



OPEN

Compute Project

Hardware Management

ICAP BASE

Version 0.02

Draft

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6 1 Scope

7 This document defines the technical specifications for an IPM Controller used in Open
8 Compute Project servers, storage devices and network switches and Power
9 Distribution Units. The specification is limited to the data format and commands
10 defined in the Intelligent Platform Management Interface specification and does not
11 require the presence of an operating system on the device that is managed.

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39 **Revision History**

Date	Revision	Description
February 10, 2014	0.01	Initial revision. Added content from document "Type A IPM Controllers"
June 9, 2014	0.02	Added OCP version number to identify this specification. Modified the Reset Firmware Command to have the field <i>Firmware Reset Selector</i> .

40 2 Overview

41 This describes the Intelligent Platform Management Interface (IPMI) capabilities(ICAP)
 42 implemented by an IPM Controller. It extends the IPMI 2.0 specification allowing Data
 43 Centers to implement a uniform System Management interface to servers, storage
 44 devices, network switches and Power Distribution Units.

45 2.1 License

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

 49 agreements/owfa-1-0):

50 Facebook, Inc.

51 You can review the signed copies of the Open Web Foundation Agreement Version 1.0
 52 for this Specification at <http://opencompute.org/licensing/>, which may also include
 53 additional parties to those listed above.

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 58 the Specification. The entire risk as to implementing or otherwise using the
 59 Specification is assumed by the Specification implementer and user. IN NO EVENT
 60 WILL ANY PARTY BE LIABLE TO ANY OTHER PARTY FOR LOST PROFITS OR ANY FORM
 61 OF INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY
 62 CHARACTER FROM ANY CAUSES OF ACTION OF ANY KIND WITH RESPECT TO THIS
 63 SPECIFICATION OR ITS GOVERNING AGREEMENT, WHETHER BASED ON BREACH OF
 64 CONTRACT, TORT (INCLUDING NEGLIGENCE), OR OTHERWISE, AND WHETHER OR NOT
 65 THE OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

66 2.2 Reference Documents

67 These documents are referenced by this specification.

68 2.2.1 Specification Documents

Acronym	Date	Specification
IPMI 2.0	10/1/2013	Intelligent Platform Management Interface Specification Second Generation v2.0, Document Revision 1.1

69 2.3 Keywords

70 **may**

71 A keyword indicating flexibility of choice without a preferred alternative.

72

shall

73

A keyword indicating a mandatory requirement; designers are required to implement all such mandatory requirements to ensure interoperability with other products that conform to this specification.

74

75

76

shall not

77

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.

78

79

80

81

should

82

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

83 3 IPM Controller

84 This specification defines a set of requirements for an IPM Controller implementing
85 the Intelligent Platform Management Interface (IPMI 2.0). They enable a Data Center
86 System Manager to control rack mounted hardware with minimum operator
87 intervention.

88 This specification provides uniform access to Servers, Storage Devices and Network
89 Switches which this document collectively calls IT hardware. No distinction is made
90 between the different types of IT hardware, The benefits to the Data Center operator
91 are a uniform, vendor and hardware neutral methods for:

- 92 • inventory data collection of model/serial numbers
- 93 • on-site customer acceptance tests
- 94 • operator training
- 95 • test procedures

96 The requirements in this document are specific to IPM Controllers in IT hardware and
97 no requirements are made on the System Manager itself. If a System Manager is not
98 present, the IT Hardware will function normally.

99 This specification is not mandatory for IT Hardware. There is no architectural
100 limitation preventing a single chassis from containing IPM Controllers implementing
101 this specification and IPM Controllers implementing proprietary IPM Controllers.

102 3.1 Out of Scope

103 This specification does not contain any requirements for hardware dimensions,
104 connectors or performance characteristics and does not mandate Hot Swap of IPMI
105 Controllers.

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

108 3.2 Private Enterprise Number

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

113 3.3 OCP Specification Identification

114 This specification is identified by five fields defined in the OCP document Hardware
115 Management SPEC ID. The five field are present in Table 2, OCP Specification
116 Descriptor byte offsets zero to five and Table 4, Get OCP Specification Version byte
117 offsets one to six. The value of the five fields are found in the following requirements.

