

NSS18500 Series Data Center Core Switch

Datasheet

Product Overview

NSS18500 series switches are Maipu new generation 100GE data center RoCE switches designed for enterprise data center, providing high-throughput, high-density 1G/10GE/40GE/100GE interfaces, larger interface buffer and lower latency. The NSS18500 series adopts advanced crossbar hardware architecture. By using Maipu MyPowerOS software platform, NSS18500 series provide rich data center service features and management capability.

NSS18500 series switches adopt an advanced hardware architecture design. It provides up to 288*100GE, 272*40GE, 384*10GE, 384*1GE line-rate ports and use an industry-leading Crossbar architecture and provide industrial-grade reliability. The switches support comprehensive data center service features. Their front-to-back airflow design suits data center equipment rooms, and the innovative energy conservation technologies greatly reduce power consumption. NSS18500 series switches can build a complete, scalable, virtualized RoCEv2 fabric network that meets the data center requirements.

NSS18500 series includes NSS18500-04, NSS18500-08 two models:



NSS18500 Series Switches

NSS18500-04 supports dual control engines, 6 switching fabrics and 4 service slots.

NSS18500-08 supports dual control engines, 6 switching fabrics and 8 service slots.

Key Features

- **High-Density Interfaces Line Cards**

NSS18500 series provide maximum 288*100GE, 272*40GE, 384*10GE, 384*1GE interfaces and use an industry-leading crossbar architecture. The port combination fully satisfies the interface density requirement of data center scenarios.

- **Highly Reliable Enterprise-class Hardware Design**

NSS18500 has enterprise-class reliability and stability to ensure long-term service continuity. Redundant MPUs work in 1+1 hot backup mode. Redundant SFUs work in N+M hot backup mode. Redundant power supplies support work in N+M hot backup and also redundant fan trays design. The fan trays work in 1+1 backup mode to ensuring efficient heat dissipation.

- **RoCEv2 Standard Compliance**

NSS18500 series fully support the RoCEv2 standards, meeting the requirements for switch performance in high-performance data center scenarios. NSS18500 series supports a wide range of lossless Ethernet technologies, including PFC, ECN, ETS, DCBX, etc. This helps create an end-to-end, zero-jitter, low-latency, lossless Ethernet network that meets the demands of cloud computing, big data, artificial intelligence, and high-performance computing deployments in data centers.

- **M-LAG for Cross-device Link Aggregation**

NSS18500 series support multi-chassis link aggregation group (M-LAG), which enables links of multiple switches to aggregate into one to implement cross-device link backup. The rest of switches in the M-LAG group are working actively regardless any switch failure. During the upgrade, other switches in the system take over traffic forwarding to ensure uninterrupted services.

- **VxLAN and EVPN for L2 Virtualized Deployment**

NSS18500 series can work with the industry's mainstream virtualization platforms and acts a hardware gateway on a VxLAN overlay network. Virtual extensible LANs (VxLAN), a common network virtualization overlay protocol that expands the layer 2 network address space from 4,000 to 16 million. NSS18500 series support BGP-EVPN, which is used as the overlay control plane and provides virtual connectivity between different layer 2/3 domains over an IP network.

- **Southbound and Northbound API**

NSS18500 series support NETCONF and RESTCONF API which can work with 3rd party SDN controller for simplified device remote configuration and management.

- **Telemetry for intelligent OAM**

NSS18500 provides telemetry technology to collect device data in real time and send the management data to customer network analyzer platform. Telemetry systems, done properly, play an important role in providing you with information about the health of your network, so you can respond intelligently to prevent hardware failure

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and network downtime. It can help customers to identify and analyze network problems which affect user experience.

- **Reliable Hardware Design**

NSS18500 series use a standard airflow design which isolates cold air channels from hot air channels. This design improves heat dissipation efficiency and meets design requirements of data center. It adopts hot swap redundant power modules and fans which ensure hardware reliability and non-stopping operation. The fan speed can be adjusted dynamically based on system workload.

