



Additional Objectives for 400GPL Study Group

Mark Nowell, Cisco
Kent Lusted, Synopsys

400GPL Study Group – Current Objectives

Approved May, 2026

Non-Rate Specific

- 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 a BER of better than or equal to 10^{-13} at the MAC/PLS service interface (or the frame loss ratio equivalent)

400 Gb/s Related

- Support optional single-lane 400 Gb/s attachment unit interfaces for chip-to-module and chip-to-chip applications
- Define a physical layer specification that supports 400 Gb/s operation over 1 pair of SMF with lengths up to at least 500 m
- Define a single-lane, 400 Gb/s PHY for operation over twin-axial copper cables with lengths up to at least 1 meter

800 Gb/s Related

- Support optional two-lane 800 Gb/s attachment unit interfaces for chip-to-module and chip-to-chip applications
- Define a physical layer specification that supports 800 Gb/s operation over 2 pairs of SMF with lengths up to at least 500 m
- Define a two-lane, 800 Gb/s PHY for operation over twin-axial copper cables with lengths up to at least 1 meter

1.6 Tb/s Related

- Support optional four-lane 1.6 Tb/s attachment unit interfaces for chip-to-module and chip-to-chip applications
- Define a physical layer specification that supports 1.6 Tb/s operation over 4 pairs of SMF with lengths up to at least 500 m
- Define a four-lane, 1.6 Tb/s PHY for operation over twin-axial copper cables with lengths up to at least 1 meter

Recap from P802.3dj

Type of Objectives

In the May 400GPL SG, we overlooked adding the objectives indicating the supported MAC rates

Adopted IEEE P802.3dj Objectives (1 of 2)

- **Non-Rate Specific**
 - 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 a BER of better than or equal to 10^{-13} at the MAC/PLS service interface (or the frame loss ratio equivalent)
 - Provide support to enable mapping over OTN
- **200 Gb/s Related**
 - Support a MAC data rate of 200 Gb/s
 - Support optional single-lane 200 Gb/s attachment unit interfaces for chip-to-module and chip-to-chip applications
 - Define a physical layer specification that supports 200 Gb/s operation:
 - over 1 lane over electrical backplanes supporting a die-to-die insertion loss ≤ 40 dB at 53.125 GHz **
 - over 1 pair of copper twin-axial cables in each direction with a reach of up to at least 1.0 meter
 - over 1 pair of SMF with lengths up to at least 500 m
 - over 1 pair of SMF with lengths up to at least 2 km
- **400 Gb/s Related**
 - Support a MAC data rate of 400 Gb/s
 - Support optional two-lane 400 Gb/s attachment unit interfaces for chip-to-module and chip-to-chip applications
 - Define a physical layer specification that supports 400 Gb/s operation:
 - over 2 lanes over electrical backplanes supporting a die-to-die insertion loss ≤ 40 dB at 53.125 GHz **
 - over 2 pairs of copper twin-axial cables in each direction with a reach of up to at least 1.0 meter
 - over 2 pairs of SMF with lengths up to at least 500 m
 - over 2 pairs of SMF with lengths up to at least 2 km

Foundational:

- Non-rate specific
- Req'ts across the whole project

PHY specific

E.g.:

- Data rate
- Reach
- Media type

Proposal

Adopt the following objectives for the 400GPL Study Group:

- Support a MAC data rate of 400 Gb/s
- Support a MAC data rate of 800 Gb/s
- Support a MAC data rate of 1.6 Tb/s