

TSN YANG Work

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From AVnu Response in San Diego

- <http://www.ieee802.org/1/files/public/docs2016/liaison-woods-AVnuResponse-0716-v00.pdf>

Avnu Industrial Requirements

What we want from 802.1 today

802.1Qbv

- Done (thank you!)

802.1Qcc

- UNI information model (CUC \leftrightarrow CNC)

802.1AS-rev

- External port configuration (i.e., sync path configuration without BMCA)
- Ability to support multiple timescales (e.g. working clock + universal clock)
- 1-step is not an requirement at this time

802.1Qcp

- YANG for “baseline” 802.1Q
- Also need: YANG for .1AS-rev, Qbv, Qcc
- **Avnu would like 802.1 to create projects for adding YANG modules for .1AS-rev, Qbv, and Qcc**
 - Future: YANG for Qci, CB, etc.

Goal: First bridge certifications in mid-2017

The Problem

- Assume .1Qbv, .1Qcc and .1AS-rev done by mid-2017
 - Avnu Industrial depends on "managed objects" / "data sets"
 - Formal spec of the management 'API'
 - Parameters each with name, permissions, data type, etc
- Assume standard YANG not done by mid-2017
 - .1Qcp provides .1Q baseline; possibly done mid-2017
 - .1Qbv, .1Qcc, and .1AS-rev are outside .1Qcp scope
 - Assume future amendments will provide standard YANG for those
- What can Avnu use to certify standards?
 - CLI? Implemented, but manual and proprietary
 - MIB/SNMP? Not intended for configuration (not long-term)

My Recommended Solution

- Pre-standard YANG modules
 - Upload to .1 public site as individual contribution
 - Avnu can use w/ RESTCONF to certify .1Qbv/.1Qcc/.1AS-rev
 - Avnu can certify the published standards, but **not** YANG
 - Future certification of YANG/RESTCONF will use future amendments
- Works toward goal of an automated CNC
- Acknowledges that standard YANG will differ
 - Assume pre-standard YANG ~80% same as standard YANG
 - Investment is far more efficient than CLI or SNMP
 - 80% re-use is better than 0%

Details: .1Qcc UNI

- .1Qcc clause 46 (UNI) contains YANG snippets
 - Used as formal specification
- Not management, but YANG module useful
 - E.g. Can use RESTCONF between CUC and CNC
- Module is simply a wrapper for clause 46 snippets
 - Configuration: List of streams
 - Each with one *Talker* container and list of *Listener* containers
 - State: List of *Status* container for each stream
- Use a 'vendor' namespace (not IEEE 802d URN)
 - For this and other TSN pre-standard modules

Details: .1Qbv Managed Objects

- .1Qbv module is an augment of .1Qcp's bridge port
 - Currently ieee802-dot1q-bridge.yang bridge-port
 - Location likely to change as .1Qcp evolves
 - Change in location will have little impact on .1Qbv module
- .1Qbv managed objects provide a clear reference
 - .1Qbv MIB also provides a guide
- Overall, .1Qbv module is straightforward

Details: .1Qcc Managed Objects

- Same methodology as .1Qbv
- Also need to augment bridge component
 - Not just bridge-port

Details: .1AS-rev Clause 14 (Data Sets)

- Data sets in .1AS-rev need enhancement for PAR goals
 - Multiple domains, external port config, etc
- Multi-domain data sets proposal pending for 1588-rev
 - To be approved-to-draft soon (similar to WG ballot)
- Proposal discussed in July .1 meeting (San Diego)
 - Wait for data sets proposal in 1588-rev draft
 - Use 1588-rev data sets for enhanced .1AS-rev clause 14
 - Changes do not impact on-the-wire compatibility
- .1AS-rev cl 15 (MIB) is on-the-wire, so decision needed
 - Various options, depending on need and volunteers

Details: .1AS-rev YANG Module

- 1588-2008 YANG is IETF TICTOC draft
 - <https://tools.ietf.org/html/draft-jlx-tictoc-1588v2-yang-04>
 - Datatracker WG State is 'WG Document'
- YANG is out-of-scope for 1588-rev
 - But revising 1588-2008 to 1588-rev is straightforward
 - Top-level organization is represented in 1588-2008 module
 - Proposal: Create 1588-rev YANG as individual contribution
 - Standardized later in either IETF TICTOC or 1588 itself
- Proposal: Augment 1588-rev YANG for .1AS-rev YANG
 - Straightforward since .1AS-rev data sets align with 1588-rev

TSN YANG Module Summary

- Individual contributions, not tied to a PAR
- Modules to be uploaded in coming months
 - .1Qcc D1.1 UNI
 - .1Qbv-2015 managed objects
 - .1Qcc D1.1 managed objects
- Modules to be uploaded after .1AS-rev data sets in draft
 - 1588-rev data sets (snapshot of latest draft)
 - .1AS-rev data sets (snapshot of latest draft)

Thank you