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

Supporting Material for Consensus - Comments R1-9, R1-48, R1-50, R1-53, R1-54

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04 February 2021

Interim Teleconference Meeting

Introduction

- This presentation provides material in consideration of the following comments:
  - **R1-9**
  - **R1-48**
  - **R1-50**
  - **R1-53**
  - **R1-54**

Comment Summary

ID	Comment	Proposed Remedy
R1-9	"DWDM System" is an unnecessary term	Delete the definition for "DWDM System". Related changes covered in other comments.
R1-48	The definition of DWDM Link should not include the DWDM PHYs to align with ITU-T use of the term DWDM Link.	Change definition of DWDM Link to DWDM Link – an aggregate of DWDM channels over either a single optical fiber or a single optical fiber per direction This effectively changes the naming of the "gray box" , ie everything between TP2 and TP3 for all channels, from Black link to DWDM link - therefore all instances of the term Black link used to describe everything between TP2 and TP3 (and not the Black Link methodology) should be replaced with term DWDM link.
R1-50	The term Black Link is used to represent the aggregate of DWDM Channels, as well as the methodology to describe the input, output, and transfer characteristics of the uni-directional transmission path between TP2 to TP3 for a given DWDM channel are specified, without specifying how the transmission path is implemented. It is felt that this will cause future readers confusion	Modify term Black Link to Black Link Methodology to focus on the specification methodology, and change definition to - the specification of the input, output, and transfer characteristics of the uni-directional transmission path between TP2 to TP3 for a given DWDM channel within a DWDM Link, without specifying how the transmission path is implemented. (See, for example, IEEE Std 802.3, Clause 154, Figure 154–3)
R1-53	This statement is problematic - Because in this application DWDM technology is used to transport multiple DWDM channels over a single fiber..... While it is true that multiple DWDM channels may happen over a single fiber - 100 Gb/s Ethernet is full duplex - so a 100GBASE-ZR PHY will utilize two DWDM channels, and these two channels may exist on either one fiber or two fibers.	Proposed revision DWDM technology allows the transport of multiple DWDM channels over a single fiber. For communication between two 100GBASE-ZR PHYs two channels will be required - one channel in each direction of transmission. These two channels may reside on a single optical fiber or a single fiber per direction. A black link methodology is used to allow specificaiton..... Add two figures showing single direction or bidirection support as noted in next comment
R1-54	Fig 154--4 is labeled as an example configuration of the black link approach - which according to the draft is not intended to place any constraints on the implementation inside. Therefore, the best way to not place any constraints on the contents would be to not show anything within the box.	Delete all content within the gray box area of Fig 154-4. Change the blox to solid black. Label inside the box "DWDM Link" in white font. Furthermore, it would be helpful if one diagram illustrated all signals going in one direction as shown, but then showing a second figure with Tx / Rx on both sides of the DWDM link. The current Fig 154-4 is best used as an example of the types of DWDM links supported, and could be moved to the information annex 154A.

Definitions Issues

- Current Definitions
  - 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.
  - 1.4.160a black link: A multi-channel link specified using a methodology where the input, output, and transfer characteristics of the uni-directional transmission path between TP2 to TP3 for a given DWDM channel are specified, without specifying how the transmission path is implemented. (See, for example, IEEE Std 802.3, Clause 154, Figure 154–3)
- Proposed Recommendations per dambrosia_3ct_01c_210128
  - Delete 1.4.237d “DWDM System” (or consider updating definition)
  - R1-48 - Change 1.4.237b “DWDM Link” definition:
    - DWDM Link – an aggregate of DWDM channels over either a single optical fiber or a single optical fiber per direction
    - Would require the replacement of “black link” throughout the entire .3ct draft when used in that context
  - Per R1-50 - Change “Black Link” to “Black Link Approach” and the associated definition:
    - Black Link Approach - the specification of the input, output, and transfer characteristics of the uni-directional transmission path between TP2 to TP3 for a given DWDM channel within a DWDM Link, without specifying how the transmission path is implemented. (See, for example, IEEE Std 802.3, Clause 154, Figure 154–3)

