

Enterprise SONiC Distribution by Broadcom

Feature and Scalability Matrix

1 Supported Platforms

PIN	Platform Name	Port Configuration	ODM/OEM Vendor	Broadcom Silicon	Hardware Revision
Leaf	AS5712-54X	48 x 10G + 6 x 40G	Accton	BCM56850 (TD2)	R03E
Leaf	AS7326-56X	48 x 25G + 8 x 100G	Accton	BCM56873 (TD3-X7 2.0T)	R01B
Spine	AS7712-32X	32 x 100G	Accton	BCM56960 (TH)	R01A
Spine/Superspine	AS7816-64X	64 x 100G	Accton	BCM56970 (TH2)	R01A
Leaf	AS7726-32X	32 x 100G	Accton	BCM56870(TD3-X7 3.2T)	R01B
Spine/Superspine	AS9716-32D	32 x 400G	Accton	BCM56980(TH3)	R0BB
Spine/Superspine	IX9	32 x 400G	Quanta	BCM56980(TH3)	C3C
Leaf	IX8	48 x 25G + 8 x 100G	Quanta	BCM56873 (TD3-X7 2.0T)	C1D
Spine/Superspine	IX4	64 x 100G	Quanta	BCM56970 (TH2)	A1A
Management Switch	AS4630-54PE	18 x 1G + 4 x 25G + 2 x 100G	Accton	BCM56370 (TD3-X3)	R0D

2 Silicon Support and Feature Matrix

Enterprise SONiC distribution by Broadcom, version 3.1.0 is supported on the StrataXGS family of silicon only. StrataDNX™ platforms will be supported in future releases.

Features Supported	Feature Description	TH/TH2	TH3	TD2	TD3-X7	TD3-X5	TD3-X3
Layer2	STP – PVST/RPVST+	Yes	Yes	Yes	Yes	Yes	Yes
	PVST/RPVST+ over MLAG	Yes	Yes	Yes	Yes	Yes	No
	Link Aggregation	Yes	Yes	Yes	Yes	Yes	Yes
	Link Aggregation Fallback	Yes	Yes	Yes	Yes	Yes	Yes
	LLDP	Yes	Yes	Yes	Yes	Yes	Yes
	UDLD	Yes	Yes	Yes	Yes	Yes	Yes
	IGMP Snooping	Yes	Yes	Yes	Yes	Yes	Yes
Layer3	BGP v4, v6	Yes	Yes	Yes	Yes	Yes	Yes
	IPv4, v6 Static Routing	Yes	Yes	Yes	Yes	Yes	Yes
	BFD	Yes	Yes	Yes	Yes	Yes	Yes
	VRRP	Yes	Yes	Yes	Yes	Yes	Yes

Feature and Scalability Matrix

Enterprise SONiC Distribution by Broadcom

	ECMP (128-way)	Yes	Yes	Yes	Yes	Yes	Yes
	DHCP Relay	Yes	Yes	Yes	Yes	Yes	Yes
	OSPFv2	Yes	Yes	Yes	Yes	Yes	Yes
	NAT	Yes	No	Yes	Yes	Yes	No
	L3 IGMP	Yes	Yes	Yes	Yes	Yes	Yes
	PIM SSM	Yes	Yes	Yes	Yes	Yes	Yes
	IP SLA (ICP/TCP track)	Yes	Yes	Yes	Yes	Yes	No
	Policy Based Routing	Yes	Yes	Yes	Yes	Yes	No
ACLs	L2 ACLs	Yes	Yes	Yes	Yes	Yes	Yes
	L3 ACLs	Yes	Yes	Yes	Yes	Yes	Yes
	Receive ACLs	Yes	Yes	Yes	Yes	Yes	Yes
	Route maps	Yes	Yes	Yes	Yes	Yes	Yes
QoS	L2 QoS Maps	Yes	Yes	Yes	Yes	Yes	Yes
	L3 QoS Maps	Yes	Yes	Yes	Yes	Yes	Yes
	Queue and buffer size configuration	Yes	Yes	Yes	Yes	Yes	Yes
	Traffic Priority scheduling (Strict, WFQ)	Yes	Yes	Yes	Yes	Yes	Yes
	WRED	Yes	Yes	Yes	Yes	Yes	Yes
	ECN	Yes	Yes	Yes	Yes	Yes	Yes
	Priority Flow Control	Yes	Yes	Yes	Yes	Yes	Yes
	BUM/Storm control	Yes	No	Yes	Yes	Yes	Yes
Monitoring	Telnet	No	No	No	No	No	No
	SSH	Yes	Yes	Yes	Yes	Yes	Yes
	SCP	Yes	Yes	Yes	Yes	Yes	Yes
	TFTP	Yes	Yes	Yes	Yes	Yes	Yes
	FTP	Yes	Yes	Yes	Yes	Yes	Yes
	NTP	Yes	Yes	Yes	Yes	Yes	Yes
	SNMP Monitoring	Yes	Yes	Yes	Yes	Yes	Yes
	ZTP	Yes	Yes	Yes	Yes	Yes	Yes
	sFlow	Yes	Yes	Yes	Yes	Yes	Yes
MC-LAG	L2	No	No	No	Yes	Yes	No
	L3	No	No	No	Yes	Yes	No

