Terminology around DWDM systems and relation with ITU-T SG15 Recommendations. Author's understanding of outcome meeting 28 January

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Introduction

During the interim teleconference meeting on 28 January 2021 two presentations were given on terminology around DWDM systems, stassar_3ct_01_210128 and dambrosia_3ct_01b_210128.

As a result of the discussion on both presentations the understanding of the terms “DWDM system”, “DWDM PHY”, “DWDM channel”, “DWDM link” and “black link” appears to have significantly improved.

This presentation contains the author’s understanding of the outcome with suggestions for further discussions and consensus building.

What do we have so far in D3.1

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)

1.4.237a DWDM channel: The transmission path between a DWDM PHY transmitting to another DWDM PHY.

1.4.237b DWDM link: One DWDM PHY transmitting to one other DWDM PHY through the transmission path between them.

1.4.237c DWDM PHY: An Ethernet PHY that is capable of running over one DWDM channel in each direction of transmission.

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.

DWDM system

Generic term, not needing a specific definition for the purpose of the actual PMD specification in Clause 154.

Depending its “context” (system configuration).

Would need a separate definition per relevant PMD (not even sure whether that would be possible).

Probably appropriate to be deleted from the draft.

The term “DWDM system” however also occurs in project name and PAR.

P802.3CT project title & PAR

Title: 100 Gb/s over DWDM systems

PAR: https://www.ieee802.org/3/ct/ProjDoc/P802.3ct_200215.pdf

It is the author's view that the use of DWDM system(s) in both title and PAR is generic, not requiring any detailed definition.

Some seem concerned that there are no statements in the draft addressing "single optical fiber" or a "single optical fiber per direction".

It is the author's view that transport via one or two fibers occurs over the multi-channel operated fiber inside the DWDM black link, not requiring any further description / definition, except the inclusion of some notes in subclause 154.6.

Black link approach

Current definition:

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)

To be modified along the lines as suggested on slide 9 of dambrosia_3ct_01b_210128:

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)

DWDM PHY

Current definition:

An Ethernet PHY that is capable of running over one DWDM channel in each direction of transmission.

No need for modification

DWDM channel

Current definition:

The transmission path between a DWDM PHY transmitting to another DWDM PHY.

To be modified along the lines as suggested on slide 9 dambrosia_3ct_01b_210128, including some word smiting:

DWDM channel: The transmission path between a transmitting DWDM PHY (TP2) to a receiving DWDM PHY (TP3)

Or equivalent …..

DWDM link

Current definition:

DWDM Link –an aggregate of DWDM channels over either a single optical fiber or a single optical fiber per direction.

It is the author's view that "DWDM link" is more generic than "black link" used in subclause 154.6 of D3.1.

The links in 100GBASE-LR4, 200GBASE-LR4, 400GBASE-FR8 and 400GBASE-LR8 can be called DWDM links, because the various channels are on an 800 GHz grid, and therefore by definition on a DWDM grid.

Therefore DWDM link could be seen as a generic term as well, and it may be appropriate to be deleted.

black link

Concerns remain on usage of term “black link” in combination with “black link approach / methodology”.

May be appropriate to use another term.

“DWDM black link” could be an alternative, better than the generic term “DWDM link”

For further consideration and discussion.

Potential definition, reused from proposed definition for DWDM link on slide 9 of dambrosia_3ct_01b_210128

DWDM black link – an aggregate of DWDM channels over either a single optical fiber or a single optical fiber per direction.

link

Concerns remain on usage of term “black link” compared to the definition of “link” in IEEE Std 802.3™-2018.

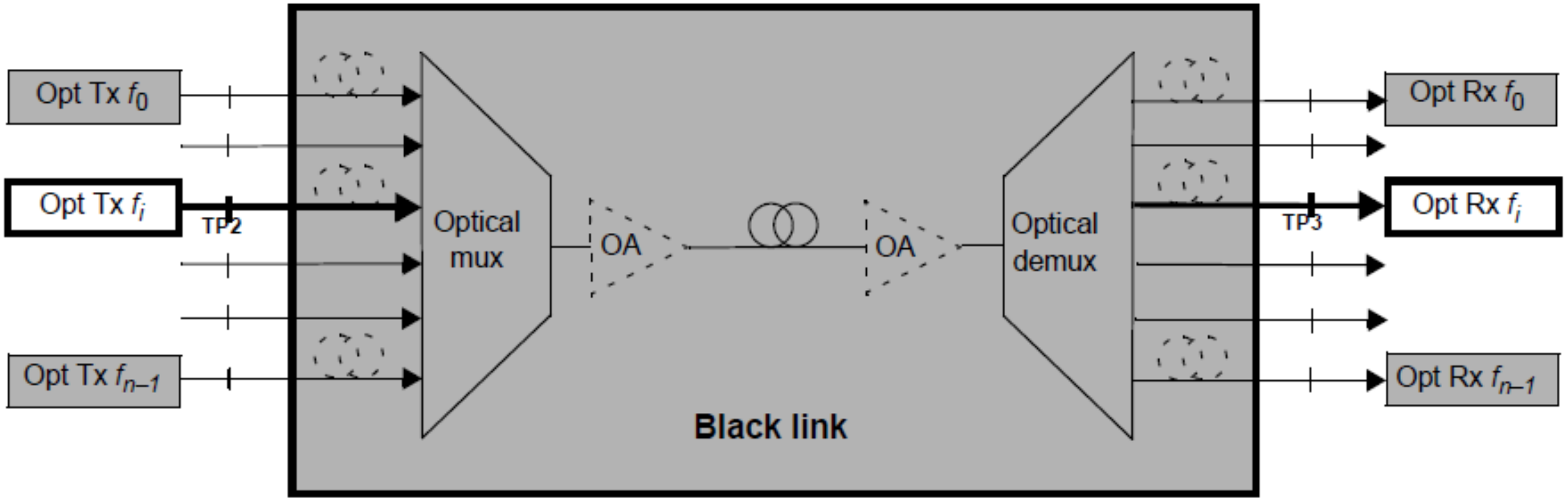
Current definition for “link”:

> *1.4.302 link: The transmission path between any two interfaces of generic cabling. (From ISO/IEC 11801.)*

This could be seen not inconsistent with a definition of DWDM black link between multiple TP2 and multiple TP3.

For further consideration and discussion

Name for the grey box in Figure 154-3



The Task Force could consider to use the term “DWDM black link” for the grey box and replace “black link” with “DWDM black link” in Clause 154.

Thanks!