

NSS5950-04C Data Center Switch

Datasheet

Product Overview

The NSS5950-04C data center flexible modular RoCE switch is a next-generation Ethernet switching product developed by Maipu for next-generation data centers, featuring high performance, business flexibility, and low latency.

The NSS5950-04C offers ultra-high density and space-saving design, providing various port speeds such as 1G/10G/25G/40G/100G, and supports a rich set of data center features, meeting the demands for high-performance forwarding. Its modular card design is flexible and adaptable, offering exceptional versatility across multiple scenarios, including integrated access, interconnection gateway, dedicated line access, data center aggregation and core, storage-integrated devices, among others.

The NSS5950-04C provides comprehensive, secure, controllable, stable, and reliable high-performance switching services, covering everything from chip design to hardware and software. It is well-suited for industries such as finance, government, telecommunications, energy, transportation, education, healthcare, and more.



NSS5950-04C Switch

Key Features

- **Flexible Port Combination for Easy Expansion**

The NSS5950-04C data center flexible modular switch supports high-density 1G/10G/25G/40G/100G ports and allows flexible combinations of various port types. The device can support up to 100*10G/25G ports, 64*40G ports, or 32*100G ports. This meets the high-speed interconnection demands of data centers, eliminates bandwidth bottlenecks, and supports network upgrades for the next 3 to 5 years.

- **RoCEv2 Standard Compliance**

NSS5950-04C fully support the RoCEv2 standards, meeting the requirements for switch performance in high-performance data center scenarios. The NSS5950-04C 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**

NSS5950-04C supports 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**

NSS5950-04C series can work with the industry's mainstream virtualization platforms and acts a hardware gateway on an 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. NSS5950-04C supports 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**

NSS5950-04C supports NETCONF and RESTCONF API which can work with 3rd party SDN controller for simplified device remote configuration and management.

- **Telemetry for Intelligent OAM**

NSS5950-04C 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 and network downtime. It can help customers to identify and analyze network problems which affect user experience.

- **Reliable Hardware Design**

NSS5950-04C uses 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	NSS5950-04C	
Hardware Specification		
Line Card Slots	4	
Fixed Service Interfaces	4*10G SFP+	
Management Interface	1* RJ45 Console Port, 1*RJ45 DC0 Management Ethernet Port, 1*USB Port	
Switching Capacity	6.4Tbps	
Flash	8G	
Memory	4G(Default)	
Interface Buffer Size	36M	
Jumbo Frame	12K	
VLAN Entry	4094	
Max. MAC Address Entry	720K	
Max. ARP Entry	106K	
Max. IPv4 Routing Entry	737K	
Max. IPv6 Routing Entry	393K	
Max. VRF Entry	8K	
VRP Group	255	
Max. ECMP Path	64	
IGMP Group	8K	
VxLAN VTEP Instance	8K	
Power Supply Slot	2	
Fan Module Slot	3	
Power Supply	Input voltage (AC): 100V ~ 240V, 50Hz ~ 60Hz	
	Input voltage (DC): -40~-72V	
Temperature	Work temperature: 0°C to 45°C	
	Storage temperature: -40°C to 70°C	
Humidity	Work humidity: 10% to 90%, no-condensing	
	Storage humidity: 5% to 95%, no-condensing	
Power Consumption	338W	
Dimension(WxDxH)	442mm×560mm×88.5mm	
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
	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/VIST+, 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, RIPng, OSPFv2, OSPFv3, IS-IS, IS-ISv6, BGP, BGPv6, Policy Route, MP-BGP
Multicast	L2 Multicast	IGMP Snooping, IGMP Snooping over VxLAN, multicast VLAN (MVR, MVP), MLD Snooping, Router-alert Option
	L3 Multicast	IGMPv1/v2/v3, MLDv1/v2, PIM-SM, PIM-DM, PIM-SSM, IPv6 PIM-SM, IPv6 PIM-SSM, MSDP, IGMP Group Filter, MLD Group Filter
QoS & ACL	QoS	802.1p, DSCP, Priority Mapping, SP, WRR, WDRR, SP+WRR, SP+WDRR, WRED, 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 L3VPN, Inter-AS MPLS VPN Option A/B, MPLS OAM, IPv6 MPLS L3VPN, MPLS TE, MPLS QoS
	L2 MPLS 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), AARF, 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, IPFIX, sFlow, LLDP, LLDP-MED, IP-SLA, CWMP, Telemetry, OpenFlow, Netconf, BSM, MOD, Capture Packet

