



Product Overview

Top-of-Rack Switch
Distributed Spine switch
48 x 10GbE SFP+ ports
4 x 40 GbE QSFP+ ports
Up to 64 x 10GbE in 1RU
Group 4 x 10G ports into 40G
Line rate L2, L3 switching
L2 and L3 Software Options
CEE and DCBX features

IPv4 and IPv6 Routing
ECMP, OSPF, BGP, IPv4/IPv6
OpenFlow v1.0
API to run scripts and apps in switch Linux user space
Redundant power and fans
Reversible air flow

The iwNetworks SDN 8952S switch meets the high performance, availability, and network scaling requirements of enterprise and cloud data centers. The SDN 8952S provides full line rate switching at Layer 2 or Layer 3 across 64 x 10GbE ports, or 48 x 10GbE ports with 4 x 10GbE uplinks. The switch can be deployed either as a top-of-rack switch, or as part of a 10GbE distributed spine forming a folded CLOS data center fabric.

SDN 8952S hardware is designed specifically for data centers with high port density of up to 64 x 10GbE in a 1RU enclosure; redundant, hot swappable, load-sharing AC or DC PSUs; fan tray with n+1 redundant fans; and port-to-power and power-to-port airflow options.

IWOS switching software is designed for data center fabrics with up to tens of thousands of dual stack IPv4/IPv6 servers. The switch provides a full set of Layer 2 switching features used for aggregating servers within a rack, or across an easily managed medium sized data center fabric. A full set of IPv4/IPv6 routing features, including ECMP, OSPF, and BGP, supports large Layer 3 data center fabrics.

Software Defined Networks

- The SDN 8952S includes an OpenFlow v1.0 Agent, for operation as a hybrid switch controlled by OpenFlow controllers.
- The SDN 8952S forms a scalable L3 transport network for use with third party virtualization overlay software solutions.
- The IWOS software provides an open API for scripts and applications to run on the switch in a Linux user space. Applications can be written in Python, Ruby, C, and cURL with the IWOS Application Development Kit. The API also supports Quagga plug-in, for an open-source Layer 3 option.

Key Features

- Cost effective, white-box infrastructure
- 48 x SFP+ switch ports, supporting 10 GbE (DAC, 10 GBASE-SR/LR/ER/LRM) or 1GbE (1000Base-T/SX/LX)
- 4 x 40G QSFP+ switch ports, supporting 40 GbE (DAC, 40GBASE-SR4/LR4) or 4 x 10GbE (DAC or fiber breakout cable)
- Port Grouping to group 4 x 10G ports into 40G port at physical layer for maximum bandwidth utilization, 300m optical reach at 40G over MMF
- Full line rate L2 or L3 forwarding with 64 byte packets
- Support hot/cold aisle with port-to-power and power-to-port airflow SKUs. All ports on front; PSUs, fan tray on rear
- Hot-swappable, load sharing, redundant AC or DC PSUs. Swappable fan tray with 3:1 fan redundancy
- Energy Efficiency. 196W typical power consumption at full line rate forwarding over 48 x 10GbE DAC and 4 x 40GBASE-SR4, with AC PSU
- Layer 2 Switching: VLANs, COS, LAG, TRILL
- Converged Enhanced Ethernet: DCBX, 802.1Qbb PFC, 802.1Qau QCN, 802.1Qaz ETS, FCOE forwarder
- Layer 3 IPv4/IPv6 Switching: 32-way ECMP, OSPFv2, OSPFv3, BGP-4, VRRP. Requires L3 software package
- QoS: 802.1p, DiffServ, ACLs, SP/WRR/WFQ scheduling, WRED.
- Management: Ethernet and console RJ45 ports; USB storage port. Industry standard CLI, SNMPv1/2/3, AAA

SDN 8952S Series Switch Specifications

Ports

Switch Ports:
 48 x SFP+ each supporting 10 GbE or 1 GbE
 4 x QSFP+ each supporting 40 GbE or 4x10 GbE
 Management Ports on front panel:
 1 x RJ45 serial console; 1 x RJ45 100/1000BASE-T management
 1 x USB type A storage port

Ethernet and IP Standards

802.3ab 1000Base-T
 802.3ae 10G Ethernet
 802.3u 100 Base-T
 802.3x Flow Control
 802.3z 1000Base-X
 RFC 768 UDP
 RFC 791 IP
 RFC 792/4443 ICMP/ICMPv6
 RFC 793 TCP
 Jumbo Frames (9216 Bytes)

Performance

Wire Speed Forwarding: L2 and L3
 Switching Capability: 1.28 Tbps full duplex
 Forwarding Rate: 960 Mpps
 MAC Address: 128k
 VLAN IDs: 4k
 Link Aggregation: 8 ports per group; 64 groups per switch
 L3 Hosts: 16k
 L3 Routes IPv4, IPv6: 16k, 8k
 ECMP: 32-way
 Packet Buffer Size: 9 MB shared buffer pool
 Latency (RFC 2544): 860ns to 1.2 ns (L2/L3. cut thru, full line rate)
 CPU, Memory, Flash: Dual core 1.0 GHz CPU, 2 GB, 2 GB

