

Specifying ILT / RTS Functions (Update)

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Introduction

- Comments #278 – 290 address various aspects of APSU.
- Further review of APSU & Specification of ILT / RTS functions raises concerns for reader confusion
- Two presentations were given to Annex 178B Ad hoc
 - 14 Apr 2026 -
https://www.ieee802.org/3/dj/public/adhoc/178b/26_0414/dambrosia_178b_01a_260414.pdf
 - 22 Apr 2026 -
https://www.ieee802.org/3/dj/public/adhoc/178b/26_0422/dambrosia_178b_01_260422.pdf

Example 200GBASE Optical PHYs

Table 116–4—PHY type and clause correlation (200GBASE-R optical with 2 or 4 lanes)

PHY type	Clause ^a																								
	78	90	117	118	119	120	120B	120C	120D	120E	120F	120G	176	176C	176D	178B	167	121	122	138					
	EEE	Time Synchronization	RS	200GMII	200GMII Extender	200GBASE-R PCS	200GBASE-R BM-PMA	200GAUI-8 C2C	200GAUI-8 C2M	200GAUI-4 C2C	200GAUI-4 C2M	200GAUI-2 C2C	200GAUI-2 C2M	200GBASE-R SM-PMA	200GAUI-1 C2C	200GAUI-1 C2M	ILT/RTS	200GBASE-VR2	200GBASE-SR2	200GBASE-DR4 PMD	200GBASE-FR4 PMD	200GBASE-LR4 PMD	200GBASE-ER4 PMD	200GBASE-SR4 PMD	
200GBASE-VR2	O	O	M	O	O	M	M	O	O	O	O	O	O	O	O	O	O	M							
200GBASE-SR4	O	O	M	O	O	M	M	O	O	O	O	O	O	O	O	O	O								M
200GBASE-SR2	O	O	M	O	O	M	M	O	O	O	O	O	O	O	O	O	O	M							
200GBASE-DR4	O	O	M	O	O	M	M	O	O	O	O	O	O	O	O	O	O			M					
200GBASE-FR4	O	O	M	O	O	M	M	O	O	O	O	O	O	O	O	O	O				M				
200GBASE-LR4	O	O	M	O	O	M	M	O	O	O	O	O	O	O	O	O	O					M			
200GBASE-ER4	O	O	M	O	O	M	M	O	O	O	O	O	O	O	O	O	O						M		

^a O = Optional, M = Mandatory, C = Conditional.
^b Mandatory for 200GAUI-1 C2C and 200GAUI-1 C2M.

- Per Note b - ILT / RTS mandatory for 200GAUI-1C2C & 200GAUI-1 C2M
- It would also be mandatory for 200GMII Extenders based on 200GAUI-1 C2C

Table 116–4a—PHY type and clause correlation (200GBASE-R optical with 1 lane)

PHY type	Clause ^a																		
	90	117	118	119	120	120B	120C	120D	120E	120F	120G	176	176C	176D	177	178B	180	182	
	Time Synchronization	RS	200GMII	200GMII Extender	200GBASE-R PCS	200GBASE-R BM-PMA	200GAUI-8 C2C	200GAUI-8 C2M	200GAUI-4 C2C	200GAUI-4 C2M	200GAUI-2 C2C	200GAUI-2 C2M	200GBASE-R SM-PMA	200GAUI-1 C2C	200GAUI-1 C2M	200GBASE-R Inner FEC	ILT/RTS	200GBASE-DR1 PMD	200GBASE-DR1-2 PMD
200GBASE-DR1	O	M	O	O	M	C ^b	O	O	O	O	O	O	M	O	O		M ^b	M	
200GBASE-DR1-2	O	M	O	O	M	C ^b	O	O	O	O	O	O	M	O	O	M	M ^b		M

^a O = Optional, M = Mandatory, C = Conditional.
^b Refer to PMD clause for details.

