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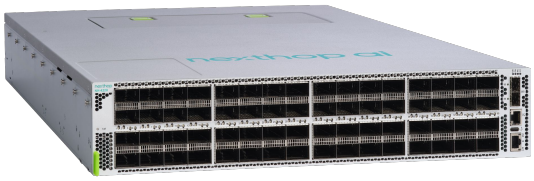
# NH-4220 Datasheet



## Nexthop NH-4220 Introduction

The NH-4220 Data Center Switch is a low power 2RU, 64-port, 1600 GbE OSFP switch, purpose built for modern cloud and AI data centers. The switch provides 102.4 Tbps of line-rate capacity, powered by flexible SerDes technology, enabling a wide range of port configurations for dense 1600 GbE, 800 GbE, 400 GbE, 200 GbE or 100 GbE applications. The NH-4220 delivers sophisticated packet processing, buffering, traffic management, congestion control, queuing and telemetry capabilities, ideally suited for advanced AI back-end and front-end networks in both leaf and spine roles, running a range of network operating systems (NOS)

## Technical Capabilities and Features

The NH-4220 is optimized to handle the extreme demands of advanced AI back-end and front-end networks. Incorporating specialized capabilities essential for high-performance computing, including RoCEv2 and DCQCN (Priority Flow Control and Explicit Congestion Notification) for ensuring low-latency data transport, Dynamic Load Balancing (DLB) and high radix ECMP for efficient traffic distribution across the network and advanced Telemetry and Monitoring for instrumentation, troubleshooting and visibility.

| Performance Highlights | Built for AI | Scalable Operations |
|---|---|---|
| 102.4 Tbps<br>Line-Rate Switching | AI Optimized<br>RoCEv2 and DCQCN | Next Generation<br>Data Center Design |
| Advanced IPv4/IPv6<br>Packet Processing | Dynamic Load Balancing<br>(DLB) | High Performance<br>Control Plane |
| Hardware-based<br>Encapsulation and Tunneling | High Radix ECMP | Flexible NOS Choice |
| Sophisticated On-Chip<br>Buffering and Traffic<br>Management | Engineered for LPO/LRO<br><br>Best-in-class Efficiency | Nexthop NOS<br>Community SONiC<br>BYoNOS |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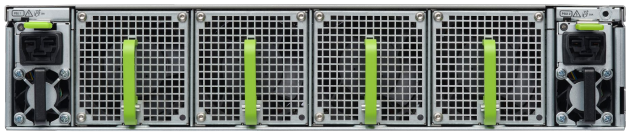
## Platform Overview

The NH-4220 platform delivers 64 ports of 1600 GbE in a 2RU system with a throughput of 102.4 Tbps. The platform also has 2 dedicated dataplane SFP28 front panel ports for telemetry and RJ-45 based console along with a 1GbE out-of-band ethernet port for system management.

A 16-core CPU complex allows for the most demanding control plane applications that are necessary for extremely large scale AI-factory environments.

64 x 1600 GbE OSFP / 1 x 25 GbE SFP
102.4Tbps



Front-to-Back Airflow
1+1 PSU and 3+1 Fans

## System Specifications

| | | |
|---|---|---|
| **Model Number** | SKU | NH-4220 |
| **Control Plane** | Processor | AMD Fire Range 16c/32t, 64-bit x86 |
| | Memory | 32 GB DDR5-5600 |
| | Security | Infineon SLB 9672 TPM 2.0 |
| | Boot Storage | 64 MB SPI |
| | Storage | 960 GB, M.2 2280, NVMe SSD |
| | Boot Loader | ONIE |
| **Form Factor** | Rack Units | 2 RU, EIA-310 rack or equivalent type |
| | Dimensions (H x W x D) | 3.5” x 17.5” x 30.9” / 88.9 mm x 445 mm x 785 mm |
| | Weight | 78 lbs (35.4 kg) - with fan and PSU modules |
| **Power and Cooling** | Power Supply | PSU-AC-5K211D-SDG-F (Hot swappable, 1+1 Redundant) |
| | Fan Module | FAN-8122-F (Hot swappable, 3+1 Redundant) |
| | Cooling | Front-to-back airflow |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## System Specifications

| | | |
|---|---|---|
| **Ports** | Network | 64 x 1600 GbE OSFP-IHS, 2 x 10/25 GbE SFP28 |
| | Management | 1 x 10/100/1000BASE-T RJ45 |
| | USB | 1 x USB 2.0 Type-C |
| | Console | 1 x RJ45 serial console port |
| **System Power**[1] | Typical Power<br>Maximum Power | 2993 W<br>3720 W |

## Environmental Specifications

| | | |
|---|---|---|
| **Operating Conditions** | Temperature<br>Humidity<br>Altitude | 0°C to 35°C / 32°F to 95°F<br>5% to 90% (RH), non-condensing<br>Sea level |
| **Non-Operating Conditions** | Temperature<br>Humidity | -40°C to 70°C / -40°F to 158°F<br>5% to 95% (RH), non-condensing |

## Power Supply Specifications

| | | |
|---|---|---|
| **PSU Model** | AC | PSU-AC-5K211D-SDG-F |
| **Connector Type** | AC | SAF-D-GRID 400 |
| **Max Output Power** | AC | 5200 W |
| **Input Voltage/ Frequency** | AC | 200-240 Vac, 50-60Hz |
| **Max Input Current** | AC | 25A at 200Vac |
| **Efficiency** | AC | 96% |



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## Software Support

Nexthop platforms come preinstalled with the Open Network Install Environment (ONIE) and support multiple Network Operating Systems (NOS), including Nexthop NOS, community SONiC and select third-party NOS.

