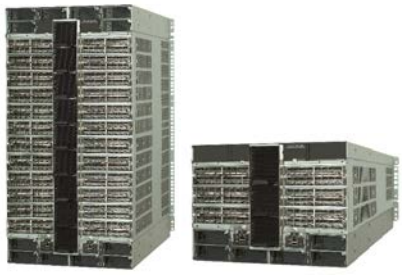
PRODUCT BRIEF

Intel® Omni-Path Director Class Switches 100 Series

768 and 192 port director switches (100 Gbps per port)



Intel® Omni-Path Director Class Switches, an element of the Intel® Scalable System Framework, are part of an end-to-end product family for HPC fabrics that delivers high performance with breakthrough cost models. Intel® Omni-Path Architecture (Intel® OPA) builds on proven technologies from Intel® True Scale Architecture, the Cray Aries* interconnect, and open source software to provide an evolutionary on-ramp to revolutionary new fabric capabilities.

Higher Performance at Lower Cost

Intel® Omni-Path Director Class Switches deliver 100 Gbps port bandwidth with latency that stays low even at extreme scale. Based on new Intel 48-port switch silicon, these switches can lower fabric acquisition costs by as much as 50 percent[i], while simultaneously reducing space and power requirements.[ii] With these savings, you can potentially achieve higher total cluster performance within the same hardware budget to expand and accelerate your research.

Flexible Fabrics at Every Scale

Intel® Omni-Path Director Class Switches support HPC clusters of all sizes, from mid-level clusters to supercomputers with tens of thousands of servers. You can use these switches in combination with Intel® Omni-Path Edge Switches to build low-latency, multi-tier fabrics with an exceptional set of features for high-speed networking.

The Right Fabric for HPC

Key Benefits

Highly-integrated design reduces space, power, and cost

- 768 ports in 20U (+1U shelf)
- 192 ports in 7U

Optimized for high message rates and low end-to-end latency

Simple generational upgrades, with:

- Binary compatible applications
- FastFabric tools for easy installation
- All open source software

Key Features

Up to 19.2 Terabytes of aggregate bandwidth

Fully redundant subsystems

- Spine/management/power/cooling

Next-generation fabric innovations

- Packet Integrity Protection (PIP)
- Traffic Flow Optimization (TFO)
- Dynamic Lane Scaling (DLS)
- New 8K and 10K MTUs for improved storage efficiency

Modular Design

Intel® OPA leaf, spine, power, cooling, and management modules are common across chassis sizes, providing the flexibility needed to deploy and grow HPC environments efficiently and cost effectively.

High Availability

Intel® OPA switches provide integrated support for high availability with advanced features such as power, fabric, and management module redundancy, component-level diagnostics and alarming, and out-of-band management. Innovative features take fabric resilience and availability to new heights without sacrificing performance. Packet Integrity Protection (PIP), for example, provides high packet reliability with latency-free error checking and link-level recovery. Dynamic Lane Scaling (DLS) maintains 75 percent of link bandwidth if a physical lane fails, so HPC workloads can complete gracefully to keep research efforts on track.

SWITCH SPECIFICATIONS

- Based on Intel® Omni-Path Switch Silicon 100 Series 48 Port ASIC
- 100 Gbps per port bidirectional
- Virtual lanes: Configurable from one to eight VLs plus one management VL
- Configurable MTU size of 2 KB, 4 KB, 8 KB, or 10KB
- Maximum multicast table size: 8,192 entries
- Maximum unicast table size: 49,151 entries
- Supports QSFP28 Quad Small Form Factor Pluggable cabling
- Passive copper or active fiber cable

Management Features

- Management Module with optional redundancy
- Built-in Fabric Manager
- Subnet Management Agent (SMA)
- Performance Management Agent (PMA)
- Enables Command Line Interface and Chassis Management GUI through 10/100/1000 Base-T Ethernet
- Enables Serial Console through USB Serial Port
- Supports Embedded Subnet Manager (ESM) and Performance Manager (PM)
- Enables Network Time Protocol (NTP), SNMP/MIBs, and LDAP
- FastFabric Toolset
- Fabric Management GUI

FEATURE	100SWD24	100SWD06
100 Gbs ports	32-up to 768	32-up to 192
Total System Bandwidth (bi-dir)	19.2 TB/s	4.8 TB/s
Dimensions (w x h x d)	17.6" x 35.0" x 29.5"	17.6" x 12.2" x 29.5"
Leaf Modules (Hot Swap)	1-24	1-6
Spine Modules (Hot Swap)	Up to 8	Up to 2
Fan Modules (Hot Swap)	9	3
Mgmt. Modules (Hot Swap)	1/2	1/2
Power Supplies (Hot Swap) Min / DC / AC	6/7/12	2/3/4
Power (Typ./Max) Input 180-260 VAC 50-60 Hz Optical Power: Class 4 - 3 Watt Max	 6.8/8.9 KW (Copper) 9.5/11.6 KW (All Optical)	 1.8/2.3 KW (Copper) 2.4/3 KW (All Optical)
Weight - Fully Loaded	265kg	86kg
Status LEDs* (Ethernet/DC_On)	1/2	1/2

