

100G Next Gen Optics

MMF ad hoc

next steps ?

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MMF ad hoc aims and progress:

- The MMF ad hoc should develop objectives which can then be judged against the 5 criteria by the study group as a whole
- MMF objectives should have supporting work which estimates ‘performance’ (e.g. % link coverage for data centers), and ‘relative cost’, and ‘relative power burn’
 - Graphs of relative link cost vs reach, and/or relative power consumption vs reach would be a desirable output from this ad hoc into the main study group.
- *We’ve had several contributions showing coverage, relative cost, and power, with reasonable agreement*
- *Graphs and tables were presented in the January IEEE meeting*
- *We haven’t agreed an objective yet*

Topics addressed in the ad hoc

- Cost/power vs coverage optimization tool
 - [PMD Solution Set Analyzer](#)
- Relative cost and power of 100G-SR4 module vs reach
 - 100G-SR10 with CPPI interface as a reference
 - Focus on retimed modules, Tx and Rx EQ, from simple to more complex adaptive schemes, and FEC
 - [MMF Ad-Hoc December Review](#)
 - [Power and Complexity of 100G-SR4 Implementations](#)
 - [100G-SR4-Rel-power-cost-jan2012](#)
 - [100G Next Gen SR4 vis-a-vis SR10](#)
- Mode Partition Noise handling in the spreadsheet model
 - What changes may be needed in the Ethernet spreadsheet model is still under discussion
 - [Mode partition noise handling in spreadsheet model](#)
 - [10GEPBud3 1 16a 25G with MPN changes pepeljugoski for web](#)
 - [Standard-MPN-vs-revised-MPN-model](#)
- ***Note: recent work on MPN treatment, by David Cunningham, shown in T11 (Fibre Channel), indicates that FEC is a necessity for 100m links***

How do we get to an MMF objective ? discussion 1

- There is some evidence of 4x25G optics technical feasibility (and there are significant technical uncertainties)
 - VCSEL performance
 - MPN for long reaches
 - 100m reach likely to need FEC due to MPN error floors)
- **There will be 4x25G sockets seeking modules**
- 4x25G modules will permit better fibre plant use, and higher front panel density
- Previous estimates of relative cost and power showed retimed SR4 similar to unretimed SR10, *but the cost/power of a 4x25 to 10x10 gearbox was not included*
 - i.e. relative cost and power of SR4 will be better than SR10+gearbox ?

How do we get to an MMF objective ? discussion 2

- At Newport Beach there wasn't consensus on an MMF objective. Why not ?
 - Uncertainty about reach? economic feasibility? other ?
 - Is a single objective of 100m on OM4 an unreasonable straw man proposal ?
 - Would very probably need FEC (due to MPN)
 - Would a shorter reach proposal be more supportable ?
 - Would a single PMD with two reach objectives be more supportable ?
 - Relative cost studies didn't include the cost of gearbox for SR10 (4x25G electrical interface to 10x parallel optical)
 - In order to move forward to task force we need an objective which can be shown to satisfy all 5 criteria at the same time
 - Broad market potential / Technical feasibility / Economic feasibility are main focus
 - (and if the detailed technical study in the task force shows a reach objective really is unreasonable, it can be changed)