IPMA-IPM-3.1 The *OCP Specification ID* used to identify any revision of this document
shall be a value of 0x1.

IPMA-IPM-3.2 The *OCP Specification Revision* used to identify this specific document **shall**
be a value of 0x0.

118 3.4 FRU Records

119 All FRU records defined in this specification contain the Private Enterprise Number
 120 as the first three bytes after the record header checksum and is written Least
 121 Significant byte first.

122 3.4.1 OCP Version

123 The OCP Version Description Record identifies which version of this specification that
 124 is implemented by an IPM Controller. The version number can be used to validate
 125 that all FRU records defined in this specification are present in the IPM Controllers
 126 FRU Information Area.

127 LUN ID zero is always implemented with a FRU ID zero. The other FRU IDs at LUN ID
 128 zero are optional. All LUN IDs addressed by a single IPMB address implement the
 129 same version of an OCP specification.

130 **Table 1. OCP Version Description Record**

Offset	Field Length	Field Name
0	1	<i>Record Type ID</i> . 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	<i>Record Checksum</i> . The zero Checksum of the record.
4	1	<i>Header Checksum</i> . The zero Checksum of the header.
5	3	<i>Manufacturer ID</i> . The Private Enterprise number assigned to OCP. Write as 42623 (A67Fh) . Least significant byte first.
8	1	<i>OCP Record ID</i> . 00h
9	1	<i>Record Format Version</i> . [7:4] Reserved. Write as 0h. [3:0] Format Version ID. Use 0h to identify this table.
10	1	<i>Version number</i> . The version of this specification implemented by the IPM Controller. To identify this version of this specification use 1h.
11	1	<i>LUN 0 Use Flags</i> . [7:0] Reserved. Write as zero.
12	1	<i>LUN 0 Max FRU ID</i> . The highest FRU ID addressable using LUN 0.
13	1	<i>LUN 1 Use Flags</i> . [7:1] Reserved. Write as zero. [0:0] <i>LUN 1 Use</i> . If set LUN 0 contains addressable FRU IDs and the field <i>LUN 1 MAX FRU ID</i> contains valid data. If not set LUN 1 does not contain addressable FRU IDs and field <i>LUN 1 MAX FRU ID</i> does

Offset	Field Length	Field Name
		not contain valid data.
14	1	<i>LUN 1 Max FRU ID</i> . The highest FRU ID addressable using LUN 1.
15	1	<i>LUN 2 Use Flags</i> . [7:1] Reserved. Write as zero. [0:0] <i>LUN 2 Use</i> . If set LUN 2 contains addressable FRU IDs and the field <i>LUN 2 MAX FRU ID</i> contains valid data. If not set LUN 2 does not contain addressable FRU IDs and field <i>LUN 2 MAX FRU ID</i> does not contain valid data.
16	1	<i>LUN 2 Max FRU ID</i> . The highest FRU ID addressable using LUN 2.
17	1	<i>LUN 3 Use Flags</i> . [7:1] Reserved. Write as zero. [0:0] <i>LUN 3 Use</i> . If set LUN 0 contains addressable FRU IDs and the field <i>LUN 3 MAX FRU ID</i> contains valid data. If not set LUN 0 does not contain addressable FRU IDs and field <i>LUN 3 MAX FRU ID</i> does not contain valid data.
18	1	<i>LUN 3 Max FRU ID</i> . The highest FRU ID addressable using LUN 3.

- IPMA-IPM-3.3 An IPM Controller **shall** include a single OCP Version Description record in the FRU Multi Record Area at address LUN 0, FRU ID 0.
- IPMA-IPM-3.4 All LUN IDs within an IPM Controller **shall** implement the same version of the specification defined in this document.

131 4 Chassis Identification

132 IPM Controllers contain FRU information that allows identifying the manufacture,
133 model number, serial number and physical size of the Chassis.

134 4.1 Chassis Info Area Record

135 IPM Controllers that act as a Chassis Manager are required to have a Chassis
136 Info record in the FRU Information. The Chassis Info Area Record contains the
137 model and serial number of the chassis and is defined by the FRU Info Specification.