Feature and Scalability Matrix

Enterprise SONiC Distribution by Broadcom

	L2 LVTEP	No	No	No	Yes	Yes	No
	L3 LVTEP	No	No	No	Yes	Yes	No
	IGMP Snooping	Yes	Yes	Yes	Yes	Yes	No
	MC-LAG graceful shutdown	Yes	Yes	Yes	Yes	Yes	No
	MC-LAG fallback	Yes	Yes	Yes	Yes	Yes	No
EVPN	L2 VxLAN	No	No	No	Yes	Yes	No
	L3 VxLAN	No	No	No	Yes	Yes	No
Linux PTP		Yes (TH)	No	Yes	No	No	No
Security	TACACS+	Yes	Yes	Yes	Yes	Yes	Yes
	RADIUS	Yes	Yes	Yes	Yes	Yes	Yes
	RBAC	Yes	Yes	Yes	Yes	Yes	Yes
Silicon Telemetry	Thresholds	Yes	Yes	Yes	Yes	Yes	No
	Snapshots	Yes	Yes	Yes	Yes	Yes	No
	Drop Monitor	Yes (TH2 only)	Yes	No	Yes	No	No
	Inband Flow Analyzer (IFA, version 2.0)	No	No	No	Yes	No	No
	Tail Stamping	Yes (TH2 only)	Yes	No	Yes	No	No
System	Dynamic Port Breakout	Yes	Yes	Yes	Yes	Yes	No
	Interface Aliasing	Yes	Yes	Yes	Yes	Yes	Yes
	Display running configuration using IS-CLI	Yes	Yes	Yes	Yes	Yes	Yes
	Third Party Container Management	Yes	Yes	Yes	Yes	Yes	No
	Multi Instance REDIS DB	Yes	Yes	Yes	Yes	Yes	Yes

3 List of Optics Supported

#	Transceiver/Cable	Type	Speed	Vendor	Part Number	Length	Support Level ¹
1	Transceiver	SFP	1G	Finisar	FTLF1321P1BTL	—	Full
2	Transceiver	SFP	1G	Finisar	FTLF8519P3BNL	—	Full
3	Transceiver	SFP+	10G	Finisar	FTLX8571D3BCL	—	Full
4	Transceiver	SFP+	10G	Finisar	FTLF8524P2BNL	—	Full
5	Transceiver	QSFP+	40G	Avago	AFBR-79EIPZ	—	Full
6	Transceiver	QSFP+	40G	Avago	AFBR-79E4Z	—	Full
7	Transceiver	QSFP+	40G	Finisar	FTL410QE2C	—	Full
8	Transceiver	QSFP+	40G	Finisar	FTL4C1QE1C	—	Full
9	DAC	QSFP+	40G	Amphenol	603020001	1M	Full
10	DAC	QSFP+	40G	Amphenol	603020003	3M	Full
11	DAC	QSFP+	40G	Amphenol	603020005	5M	Full
12	DAC	QSFP+	40G	Amphenol	603020007	7M	Full
13	DAC	QSFP28	100G	Yamachi	CAU120-038-D050	—	Full
14	DAC	QSFP28	100G	Amphenol	NDAAFF-0001	1M	Full
15	DAC	QSFP28	100G	Amphenol	NDAAFF-0003	3M	Full
16	DAC	QSFP28	100G	Amphenol	NDAAFJ-0004	5M	Full
17	DAC	SFP28	25G	Amphenol	NDCCGF-0005	3M	Full
18	DAC	SFP28	25G	Amphenol	NDCCGF-0001	1M	Full
19	DAC	SFP28	25G	Amphenol	NDCCGJ-0005	5M	Full
20	DAC	SFP28	25G	Amphenol	SF-NDCCGF28GB-002M	—	Full
21	DAC-QSFP28_to_Quad_SFP28 Breakout Cable	QSFP28 → SFP28	100 → 4 × 25G	Amphenol	NDAQGF0003	3M	Full
22	DAC - QSFP28_to_Quad_SFP28 Breakout Cable	QSFP28 → SFP28	100 → 4 × 25G	Amphenol	NDAQGF-0001	1M	Full
23	DAC - QSFP28_to_Quad_SFP28 Breakout Cable	QSFP28 → SFP28	100 → 4 × 25G	Amphenol	NDAQGF-0005	5M	Full
24	DAC	QSFP+	40G	Finisar	FCBG410QB1C03	—	Full

