Use-cases for Passive Measurement in Wireless Networks

draft-deng-ippm-passive-wireless-usecase-00

Lingli Deng, China Mobile
Lianshu Zheng, Huawei
Michael Ackermann, BCBSM
Greg Mirsky, Ericsson

Motivation

- Use passive measurement stats for mobile network operator to monitor and improve end2end service quality.
- Serves as part of the efforts to clarify the requirements and guide the design of passive IP performance measurements.

Definitions

- defined in draft-zheng-passive-framework-00.txt
- Active Measurement Method
  - The process of measuring some performance or reliability parameter associated with the transfer of traffic by generating and/or receiving packets injected into the network.
  - Active measurement traffic
- Passive Measurement Method
  - The process of measuring some performance or reliability parameter associated with the existing traffic (packets) on the network.

Use case 1
Network Planning/Optimization

- Motivation: continuous stats in production networks
- Active: injected active measurement traffic
  - characteristics may be different to the real traffic
  - not flexible to account for the impact from traffic dynamics
  - could even skew results or measurements (e.g. peak hours)
- Passive:
  - using/sampling the real traffic
  - adapts to the traffic dynamics automatically
  - with minimal impact to the network/traffic

Use case 2

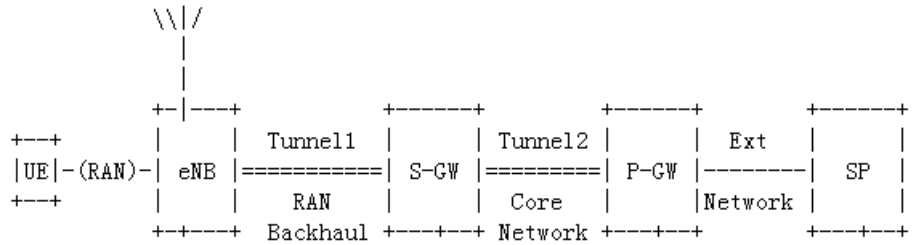
E2E Measurement for wireless subscribers

- Motivation: economic measurement for wireless last mile
- Active: injected active measurement traffic
  - extra expenses to the subscriber for active traffic
  - degraded QoE of real traffic during the active test
- Passive:
  - using/sampling the real traffic
  - no extra traffic/expenses injected on the air
  - no QoE degradation to the other traffic on the air

Use case 3

Accurate Fault Identification (1/2)

- Questions: Is there a problem? Where is the fault?
- Segment Measurement
  - within an ISP, access networks are typically segmented
    - different segments are operated by different departments



  - across ISPs, e2e data link performance's interdependency imposed by
    - visiting ISP/intermediary ISP/virtual ISP

UE<=>access ISP<=>transit ISP #1<=>Internet<=>transit ISP #2<=>ICP

Use case 3
Accurate Fault Identification (2/2)

- Active:
  - injected active measurement traffic for cross-boundary inconnections
  - cross-domain coordination needed
- Passive:
  - agents can be deployed at both the ingress and the egress point of each domain and work independently along the path
  - no extra cross-boundary traffic introduced at the interconnections
  - timely responsive degradation alert and fault identification enabled

Next Step

- Review and comments