

Type Definitions

IEEE802.3bt – 4PPoE Task Force
March 2015 Plenary

Koussalya Balasubramanian, Cisco Systems Inc.,
Lennart Yseboodt, Philips

Supporters

Christian Beia – STMicro

Gaoling Zhou – Maxim

Matthias Wendt – Philips

Fred Schindler – Seen Simply

Sesha Panguluri – Broadcom

Jean Picard – Texas Instruments

David Abramson – Texas Instruments

John Wilson – Silabs

Yair Darshan – Microsemi

Miklos Lukacs – Silabs

Jon Lewis – Dell

John D'Ambrosia – Dell

Rick Frosch - Phihong

James Liu – Fairchild Semiconductor

Ismail Jorio – Broadcom

Zhuangyan - Huawei

Huarui - Huawei

Faisal Ahmad – Akros Silicon



Motivation

- To suggest a “Type” definition for IEEE802.3bt



Type 1,2 Definitions

- Type 1 and 2 exists today – so we need to keep 1,2 definitions clear and intact
- Any impact on Type 1 and 2 from IEEE802.3bt must be clearly defined.

PSE Types	Pmin	Pmax	4P capable	MPS	L1	LLDP
Type 1	0	15.4	2P only	Old ¹	Optional	Optional
Type 2	0	30	2P only	Old ¹	Optional ²	Optional ²

PD Types	Pmin	Pmax	4P capable	MPS	L1	LLDP
Type 1	0	13	Maybe	Old ¹	optional	optional
Type 2	0	25.5	Maybe	Old ¹	Mandatory	Mandatory

¹- Long MPS pulse and 10mA I_{hold} over 2-Pair

²- A Type 2 PSE must support L1, LLDP, or both

Type 3, 4 Definitions

- Lot of new features are being defined
- It is better to package these together as new types to avoid confusions in the field

PSE Types	Pmin	Pmax	4P capable	MPS	L1	LLDP	Auto Class
Type 3	0	15.4	2P or 4P	New – Low Stby power Support	Mandatory	Optional	Optional
Type 3	0	30	2P or 4P	New – Low Stby power support	Mandatory	Optional	Optional
Type 3	0	60	4P	New – Low Stby power support	Mandatory	Optional	Optional
Type 4	0	TBD	4P	New – Low Stby power support	Mandatory	Optional	Optional

PD Types	Pmin	Pmax	4P capable	MPS	L1	LLDP	Auto Class
Type 3	0	13	4P	New/Old*	Mandatory	optional	Optional
Type 3	0	25.5	4P	New/Old*	Mandatory	Mandatory	Optional
Type 3	0	51	4P	New/Old*	Mandatory	Mandatory	Optional
Type 4	0	TBD	4P	New/Old*	Mandatory	Mandatory	Optional

* - Choice depends on attached PSE Type (Type 1/2 PSEs will be presented with old mps signature)

Why allow these?

A) Type 3 PSEs with 15.4W/30W only capacity

- Some PSEs would like to take advantage of new features like 4P(green), new mps etc., without having to strictly provide 60W
- This helps in driving flexible, low cost solutions in the market

B) Type 3 PSEs with 2P only operation

- Though 4P is green and efficient, there might be applications that can't utilize the efficiency gain
example, short reach cable application
- Allowing for 2P only operation in certain use cases is beneficial for flexible, low cost solutions

Why can't these be called Type 1/2

- Type 3 PSE that only support 2P mode have sufficient distinguishing characteristics to call them Type 3.
- Adding “Type 3 features” to Type 2 will complicate the text significantly



Base Line Text

- Add a new section for PSE Type definitions before section 33.2.1

33.2.TBD PSE type Descriptions

PSEs can be categorized as either Type 1, Type 2, Type 3, or Type 4 PSEs. Table 33-TBD shows the permissible PSE types along with supported parameters.

Table 33-TBD Permissible PSE Types

PSE Type	Number of pairs used to deliver power	Max power supported	Low MPS Support ¹	Physical Layer Classification	Data Link Layer Classification	Optional Features
Type 1	2-pair only	15.4W	No	Optional 1-Event	Optional	
Type 2	2-pair only	30W	No	1-Event or Multiple-Event	Optional ³	
Type 3	2-pair or 4-pair	15.4W	Yes	1-Event ⁴	Optional	Auto class
Type 3	2-pair or 4-pair	30W	Yes	Multiple-Event	Optional	Auto class
Type 3	4-pair only	60W	Yes	Multiple-Event	Optional	Auto class
Type 4	4-pair only ²	TBD	Yes	Multiple-Event	Optional	Auto Class

¹ – Refer to Section 33.3.8 for details

² - Can operate as 2-pair under fault conditions

³ – Mandatory if only 1-event physical layer classification is implemented. Refer to Table 33-8 for valid permutations

⁴ – 1-Event class of Type 3 is different from that of Type 1. Please refer to Table 33-10 and section 33.6.2 for details

Base Line Text contd

- Add the following text and table to Section 33.2.2

“Table 33-TBD1 shows the permissible PD types.”

Table 33-TBD1 Permissible PD Types

PD Type	4-pair Capable	Max power Drawn	Maintain Power Signature ¹	Physical Layer Classification	Data Link Layer Classification	Optional Features
Type 1	Allowed ²	13W	High	1-Event	May be	
Type 2	Allowed ²	25.5W	High	Multiple-event	Yes	
Type 3	Yes	13W	Low and High ³	1-Event	Yes	Auto class
Type 3	Yes	25.5W	Low and High ³	Multiple-Event	Yes	Auto class
Type 3	Yes	51W	Low and High ³	Multiple-Event	Yes	Auto class
Type 4	Yes	TBD	Low and High ³	Multiple-Event	Yes	Auto Class

¹ – Refer to Section 33.3.8 for details. “Low” means lower standby MPS power, “high” means higher standby MPS power

² - Needs 4PID evaluation before enabling 4-pair. See Section TBD for details

³ – Need to support High MPS when connected to Type 1 and Type 2 PSEs

Summary

- Suggest IEEE802.3bt to adopt Type 3,4 PSE/PD definitions outlined in this presentation

THANK YOU