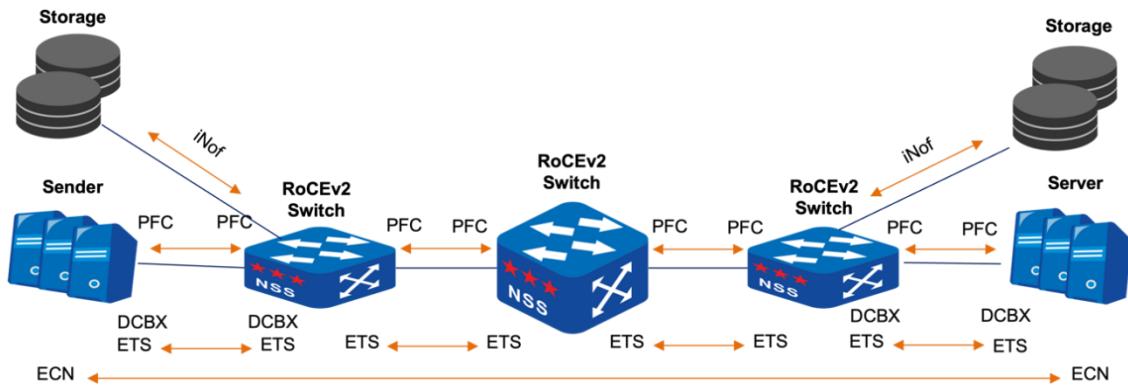
Order Information

Product Model	Description
NSS5950 Series Host	
NSS5950-04C	NSS5950-04C, 4*Service Slots, Fixed 4*10G SFP+ Ports, 3*Modular Fan Slots and 2*Modular Power Slots
Service Card Modules	
NSM5-8MQS	8*40/100G QSFP28 Ports Line Card
NSM5-16MQF	16*40G QSFP+ Ports Line Card
NSM5-24FP2QS	24*10/25G SFP28 and 2*40/100G QSFP28 Ports Line Card
NSM5-24XF2QS	24*1/10G SFP+ and 2*40/100G QSFP28 Ports Line Card
NSM5-24FP	24*10/25G SFP28 Ports Line Card
NSM5-24XF	24*1/10G SFP+ Ports Line Card
Fan Modules	
FAN-02A-01B	FAN-02A-01B, Modular Fan Slot, Hot-swappable, Air front in rear out
FAN-02A-01F	FAN-02A-01F, Modular Fan Slot, Hot-swappable, Air rear in front out
Power Modules	
AD550M-HV0B	V1 Version: AC input 100-240VAC/7A, 550W, output 12V/45A, current sharing, supporting hot-swap, Air front in rear out. (Note: Need work together with FAN-02A-01B)
AD550M-HV0F	V2 Version: AC input 100-240VAC/7A, 550W, output 12V/45A, current sharing, supporting hot-swap, Air rear in front out. (Note: Need work together with FAN-02A-01F)
AD800M-HV0B	V1 Version: AC input 100-240VAC/10A, 800W, output 12V/66A, current sharing, supporting hot-swap, Air front in rear out. (Note: Need work together with FAN-02A-01B)
DD800M-5V0B	V1 Version: DC input -40~-72VDC/25A, 800W, output 12V/64A, current sharing, supporting hot-swap, Air front in rear out. (Note: Need work together with FAN-02A-01B)
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
25G SFP28 AOC Cable	
SFP28-STACK-AOC100	SFP28 AOC cable, SFP28 to SFP28, 25Gbps, 10 meters length
SFP28-STACK-AOC200	SFP28 AOC cable, SFP28 to SFP28, 25Gbps, 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	
25G SFP28 DAC Cable	
SFP28-STACK-15	SFP28 DAC stacking cable, SFP28 to SFP28, 25Gbps, 1.5 meters length
SFP28-STACK-30	SFP28 DAC stacking cable, SFP28 to SFP28, 25Gbps, 3 meters length
SFP28-STACK-50	SFP28 DAC stacking cable, SFP28 to SFP28, 25Gbps, 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.

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