40Gb Ethernet-SMF
Choice of 4x10Gb or Serial

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Introduction

Over several meetings of the 802.3ba Task Force there has been a debate over whether the 10km 40GbE interface should use a CWDM or 40Gb/s serial configuration.

In the previous meetings in Orlando and Munich, the CWDM proposals were contained in:

cole_03_0308.pdf, cole_03_0508.pdf;

and the serial proposals were in:

traverso_04_0308.pdf, isono_01_0508.pdf, jewell_02_0508.pdf

At the end of the May interim (Munich) meeting, a straw poll was taken to gauge the support for each of the proposals (see next slide) but the result did not show the required 75% majority.

In order to try to help reach a consensus on this issue the authors of this contribution have spent some time investigating the pros and cons.

Straw Poll

During the Munich 802.3ba meeting a straw poll was taken:

Straw Poll #11: I believe that a baseline proposal for the 40GBE 10-km SMF PMD should be based on:

A) 4x10G CWDM (as per “cole_03_0508.pdf”)

B) 40G Serial (as per “jewell_03_0508.pdf”)

C) I need more information and presentation material before deciding.

D) I will abstain now and later.

Results:

A) 25 (28%)

B) 23 (26%)

C) 35 (39%)

D) 6 (7%)

Summary of considerations

40Gb CWDM	40Gb Serial
1) Link budget is technically feasible	1) Link budget is technically feasible
2) All transceiver "block diagram" components exist Uses existing 10G component designs, with re-qualification for new 13xx CWDM wavelengths	2a) New component development needed: ▪**SERDES (4:1 MUX / DMUX)** 2b) New component development proposed to achieve costs: ▪ **40G SMT RF Packaging Development for LDD, TOSA, ROSA, SERDES**
3) Timely, low-risk solution for 40GE PMD	3a) In long term (2011[a]—2015[b]) potentially the lowest cost module 3b) To reach 2011 target requires ~4-8x cost reduction in 3 years[c]. An unprecedented reduction which does not follow historical cost evolution of lower speed transceivers 3c) Schedule & economic risk from unforeseen development delays and cost issues (volume forecast assumptions unclear)

[a] **jewell_02_0508.pdf ;** [b] **cole_hse_01_0608.pdf ;** [c] **cole_03_0308.pdf**

Conclusion

After reviewing in detail the pros and cons as summarised on the previous slide the view of the authors is that on balance the preferable choice of PMD for the 10km 40GbE interface is:

4x10Gb/s 1310 nm CWDM