# 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 | |
| VRRP 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℃ to 45℃ | |
| | Storage temperature: -40℃ to 70℃ | |
| Humidity | Work humidity: 10% to 90%, no-condensing | |
| | Storage humidity: 5% to 95%, no-condensing | |
| Power Consumption | 338W | |
| Dimension(W×D×H) | 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/VISR+, GVRP, MLAG, MLAG Lite, VLAN isolation |

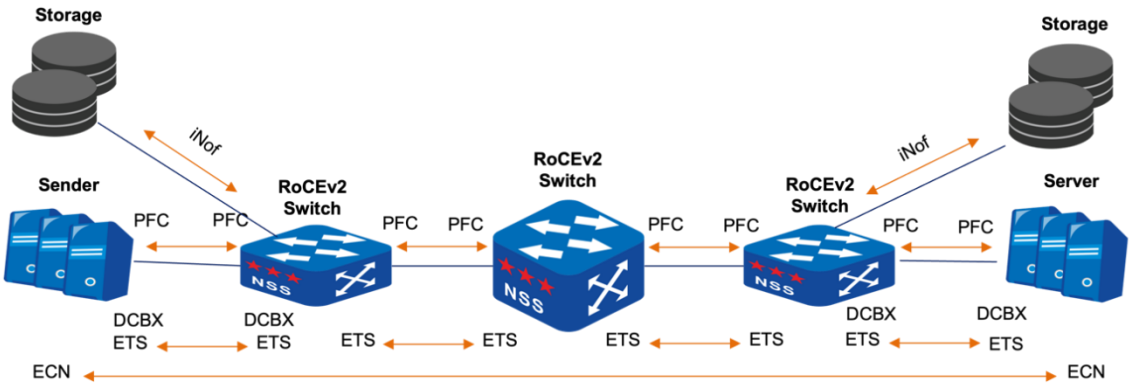
| | | |
|---|---|---|
| Standard L3 Protocol | IP Protocol | ARP, DHCP, DHCPv6, DHCP Server, DHCPv6 Server, DHCPv6 Client, DHCP Relay, DHCPv6 Relay, DHCP Option82, DNS, GRE, IPIP, IPv6 over IPv4, ISATAP, IPv4 over IPv6, IPv6 over IPv6 |
| | Routing Protocol | Static route for IPv4&IPv6, RIPv1/v2, RIPng, 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) |

# 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.

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

Maipu values and appreciates comments you may have concerning our products or this document. Please address comments to:

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