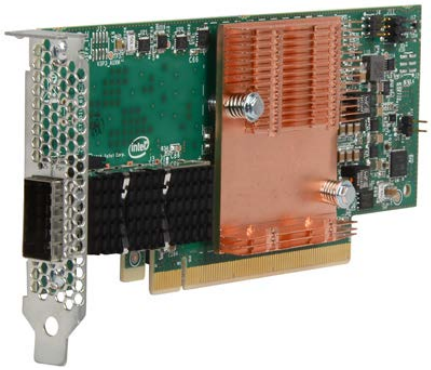
PRODUCT BRIEF

Intel® Omni-Path Host Fabric Adapter 100 Series

100 Gbps per port



High Performance Computing (HPC) solutions require the highest levels of performance, scalability, and availability to power complex application workloads. Designed specifically for HPC, Intel® Omni-Path Host Fabric Interface (HFI) adapters, an element of the Intel® Scalable System Framework, use an advanced "on-load" design that automatically scales fabric performance with rising server core counts, making these adapters ideal for today's increasingly demanding workloads.

Multiple Performance Levels

Two Intel® Omni-Path Host Fabric Adapter models are available to help fabric designers maximize performance versus cost for diverse requirements. The PCIe x16 model supports the full 100 Gbs line rate. The PCIe x8 model supports the same 100 Gbps link rate, while the narrower PCIe connection limits actual data rates to 56 Gbps.

Advanced Quality of Service (QoS)

Intel Omni-Path Host Fabric Interface adapters provide the foundation for powerful and efficient traffic control. Data is segmented into 65-bit Flow Control Digits (FLITs), which are assembled into much larger Link Transfer Packets (LTPs) for efficient wire transfer. By managing traffic at the FLIT

The Right Fabric for HPC

Benefits

- End-to-end fabric optimization
- Scalable, low latency MPI (less than 1µs end-to-end)
- High MPI message rates (160 mmps)
- Efficient storage communications with new 8K and 10K MTUs
- Congestion control and QoS (with deterministic latency)

Low power consumption

Scalable to tens-of-thousands of nodes

Open Fabrics Alliance* (OFA) software

Key Features

100 Gbps link speed

- x16 Version (supports full data rate)
- x8 version (PCIe limited)

MSI-X interrupt handling for high performance on multi-core hosts

level, Intel® Omni-Path Architecture (Intel® OPA) edge and director switches are able to make extremely granular switching decisions to optimize latency, throughput, and resiliency more effectively for all traffic types.

High Reliability and Resilience

With their on-load design, Intel® Omni-Path Host Fabric Interface adapters eliminate the need for data path firmware and external memory, while maintaining all connection state information in host memory. This reduces the potential for data errors and makes the fabric inherently more resilient to adapter and fabric failures. Additional protection against errors and downtime is provided by ECC protection on all internal SRAMs and parity checking on all internal buses.

Investment Protection

Great care was taken to ease the transition from previous-generation fabric solutions to Intel OPA. The proven Open Fabrics Alliance* (OFA) software stack "just works" with the vast majority of existing HPC applications and provides an ideal foundation for future development. The on-load architecture also delivers increasing value over time by allowing fabric performance to scale automatically with ongoing advances in Intel® Xeon® processors and Intel® Xeon Phi™ coprocessors.

HFI SPECIFICATIONS

Bus interface

- PCI Express* Gen3 x16 or PCI Express* Gen3 x8

Device type

- End point

Advanced interrupts

- MSI-X
- INTx

HFI Specifications and Interfaces

ASIC

- Single Intel® OP HFI ASIC

Max Data Rate

- 100 Gbps – PCIe x16
- 56 Gbps – PCIe x8 (*Effective rate of 56 Gbps determined by PCIe x8 interface; Intel® OP Link will operate at up to 100 Gbps*)

Virtual Lanes

- Configurable from one to eight VLs plus one management VL

MTU

- Configurable MTU size of 2 KB, 4 KB, 8 KB, or 10KB

Interfaces

- Supports QSFP28 quad small form factor pluggable passive copper, optical transceivers, and active optical cables

Physical Specifications

Port

- One Intel® OP 4X Host Fabric Interface QSFP28

LED

- Link status indicator (Green).

Software Operating Systems

- Red Hat* Enterprise Linux*
- SUSE* Enterprise Linux* Server
- CentOS*
- Scientific Linux*
- Contact your representative for others

* Other names and brands may be claimed as the property of others

FEATURE	100HFA016LS	100HFA018LS
Total Adapter Bandwidth (bi-dir)	25GB/s (100Gb Link Speed)	Up to15GB/s (100Gb Link Speed)
Dimensions (w x h)		
Card	2.713" x 6.6"	2.713" x 6.6"
Standard	0.725" × 4.725"	0.725" × 4.725"
Low Profile	0.725" × 3.118"	0.725" × 3.118"
Connector	QSFP28	QSFP28
Power (Typ./Max) - Watts DC		
- Copper	7.4/11.7 W	6.3/8.3 W
- Optical (Class 4 Optics- 3 Watts Max)	10.6/14.9 W	9.5/11.5 W
Weight	.24kg	.24kg

INTEL SKU	INTEL MM#	DESCRIPTION
100HFA016LS	948159	Intel® Omni-Path Host Fabric Interface Adapter 100 Series 1 Port PCIe x16 Low Profile 100HFA016LS
100HFA018LS	945670	Intel® Omni-Path Host Fabric Interface Adapter 100 Series 1 Port PCIe x8 Low Profile 100HFA018LS

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

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/575M above 2953ft)
- Storage: 0 – 40,000 feet

Shock

- Unpackaged: Trapezoidal, 50 g, 170 inches/sec
- Packaged: 36" in free fall drop

Vibration

- Unpackaged: 5-500 Hz, 3.13 G RMS random, 30 min total
- Packaged: 5-500 Hz, 1.09 G RMS random, 3hr total

Airflow - Requirements

- 200 LFM at 55°C local ambient

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