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Management Component Transport Protocol (MCTP) IDs and Codes

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Foreword

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

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Introduction

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

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

- Management controllers and other management controllers
- Management controllers and management devices

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

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

Document conventions

Typographical conventions

The following typographical conventions are used in this document:

- Document titles are marked in *italics*.
- ABNF rules are in monospaced font.

ABNF usage conventions

Format definitions in this document are specified using ABNF (see RFC5234), with the following deviations:

- Literal strings are to be interpreted as case-sensitive Unicode characters, as opposed to the definition in RFC5234 that interprets literal strings as case-insensitive US-ASCII characters.

Reserved and unassigned values

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

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

Byte ordering

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

Notations

See ANNEX A for notations.

Management Component Transport Protocol (MCTP) IDs and Codes

1 Scope

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 are to be included in that specification. IDs and codes values for other specifications are not be repeated for reference. Instead, provide a reference to this specification.

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

- **MCTP message type codes**

  Collection of the message type codes used for MCTP messages

- **MCTP physical medium identifiers**

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

- **MCTP physical transport binding identifiers**

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

- **MCTP host interface type identifiers**

  Collection of identifiers for the different physical interfaces used to transfer MCTP packets between the host and the management controller

2 Normative references

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

DMTF specifications are available at http://www.dmtf.org/standards/published_documents.

DMTF DSP0134, *SMBIOS Reference Specification 3.5*,
https://www.dmtf.org/sites/default/files/standards/documents/DSP0134_3.5.0.pdf

DMTF DSP0222, *Network Controller Sideband Interface (NC-SI) Specification 1.1*,
https://www.dmtf.org/sites/default/files/standards/documents/DSP0222_1.1.pdf

DMTF DSP0233, *Management Component Transport Protocol (MCTP) I3C Transport Binding Specification 1.0*,
https://www.dmtf.org/sites/default/files/standards/documents/DSP0233_1.0.0.pdf

DMTF DSP0234, *CXL™ Fabric Manager API over MCTP Binding Specification 1.0*,
https://www.dmtf.org/sites/default/files/standards/documents/DSP0234_1.0.pdf

DMTF DSP0235, *NVMe (NVM Express) Management Messages over MCTP Binding Specification 1.0*,
https://www.dmtf.org/sites/default/files/standards/documents/DSP0235_1.0.pdf

DMTF DSP0236, *Management Component Transport Protocol (MCTP) Base Specification 1.3*, https://www.dmtf.org/sites/default/files/standards/documents/DSP0236_1.3.pdf

DMTF DSP0237, *Management Component Transport Protocol (MCTP) SMBus/I^2C Transporting Binding Specification 1.2*, https://www.dmtf.org/sites/default/files/standards/documents/DSP0237_1.2.pdf

DMTF DSP0238, *Management Component Transport Protocol (MCTP) PCIe VDM Transport Binding Specification 1.2*, https://www.dmtf.org/sites/default/files/standards/documents/DSP0238_1.2.pdf

DMTF DSP0241, *PLDM Over MCTP Binding Specification 1.0*, https://www.dmtf.org/sites/default/files/standards/documents/DSP0241_1.0.pdf

DMTF DSP0253, *MCTP Serial Transport Binding Specification 1.0*, https://www.dmtf.org/sites/default/files/standards/documents/DSP0253_1.0.pdf

DMTF DSP0254, *MCTP KCS Transport Binding Specification 1.0*, https://www.dmtf.org/sites/default/files/standards/documents/DSP0254_1.0.pdf

DMTF DSP0261, *NC-SI Over MCTP Binding Specification 1.2*, https://www.dmtf.org/sites/default/files/standards/documents/DSP0261_1.2.pdf

DMTF DSP0275, *Security Protocol and Data Model (SPDM) over MCTP Binding Specification 1.0*, https://www.dmtf.org/sites/default/files/standards/documents/DSP0275_1.0.pdf

DMTF DSP0276, *Secured Messages using SPDM over MCTP Binding Specification 1.0*, https://www.dmtf.org/sites/default/files/standards/documents/DSP0276_1.0.pdf

DMTF DSP0281, *CXL™ Type 3 Device Component Command Interface over MCTP Binding Specification 1.0*, https://www.dmtf.org/sites/default/files/standards/documents/DSP0281_1.0.pdf

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

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

PCI-SIG, *PCI Express Base Specification 2.0*, PCIeV2.1, March 4, 2009, http://pcisig.com/specifications

