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# Management Component Transport Protocol (MCTP) IDs and Codes

# CONTENTS

# **Tables**

59                                          Foreword

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

62   DMTF is a not-for-profit association of industry members dedicated to promoting enterprise and systems
63   management and interoperability. For information about the DMTF, see http://www.dmtf.org.

64   This version supersedes version 1.7.1. For a list of changes, see the change log in ANNEX B.

65   **Acknowledgments**

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84 # Introduction

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

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

88 • Management controllers and other management controllers

89 • Management controllers and management devices

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

92 The *MCTP Base Protocol Specification* ([DSP0236](#)) describes the protocol and commands used for
93 communication within and initialization of an MCTP network. Associated with the *Base Protocol*
94 *Specification* are transport binding specifications that define how the MCTP base protocol and MCTP
95 control commands are implemented on a particular physical transport type and medium.

96 ## Document conventions

97 ## Typographical conventions

98 The following typographical conventions are used in this document:

99 • Document titles are marked in *italics.*

100 • ABNF rules are in monospaced font.

101 ## ABNF usage conventions

102 Format definitions in this document are specified using ABNF (see [RFC5234](#)), with the following
103 deviations:

104 • Literal strings are to be interpreted as case-sensitive Unicode characters, as opposed to the
105 definition in [RFC5234](#) that interprets literal strings as case-insensitive US-ASCII characters.

106 ## Reserved and unassigned values

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

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

111 ## Byte ordering

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

114 ## Notations

115 See ANNEX A for notations.

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118 # Management Component Transport Protocol (MCTP) IDs and
119 # Codes

120 ## 1   Scope

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

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

128 - **MCTP message type codes**
129   Collection of the message type codes used for MCTP messages

130 - **MCTP physical medium identifiers**
131   Collection of identifiers for the different types of physical media that have been defined

132 - **MCTP physical transport binding identifiers**
133   Collection of identifiers for the specifications that define the operation, formatting, addressing,
134   and encapsulation of MCTP packets over different physical media

135 - **MCTP host interface type identifiers**
136   Collection of identifiers for the different physical interfaces used to transfer MCTP packets
137   between the host and the management controller

138 ## 2   Normative references

139 The following referenced documents are indispensable for the application of this document. For dated or
140 versioned references, only the edition cited (including any corrigenda or DMTF update versions) applies.
141 For references without a date or version, the latest published edition of the referenced document
142 (including any corrigenda or DMTF update versions) applies.

143 DMTF specifications are available at http://www.dmtf.org/standards/published_documents. Unless
144 otherwise specified, values defined in this document apply to all published DMTF Standard versions of
145 the particular referenced DMTF specification.

146 DMTF DSP0134, SMBIOS Reference Specification

147 DMTF DSP0222, *Network Controller Sideband Interface (NC-SI) Specification*

148 DMTF DSP0235, *NVMe (NVM Express) Management Messages over MCTP Binding Specification*

149 DMTF DSP0236, *Management Component Transport Protocol (MCTP) Base Specification*

150 DMTF DSP0237, *Management Component Transport Protocol (MCTP) SMBusI²C Transporting Binding*
151 *Specification*

152 DMTF DSP0238, *Management Component Transport Protocol (MCTP) PCIe VDM Transport Binding*
153 *Specification*

154 DMTF DSP0241, *PLDM Over MCTP Binding Specification*

155    DMTF DSP0253, *MCTP Serial Transport Binding Specification*

156    DMTF DSP0254, *MCTP KCS Transport Binding Specification*

157    DMTF DSP0261, *NC-SI Over MCTP Binding Specification*

158    DMTF DSP0275, *Security Protocol and Data Model (SPDM) over MCTP Binding Specification*

159    DMTF DSP0276, *Secured Messages using SPDM over MCTP Binding Specification*

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162    PCI-SIG, *PCI Express Base Specification 1.1*, PCIeV1.1, March 28, 2005, http://pcisig.com/specifications

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164    PCI-SIG, *PCI Express Base Specification 3.0*, PCIeV3.0, November 10, 2010,
165    http://pcisig.com/specifications

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170    SMBus, *System Management Bus (SMBus) Specification v2.0*, SMBus, 2000,
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176    specification.

