IEEE 802.3da SPMD:

MPoE: Multiple MPIs per DTE

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1 Overview

1.1 Goals: Reporting and controls for MPoE systems

- Multiple MPIs per DTE - Multiple use cases exist for multiple MPIs associated with a single DTE.
    - David Brandt submitted several comments regarding support for additional power pairs for MPoE.
        - The comments include: 100, 101, 102, 103, 104, 105, 106, 107, 108, 109.
    - I support these changes, but I believe that the proposed resolutions from David are not sufficient.
- Minimum needed - Method to associate multiple MPIs with a single DTE
    - Clause 189 (or annex) changes to illustrate how this works
    - LLDP advertisement and negotiation to support multiple MPIs
    - Clause 30 management to support multiple MPIs
- Minimize changes to current text

1.2 Change log

- 4/30/25
    - First draft.
- 5/7/25
    - Modify to change new System Types from “Independent” to AC/DC/FMP
    - Changes from review
    - Add Power/Voltage/Current unit flags to MPSE/MPD capabilities and status to allow for higher values for AC/DC/FMP without changing 16 bit fields to 32 bit.

1.3 Open Items

- MPoE without a DTE?
    - Clause 30 containment – looks a bit like an midspan. Needs more thought.
    - Replace oResourceTypeID usage and redo containment models as needed – see RE: PoE PI/MPoE MPI with no DTE clause 30 containment issue thread.
- A DTE with a mix of MPSE and MPD MPIs. Needs more thought.

1.4 Table of Contents

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2 LLDP for MPoE Multiple MPIs

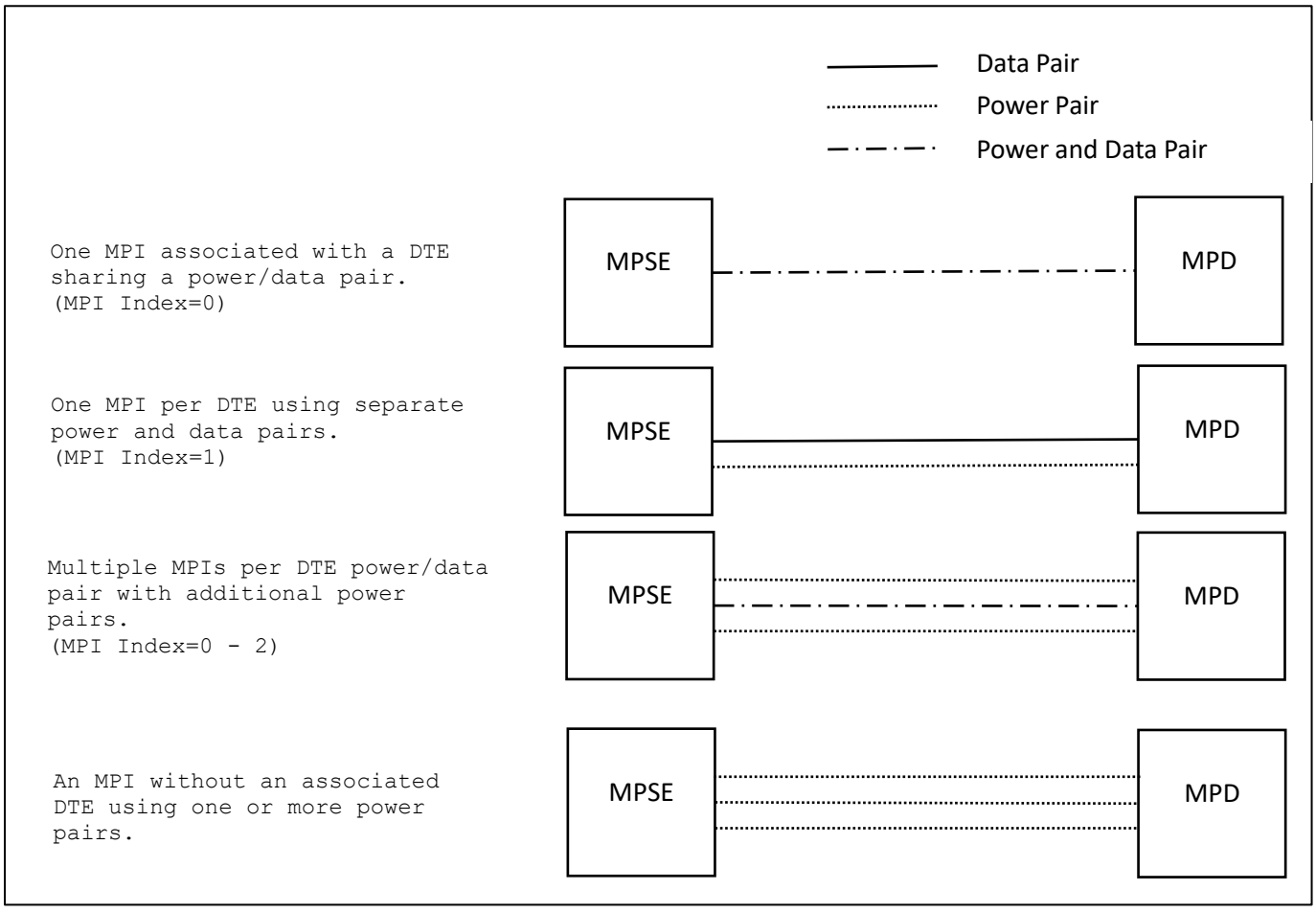
802.3da D2.2 defines LLDP TLVs for a single MPI per DTE. This document proposes changes to the current clause 30 and clause 79 draft text to support this/

