Nexthop NH-4200 Series Introduction

The NH-4200 series is a family of high density, air-cooled 102.4 Tbps switches, purpose built for modern cloud and AI data centers for front-end or back-end scale-out or scale-across use cases. The family provides 102.4 Tbps of switching capacity, powered by flexible SerDes technology that enables various port configurations for 1600 GbE, 800 GbE, 400 GbE, 200 GbE or 100 GbE applications. Additionally, these switches offer sophisticated packet processing, buffering, traffic management, congestion control, queuing and telemetry capabilities. As a result, the NH-4200 family is ideally suited for the latest-generation AI backend and front-end networks in leaf, spine, middle-of-row, and end-of-row configurations.

Technical Capabilities and Features

The NH-4200 family is optimized to handle the extreme demands of advanced AI backend and front-end networks by incorporating specialized capabilities essential for high-performance computing. This includes RoCEv2 and DCQCN (Priority Flow Control and Explicit Congestion Notification) that ensure low-latency data transport, combined with Dynamic Load Balancing (DLB) and high radix ECMP for efficient traffic distribution across the network and advanced Telemetry and Monitoring for troubleshooting and traffic visibility.

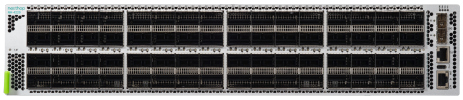
Performance Highlights

- ➔ 102.4 Tbps Line-Rate Switching
- ➔ Advanced IPv4/IPv6 Packet Processing
- ➔ Hardware-Based Encapsulations and Tunneling
- ➔ Sophisticated On-Chip Buffering and Traffic Management

Advanced AI Features

- ➔ AI Optimized: RoCEv2 and DCQCN (PFC, ECN)
- ➔ Dynamic Load Balancing (DLB)
- ➔ High Radix ECMP
- ➔ L2 instrumentation with Congestion signalling

The NH-4220-F platform delivers 64 ports of 1600G in a 2RU system with a throughput of 102.4 Tbps. The platform also has 2 dedicated SFP+ front panel ports for Telemetry and system management. The addition of a Baseband Management Controller, enables secure, fine-grained operational and system management capabilities. 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 +
2 x 10/25GbE SFP

Front-to-Back Airflow
Redundant PSU and Fans

Platform Specifications

CPU	Processor	AMD FireRange, 16 core; 64-bit x86
	Memory	32 GB DDR5-4800
	Security	Infineon SLB 9672 TPM 2.0
	BMC	ASPEED AST2720 with DDR5 support
	Storage	960 GB, M.2 NVMe SSD
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) - without optical modules
Hardware	Power Supply	Hot swappable, 2 (1+1) redundant, SAF-D-GRID, 5200 W, AC
	Fan Modules	Hot swappable, 4 (3+1) redundant
	Cooling	Front-to-back airflow
Ports	Network	64 x 1600 GbE OSFP-IHS

		2 x 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	AC Input	208-240 VAC, 50 - 60 Hz
Operating Conditions	Temperature Humidity Altitude	0°C to 35°C / 32°F to 95°F 5% to 90% (RH), non-condensing 0 to 10,000 ft (0 – 3000 m)
Non Operating Conditions	Temperature Humidity	-40°C to 70°C / -40°F to 158°F 5% to 95% (RH), non-condensing

Switch Silicon Specifications

Network Scaling[1]	SerDes Technology	200Gbps PAM4, 512 SerDes
	Flexible Port configs	Up to 64 ports of 1600 GbE Up to 128 ports 800 GbE Up to 256 ports of 400 GbE Up to 512 ports of 200 GbE Up to 512 ports of 100 GbE Up to 512 ports of 50 GbE
	Dynamic Buffer	267 MB unified packet buffer (Static & Dynamic Buffer Allocation)
	MAC Addresses	128K
	VLANs	4K
	Ingress ACLs	3K
	Egress ACLs	512
	ECMP	512-way Next hop groups: 4K, 256K members
	IPv4 Routes	850K
	IPv6 Routes	600K
	IPv4 Multicast (S,G)	128K
Key Features	Queuing and scheduling	Up to 12 queues per port, 48 queues per CPU 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)

[1] Software-supported features and scale numbers depend on the NOS and the software version

Software Support

The NH-4200 series switches come preinstalled with Open Networking Install Environment (ONIE) bootloader.

The NH-4200 series switches support multiple network operating systems including community Software for Open Networking in the Cloud (SONiC) as well as Nexthop NOS.

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

Regulatory Compliance

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

Ordering Information

SKU	Product Description
NH-4220-F	64 port 1600GbE OSFP, 102.4 Tbps, 2RU, scale-out switch platform with 16 Core CPU, BMC, front to back air flow, redundant, hot swappable power supplies (1+1) and fan modules (3+1)
PSU-AC-5200-SDG	AC Power Supply Unit with Saf-D-Grid connector, 5.2 KW, Hot swappable, CRPS-265 form factor
FAN-54V80G1-F	Dual Rotor Fan Module, front to back air flow, 80mm, 54V
NH-SVC-4220-NBD	24x7 Nexthop TAC and next business day RMA support for the NH-4220-F platform

Ready to Get Started?

To learn more about the NH-4220-F switch including quick start guide, safety & regulatory compliance and other technical specifications, refer to the Nexthop platforms page.