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178    Alliance, Inc., 19 July 2018 (Adopted 8 October 2018), http://resources.mipi.org/mipi-i3c-basic-v1-
179    download.

180    *CXL™ 2.0 Specification*, https://www.computeexpresslink.org/download-the-specification

181    Intelligent Platform Management Interface Specification Second Generation, v2.0, April 21, 2015,
182    https://www.intel.com/content/www/us/en/servers/ipmi/ipmi-intelligent-platform-mgt-interface-spec-2nd-
183    gen-v2-0-spec-update.html

184    *Private Enterprise Numbers*, Internet Assigned Numbers Authority (IANA),
185    https://www.iana.org/assignments/enterprise-numbers/enterprise-numbers

## 186    3    Terms and definitions

187    In this document, some terms have a specific meaning beyond the normal English meaning. Those terms
188    are defined in this clause.

189    The terms "shall" ("required"), "shall not", "should" ("recommended"), "should not" ("not recommended"),
190    "may", "need not" ("not required"), "can" and "cannot" in this document are to be interpreted as described
191    in ISO/IEC Directives, Part 2, Clause 7. The terms in parentheses are alternatives for the preceding term,
192    for use in exceptional cases when the preceding term cannot be used for linguistic reasons. Note that

193  [ISO/IEC Directives, Part 2](), Clause 7 specifies additional alternatives. Occurrences of such additional
194  alternatives shall be interpreted in their normal English meaning.

195  The terms "clause", "subclause", "paragraph", and "annex" in this document are to be interpreted as
196  described in [ISO/IEC Directives, Part 2](), Clause 6.

197  The terms "normative" and "informative" in this document are to be interpreted as described in ISO/IEC
198  Directives, Part 2, Clause 3. In this document, clauses, subclauses, or annexes labeled "(informative)" do
199  not contain normative content. Notes and examples are always informative elements.

200  The terms defined in DSP0004, DSP0223, and DSP1001 apply to this document.

201  Refer to [DSP0236]() for terms and definitions that are used in the MCTP specifications.

202  # 4  Symbols and abbreviated terms

203  Refer to [DSP0236]() for symbols and abbreviated terms that are used in the MCTP specifications.

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## 5   MCTP Message Type codes

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

NOTE    A device that supports a given message type might not support that message type equally across all busses that connect to the device.

**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, as specified in DSP0241. |
| NC-SI over MCTP | 0x02 | Messages used to convey NC-SI Control traffic over MCTP, as specified in DSP0261. |
| Ethernet over MCTP | 0x03 | Messages used to convey Ethernet traffic over MCTP. See DSP0261. This message type can also be used separately by other specifications. |
| NVM Express Management Messages over MCTP | 0x04 | Messages used to convey NVM Express (NVMe) Management Messages over MCTP, as specified in DSP0235. |
| SPDM over MCTP | 0x05 | Messages used to convey Security Protocol and Data Model Specification (SPDM) traffic over MCTP, as specified in DSP0275. |
| Secured Messages | 0x06 | Messages used to convey *Secured Messages using SPDM over MCTP Binding Specification* traffic, as specified in DSP0276. |
| 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 a number from the *Private Enterprise Numbers* table that is assigned and maintained by the Internet Assigned Numbers Authority (IANA) 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 |