2.1 Model

This proposal makes the following assumptions:

- All MPIs for a given DTE are either MPSEs, or MPDs.
- Unless stated otherwise, other MPI attributes for a given DTE are independent. This includes:
  - MPI type
  - MPI capabilities and status
  - MPI requested and granted power

The following diagram shows some examples (showing only two nodes for simplicity of drawing)



3 Clause 30 – Management

3.1 Clause 30 MPI identification and containment

3.1.1 Text descriptions

30.2.2.1 Text description of managed objects

Brandt D2.2 comment 106/107

Make the following changes in 30.2.2.1. In the definition for oMPD, change

```
   "to allow an instance of a MPoE MPD (see 189.5) to be managed"
to
   "to allow multiple MPoE MPD instances (see 189.5) to be managed"

In the definition for oMPSE, change
   "to allow an instance of a MPoE MPSE (see 189.4) to be managed"
to
   "to allow multiple MPoE MPSE instances (see 189. 4) to be managed"
```

3.1.2 Figure 30–3—DTE System entity relationship diagram

Brandt D2.2 comment 103

Change the `oPHYEntity` to `oMPSE`/ `oMPD` relationships from one-to-one to one-many.

NOTE: How does this work for a MPI with no associated DTE? Review midSpan and Repeater models

3.1.3 MPoE MPSE capabilities

Brandt D2.2 comment 108/109

Add the following rows to Table 30–12.

			Basic	Recommended
aMPSEMpiIndex	ATTRIBUTE	GET	X	
aMPSEType	ATTRIBUTE	GET	X	
aMPSETypeList	ATTRIBUTE	GET	X	
aMPSEVoltage	ATTRIBUTE	GET		X
aMPSECurrent	ATTRIBUTE			X

3.1.4 MPoE MPD capabilities

Brandt D2.2 comment 108/109

Add the following rows to Table 30–13.

			Basic	Recommended
aMPDMpiIndex	ATTRIBUTE	GET	X	
aMPDType	ATTRIBUTE	GET	X	
aMPDTypeList	ATTRIBUTE	GET	X	
aMPDVoltage	ATTRIBUTE	GET		X

