IEEE 802.3at Comment Resolution

#182

More Details

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Comment Data Base

Cl 33 SC 33.7.2 P89 L26 # 182

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Comment Type TR *Comment Status* A *Convention & L2 New Feature*

I believe we need to consider changing the names of some fields, and adding some to provide clarity and functionality that is essential to the spec.

SuggestedRemedy

These changes apply here, and in clause 30 - do global search, change

1) Change Requested type/source/priority to "PSE Requested type/source/priority"
2) Change Actual type/source/priority to "PD Actual type/source/priority"
3) Add "PD Minimum type/source/priority" which declares the minimum power the PD can operate with so that a PSE may reduce its power to the minimum without causing it to shut down. Add appropriate sub-clause for definition which includes the value FF = unknown.
4) Add "PD Current type/source/priority" which declares the current power the PD is operating with with so that a PSE may compute loss through the cable by subtracting this value from its own current power distributed. Add appropriate sub-clause for definition which includes the value FF = unknown. The power variable will not be required as a measurement, and may not be extremely accurate, but rather may be defined by the state of the PD and a factory setting for that state.

Response *Response Status* W

ACCEPT IN PRINCIPLE.

Items 1, 2, and 3 refer to adhoc.

Item 4 is clearly a new feature request that doesn't include enough information for the editor to write text to implement.

straw poll: the group would encourage the commentor to develop complete text for suggested remedy to implement this feature.

Y: 0, N: 12, A: 10

Problem Statement

Given:

- LLDP is going to allow a PD to accurately define its maximum power requirement
- This accuracy is important because it allows a PSE to retain allocation of power that is not used by the subject PD, and provide to other devices
- The more accurate a PSE can determine PD requirements, the more power it can retain for other devices
- The more accurate a PSE can determine cable loss, the more power it can retain for other devices

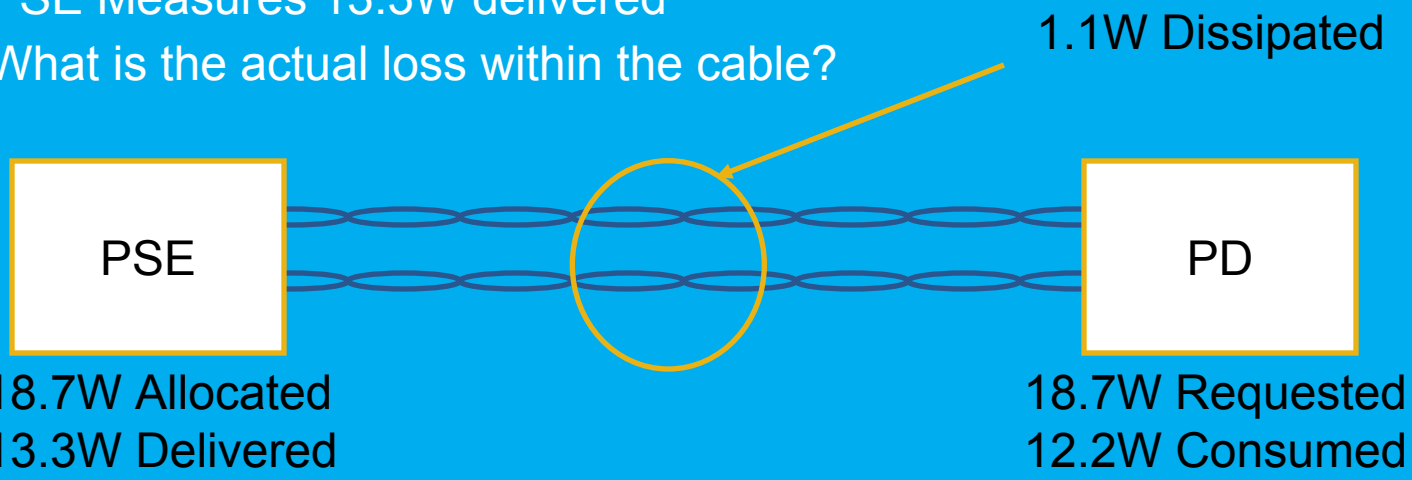
Problem:

- The PSE must not only allocate power for the PD, but for cabling losses
- Computing cable loss is not possible if the PSE does not know what the PD is actually consuming