- IPMA-CHA-4.1 IPM Controllers representing a Chassis Manager **shall** populate Common Header field Chassis Info Area with a valid offset to the Chassis Info Area.
- IPMA-CHA-4.2 IPM Controllers not representing a Chassis Manager **shall** populate Common Header field Chassis Info Area with a 0h.
- IPMA-CHA-4.3 If more than one IPM Controller implements the Chassis Manager for a single chassis, all IPM Controllers controlling the chassis **shall** contain an identical Chassis Info Area.
- IPMA-CHA-4.4 The length specified in the Chassis Part Number field of the Chassis Info Area Record record **shall** be greater than zero.
- IPMA-CHA-4.5 The length specified in the Chassis Serial Number field of the Chassis Info Area Record record **shall** be greater than zero.
- IPMA-CHA-4.6 If an IPM Controller representing the Chassis Manager is transferred from a chassis it **shall not** retain the Serial Number from the chassis from which it was removed.

138 4.2 Chassis Description

139 The OCP Rack specification defines the minimum size of the hardware installed in a
140 rack to be a 1/2 U high. To enable visualizing the physical layout of a rack without
141 preexisting knowledge of the hardware within the rack Chassis Managers contain a
142 static FRU Info record describing the size of chassis.

143 This document describes the dimensions of a chassis where the front and rear of the
144 chassis have and identical dimension. No requirements are defined for a chassis with
145 front that has a different dimension than the rear. A chassis compliant with this
146 specification does not have to physically attach to both the front and the rear of the
147 rack.

148 **Table 2. Chassis Description 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

Offset	Field Length	Field Name
		[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	<i>Record Checksum</i> . The zero Checksum of the record.
4	1	<i>Header Checksum</i> . The zero Checksum of the header.
5	3	<i>Manufacturer ID</i> . The Private Enterprise number assigned to OCP. Write as 42623 (A67Fh) . Least significant byte first.
8	1	<i>OCP Record ID</i> . 01h
9	1	<i>Record Format Version</i> . [7:4] Reserved. Write as 0h. [3:0] Format Version ID. Use 0h to identify this table.
10	1	<i>Chassis Height Major</i> . [7:6] Reserved [5:0] <i>Height Integer</i> . The number of OCP Rack Units completely filled by the chassis.
11	1	<i>Chassis Height Minor</i> . [7:1] Reserved. Write as 0h. [0:0] <i>Half Height Flag</i> . If set add 1/2 OCP Rack unit to the Chassis Height. If not set add nothing to the Chassis Height.

- IPMA-CHA-4.7 An IPM Controller representing a Chassis Manager **shall** have a Multi Record containing a Chassis Description Record at address LUN 0, FRU ID 0.
- IPMA-CHA-4.8 An IPM Controller that is not Chassis Manager **shall not** have a Multi Record containing a Chassis Description Record at address LUN 0, FRU ID 0.

149 5 IPM Controller Addressing

150 To reduce the time it takes a Data Center System Manager to detect and activate an
 151 IPM Controller OCP hardware identifies the IPMB locations available on each channel
 152 using an *IPMB Address Record*. For hardware, such as a Power Distribution Unit, that
 153 have minimal or possibly no other addresses than the BMC this reduces the time the
 154 Data Center System Manager needs for startup. The IPMB Address Record simplify
 155 the Data Center System Manager by providing a uniform method to detect IPMB
 156 addresses,

157 An IPM Controller may have up to 255 IPM Controllers it can address using multiple
 158 IPMB buses. Each IPMB bus is limited to 127 IPM Controllers.

159 The IPMB Address Record(below) allows hardware vendors to differentiate their
 160 products by distributing the subordinate IPM Controllers across one or IPMI Channels,
 161 each implementing an IPMB bus. Cost sensitive implementations or hardware with
 162 limited address range may have a single IPM Channel.

163 Hardware vendors creating systems with large number of IPM addresses may
 164 differentiate their products by distributing the IPM Controllers over multiple channels
 165 to reduce IPMB bus traffic or to minimize faults due to IPMB bus communication
 166 errors.

