

# 802.3 10BPE SG/802.3cg 10SPE TF

## Proposed Changes to 802.3cg Objectives - Intra system, Duplex and Multidrop

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# 802.3cg Objectives

## Proposed Changes Summary

- Relative to [http://www.ieee802.org/3/cg/objectives\\_10SPE\\_111016.pdf](http://www.ieee802.org/3/cg/objectives_10SPE_111016.pdf)
- Clarification of duplex requirements for point to point
  - 15m reach, half duplex required, full duplex optional
  - 1000m reach, full duplex required
- Multidrop Support
  - Incorporate the spirit of motion #16 from Charlotte, combining short reach and multidrop applications into a single PHY objective
  - 25m reach, half duplex required
  - Optional support for Power over the multidrop mixing segment
- Changed text legend

**Bold Normal Shadow**

***Bold Italics***

**Bold Underline**

**Yellow highlight – alternatives to be decided**

**10BPE SG – add Intra system**

**802.3cg 10SPE TF - Multidrop/Duplex**

**802.3cg 10SPE TF - Approved text clean ups**

# Goals for Objectives Changes

- Two link segments (15m & 1000m)
- One mixing segment (25m)
- Two PHYs
  - One supporting
    - half-duplex over 15m link segment
    - optional full-duplex over 15m link segment
    - optional half-duplex multidrop over 25m mixing segment
  - One supporting
    - full-duplex over 1000m link segment
- Optional Point to Point power distribution
  - over 15m link segment
  - over 1000m link segment
- Optional Multidrop power distribution (\*No current BASELINE)
  - over 25m mixing segment
  - Multidrop and power is a new topic, needs consensus building, technical proposals, etc

# Objectives Open Items

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- Multidrop
  - power distribution over 25m mixing segment.
  - What about repeaters (e.g., clause 9)?
    - We don't want to do anything to support them.
    - What does this mean for the draft??
  - What about AUI/MAU etc?
  - How many inline connectors?

# Objectives (1 of 3)

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1. Preserve the IEEE 802.3/Ethernet frame format at the MAC client service interface.
2. Preserve minimum and maximum frame size of the current IEEE 802.3 standard.
3. Support a speed of 10 Mb/s at the MAC/PLS service interface.
4. Do not preclude meeting FCC and CISPR EMC requirements
5. Support for optional single-pair Auto-Negotiation
6. Support optional Energy Efficient Ethernet
7. **Additionally** support 10 Mb/s **single-pair Ethernet** operation in automotive environments (e.g. EMC, temperature).
8. **Additionally** support 10 Mb/s **single-pair Ethernet** operation in industrial environments (e.g. EMC, temperature ).
9. Do not preclude the ability to survive automotive and industrial fault conditions (e.g. shorts, over voltage, EMC, ISO16750)
10. Do not preclude working within an Intrinsically Safe device and system as defined in IEC 60079

## Objectives (2 of 3)

### 11. Define performance characteristics of the following:

- a. A single balanced pair link segment supporting up to 4 inline connectors for up to at least 15 m reach
- b. A single balanced pair mixing segment supporting up to (8 or 15?) nodes for up to at least 25m reach**
- c. A single balanced pair link segment supporting up to 10 inline connectors for up to at least 1000m reach

### 12. Define a PHY:

- a. Supporting point-to-point half-duplex operation over the 15m link segment.**
- b. Optionally supporting full-duplex operation over the 15m link segment.**
- c. Optionally supporting half-duplex multi-drop operation over the 25m mixing segment(\*).**

### 13. Define a PHY:

- a. Supporting point-to-point full-duplex operation over the 1000 m link segment.**

#### Section 1.4 definitions

**Link Segment:** The point-to-point full-duplex medium connection between two and only two Medium Dependent Interfaces (MDIs).

**Mixing Segment:** A medium that may be connected to more than two Medium Dependent Interfaces (MDIs).

## Objectives (3 of 3)

16. Support fast-startup operation using predetermined configurations which enables the time from power\_on\*\*=FALSE to a state capable of transmitting and receiving valid data to be less than 100ms
17. Maintain a bit error ratio (BER) at the MAC/PLS service interface of less than or equal to:
  - a.  $10^{-10}$  on link segments up to at least 15m
  - b.  **$(10^{-9} \text{ or } 10^{-10})$  on mixing segments up to at least 25m**
  - c.  $10^{-9}$  on link segments up to at least 1000m

***Either change objective 18 as shown:***

16. Specify one or more optional power distribution techniques for use in conjunction with 10 Mb/s single-pair Ethernet PHYs over the single-pair ***link*** segments

***Or, add the following objective:***

- 19. Specify an optional power distribution technique for use in conjunction with 10 Mb/s single-pair Ethernet PHYs over the single-pair mixing segment***

Thank You!



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# Consensus

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