Example

Example : (current text)

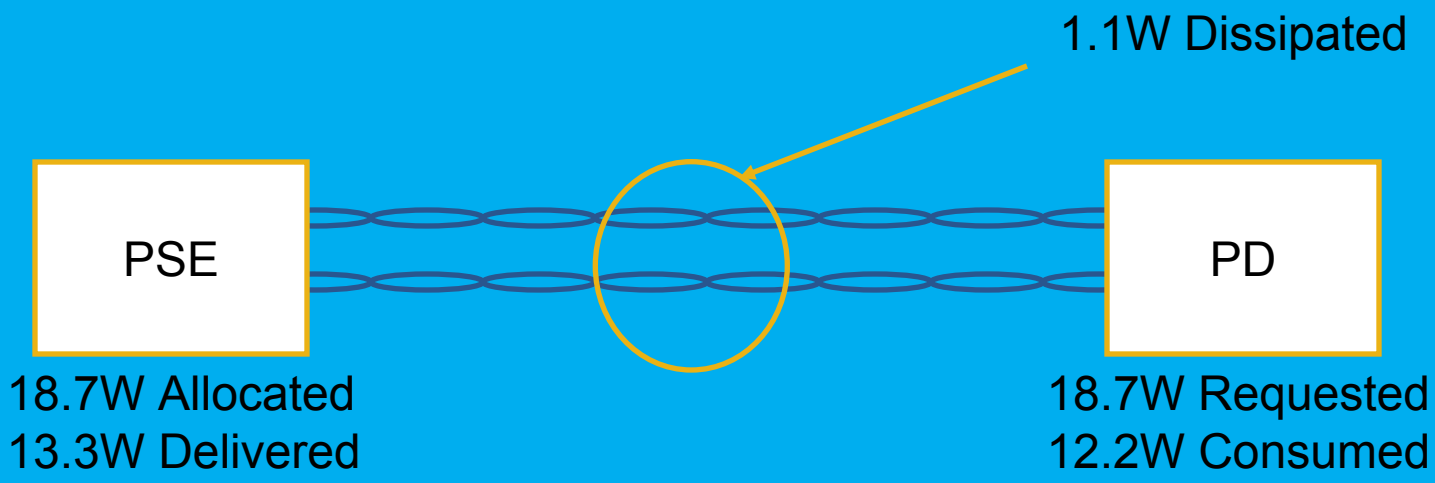
- PD Claims 18.7W required
- PSE Allocates 18.7W + 6W (PCable_max) ➔ 24.7W
- PSE Measures 13.3W delivered
- What is the actual loss within the cable?



- The system has no visibility to loss within the cable plant and thus must allocate the maximum possible loss (6W)
- This example shows ~4.9W of wasted power

Example 2: (proposed addition)

- PD Claims 18.7W required
- PD Claims 12.5W consumed (inaccurate, but helpful)
- PSE Measures 13.3W delivered & computes cable resistance
- PSE Allocates 18.7W + 2.5W (extrapolated loss) ➔ 21.2W



- The PSE has measured the power delivered, subtracted PD actual, and computed cable resistance which allows it to extrapolate loss
- This example shows ability to reduce allocation by 3.5W
- For lower loss cables, computed loss would allow lower allocation values.

Conclusion

Its important to standardize means for estimating cable loss:

- PSE allocations are impacted leading to inefficient utilization of power supply resources for lower R cables
- Proprietary means are available, but less accurate and potentially subject to restrictions in use
  - Example; One could use TDR to estimate length, calculate R
  - Example; One could use DFE coefficients to estimate length, calculate R
  - Example; One could use proprietary protocol to exchange Current PD Power Value

Using LLDP "PD Current Source/Type/Priority" and "Current PD Power Value" fields in TLV provide a standard solution

Proposed Changes

High Level Description of Changes:

- Add “PD Current Source/Type/Priority” and “Current PD Power Value” fields
  - Define accuracy that a PD must provide with loose tolerances
    - Even loose tolerances will yield savings
    - May be “by design” values PD holds in memory and based upon its state
      - » EX: 2 radios operating ➔ 12.2W (+- 500mW)
      - » EX: 4 radios operating ➔ 16.8W (+- 500mW)
    - May be “measured” value PD derives from PD controller IC or other means
  - Allow “Unknown” value to ease cost for devices that do not want to implement this capability (per item #4 of my comment)

- Add “PD Minimum Source/Type/Priority” and “Minimum PD Power Value” fields
  - Allow PSEs to reduce power to devices without shutting their power off completely
  - Allow “Unknown” value to ease cost for devices that do not want to implement this capability (per item #3 of my comment)

Proposed Changes

33.7.2 DTE Power via MDI classification TLV

The DTE Power via MDI classification TLV is used to perform Data Link Layer classification. Figure 33–26 shows the format of this TLV.