¹Full indicates Broadcom has tested these optics. Limited indicates these optics were used in Broadcom labs for SONiC testing.

Feature and Scalability Matrix

Enterprise SONiC Distribution by Broadcom

25	DAC	SFP+	10G	Amphenol	586710005	10M	Full
26	DAC	SFP+	10G	Amphenol	586710007	1M	Full
27	DAC	SFP+	10G	Amphenol	586710003	5M	Full
28	DAC	SFP+	10G	Amphenol	586710004	7M	Full
29	40G_to_40G_Fiber_Patch_Cable	QSFP+	40G	Amphenol	100164	—	Full
30	40G_to_4*10G_fiber_Splitter_Cable	QSFP+ → SFP+	40G → 4 × 10G	Molex	CU-3M-QSFP-4SFP10G-C	—	Full
31	40G_to_4*10G_fiber_Splitter_Cable	QSFP+ → SFP+	40G → 4 × 10G	Amphenol	100208	—	Full
32	Amphenol_100G_FIBER_15M	QSFP28	100G	Amphenol	FOQQD33P00015	—	Full
33	QSFP28_100G_QSFP_TRANSCEIVER_FOXCONN	QSFP28	100G	Foxconn	AFBR-89BDDZ	—	Full
34	400G DAC 400G QSFP-DD to QSFP-DD	QSFP-DD	400G	Foxconn	CU4EP54-01000-EF	—	N/A
35	400G QSFP-DD to 2xQSFP28 400G to 2*200G DAC	QSFP-DD	400G	Foxconn	CU4DP34-0B001-EF	—	N/A
36	QSFP-DD(400G) Passive Cable	QSFP-DD	400G	Amphenol	NDYYYYF0001	—	N/A
37	SFP+ Passive DAC	SFP+	10G	Foxconn	CUFCP14-CCF05-EF	3M	Full
38	SFP+ Passive DAC	SFP+	10G	Foxconn	CUFCP13-DCF05-EF	5M	Full
39	SFP28 Passive DAC	SFP28	25G	Foxconn	CUFCP34-CCF05-EF	3M	Full
40	SFP28 Passive DAC	SFP28	25G	Foxconn	CUFCP32-DCF05-EF	5M	Full
41	QSFP+ Fanout Passive DAC	QSFP+ → SFP+	40G → 4 × 10G	Foxconn	CURCP14-CCF05-EF	3M	Full
42	SFP 10G SR	SFP	10G	Brocade	57-0000075-01	—	Limited
43	QSFP 40G 150M	QSFP	40G	Brocade	57-1000128-01	—	Limited
44	QSFP28 SR4 150M	QSFP28	100G	Brocade	57-1000326-01	—	Limited
45	QSFP28 AOC 10M	QSFP28	100G	Brocade	57-1000347-01	—	Limited
46	QSFP 40G LR	QSFP	40G	Brocade	57-1000263-01	—	Limited
47	QSFP28-100G-DAC	QSFP28	100G	FS	QSFP28-100G-DAC	—	Limited
48	QSFP28 - 4xSFP28 DAC 3M	QSFP28 - 4xSFP28	100G	FS	Q28-PC03	—	Limited

Feature and Scalability Matrix

Enterprise SONiC Distribution by Broadcom

49	QSFP28-SR4-100G	QSFP28	100G	FS	QSFP28-SR4-100G	—	Limited
50	QSFP- 4xSFP DAC	QSFP-4xSFP	40G	FS	QSFP-4SFP10G-DAC	—	Limited
51	QSFP-SR4-40G	QSFP	40G	FS	QSFP-SR4-40G	—	Limited
52	QSFP-SR4-40G	QSFP	40G	FS	QSFP-SR4	—	Limited
53	40GE BiDi QSFP+	QSFP-BiDi	40G	FS	QSFP-BD-40G	—	Limited
54	QSFP-DD DR4 400G	QSFP-DD	400G	FOIT	AFCT-91DRDDZ	—	Limited
55	QSFP28 DR1 100G	QSFP28	100G	FOIT	AFCT-89SFDZ	—	Limited

