

Extending Power via MDI for IEEE 802.3BT, BASELINE

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v4.v6

Purpose

To extend the existing PoE TLV to encompass IEEE 802.3BT additions.

Colored text shows what was added or changed. Colored lines also show changes. Line numbers that are crossed out shall be ignored. Section and table numbers using a variable x or x1 are to be assigned when a required values becomes known. Red text on this slides with blue text shows changes since v2.v6 of this presentation.

33.6.x Changes

33.6.2 Data Link Layer classification timing requirements

A Type 2, 3, and 4 PSEs shall send an LLDPDU containing a Power via MDI TLV within 10 seconds of Data Link Layer classification being enabled in the PSE as indicated by the variable `pse_dll_enabled` (33.2.4.4, 33.6.3.3).

A Type 1 PSE that implements Data Link Layer classification shall send an LLDPDU containing a Power via MDI TLV when the PSE Data Link Layer classification engine is ready as indicated by the variable `pse_dll_ready` (33.6.3.3).

All Type 1 PDs that implement Data Link Layer classification and Type 2, 3, and 4 PDs shall set the state variable `pd_dll_ready` within 5 minutes of Data Link Layer classification being enabled in a PD as indicated by the variable `pd_dll_enabled` (33.3.3.3, 33.6.3.3).

33.6.3.2 Constants

PD_DLLMAX_VALUE

This value is derived from `pd_max_power` variable (33.3.3.3) described as follows:

`pd_max_power` PD_DLLMAX_VALUE

| | |
|---|-----|
| 0 | 130 |
| 1 | 39 |
| 2 | 65 |
| 3 | 130 |
| 4 | 255 |
| 5 | TBD |
| 6 | TBD |
| 7 | TBD |
| 8 | TBD |

33.6.x Changes

PD_INITIAL_VALUE

This value is derived as follows from the `pd_max_power` (33.3.3.3) variable used in the PD state diagram (Figure 33–16):

`pd_max_power` `PD_INITIAL_VALUE`

| | |
|---|-------|
| 0 | ≤ 130 |
| 1 | ≤ 39 |
| 2 | ≤ 65 |
| 3 | ≤ 130 |
| 4 | ≤ 255 |
| 5 | ≤ TBD |
| 6 | ≤ TBD |
| 7 | ≤ TBD |
| 8 | ≤ TBD |

PSE_INITIAL_VALUE

This value is derived as follows from `parameter_type` and the `mr_pd_class_detected` (33.2.4.6) variable used in the PSE state diagram (Figure 33–9):

`parameter_type` `mr_pd_class_detected` `PSE_INITIAL_VALUE`

| | | |
|---|---|-----|
| 1 | 0 | 130 |
| 1 | 1 | 39 |
| 1 | 2 | 65 |
| 1 | 3 | 130 |
| 1 | 4 | 130 |
| 2 | 4 | 255 |
| 3 | 5 | TBD |
| 3 | 6 | TBD |
| 4 | 7 | TBD |
| 4 | 8 | TBD |

33.6.x Changes

33.6.3.3 Variables

The PSE power control state diagram (Figure 33–2) and PD power control state diagram (Figure 33–3) use the following variables:

MirroredPDRequestedPowerValue

The copy of PDRequestedPowerValue that the PSE receives from the remote system. This variable is mapped from the aLldpXdot3RemPDRequestedPowerValue attribute (30.12.3.1.17). Actual power numbers are represented using an integer value that is encoded according to Equation (79–1), where X is the decimal value of MirroredPDRequestedPowerValue.

Values: 0 through ~~255~~999

All 33.6.3.3 PowerValues variables that were 255 are changed to 999. These are, MirroredPDRequestPowerValue, MirroredPSEAllocatedPowerValue, PDRequestedPowerValueEcho, PSEAllocatedPowerValue, and PSEAllocatedPowerValueEcho.

33.6.x Changes

parameter_type

A control variable output by the PSE state diagram (Figure 33–9) used by a Type 2, Type 3, or Type 4 PSE to choose

operation with Type 1, ~~or~~ Type 2, Type 3, or Type 4 PSE output PI electrical requirement parameter values defined in

Table 33–11.

Values: 1: Type 1 PSE parameter values (default).

