










DATA CENTER NETWORKING QUICK REFERENCE GUIDE




Last update: April 2019



Series	10/25/40/50/100GbE				
Overview	 High-performance, high-density 100GbE multi-rate aggregation switch	 Fixed form factor switch for high-performance data center and computing environments	 10/25/40/50/100GbE fully modular open networking top-of-rack switch	 Programmable, high-performance open networking top-of-rack switch with native 25G server/ ports and 100G network fabric connectivity	 High-performance switch with native 25G ports and 100G fabric ports
Models	Z9264F-ON	Z9100-ON	S6100-ON	S5148-ON	S5048-ON
Performance					
Switching capacity (full duplex)	12.8Tbps	6.4Tbps	6.4Tbps	3.6Tbps	3.6Tbps
Forwarding capacity (Mpps)	2900Mpps for 64 < packet size < 250 bytes 4200Mpps when average size > 250 bytes	>4400	>4400	In process	2678 Mpps
Buffer size	42MB	16MB	16MB	16MB	22MB
Latency	300ns L2/400ns L3	L2: 300ns, L3: 400ns	L2: 300ns, L3: 400ns	In process	In process
Ports					
1/10GBase-T	N/A	2 fixed 1/10GbE SFP+ ports	N/A	N/A	NA
1GbE (SFP)	128	—	2	N/A	NA
10GbE	128	128 (breakout cable)	Up to 128	54	54
25GbE	128	128 (breakout cable)	Up to 128	72	72
40GbE	64	32	Up to 64	6	6
50GbE	128	64 (breakout cable)	Up to 64	6	6
100GbE	64	32	Up to 32	6	6
Expansion module slots (Modules support speed indicated)	—	—	4 slots and 3 modules. Choose from: 8 x QSFP28; 16 x QSFP+; 4 x QSFP48 + ; 4 x CXP		NA
Power and cooling					
Power consumption (W)	1104	606 (max)/288 (normal)	896 (max)/343 (normal)	516 (max)/421 (normal)	288(max)/573(normal)
Power options	AC or DC	AC or DC	AC	AC or DC	AC or DC
Redundant power (hot-swappable)	2	2	2	2	2
Airflow	Reversible	Reversible	Reversible		
Features					
Operating Systems	Dell EMC OS10 and select 3rd party OS	Dell EMC Networking OS9 (OS10 for S5148-ON), Cumulus Linux OS, Big Switch Networks Switch Light™ OS, IP Infusion OCNOS, Pluribus NetVisor, as well as Big Switch Networks Big Tap™ Monitoring Fabric application. Consult the Dell Open Networking 3rd Party OS Ordering Guide for up-to-date data			
Industry-standard CLI (Console, Telnet, SSHv1/v2)	Dell EMC Networking and several 3rd party OS				
iSCSI optimization	iSCSI aware (detect and prioritize iSCSI traffic into pre-defined QoS); iSCSI Auto-Configuration (switch configuration routine for automated setup and optimal performance with Dell EqualLogic or Compellent arrays)				
Max VLANs (Configured)	4K per port	4096	4096	In process	4K
Max MAC entries	160K	136K	136k	Up to 512K	Up to 512K
Link aggregation (Groups/Members)	16 links per group, 128 groups	128/16	128/16	Unlimited links per group up to 36 groups	128 groups, 32 members per LAG group
Max routes (IPv4/IPv6)	128K/64K	136K/68K	136k/68k	Up to 128K/64K	Up to 128K/64K
IPv4 routing	RIP, OSPF, BGP	RIP, OSPF, BGP, IS-IS	RIP, OSPF, BGP, IS-IS	RIP, OSPF, BGP	RIP, OSPF, BGP
IPv6 routing	BGP-4	OSPFv3, BGP-4, IS-IS	OSPFv3, IS-IS, GBP	OSPFv3	OSPFv3
Multicast routing	IGMP, PIM, MSDP	IGMP, PIM, MSDP	IGMP, PIM, MTU	In process	Yes

†Some features differ for Open Networking (ON) versions.