L2 Switching Features

Spanning Tree:
 802.1D Spanning Tree
 802.1s Multiple Spanning Tree
 802.1w Rapid Spanning Tree
 Per-VLAN Rapid Spanning Tree
 Storm Control
 802.3ad Link Aggregation
 Selectable LAG hashing algorithm
 802.1AB LLDP Discovery
 ANSI/TIA-1057 LLDP, MED
 Virtual LANs:
 802.1Q VLAN
 Port-based VLAN
 802.1v Protocol-based LAN
 802.3ac VLAN Tagging
 Q-inQ
 IGMP Snooping v1/v2/v3
 RFC 4541 IGMP, MLD Snooping
 IETF TRILL
 ISDP

Physical and Environmental

Dimensions (HxWxD): 4.3 x 44 x 47 cm; 1.7 x 17.3 x 18.6"; 1RU
 Weight: 7.3 kg; 16.1 lbs
 Fan Tray: hot swappable tray with 3+1 redundant fans
 Operating Temperature: 0 to 40° C
 Storage Temperature: -40 to 70°C
 Operating Humidity: 5 to 95% non-condensing

Power

PSUs: 2 redundant, load-sharing, hot swappable, AC or DC
 Input Voltage: 90 to 264VAC at 50-60 Hz. -48 to -72 VDC
 Input Current: Max 6A @100/120VAC; 3A @200/240VAC; 10A @-72VDC
 Max Power: 244W, line rate, 48x10GBASE-SR, 4x40GBASE-SR4, AC
 Typical Power: 196W, line rate, 48x10G DAC, 4x40GBASE-SR4, AC

Regulatory

EMI: CE Mark (EN55022 Class A)
 FCC Part 15 Class A
 VCCI Class A, C-Tick (AS/NZS CISPR22)
 Environmental: Temperature: IEC 68-2-14
 Vibration: IEC 68-2-36, IEC 68-2-6
 RoHS-6 Compliant
 Safety: CE, UL, TUV Mark
 UL/IEC/CSA/EN 60950
 CCC
 Shock: IEC 68-2-29
 Drop: ISTA 2A

Supported Optics and Cables

SFP+ Ports:
 10GBASE-CR DAC; 0.5m to 7m
 10GBASE-SRL/SR; up to 100m/300m over OM3 MMF
 10GBASE-LR; up to 10km over SMF
 10GBASE-ER; up to 40km over SMF
 10GBASE-LRM; up to 220km over OM1/2/3 MMF
 1000BASE-SX, 1000BASE-LX, 100/1000BASE-T
 QSFP+ Ports:
 40GBASE-CR4 DAC; 0.5m to 7m
 40GBASE-CR4 DAC to 4 x SFP+ 10GBASE-CR DAC; 0.5 to 7m
 40GBASE-SR4; up to 100m over OM3 MMF, 150m over OM4 MMF
 40GBASE-SR4 to 4x10GBASE-SR; 100m over OM3, 150m OM4
 40GBASE-LR4; up to 10km over SMF

L3 Routing Features (Requires L3 Software Licence)

Routing:
 RFC 826 ARP
 RFC 1519 CIDR
 RFC 1812 IPv4 Routers
 RFC 2711 IPv6 Router Alert
 Static Routing:
 VLAN and Port Based Routing
 Route Redistribution
 ECMP: 32-way, enhanced hash
 RFC 3056: IPv4 to v6 tunnels
 RFC 3768 VRRP
 Quagga Plug-in
 OSPF:
 RFC 1765 OSPF Database Overflow
 RFC 2328 OSPFv2
 RFC 2740 OSPFv3
 RFC 3101 OSPF NSSA Option
 BGP:
 RFC 2385 MD5
 RFC 2918 Route Refresh
 RFC 4271 BGP-4
 RFC 4486 BGP Cease Notification
 RFC 5492 Capabilities Advertisement

QoS Features

Up to 8 queues per port
 IEEE 802.1p COS
 DSCP/TOS Classification, Remarking
 SP, WRR, WFQ Queuing, WRED
 Per port bandwidth mgmt, shaping
 DCBX Data Center Bridging
 802.1Qau QCN
 802.1Qaz ETS
 802.1Qbb PFC
 ACLs: L2, L3, L4

Management

OpenFlow v.1.0
 Programmatic API
 Industry Standard CLI
 SSH v1.5, v2
 SNMP v1, v2, v3
 Dual firmware images
 RFC 783 TFTP firmware upgrade
 Multiple Configuration Files
 RFC 951/1534/BOOTP
 RFC 2131/2132 DHCP
 RFC 3315/3736 DHCPv6
 RFC 2030 Sntp
 RFC 3046 DHCP/BOOTP Relay
 RFC 3579 RADIUS; TACACS+
 Port Mirroring, Flow-based Mirroring
 sFlow, Traceroute
 Event and Error Logging
 Buffer Usage and Traffic Monitoring
 RFC 1213 MIBII
 RFC 1493 Bridge MIB
 RFC 1643 Ethernet-like MIB
 RFC 2233 Interfaces SMIv2
 RFC 2618 RADIUS Authentication
 RFC 2620 RADIUS Accounting
 RFC 2674 VLAN MIB
 RFC 2737 Entity MIB v2
 RFC 2819 RMON 1,2,3,9
 RFC 3291 Network Addresses
 IEEE 802.1AD MIB
 MIBs with L3 License:
 RFC 3289 Diff Services MIB
 RFC 2465 IPv6 MIB
 RFC 2466 ICMPv6 MIB
 RFC 2787 VRRP MIB
 RFC 3419 Transport Addresses
 RFC 4273 BGP-4 MIB