DPLCA – Review of presence mechanism and Safety aspects

Kamal Dalmia

Recap of proposal

- DPLCA = Dynamic PLCA for automated node ID assignment
- DPLCA nodes to transmit COMMIT at every N^{th} TO
- Intent is to provide indication of the presence of a node to other nodes (and node 0) to achieve the following…
  - Quick onboarding of newly added nodes
  - Quick detection of a removed nodes
  - Avoid duplicate node IDs
  - Provide ability to distinguish between silent node and failed/removed node
- No change to Node 0 (BEACON)

Some considerations…

- 802.3cg nodes (PLCA nodes) can “choose” to transmit COMMIT at every (**Nth**) cycle
  - N to be determined/programmed by higher layers.

- DPLCA would “require” nodes to transmit COMMIT at every (**Nth**) cycle
  - N=1, 2, …N
  - N=0 implies no requirement to transmit COMMIT. Node acts as “legacy” PLCA node.

- DPLCA nodes would transmit bit streams that are already allowed to be transmitted by PLCA nodes

- Given that the bits on the wire can be identical for the two cases…

- EMI and collision behaviors are subsets of what is already possible with PLCA networks

Safety Considerations

- Safety is a key consideration in Automotive (and some industrial) applications
- Rapid detection of failure conditions helps achieve certain safety levels
- Frequent indication of a node's presence is beneficial for safety
  - How frequent? Flexibility via choice of N!

Summary

- Transmission of COMMITs at every (or every N^{th}) TO provides the following desirable qualities
  - Quick onboarding of newly added nodes
  - Quick detection of a removed nodes
  - Avoids duplicate node IDs
  - Provides ability to distinguish between silent node and failed/removed node

- DPLCA using COMMITs to indicate presence would be interoperable with existing PLCA

Thank You