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 Ma nagement 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

Buy Intel Omni-Path Director Class Switches Today

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www.aspsys.com/solutions/networking/intel-omni-path/

Intel Omni-Path Director Class Switches from Aspen Systems Inc.

Aspen Systems Director Class Switches by Intel
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
• Passive Copper or Active Fiber Cable

Aspen Systems was founded in 1982 as a privately held corporation. Our mission is to provide leading best-in-class solutions to High Performance Computing (HPC) users and administrators. We are proud to service all key market sectors including government, universities, corporations and anywhere research and science can be found. ISO 9001:2008 Certified. GSA Contract #GS-35F-0192K.

sales@aspsys.com | +1-303-431-4606 | www.aspsys.com

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.