Micro-burst Decreasing in Layer3 Network for Low-Latency Traffic

draft-du-detnet-layer3-low-latency-02
Zongpeng Du duzongpeng@chinamobile.com
Peng Liu liupengyjy@chinamobile.com
IETF110
Modifications

• Change the statement that “the large scale ISP network is not in scope of DetNet”, because
  – DetNet is scoped for “single administrative domain” which could be small or large

• Change the draft to informational type, because
  – The key issue is not “an implementation or a queuing mechanism”
  – But is a new exploration to provide Low-Latency service

• Add some explanations about the motivation of the work and the way to decrease the micro-bursts
  – Several new sections are added, such as Section 2, 3, 5
What we want to solve

• Currently, TSN Mechanisms are too complicated to deploy in large scale ISP networks
  – Nowadays, there is not a common and simple method to provide the Low-Latency service in large scale ISP networks

• The method mentioned in the draft shows a potential solution that is both simple and scalable
  – Meanwhile, does not need time sync

• Perhaps, it can benefit some Low-Latency service providing in large scale ISP networks
Description of the method in the draft

• Precondition 1: critical traffic has a high priority
• Precondition 2: critical traffic has specific bandwidth resource reserved, so that there should be enough bandwidth for it on the interface
  – In this case, the main problem is the micro-burst
• Mechanism Description: on the edge, do the per-flow shaping, and on the Intermediate nodes, do the per-interface aggregated shaping
  – Change the regular behavior, i.e., forwarding all the traffic as soon as possible
Analysis of the Proposed Method

• Comparing to traditional IP forwarding with priorities in a relatively light loaded network
  – The mechanism can offer a better forwarding for the Low-Latency traffic, with less micro-bursts
  – At the cost of shaping on the edge, and keeping the shaping result on the Intermediate nodes

• Comparing to TSN mechanisms
  – The mechanism is simpler, and more scalable
  – The disadvantage is that the uncertainty is higher
    • Perhaps, some of the DetNet use cases can not be supported in this mechanism
Work at the next step

• Try to find whether some of the DetNet use cases can be supported in certain conditions
  – For example, in a network that the critical traffic is not too much, or the Low-Latency traffic not that critical
  – And perhaps as the first step, the Low-Latency traffic not that critical would appear in the ISP network

• An approximate evaluation of the uncertainty
  – We need to check whether the mechanism can work for those Low-Latency traffic not that critical
  – Maybe, the Packet Replication and Elimination mechanism can help
Thanks for listening and
Welcome for comments