2: Type 2 PSE parameter values.

3: Type 3 PSE parameter values.

4: Type 4 PSE parameter values.

pd_dll_power_type

A control variable that indicates the type of PD that is connected to the PSE as advertised through Data Link Layer classification.

Values: 1: PD is a Type 1 PD (default).

2: PD is a Type 2 PD.

~~223:~~ PD is a Type 3 PD.

4: PD is a Type 4 PD.

[Note that the crossed out 22 is a line reference that shall ignored.]

33.6.x Changes

pse_dll_power_type

A control variable that indicates the type of the PSE by which the PD is being powered.

Values: 1:PSE is a Type 1 PSE (default).

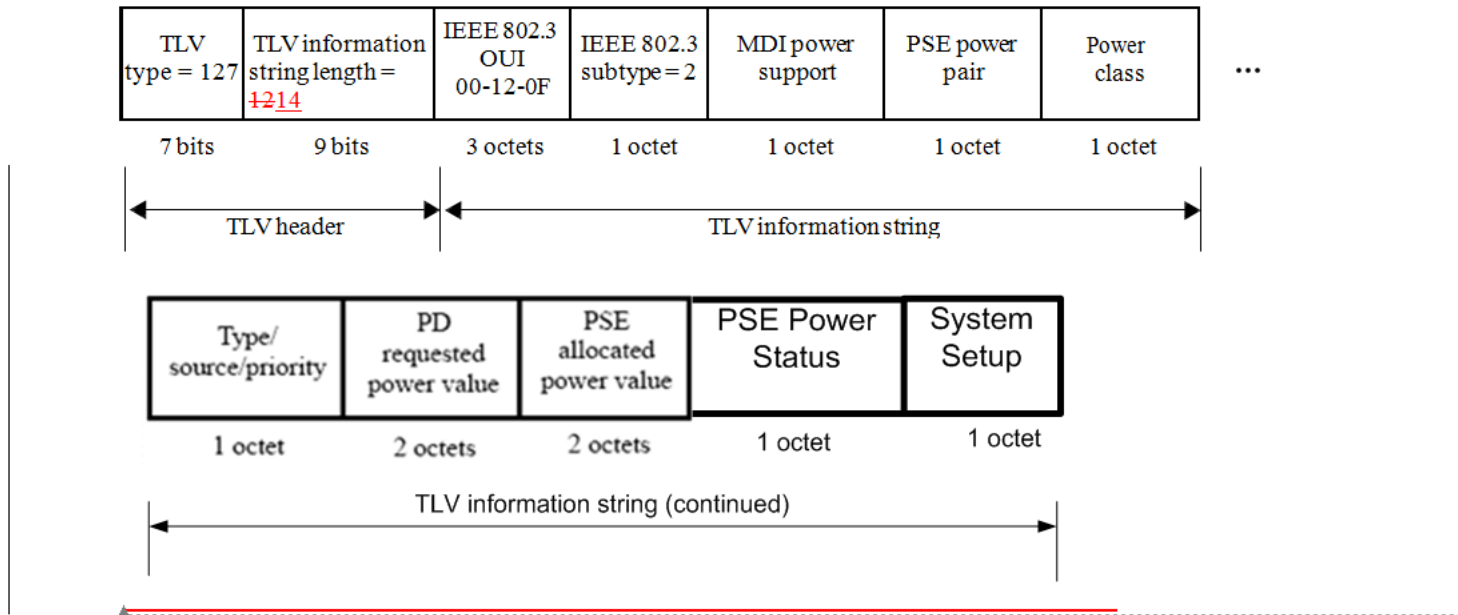
2: PSE is a Type 2 PSE.

3: PSE is a Type 3 PSE.

4: PSE is a Type 4 PSE.

[State diagrams do not need to be changed.]

79.3.2 Power Via MDI TLV



[TLV length changed from 12 to 14 and two more octets were added.]

