

# Type 4: Class range v103

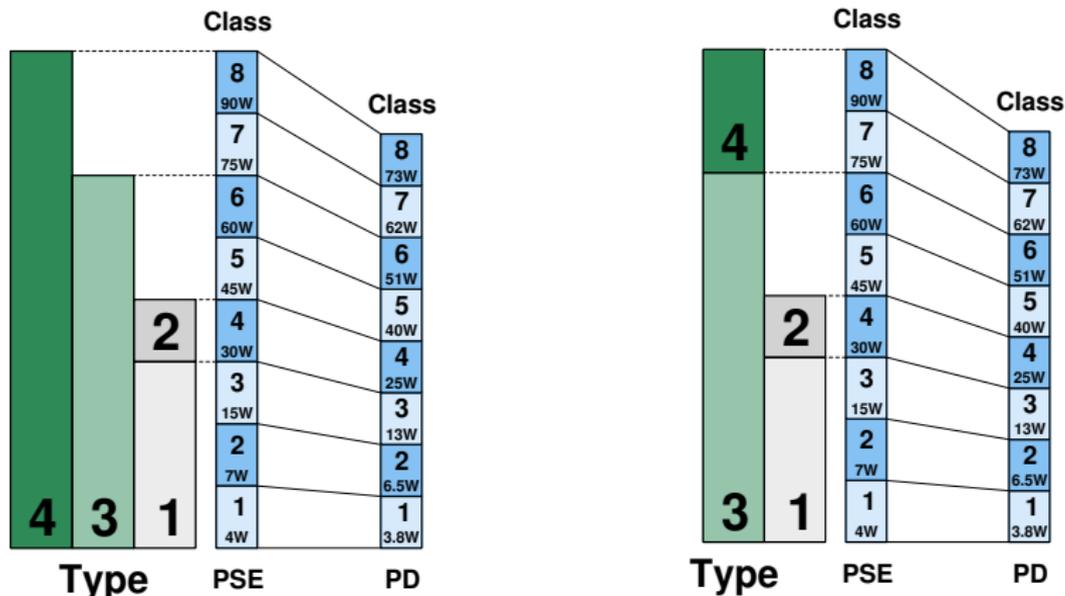
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Philips Research

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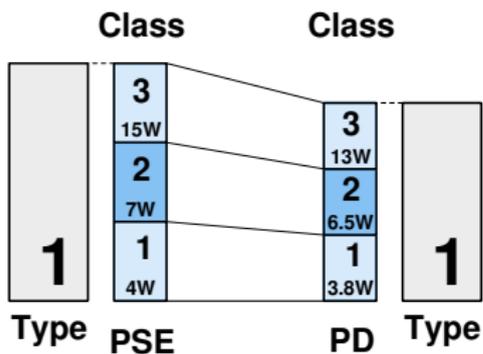
# Overview

This presentation will discuss the interpretation of Type 4 for 802.3bt.

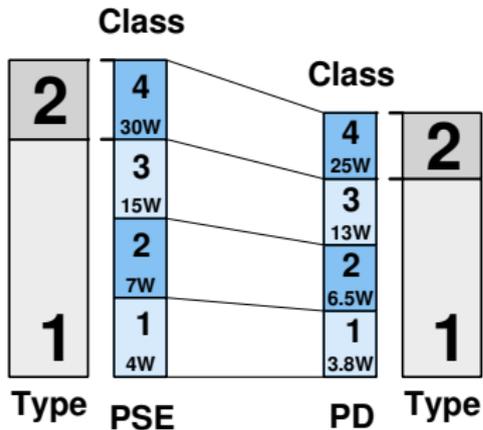


Should Type 4 cover the class range 1-8 (left) or be restricted to 7-8 (right) ?

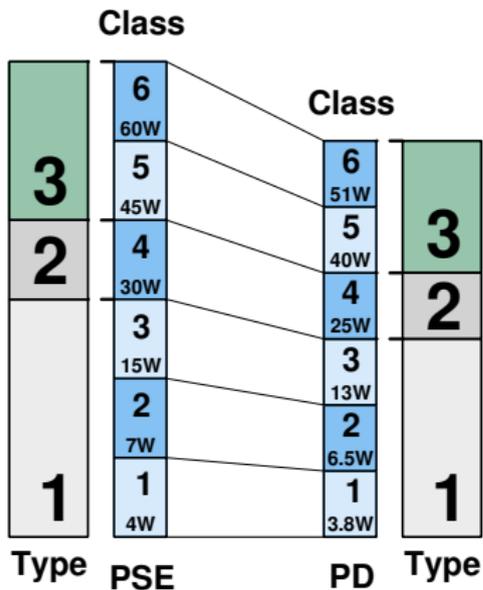
In 802.3af there was no concept of Type and only Class 0 to 3 existed.



