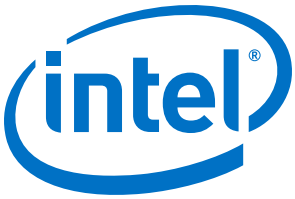


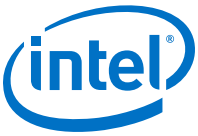
Intel® Omni-Path Fabric Switches

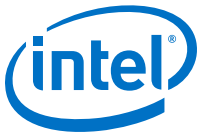
Release Notes for v10.8.1

Rev. 2.0

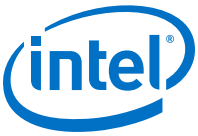
December 2019

Doc. No.: K38337, Rev.: 2.0





Contents



Figures

Tables

1.0 Overview of the Release

This document provides a brief overview of the changes introduced into the Intel® Omni-Path Software by this release. References to more detailed information are provided where necessary. The information contained in this document is intended as supplemental information only; it should be used in conjunction with the documentation provided for each component.

These Release Notes list the features supported in this software release, open issues, and issues that were resolved during release development.

1.1 Audience

The information provided in this document is intended for installers, software support engineers, service personnel, and system administrators.

1.2 Software License Agreement

This software is provided under license agreements and may contain third-party software under separate third-party licensing. Please refer to the license files provided with the software for specific details.

1.3 If You Need Help

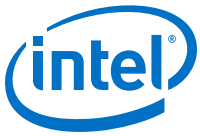
Technical support for Intel® Omni-Path products is available 24 hours a day, 365 days a year. Please contact Intel Customer Support or visit http://www.intel.com/omnipath/support for additional detail.

1.4 New Features

- None

1.5 Supported in this Release

- The list of supported hardware is in Table 1 on page 7.
- Active Optical Cables (AOC). For details, see the Cable Matrix at: http://www.intel.com/content/www/us/en/high-performance-computing-fabrics/omni-path-cables.html
- Support for active optical cables (AOC) on server platforms using integrated HFI for OPA (commonly known as "-F").
- Support for Power Class 2 active optical cables (AOC). See Product Constraints on page 7 for more information.
- OPA 100 Director 48P QSFP Leaf Module



1.6 Intel Hardware

The following table lists the Intel hardware supported in this release. The table does not include OEM-specific hardware, such as custom adapters and switches.

NOTE

The Intel® PSM2 implementation has a limit of four (4) HFIs.

Table 1. Supported Hardware

Hardware	Description
Intel® Xeon® Processor E5-2600 v3 product family	Haswell CPU-based servers
Intel® Xeon® Processor E5-2600 v4 product family	Broadwell CPU-based servers
Intel® Xeon® Scalable Processors	Skylake CPU-based servers
2nd Generation Intel® Xeon® Scalable Processors	Cascade Lake CPU-based servers
Intel® Xeon Phi™ x200 Product Family	Knights Landing CPU-based servers
Intel® Omni-Path Host Fabric Interface 100HFA016 (x16)	Single Port Host Fabric Interface (HFI)
Intel® Omni-Path Host Fabric Interface 100HFA018 (x8)	Single Port Host Fabric Interface (HFI)
Intel® Omni-Path Switch 100SWE48Q	Managed 48-port Edge Switch
Intel® Omni-Path Switch 100SWE48U	Externally-managed 48-port Edge Switch
Intel® Omni-Path Switch 100SWE48UFH	Externally-managed 48-port Edge Switch, hot-swap power and fans
Intel® Omni-Path Switch 100SWE48QFH	Managed 48-port Edge Switch, hot-swap power and fans
Intel® Omni-Path Switch 100SWE24Q	Managed 24-port Edge Switch
Intel® Omni-Path Switch 100SWE24U	Externally-managed 24-port Edge Switch
Intel® Omni-Path Director Class Switch 100SWD24	Director Class Switch 100 Series, up to 768 ports
Intel® Omni-Path Director Class Switch 100SWD06	Director Class Switch 100 Series, up to 192 ports