167 5.1 IPMB Bus Address Record

168 All IPMB Bus addresses that an IPM Controller may access are defined in the IPMB
 169 Address record.

170 **Table 3. IPMB Address Record**

Offset	Field Length	Field Name
0	1	<i>Record Type ID</i> . 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	<i>Record Checksum</i> . The zero Checksum of the record.
4	1	<i>Header Checksum</i> . The zero Checksum of the header.
5	3	<i>Manufacturer ID</i> . The Private Enterprise number assigned to OCP. Write as 42623 (A67Fh) . Least significant byte first.
8	1	<i>OCP Record ID</i> . 02h.
9	1	<i>Record Format Version</i> . [7:4] Reserved. Write as 0h. [3:0] Format Version ID. Use 0h to identify this table.

Offset	Field Length	Field Name
10	1	<i>Channel Number.</i> [7:4] Reserved [3:0] Channel Number. The channel number of the IPM Controller containing the IPMB Bus.
11	1	<i>IPMB Address Count.</i> [7:7] Reserved. Write as 0h. [6:0] <i>Address Entry Count.</i> The number N of of IPMB addresses in this record.
12	1*N	<i>IPMB Address List.</i> A variable size list of IPMB Addresses. Each IPMB address is in its own byte.

- IPMA-CAD-5.1 An IPM Controller **shall** have one IPMB Address Record for each IPMI channel containing an IPMB Bus.
- IPMA-CAD-5.2 All IPMB Address Record **shall** be located at the IPMB address of the IPM Controller FRU Information Area at the address of LUN ID 0, FRU ID 0.
- IPMA-CAD-5.3 Each IPMB Address Record **shall** be contained in a single FRU Multi Record.

171 6 Sensors

172 To implement a consistent interface to the health and status of the devices managed
173 by a single IPM Controller. The requirements in this section are part of the IPMI 2.0
174 specification but not explicitly stated.

175 6.1 Fan Speed Sensor

176 IPMI 2.0 allows the Full Sensor SDR to contain a value of zero for the nominal and
177 maximum sensor readings. When this is done for Fan Speed sensors the technician is
178 unable to determine if a fan is operating normally or is at it's maximum speed.

179 To present a graph or table with valid information on the fan speed to a technician
180 the nominal fan speed needs to be specified with non zero values. This allows
181 verification that the fan is operating within the manufacturers nominal limits.

IPMA-IMP-6.1 The Full Sensor SDR describing a fan speed **shall** have a value greater than zero for the fields *Nominal Reading*(byte 32), *Normal Maximum*(byte 33) and *Normal Minimum*(byte 34).

IPMA-IMP-6.2 The Full Sensor SDR describing a fan speed **shall** have a value for the *Sensor Maximum Reading* field(byte 35) that is greater than or identical to the *Normal Maximum* field(byte 33).

182 **Question:** Should OCP mandate that at least one low and one high threshold be
183 populated with a non-zero value?

184 6.2 Air Temperature Sensor

185 To standardize the reporting of temperature readings, the Full Sensor SDR should not
186 indicate the position in the air flow of a temperature sensor by encoding it in the
187 sensor name. Instead use the IPMI 2.0 field Sensor Direction.

IPMA-IMP-6.3 The Full Sensor SDR describing an intake air temperature sensor **shall** use a value of 01h for the *Sensor Direction* field(byte 29) bits [1:0].

IPMA-IMP-6.4 The Full Sensor SDR describing an exhaust air temperature sensor **shall** use a value of 10h for the *Sensor Direction* field(byte 29) bits [1:0].

IPMA-IMP-6.5 The Full Sensor SDR describing an air temperature sensor that is neither an intake or exhaust sensor **shall** use a value of 00h for the *Sensor Direction* field(byte 29) bits [1:0].

IPMA-IMP-6.6 The Full Sensor SDR describing an intake air temperature sensor **shall** use an Entity ID of 37h.

IPMA-IMP-6.7 The Full Sensor SDR describing an exhaust air temperature sensor **shall** not use an Entity ID of 37h.

188 7 Commands

189 To implement high performance System Managers that use the IPMI RMCP protocol an
190 IPM Controller must meet these requirements. The requirements in this section are
191 part of the IPMI 2.0 specification but not explicitly state.

192 7.1 Network Function Code

193 The IPMI commands defined in this specification use the OEM/Group extension
194 method documented in IPMI 2.0, Table 5-1, Network Function Codes.

