50G/NOATH Next Steps

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Where are we now?

- We have adopted objectives
- PAR approval on NESCOM May 2nd
- If approved, IEEE 802.3cd Task Force first meets F2F @ May interim in Whistler
- Goal of the TF:
  - Make decisions
  - Adopt baselines
  - Write and review specification until we have no TBDs

Objectives 1 of 3

- Support full-duplex operation only
- Preserve the Ethernet frame format utilizing the Ethernet MAC
- Preserve minimum and maximum FrameSize of current IEEE 802.3 standard
- Support optional Energy-Efficient Ethernet operation
- Provide appropriate support for OTN
- Support a MAC data rate of 50 Gb/s and 100 Gb/s
- Support a BER of better than or equal to 10^{-12} at the MAC/PLS service interface (or the frame loss ratio equivalent) for 50 Gb/s and 100 Gb/s operation
- Support a MAC data rate of 200 Gb/s
- Support a BER of better than or equal to 10^{-13} at the MAC/PLS service interface (or the frame loss ratio equivalent) for 200 Gb/s operation

Objectives 2 of 3

- Define single-lane 50 Gb/s PHYs for operation over
  - copper twin-axial cables with lengths up to at least 3m.
  - printed circuit board backplane with a total channel insertion loss of <= 30dB at 13.28125 GHz.
  - MMF with lengths up to at least 100m
  - SMF with lengths up to at least 2km
  - SMF with lengths up to at least 10km
- Define a two-lane 100 Gb/s PHY for operation over
  - copper twin-axial cables with lengths up to at least 3m.
  - Define a two-lane 100 Gb/s PHY for operation over a printed circuit board backplane with a total channel insertion loss of <= 30dB at 13.28125 GHz.
  - MMF with lengths up to at least 100m

Objectives 3 of 3

- Define four-lane 200 Gb/s PHYs for operation over
  - copper twin-axial cables with lengths up to at least 3m.
  - printed circuit board backplane with a total channel insertion loss of <= 30dB at 13.28125 GHz.
- Define 200 Gb/s PHYs for operation over MMF with lengths up to at least 100m
- Provide physical layer specifications which support 200 Gb/s operation over:
  - At least 2km of SMF
  - At least 10km of SMF
  - At least 500m of 4-lane parallel SMF

Note: Objectives in red have been proposed to be handled by the P802.3bs Task Force (400 Gb/s Ethernet).

Schedules…

Task Force	TF Formed	Baselines adopted	TF Review Complete	WG Ballot complete
IEEE 802.3ba	1/2008	+6 months	+6 months	+8 months
IEEE 802.3bj	9/2011	+8 months	+10 months	+8 months
IEEE 802.3bm	9/2012	+8 months	+6 months	+6 months
IEEE 802.3bs*	5/2014	+14 months	+12 months	+8 months
IEEE 802.3by*	1/2015	0 months	+6 months	+4 months

Project duration strongly dependent on many factors:

- Maturity of technology being specified
- Ability to leverage existing IEEE work
- Industry consensus

* In progress

Immediate focus

- Any additional work (new objectives)
- Picking baselines

Potential additional work

- Whatever might arise out of:
  - Backwards compatibility discussions
  - Low latency discussions
- Resolve as soon as possible

Towards baselines

Key baseline areas

- 50G/100G Arch, PCS, FEC
- 50G SMF
- 50G/100G/200G MMF
- 50G/100G/200G Copper/Backplanes

Significant leverage

- 802.3bs
- 802.3bj (Clause 94)

Key new areas

- 50 Gb/s MMF & Copper

Contributions needed!!

Summary

- Focus shifts to selecting baselines
  - Contributions needed
  - Ad hocs Apr 13, Apr 27, May 11
- Adopt a schedule soon (but we need to start scoping the work first)