4 Scalability Matrix

SONiC 3.1.0 Scaling Numbers	TH	TH2	TD2	TD3	TH3
Number of Port Channels per system	128	128	128	128	128
Number of Port Channel members per system	128	128	128	128	128
Maximum number of Port Channel members per Port Channel.	32	32	32	32	32
Maximum number of PVST instances	510	510	510	510	62
Maximum number of RPVST instances	510	510	510	510	62
Maximum number of RPVST VLAN ports	3500	3500	3500	3500	3500
Number of VLAN members per system	24k	24k	24k	8k/24k	24k
Maximum number of VLAN members per VLAN	Up to maximum number of system ports + port channel				
Maximum number of VLAN_INTERFACE per system	1K	1K		1K	512
Maximum number of L3 interface supported per system.	1K	1K		1K	512
Maximum number of MAC per system	40k / 136k	40k / 256k	16k / 288k	40k / 224k	8k/8k
Maximum number of MAC per VLAN	40k / 136k	40k / 256k	16k / 288k	40k / 224k	8k/8k
Maximum number of MAC per Port	40k / 136k	40k / 256k	16k / 288k	40k / 224k	8k/8k
Maximum number of VRF per system	1000	1000		1000	512
Maximum number of IPv4 routes per system (default mode)	65k	196k	128K	81k	196k
Maximum number of IPv6 routes per system (default mode)	24K(<=64b), 14k(>64b)	32K(<=64b), 25k(>64b)	80K(<=64b)	32K(<=64b), 25k(>64b)	32K (≤ 64b), 25k (> 64b)
Maximum number of IPv4 routes per system (route scale max mode)	N/A	280k	NA	160k	N/A
Maximum number of IPv6 routes per system (route scale max mode)	N/A	32k (<=64b, >64b)	NA	65k (<=64b, >64b)	N/A
Maximum number of static routes per system	2K	2K	2K	2K	2K
Maximum number of BGP routes per system	1M	1M	1M	1M	1M
Maximum number of BGP routes RIB IN.	1M	1M	1M	1M	1M
Maximum number of BGP neighbors	512	512	512	512	512
Maximum number of paths in an ECMP group	128	128	128	128	128
Maximum number of BFD sessions	128	128	128	128	128
IP SLA - ICMP Tracker	50	50	50	50	50

Feature and Scalability Matrix

Enterprise SONiC Distribution by Broadcom

IP SLA - TCP Tracker	50	50	50	50	50
Maximum number of ARP supported per system	32K	32K	16K	32K	16k
Maximum number of ND supported per system	16K	16K	8K	16K	8k
Maximum number of OSPF routers per OSPF area	50	50	50	50	50
Maximum number of OSPF enabled L3 interfaces	128	128	128	128	128
Maximum number of OSPFv2 neighbors	128	128	128	128	128
Maximum number of OSPF intra area routes	5000	5000	5000	5000	5000
Maximum number of inter area summary routes	5000	5000	5000	5000	5000
Maximum number of OSPF external (type-5) routes	40,000	40,000	40,000	40,000	40,000
Maximum number of VRRP Instances	128	128	128	128	128
Maximum number of VRRP enabled Interfaces	128	128	128	128	128
Maximum number of VRRP Instances per Interface	16	16	16	16	16
Maximum number of tracked interfaces per VRRP Instance	8	8	8	8	8
Max IP address per VRRP Instance	4	4	4	4	4
Max Number of Ingress IPv4 Only ACL Tables Applied to Interface	3	3	8	3	2
Max Number of IPv4 ACL Rules Per Applied ACL Table at Ingress	256	256	256	768	256*
Max Number of Ingress IPv6 Only ACL Tables Applied to Interface	3	3	4	3	2
Number of IPv6 ACL Rules Per Applied ACL Table at Ingress	256	256	256	768	256 ²
Max Number of Egress IPv4 Only ACL Tables Applied to Interface	1	1	1	1	1
Max Number of IPv4 ACL Rules Per Applied ACL Table at Egress	256	256	256	512	128
Max Number of Egress IPv6 Only ACL Tables Applied to Interface	1	1	1	1	1
Number of IPv6 ACL Rules Per Applied ACL Table at Egress	256	256	256	512	128
Maximum number of NAT entries (static + dynamic)	1024	1024	1024	1024	0

²For TH3, one ACL table can be 512 entries while other can be at 256. However, its not deterministic which table will be size 512 when tables are added and deleted hence its marked as 256.