## 211  6   MCTP physical medium identifiers

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

215 NOTE   PCIe revision numbers are intended to indicate specification compatibility, not bit transfer rate or
216           throughput.
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219                          **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` | SMBus 3.0 or I$^2$C 400 kHz compatible (Fast-mode) |
| `0x05` | SMBus 3.0 or I$^2$C 1 MHz compatible (Fast-mode Plus) |
| `0x06` | I$^2$C 3.4 MHz compatible (High-speed mode) |
| `0x07` | Reserved |
| `0x08` | PCIe revision 1.1 compatible |
| `0x09` | PCIe revision 2.0 compatible |
| `0x0A` | PCIe revision 2.1 compatible |
| `0x0B` | PCIe revision 3.x compatible |
| `0x0C` | PCIe revision 4.x compatible |
| `0x0D` | PCIe revision 5.x compatible, CXL 1.x / 2.x compatible |
| `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` | NC-SI over RBT (A physical interface based on RMII as defined in DSP0222) |
| `0x19:0x1F` | Reserved |
| `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) |
| `0x30` | I3C Basic compatible |
| `0x31:0xFF` | Reserved |

1.  Keyboard Controller Style Interface – refer to DSP0254.
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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222 # 7  MCTP physical transport binding identifiers

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

225 **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 (DSP0254) |
| `0x05` | MCTP over Serial (DSP0253) |
| `0xFF` | Vendor defined<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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## 227    8    MCTP host interface type identifiers

228    The SMBIOS specification (DSP0134) reserves a range of host interface type identifiers 0x00 through
229    0x3F for use by this specification. Table 4 defines a set of numbers that correspond to different MCTP
230    host interface types that can be used with MCTP. The identifier indicates which physical interface to
231    transfer MCTP packets between the host and the management controller.

232                    **Table 4 – MCTP host interface type identifiers**

| MCTP Host Interface Type Identifier | Description |
|---|---|
| 0x00 | Reserved |
| 0x01 | Reserved |
| 0x02 | KCS: Keyboard Controller Style – refer to *IPMI*, 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 |
| 0x09:0x3F | Reserved |
| all other | Assigned by the SMBIOS specification (DSP0134) |

## 233    9    Host interface protocol identifiers

234    In earlier versions of this specification, this clause contained a table of host interface protocol identifiers.
235    That table has been moved to the description of the Type 42 record in the SMBIOS specification
236    (DSP0134) version 3.1.1 or later.

# ANNEX A
# (informative)
# Notations

## 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" clause 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.

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# ANNEX B
# (informative)
# Change log

| Version | Date | Description |
|---------|------|-------------|
| 1.0.0 | 2009-07-28 | |
| 1.1.0 | 2009-11-03 | 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 | 2012-06-04 | 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. |
| 1.3.0 | 2015-03-06 | Added message type NVMe (NVM Express) Management Messages over MCTP. Updated references. |
| 1.4.0 | 2017-01-11 | Limited host interface type identifiers to the range 0x00:0x3F. Moved the host interface protocol identifier table to the SMBIOS specification. Updated references. |
| 1.5.0 | 2017-11-16 | Updated contributors and references. Added support for SMBus 3.0 and PCIe Gen 4. |
| 1.6.0 | 2019-06-04 | Added an MCTP Message Type for SPDM. Added an MCTP physical medium identifiers for PCIe revision 5.0, and I3C. |
| 1.6.1 | 2020-12-07 | Updated contributor list. Corrected the I3C entries in the MCTP physical medium identifiers table. |
| 1.6.2 | 2021-03-02 | Added CXL compatible reference to physical medium identifier table PCIe 5.x row. |
| 1.7.0 | 2020-05-26 | Added an MCTP Message Type for MCTP Security using SPDM. Added an MCTP physical medium identifiers for CXL. |
| 1.7.1 | 2020-12-07 | Update the contributor list. Correct the I3C entries in the MCTP physical medium identifiers table. |
| 1.7.2 | 2021-04-13 | Removed separate entry for CXL from physical medium identifiers table since CXL uses PCIe as the physical medium. Added CXL compatible reference to physical medium identifier table PCIe 5.x row. Updated to comply with ISO guidelines. |

264 # Bibliography

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267