x40G, 2x50, 4x25G, 4x10G	Listed Breakout modes are supported on port 1/1 - 1/31. Port 1/32 does not support 4x25G or 4x10G modes. To configure Port1/32 to operate at 40G, use the speed 40000 command. 2x50G is validated only for a specific case with 100G DAC.
S5248F-ON	1x100G, 1x40G, 4x25G, 4x10G	The listed breakout modes are supported on port 1/49 - 1/56. Port 1/1 to 1/48 do not support breakout and are 25G by default. You can use them at 10G or 1G using the port-group command. For more information about using the port-group command, see the User Guide.
S5296F-ON	1x100G, 1x40G, 4x25G, 4x10G	The listed breakout modes are supported on port 1/97 - 1/104. Port 1/1 to 1/96 do not support breakout and are 25G by default. You can use them at 10G or 1G using the port-group command. For more information about using the port-group command, see the User Guide.

**Table 11. Breakout modes on Dell PowerSwitch platforms (continued)**

Platform	Breakout modes	Default breakout mode
S5448F-ON	<ul style="list-style-type: none"> <li>• Port 1/1 to 1/4 and 1/53 to 1/56: 1x25G, 1x10G, 1x100G, 1x40G, 1x200G, 2x40G, 2x200G, 2x100G, 4x25G, 4x10G, 4x100G</li> <li>• Port 1/5 to 1/52: 1x25G, 1x10G, 1x100G, 1x40G, 1x200G, 1x400G, 2x40G, 2x200G, 2x100G, 4x25G, 4x10G, 4x100G</li> </ul>	-
Z9264F-ON	1x100G, 1x40G, 4x25G, 4x10G, 1x25G, 1x10G	-
Z9332F-ON	1x400G, 2x200G, 2x100G, 2x40G, 4x100G, 1x100G, 1x40G, 1x200G, 8x25G, 8x10G, 4x25G, 4x10G, 1x25G, 1x10G	-
Z9432F-ON	1x400G, 2x200G, 2x100G, 2x40G, 4x100G, 1x100G, 1x40G, 1x200G, 8x25G, 8x10G, 4x25G, 4x10G, 1x25G, 1x10G	-
Z9664F-ON	1x400G, 2x200G, 2x100G, 2x40G, 4x100G, 1x100G, 1x40G, 4x25G, 4x10G, 1x25G, 1x10G	-
N and E-series	None	-