1.7 Product Constraints

- If you are upgrading from Release 10.5, refer to Technical Advisory #23 (TA0023-10.5_Fabric_Manager_Workaround.pdf) for detailed instructions on how to remove the workaround and restore normal FM performance for this release.
- Power class 2 AOC are supported. You must use 10.5 (or newer) host software and 1.5 (or newer) UEFI for proper operation. Integrated HFI (-F) requires a specific BIOS level to support power class 2 AOC; contact your BIOS vendor for more information.
- The PM congestion weight for `XmitWaitPct` is set to 0 by default which causes the counter to be ignored. Setting a value other than 0 may lead to overreporting of congestion.
- The embedded version of the Fabric Manager supports a maximum of 100 HFI ports involving less than 20 switch ASICs. Calculate the number of switch ASICs in your fabric as follows:
  - 1 ASIC per Intel® Omni-Path Edge Switch 100 Series

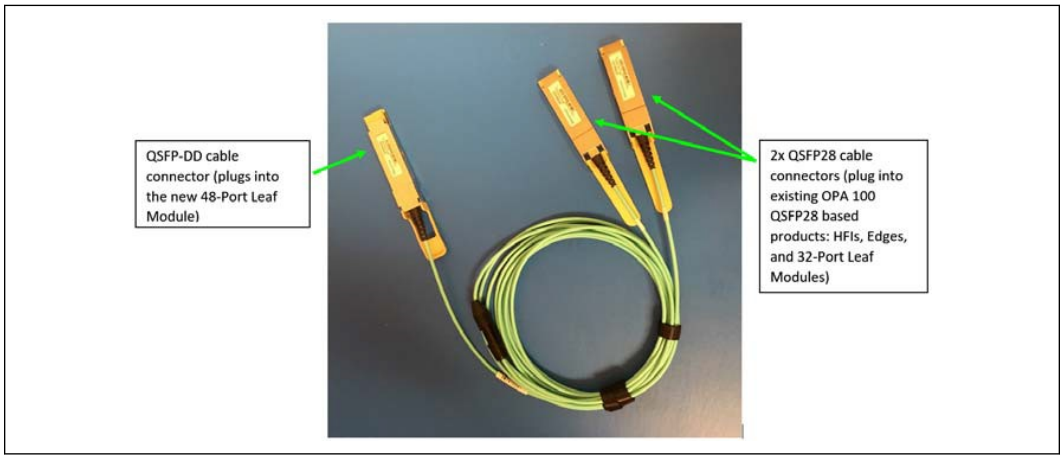
  - 2 ASICs per Intel® Omni-Path Director Class Switch 100 Series Leaf module
  - 2 ASICs per Intel® Omni-Path Director Class Switch 100 Series Spine module
- The use of AOC cable type QSFPDD-to-2x-QSFP28 100Gb/s is required to interconnect the OPA 100 Director 48-Port Leaf Module to the current Intel® OPA 100 QSFP28 products:
  - OPA 100 Host Fabric Adapters (HFIs)
  - OPA 100 Edge Switches
  - OPA 100 Director 32-Port Leaf Modules

  There are 24 QSFP-DD ports on the 48-Port Leaf Module that are double-density QSFP. They accept the QSFP-DD style cable connector. Refer to the following figure.

NOTE

Use of standard QSFP28-to-QSFP28 100Gb/s cables with the OPA 100 Director 48-Port Leaf Module are not supported as they block one of the internal QSFP-DD ports and may fail to properly initialize.

Figure 1. QSFPDD-to-2x-QSFP28 100 Gb Cable

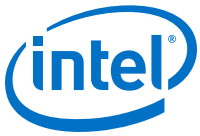


1.8 Installation Requirements

The Intel® Omni-Path Fabric Suite FastFabric tool set needs to be installed to manage the externally-managed edge switch. FastFabric is installed along with the Intel® Omni-Path Fabric Software, which can be downloaded here.

1.8.1 Best Practices

- Intel recommends that users update to the latest versions of Intel® Omni-Path firmware and software to obtain the most recent functional and security updates.
- To improve security, the administrator should log out users and disable multi-user logins prior to performing provisioning and similar tasks.
- In order to troubleshoot potential issues with externally-managed edge switches, Intel recommends that all fabrics contain at least one managed switch.