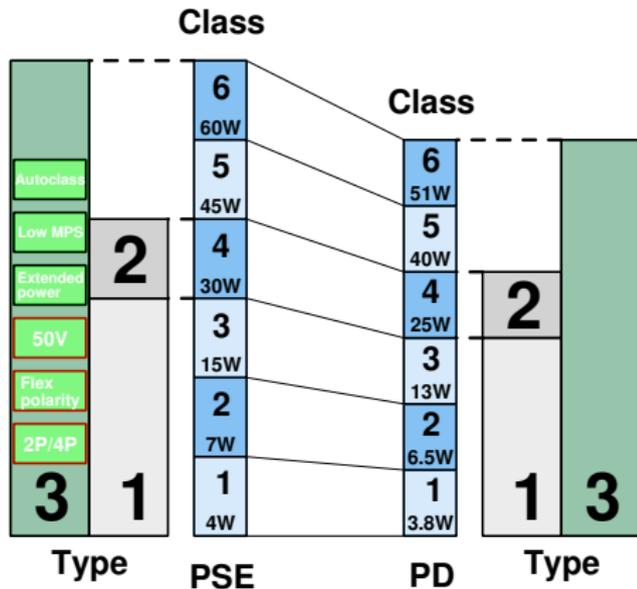
802.3at added the capability to deliver 25.5W. That was the only feature. The concept of Types is introduced: Type 2 == Class 4.



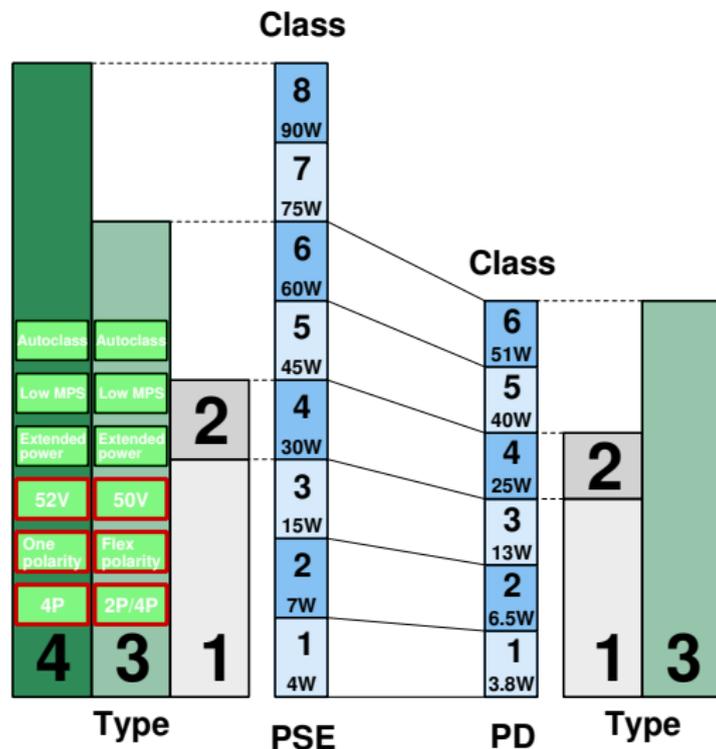
We could have added Type 3 'on top of' Type 2...  
But we added quite a few new capabilities...



