# Management Component Transport Protocol (MCTP) IDs and Codes

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## Tables

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62                                          Foreword

63   The *Management Component Transport Protocol (MCTP) IDs and Codes* (DSP0239) was prepared by
64   the PMCI Working Group.

65   DMTF is a not-for-profit association of industry members dedicated to promoting enterprise and systems
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79                                             Introduction

80    This document presents a collection of IDs and codes that are used across the Management Component
81    Transport Protocol (MCTP) and transport binding specifications.

82    The MCTP defines a communication model intended to facilitate communication between:

83        •   Management controllers and other management controllers

84        •   Management controllers and management devices

85    The communication model includes a message format, transport description, message exchange
86    patterns, and configuration and initialization messages.

87    The *MCTP Base Protocol Specification* ([DSP0236](#)) describes the protocol and commands used for
88    communication within and initialization of an MCTP network. Associated with the *Base Protocol*
89    *Specification* are transport binding specifications that define how the MCTP base protocol and MCTP
90    control commands are implemented on a particular physical transport type and medium, such as
91    SMBus/I$^2$C, PCI Express™ (PCIe) Vendor Defined Messaging (VDM), and so on.

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# Management Component Transport Protocol (MCTP) IDs and Codes

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# 1    Scope

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The *Management Component Transport Protocol (MCTP) IDs and Codes* document provides a consolidated list of major IDs and codes used across the MCTP protocol and transport binding specifications. Only IDs and codes that are required by a particular specification should be included in that specification. IDs and codes values for other specifications should not be repeated for reference. Instead, a reference to this specification should be provided.

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102
The following is an overview of the different sets of codes and identifiers (enumeration values) that are specified in this document:

103
- **MCTP message type codes**

104
     Collection of the message type codes used for MCTP messages

105
- **MCTP physical medium identifiers**

106
     Collection of identifiers for the different types of physical media that have been defined

107
- **MCTP physical transport binding identifiers**

108
109
     Collection of identifiers for the specifications that define the operation, formatting, addressing, and encapsulation of MCTP packets over different physical media

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# 2    Normative References

111
112
113
The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

114
115
DMTF DSP0222, *Network Controller Sideband Interface (NC-SI) Specification 1.0,*
http://www.dmtf.org/standards/published_documents/DSP0222_1.0.pdf

116
117
DMTF DSP0236, *Management Component Transport Protocol (MCTP) Base Specification 1.0*, MCTP,
http://www.dmtf.org/standards/published_documents/DSP0236_1.0.pdf

118
119
120
DMTF DSP0237, *Management Component Transport Protocol (MCTP) SMBusI$^2$C Transporting Binding Specification 1.0*, MCTP SMBus-I$^2$C,
http://www.dmtf.org/standards/published_documents/DSP0237_1.0.pdf

121
122
DMTF DSP0238, *Management Component Transport Protocol (MCTP) PCIe VDM Transport Binding Specification 1.0*, MCTP PCIe-V, http://www.dmtf.org/standards/published_documents/DSP0238_1.0.pdf

123
124
IPMI Consortium*, Intelligent Platform Management Interface Specification* 1.5 Revision 1.1, February 20, 2002, http://download.intel.com/design/servers/ipmi/IPMIv1_5rev1_1.pdf

125
126
ISO/IEC Directives, Part 2, *Rules for the structure and drafting of International Standards,*
http://isotc.iso.org/livelink/livelink?func=ll&objId=4230456&objAction=browse&sort=subtype

127
128
PCI-SIG, *PCI Express Base Specification 1.1*, PCIeV1.1, March 28, 2005,
http://www.pcisig.com/members/downloads/specifications/pciexpress/PCI_Express_Base_11.pdf

129   PCI-SIG, *PCI Express Base Specification 2.0*, PCIeV2.1, March 4, 2009,
130   http://www.pcisig.com/members/downloads/specifications/pciexpress/PCI_Express_Base_r2_1_04Mar09.
131   pdf

132   PCI-SIG, *PCI Express Base Specification 3.0*, PCIeV3.0, November 10, 2010,
133   http://www.pcisig.com/members/downloads/specifications/pciexpress/PCI_Express_Base_r3.0_10Nov10.
134   pdf

135   Philips Semiconductors, *The I$^2$C-Bus Specification v2.0*, I2C, December 1998
136   http://www.nxp.com/acrobat_download/literature/9398/39340011_20.pdf

137   RMII Consortium, *Reduced Media Independent Interface (RMII) Specification v1.2*, RMII, 1997,
138   http://www.national.com/assets/en/other/rmii_1_2.pdf

139   SMBus, *System Management Bus (SMBus) Specification v2.0*, SMBus, 2000,
140   http://www.smbus.org/specs/smbus20.pdf

# 141   3   Terms and Definitions

142   Refer to DSP0236 for terms and definitions that are used in the MCTP specifications.

# 143   4   Symbols and Abbreviated Terms

144   Refer to DSP0236 for symbols and abbreviated terms that are used in the MCTP specifications.

# 145   5   Conventions

146   The conventions described in the following clauses apply to this specification.

## 147   5.1   Reserved and Unassigned Values

148   Unless otherwise specified, any reserved, unspecified, or unassigned values in enumerations or other
149   numeric ranges are reserved for future definition by the DMTF.