- **Free Licensing Policy**

Maipu always insists on “One-time investment” free license policy, the standard features and advanced features will be never divided to different version. For any new firmware version, Maipu will share to customers without extra charge. Compared with other manufacturers, Maipu free license policy can better protect users' short-term and long-term investment.

Technical Specifications

Product Model	NSS18500-04	NSS18500-08
Hardware Specification		
Hardware Architecture	CLOS	CLOS
Control Engine Slots	2	2
Switching Engine Slots	4*Standard SFU Slots 2*Extension SFU-EX Slots	4*Standard SFU Slots 2*Extension SFU-EX Slots
Service Card Slots	4	8
Control Engine Model	NSM185-MPUA	NSM185-MPUB
Switching Engine Model	NSM185-SFUA NSM185-SFUA-EX	NSM185-SFUB NSM185-SFUC NSM185-SFUC-EX
Max. Switching Capacity	28.8Tbps	57.6Tbps
Flash	8G	
Memory	4G(Default)/8G	
Interface Buffer Size	36M	
Jumbo Frame	12K	
VLAN Entry	4094	
Max. MAC Address Entry	720K	
Max. ARP Entry	129K	
Max. IPv4 Routing Entry	737K	
Max. IPv6 Routing Entry	393K	
Max. VRF Entry	8K	
VRRP Group	255	
Max. ECMP Path	64	
IGMP Group	8K	
VxLAN VTEP Instance	8K	
Power Slots	4	8
FAN Slots	2	2
Air Flow	Front-to-Back	Front-to-Back
Power Input	Input voltage AC: 100V ~ 240V, 50Hz ~ 60Hz	
	Input voltage DC: 42V~72V or Input High voltage DC: 192V~288V	
Temperature	Work temperature: 0℃ to 50℃	
	Storage temperature: -40℃ to 70℃	
Humidity	Work humidity: 10% to 90%, no-condensing	
	Storage humidity: 5% to 95%, no-condensing	
Power Consumption	2340W	4236W