- To protect against possible downstream issues induced by failing cables, Intel recommends the use of 48-bit CRC mode. 48-bit CRC mode provides the strongest available protection against a failing cable at the cost of up to 3% reduction in peak bandwidth of the cable. This reduction is negligible in most fabric implementations.

1.9 Firmware Components

This release has the following firmware:

- Internally-managed switches:

  `STL1.q7.10.8.1.0.9.spkg`

- Externally-managed edge:

  `Intel_PRREdge_V1_firmware.10.8.1.0.9.emfw`

1.10 Miscellaneous

- In order to troubleshoot potential issues with externally-managed edge switches, Intel recommends that all fabrics contain at least one managed switch.
- The table below details the supported passive copper cable lengths. For all other cable lengths and gauges, please contact your sales representative for proper use in Omni-Path Architecture configurations.

Table 2. Supported Passive Copper Cable Lengths

Product Code	Description	Use
100CQQH3005	0.5 M 30 AWG	Any
100CQQH3010	1.0 M 30 AWG	Any
100CQQH2615	1.5 M 26 AWG	Any
100CQQH2620	2.0 M 26 AWG	Any
100CQQH2630	3.0 M 26 AWG	Any
100CQQF3005	0.5 M 30 AWG	Any
100CQQF3010	1.0 M 30 AWG	Any
100CQQF3015	1.5 M 30 AWG	Any
100CQQF3020	2.0 M 30 AWG	Any

1.11 Document Versions

The following table lists the end user document versions supported by this release.

Table 3. Supported Document Versions

Title	Doc. Number	Revision
Intel® Omni-Path Fabric Quick Start Guide	J57479	7.0
Intel® Omni-Path Fabric Setup Guide	J27600	11.0
Intel® Omni-Path Fabric Switches Hardware Installation Guide	H76456	11.0

continued...

Title	Doc. Number	Revision
Intel® Omni-Path Host Fabric Interface Installation Guide	H76466	6.0
Intel® Omni-Path Fabric Software Installation Guide	H76467	15.0
Intel® Omni-Path Fabric Switches GUI User Guide	H76457	11.0
Intel® Omni-Path Fabric Switches Command Line Interface Reference Guide	H76458	11.0
Intel® Omni-Path Fabric Suite FastFabric User Guide	H76469	15.0
Intel® Omni-Path Fabric Suite Fabric Manager User Guide	H76468	14.0
Intel® Omni-Path Fabric Suite Fabric Manager GUI User Guide	H76471	14.0
Intel® Omni-Path Fabric Host Software User Guide	H76470	15.0
Intel® Performance Scaled Messaging 2 (PSM2) Programmer's Guide	H76473	13.0
Intel® Omni-Path Fabric Performance Tuning User Guide	H93143	17.0
Intel® Omni-Path IP and LNet Router Design Guide (Old title: *Intel® Omni-Path IP and Storage Router Design Guide*)	H99668	9.0
Building Containers for Intel® Omni-Path Fabrics using Docker and Singularity* Application Note*	J57474	8.0
Intel® Omni-Path Management API Programmer's Guide	J68876	7.0
Configuring Non-Volatile Memory Express (NVMe*) over Fabrics on Intel® Omni-Path Architecture Application Note*	J78967	1.0
Intel® Omni-Path Fabric Software Release Notes	K69616	1.0
Intel® Omni-Path Fabric Manager GUI Release Notes	K69636	1.0
Intel® Omni-Path Fabric Switches Release Notes (includes managed and externally-managed switches)	K21142	1.0
Intel® Omni-Path Fabric Unified Extensible Firmware Interface (UEFI) Release Notes	K50782	2.0
Intel® Omni-Path Fabric Thermal Management Microchip (TMM) Release Notes	K38341	2.0
Intel® Omni-Path Fabric Firmware Tools Release Notes	K50784	2.0

Related Links

Intel Omni-Path Documentation Library on page 12

2.0 Issues

This section lists the resolved and open issues in the Intel® Omni-Path Fabric Switches.