Implications of Proposed Changes

- This part of “DWDM system” definition needs to be addressed –

  “an aggregate of DWDM links over either a single optical fiber or a single optical fiber per direction”

  - If “DWDM system” deleted, then needs to be included elsewhere, such as in DWDM Link as proposed
  - If “DWDM system” modified
    - Keep in modified definition?
    - Would propose it still needs to be included in “DWDM Link definition”
- Change “Black Link” to “Black Link Approach” and the associated definition:
  - Black Link Approach - the specification of the input, output, and transfer characteristics of the uni-directional transmission path between TP2 to TP3 for a given DWDM channel within a DWDM Link, without specifying how the transmission path is implemented. (See, for example, IEEE Std 802.3, Clause 154, Figure 154–3)
  - Current Figure 154-3 is an example of an implementation, but a more general figure, not showing an implementation, would be more appropriate

Suggestion Regarding Fig 154-3 (R1-54)

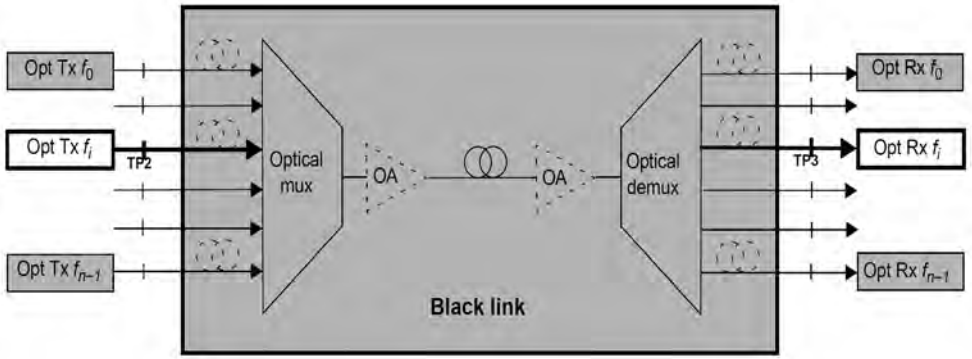


Figure 154–3—Black link example configuration for specifying *n* DWDM channels

Current

For clarity, only one direction of transmission is shown
Figure 154-3 – Black Link Approach for specifying DWDM channels in a DWDM Link

- The focus of this figure is when all signals are propagating on a single fiber in the same direction

Consider Addition of Complimentary Figure to Fig 154-3 (R1-54)

Figure 154-x – Black Link Approach for specifying DWDM channels in a DWDM Link

- Illustrates an aggregate of DWDM channels over either a single optical fiber (bi-directional transmission)
- Total number of λ's divided by 2 – ½ in each direction