Dimension(W×D×H)	442mm×747.5mm×262.5mm(6U)	442mm×645mm×666mm(15U)
MTBF	>200, 000 hours	
Software specification		
Standard L2 Protocol	Interface	Port Type UNI/NNI, Port Speed, Port MTU, Port Loopback, Loopback interface, Tunnel interface, Null interface, VXLAN interface, VXLAN distribute-gateway
	Ethernet Switching	LACP Link aggregation, LACP Port Priority, LACP Load Balance, LACP Rate Monitor, LACP Debug, Port isolation, QinQ, VLAN mapping, Super VLAN, PVLAN, Voice VLAN, STP, RSTP, MSTP, Loopback-detection, Error-disable, VIST/VISR+, GVRP, MLAG, MLAG Lite, VLAN isolation
Standard L3 Protocol	IP Protocol	ARP, DHCP, DHCPv6, DHCP Server, DHCPv6 Server, DHCPv6 Client, DHCP Relay, DHCPv6 Relay, DHCP Option82, DNS, GRE, IPIP, IPv6 over IPv4, ISATAP, IPv4 over IPv6, IPv6 over IPv6
	Routing Protocol	Static route for IPv4&IPv6, RIPv1/v2, RIPvng, OSPFv2, OSPFv3, IS-IS, IS-ISv6, IRMP, BGP, BGPv6, Policy Route, MP-BGP
Multicast	L2 Multicast	IGMPv1/v2/v3 Snooping, IGMP Snooping over VxLAN, multicast VLAN (MVR, MVP), MLD Snooping, Router-alert Option
	L3 Multicast	IGMPv1/v2/v3, MLDv1/v2, PIM-SM, IPv6 PIM-SM, PIM-DM, PIM-SSM, IPv6 PIM-SSM, MSDP, IGMP Group Filter, MLD Group Filter
QoS & ACL	QoS	802.1p, DSCP, Priority mapping, SP, WRR, WRED, WDRR, SP+WRR, SP+WDRR, Flow classification, Traffic monitoring, Traffic shaping, Congestion management, Congestion avoidance, Flow-based mirroring
	ACL	Standard IP ACL, extended IP ACL, standard MAC ACL, extended MAC ACL, extended Hybrid ACL, Standard IPv6 ACL, extended IPv6 ACL
Data Center Feature	Basic Feature	TRILL, VXLAN, M-LAG, MLAG for VXLAN, VXLAN QoS, ESI Multi-Homing, BGP-EVPN, NLB
	RoCEv2	ECN, EQCN, ETS, PFC, iNOF, DCBX
MPLS L2/L3 VPN	L3 MPLS VPN	MPLS LDP, MPLS GR, M-VRF, MPLS L3 VPN, Inter-AS MPLS VPN Option A/B, MPLS OAM, IPv6 MPLS L3VPN, MPLS TE, MPLS QoS
	L2 VPLS VPN	VPWS, Martini/Kompella VPLS
Precision Time Protocol (PTP)	IEEE 1588v2	E2ETC, P2PTC
Virtualization	VST	H-VST, M-VST
	MAD	MAD LACP, MAD BFD, MAD Fast-hello
Security & Network Reliability	Security	ARP Check, AARF, AARF ARP-Guard, CPU Protection, Port Security, IP Source Guard, IPv6 Source Guard, ND-Snooping, DHCP Snooping, DHCPv6 Snooping, Dynamic ARP Inspection (DAI), Host Guard, P2P MACSec, PPPoE+, 802.1x, Portal Authentication, Anti-attack detect drop flood log, URPF
	AAA	Authentication, Authorization, Accounting, Radius, TACACS+
	Network Reliability	HA, ULFD, ERPS, ULPP, Monitor Link, VRRP, VRRPv3, VBRP, BFD, EEP, CPU protection
Management	Network Management	SNMP v1/v2/v3, MIB, RMON, SYSLOG, CLI, Telnet, SSH, HTTP/HTTPS, FTP/TFTP, Debug, NTP, Keepalive Gateway
	Network Monitoring	SPAN, RSPAN, ERSPAN, VLAN SPAN, sFlow, IPFIX, LLDP, IP-SLA, CWMP, Telemetry, OpenFlow, Netconf, Restconf, BSM, MOD, Capture-Packet

Power Consumption Specification

Model Name	Max. Power Consumption	Model Name	Max. Power Consumption
NSM185-MPUA	50W	NSM185-MPUB	50W
NSM185-SFUA-EX	105W	NSM185-SFUC-EX	150W
NSM185-SFUA	105W	NSM185-SFUC	150W
FAN-06A-01B	105W	NSM185-SFUB	85W
NSM185-36QFP-DA	350W	FAN-15B-01B	125W
NSM185-24QFP-DA	235W	NSM185-34QXGE-DA	275W
NSM185-12QFP-DA	120W	NSM185-16QXGE-DA	125W
NSM185-48XGEF2QXGE-DA	165W	NSM185-48GET4XGEF-DA	100W

