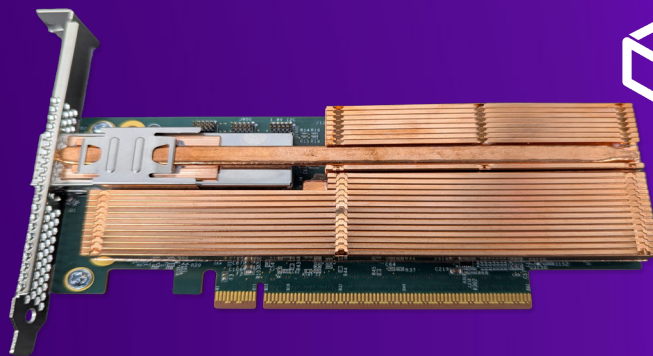


# CORNELIS® CN6000 800G OMNI-PATH® SUPERNIC AND ETHERNET SUPERNIC



The first multi-protocol SuperNIC unifying Omni-Path, RoCEv2, and Ultra Ethernet at 800Gbps on PCIe 6.0 — delivering the industry's highest performance for AI and HPC at any scale.



## The Network AI and HPC Has Been Waiting For

### Multi-Protocol Performance Without Trade-offs

The CN6000 SuperNIC is the first adapter to simultaneously support Omni-Path, Ethernet RoCEv2, and Ultra Ethernet Compliance on a single silicon platform. Each port is independently configurable, allowing operators to run Omni-Path for maximum-performance HPC fabrics on one port and RoCEv2 or Ultra Ethernet on the other — connecting seamlessly to any 400G/800G Ethernet switch ecosystem without a forklift upgrade.

Powered by Cornelis' production-proven pipeline architecture and a new Ethernet Adaptation Layer, CN6000 brings the performance DNA of Omni-Path — credit-based flow control, fine-grained adaptive routing, and sub-microsecond latency — to the world's most widely deployed networking standard. The result: deterministic, congestion-free behavior in heterogeneous environments that previously required separate fabrics.

### Industry-Leading Performance at Gigawatt-AI Scale

As AI factories scale toward gigawatt-class deployments, traditional Ethernet architectures buckle under collective communication pressure. The CN6000 800G SuperNIC eliminates that bottleneck. Delivering 1.6 billion messages per second — the highest in the industry — with sub-1  $\mu$ s MPI latency and 800 Gbps of bidirectional bandwidth, the SuperNIC keeps GPUs saturated and CPU clusters moving.

### No Compromise RoCEv2

Hardware-accelerated RDMA, lightweight queue pairs, and a RoCEv2 In-Flight tracking table enable the SuperNIC to maintain millions of concurrent operations at line rate, providing deterministic latency and throughput as cluster sizes grow from thousands to hundreds of thousands of nodes.

The result: Lower AllReduce completion time versus alternate solutions, higher GPU utilization — directly translating into faster training runs, lower power and cooling costs, and higher token yield per dollar.

### Secured by Post Quantum Cryptography

Security is first-class citizen with CN6000 with a PQC-enabled Root-of-Trust with SPDM 1.4 (ML-DSA-87 + ECDSA P-384) that protects every deployment against both current and future cryptographic threats.

The SuperNIC optimizes real-time inferencing, shortens feedback loops, and reduces time-to-results. Its robust and efficient design makes it the ideal choice for highly parallelized applications at any scale.

### Open and Built for Every Environment

CN6000 is designed around openness at every layer. As a founding contributor to libfabric — now the transport foundation of the Ultra Ethernet Consortium — Cornelis brings deep protocol expertise to Ultra Ethernet 1.0's full feature set: Reliable Unordered Delivery (RUD), Reliable Ordered Delivery (ROD), and unreliable delivery modes.

The CN6000 PCIe 6.0 x16 SuperNIC also supports industry standard virtualization with SR-IOV, GPU-Direct for NVIDIA and AMD accelerators, and compatibility with PyTorch, NCCL, RCCL, UCX, MPI, and OpenFabrics ensure it integrates into any AI or HPC software stack. Air- and conduction-cooling options support the most demanding rack densities.

### Ecosystem-Ready End-to-End

The CN6000 SuperNIC pairs with CN6000-series Omni-Path edge switches for a fully optimized end-to-end fabric, and interoperates with Arista, Cisco, Juniper, NVIDIA Spectrum, and other standards-based Ethernet end points. CN6000 SuperNIC is backward compatible with CN5000 infrastructure allowing customers to upgrade at their own pace.