3.1.5 MPSE attributes

3.1.5.1 aMPSEMpiIndex/ aMPSEType/ aMPSETypeList/ aMPSEVoltage/ aMPSEMaxCurrent

Brandt D2.2 comment 104 aMPSEMpiIndex

Add the following before 30.17.1.1.1 aMPSEAdminState.

```
  <subclause number> aMPSEMpiIndex
    ATTRIBUTE
    APPROPRIATE SYNTAX:
     INTEGER(0..255)
    BEHAVIOUR DEFINED AS:
     An integer value identifying a specific MPSE MPI associated with a
     DTE/oPHYEntity (see 189.1.2a).
      0    = the MPI that connects to the same physical media as the DTE
      >0   = separate MPIs;

 <subclause number> aMPSEType
  ATTRIBUTE
  APPROPRIATE SYNTAX:
       An ENUMERATED VALUE that has one of the following entries:
       ac
       dc
       fmp
       type0
       type1
  BEHAVIOUR DEFINED AS:
    The current MPSE type (see 189.3).

  <subclause number> aMPSETypeList
  ATTRIBUTE
  APPROPRIATE SYNTAX:
    A SEQUENCE that meets the requirements of the description below:
       ac
       dc
       fmp
       type0
       type1
  BEHAVIOUR DEFINED AS:
```

```
    The MPSE types this MPSE supports (see 189.3).

  <subclause number> aMPSEMaxVoltage
  ATTRIBUTE
  APPROPRIATE SYNTAX:
    INTEGER
  BEHAVIOUR DEFINED AS:
    The maximum voltage that this MPSE can output in Volts.

  <subclause number> aMPSEMaxCurrent
  ATTRIBUTE
  APPROPRIATE SYNTAX:
    INTEGER
  BEHAVIOUR DEFINED AS:
    The maximum current that this MPSE can output at aMPSEMaxVoltage in Amps.
```

3.1.5.2 aMPSETypeDiscovery

Change the APPROPRIATE SYNTAX definition to

```
  APPROPRIATE SYNTAX:
    A SEQUENCE that meets the requirements of the description below:
         ac
         dc
         fmp
         type0
         type1
         types01

  BEHAVIOUR DEFINED AS:
    A read-only value that indicates the MPD type(s) of the detected MPD(s)
    as specified in 189.3;
```

3.1.6 MPD attributes

3.1.6.1 aMPDMpiIndex/ aMPDType/ aMPDTypeList/ aMPDVoltage/ aMPDMaxCurrent

Brandt D2.2 comment 105 for aMPDMpiIndex

Add the following before 30.17.1.1.1 aMPDAdminState.

```
  <subclause number> aMPDMpiIndex
  ATTRIBUTE
  APPROPRIATE SYNTAX:
    INTEGER(0..255)
  BEHAVIOUR DEFINED AS:
    An integer value identifying a specific MPD MPI associated with a
    DTE/oPHYEntity (see 189.1.2a).
     0  = the MPI that connects to the same physical media as the DTE
     >0 = separate MPIs;

 <subclause number> aMPDType
  ATTRIBUTE
  APPROPRIATE SYNTAX:
       An ENUMERATED VALUE that has one of the following entries:
       ac
       dc
       fmp
       type0
       type1
  BEHAVIOUR DEFINED AS:
    The current MPD type (see 189.3).

  <subclause number> aMPDTypeList
  ATTRIBUTE
  APPROPRIATE SYNTAX:
    A SEQUENCE that meets the requirements of the description below:
       ac
       dc
       fmp
       type0
       type1
  BEHAVIOUR DEFINED AS:
    The MPD types this MPD supports (see 189.3).

  <subclause number> aMPDMaxVoltage
  ATTRIBUTE
  APPROPRIATE SYNTAX:
    INTEGER
  BEHAVIOUR DEFINED AS:
    The maximum voltage that this MPD can accept in Volts.
```

4 Clause 79- LLDP

4.1 TLVs

4.1.1 MPoE MPSE Status TLV

Brandt D2.2 comment 100

Replace the first paragraph in 79.3.10 as follows:

The MPoE MPSE Status TLV allows a DTE to advertise capabilities and status for each of its associated MPSEs to other DTEs on the mixing segment. The TLV consists of a fixed element (Table 79–22a1) reporting the number of MPSE entries included in the TLV, followed by an array of MPSE entries (Table 79–22b). The MPSE entries are sorted by MPI Index. Each entry indicates the units used by that MPSE for power, voltage and current.

Insert the following table before 79–22b.

Table 79–22a1 — MPSE Status TLV fixed elements

Field	Field width	Table reference or value/meaning
MPSE MPI Entry count	8	The number of entries
Reserved	8	16 bit alignment

Change Table 79–22b—"MPSE Status TLV elements" as follows

Table 79–22b— MPSE MPI Status TLV entry

Field	Field width	Table reference or value/meaning
MPI Index	8	See Table 79–22b1
Withdrawing Power Delay	8	See Table 79–22h
Capabilities and status	16	See Table 79–22c
Supported Types	8	See Table 79–22d
Active Type	8	See Table 79–22e
Maximum Power	16	See Table 79–22f
Allocated Power	16	See Table 79–22g
Maximum Voltage	16	See Table 79–22h1
Maximum Current	16	See Table 79–22h2

Insert the following table after Table 79–22b.

