

# 802.3 SMF PMD Nomenclature Proposal with Application to 400GBASE-LR4

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P802.3cu 100 Gb/s and 400 Gb/s over SMF at  
100 Gb/s per Wavelength Task Force

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# Introduction

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- 802.3cu adopted 6km 400GBASE-LR4 PMD baseline
- 802.3cn considered a 30km 400GBASE-ER4 PMD spec.
- Creating a new letter for every new reach is unmanageable
- Single letter has never meant a single reach in any standard  
[http://www.ieee802.org/3/cu/public/Sept19/cole\\_3cu\\_01b\\_0919.pdf#page=6](http://www.ieee802.org/3/cu/public/Sept19/cole_3cu_01b_0919.pdf#page=6)
- Industry uses ad-hoc suffixes for non-standard reaches:
  - lite
  - extended
  - +
- There is a need for a nomenclature convention to differentiate between reaches within a PMD type
- Fortunately, this problem is solved in ITU-T and MSAs

# ITU-T and MSA Reach Suffix Nomenclature

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- ITU-T G.693 application code:
  - VSR600: 0.6km Serial
  - VSR1000: 1.0km Serial
  - VSR2000: 2.0km Serial (basis for 40GBASE-FR)
  - Separately, there are 4, 6, 12, 16dB loss categories
- 4WDM MSA 100G specifications:
  - 4WDM-10: 10km CWDM4  
(vs. CWDM4 MSA 2km default)
  - 4WDM-20: 20km LWDM4
  - 4WDM-40: 40km LWDM4
  - Logo:



# Nomenclature Proposal

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Description	DR	FR	LR	ER	ZR
unit	m	km	km	km	km
reach (max) range	100 - 2000	1 - 3	4 - 20	20 - 40	any
default reach	500	2	10	40	80
default name	DRn	FRn	LRn	ERn	ZR
optional alt. default name	DRn-500	FRn-2	LRn-10	ERn-40	ZR-80
non-default ex.1 reach	300	1	6	30	120
ex.1 name	DRn-300	FRn-1	LRn-6	ERn-30	ZR-120
non-default ex.2 reach	1500	1.5	15	25	40
ex.2 name	DRn-1500	FRn-1.5	LRn-15	ERn-25	ZR-40

# Nomenclature Proposal Examples

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- 802.3cu:
  - 400GBASE-LR4-6: 6km CWDM4  
[http://www.ieee802.org/3/cu/public/Sept19/cole\\_3cu\\_01b\\_0919.pdf#page=5](http://www.ieee802.org/3/cu/public/Sept19/cole_3cu_01b_0919.pdf#page=5)
  - 400GBASE-LR4-15: 15km LWDM4 (if feasible)
- 802.3bs follow-on possible future PMD:
  - 400GBASE-LR8-20: 20km LWDM8  
[http://www.ieee802.org/3/B10K/public/18\\_07/cole\\_b10k\\_01\\_0718.pdf](http://www.ieee802.org/3/B10K/public/18_07/cole_b10k_01_0718.pdf)
- 802.3cn follow-on possible future PMD:
  - 400GBASE-ER8-30: 30km LWDM8  
[http://www.ieee802.org/3/cn/public/tf\\_interim/19\\_0924/cole\\_3cn\\_01a\\_190924.pdf#page=14](http://www.ieee802.org/3/cn/public/tf_interim/19_0924/cole_3cn_01a_190924.pdf#page=14)  
[http://www.ieee802.org/3/cn/public/19\\_05/chang\\_3cn\\_02\\_0519.pdf#page=7](http://www.ieee802.org/3/cn/public/19_05/chang_3cn_02_0519.pdf#page=7)

# Complete Nomenclature Proposal Example

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- 400GBASE-PSM4.2 introduced in 802.3bs  
[http://www.ieee802.org/3/bs/public/14\\_05/cole\\_3bs\\_01a\\_0514.pdf#page=4](http://www.ieee802.org/3/bs/public/14_05/cole_3bs_01a_0514.pdf#page=4)
- 400GBASE-DR4 (PSM4) adopted in 802.3bs  
[http://www.ieee802.org/3/bs/public/14\\_05/cole\\_3bs\\_01a\\_0514.pdf#page=5](http://www.ieee802.org/3/bs/public/14_05/cole_3bs_01a_0514.pdf#page=5)
- 400GBASE-SR4.2: 1<sup>st</sup> no. of fibers.  $\lambda$ s suffix use (802.3cm)
- Possible future 802.3 TF may specify 800G PSM4 PMD(s)  
Ex. 2x 100G  $\lambda$ /fiber-pair (i.e. PSM4.2 as in 802.3bs)
  - 800GBASE-DR4.2: 500m default reach name
  - 800GBASE-DR4.2-300: 300m reduced reach name

## 802.3 Actions

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- Consistent with the Nomenclature Proposal, the following comment was submitted against P802.3cu D1.0:  
*Replace every instance of 400GBASE-LR4 throughout the document with 400GBASE-LR4-6*
- Also consistent with the Nomenclature Proposal, no change was submitted against the following P802.3 D1.0 names:
  - 100GBASE-FR1
  - 100GBASE-LR1
  - 400GBASE-FR4
- No other action is recommended now in 802.3 with respect to the Nomenclature Proposal. Existing or future TF(s) can consider the Proposal, based on their project needs.

# 802.3 SMF PMD Nomenclature Proposal

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Thank You