50 Gb/s Ethernet over a Single Lane and Next Generation 100 Gb/s and 200 Gb/s Ethernet Study Groups Adopted Objectives (including the adopted proposed modifications to 802.3bs objectives)

Mar 2016 Plenary

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.
- Define a two-lane 100 Gb/s PHY for operation over 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).

Modified objectives for P802.3bs

- **Support a MAC data rate of 200 Gb/s**
- Support a MAC data rate of 400 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)
- Support full-duplex operation only
- Preserve the Ethernet frame format utilizing the Ethernet MAC
- Preserve minimum and maximum FrameSize of current Ethernet standard
- Provide appropriate support for OTN
- **Provide physical layer specifications which support 200 Gb/s operation over:**
  - **At least 500m of 4-lane parallel SMF**
  - **At least 2 km of SMF**
  - **At least 10 km of SMF**
- Provide physical layer specifications which support **400 Gb/s operation over:** ~~link distances of:~~
  - At least 100 m **of** ~~over~~ MMF
  - At least 500 m **of** ~~over~~ SMF
  - At least 2 km **of** ~~over~~ SMF
  - At least 10 km **of** ~~over~~ SMF
- Specify optional Energy Efficient Ethernet (EEE) capability ~~for 400 Gb/s PHYs~~
- Support optional 4~~00 Gb/s~~ Attachment Unit Interfaces for chip-to-chip and chip-to-module applications