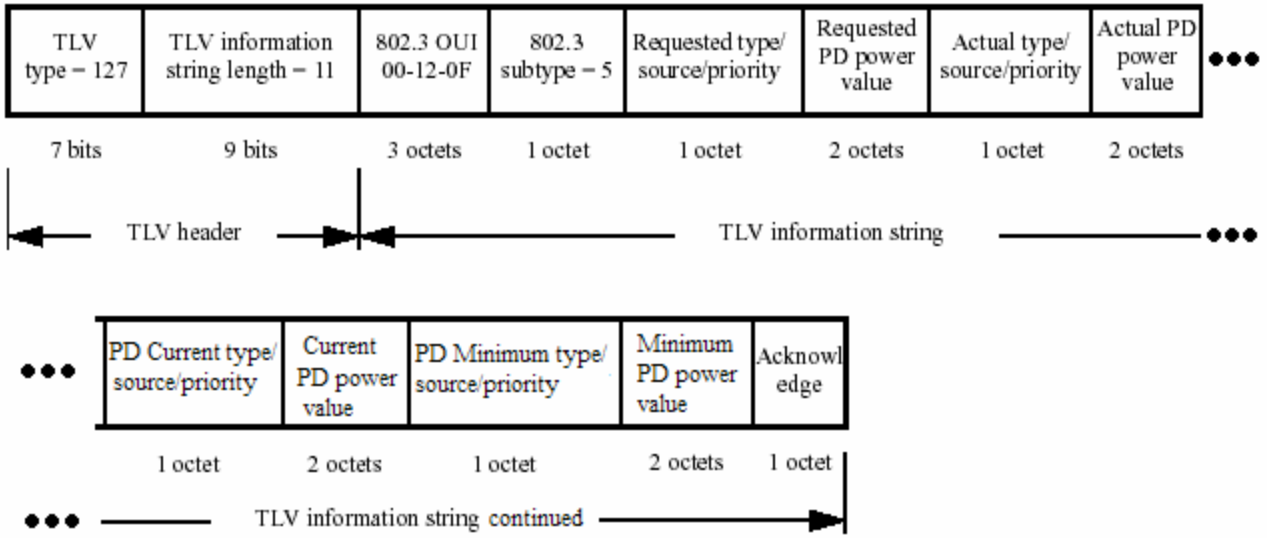


Figure 33–26—DTE Power via MDI classification TLV format

Change to Figure 33-26

Changes to Text: (Renumber & Insert the following)

33.7.2.6 PD current power type/source/priority

The PD current power type/source/priority field shall contain a bit-map of the current power type, source, and priority defined in Table 33–22.

33.7.2.7 Current PD power value

The Current PD power value field shall contain the Current PD power value defined in Table 33–23. The Current PD power value is the average input power (see 33.3.7.2) the PD is currently drawing. This value may be measured, or it may be based upon the state of operation of the PD. If measured or based upon the state of operation, the accuracy of the value provided shall be within 15% of the average power drawn over a one second period prior to transmission of the TLV.

33.7.2.8 PD minimum power type/source/priority

The minimum power type/source/priority field shall contain a bit-map of the minimum power type, source, and priority defined in Table 33–22.

33.7.2.9 Minimum PD power value

The Minimum PD power value field shall contain the Minimum PD power value defined in Table 33–23. The Minimum PD power value is the average input power (see 33.3.7.2) input with which the PD can maintain Data Link Layer communication and any minimal functionality it intends to provide to the user.

33.7.2.10 Acknowledge

The Acknowledge field shall contain a value to indicate the response to the last change in requested power value. The encoding of this field is defined in Table 33–24.