

Joint IEEE P802.3ct / P802.3cw Task Force Interim Teleconference

Comment #i-1 - Black Link Definition and Terminology

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Comment i-1 – Related to “Black Link” Definition

CI 1 SC 1.4.160a P23 L14

- Comment Type E The term should not be used in its own definition. [IEEE Standards Style Manual, clause 10.6]
- SuggestedRemedy An approach where the input, output, and transfer characteristics of the uni-directional transmission path between TP2 to TP3 are specified, without specifying how the transmission path is implemented.
- PROPOSED ACCEPT IN PRINCIPLE. Modify black link definition to "A methodology where the input, output, and transfer characteristics of the uni-directional transmission path between TP2 to TP3 are specified, without specifying how the transmission path is implemented."

Additional Meaning to “Black Link” in D3.0

- Per 154-6 (p. 108 Line 2)

The presence of one or more optical add-drop multiplexers (OADM)s is not directly assumed but also not specifically excluded as long as the end-to-end link requirements are met. The arrangement of (DWDM) elements within the black link shown in Figure 154–3 is not intended to place constraints on the construction of the black link, but simply to define the location of the single channel interfaces at TP2 and TP3. To visualize that specifying details of the black link is outside the scope of this clause, the black link in Figure 154–3 is shown as a grey shaded box, where certain elements are shown only for illustrating one example.

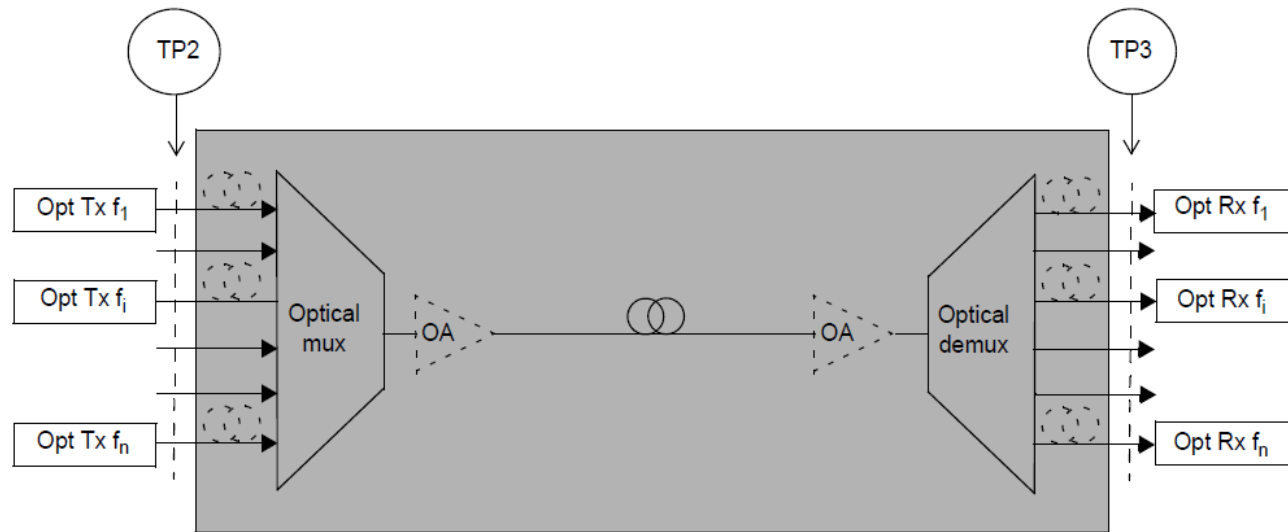


Figure 154–3—Example configuration of the black link approach

G.698.1, 5.4 Single-channel interfaces at the reference points SS and RS – uses the term “DWDM link” (no OA)

G.698.2, 5.4 Single-channel interfaces at the reference points SS and RS – uses the term “DWDM black link”

