

# Flow Aggregation for Enhanced DetNet

draft-xiong-detnet-flow-aggregation-00

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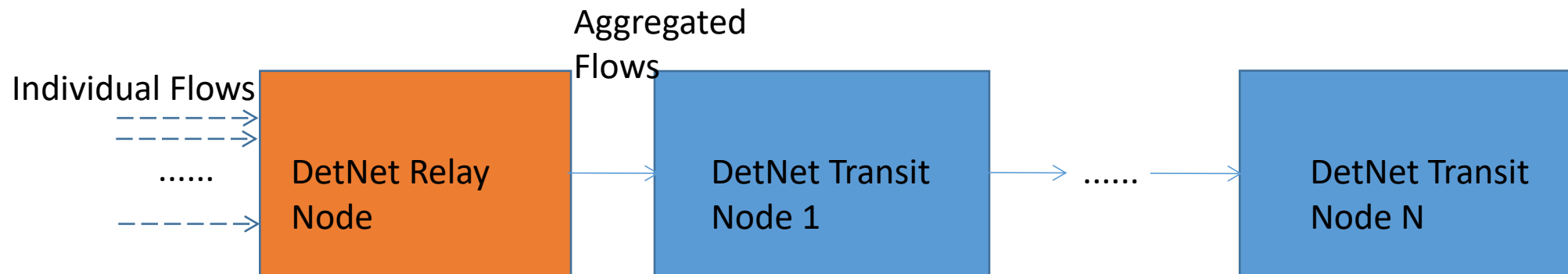
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# Agenda

- Flow Aggregation for Enhanced DetNet
  - Gaps and Requirements
  - Considerations

# Flow Aggregation Gaps and Requirements-1

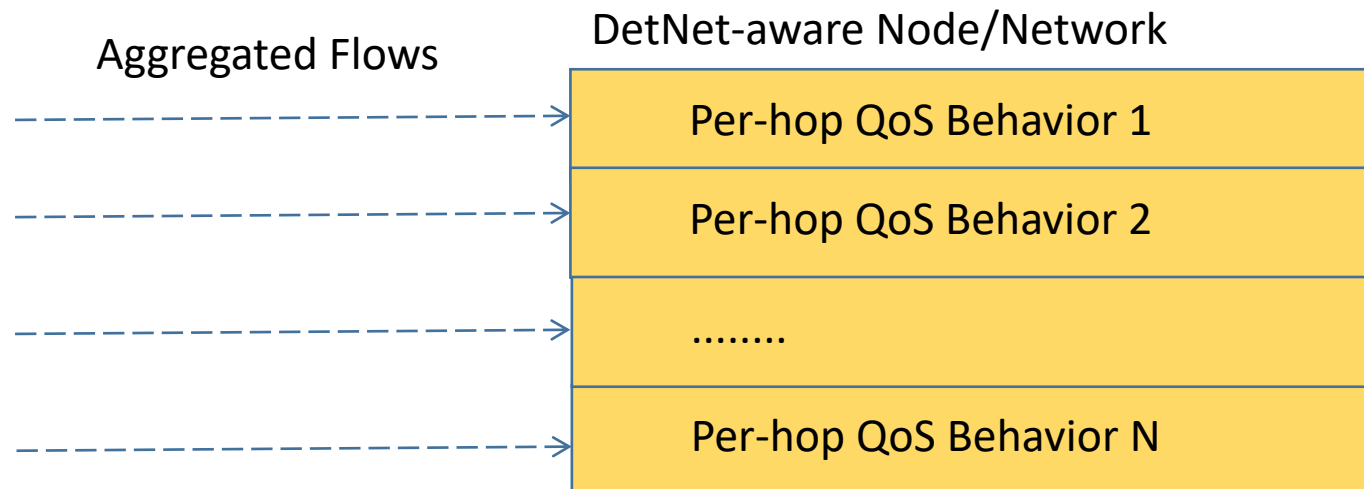
- **Aggregating DetNet flows to resolve the scalability issues at transit nodes**
  - ✓ As per [RFC9522], it might suffer from the scalability concerns and the existing aggregation of individual flows may be still challenging for network operations.
  - ✓ As per [I-D.joung-detnet-taxonomy-dataplane], the class level could be provided to simplify the control and accommodate traffic fluctuations by aggregating flows with the same level of service requirements.
  - ✓ The flow aggregation based on the class level or hierarchical aggregation could resolve the scalability issues. When DetNet flows are aggregated, transit nodes provide service to the limited aggregate levels.



