Deterministic Networking status 2016-09-07

Norman Finn

nfinn@alumni.caltech.edu

IEEE draft stages

1. Task Group ballot drafts (TG)
2. Working Group ballot drafts (WG)
3. Sponsor ballot drafts (SB)
4. Published standard

IETF draft stages

1. Independent drafts
2. Working Group review
3. Area and IETF review
4. RFC editing

IEEE Std 802: Published standards

- IEEE Std™ 802.1Q-2014 Bridges and Bridged Networks
  - Incorporates old 802.1D non-VLAN bridges and all AVB standards
- IEEE Std 802.1Qbu-2015 Frame Preemption (in bridge) supports IEEE Std 803.3br-2016 Interspersing Express Traffic (in MAC)
- IEEE Std 802.1Qbv-2016 Scheduled Traffic
  - Per-port rotating schedule turns on and off every queue
- IEEE Std 802.1Qca-2015 Path Control and Reservation
  - Uses ISIS to create multiple paths

IEEE P802: In-process standards

- P802.1CB Frame Replication and Elimination for Reliability (SB)
  - Makes use of multiple paths (802.1Q, 802.1Qca)
  - Adds serial tag, or uses IEC 62439-3 HSR tags or PRP trailers
- P802.1Qcc Stream Reservation Protocol Enhancements (WG)
  - Defines managed objects to allow central control of an enhanced peer-to-peer bandwidth reservation protocol
- P802.1Qch Cyclic Queuing and Forwarding (WG)
  - Lock-step synchronized double buffering provides fixed latency, zero congestion loss

IEEE P802: In-process standards

- P802.1Qci Per-Stream Filtering and Policing (WG)
  - Time-gated input processing supports P802.1Qch CQF, per-flow queues, and robustness against misbehaved transmitters.
- P802.1CM Time-Sensitive Networking for Fronthaul (TG)
  - Profile for TSN standards for CPRI (Common Public Radio Interface) fronthaul application.
- P802.1Qcr Asynchronous Traffic Shaping (editor's drafts)
  - 2-stage hierarchical shaped queues.

DetNet Working Group drafts

- No RFCs to date
- Drafts adopted by DetNet Working Group:
  - Deterministic Networking Problem Statement
  - Deterministic Networking Use Cases
- Drafts currently being polled for adoption:
  - DetNet Data Plane Protocol and Solution Alternatives
  - Deterministic Networking Architecture
- Five other independent drafts.

Pointers

- IEEE 802.1 home page
- DetNet home page
- Get 802 program supplies IEEE 802 standards free after 6 months.