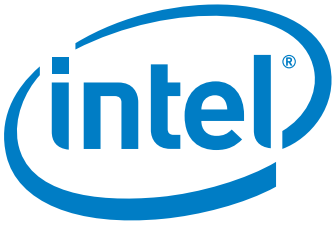
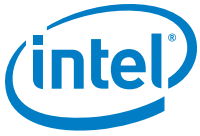


Intel® Omni-Path Fabric Switches

Release Notes for 10.7

April 2018

Doc. No.: J95964-1.0



You may not use or facilitate the use of this document in connection with any infringement or other legal analysis concerning Intel products described herein. You agree to grant Intel a non-exclusive, royalty-free license to any patent claim thereafter drafted which includes subject matter disclosed herein.

No license (express or implied, by estoppel or otherwise) to any intellectual property rights is granted by this document.

All information provided here is subject to change without notice. Contact your Intel representative to obtain the latest Intel product specifications and roadmaps.

The products described may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request.

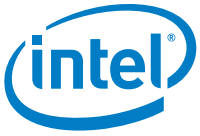
Copies of documents which have an order number and are referenced in this document, or other Intel literature, may be obtained by calling 1-800-548-4725, or by visiting: http://www.intel.com/design/literature.htm

Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Learn more at http://www.intel.com/ or from the OEM or retailer.

Intel and the Intel logo are trademarks of Intel Corporation in the U.S. and/or other countries.

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

Copyright © 2018, Intel Corporation. All rights reserved.



Contents

1.0 Overview of the Release 4
1.1 Introduction 4
1.2 Audience 4
1.3 If You Need Help 4
1.4 Supported in this Release 4
1.5 New Features 5
1.6 Product Constraints 5
1.7 Installation Requirements 6
1.7.1 Firmware Components 6
1.8 Miscellaneous 6
1.9 Documentation Versions 8
2.0 System Issues 9
2.1 Resolved Issues 9
2.2 Open Issues 10
3.0 Related Information 11
3.1 Documentation 11
3.1.1 How to Search the Intel® Omni-Path Documentation Set 13

Tables

1-1 Supported Hardware 4
1-2 Supported Passive Copper Cable Lengths 7
1-3 Supported Documentation Versions 8
2-1 Resolved Issues 9
2-2 Open Issues 10
3-1 Intel® Omni-Path Documentation Library 11

§

1.0 Overview of the Release

1.1 Introduction

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.

1.2 Audience

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

1.3 If You Need Help

If you need assistance while working with the Intel® Omni-Path Fabric Switches, contact your Intel representative.

1.4 Supported in this Release

- The list of supported hardware is in Table 1-1.
- Active Optical Cables (AOC). For details, see the Cable Matrix at: http://www.intel.com/content/www/us/en/high-performance-computingfabrics/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" for more information.
- OPA 100 Director 48P QSFP Leaf Module

Table 1-1. Supported Hardware (Sheet 1 of 2)

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 Processor	Skylake CPU-based servers
Intel® Xeon Phi™ Processor x200 product family	Knights Landing CPU-based servers
Next generation Intel® Xeon Phi™ Processor (codename Knights Mill)	Knights Mill CPU-based servers

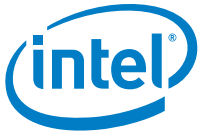


Table 1-1. Supported Hardware (Sheet 2 of 2)

Hardware	Description
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

1.5 New Features

- Q7 management board BIOS and board controller firmware update.

1.6 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 and require 10.5 (or newer) level firmware on both ends of the cable. Specifically, 10.5 (or newer) host software and 1.5 (or newer) level UEFI are required 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 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 Figure 1-1.

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

1.7 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.

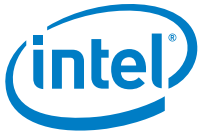
1.7.1 Firmware Components

This release has the following firmware:

- Internally-managed switches:
  `STL1.q7.10.7.0.0.146.spkg`
- Externally-managed edge:
  `Intel_PRREdge_V1_firmware.10.7.0.0.144.emfw`

1.8 Miscellaneous

- Additional internal tracing is available to the firmware to improve link error-related diagnostic capabilities.
- In order to troubleshoot potential issues with externally-managed edge switches, Intel recommends that all fabrics contain at least one managed switch.



- Table 1-2 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 1-2. Supported Passive Copper Cable Lengths

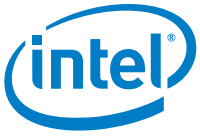
Product Code	Description	Use
100CQQH3005	0.5M 30AWG	Any
100CQQH3010	1.0M 30AWG	Any
100CQQH2615	1.5M 26AWG	Any
100CQQH2620	2.0M 26AWG	Any
100CQQH2630	3.0M 26AWG	Any
100CQQF3005	0.5M 30AWG	Any
100CQQF3010	1.0M 30AWG	Any
100CQQF3015	1.5M 30AWG	Any
100CQQF3020	2.0M 30AWG	Any

1.9 Documentation Versions

Table 1-3 lists the end-user document versions supported by this release.