Series	10/25/40/50/100GbE				
Overview	 Build a high-performance, cost-efficient data center leaf/spine fabric with this spine fabric switch	 Provide optimum flexibility and cost-effectiveness for demanding compute and storage traffic environments	 Double the amount of direct 25GbE ports with a ToR switch that features 96 x 25GbE SFP28	 Low-density 1RU, half-width switch ideal for high-performance HCI connectivity	 Low-density 1RU, full-width switch ideal for high-performance HCI connectivity
Models	S5232F-ON	S5248F-ON	S5296F-ON	S5212F-ON	S5224F-ON
Performance					
Switching capacity (full duplex) (Tbps)	3.2	2.0	3.2	2.16Tbps	2.16Tbps
Forwarding capacity (Mpps)	4761Mpps	2976Mpps	4761Mpps	892Mpps	1488Mpps
Buffer size	32MB	32MB	32MB	32MB	32MB
Latency	TBD	TBD	TBD	906	881
Ports					
1/10GBase-T	N/A	N/A	N/A	NA	NA
1GbE (SFP)	N/A	N/A	N/A	NA	NA
10GbE	128	80	128	24	40
25GbE	128	80	128	24	40
40GbE	32	8	8	3	4
50GbE	64	16	16	6	8
100GbE	32	8	8	3	4
Expansion module slots	N/A	N/A	N/A	NA	NA
Power and cooling					
Power consumption (W)	635	602	835	304W	455W
Power options	AC or DC	AC or DC	AC or DC	AC or DC	AC
Redundant power (hot-swappable)	2	2	2	NA	2
Airflow	Reversible	Reversible	Reversible	Reversible	Reversible
Features					
Operating Systems	Dell EMC OS10 and select 3rd party OS				
Industry-standard CLI (Console, Telnet, SSHv1/v2)	Dell EMC networking and several 3rd party OS				
iSCSI optimization	iSCSI optimization and FSB	iSCSI optimization and FSB	iSCSI optimization and FSB	iSCSI optimization and FSB	iSCSI optimization and FSB
Max VLANs (Configured)	4K per port	4K per port	4K per port	4K per port	4K per port
Max MAC entries	160K	160K	160K	160K	160K
Link aggregation (Groups/Members)	16 links per group, 128 groups	16 links per group, 128 groups	16 links per group, 128 groups	16 links per group, 128 groups	16 links per group, 128 groups
Max routes (IPv4/IPv6)	128K/64K	128K/64K	128K/64K	128K/64K	128K/64K
IPv4 routing	RIP, OSPF, BGP	RIP, OSPF, BGP	RIP, OSPF, BGP	RIP, OSPF, BGP	RIP, OSPF, BGP
IPv6 routing	BGP-4	BGP-4	BGP-4	BGP-4	BGP-4
Multicast routing	IGMP, PIM, MSDP	IGMP, PIM, MSDP	IGMP, PIM, MSDP	IGMP, PIM, MSDP	IGMP, PIM, MSDP

