

# draft-finn-detnet-bounded-latency

## Introduction

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# Status. Abstract. Justification.

- Individual draft. Incomplete.
- Abstract: This document [provides] a model for DetNet to achieve bounded latency and zero congestion loss using existing and in-progress standards from IEEE 802 and RFCs from IETF.
  - This goal is not achieved in this first version of the draft.
- We have been talking a lot about packet replication, but **DetNet's primary features are bounded latency and zero congestion loss.** These require an accurate, not approximate, computation of:
  - The **worst-case latency** that a flow can experience; and
  - The amount of **buffer space** required at each hop.

# Accurate numbers

- Without accurate numbers for latency, DetNet is useless.
- Without accurate numbers for buffer requirements, DetNet is too expensive to implement.
- This hop's buffer requirements depend strongly on the details of previous hops' transmission selection algorithms.
- So, accurate numbers require detailed descriptions and/or parameterization of queuing and transmission selection algorithms.
- No single queuing and transmission selection algorithm will satisfy all of the DetNet use cases.

# What queuing and selection algorithms?

- **RFC 2963** “A Rate Adaptive Shaper for Differentiated Services” is being used, today, to implement DetNet-type services.
- Several queuing and transmission selection algorithms are precisely defined in **IEEE Std 802.1Q** and its amendments, and are being used to implement DetNet-type services. Furthermore, 802.1Q defines exactly how these different 802.1Q methods interact with each other.
- But, in IEEE Std 802.1Q, the definitions of the queuing and transmission selection algorithms are **embedded** in, and intimately **tied to**, the definition of **a bridge** – not a router or end system.

# Progress in IEEE 802.1 (this author's opinion)

- A [project](#) is under discussion\* (**≠ “started”!!**) in IEEE 802.1 Time-Sensitive Networking Task Group to create a new document, “Quality of Service Provision for Non-Bridges”. This would specify how a device that is **not** a Bridge can apply the 802.1Q queuing and transmission selection algorithms. This would:
  - Provide easy points of reference for IEEE, IETF, or other SDOs’ documents to call out 802.1Q queuing and transmission selection algorithms;
  - Provide an entry to 802.1Q for implementers who want to build these queues, but do not care about the intricacies of bridges.

\* The January 802.1 interim is authorized to prepare a Project Authorization Request to submit to the 802 Executive Committee at the March plenary.

# Whither draft-finn-detnet-bounded-latency?

- It is the author's intention that this draft eventually be a companion to the new 802.1 standard, defining at least one set of choices for 802.1 and/or IETF queuing definitions for implementing at least one class of DetNet service.
- Whether the new 802.1 standard, or some development of draft-finn-detnet-bounded-latency, explains how to integrate RFC 2963 (or others) with bridging queues is To Be Determined.
- Additional ideas / authors are welcome.

# Discussion