Table 79–22b1 — MPSE MPI Index

Field width	Bit	Function	Units	Value/meaning
8	--	MPI Index	--	MPSE MPI Index within the DTE

Delete the “Reserved“ row from Table 79–22c—"MPSE capabilities and status” and add the following rows at the same location.

Table 79–22c— MPSE capabilities and status

Field width	Bit	Function	Units	Value/meaning
--	2	Power Units	--	1 = Watts (W) 0 = MilliWatts (mW)
	3	Voltage Units		1 = Volts (V) 0 = MilliVolts (mV)
	4	Current Units		1 = Amps (A) 0 = MilliAmps (mV\A)
--	15:5	Reserved	--	--

Delete the “Reserved“ row from Table 79–22d—" MPSE supported Types” and add the following rows at the same location.

Table 79–22d— MPSE supported Types

Field width	Bit	Function	Units	Value/meaning
--	2	AC	--	1 = supported 0 = unsupported
--	3	DC	--	1 = supported 0 = unsupported
--	4	FMP	--	1 = supported 0 = unsupported
--	7:5	Reserved	--	--

Delete the “Reserved“ row from Table 79–22e—" MPSE active Type” and add the following rows at the same location.

Table 79–22e — MPSE active Type

Field width	Bit	Function	Units	Value/meaning
--	2	AC	--	1 = active 0 = inactive
--	3	DC	--	1 = active 0 = inactive
--	4	FMP	--	1 = active 0 = inactive
--	7:5	Reserved	--	--

Change Table 79–22f—MPSE max power as follows:

Field width	Bit	Function	Units	Value/meaning
16	--	Maximum power	mW/W	Maximum power the MPSE can supply to the MPI

Change Table 79–22g—MPSE allocated power as follows:

Field width	Bit	Function	Units	Value/meaning
16	--	Static power	mW/W	Power the MPSE has allocated for the MPI

Change Table 79–22h—Withdrawing power delay as follows:

Field width	Bit	Function	Units	Value/meaning
16	—	Withdrawing power delay	secs	Seconds until the MPSE will stop providing power to the MPI. Ignored unless the "Withdrawing Power Notification" flag is set.

Insert the following tables after Table 79–22h.

Table 79–22h1 — MPSE Voltage

Field width	Bit	Function	Units	Value/meaning
8	--	Voltage	mV/V	Nominal MPSE output voltage

Table 79–22h2 — MPSE Maximum Current

Field width	Bit	Function	Units	Value/meaning
8	--	Maximum Current	mA/A	Nominal MPSE maximum output current

4.1.2 MPoE MPD Status TLV

Brandt D2.2 comment 101

Replace the first paragraph in 79.3.11 as follows:

The MPoE MPD Status TLV allows a DTE to advertise capabilities, status, and requests for each of its associated MPDs to other DTEs on the mixing segment. The TLV consists of a fixed element (Table 79–22h1) reporting the number of MPD entries included in the TLV, followed by an array of MPD entries (Table 79–22i). The MPD entries are sorted by MPI Index. Each entry indicates the units used by that MPD for power, voltage and current.

Insert the following table:

Table 79–22h1 — MPD Status TLV fixed elements

Field	Field width	Table reference or value/meaning
MPI Entry count	8	The number of entries
Reserved	8	16 bit alignment

Change Table 79–22i—" MPD Status TLV elements” as follows:

Table 79–22i — MPD MPI Status TLV entry

Field	Field width	Table reference or value/meaning
MPI Index	8	See Table 79–22i1
Temporary power delay	8	See Table 79–22q
Capabilities and status	16	See Table 79–22j
Voltage	16	See Table 79–22q1
Supported Types	8	See Table 79–22k
Active Type	8	See Table 79–22l
Static power	16	See Table 79–22m
Normal power	16	See Table 79–22n
Temporary power	16	See Table 79–22o
Temporary power duration	16	See Table 79–22p
Instantaneous Voltage	16	See Table 79–22r
Voltage Out of Range	16	See Table 79–22s

Insert the following table(s) after Table 79–22i:

Table 79–22i1 — MPD MPI Index

Field width	Bit	Function	Units	Value/meaning
8	--	MPD MPI Index	--	MPD MPI Index within the DTE

Delete the “Reserved“ row from Table 79– 22j—"MPD capabilities and status” and add the following rows at the same location.

