Another Scheme for 802.1AS-Rev BMC Redundancy

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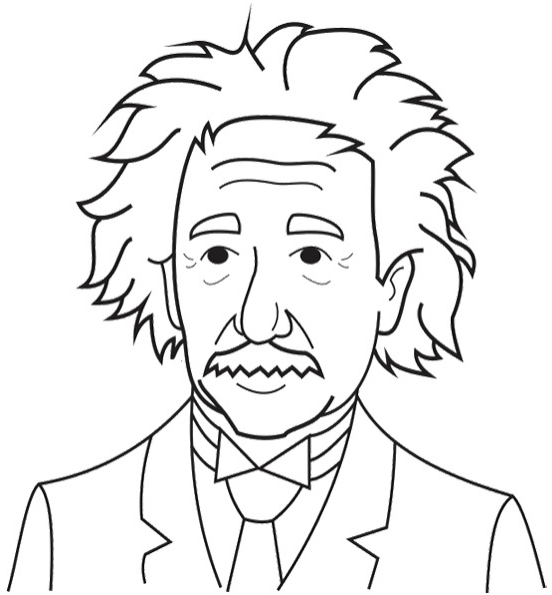

Out of clutter… find SIMPLICITY

Albert Einstein

BMC REDUNDANCY IN THE CURRENT 802.1AS-REV DRAFT

- **As currently described in the 802.1AS-Rev draft, the GMC redundancy scheme is based on the "legacy" 802.1AS Rev1 scheme, that:**
  - was initially designed to advertise a **single** BM clock only within a domain
  - uses a PTP loop free Announce message flooding protocol

- **To support multiple concurrent BM clocks for redundancy, this scheme requires to establish a separated path for the Announce messages each concurrent BM clock**

CURRENT SCHEME LIMITATIONS

- **Inefficient**
  - requires to define one domain per clock
  - BMCA cannot be run independently in each domain
- **No “scalable friendly”**
  - by increasing the Announce message traffic with each BM concurrent clock
- **Prone to misinterpretation**
  - How propagating Announce messages for multiple clocks is not explicitly indicated in the draft

CURRENT SCHEME LIMITATIONS (2)

- **Too specific**
  - Centralized managed network (“God box “ scheme) do not need Announce messages
  - Nor does the automotive or some industrial networks
- **Weak against faulty BMC**
  - Nodes do not distinguish Announce messages from faulty BM sources

PROPOSED NEW SCHEME

1. **Information about all the GM capable clocks is part of the topology DB on each node**
   - The DB could be populated in many different ways (could be described in an Annex):
     a) Statically (automotive for example)
     b) Dynamically (thru Topology Information distribution protocol such IS-IS or any other)
     c) Thru Announce messages (for interoperability and backward compatibility with the "legacy" IEEE 802.1AS Rev0
2. **The "BMCA selection" (the selection algorithm in BMCA) is locally performed on each node to select the BM clock(s) based on the GM capable clocks attributes stored in the DB**
3. **The Sync distribution path for a given BM clock is established thru 802.1Qca**
   - Allow BTW to select an optimized path based on some constrains such shortest path, delay,…

PROPOSED NEW SCHEME - PROS

- **Simpler:**

  the GM information is distributed by standard topology propagation protocol (anyway necessary) instead of the proprietary GM Announce Msg one. No need for multiple VLAN IDs on a per clock base

- **More scalable:**

  the BMC selection could be invoked iteratively on several subsets of GM capable clocks to select any configurable number of concurrent GM clocks.

  - GM Clock-1 = Clk-a = BMCA {Clk-a, Clk-b, Clk-c…, Clk-n}
  - GM Clock-2 = Clk-c = BMCA {Clk-b, Clk-c…, Clk-n}
  - GM Clock-i = …

- **Stronger:**

  as the BMCA is performed by each node, a node could more easily identify and block Sync messages of unselected clock (rogue or faulty source).

THANK YOU