150   Unless otherwise specified, numeric or bit fields that are designated as reserved shall be written as 0
151   (zero) and ignored when read.

## 152   5.2   Byte Ordering

153   Unless otherwise specified, byte ordering of multi-byte numeric fields or bit fields is "Big Endian" (that is,
154   the lower byte offset holds the most significant byte, and higher offsets hold lesser significant bytes).

155

156 # 6    MCTP Message Type Codes

157 Table 1 defines the values for the Message Type field for different message types transported through
158 MCTP.

159 NOTE:    A device that supports a given message type may not support that message type equally across all busses
160 that connect to the device.

161                            **Table 1 – MCTP Message Types**

| Message Type | Message Type Code | Description |
|---|---|---|
| MCTP Control | 0x00 | Messages used to support initialization and configuration of MCTP communication within an MCTP network, as specified in DSP0236 |
| Platform Level Data Model (PLDM) | 0x01 | Messages used to convey Platform Level Data Model (PLDM) traffic over MCTP. |
| NC-SI over MCTP | 0x02 | Messages used to convey NC-SI Control traffic over MCTP. |
| Ethernet over MCTP | 0x03 | Messages used to convey Ethernet traffic over MCTP. |
| Vendor Defined – PCI | 0x7E | Message type used to support VDMs where the vendor is identifed using a PCI-based vendor ID. The specification of the initial Message Header bytes for this message type is provided within this specification. The specification of the format of this message is given in DSP0236. Otherwise, the message body content is specified by the vendor, company, or organization identified by the given vendor ID. |
| Vendor Defined – IANA | 0x7F | Message type used to support VDMs where the vendor is identifed using an IANA-based vendor ID. This format uses an "Enterprise Number" that is assigned and maintained by the Internet Assigned Numbers Authority (IANA), www.iana.org, as the means of identifying a particular vendor, company, or organization. The specification of the format of this message is given in DSP0236. Otherwise, the message body content is specified by the vendor, company, or organization identified by the given vendor ID. |
| Reserved | all other | Reserved |

162 # 7    MCTP Physical Medium Identifiers

163  Table 2 defines a set of numbers that correspond to different media types that can be used with MCTP.
164  The identifier is primarily used to identify which physical addressing format is used for MCTP packets on
165  the bus.

166 **Table 2 – MCTP Physical Medium Identifiers**

| Physical Media Identifier | Description |
|---|---|
| 0x00 | Unspecified |
| 0x01 | SMBus 2.0 100 kHz compatible |
| 0x02 | SMBus 2.0 + I$^2$C 100 kHz compatible |
| 0x03 | I$^2$C 100 kHz compatible (Standard-mode) |
| 0x04 | I$^2$C 400 kHz compatible (Fast-mode) |
| 0x05 | I$^2$C 1 MHz compatible (Fast-mode Plus) |
| 0x06 | I$^2$C 3.4 MHz compatible (High-speed mode) |
| 0x07 | Reserved |
| 0x08 | PCIe 1.1 compatible |
| 0x09 | PCIe 2.0 compatible |
| 0x0A | PCIe 2.1 compatible |
| 0x0B | PCIe 3.0 compatible |
| 0x0C:0x0E | Reserved |
| 0x0F | PCI compatible (PCI 1.0,2.0,2.1,2.2,2.3,3.0,PCI-X 1.0, PCI-X 2.0) |
| 0x10 | USB 1.1 compatible |
| 0x11 | USB 2.0 compatible |
| 0x12 | USB 3.0 compatible |
| 0x13:0x17 | Reserved |
| 0x18 | RMII / NC-SI (A physical interface based on RMII as defined in DSP0222) |
| 0x20 | KCS[1] / Legacy (Fixed Address Decoding) |
| 0x21 | KCS[1] / PCI (Base Class 0xC0 Subclass 0x01) |
| 0x22 | Serial Host[2] / Legacy (Fixed Address Decoding) |
| 0x23 | Serial Host[2] / PCI (Base Class 0x07 Subclass 0x00) |
| 0x24 | Asynchronous Serial[3] (Between MCs and IMDs) |
| all other | Reserved |
| 1. Keyboard Controller Style Interface – refer to DSP0236. | |
| 2. Serial Host refers to a register based UART interface. | |
| 3. Asynchronous Serial refers to an 8–bit asynchronous bi-directional serial transmission media where characters are transmitted independently (i.e., each frame carries 8-bits of data). | |

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169     # 8     MCTP Physical Transport Binding Identifiers

170     Table 3 defines as set of numbers that correspond to different media types that can be used with MCTP.
171     The identifier indicates which physical addressing format is used for MCTP packets on the bus.