DWDM Link Types and Terminology

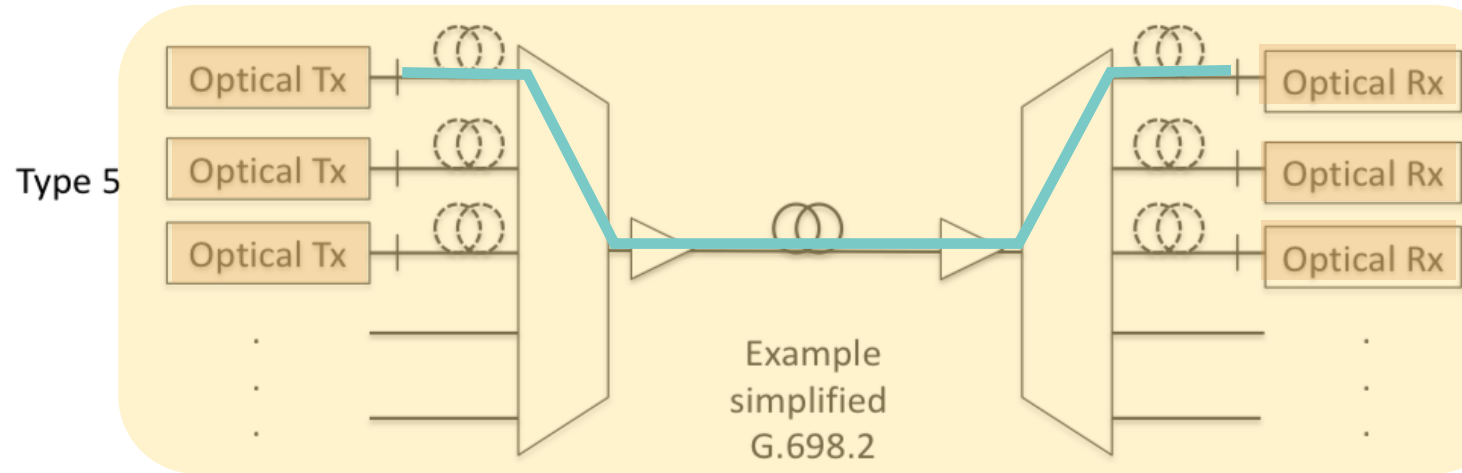
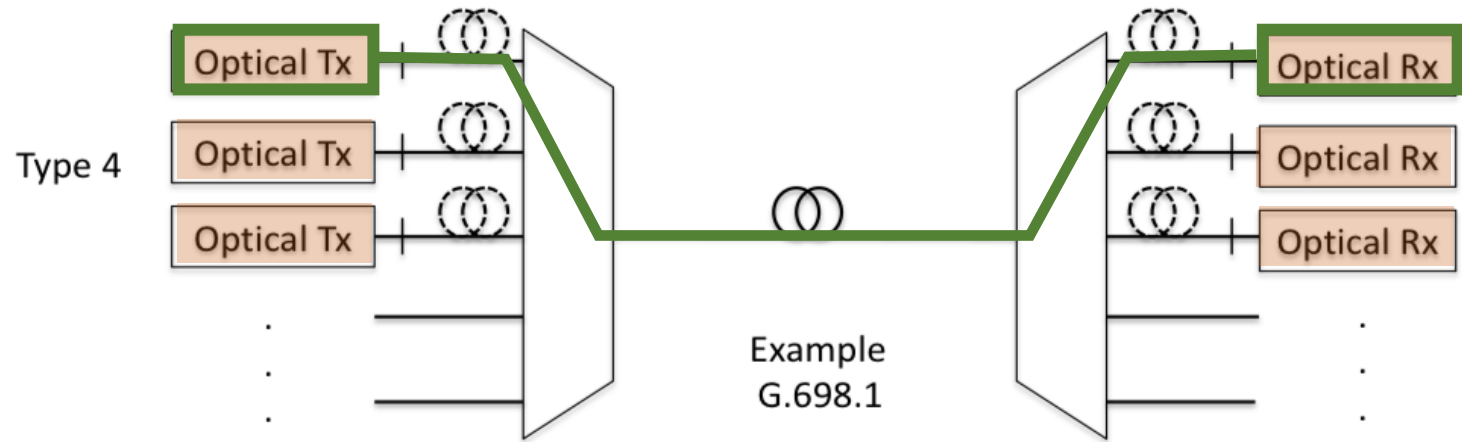
DWDM PHY:

DWDM Channel:

DWDM Link:

DWDM System:

Optical link types 4 and 5



4

Source: nowell_b10k_02_180227

http://www.ieee802.org/3/B10K/public/18_01/anslow_b10k_01_0118.pdf

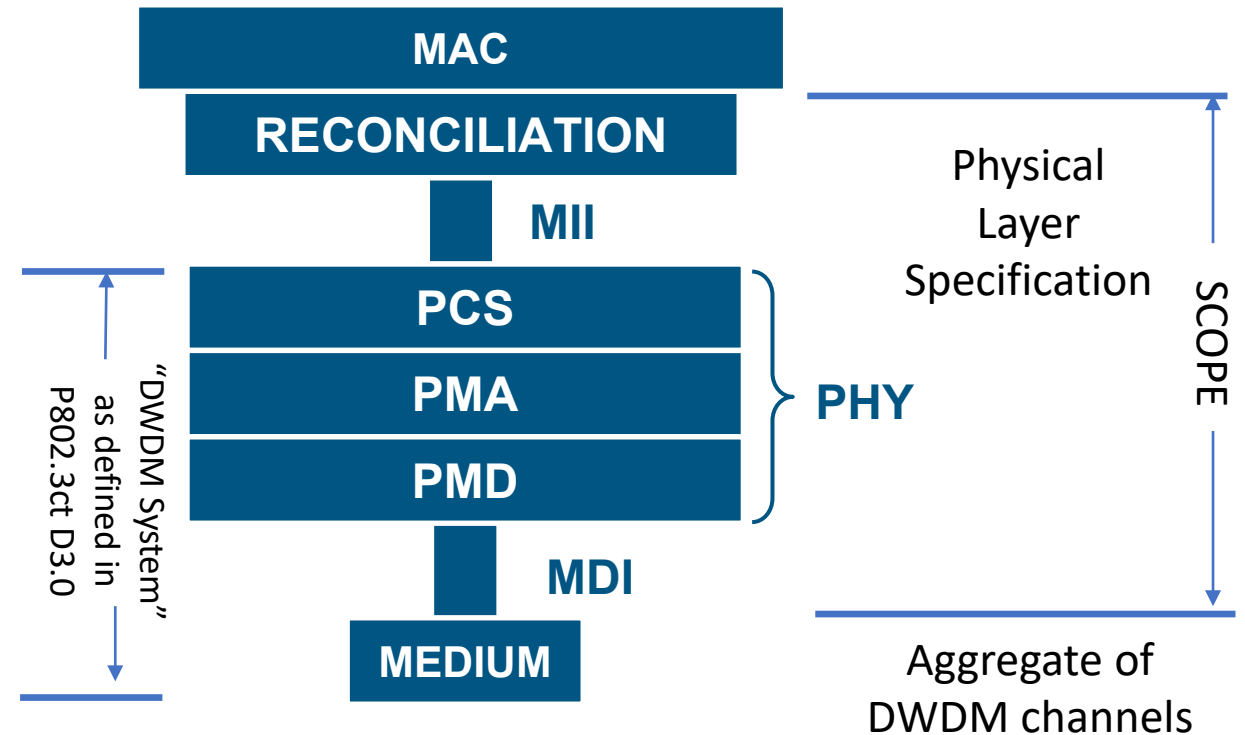
Definitions Per IEEE P802.3ct D3.0

- **1.4.237a DWDM channel:** The transmission path between a DWDM PHY transmitting to another DWDM PHY.
- **1.4.237c DWDM PHY:** An Ethernet PHY that is capable of running over one DWDM channel in each direction of transmission.
- **1.4.237b DWDM link:** One DWDM PHY transmitting to one other DWDM PHY through the transmission path between them.
- **1.4.237d DWDM system:** An aggregate of DWDM links optically multiplexed and demultiplexed onto and off either a single optical fiber or a single optical fiber per direction.

No definition has been defined for the aggregate of DWDM channels or exists in Clause 1.4, but the text in 154-6 appears to suggest that this is also the “Black Link”