Table 79–22j– MPD capabilities and status

Field width	Bit	Function	Units	Value/meaning
--	6	Power Units	--	1 = Watts (W) 0 = MilliWatts (mW)
	7	Voltage Units		1 = Volts (V) 0 = MilliVolts (mV)
	8	Current Units		1 = Amps (A) 0 = MilliAmps (mV\A)
--	15:9	Reserved	--	--

Delete the “Reserved“ row from Table 79–22k—" MPD supported Types” and add the following rows at the same location.

Table 79–22k– MPD supported Types

Field width	Bit	Function	Units	Value/meaning
--	2	AC	--	1 = supported 0 = unsupported
--	3	DC	--	1 = supported 0 = unsupported
--	4	FMP	--	1 = supported 0 = unsupported
--	7:5	Reserved	--	--

Delete the “Reserved“ row from Table 79–22l—" MPD active Type” and add the following rows at the same location.

Table 79–22el – MPD active Type

Field width	Bit	Function	Units	Value/meaning
--	2	AC	--	1 = active 0 = inactive
--	3	DC	--	1 = active 0 = inactive
--	4	FMP	--	1 = active 0 = inactive
--	7:5	Reserved	--	--

Change Table 79–22m—MPD static power as follows:

Field width	Bit	Function	Units	Value/meaning
16	--	Static power	mW/W	The maximum power the MPD draws before MPoE power negotiation.

Change Table 79–22n—MPD normal power as follows:

Field width	Bit	Function	Units	Value/meaning
16	--	Normal power	mW/W	Power the MPD needs to support its normal function in the range: 0W <= Normal Power <= Static power

Change Table 79–22o—MPD temporary power request as follows:

Field width	Bit	Function	Units	Value/meaning
16	--	Temporary power	mW/W	Power the MPD needs for a defined duration.

Insert the following table(s) after Table 79–22q:

Table 79–22q1 — MPD Voltage

Field width	Bit	Function	Units	Value/meaning
16	--	MPD Voltage	mV/V	Nominal MPD Input voltage

Change 79–22r—MPD instantaneous voltage as follows:

Field width	Bit	Function	Units	Value/meaning
16	—	Instantaneous voltage	mV/V	The instantaneous voltage observed by the MPD. Ignored if "Voltage monitoring" is not set.

4.1.3 MPoE Power Allocated TLV

Brandt D2.2 comment 102

Replace the first paragraph in 79.3.12 as follows:

The MPoE Power Allocated TLV allows a DTE to advertise power allocation information for each of its associated MPSEs to other DTEs on the mixing segment. The TLV consists of a fixed element (79–22t) reporting the number of allocated power entries included in the TLV, followed by an array of allocated power entries (Table 79–22u). The allocated power entries are sorted by DTE MAC address, then by MPD MPI Index. Each entry uses the MPD power units.

Change Table 79–22u—MPSE Power Allocated TLV power entry as follows:

Table 79–22u—MPSE Power Allocated TLV power entry

Field width	Bit	Function	Units	Value/meaning
48	—	MPD MAC address	—	MPD MAC
8	--	MPD MPI Index	--	See Table 79–22q1
8	—	Reserved	—	16-bit alignment
16	—	MPD granted power	mW/W	Power the MPD is allocated
16	—	MPD static power	mW/W	See Table 79–22m
16	—	MPD normal power	mW/W	See Table 79–22n
16	—	MPD temporary power	mW/W	See Table 79–22o
16	—	MPD temporary power duration	secs	See Table 79–22p
8	—	MPD temporary power delay	secs	See Table 79–22q
8	—	Reserved	—	16-bit alignment

4.2 PICS

4.2.1 MPoE MPSE Status TLV PICS

Modify/add the following rows to “79.5.14 MPoE MPSE Status TLV” PICS subclause.

