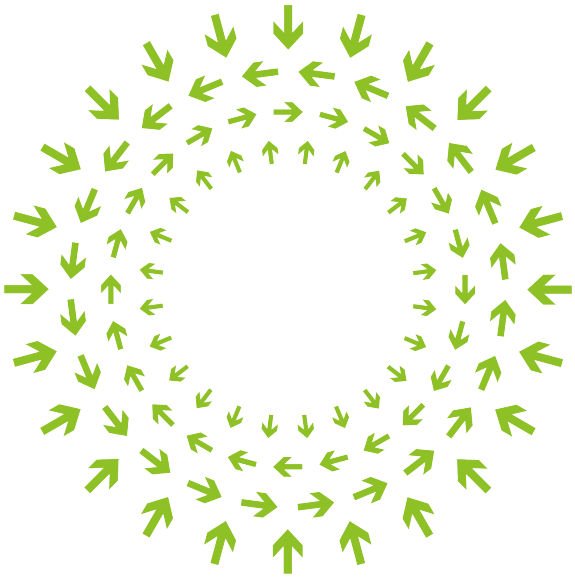

OPEN

Compute Project

Hardware Management SPEC ID

Version 0.04

Draft

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1 Scope

This document defines the technical specifications for an IPM Controller used in Open Compute Project servers, storage devices, network switches and Power Distribution Units. The specification is limited to a single FRU information Record and two IPMI Commands and their replies.

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Revision History

Date	Revision	Description
March 25, 2014	0.01	Initial revision.
March 29, 2014	0.02	Added LUN ID and record checksums for Record ID 0.
April 23, 2014	0.03	Increased the Spec ID from 8 to 16 bits. Changed LUN addressing so Hot Swap is possible.
June 9, 2014	0.04	Added a field for OEM Internet Assigned Number Authority IDs.

4 June 9, 2014Hardware Management

SPEC ID

2 Overview

This describes the Intelligent Platform Management Interface (IPMI) to identify the Open Compute Project specifications implemented within a IPMI controller found in a server/switch/storage device.

2.1 License

As of April 7, 2011, the following persons or entities have made this Specification available under the Open Web Foundation Final Specification Agreement (OWFa 1.0), which is available at http://www.openwebfoundation.org/legal/the-owf-1-0-agreements/owfa-1-0:

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2.2 Reference Documents

These documents are referenced by this specification.

2.2.1 Specification Documents

Acronym	Date	Specification
IPMI FRU Info	2/28/2013	IPMI Platform Management FRU Information Storage Definition v1.0, Document Revision 1.2
IPMI 2.0	10/1/2013	Intelligent Platform Management Interface Specification Second Generation v2.0, Document Revision 1.1

2.3 Keywords

may

A keyword indicating flexibility of choice without a preferred alternative.

shall not

A keyword used to describe a feature, function, or coded value that is defined in a specification to which this specification makes a normative reference where the use of said feature, function, or coded value is not allowed for implementations of this specification.

should

A keyword indicating flexibility of choice with a strongly preferred alternative.

3 IPM Controller

This specification defines the IPMI requirements to identify one or more Open Compute Project specifications that Data Center hardware supports. The specification creates a uniform interface to identify what OCP specifications are implemented on wide range devices such as Power Distribution units, Servers, Storage devices and network switch and any components within them. This allows a data center system manager to implement a single interface that identifies devices, both at the rack level and components within them, that support the Open Compute Project.

Two methods, FRU Information record and IPMI commands, support OCP specification identification using entirely different IPMI commands but return identical information. Both methods are mandatory for an OCP compliant IPM controller.

Identification of a device that implements any OCP specification is accomplished at the IPMI FRU ID level which requires the IPMI address of an IPMB Bus Address, LUN ID and FRU ID. This specification allows for a LUN to contain FRU IDs that implement OCP specifications to coexist with FRU IDs that do not implement an OCP specification.

The FRU Information record allows files or memory images stored outside the server/switch/storage device to be read and identified by tools or a Data Center System Manager. This allows identification of files that are candidates for upgrading firmware in an IPM Controller.

The two IPMI commands defined in this document allow a Data Center System Manager to query a device for OCP specification support without the delay of reading the contents of the FRU Information Area. The IPMI commands are by design eleven bytes which allows them to be bridged between a maximum of two IPMI buses using the IPMI Send Message command.

This specification allows a device within the IPM Controller to be activated or deactivated, hot swapped, while the IPM controller is in operation. Both activation and deactivation are monitored using the IPMI version change sensor.

This specification is designed to allow hot swap of devices that are identified with an IPMI FRU ID. This specification does not define a hot swap mechanism and allows proprietary or later OCP specifications to implement the hot swap mechanism.

