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
- \[ \frac{1}{(299,792,458 \text{ meters/second} \times \frac{2}{3})} = 5.003\text{ns/meter} \]
- 130 meter = 650.4ns wire delay
Fast Ethernet Buffered Repeater

- 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
Minimum delay on a buffered repeater is 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

- `neighborPropDelayThresh > 618.8ns` to accommodate 130m length
- `neighborPropDelayThresh < 5493ns` to detect a buffered repeater
- `neighborPropDelayThresh < 1068ns` to detect a cut through repeater
Buffered Repeater Testing

- **FE Buffered repeaters**

<table>
<thead>
<tr>
<th>Brand</th>
<th>Silicon</th>
<th>Delay</th>
</tr>
</thead>
<tbody>
<tr>
<td>LinkSys</td>
<td>Realtek</td>
<td>8890ns</td>
</tr>
<tr>
<td></td>
<td>Marvell</td>
<td>9292ns</td>
</tr>
</tbody>
</table>

- **GE Buffered repeaters**

<table>
<thead>
<tr>
<th>Brand</th>
<th>Silicon</th>
<th>Delay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dlink</td>
<td>Vitesse</td>
<td>1687ns</td>
</tr>
<tr>
<td></td>
<td>Marvell</td>
<td>1464ns</td>
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</tbody>
</table>

Delay times represent only the additional delays from the buffered repeater on a network with no other traffic besides pDelay messages.
Recommended Defaults

- **802.3 over Cat 5**
  - Theoretical minimum default should be > 618.8ns
  - From testing maximum default should be < 1464ns

- **A neighborPropDelayThresh of 1000ns would easily detect typical GE buffered repeaters and allow maximum length cables with adequate margin for error.**
References

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