

CORNELIS® CN6000 800G OMNI-PATH® SWITCH



The CN6000 Switch is ideally suited to meet the demands of the modern data center, providing high bandwidth fabric bandwidth, low-latency 800 Gbps connectivity, and intelligent congestion management.



The Network AI and HPC Has Been Waiting For

Built for Scale and Efficiency

The Cornelis CN6000 Omni-Path Switch is purpose-built to meet the growing demands of AI data centers and large-scale HPC environments. Delivering 800G per port across 48 ports, the CN6000 provides a high-performance, lossless networking fabric that scales up to 500,000 endpoints while maintaining predictable low latency and high application efficiency.

Leveraging the advanced Cornelis Omni-Path Architecture, the CN6000 Switch enables congestion-free communications through credit-based flow control, fabric-wide congestion management, link-level retransmissions, and adaptive multipath routing. These capabilities eliminate packet loss, reduce tail latency, maximize compute utilization, and lower total cost of ownership for the most demanding AI and HPC workloads.

Optimized for AI and HPC Workloads

As model sizes grow and distributed training clusters expand, network performance becomes critical to overall application efficiency. The CN6000 Switch delivers ultra-low latency, high message rates, and deterministic performance that accelerate AI training, inference, and large-scale scientific computing. By minimizing communication bottlenecks and maintaining efficient data movement across thousands of nodes, the CN6000 helps increase CPU and GPU utilization, shorten time-to-results, and improve infrastructure efficiency.

Intelligent, Congestion-Free Networking

Unlike traditional Ethernet-based approaches that rely on packet drops and retransmissions, the CN6000 delivers true lossless networking through advanced congestion management technologies, including:

- FGAR and SDR
- Incast-aware flow control
- Credit-based traffic management
- Dynamic workload-aware routing

Together, these innovations ensure consistent application performance, predictable latency, and optimal fabric utilization across AI and HPC environments of any scale.

Advanced Telemetry and Simplified Operations

CN6000 provides deep visibility into network performance through real-time telemetry and integrated management capabilities. Built on an OpenBMC-based architecture with support for Redfish, PLDM, and industry-standard management interfaces, the platform enables proactive monitoring, rapid troubleshooting, and simplified lifecycle management.

With support for both in-band and out-of-band management, organizations gain the operational intelligence needed to maximize performance and efficiently manage large-scale deployments.

Enterprise-Class Reliability and Security

Designed for mission-critical environments, CN6000 incorporates advanced error detection and recovery technologies, secure boot capabilities, protected key storage, and resilient fabric services to ensure continuous operation and data integrity.

Available in air-cooled and liquid-cooled configurations with hot-swappable field-replaceable fans and power supplies, the Switch delivers the flexibility required for modern AI and HPC data centers.

Open, End-to-End AI and HPC Networking

The CN6000 Switch is part of the complete Cornelis CN6000 Omni-Path product family, which includes SuperNICs, Director Class Switches, cables, and open-source OPX Host and Management Software. Together, these components provide a high-performance, interoperable networking solution designed to maximize AI and HPC performance while simplifying deployment and operations at scale.

CN6000 SWITCH HIGHLIGHTS

Benefits

- Performance that scales with your cluster
- Real-time network visibility and control
- Supports >100K node clusters

Performance

- 48 ports of 800G or 96 ports of 400G
- 76.8T full duplex bandwidth
- Switch latency as low as 105 ns

Key Features

- Optimized for high throughput and low latency
- Virtual lanes (VLs): Configurable from one to eight VLs plus one management VL
- QSFP-DD Quad Small Form Factor Pluggable Double Density cabling
- Low-Latency bit error recovery and optional correction
- Security (Secure key EEPROM, Secure Boot)
- Liquid cooling design, supports high density racks
- Hot swappable, field replaceable (FRU) power supply
- N+N redundant power supplies

Specifications

| | |
|------------------------|--------------------------|
| Bandwidth | 800G |
| Fabric Ports | 48 x 800G QSFP-DD Ports |
| Chassis | 1.7H x 17.2W x 26.1D in. |
| Dimensions | 4.4H x 43.8W x 66.3D cm |
| Input Range | 240 - 277 VAC, 50/60 Hz |
| Cooling Options | Liquid-Cooled |

| | |
|-------------------------------------|--|
| Weight | |
| Liquid-Cooled | AC Power: 38.5 lb. (17.5 kg) DC Power: 36.5 lb. (16.6 kg) |
| Power Consumption (Typ/Max)* | |
| DAC | Liquid-Cooled: 856/929 W |
| AOC | Liquid-Cooled: 1663/1767 W |
| *All DACs or AOCs | |

Advanced Congestion Management

- Fine-Grained Adaptive Routing (FGAR)
- Static Dispersive Routing (SDR)
- Lossless, congestion-free networking through fabric-wide adaptive routing and incast-aware flow control

Management Features

- Integrated OpenBMC-based management
- Redfish protocol and data model/schema support
- In-band and out-of-band management options
- Command line interface through 10/100/1000 BASE-T Ethernet
- Network Time Protocol (NTP) and LDAP

The CN6000 Switch requires the use of CN6000 SuperNICs to fully enable its congestion-free, lossless operation at scale. This solution is supported by Cornelis' open-source host software and integrates with standard HPC and AI environments with minimal modification.

| Name | Number | Description |
|--------------|--------|---|
| CN6SWE48G2WF | 980245 | CN6000 Switch, 48-Port, 240/277 VAC in, Dual Power Supply, Liquid-Cooled, Fan-to-Port |
| CN6SWE48G2WP | TBD | CN6000 Switch, 48-Port, 240/277 VAC in, Dual Power Supply, Liquid-Cooled, Port-to-Fan |
| CN6SWE48D2WF | TBD | CN6000 Switch, 48-Port, 48 VDC in, Dual Power Supply, Liquid-Cooled, Fan-to-Port |

Operating Conditions

| | |
|--------------------|--|
| Temperature | |
| Operating: | 10 to 35 °C (derated 1°C/175 m above 900 m) |
| Storage: | -40 to 70 °C |
| Humidity | |
| Operating: | 5% to 85% non-condensing |
| Storage: | 5% to 95% non-condensing |
| Altitude | |
| Operating: | 0 to 3,000 m |
| Storage: | 0 to 12,000 m |

Emissions/Immunity

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

Safety

| | |
|----------------------|--|
| US/Canada | NRTL 62368-1, CSA 22.2.No. 62368-1 |
| Europe | EN62368-1 |
| International | CB Scheme: IEC 62368-1 |
| Environmental | |
| RoHS | RoHS Directive 2011/65/EU RoHS Directive 2015/863 |
| REACH | 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.cornelisnetworks.com



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