3.1 OCP Specification Number

This document does not define the use or how OCP specification numbers are defined. That is done in the OCP specification **TBD**. This document only defines how the numbers are read using IPMI.

3.2 Security

All IPMI commands and and FRU Information Records defined in this document allow querying of the OCP specification information using the IPMI privilege level of User.

The IPMI commands in this document have no provision to write data to an IPM Controller.

3.3 Out of Scope

This specification does not contain any requirements for hardware dimensions, connectors, performance characteristics or hot swap IPMI messaging.

The electrical interface between the IPM Controller and any device is not defined in this document.

3.4 Private Enterprise Number

The IPMI Commands and FRU records defined in this document utilize the Private Enterprise Number 42623 assigned to OCP by the Internet Assigned Number Authority , www.iana.org. In a twist of fate that only an IPMI implementer will enjoy, the number assigned to OCP ends in the IPMI UDP port number, 623.

116 4 FRU Records

117 The OCP Specification ID Record identifies any version of the an Open Compute
118 Project specification that is implemented by an IPM Controller. It may implement
119 more than one specification.

120 4.1 OCP Specifications Record

121 The record header format is defined by the IPMI Platform Management FRU
122 Information Storage(see IPMI FRU Info), Table 16-1, MultiRecord Area Record Header.
123 The bytes following the header are defined in this specification. The entire record is
124 called the OCP Specification ID Record(below).

125 The OCP Specification ID Record defined in this specification contains the OCP Private
126 Enterprise Number as the first three bytes after the record header checksum and is
127 written Least Significant byte first. This format is common to all OCP FRU Information
128 Records.

129 The record is located within a IPM Controller at any address LUN ID with any FRU ID.
130 To allow hot swap of FRUs that have different versions of the same Open Compute
131 Project specification the FRUs are allowed to implement different revisions of the
132 specification and different quantities of the Open Compute Project specifications..

133 **Table 1. OCP Specification ID Record**

Offset	Field Length	Field Name
0	1	*Record Type ID*. For all records defined in this specification a value of D0h (OEM) is used.
1	1	End of List/Version [7:7]- End of List. Set to one for the last record. [6:4]- Reserved. Write as 0h. [3:0]- Record Format Version. For this specification 0h.
2	1	Record Length
3	1	*Record Checksum*. The zero Checksum of the record.
4	1	*Header Checksum.* The zero Checksum of the header.
5	3	*Manufacturer ID*. The Private Enterprise number assigned to OCP. Write as 42623 (A67Fh) . Least significant byte first.
8	1	*OCP Record ID*. 00h
9	1	*Spec ID Count*. The number of Open Compute Project Specifications implemented by the IPM Controller.
10	11* SPEC ID Count	One or more OCP Specification Descriptors.

IPMA-SID-4.1 An IPM Controller **shall** include a single OCP Version Description record in the FRU Multi Record Area at any FRU ID address implementing a Open Compute Project specification.

IPMA-SID-4.2 FRU IDs within an IPM Controller **may** implement different version of the specification defined by this document.

For each OCP specification implemented by the hardware one OCP Specification Descriptor is present. The OEM which implement the OCP specification is identified by using the Internet Assigned Number Authority ID. The value of the OEM bytes is not dictated by this specification. The OEM vendor is free to assign any value to these fields.

Table 2: OCP Specification Descriptor

Offset	Field Length	Field Name
0	2	*OCP Specification ID.* Use defined by OCP spec **TBD**.
2	1	*OCP Full Spec Version.* Use defined by OCP spec **TBD**.
3	1	*OCP IC Version.* Use defined by OCP spec **TBD**.
4	1	*OCP Community Version.* Use defined by OCP spec **TBD**.
5	1	*OCP Specification Revision.* Use defined by OCP spec **TBD**.
6	3	*OEM IANA ID*. The Internet Assigned Number Authority ID of the OEM which implemented the OCP specification.
9	1	*OEM Major Revision*. The major version number assigned by the OEM.
10	1	*OEM Minor Revision*. The minor version number assigned by the OEM.
11	1	*OEM Bug Fix Revision*. The bug version number assigned by the OEM.
12	1	*OEM Use 1*. The value of this field is determined by the OEM manufacturer.
13	1	*OEM Use 2*, The value of this field is determined by the OEM manufacturer.

IPMA-SID-4.3 The *OCP Specification Descriptor*, field OEM IANA ID **shall not** be zero.

Each OCP specification that needs to be identified by a OCP Specification Descriptor shall include two requirements. The first identifies the numeric value of the OCP Specification Descriptor field *OCP specification* which is unique for each specification. The second identifies the numeric value of the OCP Specification Descriptor field *OCP Specification Revision* which is not unique when compared with other specifications.