IPMA-CTL-7.1 IPMI Request Commands defined in this specification **shall** use the Network Function Code 2Eh.

IPMA-CTL-7.2 IPMI Response Commands defined in this specification **shall** use the Network Function Code 2Fh.

195 7.2 IPMI Command Address

196 IPMI 2.0 allows System Managers to send IPMI commands using a source IPMI address
197 that contains LUN IDs 0,1,2 and 3. To enable multiple outstanding IPMI commands to
198 concurrently execute the IPM controller must support all four LUNs as source
199 addresses.

IPMA-IMP-7.3 All IPMI requests sent to the IPM Controller using a source LUN ID zero **shall** have the response returned using a destination LUN ID zero.

IPMA-IMP-7.4 All IPMI requests sent to the IPM Controller using a source LUN ID one **shall** have the response returned using a destination LUN ID one.

IPMA-IMP-7.5 All IPMI requests sent to the IPM Controller using a source LUN ID two **shall** have the response returned using a destination LUN ID two.

IPMA-IMP-7.6 All IPMI requests sent to the IPM Controller using a source LUN ID three **shall** have the response returned using a destination LUN ID three.

200 7.3 Get Channel Authentication Capabilities

201 To enable discovery of devices the IPMI command *Channel Authentication*
202 *Capabilities* is valid both within a RMCP session and outside a RMCP session.

IPMA-IMP-7.7 When an IPM Controller receives an IPMI command request Get Channel Authentication Capabilities within a RMCP session it **shall** return an IPMI response.

IPMA-IMP-7.8 When an IPM Controller receives an IPMI command request Get Channel Authentication Capabilities outside a RMCP session it **shall** return an IPMI response.

203 7.4 Get System GUID

204 The IPMI command *Get System GUID* provides a Globally Unique ID for the managed
205 system. It is optional in the IPMI 2.0 specification and mandatory in the DCMI 1.5
206 specification. The *Get System GUID* command is required by this specification so



207
208

Open Computer Project hardware that does not implement DCMI, such as a Power Distribution Unit, can be uniquely identified.

- IPMA-IMP-7.9 When an IPM Controller receives an IPMI command request Get System GUID within a RMCP session it **shall** return an IPMI response containing the GUID.
- IPMA-IMP-7.10 When an IPM Controller receives an IPMI command request Get System GUID outside a RMCP session it **shall** return an IPMI response containing the GUID.

209 8 Packet Transmission Performance Test

210 The Packet Transmission Performance Test(PTPT) allows an IPM Controller or a remote
211 client to test the data rate throughput of the Ethernet or IPMB.

212 A Packet Transmission Performance Test requires two devices:

- 213 1. The Packet Test Supervisor(PTS) initiates the tests by sending a Start Packet
214 Performance Test Command(see below) to the remote device. The PTS generates a
215 test id to distinguish separate tests and determines how long the test will run. If the
216 test needs to be stoped before scheduled ending time the PTS or any device with the
217 test ID sends a Stop Packet Performance Test Command to the remote device.
- 218 2. The IPM Controller Transmitter(ICT) receives the Start Packet Performance Test
219 Command and transmits a Packet Performance Test Data Command on the IPMB or
220 Ethernet at the rate specified in the start command. The ICT continues the normal
221 scheduling the transmission of IPMI commands. When no IPMI command is available
222 to send the ICT sends an IPMI response command with a payload set to zeros. An ICT
223 may execute only one test at a time.

224 The size of the payload is configurable and ranges from 1 to 65530 bytes. This floods
225 the transmission media with packets. An IPM Controller implementing this
226 specification may not bridge the IPMI commands between IPM Controller channels.
227 The IPMI Send Message commands are rejected if they contain a PTPT IPMI command.

228 To diagnose infrequent network errors the maximum test period is 16,777,215
229 seconds(4660) hours.

230 8.1.1 IPMB Bus

231 When the PTS is connected to the ICT using IPMB the performance test allows system
232 integrators and Data Center operators to evaluate traffic rates for IPM Controllers and
233 IPMB architectures. An IPM Controller is not required to implement the IPMI PTPT
234 commands on IPM Controller channels with a media type of IPMB.