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

PCI-SIG, *PCI Express Base Specification 4.0*, PCIeV4.0, October 5, 2017, http://pcisig.com/specifications

PCI-SIG, *PCI Express Base Specification 5.0*, PCIeV5.0, May 28, 2019, http://pcisig.com/specifications

NXP Semiconductors UM10204, *I^2C-bus specification and user manual*, Rev. 6, 4 April 2014 https://web.archive.org/web/20210813122132/https://www.nxp.com/docs/en/user-guide/UM10204.pdf

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

SMBus, *System Management Bus (SMBus) Specification v3.0*, SMBus, December 20, 2014, http://www.smbus.org/specs/SMBus_3_0_20141220.pdf

MIPI Alliance Specification for I3C® (Improved Inter Integrated Circuit), version 1.0, MIPI Alliance, Inc., 23 December 2016 (Adopted 31 December 2016), https://www.mipi.org/specifications/i3c-sensor-specification.

MIPI Alliance Specification for I3C BasicSM (Improved Inter Integrated Circuit – Basic), version 1.0, MIPI Alliance, Inc., 19 July 2018 (Adopted 8 October 2018), http://resources.mipi.org/mipi-i3c-basic-v1-download.

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

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

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

3 Terms and definitions

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

The terms "shall" ("required"), "shall not", "should" ("recommended"), "should not" ("not recommended"), "may", "need not" ("not required"), "can" and "cannot" in this document are to be interpreted as described in ISO/IEC Directives, Part 2, Clause 7. The terms in parentheses are alternatives for the preceding term, for use in exceptional cases when the preceding term cannot be used for linguistic reasons. Note that ISO/IEC Directives, Part 2, Clause 7 specifies additional alternatives. Occurrences of such additional alternatives shall be interpreted in their normal English meaning.

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

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

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

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

4 Symbols and abbreviated terms

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

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.
CXL FM API over MCTP	0x07	Messages used to convey *CXL™ Fabric Manager API over MCTP Binding Specification* traffic as specified in DSP0234.
CXL CCI over MCTP	0x08	Messages used to convey *CXL™ Type 3 Device Component Command Interface over MCTP Binding Specification* traffic as specified in DSP0281.
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

6 MCTP physical medium identifiers

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

NOTE PCIe revision numbers are intended to indicate specification compatibility, not bit transfer rate or throughput.

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236 **Table 2 – MCTP physical medium identifiers**

Physical Media Identifier	Description
0x00	Unspecified
0x01	SMBus 2.0 100 kHz compatible
0x02	SMBus 2.0 + I^2C 100 kHz compatible
0x03	I^2C 100 kHz compatible (Standard-mode)
0x04	SMBus 3.0 or I^2C 400 kHz compatible (Fast-mode)
0x05	SMBus 3.0 or I^2C 1 MHz compatible (Fast-mode Plus)
0x06	I^2C 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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7 MCTP physical transport binding identifiers

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

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)
0x06	MCTP over I3C (DSP0233)
0xFF	Vendor defined 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

8 MCTP host interface type identifiers

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

Table 4 – MCTP host interface type identifiers

MCTP Host Interface Type Identifier	Description
0x00	Reserved
0x01	Reserved
0x02	KCS: Keyboard Controller Style – refer to the section titled "Keyboard Controller Style (KCS) Interface" of *IPMI*
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	I2C / SMBUS
0x0A	I3C
0x0B	PCIe VDM
0x0C:0x3F	Reserved
all other	Assigned by the SMBIOS specification (DSP0134)

9 Host interface protocol identifiers

In earlier versions of this specification, this section contained a table of host interface protocol identifiers. That table has been moved to the description of the Type 42 record in the SMBIOS specification (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” 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 `0`s and `1`s 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.

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.
1.7.0	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	2021-04-05	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.
1.8.0	2021-01-12	Added CXL FM API over MCTP to Message Type table. Add MCTP over I3C to MCTP physical transport binding identifiers table.
1.9.0	2021-11-09	Added I2C/SMBUS, I3C, and PCIe VDM to the MCTP host interface type identifiers table. Added CXL CCI over MCTP to the Message Type table. Updated references.

Bibliography

RMII Consortium, *Reduced Media Independent Interface (RMII) Specification v1.2*, RMII, March 20, 1988, http://ebook.pldworld.com/_eBook/-Telecommunications,Networks-/TCPIP/RMII/rmii_rev12.pdf