IEEE 802.3da SPMD TF: Mixing Segment Musings

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Background

- Use case library (https://www.ieee802.org/3/SPMD/usecase/SPMD_Usecase_Library.pdf)
  - Multiple cases requested more nodes/longer reach(e.g., 32/75, 64/75, 24/75, 16/60, 32/100)
- Strawman objectives September 2019 (https://www.ieee802.org/3/SPMD/public/sep19/spmd_pjones_03a_0919.pdf)

  "Define performance characteristics of a mixing segment with a single balanced pair of conductors supporting up to at least 32 nodes, for up to at least 75 m reach"
- Strawman objectives November 2019 (https://www.ieee802.org/3/SPMD/public/sep19/spmd_pjones_03a_0919.pdf)

  "Define performance characteristics of a mixing segment with a single balanced pair of conductors supporting up to at least 16 nodes, for up to at least 50m reach"
- Objective 1 (https://www.ieee802.org/3/da/802d3da_objectives.pdf)

  "Define performance characteristics of a mixing segment for 10Mb/s multidrop single balanced pair networks supporting up to at least 16 nodes, for up to at least 50m reach."

Things to consider *(Common deployments)*

- 10BASE-2: 30 nodes, 185m
- CAN: 32 nodes, 100m @ 500Kb/s
- DALI: 64 devices, 300m
- AS-I: 62 Nodes, 100m
- BacNet MS/TP*: 32 Nodes, 100m+
- DMX512*: 32 “unit loads”, 400m
- Profibus*: 32 Nodes, 100m
- <next target technology>

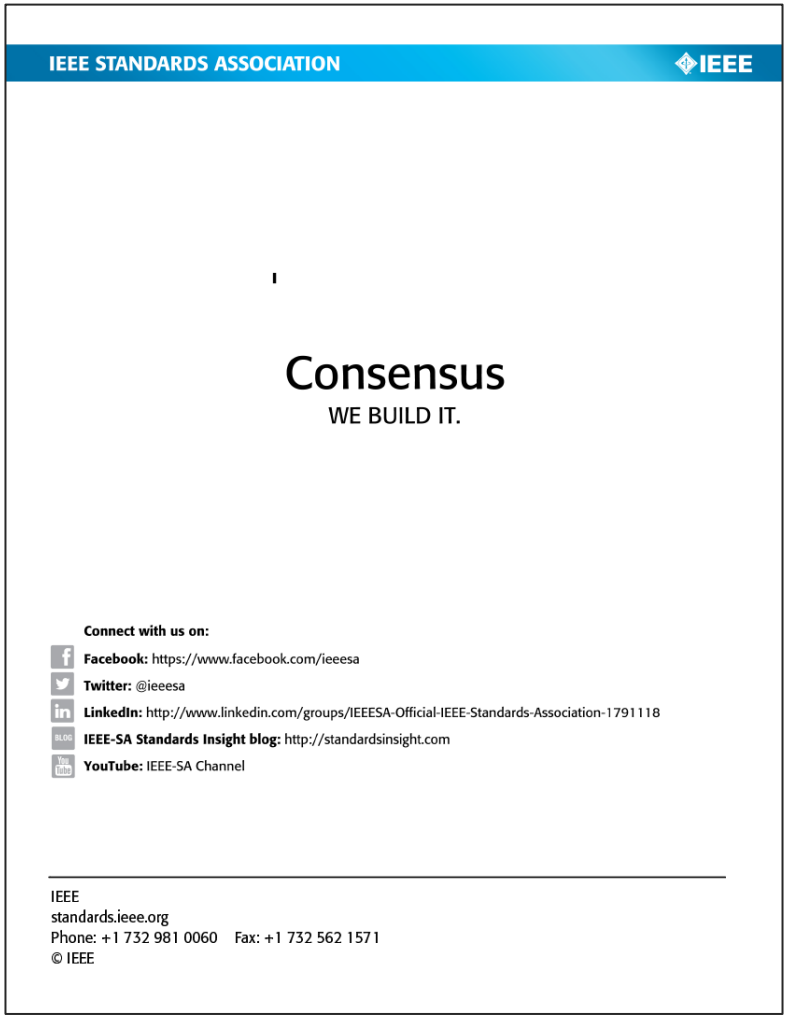
*RS485 based systems

More things to consider

- Silicon gets cheaper over time *(at least digital logic)*, magnetics, MDI etc, not so much.
- *I believe* we will end up coming back to do higher speeds, let's keep that in mind.
- *I believe* we need to be credible compared to the technologies we want to replace.
- *A SPMD mixing segment can be "extended" using Two Port MAC Relay's,* but we want that to be the exception, not the rule.

Takeaways

- *I believe* we need to make conscious decisions when trading off mixing segment, PHY and powering circuitry
- *I believe* we should consider, and hopefully accept, PHYs more complex than Clause 147 to expand the supported scenarios/use cases
- *I believe* we need to consider the value (and interpretation) of "Support interoperability with Clause 147 multidrop" vs the value of expanded target application support.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