

DetNet

Bounded Latency

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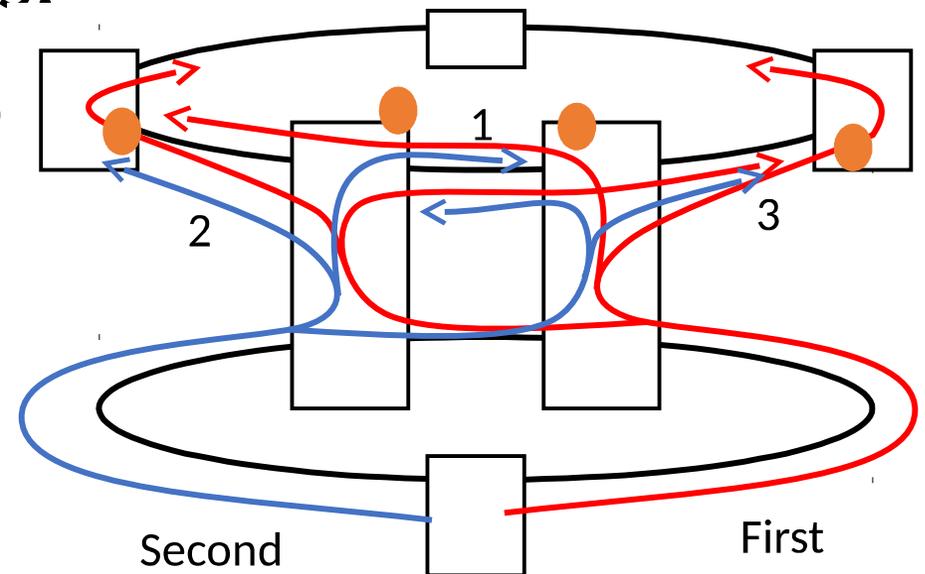
A reminder to new attendees ...

- DetNet is about an **upper bound** on end-to-end latency – **not** low average latency.
- Bounded latency \Leftrightarrow the ability to compute exactly how many buffers are required to achieve zero congestion loss.
- **Feedback** that slows down flows to avoid congestion is **not an option** for the application space of interest to DetNet.
- Mathematically sound assurances can be given on latency and congestion loss.

Most of the DetNet work as been about packet replication and elimination

That's probably because it's a "fun" topic.

- Lots of ways to do it, but it's not a trivial problem.
- It's very similar to existing usages.
- MPLS is a familiar technology, so everyone has an opinion.



But, **bounded latency** is the most important feature to most of DetNet applications.

- It is random, unexpected, congestion that prevents mixing critical and other traffic in a single network.
- Bounded latency is not as much “fun” as PR / EF.
 - IntServ was a really long time ago.
 - IntServ “doesn’t scale”.
 - Queuing calculations are complicated.

There is good news

- IntServ technologies DO work, and hardware is a lot cheaper, now, than in 1995.
- There are also a number of new queuing and transmission selection techniques that offer various useful trade-offs among low latency, latency variation, implementation complexity, and reservation management complexity.
- We have Jean-Yves Le Boudec to help us make the network calculus automatically computable.

Important sections of draft-finn-bounded-latency

4. DetNet bounded latency

- Introduction

5. Computing End-to-end Latency Bounds

- Network calculus

6. Achieving zero congestion loss

- Computing the buffers required for zero congestion loss

7. Queuing models

- Mapping applicable queuing technologies to the model in 4, 5, and 6.

8. Parameters for the bounded latency model

- Parameters useable for resource reservation over all queuing technologies.

At this stage ...

- There is more intent than substance.
- The descriptions of the IEEE queuing technologies is too long.
- More substance, especially in the network calculus sections, has been promised.

Thank you