For software release version support, checkout the SW Release page or contact support@nexthop.ai.

## Switch Silicon Specifications

| | | |
|---|---|---|
| **Network Scaling**[2] | SerDes Technology | 200Gbps PAM4, 512 SerDes |
| | Flexible Port configs | Up to 64 ports 1600 GbE<br>Up to 128 ports of 800 GbE<br>Up to 256 ports of 400 GbE<br>Up to 512 ports of 200 GbE<br>Up to 512 ports of 100 GbE<br>Up to 512 ports of 50 GbE |
| | Dynamic Buffer | 267 MB unified packet buffer<br>(Static & Dynamic Buffer Allocation) |
| | MAC Addresses | 136K |
| | VLANs | 4K w/128 profiles |
| | ACLs | 3K |
| | Egress ACLs | 512 |
| | ECMP | 4K groups, 512-way<br>256K members |
| | IPv4 Host/LPM Routes | 850K |
| | IPv4 Multicast (S,G) | 128K |
| | IPv6 Host/LPM Routes | 600K |
| **Key Features** | Queuing and scheduling | Up to 12 queues per port and a variety of scheduling algorithms (SP, RR, WRR, WDRR) |
| | QoS features | DSCP, Hierarchical ECMP, rate limiting, and shaping |
| | Advanced AI | ROCEv2, DCQCN (PFC, ECN), DLB, high-radix ECMP |
| | Telemetry and Monitoring | Port Mirroring, Flow Mirroring, ERSPAN (ingress and egress), Mirror on Drop (MoD), In-band Telemetry (INT) |


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## Regulatory Compliance

| | | | |
|---|---|---|---|
| **Safety** | UL/CSA 62368-1:2019, IEC 62368-1:2018 | **EMC** | FCC part 15, Class A<br>ICES-003<br>VCCI-CISPR 32<br>AS/NZS CISPR 32<br>EN 55032<br>BS EN55032<br>CISPR 32<br>KS C 9832<br>CNS 15936<br>EN 55035<br>BS EN55035<br>CISPR 35<br>EN 61000-3-2<br>IEC 61000-3-2<br>BS EN IEC 61000-3-2<br>EN 61000-3-3<br>IEC 61000-3-3<br>BS EN 61000-3-3<br>KS C 9835 |
| **Certifications** | BSMI (Taiwan)<br>CE (European Union)<br>KCC (South Korea)<br>NRTL (North America)<br>RCM (Australia/New Zealand)<br>VCCI (Japan) | | |
| **EU Directives** | 2014/35/EU Low Voltage Directive<br>2014/30/EU EMC Directive<br>2012/19/EU WEEE Directive<br>2011/65/EU RoHS Directive<br>2015/863/EU Commission Delegated Directive | | |
| **Regulatory Model Number** | | NH26-05 | |

## Datasheet Notes

| | |
|---|---|
| **1. System Power** | Typical Power: 1600 GbE, L3, Large frames, Random payload, 25°C, sea level, 50% traffic, LRO<br>Maximum Power: 1600 GbE, L3, Large frames, Random payload, 35°C, sea level, 100% traffic, FRO |
| **2. Network Scaling** | Software-supported features and scale numbers depend on the NOS and the software version. |



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## Ordering Information

| | |
|---|---|
| **NH-4220-F** | 64 port 1.6TbE OSFP-IHS 102.4 Tbps, 2RU scale-out, switch platform with 16-core CPU, front to back airflow, redundant, hot swappable power supplies (1+1) and fans (3+1) |
| **NH-4220-CHS** | Bare chassis - 64 port 1.6TbE OSFP-IHS, 102.4 Tbps, 2RU, scale-out switch platform with 16-core CPU. (No power supplies or fans) |
| **NH-SVC-4220-NBD** | 24x7 Nexthop TAC and next business day RMA support for the NH-4220-F platform; 1 month |
| **PSU-AC-5K211D-SDG-F** | AC Power Supply Unit, 5.2 kW, with SAF-D-GRID connector, hot swappable |
| **FAN-8122-F** | Dual Rotor Fan Module, front to back airflow, 80mm |

## Ready to Get Started?

To learn more about Nexthop switches, download quick start guides, safety & regulatory compliance information, and other technical specifications, please visit the Nexthop platforms page.

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