

Title: Liaison on IEEE 802.1 TSN projects to the IETF DetNet WG
From: IEEE 802.1 Working Group
For: Information
Contacts: Glenn Parsons, Chair, IEEE 802.1, glenn.parsons@ericsson.com,
Jessy Rouyer, Vice-Chair, IEEE 802.1, jessy.rouyer@nokia.com,
Karen Randall, Liaison Secretary, IEEE 802.1, karen@randall-consulting.com,
János Farkas, Chair, IEEE 802.1 TSN Task Group, janos.farkas@ericsson.com,
Craig Gunther, Vice-Chair, IEEE 802.1 TSN Task Group, craiggunther@yahoo.com,
Johannes Specht, IEEE 802.1 TSN Secretary, johannes.specht.standards@gmail.com,
Paul Nikolich, Chair, IEEE 802, p.nikolich@ieee.org,
Jodi Haasz, Senior Manager, IEEE SA Operational Program Management, j.haasz@ieee.org
To: IETF DetNet WG, detnet@ietf.org, detnet-chairs@ietf.org,
Lou Berger, Co-Chair, IETF DetNet WG, lberger@labn.net,
János Farkas, Co-Chair, IETF DetNet WG, IETF liaison manager to IEEE 802.1,
janos.farkas@ericsson.com
Date: November 16, 2023

Dear Colleagues,

We would like to inform you about our current projects that might be most relevant for your ongoing work on enhanced DetNet data plane.

The IEEE P802.1DC “Quality of Service Provision by Network Systems” project (<https://1.ieee802.org/tsn/802-1dc/>) specifies procedures, managed objects, and YANG modules for Quality of Service (QoS) features specified in IEEE Std 802.1Q, such as per-stream filtering and policing, queuing, transmission selection, flow control and frame preemption, in a network system that is not a bridge. IEEE Std 802.1Q specifies QoS features for bridges; however, these features are perfectly applicable to other devices, e.g., end stations, routers, e.g., DetNet routers. In IEEE Std 802.1Q, the specifications of these features are scattered, and coupled tightly to the operation of a bridge. IEEE P802.1DC provides simple reference points to the IEEE Std 802.1Q QoS specifications that are usable for non-bridge systems, and for managed objects for these features that are not specific to bridges. A list of TSN QoS features provided in Table 9-2 in IEEE P802.1DC. IEEE P802.1DC is at IEEE Standards Association ballot.

The IEEE P802.1Qdv “Enhancements to Cyclic Queuing and Forwarding” project (<https://1.ieee802.org/tsn/802-1qdv/>) specifies procedures, protocols and managed objects to enhance Cyclic Queuing and Forwarding, comprising: a transmission selection procedure that organizes frames in a traffic class output queue into logical bins that are output in strict rotation at a constant frequency; a procedure for storing received frames into bins based on the time of reception of the frame; a procedure for storing received frames into bins based on per-flow octet counters; a protocol for determining the phase relationship between a transmitter’s and a receiver’s bin boundaries in time; managed objects, Management Information Base (MIB), and YANG modules for controlling these procedures; and an informative annex to provide guidance for applying these procedures. This amendment also addresses errors and omissions in the description of existing IEEE Std 802.1Q functionality. The existing Cyclic Queuing and Forwarding (CQF) functionality in IEEE Std 802.1Q provides bounded end-to-end delays, allows simple delay analysis methods, and does not depend on per-flow state. These properties are critical for scaling up Time-Sensitive Networking to large networks with a high number of simultaneous flows, such as service provider networks. This amendment extends the existing CQF functionality to support

long physical links with high delay, processing delay variations in bridges, non-time-synchronized ingress traffic, and/or flows with a wider range of latency requirements. These properties enhance the suitability of CQF for large networks. The time-based bin filling provides for synchronized time division multiplexing (TDM). The count-based bin filling (“[paternoster](#)”) provides ingress to a TDM domain and provides the QoS between TDM domains. In addition, count-based bin filling without synchronized clocks provides very low latency variation, which improves scaling when aggregating flows. IEEE P802.1Qdv is at Task Group ballot.

We look forward to continued collaboration between our groups.

Respectfully submitted,
Glenn Parsons
Chair, IEEE 802.1 Working Group