144 5 IPMI OCP Version Commands

145 The type of OCP specification and it's version number are found by issuing two IPMI
146 commands. When a hardware device implements OCP Specification record(Table 1)
147 these IPMI commands are mandatory. Together the IPMI commands contain an
148 identical set of information reported in Table 1.

149 5.1 Get OCP Specification Quantity Command

150 The IPMI command to query the number of OCP specifications supported by an IPM
151 Controller is the *Get OCP Specification Quantity.* The command is mandatory for the
152 IPM Controller's LUN ID zero and optional for all other LUN IDs.

153 **Table 3: Get OCP Specification Quantity**

	Byte	Data Field
Request Data	0:2	*OCP Private Enterprise Number*. The Private Enterprise number assigned to OCP. The value 42623 (A67Fh) . Least significant byte first.
	3:4	*OCP Command ID*. This shall be the value 01h.
	5	*FRU ID*. The FRU ID to query for Open Compute Project specification support.
Response Data	0	*Completion Code*. The completion code as defined by the IPMI specification. A value of zero indicated the following field, *OCP Specification Count* is present in the
	(1)	*OCP Specification Count*. A value greater than zero. The number of OCP specifications implemented by the FRU ID. This field is not present when the *Completion Code* contains a value other than zero.

IPMA-SID-5.1 When an IPM Controller receives an IPMI command request *Get OCP Specification Quantity* within a RMCP session it **shall** return an IPMI response containing the number of OCP Specifications implemented by the FRU ID.

IPMA-SID-5.2 An IPM Controller **shall** respond to an IPMI Command request *Get OCP Specification Quantity* when it is sent to the IPM Contoller's FRID ID.

154 5.2 Get OCP Specification Version Command

155 The IPMI Command *Get OCP Specification Version*(below) identifies what OCP
156 specifications and the version of the OCP specifications are implemented by the IPM
157 Controller. One command is issued for each OCP specification implemented by the
158 IPM Controller.

159 The command contains a specification index that starts a zero and increases to one
160 less than the value returned by the IPMI Command *Get OCP Specification Quantity*,
161 field *OCP Specification Count.*

162 **Table 4: Get OCP Specification Version**

	Byte	Data Field
Request Data	0:2	*OCP Private Enterprise Number*. The Private Enterprise number assigned to OCP. The value 42623 (A67Fh) . Least significant byte first.
	3	*FRU ID*. The FRU ID to query for Open Compute Project specification support.
	4:5	*OCP Specification Index.* This value is zero to a maximum value of one less than the value returned by the *Get OCP Specification Quantity* command field *OCP Specification Count.*
Response Data	0	*Completion Code*. CCh Data Field out of Range. The *OCP Specification Index* Field exceeds the value of one less than the value returned by the IPMI Command Get OCP Specification Quantity, field *OCP Specification Count*
	1:2	*OCP Specification ID*. Use defined by OCP spec **TBD**. Identical to the value found in the OCP Specification Descriptor byte index zero.
	3	*OCP Full Spec Version*. Use defined by OCP spec **TBD**. Identical to the value found in the OCP Specification Descriptor byte index two.
	4	*OCP IC Version*. Use defined by OCP spec **TBD**. Identical to the value found in the OCP Specification Descriptor byte index three.
	5	*OCP* Community *Version*. Use defined by OCP spec **TBD**. Identical to the value found in the OCP Specification Descriptor byte index four.
	6	*OCP Specification Revision*. Use defined by OCP spec **TBD**. Identical to the value found in the OCP Specification Descriptor byte index five.
	6	*OEM IANA ID*. The Internet Assigned Number Authority ID of the OEM which implemented the OCP specification.
	9	*OEM Major Revision*. Identical to the value found in the OCP Specification Descriptor byte index five.
	10	*OEM Minor Revision*. Identical to the value found in the OCP Specification Descriptor byte index six.
	11	*OEM Bug fix Revision*. Identical to the value found in the OCP Specification Descriptor byte index seven.
	12	*OEM Byte One*. Identical to the value found in the OCP Specification Descriptor byte index eight.
	13	*OEM Byte Two*. Identical to the value found in the OCP Specification Descriptor byte index nine.

IPMA-SID-5.3 An IPM Controller **shall** respond to an IPMI Command request *Get OCP Specification Version* when it is sent to the IPM Controller's any FRU ID.

IPMA-SID-5.4 The IPMI Command *Get OCP Specification Version*, field OEM IANA ID **shall not** be zero.

163 6 ID Assignment

164 **Table 5: IPMI Command ID Assignment**

Command Name	Table Number	Command ID	Minimum Privilege Level
Get OCP Specification Quantity	3	1h	User
Get OCP Specification Version	4	2h	User

165 **Table 6: FRU Information Record ID Assignments**

FRU Record Name	Table Number	Record ID
OCP Specification ID Record	1	0h