Naddod N9520-64OC Datasheet

AI Data Center 64*800G RoCE Switch

1. Product Overview

The N9520-64OC is a next-generation, high-performance, and high-density fixed switch developed by Naddod Networks for high-end data centers and Artificial Intelligence Generated Content (AIGC) intelligent computing networks.

With an advanced hardware architecture design, the N9520-64OC provides 64 x 800GE ports or 128 x 400GE ports, which is compatible with the Linear-drive Pluggable Optics (LPO), as well as 2 x 25GE ports. All ports support line-rate forwarding. The power modules and fan modules are redundant and pluggable. Remote Dynamic Load Balancing (RDLB) and Global Dynamic Load Balancing (GDLB) of Naddod AIGC solution increase the bandwidth and shorten the AI training time in AIGC intelligent computing scenarios. A typical two-tier network supports a cluster of up to 4,000 GPUs (400GE), while a typical three-tier network accommodates a cluster of up to 128,000 GPUs (400GE). One-click RoCE configuration can be employed to import Explicit Congestion Notification (ECN), Priority-based Flow Control (PFC) and other complicated RDMA-related configuration for quick deployment.

2. Product Appearance

N9520-64OC

N9520-64OC Front View

N9520-64OC Rear View

N9520-64OC Front Top View

3. Product Features

Building Next-Generation Data Center Networks

The rapid development of AI, machine learning, big data, high-performance computing, distributed storage, and other applications is driving the evolution of next-generation data center networks towards the evolution to 200GE/400GE/800GE. The next-generation data center networks require devices to provide higher performance and greater bandwidth in a unit space. The N9520-64OC provides up to 64 x 800GE ports or 128 x 400GE ports in a 2 RU space, which is compatible with the LPO optical transceiver, as well as two 25GE ports, thereby coping with evolution requirements of next-generation data center networks.

Building High-Performance and Low-Latency Data Center Networks

The N9520-64OC switch supports the RDMA over Converged Ethernet (RoCE) technology for lossless data center networks, and network flow control technologies such as PFC and ECN, as well as the memory management unit (MMU) technology, to construct end-to-end, lossless, and low-latency forwarding Remote Direct Memory Access (RDMA) infrastructure networks. Moreover, RDLB and GDLB of Naddod AIGC solution are leveraged to solve the ECMP conflict caused by flow-based load balancing,

increasing the bandwidth and shortening the AI training time in AIGC intelligent computing scenarios. This meets network deployment requirements across various scenarios including AI, machine learning, high-performance computing, distributed storage, big data, and other applications.

Carrier-Class High Reliability

The N9520-64OC switch supports 1+1 power redundancy and 3+1 fan redundancy. All power modules and fan modules can be hot swapped without affecting service continuity on the switch. The switch provides fault detection and alarm functions for power modules and fan modules. It automatically adjusts the fan speed based on temperature changes, better adapting to data center environments. The switch also supports device-level and link-level reliability protection as well as overcurrent protection, overvoltage protection, and over temperature protection.

In addition, the switch integrates various link availability mechanisms such as networking through dual redundant ports, graceful restart (GR), and bidirectional forwarding detection (BFD). When multiple services and heavy traffic are carried over the network, these mechanisms can reduce the impact of exceptions on network services and enhance the overall availability.

Quick Deployment

The switch features automatic configuration of network parameters and profile-based automatic provisioning, allowing for quick deployment and significantly shortening the project deployment time. It also supports automated acceptance testing, including cable testing, optical transceiver testing, and device testing, to ensure high-quality delivery.

Intelligent O&M

The switch offers AI-powered automatic ECN tuning, real-time telemetry of key RoCE network metrics, visualization of endpoint status and RoCE services, along with congestion and packet loss analytics.

IPv4/IPv6 Dual-Stack Protocols and Multilayer Switching

The hardware of the N9520-64OC supports IPv4 and IPv6 protocol stacks and multilayer line-rate switching. The hardware differentiates and processes IPv4 and IPv6 packets. The switch also supports multiple tunneling technologies (such as manually configured tunnels). You can flexibly work out IPv6 inter-network communication solutions by using this switch based on IPv6 network planning and the current network environment.

The switch supports various IPv4 routing protocols, including static routing, Routing Information Protocol (RIP), RIPv2, Open Shortest Path First (OSPF), and Border Gateway Protocol version 4 (BGP4). You can

select routing protocols based on network environments to flexibly set up an IPv4 network.
The switch also supports abundant IPv6 routing protocols, including static routing, Routing Information Protocol next generation (RIPng), OSPFv3, and BGP4+. You can select routing protocols to upgrade an existing network to an IPv6 network or build a new IPv6 network.

All-Round Management Performance

The switch provides various management ports such as the Console port, MGMT port, and USB port, and supports Simple Network Management Protocol (SNMP) v1/v2c/v3 and universal network management platform. The switch provides various management modes such as CLI, Telnet, and cluster management, and different encryption modes such as SSH2.0 and SSL, facilitating easy and secure management.
In addition, the switch supports the switched port analyzer (SPAN), remote switched port analyzer (RSPAN), and Encapsulated Remote Switched Port Analyzer (ERSPAN), multiple SPAN monitoring ports, making network traffic monitoring intuitive. The switch provides various network traffic analysis reports to help you promptly optimize the network architecture and adjust resource deployment.

