neighborPropDelayThresh Defaults

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Overview

- Currently default values for neighborPropDelayThresh are not specified
- The market needs standard defaults in order to maintain plug and play compatibility
- neighborPropDelay is used to measure the wire delay between link partners
- If neighborPropDelay > neighborPropDelayThresh then it is assumed that a buffered repeater is in the path and asCapable is set to False
Structured wiring limit 100 meters of CAT 5 cable
Unstructured wiring limit 130 meters of Cat 5 cable

\[
1 \div (299,792,458 \text{ meters/second} \times \frac{2}{3}) = 5.003\text{ns/meter}
\]

130 meter = 650.4ns wire delay
- Minimum delay on a buffered repeater 8 bytes of preamble + 64 byte packet = 5493ns
- Minimum delay on a cut through repeater is 8 bytes of preamble + 6 bytes of DA
- Minimum time for a cut through repeater = 1068ns
Gigabit Ethernet Buffered Repeater

- Minimum delay on a buffered repeater 8 bytes of preamble + 64 byte packet = 549ns
- Minimum delay on a cut through repeater is 8 bytes of preamble + 6 bytes of DA
- Minimum time for a cut through repeater = 107ns
- We may not be able to detect a Gig Buffered Repeater
802.3 Cat 5 neighborPropDelayThresh

- \( \text{neighborPropDelayThresh} > 618.8 \text{ns} \) to accommodate 130m length
- \( \text{neighborPropDelayThresh} < 5493 \text{ns} \) to detect a buffered repeater
- \( \text{neighborPropDelayThresh} < 1068 \text{ns} \) to detect a cut through repeater
**Fiber**

- **Multi-mode Fiber Length**
  - 2 km meters at 100 Mbit/s
  - 550 meters at 1 Gbit/s
  - 300 meters at 10 Gbit/s

- **Single-mode Fiber Length**
  - 10 km at 1,310 nm wavelength
  - ~70 km at 1,550 nm wavelength

- \( \frac{1}{(299,792,458 \text{ meters/second} \times \frac{2}{3})} = 5.003\text{ns/meter} \)

- \( \text{neighborPropDelayThresh} > 10 \text{ microsecond for multi-mode fiber} \)

- \( \text{neighborPropDelayThresh} > 50 \text{ microsecond for single-mode fiber} \)
Recommended Defaults

- 802.1AS measurements are not exact and some overhead needs to be added to the defaults

- 802.3 over Cat 5

- 802.3 over Fiber
References

- http://en.wikipedia.org/wiki/Multi-mode_optical_fiber