

IP Packet loss rate measurement testing and problem statement

draft-fan-opsawg-packet-loss-01

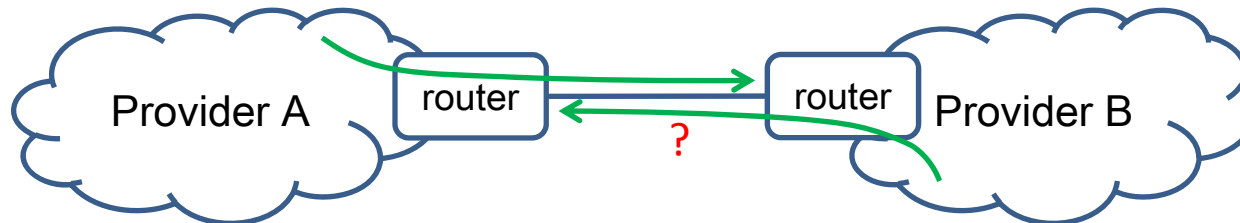
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Motivation

- Problems exist when measuring IPLR on peering link
 - Different methods result in different packet loss rates
 - Unable to know the packet loss rate of inbound traffic



- Overview of different methods
 - Problems and guidance
- Hope to reach a solution
 - Find a way that works well on peering links with consistent testing results

Methods for packet loss rate measurement

Active approaches:

- ICMP ping
 - Started on routers or probes, through CLI or SNMP
- OWAMP & TWAMP
- Proprietary Tools
 - Support ICMP, TCP/UDP, HTTP... ; e.g. RPM (juniper), IPSLA (cisco), NQA (huawei), SAA (ALU)

Passive approaches:

- Interface statistics report
 - Fetched through CLI or SNMP, packet loss rate can be calculated
- Coloring based methods

Test on IPLR measurement

- Test cases of ICMP ping
 - Using CLI/SNMP; started/targeted on router/probe
- Errors exist, sometimes too large to be used
 - 0% loss of ICMP packets vs. 50% loss of service traffic in some cases
- Different values among test cases and vendors
- Statistics Report gives most accurate values
 - Constant among test cases and vendors

Issues for measurement

- Issues to be considered when using ping
 - Forwarding class: routers may by default put ICMP and service traffic into different classes; ICMP with CLI and SNMP may also be different
 - Internal priority: implementation related; may not be able to adjust
 - Ingress line card: polling schedule allowing line cards to get forwarding resources
 - Rate limitation towards CPU: excessive ICMP packets sending to CPU may be dropped
- Interface report
 - Direct and accurate; not a smart way though
 - Require direct access to routers; difficult in cross-domain scenarios

Considerations

- Active measurement: Better to guarantee test traffic and service traffic have the same drop possibility
- Ping considerations
 - Results related to specific forwarding class of an interface
 - Better to make ICMP traffic “transit”: start ping on probes
 - > port occupation on routers; should avoid congestion on path between probes and routers
- Interface report
 - Irrelevant to internal implementation
 - Can only measure outbound traffic on links between providers

Next step

- Invite comments
- Update draft to give more analysis
- Start work on passive measurement framework/protocols?
Find a way to solve the inter-domain monitoring problem
- Can it be a WG item?