2.1 Issues Resolved in this Release

The following table lists the resolved for this release.

Table 4. Resolved Issues

ID	Description	Resolved in Release
STL-59235	Incorporate patches for recent Wind River VxWorks publicly-announced CVEs.	10.8.1

2.2 Open Issues

The following table lists the open issues for this release.

Table 5. Open Issues

ID	Description	Workaround
134230	When a managed switch chassis is rebooted, AOC cables connected to that chassis may occasionally report Warning messages in the switch log. These messages are benign and typically clear shortly after they are reported.	None.
134665	Cable links connected to Switch ports may return non-printable characters in Vendor Name and Serial Number fields. This occurs in a very small percentage of cables (less than 0.1%) and does not affect link performance on cables that have already successfully come up.	Disable, then re-enable the link. If this fails to resolve the issue, reseat the cable. **NOTE:** Bouncing the link will not be effective.

3.0 Related Information

3.1 Intel® Omni-Path Documentation Library

Intel® Omni-Path publications are available at the following URL, under the Downloads and Documentation tab:

https://www.intel.com/content/www/us/en/design/products-and-solutions/networking-and-io/fabric-products/omni-path/overview.html

Use the tasks listed in this table to find the corresponding Intel® Omni-Path document.

Task	Document Title	Description
Using the Intel® OPA documentation set	*Intel® Omni-Path Fabric Quick Start Guide*	A roadmap to Intel's comprehensive library of publications describing all aspects of the product family. This document outlines the most basic steps for getting your Intel® Omni-Path Architecture (Intel® OPA) cluster installed and operational.
Setting up an Intel® OPA cluster	*Intel® Omni-Path Fabric Setup Guide*	Provides a high level overview of the steps required to stage a customer-based installation of the Intel® Omni-Path Fabric. Procedures and key reference documents, such as Intel® Omni-Path user guides and installation guides, are provided to clarify the process. Additional commands and best known methods are defined to facilitate the installation process and troubleshooting.
Installing hardware	*Intel® Omni-Path Fabric Switches Hardware Installation Guide*	Describes the hardware installation and initial configuration tasks for the Intel® Omni-Path Switches 100 Series. This includes: Intel® Omni-Path Edge Switches 100 Series, 24 and 48-port configurable Edge switches, and Intel® Omni-Path Director Class Switches 100 Series.
	Intel® Omni-Path Host Fabric Interface Installation Guide	Contains instructions for installing the HFI in an Intel® OPA cluster.
Installing host software Installing HFI firmware Installing switch firmware (externally-managed switches)	*Intel® Omni-Path Fabric Software Installation Guide*	Describes using a Text-based User Interface (TUI) to guide you through the installation process. You have the option of using command line interface (CLI) commands to perform the installation or install using the Linux* distribution software.
Managing a switch using Chassis Viewer GUI Installing switch firmware (managed switches)	*Intel® Omni-Path Fabric Switches GUI User Guide*	Describes the graphical user interface (GUI) of the Intel® Omni-Path Fabric Chassis Viewer GUI. This document provides task-oriented procedures for configuring and managing the Intel® Omni-Path Switch family. Help: GUI embedded help files
Managing a switch using the CLI	*Intel® Omni-Path Fabric Switches Command Line Interface Reference Guide*	Describes the command line interface (CLI) task information for the Intel® Omni-Path Switch family. Help: -help for each CLI

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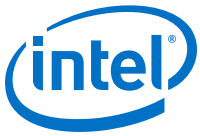