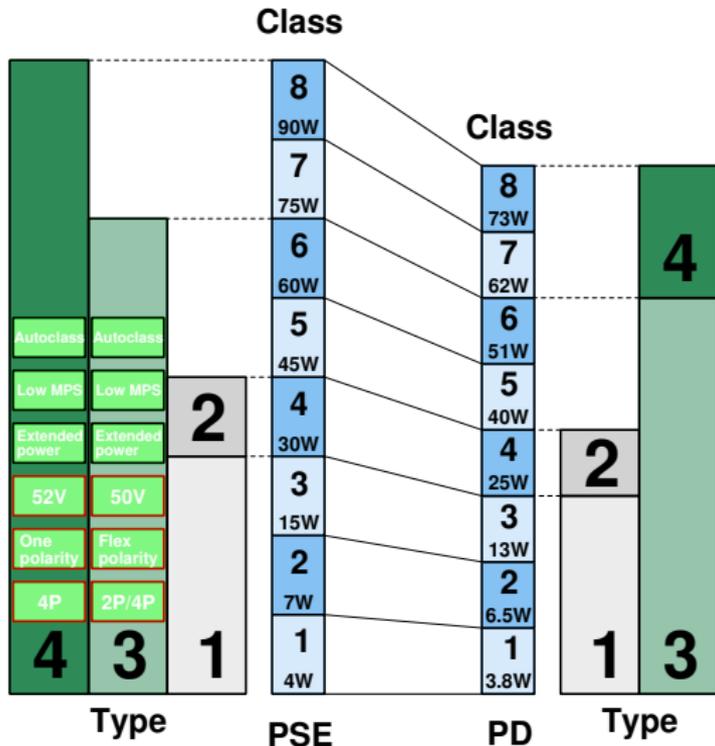
... and to be able to use them at any power level, Type 3 covers Classes 0-6.



Type 4 is no different. It has unique properties not in Type 3. It makes sense to allow Type 4 PSEs to exist for Class 0-8.



This does **not** apply to PDs. Type 4 PDs have nothing more to offer than Type 3 PDs and should only exist for Class 7 and 8.



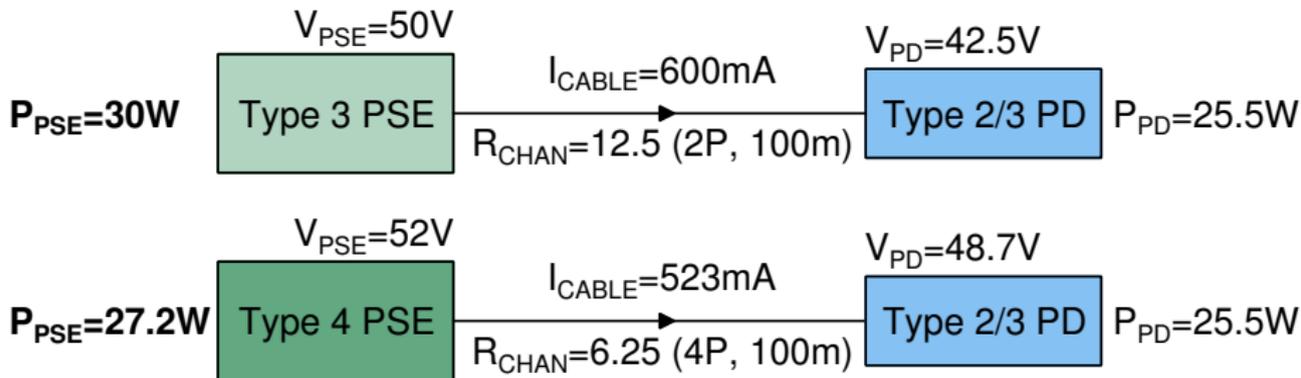
## Capability overview

Capability	Type 1+2	Type 3	Type 4
Low MPS	✗	✓	✓
Autoclass	✗	✓	✓
Extended Power	✗	✓	✓
4P capable	✗	Optional <sup>1</sup>	Mandatory
Polarity		Flexible	Fixed
V <sub>PSE</sub> (min)	44V/50V	50V	52V

Type 4 PSEs have several properties not shared with Type 3 PSEs. None of these properties require a PD to distinguish a Type 3 from a Type 4 PSE, the benefits/differences are 'passive' and do not put any additional requirement on mutual ID.

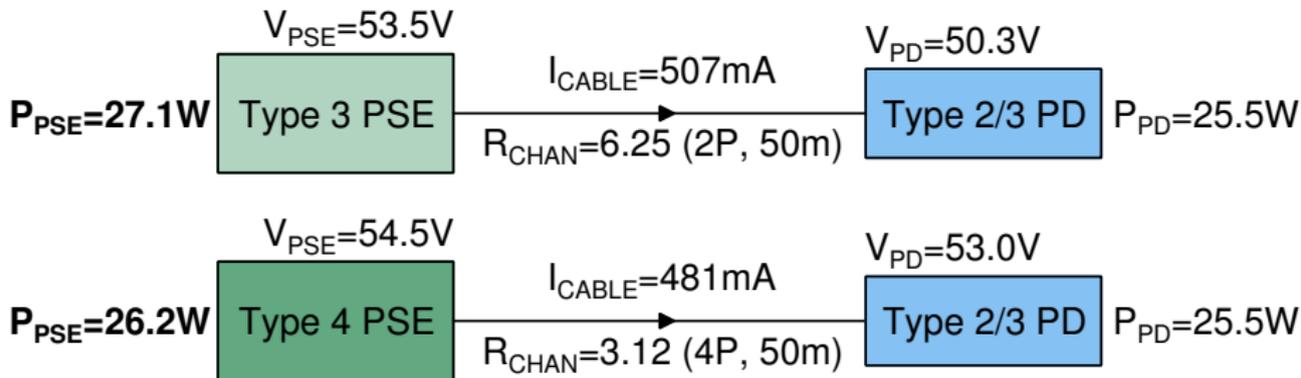
<sup>1</sup>Optional for Class 0-4, mandatory for Class 5-6.