4. Specifications

Hardware Specifications

Item	N9520-64OC
Dimensions (W x D x H)	440 mm x 760 mm x 86.1 mm (17.32 in. x 29.92 in. x 3.39 in.)
Height	2 RU
Weight	26 kg (57.32 lbs.) (A chassis installed with two power modules and four fan modules)
Switching Capacity	102.4 Tbps
Packet Forwarding Rate	21000 Mpps
Service Port	64 x 200G/400G/800G OSFP ports 2 x 1G/10G/25G SFP28 ports

Management Port	1 x RJ45 console port 1 x RJ45 MGMT port
USB Port	1 x USB 2.0 port (Type A connector)
Slot	2 x power module slots 4 x fan module slots
Power Consumption	Maximum power consumption: 2982 W Typical power consumption: 2010 W Static power consumption: 352 W
Power input	AC input: Rated input voltage: 100 V AC to 240 V AC, 50 Hz/60 Hz Maximum input voltage: 90 V AC to 264 V AC, 47 Hz to 63 Hz Rated input current: 16 A (100 V AC to 240 V AC) Power connector: C20 HVDC input: Rated input voltage: 240 V DC Maximum input voltage: 180 V DC to 320 V DC Rated input current: 16 A Power connector: C20

Temperature	Operating temperature: 0°C to 40°C (32°F to 104°F) Storage temperature: –40°C to +70°C (–40°F to +158°F) Note: At altitudes ranging from 1800 m (5,905.51 ft.) to 3000 m (9,842.52 ft.), the maximum temperature decreases by 1°C (1.8°F) for every 220 m (721.787 ft.) increase in elevation.
Humidity	Operating humidity: 10% RH to 90% RH (non-condensing) Storage humidity: 5% RH to 95% RH (non-condensing)
Altitude	Operating altitude: ≤ 3000 m (9,842.52 ft.) Storage altitude: ≤ 5000 m (16,404.20 ft.)
Cooling	Air cooling, front-to-rear airflow (port-side intake)

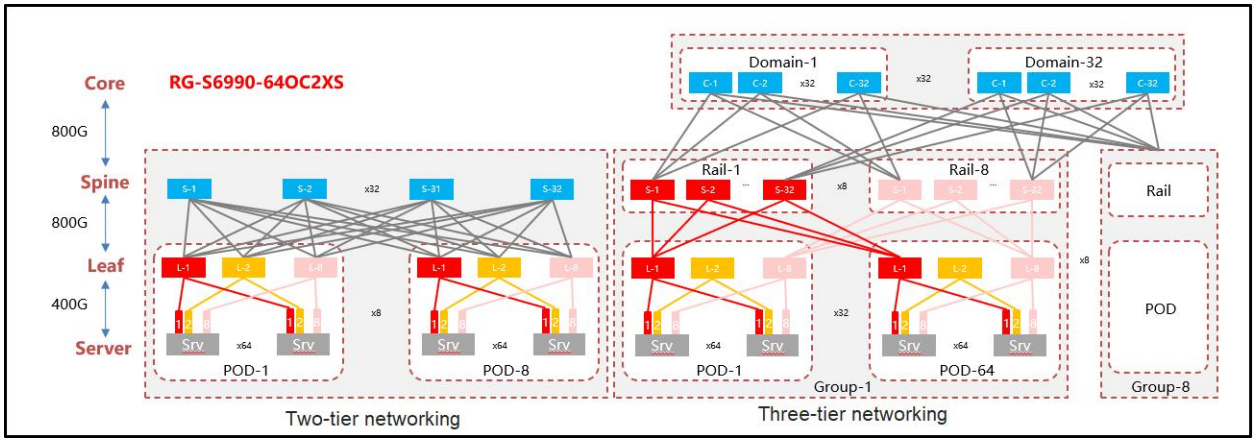
Software Specifications

Item	N9520-64OC
Layer 2 protocols	IEEE 802.3ae (10GBase), IEEE 802.3ak, IEEE 802.3an, IEEE 802.3x, IEEE 802.3ad (Link Aggregation Control Protocol), IEEE 802.1p, IEEE 802.1Q, IEEE 802.1D (STP), IEEE 802.1w (RSTP), IEEE 802.1s (MSTP), Jumbo Frame (9 KB)
Layer 3 protocols (IPv4)	BGP4, OSPFv2, RIPv1, RIPv2, LPM Routing, Policy-based Routing, Route-policy, ECMP, WCMP, VRRP
Basic IPv6 protocols	Neighbor Discovery (ND), ICMPv6, Path MTU Discovery, DNSv6, DHCPv6, ICMPv6, ICMPv6 redirection, ACLv6, IPv6 TCP/UDP, SNMPv6, IPv6 Ping/Traceroute, IPv6 RADIUS, IPv6 Telnet/SSH, IPv6 FTP/TFTP, NTPv6, IPv6 MIB for SNMP, IPv6 VRRP, IPv6 QoS
IPv6 features	Static routing, ECMP, PBR, OSPFv3, RIPng, BGP4+
Data center features	VXLAN, BGP-EVPN RDMA