235 A performance test run between IPM Controllers connected with an IPMB allows
236 comparison between the radial and bused architectures. Hardware vendors may use
237 this test to document the performance changes when implementing a single virtual
238 IPMB that is physically composed of multiple parallel IPMBs(ie AdvancedTCA).

239 8.1.2 Network

240 When the PTS is connected to the ICT with Ethernet a performance test verifies that
241 network switches and routers between the PTS and ICT are configured to handle the
242 packet traffic.

243 This test is used to verify that Virtual Private Network or a VLAN are correctly
244 configured with network bandwidth required for a System Manager to maintain
245 controller of the data center during a crises.

246 The tests may be preformed daily or weekly and the results compared with a
247 database of previous tests to identify miss-configured network hardware prior to
248 crises in the data center. In addition, a performance test can validate System
249 Management network performance when swapping out network hardware or adding
250 additional hops between the System Manager and the ICT.

251 A performance test can be used during customer acceptance test to enable all ICTs in
252 a rack or data hall to verify the network hardware can support the worst case data

253 rates.

254 Data Center operators can activate a performance test where thousands of ICTs send
 255 data to verify the System Manager is capable of supporting the worst case workload.
 256 This is used to validate System Manager software or hardware upgrades.

257 The performance test utilizes the IPMI RMCP protocol and when that is encrypted, as
 258 allowed by both the IPMI and Intel DCMI specification, the test validates the System
 259 Manager is able to decrypt worst case traffic volumes.

260 8.1.3 Command Set

261 The IPMI command to start a Packet Transmission Performance Test

262 **Table 4: Start Packet Performance Test Command**

	Byte	Data Field
Request Data	0:2	<i>OCF Private Enterprise Number.</i> The Private Enterprise number assigned to OCP. The value 42623 (A67Fh) . Least significant byte first.
	3:4	<i>Test Id.</i> The test number. Used to distinguish tests from each other.
	5:7	<i>Test Length.</i> The number of seconds to run the test.
	8:9	<i>Send Rate.</i> 15:10 Reserved. Write as zero. 9:0 <i>Send Rate.</i> The number of IPMI Commands to send every 100 milliseconds. If zero send as many packets as possible. The actual number of command sent may be less because normal IPMI traffic takes precedence.
	10:11	<i>Test Fill Data Size.</i> The number of bytes sent in the response. The values 65530 and above are reserved.
Response Data	0	<i>Completion Code.</i> C0h Node Busy. A Packet Performance Test is already running. C8h Data Field Length Limit Exceeded. The IPMI Controller can not allocate enough memory to execute the test. C9h Data field out of range. The <i>Test Length</i> or <i>Test Fill Data Size</i> fields are zero.

263 **Table 5: Packet Performance Test Data Command**

	Byte	Data Field
Response Data	0	<i>Completion Code.</i>
	1:2	<i>Test Id.</i> The test number. Identical to the <i>Start Packet Performance Test Command</i> field <i>Test Id.</i>
	3:4	<i>Block Counter.</i> A counter that starts at zero for a test and is incremented each time this command is sent. On reaching the maximum value the value is reset to zero.
	5:N	<i>Test Fill Data.</i> All bytes set to zero. The length of the field, value N, is determined by the <i>Start Packet Performance Test Command</i> field <i>Test Fill Data Size.</i>

264

Table 6: Stop Packet Performance Test Command

	Byte	Data Field
Request Data	0:2	<i>OCF Private Enterprise Number</i> . The Private Enterprise number assigned to OCP. The value 42623 (A67Fh) . Least significant byte first.
	3:4	<i>Test Id</i> . The test number to stop.
Response Data	0	<i>Completion Code</i> . CCh Data Field out of Range. The <i>Test Id</i> Field does not contain a test that is running.

- IPMA-PTP-8.1 The IPM Controller **shall** accept the Start Packet Performance Test Command on any IPM channel connected to an Ethernet.
- IPMA-PTP-8.2 The IPM Controller **may** accept the Start Packet Performance Test Command on any IPM channel connected to an IPMB.
- IPMA-PTP-8.3 The IPM Controller **shall** schedule sending of the Packet Performance Test Data Commands at a rate lower than all other IPMI commands.
- IPMA-PTP-8.4 The IPM Controller **shall** accept a Stop Packet Performance Test Command on any channel that it accepts a Start Packet Performance Test Command.