Table 1-3. Supported Documentation Versions

Title	Doc. Number	Revision
Key: Shading indicates the URL to use for accessing the particular document.		
• Intel® Omni-Path Switches Installation, User, and Reference Guides: http://www.intel.com/omnipath/SwitchPublications		
• Intel® Omni-Path Software Installation, User, and Reference Guides (includes HFI documents): http://www.intel.com/omnipath/FabricSoftwarePublications		
• Drivers and Software (including Release Notes): http://www.intel.com/omnipath/Downloads		
Intel® Omni-Path Fabric Quick Start Guide	J57479	4.0
New title: *Intel® Omni-Path Fabric Setup Guide* (Old title: *Intel® Omni-Path Fabric Staging Guide*)	J27600	8.0
Intel® Omni-Path Fabric Switches Hardware Installation Guide	H76456	7.0
Intel® Omni-Path Host Fabric Interface Installation Guide	H76466	5.0
Intel® Omni-Path Fabric Software Installation Guide	H76467	9.0
Intel® Omni-Path Fabric Switches GUI User Guide	H76457	9.0
Intel® Omni-Path Fabric Switches Command Line Interface Reference Guide	H76458	9.0
Intel® Omni-Path Fabric Suite FastFabric User Guide	H76469	9.0
Intel® Omni-Path Fabric Suite Fabric Manager User Guide	H76468	9.0
Intel® Omni-Path Fabric Suite Fabric Manager GUI User Guide	H76471	9.0
Intel® Omni-Path Fabric Host Software User Guide	H76470	9.0
Intel® Performance Scaled Messaging 2 (PSM2) Programmer's Guide	H76473	9.0
Intel® Omni-Path Fabric Performance Tuning User Guide	H93143	11.0
Intel® Omni-Path IP and Storage Router Design Guide	H99668	5.0
Building Lustre Servers with Intel® Omni-Path Architecture Application Note*	J10040	1.0
Building Containers for Intel® Omni-Path Fabrics using Docker and Singularity* Application Note*	J57474	4.0
Intel® Omni-Path Architecture Management API Programmer's Guide	J68876	3.0
Configuring Non-Volatile Memory Express (NVMe*) over Fabrics on Intel® Omni-Path Architecture Application Note*	J68876	1.0
Intel® Omni-Path Fabric Software Release Notes	J95967	1.0
Intel® Omni-Path Fast Fabric Manager GUI Release Notes	J95968	1.0
Intel® Omni-Path Fabric Switches Release Notes (includes managed and externally-managed switches)	J95964	1.0



2.0 System Issues

This section lists the resolved and known issues for the Intel® Omni-Path Fabric Switches.

2.1 Resolved Issues

Table 2-1 lists the resolved issues for this release.

Table 2-1. Resolved Issues (Sheet 1 of 2)

ID	Description	Resolved in Release
139236 139248 139428 139664 139669 139890 139891	SNMP MIBS are included for customer evaluation. Some features may not be fully implemented.	10.7
139550	Infrequently, an AOC may exhibit an unexpectedly high local link integrity error rate after the link comes up, relative to the error rate on previous link up occasions. This can be determined by observing a link quality of <5. These links may eventually experience a link width downgrade.	10.7
140708	A redundantly-managed Director-class switch may experience issues when trying to perform a firmware update of the slave management module (MM). This issue impacts both the command line interface (CLI) (**fwUpdateChassis**) and the graphical user interface (GUI) versions of the firmware update. If the master MM has logged **Chassis Management redundancy available** and if executing the **fwVersion** command on the master MM does not show the firmware versions of the slave MM, then that system will experience this firmware update issue. The issue is caused by a timing race. It has only been observed when MM slot **M201** becomes the master after both modules are booted at approximately the same time (e.g., due to a power cycle or a **reboot now all**).	10.7
140945	SNMP/Target Configuration: Adding a new SNMP address with the Storage Type **other** does not work correctly.	10.7
141078	Chassis Viewer GUI Help: The SNMP Target Configuration Help screen needs the following change to reflect the removal of the Storage Type **other**: "Volatile or Other indicates it is not saved." to "Volatile indicates it is not saved."	10.7
141088	SNMP: Changing the **Storage Type** for a **SnmpTargetParameter** is not saved following a reboot.	10.7

Table 2-1. Resolved Issues (Sheet 2 of 2)

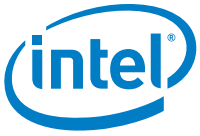
ID	Description	Resolved in Release
141111	A Director class Management Module (MM) may incorrectly log an error regarding the fpga bitstream of the module being at the wrong expected level (e.g., **`fpga bitstream version=0x0000a201 expected=0x00000102`**).	10.7
141301	AuditLog is based on the Notice level log. When the Notice level is turned on/off, the **auditLog** may fail to log this level change action.	10.7
141485	Resolved FM process out of memory condition	10.7
141909	Resolved multiple FM synchronization issue that can lead to FM failure.	10.7
142652	Switch CLI command **ismPortQsfpInfo** has been updated to for QSFP-DD support.	10.7
143570	Failovers between redundant Management Modules (MM) running two different firmware versions (i.e., 10.7 or earlier) may result in errors, and a disruption in fabric switching.	10.7

2.2 Open Issues

Table 2-2 lists the open issues for this release.