Item	N9520-64OC
	PFC, ECN AI ECN ECN overlay RDLB, GDLB, End-to-Network Load Balance (ENLB)
Visualization	Telemetry INT sFLOW/IPFIX
QoS	IEEE 802.1p, DSCP, and ToS mapping ACL-based traffic classification Priority marking and re-marking Multiple queue scheduling mechanisms, including SP, WRR, WFQ, DRR, SP+WRR, SP+WFQ, SP+DRR Congestion avoidance mechanisms such as WRED and tail discarding
High availability	GR for RIP/OSPF/BGP, BFD, Device Link Detection Protocol (DLDP), Rapid Ethernet Uplink Protection Protocol (REUP), Rapid Link Detection Protocol (RLDP), power redundancy, fan redundancy, and hot swapping of line cards and power modules
Security features	Network Foundation Protection Policy (NFPP), CPU Protection Policy (CPP), RADIUS/TACACS, IPv4/IPv6 packet filtering by basic ACL, extended ACL or VLAN-based ACL, cleartext and MD5-based authentication for OSPF, RIPv2, and BGPv4 packets, Telnet login from specified IP addresses, broadcast packet suppression, and hierarchical user management
Management mode	SNMP v1/v2c/v3, Telnet, Console, MGMT, RMON, SSHv1/v2, FTP/TFTP, NTP clock, Syslog, SPAN/RSPAN/ERSPAN, ZTP, NETCONF, Python, fan and power alarm, temperature alarm
Other protocols	DHCP Client, DHCP Relay, DHCP Server, DNS Client, ARP Proxy, and Syslog

5. Typical Applications

AIGC Network Scenario



6. Ordering Guide

Take the following steps to order an N9520-64OC switch:

- Select the chassis.
- Select optical transceivers based on the port types and quantity required.

7. Ordering Information

Chassis, Fan Modules, and Power Modules

Model	Description
N9520-64OC	Fixed 64 x 800GE ports, 2 x 25GE ports, two power module slots, and four fan module slots, equipped with high-performance CPUs.
ND-PA3000I-F	Power module, hot-swappable, 1+1 redundancy, front-to-rear airflow
ND-FAN80-02-F	Fan module, hot-swappable, 3+1 redundancy, front-to-rear airflow

800GE Optical Transceivers

Model	Description
OSFP-800G-2xSR4	800G OSFP 2xSR4/SR8 850nm 100m PAM4 DOM MPO/MTP MMF Transceiver Module for 7060X6-64PE Switch
OSFP-800G-2xDR4	800G OSFP 2xDR4/DR8 1310nm 500m PAM4 DDM Dual MPO/MTP-12 SMF Optical Transceiver Module for 7060X6-64PE Switch
OSFP-800G-2xLR4	800G OSFP 2xLR4/LR8 for NVIDIA Spectrum-XGS 1310nm 10km PAM4 DDM Dual LC Duplex SMF Optical Transceiver Module
OSFP-800G-AE5	AEC 5m (16ft) Twin-port 2x400Gb/s OSFP Finned Top to 2x400Gb/s OSFP Finned Top Active Electrical Cable

25GE Optical Transceivers

Model	Description
SFP-25G-A5	5m (16ft) 25G SFP28 Active Optical Cable
SFP-25G-SR	25GBASE-SR SFP28 850nm 70m (OM3) /100m (OM4) DOM Duplex LC Transceiver Module for MMF
SFP-25G-LR	25GBASE-LR SFP28 1310nm 10km DOM Duplex LC Transceiver Module for SMF
SFP-25G-ER	25GBASE-ER SFP28 1310nm 40km DOM Duplex LC Transceiver Module for SMF
SFP-25G-DW10	25GBASE-DW10 SFP28 C17 10km Duplex LC Transceiver Module for SMF
SFP-25G-CW10	25GBASE-CW10 SFP28 1270nm 10km Duplex LC Transceiver Module for SMF
SFP-25G-CW40	25GBASE-CW40 SFP28 1270nm 40km Duplex LC Transceiver Module for SMF

Warranty

For more information about warranty terms and period, contact your local sales agency:

- **Warranty terms:** https://www.naddod.com/support/
- **Warranty period:** https://www.naddod.com/support/

Note: The warranty terms are subject to the terms of different countries and distributors.

More Information

For more information about Naddod Networks, visit the official Naddod website or contact your local sales agency:

- **Naddod Networks official website:** https://www.Naddod.com/
- **Online support:** https://www.Naddod.com/support
- **Email support:** support@Naddod.com

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Disclaimer

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2. Nothing herein should be construed as constituting an additional warranty.
3. NADDOD assumes no responsibility for the use or reliability of equipment or software not provided by NADDOD.