Example Implementations should be placed in Annex 154A

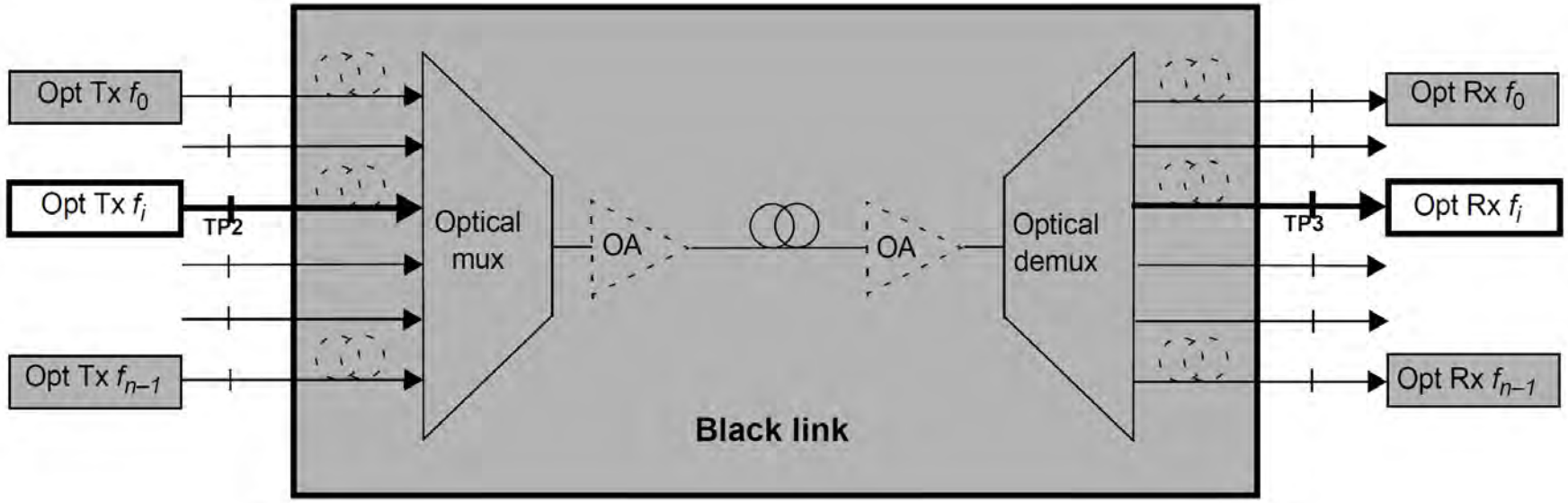
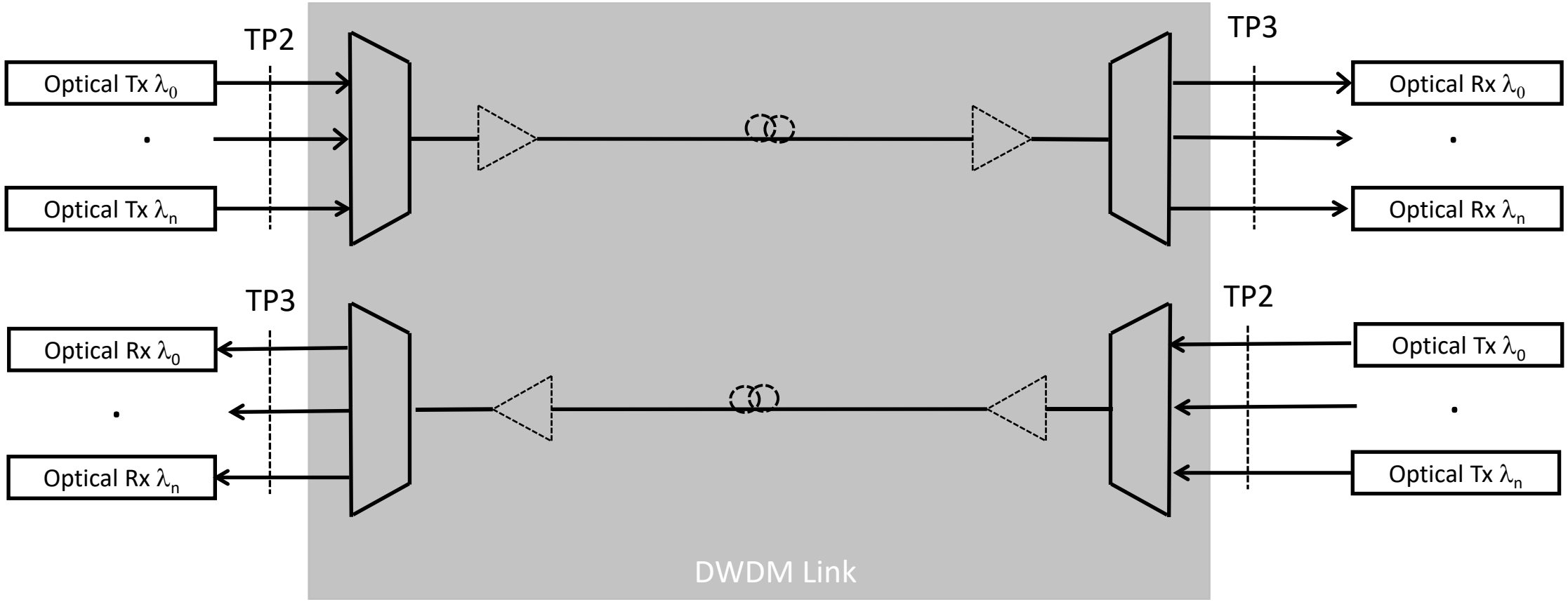