Series	10GbE/8GbFC	10GbE	
Overview	 Latest generation 40GbE 10K switch based on Broadcom Trident2+ chip	 Full function high-performance switch with 10/40GbE ports and multi-rate 100GbE ports with deep buffers	 High-performance switch with 10/40Gbe ports, multi-rate 100GbE ports and deep buffers and tables
Models	S6010-ON+	S4248FB-ON	S4248FBL-ON
Performance			
Switching capacity (full duplex) (Tbps)	2.56	1.6	1.6
Forwarding capacity (Mpps)	1462	720	720
Buffer size	16MB	6GB	6GB
Latency	Sub 600ns	1.9 to 10.0 micro sec	1.9 to 10.0 micro sec
Ports			
1/10GBase-T	—	NA	NA
1GbE (SFP)	96 (breakout cable)	NA	NA
10GbE	—	72	72
25GbE	—	24	24
40GbE	32 fixed 40GbE QSFP+ ports	8	8
50GbE	—	12	12
100GbE	—	6	6
Expansion module slots (Modules support speed indicated)	—	NA	NA
Power and cooling			
Power consumption (W)	411 (max)/274 (normal)	420 (max)/150 (normal)	470 (max)/180 (normal)
Power options	AC	AC or DC	AC or DC
Redundant power (hot-swappable)	2	2	2
Airflow		Reversible	
Features			
Operating Systems		Dell EMC Networking OS10 and several 3rd party OS	
Industry-standard CLI (Console, Telnet, SSHv1/v2)		EMC Networking OS10 and several 3rd party OS	
iSCSI optimization		Yes	
Max VLANs (Configured)	4K	4K	4K
Max MAC entries	160K	750K	750K
Link aggregation (Groups/Members)	128/16	32 links per group, 128 groups	32 links per group, 128 groups
Max routes (IPv4/IPv6)	128K/8K	130K / 64K	2 Million / 400K
Jumbo frames	In process	9216 bytes	9216 bytes
IPv4 routing	RIP, OSPF, BGP, IS-IS	RIP, OSPF, BGP	RIP, OSPF, BGP
IPv6 routing	BGP-4, IS-IS	OSPFv3	OSPFv3
Multicast routing	IGMP, PIM, MTU	In process	In process

*Some features differ for Open Networking (ON) versions.

Series






10GbE

Overview



Next generation open networking switches for enterprise, mid-market and Tier2 cloud service providers with demanding compute and storage traffic environments

Models (all sized 1RU)	S4128F-ON	S4128T-ON	S4148F-ON	S4148T-ON	S4148FE-ON	S4148U-ON
Performance						
Switching capacity (full duplex)	960 Gbps	960 Gbps	1.76 Tbps	1.76 Tbps	1.76 Tbps	1.76 Tbps
Forwarding Capacity (Mpps)	720	720	1320	1320	1320	1320
Buffer size	12MB	12MB	12MB	12MB	12MB	12MB
Latency (microseconds)	<800 n sec	<2.3 u sec	<800 n sec	<2.3 u sec	<850 n sec	<800 n sec
Ports						
FC8/FC16	N/A	N/A	N/A	N/A	N/A	unified SFP+/SFP28
FC8/FC16/FC32	N/A	N/A	N/A	N/A	N/A	unified QSFP28
1/10GBase-T	N/A	28	N/A	48	N/A	N/A
10GbE	36	36	72	72	72	72
25GbE (QSFP+)	8	8	16	16	16	16
40GbE	2	2	6	6	6	6
50GbE	4	4	8	8	8	8
100GbE	2	2	4	4	4	4
Expansion module slots (Modules support speed indicated)	N/A	N/A	N/A	N/A	N/A	N/A
Power and cooling						
Max. power consumption (W)	260 (max)/160 (normal)	300 (max)/250 (normal)	370 (max)/200 (normal)	440 (max)/320 (normal)	400(max)/240 (normal)	460 (max)/300 (normal)
Power options	AC or DC	AC or DC	AC or DC	AC or DC	AC or DC	AC or DC
Redundant power supplies	2	2	2	2	2	2
Airflow	Normal or Reverse					
Features						
Stacking	Not currently available					
Operating system	Dell EMC Networking OS10 and select 3rd party OS					
Industry-standard CLI	Dell EMC Networking OS10 and several 3rd party OS					
iSCSI optimization storage features	iSCSI optimization and FSB					iSCSI optimization, FSB, NPIV Proxy gateway, F_Port, FCoE/FC hosts, FC zoning
Max L2 VLANs and L3 VLANs	500 L3 VLANs					
Max MAC entries	272K					
Link aggregation (groups/Members)	32 links per group, 128 groups					
Max routes (IPv4/IPv6)	200K/130K					
Jumbo frames (Bytes)	9,416					
IPv4 routing	RIP, OSPF, BGP					
IPv6 routing	OSPFv3					
Multicast routing	In process					

