

Problem Statement and Requirement for Inband Flow Learning

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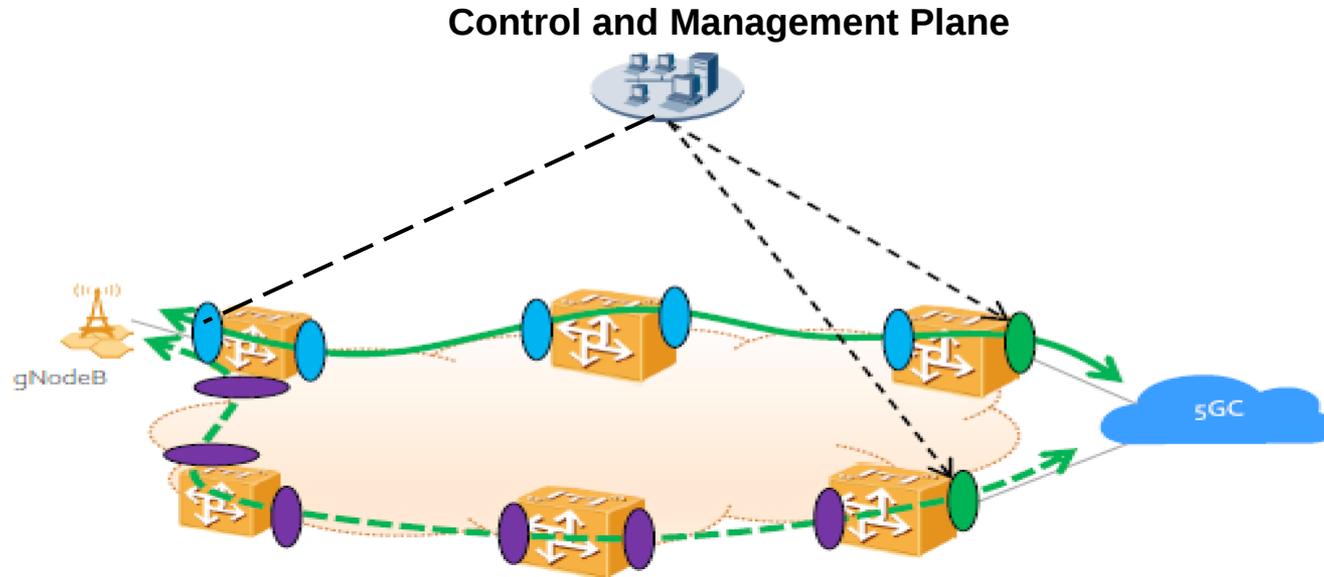
Objective of This Contribution

- To analyze the challenges of in-band flow identification in the operator's networks: a large scale deployment of 4G/5G wireless base stations and enterprise services.
- Requirements of in-band flow learning to solve the problems for deploy in-band performance monitoring.
- Provide scenarios for in-band flow learning, including Ingress Flow Learning, Egress Flow Learning, Hop-by-Hop Flow Learning, Auto Flow Aging.

Problem Statements

1. It is always difficult to get the flow information ,including Ports, IP address, DSCP, etc, to setup the instance for flow performance monitoring in the operators networks.
 - 4G/5G 2C and 5G 2B scenarios □ because of Tidal Effects, base station adjustments, UPF expansions, etc.
 - Enterprise services, because of difficult to get the customer's information.
2. It is hard to deploy and maintain flow monitoring and statistics telemetry in a static mode in large scale network.
 - China Mobile has 410,000 5G Stations, 400,000 SPNs for backhaul and enterprise service by the end of March 2021.
3. The traffic forwarding path is changed because of service flow switching, service protection and route convergence, When a hop-by-hop flow monitoring is required by critical traffic for deep SLA investigation, monitoring instance on each node needs to be re-deployed on the new path.

Requirements



Ingress Flow Learning

Ingress flow learning captures the characteristic data fields of packet and create the monitoring instance. It is more simple to create the monitoring instance in the wireless to core network scenarios .

Egress Flow Learning

To solve the problem of egress node changing, the egress node or egress port of service flow can be triggered to re-learn and re-monitor the service flow.

Hop-by-Hop Flow Learning

To solve the problem of path of a service flow changing, the service flow re-triggers the flow learning on the new path and starts the new monitoring.

Auto Flow Aging

Automatic aging and resource recycle

Next Step

- Update the draft according to WG feedback.
- Later we will propose more contributions on the mechanisms of the in-band flow learning.

Thank You