*Status LEDs - Ethernet Activity (Green), Ethernet Speed (Green/Orange) / DC_On (Green on push button)

INTEL SKU	INTEL MM#	DESCRIPTION
100SWD06B1N	945676	Intel® Omni-Path Director Class Switch 100 Series 6 Slot Base 1MM 100SWD06B1N
100SWD24B1N	945677	Intel® Omni-Path Director Class Switch 100 Series 24 Slot Base 1MM 100SWD24B1N
100SWDMGTSH	945776	Intel® Omni-Path Director Switch Management Module 100 Series 100SWDMGTSH
100SWDLF32Q	945777	Intel® Omni-Path Director Switch Leaf Module 100 Series 32 port 100SWDLF32Q
100SWDSPINE	945778	Intel® Omni-Path Director Switch Spine Module 100 Series 100SWDSPINE
100SWDFAN01	945779	Intel® Omni-Path Director Switch Fan Module 100 Series 100SWDFAN01
100SWDPS001	945780	Intel® Omni-Path Director Switch Power Supply Module 100 Series 100SWDPS001
100SWDLFFPN	945781	Intel® Omni-Path Director Switch Leaf Filler Panel 100 Series 100SWDLFFPN
100SWDSPFPN	945834	Intel® Omni-Path Director Switch Spine Filler Panel 100 Series 100SWDSPFPN
100SWDMSFPN	945835	Intel® Omni-Path Director Switch Management Filler Panel 100 Series 100SWDMSFPN
100SWDPSFPN	945870	Intel® Omni-Path Director Switch Power Supply Filler Panel 100 Series 100SWDPSFPN
100SWDIKT06	945832	Intel® Omni-Path Director Switch Installation Kit 100 Series 6 Slot 100SWDIKT06
100SWDIKT24	945833	Intel® Omni-Path Director Switch Installation Kit 100 Series 24 Slot 100SWDIKT24

Compliance

US/Canada

- FCC Part 15, Subpart B, Class A
- CAN ICES-3 (A)

Europe

- CISPR22
- CISPR32/EN55032
- EN55024
- EN61000-3-2
- EN61000-3-3

Japan

- VCCI, Class A

New Zealand/Australia

- AS/NZS CISPR 22, Class A

Korea

- RRA/KC (KN22, KN24), Class A

Taiwan

- BSMI (CNS 13438), Class A

Customs Union: Russia, Belarus and Kazakhstan

- GOST R IEC 60950-1
- GOST R 51318.22
- GOST 30805.24
- GOST R 51317.3.2 (Section 6, 7)
- GOST R 51317.3.3

Agency Approvals – Safety (Planned)

US/Canada

- TUV NRTL: UL 60950-1, CSA 22.1.No. 60950-1

Europe

- TUV SUD EN60950-1

International

- CB Scheme: IEC 60950-1

RoHS/REACH

- Complies with RoHS II Directive 2011/65/EU of the European Parliament
- Complies with REACH Regulation (EC) No 1907/2006

Acoustics

- Less than 7.0 Bels

Environmental Specifications

Temperature

- Operating: 0° to 40° C
- Storage: -40° to 70° C

Humidity

- Operating: 5% to 85% non-condensing
- Storage: 5% to 95% non-condensing

Altitude

- Operating: 0 – 10,000 feet (Temperature Derating 1C/175M above 900M)
- Storage: 0 – 40,000 feet

Shock

- Unpackaged: Half-sine, 2g 11ms 300 pulses total
- Packaged: 9” vertical and rotational drop

Vibration

- Unpackaged: 5-500 Hz, 2.2 g RMS random
- Packaged: 5-500 Hz, 1.09 g RMS random

Airflow - Front-to-back (Variable Speed Fans)

- 1100 CFM maximum at 40°C for 24 slot chassis
- 390 CFM maximum at 40°C for 6 slot chassis

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[i] Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Learn more at Intel.com, or from the OEM or retailer.

[ii] Internal cost analysis based on a 256-node to 2048-node clusters configured with Mellanox* FDR and EDR InfiniBand* products. Mellanox component pricing from kernelsoftware.com Prices as of November 3, 2015. Compute node pricing based on Dell PowerEdge R730 server from www.dell.com. Prices as of May 26, 2015. Intel® OPA (x8) utilizes a 2-1 over-subscribed Fabric. Intel® OPA pricing based on estimated reseller pricing using projected Intel MSRP pricing on day of launch.