Feature and Scalability Matrix

Enterprise SONiC Distribution by Broadcom

Maximum number of Port mirroring session per system.	4	4	4	4	4
Maximum number of ERSPAN mirroring session per system.	8	8	8	8	8
Max Number of BGP-EVPN sessions	256	256	256	256	256
Max EVPN MAC addresses	Not Supported	Not Supported	Not Supported	40k/288K	Not Supported
Max VXLAN tunnels	Not Supported	Not Supported	Not Supported	512	Not Supported
Maximum number of VNIs – L2VNI	Not Supported	Not Supported	Not Supported	4k	Not Supported
VRF (L3 VNI) – 1K	Not Supported	Not Supported	Not Supported		Not Supported
Overlay routes – IPv4 – 81K, IPv6 – 25K	Not Supported	Not Supported	Not Supported		Not Supported
Max Number of IPMC (L3) forwarding entries	8K	8K	8K	8K	512
Maximum number of L3 interfaces that can be enabled for DHCPv4/v6 relay	64/64	64/64	64/64	64/64	64/64
Maximum number of Flow groups for Silicon Telemetry features	Not Supported	253	Not Supported	253	253
Maximum Number of IFA sessions	Not Supported	Not Supported	Not Supported	249	Not Supported
Maximum Number of Drop Monitor sessions	Not Supported	253	Not Supported	253	253
Maximum Number of Tail stamping sessions	Not Supported	253	Not Supported	253	253

VxLAN Feature and Scaling Numbers Feature_Scalability_Matrix

VxLAN Component	Cloud Base	Cloud-Adv	Enterprise-Base	Enterprise-Adv
VxLAN Feature	Not Supported	Not Supported	Supported	Supported
VxLAN Scaled Numbers	Not Supported	Not Supported	Not Supported	Supported
Tunnels	0	0	4	512
VLAN/VNI	0	0	64	4096

CoPP/Scaling Numbers (SONiC) Feature_Scalability_Matrix

Protocol	CPU Queue	Scheduling Weight	Rate Limit (PPS)
LACP	23	10	500
UDLD	22	10	500
STP, PVRST	21	30	16000

Feature and Scalability Matrix

Enterprise SONiC Distribution by Broadcom

BFD, BFDv6	20	10	1500
PTP	19	3	5000
LLDP	18	2	500
VRRP, VRRPv6	17	2	500
ICCP	16	4	5000
OSPF	15	4	5000
BGP, BGPv6	14	6	10000
PIM	13	2	5000
IGMP Query	12	2	2000
ARP Suppress, ND Suppress	11	2	3000
ARP Req, AP Resp, Neighbor Discovery	10	2	3000
DHCP, DHCPv6	9	2	300
ICMP	8	2	1000
IP2ME	7	2	6000
Subnet	6	2	2000
Source NAT Miss, Dest NAT Miss	5	1	300
L3 MTU Error	4	1	500
Sample Packet (sflow)	3	1	8000
DEFAULT	0	1	600

4.1 Guidelines for MAC Aging Timer Settings for Scaled ARP Hosts with Unidirectional Traffic

This section describes the Broadcom recommendations for ARP scaling with unidirectional traffic in the SONiC 3.1.0 release.

Based on your ARP scaling requirements with unidirectional traffic, configure the corresponding MAC aging timer value according to the guidelines in the following table. Using these values avoids issues with MAC age-out and traffic loss.

By default, the MAC aging timer is set to 10 minutes, and the ARP aging timer is set to 30 minutes. The MAC aging timer and ARP aging timer are both configurable

ARP Scale	MAC Aging Timer (Minimum)	ARP Aging Timer (Minimum)
2000	10 (default)	30 (default)
4000	20	30 (default)
6000	30	60

NOTE:

- To further increase ARP scaling (> 10K), a step-up in MAC aging timer value is also required.
- The scale numbers described in this section are not applicable to bidirectional traffic. No specific MAC aging timer settings are necessary to avoid traffic loss or MAC age-out issues.