

802.1AS: Problem of Constrained Systems

Rodney Cummings, National Instruments

Constrained Systems and 802.1AS

- Some TSN-capable systems are constrained ([RFC 7228](#))
 - E.g. 8-bit microcontroller, 10 KiB RAM
 - Often applies to boot time as well (e.g. < 100ms)
- In the context of 802.1AS, this often means
 - Disable BMCA: Too heavy, too slow
 - Each port's state is either
 - Pre-configured: Fixed out-of-box
 - Static: Set by management
 - GM's time is non-traceable (e.g. no GPS): Working clock

The Problem

- Constraints apply to the implementation
- A standard that mandates a non-constrained implementation will be ignored
 - This is proven historically (not theoretical)
- Claim: We want constrained systems to be conformant to 802.1AS
 - Problem: Not true for 802.1AS Rev D1.0
 - E.g. **A.5 Major capabilities**

BMC	Does the device implement the best master clock algorithm?	M	10.3	Yes []
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Proposed Solution

- Two distinct conformance categories for 802.1AS
- ‘Universal’
 - Same mandates as 802.1AS-2011: BMCA, PTP timescale, ...
 - If this class is supported, shall use domainNumber 0
- ‘Working’
 - BMCA optional, ARB timescale, ...
 - If ‘Universal’ not supported, may use domainNumber 0
- 802.1AS-2011 products are ‘Universal’ only
- Future 802.1AS products can support one or both