Order Information

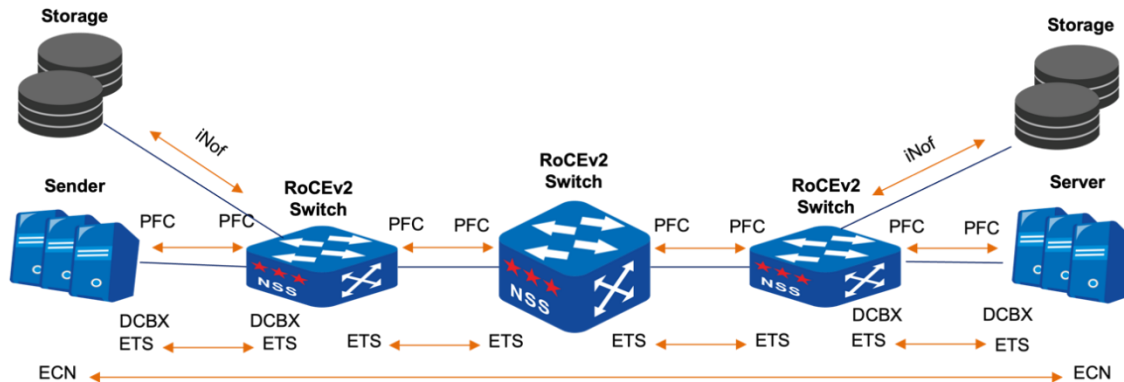
Model	Description
NSS18500 Series	
NSS18500-04 Host	
NSS18500-04	NSS18500-04 chassis, two control engine slots, six switching engine slots, four service slots, two fan slots, four power slots.
NSM185-MPUA	NSM185-MPUA Control Engine, for NSS18500-04, supporting active/standby backup function
NSM185-SFUA-EX	NSM185-SFUA-EX Switching Engine, for NSS18500-04
NSM185-SFUA	NSM185-SFUA Switching Engine, for NSS18500-04
FAN-06A-01B	FAN-06A-01B Fan module for NSS18500-04
AD800M-HV1B	AD800-HV1B, 800W AC power module
DD1600M-5V0B	DD1600M-5V1F, 1600W DC power module
NSS18500-04 Line Cards	
NSM185-36QFP-DA	36-port 100GE QSFP28 interface line card (Recommended 4*NSM185-SFUA+2*NSM185-SFUA-EX Switching Engines)
NSM185-24QFP-DA	24-port 100GE QSFP28 interface line card (Recommended 4*NSM185-SFUA+2*NSM185-SFUA-EX Switching Engines)
NSM185-12QFP-DA	12-port 100GE QSFP28 interface line card (Recommended 4*NSM185-SFUA Switching Engines)
NSM185-34QXGE-DA	34-port 40GE QSFP+ interface line card (Recommended 4*NSM185-SFUA Switching Engines)
NSM185-16QXGE-DA	16-port 40GE QSFP+ interface line card (Recommended 4*NSM185-SFUA Switching Engines)
NSM185-48XGEF2QXGE-DA	48-port 10GE SFP+ interface, 2-port 40GE QSFP+ interface line card (Recommended 4*NSM185-SFUA Switching Engines)
NSM185-48GET4XGEF-DA	48-port 1G Base-T electrical interface, 4-port 10GE SPF+ interface line card (Recommended 2*NSM185-SFUA Switching Engines)
NSS18500-08 Host	

