

Economic Feasibility Ad Hoc Report

IEEE 802.3
400 Gb/s Ethernet Study Group

Andy Moorwood, Infinera

Ad Hoc Report (1)

- Conf Call Held on Jan 7th
 - Thank you IEEE-SA for hosting the WebEx!
 - Agenda
http://www.ieee802.org/3/400GSG/public/adhoc/con_feas/agenda_efa_01_14_0107.pdf
 - Presentation
http://www.ieee802.org/3/400GSG/public/adhoc/con_feas/moorwood_efa_01_14_0107.pdf
 - Meeting notes (unapproved)
<http://www.ieee802.org/3/400GSG/email/msg00172.html>

Ad Hoc Report (2)

- Presentations received to address some of gaps identified in moorwood_efa_01_14_0107
- Requesting presentations to address “known cost factors” criterion

**SEE UPDATES ON
FOLLOWING SLIDES,
ITEMS ADDRESSED, NO NEED
FOR FOLLOW UP CALL**

Demonstrating Economic
Feasibility of 400G Ethernet
for the 5 Criteria Presentation
including updates received at
the Indian Wells Meeting

Andy Moorwood, Infinera

Economic Criteria: Supporting Presentations

Additional information provided at the Indian Wells meeting is shown in this font color

▶ Consideration of installation costs

- Using established practices and methods helps answer these questions
- A new capability likely to be needed is support for 16/32 fiber connectors
 - Work is underway (outside of IEEE) and presentations provided
 - Is there understanding of relative costs versus 12/24 fiber connectors ?

Presentation	Comments
palkert_400_03_0114.pdf	<i>Presenter's Note: I think we have a gap here Material presented</i>

Economic Criteria: Supporting Presentations

Additional information provided at the Indian Wells meeting is shown in this font color

- ▶ **Balanced costs (infrastructure versus attached stations)**
 - Several alternatives have proposed using multiple parallel lanes of media vs a single duplex pair
 - Extensive analysis of tradeoffs between media and module costs presented in the .bm task force, can we leverage this ?

Presentation	Comments
welch_400_01_1113.pdf	Infrastructure trade off between module and multi lane SMF cabling approaches
palkert_400_01_1113.pdf	Copper connector tradeoffs
palkert_02a_0313_optx.pdf shen_01_0313_optx.pdf cole_01_0313_optx.pdf welch_01b_0113_optx.pdf	<i>Presenter's Note: Add references from bm? References added</i>
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Economic Criteria: Supporting Presentations

Additional information provided at the Indian Wells meeting is shown in this font color

▸ Known cost factors

- Widespread presumption there will be extensive re-use of 100G PMDs “just use 4 of them” but:
 - What is the impact of the BER objective ?
 - Are there significant yield impacts upon 16 wide laser arrays cf to 10 or 4 wide arrays?
- When supporting a 10km PMD, an approach that can use a single duplex fiber pair versus multiple pairs will likely be optimal (balanced costs)
 - Do we understand the cost of such an approach relative to widely known costs e.g. 100G SR10, LR4 or ER4 ?
- 400G MAC and PCS functions are considered technically feasible (there are presentations supporting this)
 - However do such potential implementations necessitate the use of the largest FPGAs or smallest available ASIC processes, such that the cost factor is significantly larger than 4x 100 ?

Presentation	Comments
jewell_400_01_1113.pdf palkert_400_02_0114.pdf Discussion during the meeting indicates minimal impact due to this cost factor (laser yield)	MMF, 400G is equivalent to 4x100, then improves <i>Presenter’s Note: No discussion of “by 16 laser array yield”-Material presented and discussion</i>
tanaka_400_01a_0913.pdf dove_400_01a_0114.pdf bower_400_01_0114.pdf	10km PMD <i>Presenter’s Note:-Additional info available in takahara_01_0513_optx but relative cost is hard to determine</i> Material presented
welch_400_01_1113.pdf	500m, 2km SMF module relative cost factors
Discussion during the meeting indicates minimal impact due to this cost factor (BER)	<i>Presenters Note: Need to address the impact of the BER objective? Addressed by discussion at the meeting</i>
gustlin_400_01_0114.pdf li_400_01_0114.pdf	<i>Presenters Note:-MAC/PCS material?-Material presented</i>

Economic Criteria: Supporting Presentations

Additional information provided at the Indian Wells meeting is shown in this font color

- ▶ Consideration of operational costs (e.g. energy consumption)
 - SG has adopted and energy efficient objective

Presentation	Comments
diab_400_01b_0713.pdf kipp_400_01_0114.pdf	Proposes adding EEE into list of objectives <i>Presenter's Note: Adequate response? Additional Material presented</i>

Economic Criteria: Supporting Presentations and Gaps (5)

Additional information provided at the Indian Wells meeting is shown in this font color

- ▶ Other areas (as appropriate)
 - Do we have any

Presentation	Comments
	<i>Presenters' Note: None come to mind at present</i> <i>None identified</i>

Thank You