- Per Note b – Mandatory ILT / RTS points to PMD Clause for details
- ILT / RTS mandatory for 200GAUI-1C2C & 200GAUI-1 C2M
- It would also be mandatory for 200GMII Extenders based on 200GAUI-1 C2C

Example – 200GBASE-DR PMD Physical Layer

Table 180-1—Physical Layer clauses associated with the 200GBASE-DR1 PMD

Associated clause	200GBASE-DR1
90—Time Synchronization	Optional
117—200 Gb/s RS	Required
117—200GMII ^a	Optional
118—200GMII Extender	Optional
119—200GBASE-R PCS	Required
120—200GBASE-R BM-PMA	Conditional ^b
120B—200GAUI-8 C2C ^c	Optional ^d
120C—200GAUI-8 C2M ^c	Optional ^d
120D—200GAUI-4 C2C ^c	Optional ^d
120E—200GAUI-4 C2M ^c	Optional ^d
120F—200GAUI-2 C2C ^c	Optional ^d
120G—200GAUI-2 C2M ^c	Optional ^d
176—200GBASE-R SM-PMA	Required ^b
176C—200GAUI-1 C2C	Optional ^d
176D—200GAUI-1 C2M	Optional ^d
178B—ILT/RTS	Required ^e

^a The 200GMII is an optional interface. However, if the 200GMII is not implemented, a conforming implementation behaves functionally as though the RS and 200GMII were present.

^b If a 200GAUI-n is implemented in a PHY, additional 200GBASE-R BM-PMA or SM-PMA sublayers are required according to the guidelines in 176B.5.1.

^c When implemented in a 200GBASE-DR1 PHY, the signaling rate range is constrained as specified in 120.1.4.

^d One or two 200GAUI-n may be instantiated within a 200GBASE-DR1 PHY as described in 176B.5.1.

^e ILT and RTS functions are mandatory for the 200GBASE-DR PMD, 200GAUI-1 C2C, and 200GAUI-1 C2M.

- Per Note e - ILT / RTS mandatory for 200GBASE-DR PMD, 200GAUI-1C2C & 200GAUI-1 C2M
- It would also be mandatory for 200GMII Extenders based on 200GAUI-1 C2C or 200GAUI-1 C2M

22 Apr 2026 Slide 12: Recommendations (1 of 2)

- For Tables 116-3, 116-3aa, 116-3a, 116-3b, 116-4, 116-4a, 116-5, 116-5a, 169-2, 169-3, 169-3a, 174-2, and 174-3
 - Delete Column 178B – ILT / RTS
- For Tables 178-1, 178-2: Delete Row 178B- ILT / RTS, Note e
- For Tables 178-3, 178-4: Delete Row 178B- ILT / RTS, Note d
- For Tables 179-1, 179-2: Delete Row 178B- ILT / RTS, Note e
- For Tables 179-3, 179-4: Delete Row 178B- ILT / RTS, Note d
- For Tables 180-1, 180-2: Delete Row 178B- ILT / RTS, Note e
- For Tables 180-3, 180-4: Delete Row 178B- ILT / RTS, Note d
- For Tables 181-1: Delete Row 178B- ILT / RTS, Note d
- For Tables 182-1, 182-2: Delete Row 178B- ILT / RTS, Note e
- For Tables 182-3, 182-4: Delete Row 178B- ILT / RTS, Note d
- For Tables 183-1: Delete Row 178B- ILT / RTS, Note d
- For Tables 185-1: Delete Row 178B- ILT / RTS, Note d
- For Tables 187-1: Delete Row 178B- ILT / RTS, Note e

22 Apr 2026 Slide 13: Recommendations (2 of 2)

Note – Minor editorial changes have been made to original 22 Apr 2026 Slide to improve the clarity of the recommendation. Changes highlighted in yellow.

- Modify title of Annex 178B

“Autonomous path startup functions for electrical and optical interfaces”

to

“ILT and RTS functions and support for Autonomous Path Startup for electrical and optical interfaces”

- Modify 178B.4 (Page 867, Line 15)

~~Modify~~ Replace the current sentence “An ISL, PHY,”

to with

“A path that does not meet the above criteria is not defined to support APSU. An ISL, PHY, Physical Layer, or path that cannot be activated using APSU may be activated using management or other means beyond the scope of this annex.”

Recommendations

- 22 Apr Straw Poll #1
 - I support proposed changes on Slides 12 & 13 of dambrosia_178b_01_260422.pdf
Results (y/n/a): 18 / 2 / 5
- Recommendations:
 - Implement changes on Slide #5 and #6 to address comments #278 – 288
 - No proposed changes to Tables 118-a (281, 287), 118-b (282, 288), 171-1 (283), 171-1a (284)
 - If adopted, the commenter (D'Ambrosia) offers to withdraw comments 289, 290