NSS18500-08	NSS18500-08 chassis, two control engine slots, six switching engine slots, eight service slots, two fan slots, eight power slots.
NSM185-MPUB	NSM185-MPUB Control Engine, for NSS18500-08, supporting active/standby backup function
NSM185-SFUC-EX	NSM185-SFUC-EX Switching Engine, for NSS18500-08
NSM185-SFUC	NSM185-SFUC Switching Engine, for NSS18500-08
NSM185-SFUB	NSM185-SFUB Switching Engine, for NSS18500-08
FAN-15B-01B	FAN-15B-01B Fan module for NSS18500-08
AD800-1D005M	AD800-1D005M, 800W AC power module
DD1600M-5V1F	DD1600M-5V1F, 1600W DC power module
NSS18500-08 Line Cards	
NSM185-36QFP-DA	36-port 100GE QSFP28 interface line card (Recommended 4*NSM185-SFUC+2*NSM185-SFUC-EX Switching Engines)
NSM185-24QFP-DA	24-port 100GE QSFP28 interface line card (Recommended 4*NSM185-SFUC+2*NSM185-SFUC-EX Switching Engines)
NSM185-34QXGE-DA	34-port 40GE QSFP+ interface line card (Recommended 4*NSM185-SFUC Switching Engines)
NSM185-12QFP-DA	12-port 100GE QSFP28 interface line card (Recommended 4*NSM185-SFUB Switching Engines)
NSM185-16QXGE-DA	16-port 40GE QSFP+ interface line card (Recommended 4*NSM185-SFUB Switching Engines)
NSM185-48XGEF2QXGE-DA	48-port 10GE SFP+ interface, 2-port 40GE QSFP+ interface line card (Recommended 4*NSM185-SFUB Switching Engines)
NSM185-48GET4XGEF-DA	48-port 1G Base-T electrical interface, 4-port 10GE SFP+ interface line card (Recommended 2*NSM185-SFUB Switching Engines)
AOC Cables	
10G SFP+AOC Cable	
SFP-STACK-AOC50	SFP+ AOC cable, SFP+ to SFP+, 10Gbps, 5 meters length
SFP-STACK-AOC100	SFP+ AOC cable, SFP+ to SFP+, 10Gbps, 10 meters length
SFP-STACK-AOC200	SFP+ AOC cable, SFP+ to SFP+, 10Gbps, 20 meters length
40G QSFP+AOC Cable	
QSFP-STACK-AOC50	QSFP AOC cable, QSFP to QSFP, 40Gbps, 5 meters length
QSFP-STACK-AOC100	QSFP AOC cable, QSFP to QSFP, 40Gbps, 10 meters length
QSFP-STACK-AOC200	QSFP AOC cable, QSFP to QSFP, 40Gbps, 20 meters length
100G QSFP28 AOC Cable	
QSFP28-STACK-AOC100	QSFP28 AOC cable, QSFP28 to QSFP28, 100G, 10 meters length
QSFP28-STACK-AOC200	QSFP28 AOC cable, QSFP28 to QSFP28, 100G, 20 meters length
DAC Cables	
10G SFP+DAC Cable	
SFP-STACK-15	SFP+ DAC stacking cable, SFP+ to SFP+, 10Gbps, 1.5 meters length
SFP-STACK-30	SFP+ DAC stacking cable, SFP+ to SFP+, 10Gbps, 3 meters length
SFP-STACK-50	SFP+ DAC stacking cable, SFP+ to SFP+, 10Gbps, 5 meters length

40G QSFP+DAC Cable	
QSFP-STACK-10	QSFP DAC stacking cable, QSFP to QSFP, 40Gbps, 1.0 meters length
QSFP-STACK-30	QSFP DAC stacking cable, QSFP to QSFP, 40Gbps, 3 meters length
QSFP-STACK-50	QSFP DAC stacking cable, QSFP to QSFP, 40Gbps, 5 meters length
100G QSFP28 DAC Cable	
QSFP28-STACK-30	QSFP28 DAC stacking cable, QSFP28 to QSFP28, 100Gbps, 3 meters length

Typical Application

RoCEv2 Lossless Ethernet Solution for Data Center



RoCEv2 is a network protocol that enables servers in data centers to perform Remote Direct Memory Access (RDMA) directly over Ethernet. RoCEv2 benefits significantly from a lossless Ethernet environment because it relies on high reliability and low latency for performance efficiency. Lossless Ethernet technology ensures that RoCEv2 can deliver its full potential benefits by avoiding the typical challenges associated with standard Ethernet communications.

NSS18500 fully supports the RoCEv2 standards, meeting the requirements for switch performance in high-performance data center scenarios. NSS18500 supports a wide range of lossless Ethernet technologies, including ETS, PFC, ECN, DCBX, etc. This helps create an end-to-end, zero-jitter, low-latency, lossless Ethernet network that meets the demands of cloud computing, big data, artificial intelligence, and high-performance computing deployments in data centers.

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