Item	Feature	Sub clause	Value/Comment	Status	Support
MPSE4	Max power	79.3.10	MPSE maximum power, see Table 79-22f	MPSE: M	Yes[] No[]
MPSE5	Allocated power	79.3.10	MPSE allocated power, see Table 79-22g	MPSE: M	Yes[] No[]
MPSE7	MPSE Entry count	79.3.10	Number of MPSE entries in the TLV, see Table 79-22a1	M	Yes[] No[]
MPSE8	MPI Index	79.3.10	MPSE MPI Index within the associated DTE, see Table 79-22h1	M	Yes[] No[]
MPSE9	Voltage	79.3.10	MPSE output voltage, see 79-22h2	M	Yes[] No[]
MPSE10	Maximum Current	79.3.10	MPSE maximum output current, see Table 79-22h3	M	Yes[] No[]

4.2.2 MPOE MPD Status TLV PICS

Modify/add the following rows to “79.5.15 MPoE MPD Status TLV” PICS subclause.

Item	Feature	Sub clause	Value/Comment	Status	Support
MPD4	Static power	79.3.11	MPD static power, see Table 79-22m	MPD:M	Yes[] No[]
MPD5	Normal power	79.3.11	MPD normal power, see Table 79-22n	MPD:M	Yes[] No[]
MPD6	Temporary power	79.3.11	MPD temporary power request comprising of power level, duration, and delay, see Table 79-22o, Table 79-22p, Table 79-22q	MPD:O	Yes[] No[]
MPD7	Instantaneous voltage	79.3.11	MPD instantaneous voltage, see Table 79-22r	MPD:O	Yes[] No[]
MPD9	MPD Entry count	79.3.11	Number of MPD entries in the TLV, see Table 79-22h1	M	Yes[] No[]
MPD10	MPI Index	79.3.11	MPD MPI Index within the associated DTE, see Table 79-22q1	M	Yes[] No[]
MPD11	Voltage	79.3.11	MPD input voltage, see Table 79-22q1	M	Yes[] No[]

4.2.3 MPoE Power Allocated TLV PICS

Add the following rows to “79.5.16 MPoE Power Allocated TLV” PICS subclause.

Item	Feature	Sub clause	Value/Comment	Status	Support
MPA3	DTE MAC address	79.3.12	MAC address of the target DTE, see Table 79–22u	M	Yes[] No[]
MPA4	MPD granted power	79.3.12	Power granted to the MPD, see Table 79–22u	M	Yes[] No[]
MPA5	MPD static power	79.3.12	Static power advertised by the MDP, see Table 79–22m	M	Yes[] No[]
MPA6	MPD normal power	79.3.12	Normal power advertised by the MDP, see Table 79–22n	M	Yes[] No[]
MPA7	MPD temporary power	79.3.12	Temporary power requested by the MDP, see Table 79–22o	M	Yes[] No[]
MPA8	MPD temporary power duration	79.3.12	Temporary power duration requested by the MDP, see Table 79–22p	M	Yes[] No[]
MPA9	MPD temporary power delay	79.3.12	Temporary power delay requested by the MDP, see Table 79–22q	M	Yes[] No[]
MPA10	MPD MPI Index	79.3.12	MPI Index for this MPD within the associated DTE, see Table 79–22u and Table 79–22q1	M	Yes[] No[]

5 Clause 189 – MPoE

5.1 Overview

Change the last sentence of the first paragraph of 189.1 from

Alternatively, MPoE can be used to provide power over a single pair multidrop wiring configuration.

To

MPoE interfaces (MPIs) are normally associated with a DTE (e.g., a 10BASE-T12M TCI). A given DTE may have multiple associated MPIs (see 189.1.2a). MPIs may also operate without an associated DTE (see 189.1.2a).

5.2 Interfaces

Add the following text after Figure 189–1 in 188.1.2

189.1.2a MPI and DTE association

Figure 189-1a below illustrates some of the different types of MPI and DTE associations supported by MPoE.