79.3.x Power Via MDI TLV

Table 79–5—PD requested power value field

| Bit | Function | Value/meaning |
|------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| 15:0 | PD requested power value | Power = $0.1 \times (\text{decimal value of bits})$ Watts. Valid values for these bits are decimal 1 through 999255 . |

Table 79–6—PSE allocated power value field

| Bit | Function | Value/meaning |
|------|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| 15:0 | PSE allocated power value | Power = $0.1 \times (\text{decimal value of bits})$ Watts. Valid values for these bits are decimal 1 through 999255 . |

79.3.x Power Via MDI TLV

79.3.2.6.1 PSE Power Status

Table 79-x—PSE Power Status value field

| <u>Bit</u> | <u>Function</u> | <u>Value/meaning</u> |
|------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>7</u> | <u>Reserved</u> | <u>Transmit as zero. Ignore on receive.</u> |
| <u>6:5</u> | <u>PSE power pair</u> | <u>1 1 Both Alternatives</u> <u>1 0 Alternative B</u> <u>0 1 Alternative A</u> <u>0 0 Reserved/Ignore</u> |
| <u>4</u> | <u>Reserved</u> | <u>Transmit as zero. Ignore on receive.</u> |
| <u>3:0</u> | <u>PSE power class</u> | <u>1 0 0 10 to 1 1 1 1 Reserved. Ignore on receive.</u> <u>1 0 0 0 class 8</u> <u>0 1 1 1 class 7</u> <u>0 1 1 0 class 6</u> <u>0 1 0 1 class 5</u> <u>0 1 0 0 class 4</u> <u>0 0 1 1 class 3</u> <u>0 0 1 0 class 2</u> <u>0 0 0 1 class 1</u> <u>0 0 0 0 class 0</u> |

79.3.2.6.1.1 PSE power pair

The PSE power pair field shall contain an integer value for PSE power pairs defined by 33.2.

79.3.2.6.1.2 PSE power class

The power class field shall contain an integer value for PSE classes defined by 33.2.6.

79.3.x Power Via MDI TLV

79.3.2.6.2 System Setup

Table 79-x-1—System Setup value field

| <u>Bit</u> | <u>Function</u> | <u>Value/meaning</u> |
|------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>7:4</u> | <u>Power type</u> | <u>1 0 1 0 to 1 1 1 1 Reserved. Ignore on receive.</u> <u>1 0 0 1 Type 4 PD</u> <u>1 0 0 0 Type 4 PSE</u> <u>0 1 1 1 Type 3 PD</u> <u>0 1 1 0 Type 3 PSE</u> <u>0 1 0 1 Type 2 PD</u> <u>0 1 0 0 Type 2 PSE</u> <u>0 0 1 1 Type 1 PD</u> <u>0 0 1 0 Type 1 PSE</u> |
| <u>3</u> | <u>PD 4P-ID</u> | <u>1 PD supports powering of both Modes</u> <u>0 PD does not support powering of both</u> <u>Modes</u> |
| <u>2</u> | <u>PD PI</u> | <u>1 Dual loadsignature Pclass PD is the sum of</u> <u>the indicated PD Mode power class values.</u> <u>0 Single loadsignature Pclass PD is indicated</u> <u>by either PD Mode power class values.</u> |
| <u>1</u> | <u>Reserved</u> | <u>Transmit as zero. Ignore on receive.</u> |
| <u>0</u> | <u>Reserved</u> | <u>Transmit as zero. Ignore on receive.</u> |

79.3.x Power Via MDI TLV

79.3.6.2.1 Power type

This field shall be set according to Table 79-x1.

79.3.6.2.2 PD 4P-ID

This field shall be set according to Table 79-x1 when the power type is PD. This field shall be set to 0 when the power type is PSE.

79.3.6.2.3 PD PI

This field shall be set according to Table 79-x1 when the power type is PD. This field shall be set to 0 when the power type is PSE.

Next Step

Determine if additional values should be added for IEEE 802.3bt and who will provide them.

Need to update,

Create field and state diagram for **Unused channel loss**

PSE registers 33.5.1

Management 30.9, 30.12

PICs

Motion

Move to accept text from slide 3 to 7 of Schindler_3bt_02_03_15r2.pdf as IEEE802.3bt text within Section 33.6 and slide 8 to 12 of the same presentation as IEEE802.3bt text within Section 79.3.2.

Mover: Fred Schindler,

Seconder: Koussalya Balasubramanian

Y:

N:

A:

Seen Simply

Turning complexity into understanding.