CORNELIS® CN6000 800G OMNI-PATH® SUPERNIC

Get more from every XPU.

1.6 billion messages per second, sub-microsecond MPI latency, and 800 Gb/s on the lossless fabric HPC already trusts.



The Network AI and HPC Has Been Waiting For

Industry-Leading Performance at Gigawatt-AI Scale

As AI factories grow toward gigawatt-class deployments, collective communication can stall traditional Ethernet. The CN6000 Omni-Path SuperNIC removes that bottleneck with 1.6 billion messages per second — the highest in the industry[1] — sub-1 µs MPI latency and 800 Gb/s per port. GPUs stay saturated and CPU clusters keep moving, across fabrics of more than 500,000 endpoints.

Lossless and Self-Correcting

Credit-based flow control prevents packet loss, and link-level retry fixes errors on the link before they reach the application. Fine-grained adaptive routing, static dispersive routing and hardware congestion management spread traffic and ease hot spots, so long training and simulation jobs keep running.

Multi-Plane by Design

The SuperNIC drives two independent 400 Gb/s data paths. Paired with the CN6000 Omni-Path Switch — two independent 48-port 400G planes in one 1U chassis — one cable per node reaches both planes at up to 800 Gb/s. Each plane keeps the radix and low hop count of a 400G fabric, and a fault in one plane leaves the other running while you service it.

Built for Disaggregated Inference

Splitting prefill from decode, and attention from FFN or expert layers, puts KV-cache handoffs and per-token activations on the network. Sub-microsecond latency, 1.6 billion messages per second and a lossless fabric mean no transfer waits on a retransmit — keeping accelerators busy and raising token yield per dollar.

Secured by Post-Quantum Cryptography

A hardware Root of Trust with post-quantum cryptography, secure boot and SPDM 1.4 attestation using ML-DSA-87 and ECDSA P-384 helps protect firmware and device identity against both current and future cryptographic threats.

Open Software, Ecosystem-Ready

Cornelis OPX is an open-source stack built on libfabric, the open interface Cornelis originally developed. MPI, OpenSHMEM, NCCL, RCCL, UCX, PyTorch and OpenFabrics run on it, with GPUDirect for NVIDIA and AMD accelerators. The SuperNIC is backward compatible with CN5000 and uses the same OPX provider and host driver, so you can upgrade at your own pace — and carry applications forward to CN7000.

1.6B	<1 µs	500K+	800G
Messages per second	MPI latency	Endpoints in one fabric	Per port

WHERE OMNI-PATH FITS

AI

Train large language models, serve disaggregated inference, run agentic AI frameworks, and power fraud detection & computer vision on a lossless fabric.

HPC

Climate modeling, seismic analysis, aerospace and automotive simulation, and genomic research — MPI and SHMEM codes at national-lab scale.

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Technical Specifications

Fabric and Host

Protocol	Omni-Path, lossless credit-based flow control with link-level retry
Bandwidth	800 Gb/s aggregate (1.6 Tb/s bidirectional) over two independent 400 Gb/s data paths
Network ports	Dual x4-lane QSFP-DD, 112 Gb/s per lane
Media	Copper, linear pluggable optics (DR8), retimed optics (SR8)
Host interface	PCI Express 6.0 x16
Message rate	1.6 billion messages/s, bidirectional[1]
MPI latency	Under 1 µs[1]
Fabric scale	More than 500,000 endpoints
Virtual lanes	1 to 4 data VLs plus 1 management VL
MTU	2, 4, 8 or 10 KB per VL
Routing	Fine-grained adaptive (FGAR); static dispersive (SDR); hardware congestion management

Software, Security and Hardware

Software	Cornelis OPX on libfabric; MPI, OpenSHMEM, NCCL, RCCL, UCX, PyTorch, OpenFabrics
Accelerators	GPUDirect for NVIDIA and AMD
Operating systems	RHEL, Rocky Linux, Ubuntu LTS, SLES; supported versions in the release notes
Virtualization	SR-IOV; MSI-X
Security	Hardware root of trust with post-quantum cryptography; secure boot; SPDM 1.4 (ML-DSA-87, ECDSA P-384)
Management	Integrated management processor; MCTP over PCIe and SMBus; PLDM for Monitoring and Control, Firmware Update and Redfish Device Enablement
Form factor	PCIe low profile, 3.12 × 6.6 in (7.92 × 16.76 cm); OCP NIC 3.0 SFF
Brackets	PCIe card: low profile installed, standard in package
Weight	0.280 kg (0.62 lb) air-cooled; 0.235 kg (0.52 lb) conduction-cooled

Power and Environmental

Power, copper	45 W typical, 49 W maximum
Power, LPO	53 W typical, 58 W maximum (DR8)
Power, retimed	60 W typical, 65 W maximum (SR8)
Cooling	Air or conduction (PCIe card); air (OCP NIC 3.0 SFF)
Airflow	PCIe: thermal level 6, 450 LFM (copper) to 500 LFM (retimed) at 55 °C. OCP: cooling tier 7 at 55 °C, maximum power
Temperature	Operating 0 to 55 °C, derate 1 °C per 175 m above 900 m; storage –40 to 70 °C
Humidity	Operating 10% to 85%; storage 5% to 95%; non-condensing
Altitude	Operating 0 to 3,200 m; storage 0 to 12,000 m

Compliance

Emissions	FCC Part 15 Subpart B Class A; ICES-3(A)/NMB-3(A); EN 55032; EN 55035; VCCI Class A; AS/NZS CISPR 32 Class A; KS C 9832 and KS C 9835; BSMI CNS 15936 Class A
Safety	IEC/EN/CSA 62368-1 (NRTL, CB Scheme)
Environmental	RoHS 2011/65/EU and 2015/863; REACH (EC) No 1907/2006

The CN6000 Omni-Path Family

An end-to-end 800G fabric: the Omni-Path SuperNIC, the CN6000 Omni-Path Switch, cables, and open-source OPX host and management software.

Ordering Information

Item	Cornelis OPN	Description
980178	CN6HFA1D6ALS	CN6000 SuperNIC, QSFP-DD, x16 PCIe 6.0, air-cooled, low profile, single
980182	CN6HFA1D6NLS	CN6000 SuperNIC, QSFP-DD, x16 PCIe 6.0, conduction-cooled, low profile, single
TBD	CN6HFP1D6AxS	CN6000 SuperNIC, QSFP-DD, x16 PCIe 6.0, air-cooled, OCP, faceplate **TBD**, single

In the OCP NIC 3.0 part number, x designates the faceplate retention (latch, thumbscrew or other).

Learn more at www.cornelisnetworks.com

[1] [Test basis and system configuration]. Results vary with configuration, workload and topology. Specifications are subject to change without notice; values marked TBD are pending engineering confirmation. Cornelis, the Cornelis logo and Cornelis product names are trademarks of Cornelis Networks. Other names and brands may be claimed as the property of others. © 2026 Cornelis Networks. All rights reserved. Revision 2.0, November 2026.