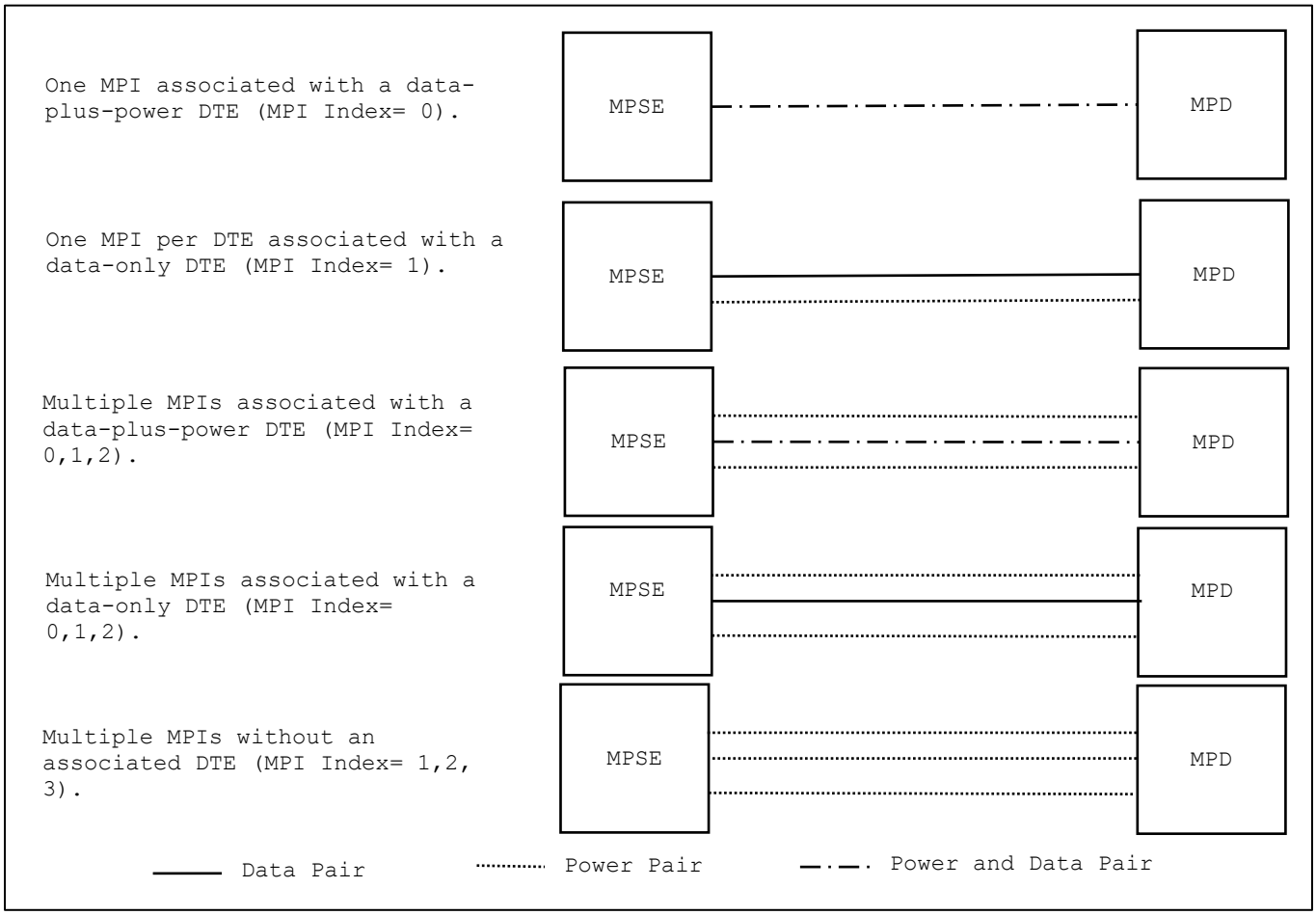


Figure 189-1a – Example MPI to DTE associations

189.1.2a.1 MPIs associated with a DTE

A DTE may be associated with 0, 1 or more than one MPIs. A DTE with 0 associated MPIs is a data only link. A DTE often has an MPI sharing the same power/data pair.

The set of MPIs associated with a DTE are identified within the DTE using an MPIIndex. MPIIndex has the following semantics:

- Type: 8 bit unsigned integer
- Values:
    - 0: The MPI that connects to the same physical media as the DTE.
    - >0: = separate MPIs

The set of MPIs associated with a DTE shall meet the following criteria:

- All MPIs for a given DTE are either MPSEs, or MPDs.
- Unless stated otherwise, all other MPI attributes for a given DTE are independent. This includes:
    - MPI type
    - MPI capabilities and status
    - MPI requested and granted power

189.1.2a.2 MPIs not associated with a DTE

An MPI may not be associated with DTE. In this case management of the local MPI may be available, but LLDP discovery and power negotiation with the remote MPIs is not possible.