Another Observation

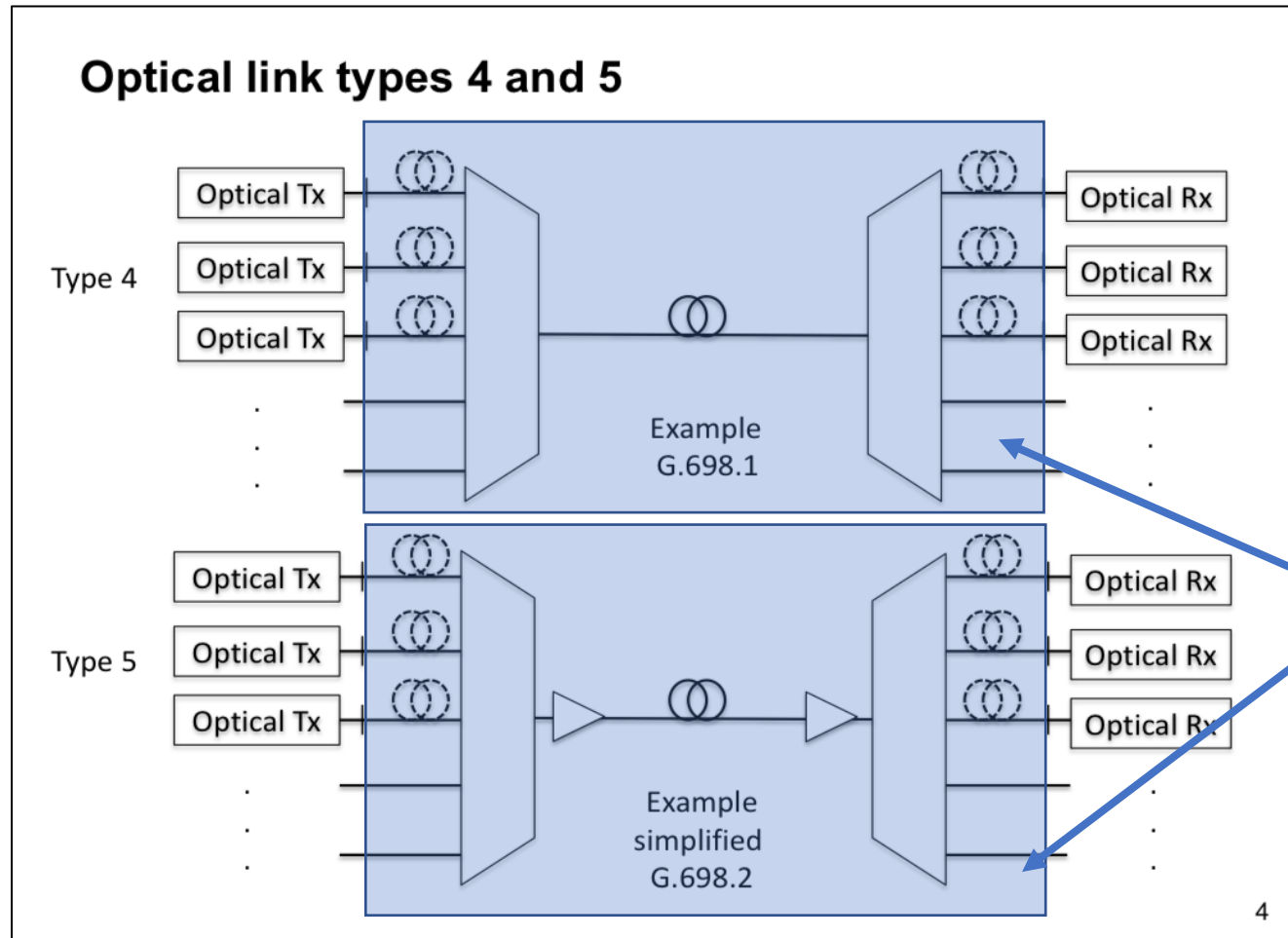
- PAR Scope P802.3ct –
 - Define physical layer specifications and management parameters for the transfer of Ethernet format frames at 100 Gb/s at reaches greater than 10 km over DWDM systems. Change to scope of the project: Define physical layer specifications and management parameters for the transfer of Ethernet format frames at 100 Gb/s and 400 Gb/s at reaches greater than 10 km over DWDM systems.
- PAR Scope P802.3cw –
 - Optical solutions targeting 400 Gb/s operation at reaches in excess of 10 km over a DWDM system will address the bandwidth growth and reach requirements of interconnect for distributed data centers where reaches greater than 10 km are required, or where fiber availability drives the need for multiple instances of Ethernet over a DWDM system.



The scope of these two projects states PHYSICAL LAYER SPECIFICATIONS are being defined (which includes PHYs) to run over DWDM systems that includes PHYs

Lack of clearness in the scope of both projects. Perhaps “DWDM System” is best applied to the aggregate of DWDM channels.

Proposed Update to “DWDM System” Definition



Proposed Update to “DWDM System” - An aggregate of DWDM ~~links~~ **channels** optically multiplexed and demultiplexed onto and off either a single optical fiber or a single optical fiber per direction.

Problem Statement -

- Current “Black Link” definition per 1.4.160a
 - Methodology – not a description of the DWDM channel(s?) between (PHYs / MDIs / TP2-TP3)
 - Not clear if it refers to a single or all DWDM channels
- Secondary “definition” for Black Link inside of noted Clause 154-6.
 - This definition conflicts with the definition noted in 1.4.160a, which refers to black link as a methodology.
 - No supporting definition inside 1.4
- It is the author’s opinion that this terminology issue is causing confusion between individuals while working on both 802.3ct and 802.3cw and would, therefore, also cause confusion to individuals reading the anticipated standards, if this is not corrected.

Recommendation

- Options

1. “Black Link” is being used to describe the methodology and the aggregate of DWDM channels.

- This appears to be the approach taken by the G.698.1 and G.698.2.
- Perhaps current “black link” term should be changed to “black link methodology” and updated per response to i-1
- Add additional definition “black link” that refers to the aggregate of DWDM channels, as illustrated in Fig 154-3.
- The scopes of both projects may need updated to address the noted “DWDM system” issue.

2. Consider redefining “DWDM system” to be what is defined in Clause 154.6 / Fig 154-3. See Slide #7

- Modify “Black ‘link” definition as per response to i-1
- Potential re-definition for **1.4.237d DWDM system** - An aggregate of DWDM ~~links~~ channels optically multiplexed and demultiplexed onto and off either a single optical fiber or a single optical fiber per direction.
- Above recommendation would then clear up noted PARs Scopes issues
- This does NOT appear in line with the approach defined in G.698.1 and G.698.2.

- Editor’s License needs to be applied to clean up the rest of Clause 154.