Series	10GbE			1GbE		
Overview						
	Low density ToR switch for 10GE/25GE storage arrays and servers in a compact form factor		High-density 10GbE open networking switch	Open networking switch for copper connections providing choice, cost-effectiveness and ultra low-latency performance	Power-efficient and resilient 1 GbE switching solution with integrated 10GbE uplinks for advanced L3 switching	High-density 1GbE open networking switch
Models (all sized 1RU)	S4112F-ON	S4112T-ON	S4048-ON+	S4048T-ON	S3148/S3124	S3048-ON+
Performance						
Switching capacity (full duplex)	840Gbps	840Gbps	1.44Tbps	2.88Tbps	520Gbps	520Gbps
Forwarding Capacity (Mpps)	630Mpps	630Mpps	1080	1080	193	131
Buffer size	12MB	12MB	12MB	16MB	4MB	4MB
Latency (microseconds)	800	<2.5us	Sub 600ns	2.8 microseconds	4.2 microseconds	3.7 microseconds
Ports						
1/10GBase-T	NA	12	—	48 fixed 10GBase-T RJ-45 ports	—	48
1GbE (SFP)	NA	NA	—	—	Up to 48 RJ45 10/100/1000MB autosensing POE+, 2 SFP+	4
10GbE	12, 24 with breakout cables	12 with breakout	48 (SFP+) 72 total (breakout cable)	24 (breakout cable)	2 10GbE SFP+	4 (using SFP+ module)
25GbE	12 with breakout	12 with breakout	—	—	—	—
40GbE (QSFP+)	3	3	6	—	—	—
50GbE	6	6	—	—	—	64 (breakout cable)
100GbE	3	3	—	—	—	32
Expansion module slots (Modules support speed indicated)	—	—	—	6 fixed 40GbE QFSP+ ports	2 modules, choose from: • 12 port 10GbE SFP+ • 12 port 1/10GBase-T • 12 port combo (SFP+ or 12 port FC 2/4/8Gbps)	—
Power and cooling						
Max. power consumption (W)	180 (max) / 90 (normal)	200 (max) / 120 (normal)	234.35	460 (max)/338 (normal)	2145 (max)/ 44(normal)	87
Power options	Fixed power supply		AC or DC	AC	AC	AC or DC
Redundant power supplies	Redundant Fixed fans		2 hot-swappable	2	2	2 hot-swappable
Airflow	Normal or reverse air flow			Reversible		Normal
Features						
Stacking	Not currently available		Up to 6 units		Up to 12 units	Up to 6 units
Operating system	Dell EMC OS10 and select 3rd party OS	Dell EMC OS10 and select 3rd party OS	Consult the Dell EMC Open Networking 3rd Party OS Ordering Guide for up-to-date details		Dell EMC OS9	See Ordering Guide
Industry-standard CLI	Dell EMC networking and several 3rd party OS			Dell EMC Networking OS9 and several 3rd party OS		
iSCSI optimization storage features			iSCSI optimization and FSB			No
Max L2 VLANs and L3 VLANs	4KL2/500L3		4096/1000	4K	4K	4096/1000
Max MAC entries	272K		160K	160K	56K	64K
Link aggregation (groups/Members)	32 links per group, 128 groups		128/16	128/16	128/16	128/16
Max routes (IPv4/IPv6)	200K/130K		128K/64K	128K/64K	16K/8K	16K/8K
Jumbo frames (Bytes)	9,416		9,252	12K	12K	12K
IPv4 routing	RIP, OSPF, BGP		RIP, OSPF, BGP, IS-IS	RIP, OSPF, BGP, IS-IS	RIP, OSPF, BGP, IS-IS	RIP, OSPF, BGP, IS-IS
IPv6 routing	OSPFv3		OSPFv3, BGPv6, IS-IS	OSPFv3, BGP-4, IS-IS	OSPFv3, BGPv6, IS-IS	OSPFv3, BGPv6, IS-IS
Multicast routing	In process			IGMP, PIM, MTU, MSDP	IGMP, MDSP, PIM	IGMP, PIM

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