Link Propagation Delay in IEEE 802.3dm: System Implications and Trade-offs

Contribution to 802.3dm Task Force

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802.3dm Objective and Link Delay

- The current Link Delay proposal of <80nsec will put <u>unnecessary restrictions</u> on the Link Delay that will make longer reach applications difficult to achieve.
  - https://ieee802.org/3/dm/public/050125/gorshe_3dm_01a_250501.pdf

- The objective for 802.3dm does **NOT** limit the cable length to 15meters

> Define performance characteristics of link segments suitable for use with automotive balanced-pair cabling and automotive unbalanced coaxial cabling supporting use of up to 4 inline connectors and up to at least 15m reach on at least one type of automotive cabling.

https://www.ieee802.org/3/ISAAC/public/0324/Objectives_ISAAC_01_0324.pdf

Example Application

Below Example Use Cases:

There are market and customer applications that exceed >15meters of cable.

– What if 30m's of cable is desired?

  • ~5ns/m is 150nsecs total link delay + 1-2nsecs for inlines = ~158nsec of link delay

Recommendation	Target
Cable VF	>= 0.67
Cable IL	0.7 - 0.75dB/m @ nyquist
Total Connector count	4inlines and 2 termination

20-30meters of cable
w/ 3-4 inline connectors

ECU Connector

Sensor Connector
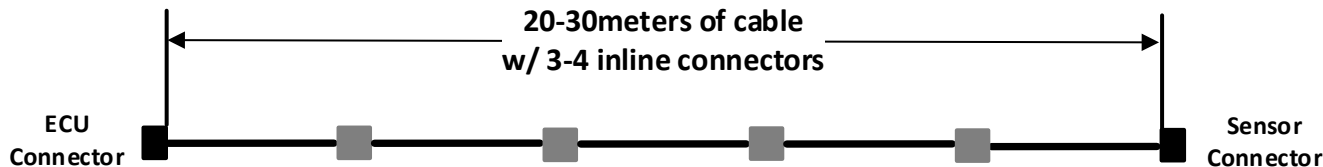
Summary

1 It is proposed to have a link delay **160 nanoseconds** to be competitive in the existing market space

2 This will allow **longer reach** and or **cheaper** cable use cases