Table 2-2. 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.
135838	There are slow responses to SSH or SCP requests to a switch from a system running SLES 12.2.	Adding the following command to the ssh_config file on the SLES 12.2 host may improve response time: `#  MACs hmac-md5,hmac-sha1,umac-64@openssh.com,hmac-ripemd160 MACs hmac-md5`
143311	During UEFI pre-boot with the connected switch running 10.7.0.0.134, the OPA link may not complete initialization if the link is bounced or restarted. This behavior is limited to the pre-boot period. There is no exposure once Linux boot has completed	Avoid link bounce or switch reboots during server reboot periods. If the OPA link fails to come up during UEFI pre-boot, a host reboot is required to recover.
143829	When hot-swapping FRUs in a Director Class switch, the management firmware may report incorrect Vital Product Data (e.g., SN) for the newly-inserted board.	To remedy the situation, perform a non-disruptive reboot (**reboot -m**) of the management module after the hot swap.



3.0 Related Information

3.1 Documentation

Intel® Omni-Path deliverables are available at the following URLs:

- Intel® Omni-Path Switches Installation, User, and Reference Guides
  www.intel.com/omnipath/SwitchPublications
- Intel® Omni-Path Fabric Software Installation, User, and Reference Guides
  www.intel.com/omnipath/FabricSoftwarePublications
- Drivers and Software (including Release Notes)
  www.intel.com/omnipath/downloads

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

Table 3-1. Intel® Omni-Path Documentation Library (Sheet 1 of 3)

Task	Document Title	Description
Key: Shading indicates the URL to use for accessing the particular document.		
• Intel® Omni-Path Switches Installation, User, and Reference Guides: http://www.intel.com/omnipath/SwitchPublications		
• Intel® Omni-Path Software Installation, User, and Reference Guides (includes HFI documents): http://www.intel.com/omnipath/FabricSoftwarePublications		
• Drivers and Software (including Release Notes): http://www.intel.com/omnipath/Downloads		
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. It outlines the most basic steps for getting your Intel® Omni-Path Architecture (Intel® OPA) cluster installed and operational.
Setting up an Intel® OPA cluster	**New title:** *Intel® Omni-Path Fabric Setup Guide* (Old title: *Intel® Omni-Path Fabric Staging 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 BKMs 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. A cluster is defined as a collection of nodes, each attached to a fabric through the Intel interconnect. The Intel® HFI utilizes Intel® Omni-Path switches and cabling.

Table 3-1. Intel® Omni-Path Documentation Library (Sheet 2 of 3)

Task	Document Title	Description
Installing host software Installing HFI firmware Installing switch firmware (externally-managed switches)	*Intel® Omni-Path Fabric Software Installation Guide*	Describes using a Text 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 Intel® Omni-Path Fabric Chassis Viewer graphical user interface (GUI). It provides task-oriented procedures for configuring and managing the Intel® Omni-Path Switch family. Help: GUI Online Help.
Managing a switch using the CLI Installing switch firmware (managed switches)	*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.
Managing a fabric using FastFabric	*Intel® Omni-Path Fabric Suite FastFabric User Guide* *(Merged with: Intel® Omni-Path Fabric Suite FastFabric Command Line Interface Reference 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 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. It is a user-friendly alternative to traditional command-line tools for day-to-day monitoring of fabric health. Help: Fabric Manager GUI Online Help.
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 both cluster administrators and Message-Passing Interface (MPI) application programmers, who have different but overlapping interests in the details of the technology.
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 storage router on Intel® OPA	*Intel® Omni-Path IP and Storage 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 a Lustre* Server using Intel® OPA	*Building Lustre* Servers with Intel® Omni-Path Architecture Application Note*	Describes the steps to build and test a Lustre* system (MGS, MDT, MDS, OSS, OST, client) from the HPDD master branch on a x86_64, RHEL*/CentOS* 7.1 machine.
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.

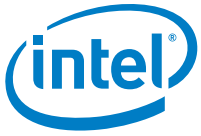


Table 3-1. Intel® Omni-Path Documentation Library (Sheet 3 of 3)

Task	Document Title	Description
Writing management applications that interface with Intel® OPA	*Intel® Omni-Path Architecture 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.
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)	

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.

§ §