Task	Document Title	Description
Installing switch firmware (managed switches)		
Managing a fabric using FastFabric	*Intel® Omni-Path Fabric Suite FastFabric User Guide*	Provides instructions for using the set of fabric management tools designed to simplify and optimize common fabric management tasks. The management tools consist of Text-based User Interface (TUI) menus and command line interface (CLI) commands. Help: -help and man pages for each CLI. Also, all host CLI commands can be accessed as console help in the Fabric Manager GUI.
Managing a fabric using Fabric Manager	*Intel® Omni-Path Fabric Suite Fabric Manager User Guide*	The Fabric Manager uses a well defined management protocol to communicate with management agents in every Intel® Omni-Path Host Fabric Interface (HFI) and switch. Through these interfaces the Fabric Manager is able to discover, configure, and monitor the fabric.
	Intel® Omni-Path Fabric Suite Fabric Manager GUI User Guide	Provides an intuitive, scalable dashboard and set of analysis tools for graphically monitoring fabric status and configuration. This document is a user-friendly alternative to traditional command-line tools for day-to-day monitoring of fabric health. Help: Fabric Manager GUI embedded help files
Configuring and administering Intel® HFI and IPoIB driver Running MPI applications on Intel® OPA	*Intel® Omni-Path Fabric Host Software User Guide*	Describes how to set up and administer the Host Fabric Interface (HFI) after the software has been installed. The audience for this document includes cluster administrators and Message-Passing Interface (MPI) application programmers.
Writing and running middleware that uses Intel® OPA	*Intel® Performance Scaled Messaging 2 (PSM2) Programmer's Guide*	Provides a reference for programmers working with the Intel® PSM2 Application Programming Interface (API). The Performance Scaled Messaging 2 API (PSM2 API) is a low-level user-level communications interface.
Optimizing system performance	*Intel® Omni-Path Fabric Performance Tuning User Guide*	Describes BIOS settings and parameters that have been shown to ensure best performance, or make performance more consistent, on Intel® Omni-Path Architecture. If you are interested in benchmarking the performance of your system, these tips may help you obtain better performance.
Designing an IP or LNet router on Intel® OPA	*Intel® Omni-Path IP and LNet Router Design Guide*	Describes how to install, configure, and administer an IPoIB router solution (Linux* IP or LNet) for inter-operating between Intel® Omni-Path and a legacy InfiniBand* fabric.
Building Containers for Intel® OPA fabrics	*Building Containers for Intel® Omni-Path Fabrics using Docker* and Singularity* Application Note*	Provides basic information for building and running Docker* and Singularity* containers on Linux*-based computer platforms that incorporate Intel® Omni-Path networking technology.
Writing management applications that interface with Intel® OPA	*Intel® Omni-Path Management API Programmer's Guide*	Contains a reference for programmers working with the Intel® Omni-Path Architecture Management (Intel OPAMGT) Application Programming Interface (API). The Intel OPAMGT API is a C-API permitting in-band and out-of-band queries of the FM's Subnet Administrator and Performance Administrator.
Using NVMe* over Fabrics on Intel® OPA	*Configuring Non-Volatile Memory Express* (NVMe*) over Fabrics on Intel® Omni-Path Architecture Application Note*	Describes how to implement a simple Intel® Omni-Path Architecture-based point-to-point configuration with one target and one host server.

continued...

Task	Document Title	Description
Learning about new release features, open issues, and resolved issues for a particular release	*Intel® Omni-Path Fabric Software Release Notes*	
	Intel® Omni-Path Fabric Manager GUI Release Notes	
	Intel® Omni-Path Fabric Switches Release Notes (includes managed and externally-managed switches)	
	Intel® Omni-Path Fabric Unified Extensible Firmware Interface (UEFI) Release Notes	
	Intel® Omni-Path Fabric Thermal Management Microchip (TMM) Release Notes	
	Intel® Omni-Path Fabric Firmware Tools Release Notes	

3.1.1 How to Search the Intel® Omni-Path Documentation Set

Many PDF readers, such as Adobe* Reader and Foxit* Reader, allow you to search across multiple PDFs in a folder.

Follow these steps:

1. Download and unzip all the Intel® Omni-Path PDFs into a single folder.
2. Open your PDF reader and use **CTRL-SHIFT-F** to open the Advanced Search window.
3. Select **All PDF documents in...**
4. Select **Browse for Location** in the dropdown menu and navigate to the folder containing the PDFs.
5. Enter the string you are looking for and click **Search**.

Use advanced features to further refine your search criteria. Refer to your PDF reader Help for details.