## Example 1 (corner case)



It takes a Type 3 PSE over 10% more power to provide 25.5W to a PD than a Type 4 PSE. This is a corner case with maximum channel resistance and lowest PSE voltage.

## Example 2 (typical)

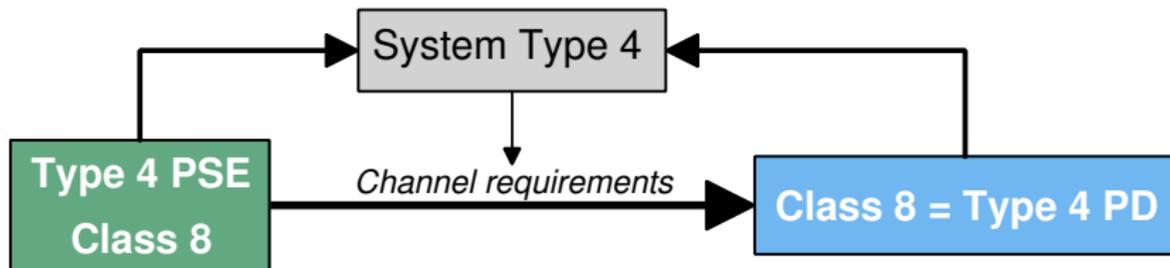


In this typical case with half the maximum channel resistance and  $V_{PSE}$  in the middle of the allowed output range, it still takes the Type 3 PSE 3.5% more power than the Type 4 PSE.

# PSE, PD and System Type

## System Type definition

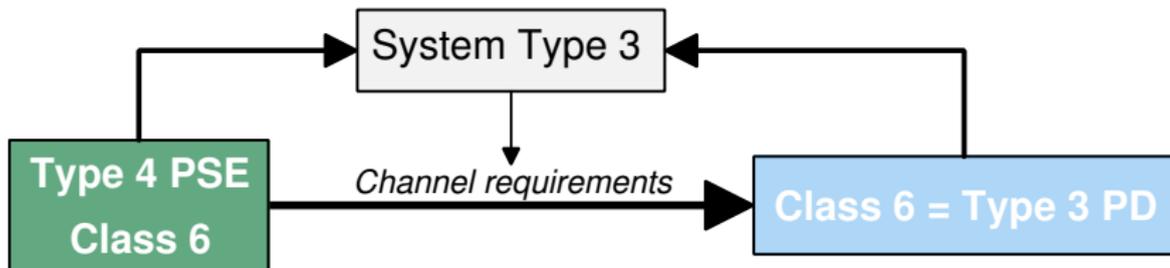
The System Type is the lowest of PSE and PD Type. The system Type defines the DC channel specifications per Table 33-1.



# PSE, PD and System Type

## System Type definition

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# Baseline proposal

Table 33-3—Allowed PSE variable definition permutations

PSE Type	Variables	
	class_num_events	pse_dll_capable
Type 4	5	<u>FALSE</u>
		TRUE
Type 3	4	<u>FALSE</u>
		TRUE
	2	<u>FALSE</u>
		TRUE
	1	<u>FALSE</u>
		TRUE
Type 2	2	FALSE
		TRUE
	1	TRUE
Type 1	1	FALSE
		TRUE
		FALSE



# Conclusion

- ▶ Type 4 **PSEs** exist for Class 0 through 8
- ▶ Type 4 **PDs** only exist for Class 7 and 8
- ▶ This is mostly a naming convention with no technical impact
- ▶ It provides a convenient way to refer to a set of requirements
- ▶ The system type and cable requirements track the actual maximum current of any PSE/PD system
- ▶ It does not introduce an interoperability issue as Type 3 requirements are a subset of Type 4 requirements
  
- ▶ Provides more choice for customers