189.1.2a.3 MPI Type restrictions

An MPI that connects to the same physical media as a DTE is either Type0, Type1 or Type01. An MPI that uses different physical media does not have this restriction, see 189.3.

5.3 System type power requirements

Replace the first paragraph of 189.3 with the following.

MPSEs and MPDs are categorized by their system type as shown in Table 189-1.

Table 189-1 – System Power Types

Type	Share media with DTE?	Description
AC	No	Alternating Current
DC	No	Direct Current
FMP	No	Fault Managed Power, aka NEC Class 4 Power
Type 0	Yes	MPoE type 0, see Table 189-1a
Type 1	Yes	MPoE type 1, see Table 189-1a

Type 0 and Type 1 are fully specified in Clause 189 and are the only types that can be used when a DTE and a MPI share the same media. An MPSE may transition between Type 0 and Type 1 during IDLE (see Figure 189–3 and Figure 189–4). MPDs may support either or both Type 0 and Type 1. Type 0 and Type 1 are further characterized in Table 189–1a

Renumber/rename Table 189–1—System power types to

Table 189–1a— Type 0 and Type 1 characteristics

Add the following after Table 189–1

MPoE also supports additional system types when an MPI is connected to a "power only" pair as listed in Table 189-1. These types are characterized in Table 189-1b.

Table 189-1b – Parameters for "power only" pair connectivity

Role	Parameter	Units	Range	Notes
MPSE				
	Output Power type	--	--	See Table 189-1
	Output Voltage	Volts	--	16 bit number
	Output Maximum Current	Amps	--	16 bit number
MPD			--	
	Input Power type	--	--	See Table 189-1
	Input Voltage	Volts	--	16 bit number

5.4 MPSE types

Replace the first paragraph of 189.4.1 with the following.

Type 0 or Type 1 MPSEs shall comply with the requirements listed in Table 189–1a and Table 189–5.

5.5 MPD system types

Replace current text of 189.5.1 with the following.

Type 0, Type 1 or Type 0/1 MPDs shall comply with the requirements listed in Table 189–1 and Table 189–9.

To be powered, an MPD must support a system type compatible with the MPSE it is attached to (e.g., same voltage).

5.6 Clause 189 PICs

5.6.1 189.8.3 Major capabilities/options

Modify 189.8.3 Major capabilities/options to be as follows:

Item	Feature	Sub clause	Value/Comment	Status	Support
*MPSE	Implements MPSE behavior		Provides power to the mixing segment (Type 0/Type 1)	O/1	Yes[] No[]
*MPD	Implements MPD behavior		Sources power from the mixing segment (Type 0/Type 1)	O/1	Yes[] No[]
*INS-MIX	Installation / mixing segment		Items marked with *INS-MIX include installation practices and cabling specifications for mixing segments and are not applicable to a PHY manufacturer	O	Yes[] No[]
*EXT-TYPE	Supports type(s) other than Type 0/Type 1		See Table 189-1 for full list of types	O	Yes[] No[]
*NO-DTE	MPI without a DTE	188.1.2	MPI not associated with a DTE.	O	Yes[] No[]
*ONE-DTE	Single MPI per DTE	188.1.2	DTE is associated with a single MPI DTE.	O	Yes[] No[]
*MULT-MPI	Multiple MPIs per DTE	188.1.2	DTE is associated with multiple DTEs.	O	Yes[] No[]

5.6.2 New major capabilities/options

Add the following after “189.8.4 PICS proforma tables for Multidrop Power over Ethernet (MPoE)” and before “189.8.4.1 Power and mixing segment requirements”.

189.8.4.0a MPI Extended Types

Item	Feature	Sub clause	Value/Comment	Status	Support
MEXT***n***	AC	189.3	AC MPI	EXT-TYPE:O.1	Yes[] No[]
MEXT***n***	DC	189.3	DC MPI	EXT-TYPE:O.1	Yes[] No[]
MEXT***n***	FMP	189.3	FMP MPI	EXT-TYPE:O.1	Yes[] No[]

189.8.4.1a Multiple MPIs per DTE

Item	Feature	Sub clause	Value/Comment	Status	Support
MMP***n***	Single MPI category	188.1.2	MPIs associated with a specific DTE must be either all MPSEs or all MPDs	MULT-MPI:M	Yes[] No[]

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