## CN6000 SUPERNIC HIGHLIGHTS

### Benefits

- Industry's highest message rate: 1.6Billion msg/s
- Concurrent Omni-Path, RoCEv2 and Ultra Ethernet

### Performance

- 1.6Tbps bidirectional (800Gbps Tx and 800Gbps Rx)
- < 1  $\mu$ s MPI latency

## Key Features

- Multi-protocol – Omni-Path and RoCEv2, concurrently
- Enhanced resource scaling
- Optimized send and receive buffer management for high message rate applications
- Supports Single Root I/O Virtualization (SR-IOV)
- Supports industry standard management interfaces
- Supports MSI-X interrupt handling
- Configurable from one to four VLs plus one management
- Configurable MTU size of 2 KB, 4 KB, 8 KB, or 10 KB VL
- PCI Express Base Specification 6.0 compliant
- Air and conduction cooling options

## Advanced Features

- Advanced Congestion Management
- Fine-Grained Adaptive Routing (FGAR)
- Static Dispersive Routing (SDR)
- Root of Trust secured with Post Quantum Cryptography (PQC)

## Management Features

- Optimized for scalable MPI and SHMEM message rate and latency
- Includes support for standard telemetry protocols (PLDM, MCTP, Redfish) to streamline system integration and firmware updates
- Integrated management processor supports host monitoring, query, and updates. Supported interfaces include:
  - MCTP over PCIe
  - MCTP over SMBus
  - PLDM for Platform Monitoring and Control
  - PLDM for Firmware Update
  - PLDM for Redfish Device Enablement (RDE) support
  - Security Protocol and Data Model (SPDM) 1.4

## Specifications

<b>Bandwidth</b>	800G	<b>Cooling Options</b>	Air- and Conduction-Cooled
<b>Port Options</b>	Dual x4 lane QSFP-DD (112 Gbps per lane)	<b>Power Consumption (Typ/Max)</b>	
<b>PCI Low-Profile Card (HxL)</b>	3.12 x 6.6 in.	<b>AOC</b>	57.5/62.2 W
	7.92 x 16.76 cm	<b>DAC</b>	42.4/46.0 W
<b>Tall Bracket included</b>	Low-Profile (installed)	<b>Weight</b>	
	Standard (in package)	<b>Air-Cooled</b>	0.62 lb/0.280 kg
		<b>Conduction-Cooled</b>	0.52 lb/0.235 kg

Name	Number	Description
CN6HFA1D6ALS	980178	CN6000 SuperNIC, QSFP-DD, x16 PCIe 6.0, Air-Cooled, Low Profile, Single
CN6HFA1D6NLS	980182	CN6000 SuperNIC, QSFP-DD, x16 PCIe 6.0, Conduction-Cooled, Low Profile, Single

## Operating Conditions

<b>Temperature</b>	
<b>Operating:</b>	0 to 55 °C (derated 1 °C/175 m above 900 m)
<b>Storage:</b>	-40 to 70°C
<b>Humidity</b>	
<b>Operating:</b>	10% to 85% non-condensing
<b>Storage:</b>	5% to 95% non-condensing
<b>Altitude</b>	
<b>Operating:</b>	0 to 3,200 m
<b>Storage:</b>	0 to 12,000 m

## Emissions/Immunity

<b>US</b>	FCC Part 15, Subpart B, Class A,
<b>Canada</b>	CAN ICES-3(A)/NMB-3(A) Issue 7
<b>Europe</b>	EN55032 (CISPR32) EN55035 (CISPR35) EN61000-3-2 EN61000-3-3
<b>Japan</b>	VCCI, Class A
<b>AS/NZ</b>	As/NZS CISPR 32, Class A
<b>Korea</b>	
<b>Emissions</b>	KS C 9832 Class A
<b>Immunity</b>	KS C 9835
<b>Taiwan</b>	BSMI (CNS 15936), Class A

## Safety

<b>US/Canada</b>	NRTL 62368-1, CSA 22.2. No. 62368-1
<b>Europe</b>	EN62368-1
<b>International</b>	CB Scheme: IEC 62368-1

## Environmental

<b>RoHS</b>	RoHS Directive 2011/65/EU RoHS Directive 2015/863
<b>REACH</b>	REACH Regulation (EC) No 1907/2006

The Cornelis CN6000 Omni-Path product family is a flexible, high-performance end-to-end networking solution that addresses diverse infrastructure needs and is comprised of the Switch, SuperNIC, cables, and open-source OPX Host and Management Software. CN6000 is also interoperable with the CN5000 product family.

Learn more about industry leading AI and HPC scale-out network at [www.cornelis.com](http://www.cornelis.com)



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