

Data Showing Market Potential and Feasibility Impact of 5m and 3 Meter Objectives

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Exercise:

▶ Exercise

- Evaluate the COM as a electrical feasibility indicator for the cables with
 - Various FEC options with a corresponding DER (Detector Error Ratio)
 - FEC for 1 lane with 'bj strength may have much greater latency than FEC for 4 lanes
 - FEC for 1 lane with clause 74 like strength may have the same latency than FEC for 4 lanes
 - host routing budgets
 - Annotated as routing multiplies to the 6.26dB added in COM
 - 1.5 would be a 50% increase in clause 92 host routing budget
 - For 3m and 5m cables

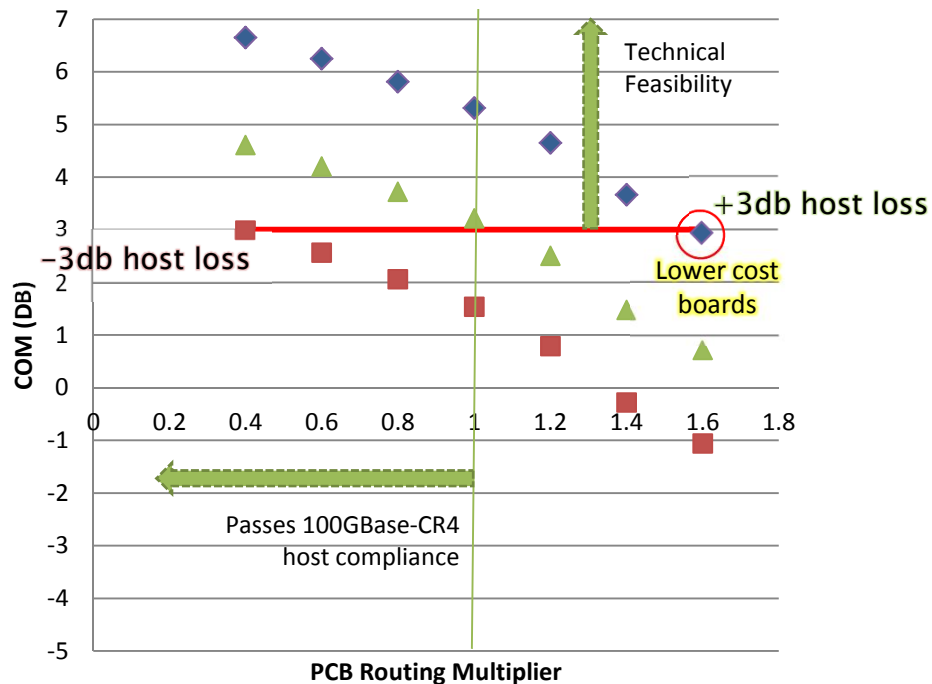
▶ References

- 5 m
 - http://www.ieee802.org/3/100GCU/public/jan11/bugg_01_0111.pdf
 - ieee802p3bj\bugg_02_0511\5m_26awg\5m 26AWG Leoni\P1 RX1\IL\TX1.s4p
- 3 m
 - http://www.ieee802.org/3/100GCU/public/ChannelData/CD_11_0415/3m_QSFP_30AWG.zip *
 - 3m_all\P1_RX3\P1 RX3\IL\TX3.s4p

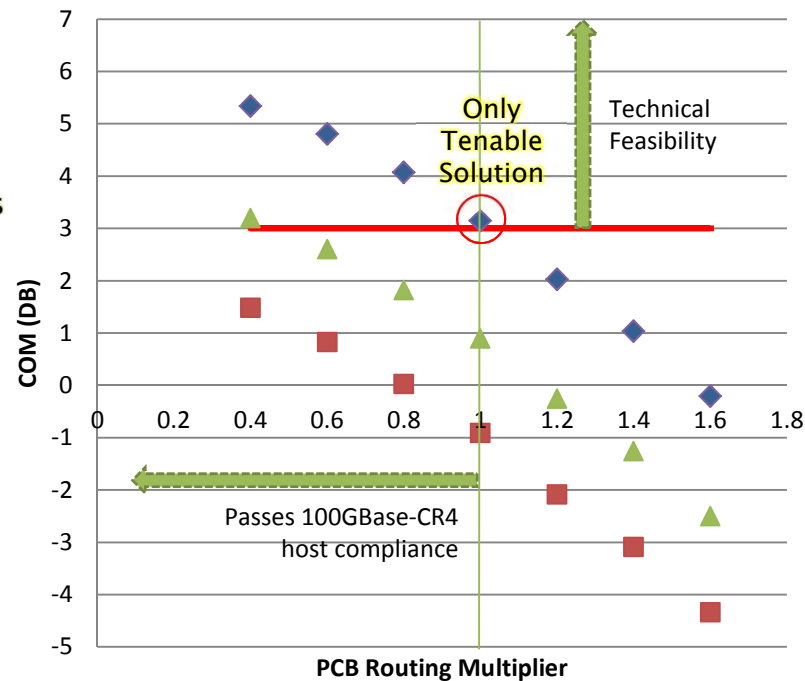
* For this presentation the AWG designation is a reference pointer only.

Technical Feasibility and Market Potential

3 Meter Cable Data



5 Meter Cable Data



— COM limit ■ COM(dB) NO FEC
▲ COM(dB) clause 74 FEC ◆ COM(dB) 'bj FEC

— COM limit ■ COM(dB) NO FEC
▲ COM(dB) clause 74 FEC ◆ COM(dB) 'bj FEC

Market Conundrums

- ▶ Up to at least 3 meters only
 - Can be problematic for 5m deployments
 - Can enable lower cost servers and switches
 - Can enable “no FEC”
 - Other FEC’s strengths are possible
- ▶ Up to at least 5 meter only
 - Requires only ‘bj FEC with increased latency.
 - Supports ‘bj reaches
 - Cannot do “no FEC”
 - Cannot reduce cost on boards

Why Consider Channel Repartition?

25GbE is not 100GbE!

Attribute	25GbE	100GbE
Switch Application	Downlink to Server	Uplink to core/aggr.
Server NIC Priority	Cost optimization	Performance
Server NIC Market	100k's soon	Niche this decade

802.3bj system budget target circa 2011: 4 inches PHY to module

- http://www.ieee802.org/3/bj/public/nov11/nicholl_01_1111.pdf
- Switch
 - Use of external PHY always assumed ('bj), but ...
 - Single-chip ToR switch with integrated PHYs **need ~10+ inches on low loss material**
- Server Network Interface Controller (NIC)
 - Add-in card assumed ('bj) for 100G NIC (<4"), but...
 - Lowest cost opportunity is LAN on Motherboard and silicon integration
 - **Needs ~7 inches on FR4**
- In both cases the host budget is the same 12dB!