

# DetNet

# DetNet Flow Information Model

draft-ietf-detnet-flow-information-model-04

János Farkas, Balázs Varga,  
Rodney Cummings, Jiang Yuanlong

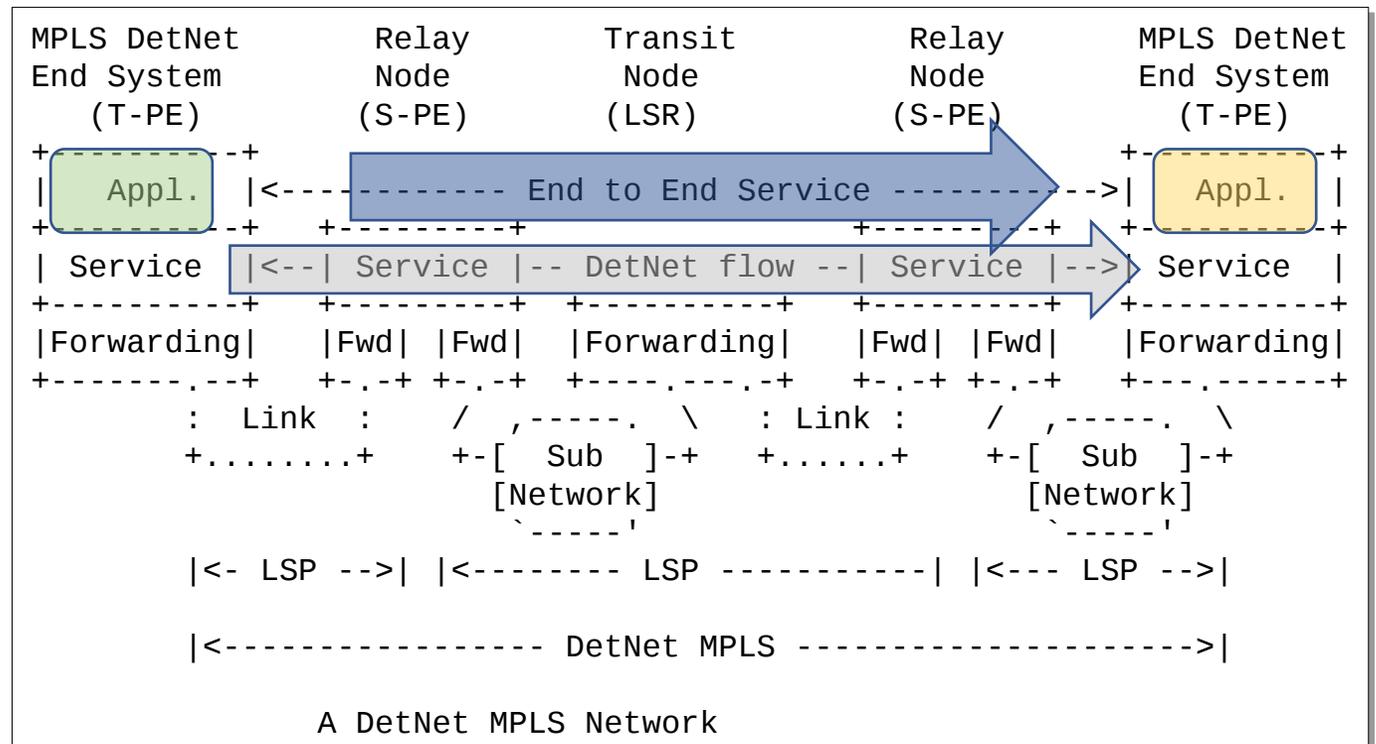
[janos.farkas@ericsson.com](mailto:janos.farkas@ericsson.com), [balazs.a.varga@ericsson.com](mailto:balazs.a.varga@ericsson.com),  
[rodney.cummings@ni.com](mailto:rodney.cummings@ni.com), [jiangyuanlong@huawei.com](mailto:jiangyuanlong@huawei.com),

DetNet WG

Montreal, 24<sup>th</sup> July, 2019

# Agenda

- Model related reminders
- MAJOR update in the draft
- Next steps



# Information/Data models for DetNet

## Service / Flow / Configuration

Reminder of target

- DetNet: three models are distinguished:

- **Flow information model:**

describes characteristics of data flows. It includes in detail all relevant aspects of a flow that are needed to support the flow properly by the network between the source and the destination(s).

- **Service information model:**

describes characteristics of services being provided for data flows over a network. It can be treated as a network operator independent information model.