Large number of Individual Flows  Limited number of aggregated classes

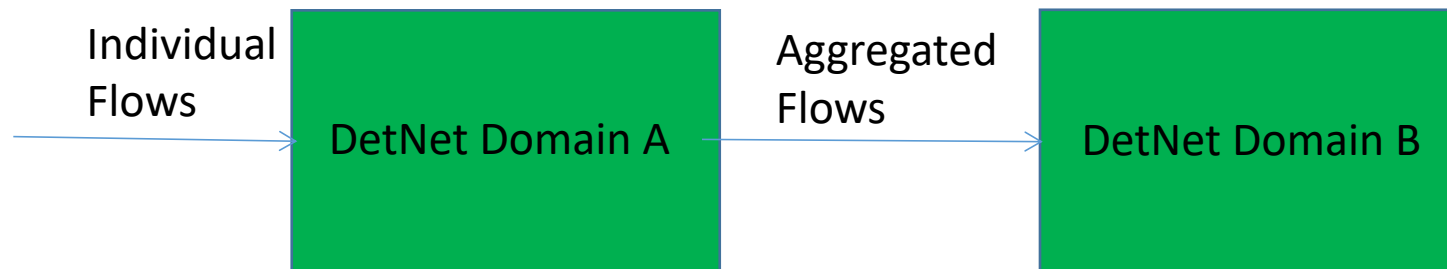
# Flow Aggregation Gaps and Requirements-2

- **Aggregating DetNet flows to provide fine-grained QoS behaviors**
  - ✓ As per [I-D.ietf-detnet-scaling-requirements], different levels of applications differ in the SLAs requirements such as tight jitter, strict latency, loose latency and so on.
  - ✓ As per [I-D.joung-detnet-taxonomy-dataplane], the treatment solutions in data plane can be categorized based on performance and functional characteristics. For example, delay bound guarantee such as C-SCOR/EDF , jitter bound guarantee such as CQF variations.
  - ✓ The DetNet node or domain needs to transmit the individual flows by aggregating the flows to a selecting treatment solution with corresponding per-hop QoS behavior to provide fine-grained provisioning.



# Flow Aggregation Gaps and Requirements-3

- **Aggregating DetNet flows across different network domains**
  - ✓ As per [I-D.ietf-detnet-scaling-requirements], different network implementations may be intended for different application domains, where there is no additional requirements for the coordination.
  - ✓ As defined in [ITU-T Y.2122], the network operating parameters of a flow aggregate should be exchanged among different network domains.
  - ✓ The flow aggregation may be used to achieve the interworking of different domains in multi-domain scenario such as the mapping of the QoS requirements.



# Consideration about Aggregating DetNet Flows on Aggregated-class Level

- **Flow Classification**

- Individual flows may be aggregated for treatment based on shared DetNet flow-specific QoS characteristics on aggregated-class level .
- Aggregated classes can be predefined to indicate the different levels of applications with SLAs requirements and each class demands differentiated QoS behaviors and treatment as well as different DetNet capabilities in scaling networks.

- **Flow Identification**

- The aggregated flows are required to be dynamic and simplified to be identified by an aggregation class (A-Class).
- The aggregation class information may be used alone or together with other metadata to indicate the required queuing and forwarding behaviors.
- The encoding of the A-Class may reuse the DSCP/TC or existing field such as the TC field in A-Label.

# Next Step

- Describing some real scenarios, e.g., 5GS-as-a-logic-detnet-node, providing the hierarchical aggregation and also requires explicitly per-hop DetNet behavior.
- Comments and suggestions are very welcome!
- Thanks!