IEEE 802.3 400 Gb/s/lane “400GPL” SG Objectives

Approved by Study Group, 10 June 2026

400GPL SG Objectives (1/4)

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)

400GPL SG Objectives (2/4)

400 Gb/s Related

- Support a MAC data rate of 400 Gb/s
- 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

400GPL SG Objectives (3/4)

800 Gb/s Related

- Support a MAC data rate of 800 Gb/s
- 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

400GPL SG Objectives (4/4)

1.6 Tb/s Related

- Support a MAC data rate of 1.6 Tb/s
- 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