Practical limitations on RP

Consider following implementations for RP:

1. Dynamic allocation of RLs for congested flows:
   - Install RL for a flow when congestion information is received.
   - Only congested flow goes through RL, all other flows continue unaffected
   - Remove flow from RL when: it returns to scheduling rate of link speed and it is empty

2. Static Allocation of flows to available RLs:
   - All flows are statically hashed (e.g. {DA, Pri}) to available rate limiters
   - Scheduling rate for RLs is modified according to congestion information received and recovery/drift mechanisms

3. Combination of above

   NOTE:
   In #1 above, when Number_of_congested_flows > Number_of_RLs, flows get hashed to available RLs – degenerates in #2

   Need to support case : multiple flows mapped to single RL
Multiple Congestion Points in single RP

Case 1:

Case 2:
Case 1: Effect of multiple CPs

**Negative Feedback:**
- Should work, Max negative feedback can take effect – “winner CP”

**Positive Feedback with RP/CP association:**
- CPID helps in associating this feedback with “winner CP”
- But creates hard RP/CP association
  - Needs drift to recover from possible corner cases (RP getting stuck:CP vanishing, flow re-routing, flow-completion)

**Self clocked recovery (no RP/CP association):**
- Should work, Max negative feedback can take effect

**“No congestion” feedback (no RP/CP association):**
- May cause increase in flip-flop for Self clocked recovery

**Rate feedback/Path probes:**
- How to resolve different rate feedbacks from different paths (flows)?
Case 2: Effect of multiple CPs

**Negative Feedback:**
- Should work, Max negative feedback can take effect – “winner CP”

**Positive Feedback with RP/CP association:**
- CPID helps in associating this feedback with “winner CP”
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**Self clocked recovery (no RP/CP association):**
- Should work, Max negative feedback can take effect

**“No congestion” feedback (no RP/CP association):**
- Should work as feedback is consolidated through the path

**Rate feedback/Path probes:**
- Should work as rates are consolidated through the path
Summary

• Practical implementations will have finite number of rate limiters at Reaction Point
• Multiple flows (to different destinations/paths) may get mapped into same Rate Limiter
• Proposed 802.1Qau solution needs to address this case