Figure 154–3—Black link example configuration for specifying *n* DWDM channels

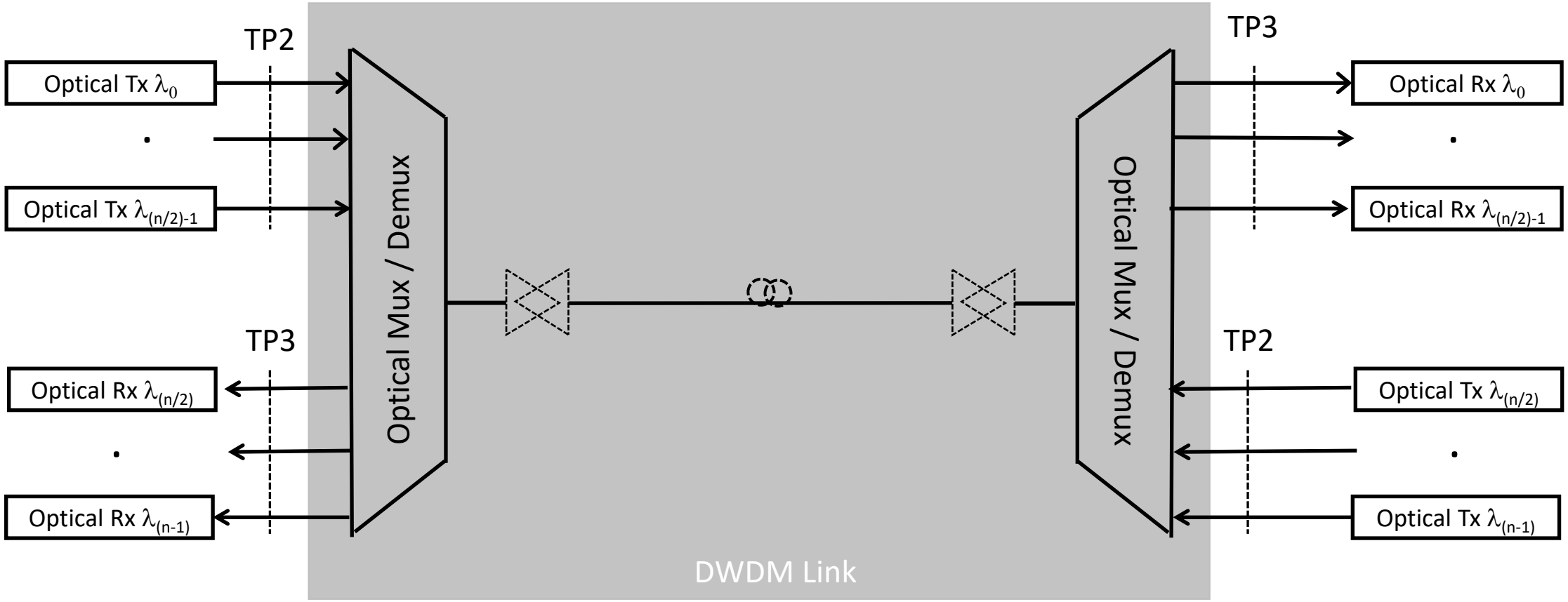
- If this figure is kept, need to add note – “For clarity, only one direction of transmission is shown.”
- Change “Black link” to “DWDM link” in figure and title
- Change title to “DWDM link example configuration”

Proposed Annex 154A Example Configuration Figure Single Fiber Per Direction



Example - DWDM Link – Single Fiber Per Direction

Proposed Annex 154A Example Configuration Figure to Address Single Fiber



Example - DWDM Link – Single Fiber

Based on ITU-T G698.2 Figure 5-3 – Linear "black link" approach for bidirectional applications