L2/L3 cooperation for Quality of Service issues

TSN TG, please take note!

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There is no layer 2 or layer 3 for QoS!

- There are Layer 2 protocols for establishing and effecting Quality of Service requirements:
    - Priority tagging
    - Best-effort priority
    - Enhanced transmission selection
    - Traffic shaping
    - Time-scheduled queues
    - Congestion notification
    - Stream Reservation Protocol

- There are layer 3 protocols for establishing and effecting Quality of Service requirements:
    - DiffServ
    - IntServ
    - Hierarchical queuing
    - MPLS priorities
    - RSVP
    - And on and on …

BUT

In reality …

- There are only boxes and links.

- QoS is all or nothing. It is end-to-end, or it is mostly useless.

- No matter how many protocols are in use, an ASIC has to pick which packet is to be transmitted next on a port, and all of the various QoS plans **must be reconciled** to a single decision.

- If L2 (802.1 *among others*) and L3 (IETF mostly) and higher-layer (e.g. video protocols) cannot easily be reconciled, then standards have to be ignored.

- If we make QoS a competition between 802 and IETF, I'll give you three guesses as to who will lose.

- **Boxes and links. End to end.**

In reality …

- Even in an automobile, there will be both routing and bridging. I cannot imagine there is any doubt that this will be true in an airplane.

- I am not saying that no pure-L2 solution is useful, in some context.

- I am absolutely saying that any L2 solution (e.g. the current SRP or the proposed split/merge protocol) that cannot be easily tied to an L3 requirement and a corresponding L3 protocol will die a lingering but painless death, unremarked by anyone except its proud but heartbroken parents.

- **Boxes and links. End to end.**

What to do, what to do

- If you attend IETF, please figure out who we need to talk to.

- I will be talking to IETFers within my company.

- Let's get both L2 and L3 standards working together.

- Get the handles for connections to RSVP back in to SRP.

- Get the handles for open-jaw configurations into any split/merge protocol (where the open jaws are expected to be routers).

- If there is no L3 protocol that can be tied to split/merge, then get one started in IETF.

- Get a scheduled queue mechanism started in IETF.

- **Boxes and links. End to end.**

- Other ideas are **very** welcome! Let's talk!!

Boxes and links.
End to end.