265 9 Reset Firmware

266 **Question:** This may not be the best way to implement the reset command.
 267 Currently it is written so that vendors can have unique defaults but that causes the
 268 OCP Compliance & Interoperability subcommittee to have unique test cases for each
 269 vendor. Should this command be rewritten so it is not vendor dependent ?

270 IPM Controllers accept an IPMI command that resets the IPMI firmware to a known
 271 state defined by each hardware vendor. On receipt of the reset command all RMCP
 272 accounts will be deleted on all of the IPM Controller's channels. Then for each
 273 channel a single administrator account is created utilizing User ID 1. The password
 274 used for the account is defined by the hardware vendor.

275 The reset command sets the BMC key, Serial Mux setting and all LAN Parameters(IP
 276 Address, VLAN ID, etc) to values defined by the hardware vendor.

277 9.1 Command Format

278 The IPMI command to reset the IPMI Firmware state is

279 **Table 7: Reset Firmware Command**

	Byte	Data Field
Request Data	0:2	<i>OCF Private Enterprise Number.</i> The Private Enterprise number assigned to OCP. The value 42623 (A67Fh) . Least significant byte first.
	3	<i>Firmware Reset Selector.</i> [7:4] Reserved. Write as zero. [3:0] Firmware subsystem. 0h Factory Defaults. All of IPMI including any OEM data. 1h OEM Data. Only OEM additions to the IPM Controller. 2h Lan Parameters All data in IPMI 2.0 Table 23-4, LAN Configuration Parameters. 3h Account information. Reset account names and passwords to factory defaults. All other values reserved.
Response Data	0	<i>Completion Code.</i>

- IPMA-FIR-9.1 If more than one RMCP session is active on any channel of the IPM Controller then the IPM Controller **shall** return a completion code of D5h(Command not supported in present state).
- IPMA-FIR-9.2 On receipt of the Reset Firmware command all RMCP account names on all channels **shall** be removed; then a single RMCP account name of "admin" shall be added as User ID 1.
- IPMA-FIR-9.3 The password used when creating the "admin" account **shall** be reset to the manufacturer default.
- IPMA-FIR-9.4 While the Reset Firmware Request command is executing all requests to activate a RMCP session **shall** be refused using a 1h(Insufficient resources to create a session) in the RAKP 2 or RAKP 4 field *RMCP+ status code*(byte 2).

- IPMA-FIR-9.5 After the Reset Firmware response is sent with a completion code of normal all IPMI LAN Parameters **shall** be reset to manufacturer defaults.
- IPMA-FIR-9.6 After the Reset Firmware response is sent with a completion code of normal the IPMI Asset Tag **shall** be reset to manufacturer defaults.
- IPMA-FIR-9.7 After the Reset Firmware response is sent with a completion code of normal
- IPMA-FIR-9.8 After the Reset Firmware response is sent with a completion code of normal the number of entries in the System Event Log **shall** be set to zero.
- IPMA-FIR-9.9 After a Reset Firmware Command request is received any subsequent Reset Firmware requests **shall** be rejected using an IPMI response with a completion code of C0h until a Reset Firmware response is sent.
- IPMA-FIR-9.10 Five seconds after a Reset Firmware response command with a completion code of normal is sent the controller **shall** terminate all RMCP sessions.

280 10 ID Assignment

281 **Table 8: IPMI Command ID Assignment**

Command Name	Table Number	Command ID	Minimum Privilege Level
Reset Firmware Command	7	0h	Administrator
Start Packet Performance Test Command	4	1h	Administrator
Packet Performance Test Data Command	5	2h	Administrator
Stop Packet Performance Test Command	6	3h	Administrator

282 **Table 9: FRU Information Record ID Assignments**

FRU Record Name	Table Number	Record ID	Chassis Manager	Node Manager
OCP Version Description Record	1	0h	Yes	Yes
Chassis Description Record	2	1h	Yes	No
IPMB Address Record	3	2h	Yes	Yes