

Possible Joint Work

IEEE 802.3

IEEE P802.3cg 10 SPE and Multi-Gig
Automotive Ethernet PHY Study Group

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Possible Joint Work

- Attempt to identify any areas where joint work between P802.3cg 10 SPE and P802.3ch NGAUTO (assuming IEEE-SA approval) would occur
 - Autonegotiation
 - Powering

Autonegotiation

- Clause 98 defines single-pair auto-neg (work done in 802.3bp-2016)
- 1000BASE-T1 is the only PHY that supports Clause 98 at present
 - Currently not defined in Clause 96, 100BASE-T1
 - 100BASE-T1 is in Clause 98: Table 98B–1—Technology Ability Field bit assignments

Autonegotiation-P802.3cg

- P802.3cg has not yet selected PHY baselines, but:
 - Clause 98 autonegotiation won't operate at reaches in excess of ~200 meters for the industrial case
 - 1000BASE-T1 Type B link segment is specified to 40 meters; 100BASE-T1 link segment is specified to 15 meters
 - 802.3 PHYS do not have any knowledge of the characteristics of the media
 - 98.1.1 Scope: Single twisted-pair Auto-Negotiation does not test the link segment characteristics.

Autonegotiation-P802.3cg

- If auto-neg is desired for the 1000 meter link segment, a new auto-neg will need to be defined
- If auto-neg is desired for the 15 meter automotive link segment PHY, Clause 98 can be used
 - Clause 98 auto-neg operates at 16.666 MHz, which is likely to be higher than the clock rate for 10 SPE
 - Not necessarily a problem, but worth noting

Autonegotiation-P802.3ch

- P802.3ch has (obviously) not yet selected PHY baselines, but:
- Objectives for 2.5, 5 and 10 Gb/s have been adopted over electrical media
 - Media types have not been adopted
 - May be single-pair → use Clause 98
 - May be two-pair → use Clause 28
 - May be coax/TwinAx → ?

Auto-neg Summary

- P802.3cg can use Clause 98 for the 15 meter link segment
- P802.3cg will have to define auto-neg for the 1000 meter link segment
- P802.3ch can use Clause 28 or Clause 98 as required
- There is not much direct overlap of work
- It's likely that Clause 98 will be opened up by both projects
- Coordination should be done to avoid editing problems

Powering

- P802.3ch has an objective to support Clause 104 PoDL
 - PoDL experts believe it will not be a problem
 - This is not likely to involve extensive work
 - PoDL only requires 2 conductors; it is not tied to twisted pair

Powering

- P802.3cg has an objective to support powering:
 - Specify one or more optional power distribution techniques for use over the 10 Mb/s single balanced twisted-pair link segments, in conjunction with 10 Mb/s single balanced twisted-pair PHYs, in the automotive and industrial environments

Powering

- Powering for a point-to-point 15 meter link segment may be an extension to Clause 104
- Powering for a multi-drop 15 meter link segment will be new work
- Powering for the 1000 meter link segment has many constraints and will be new work

Powering - Summary

- P802.3cg may use Clause 104 for the 15 meter link segment
- P802.3cg will have to define powering for the 1000 meter link segment
 - May need to split the P802.3cg PAR and create a separate power project
- P802.3ch can use Clause 104 as required
- It's likely that Clause 104 will be opened up by both projects
- Coordination should be done to avoid editing problems

Thank you!