172                         **Table 3 – MCTP Physical Transport Binding Identifiers**

| MCTP Physical Transport Binding Identifier | Description |
| --- | --- |
| 0x00 | Reserved |
| 0x01 | MCTP over SMBus (DSP0237) |
| 0x02 | MCTP over PCIe VDM (DSP0238) |
| 0x03 | Reserved for MCTP over USB |
| 0x04 | MCTP over KCS |
| 0x05 | MCTP over Serial |
| 0xFF | Vendor defined<br><br>NOTE:  A vendor-defined transport binding must meet the requirements in DSP0236 (in particular, when being bridged to or from standard MCTP transport binding and media combinations). |
| All other | Reserved |

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174 # 9 MCTP Host Interface Type Identifiers

175 Table 3 defines a set of numbers that correspond to different MCTP host interface types that can be used
176 with MCTP. The identifier indicates which physical interface to transfer MCTP packets between the host
177 and the management controller.

178 **Table 4 – MCTP Host Interface Type Identifiers**

| MCTP Host Interface Type Identifier | Description |
|---|---|
| 0x00 | Reserved |
| 0x01 | Reserved |
| 0x02 | KCS: Keyboard Controller Style – refer to *Intelligent Platform Management Interface Specification* Section 9 Keyboard Controller Style (KCS) Interface |
| 0x03 | 8250 UART Register Compatible |
| 0x04 | 16450 UART Register Compatible |
| 0x05 | 16550/16550A UART Register Compatible |
| 0x06 | 16650/16650A UART Register Compatible |
| 0x07 | 16750/16750A UART Register Compatible |
| 0x08 | 16850/16850A UART Register Compatible |
| 0xF0 | OEM |
| all other | Reserved |

179 # 10 Host Interface Protocol Identifiers

180 Table 3 defines a set of numbers that correspond to different protocols that can be used on a physical
181 host interface. These protocol identifiers are used in SMBIOS Management Controller Host Interface
182 Type 42 record as well as the ACPI MCHI description record.

183 **Table 5 – Host Interface Protocol Identifiers**

| Protocol Identifier | Description |
|---|---|
| 0x00 | Reserved |
| 0x01 | Reserved |
| 0x02 | IPMI : Intelligent Platform Management Interface – refer to *Intelligent Platform Management Interface Specification* Appendix C1 |
| 0x03 | MCTP : Management Component Transport Protocol – refer to DSP0236 |
| 0xF0 | OEM |
| all other | Reserved |

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<div align="center">

# Annex A

(informative)

# Notation and Conventions

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## A.1    Notations

Examples of notations used in this document are as follows:

- 2:N        In field descriptions, this will typically be used to represent a range of byte offsets starting from byte two and continuing to and including byte N. The lowest offset is on the left, the highest is on the right.

- (6)        Parentheses around a single number can be used in message field descriptions to indicate a byte field that may be present or absent.

- (3:6)     Parentheses around a field consisting of a range of bytes indicates the entire range may be present or absent. The lowest offset is on the left, the highest is on the right.

- PCIe     Underlined, blue text is typically used to indicate a reference to a document or specification called out in the "Normative References" section or to items hyperlinked within the document.

- rsvd     Abbreviation for "reserved." Case insensitive.

- [4]        Square brackets around a number are typically used to indicate a bit offset. Bit offsets are given as zero-based values (that is, the least significant bit [LSb] offset = 0).

- [7:5]     A range of bit offsets. The most significant bit is on the left, the least significant bit is on the right.

- 1b        The lower case "b" following a number consisting of 0s and 1s is used to indicate the number is being given in binary format.

- 0x12A    A leading "0x" is used to indicate a number given in hexadecimal format.

209                                      # Annex B

210                                      (informative)

211                                      **Change Log**

| Version | Date | Description |
|---------|------|-------------|
| 1.0.0 | 07/28/2009 | |
| 1.1.0 | 11/03/2009 | Added Host Interface Type Identifiers. Added Host Interface Protocol Identifiers. Added reference to NC-SI and added clarification on physical medium identifiers. |
| 1.2.0 | 8/28/2012 | Added Ethernet over MCTP message type. Clarified the description of NC-SI over MCTP and PLDM over MCTP. Added I2C fast plus and high-speed physical medium identifiers. Clarified RMII/NC-SI physical `medium identifier description. Fixed references. |

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