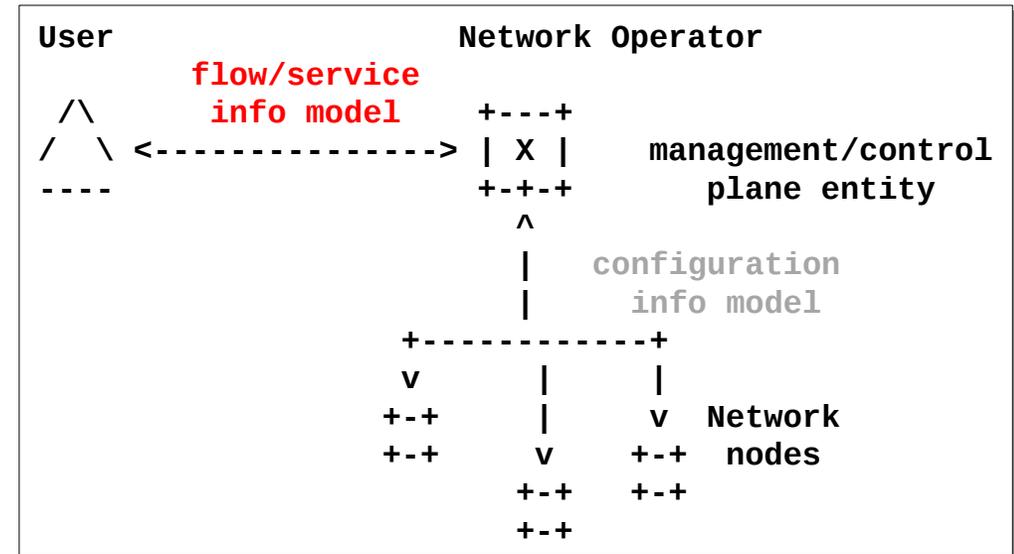
- **Configuration data model:**

describes in detail the settings required on network nodes to serve a data flow properly.

Flow  
Information Model

Customer  
Service Model

Network Element  
YANG Modules



# Terminology

## Flows and Reference points

### Based on architecture draft:

- **App-flow:**
  - The payload (data) carried over a DetNet service.
- **DetNet flow:** App-flow + DetNet encaps.
  - A DetNet flow is a sequence of packets which conform uniquely to a flow identifier, and to which the DetNet service is to be provided. It includes any DetNet headers added to support the DetNet service and forwarding sub-layers.

Note: In some scenarios App-flow and DetNet flow look similar on the wire (e.g., IP App-flow over a DetNet IP network).

Note: DetNet flow can be treated as an application level flow (App-flow) e.g., at DetNet flow aggregation or in a sub-network that interconnects DetNet nodes.

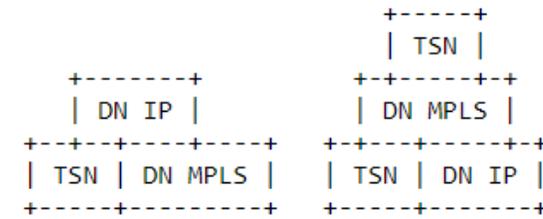


Figure 1: DetNet Service Examples as per Data Plane Framework

### New terms:

- **Source:**
  - Reference point for an App-flow, where the flow starts.
- **Destination:**
  - Reference point for an App-flow, where the flow terminates.
- **DN Ingress**
  - Reference point for DetNet flow, where it starts. Networking technology specific encapsulation may be added here to the served App-flow(s).
- **DN Egress:**
  - Reference point for DetNet flow, where it terminates. Networking technology specific encapsulation may be removed here from the served App-flow(s).

# Information Elements of the Models

## 3 groups defined

- App-flow related parameters:
  - they describe the App-flow characteristics (e.g., identification, encapsulation, traffic specification, endpoints, status, etc.) and the App-flow requirements (e.g., delay, loss, etc.).
- **DetNet flow related parameters:**
  - they describe the DetNet flow characteristics (e.g., identification, format, traffic specification, endpoints, rank, etc.).
- **DetNet service related parameters:**
  - they describe the expected service characteristics (e.g., delivery type, connectivity, delay/loss, status, rank, etc.).

# Structure of the Attributes

## App-flow, DetNet flow and DetNet service

draft-ietf-detnet-flow-information-model

### App-flow

#### Characteristics

- FlowID: unique (manag.) ID
- FlowType: Eth, MPLS, IP
- *DataFlowSpecification*:  
src/dst-addr, label, VLAN, etc.
- *TrafficSpecification*:  
interval, pkt-size, max-packet
- FlowEndPoints: Src, Dst(s)
- FlowRank
- FlowStatus

#### Requirements

- *FlowRequirements*:  
MinBW, PD, PDV, Loss, etc.
- FlowBiDir

Service Requirements similar to  
e.g., 802.1Qcc Attributes like  
UserToNetworkRequirements

### DetNet flow

#### Characteristics

- DnFlowID: unique (manag.) ID
- DnPayloadType: Eth, MPLS, IP
- DnFlowFormat: MPLS, IP
- *DnFlowSpecification*:  
Label, 6-tuple
- *DnTrafficSpecification*:  
interval, pkt-size, max-packet
- DnFlowEndPoints: Ingress, Egress(s)
- DnFlowRank
- DnFlowStatus

#### Requirements

- *DnFlowRequirements*:  
MinBW, MaxLatency, MaxLatencyVariation,  
MaxLoss, MaxConsecutiveLossTolerance,  
MaxMisordering
- DnFlowBiDir

### DN Service

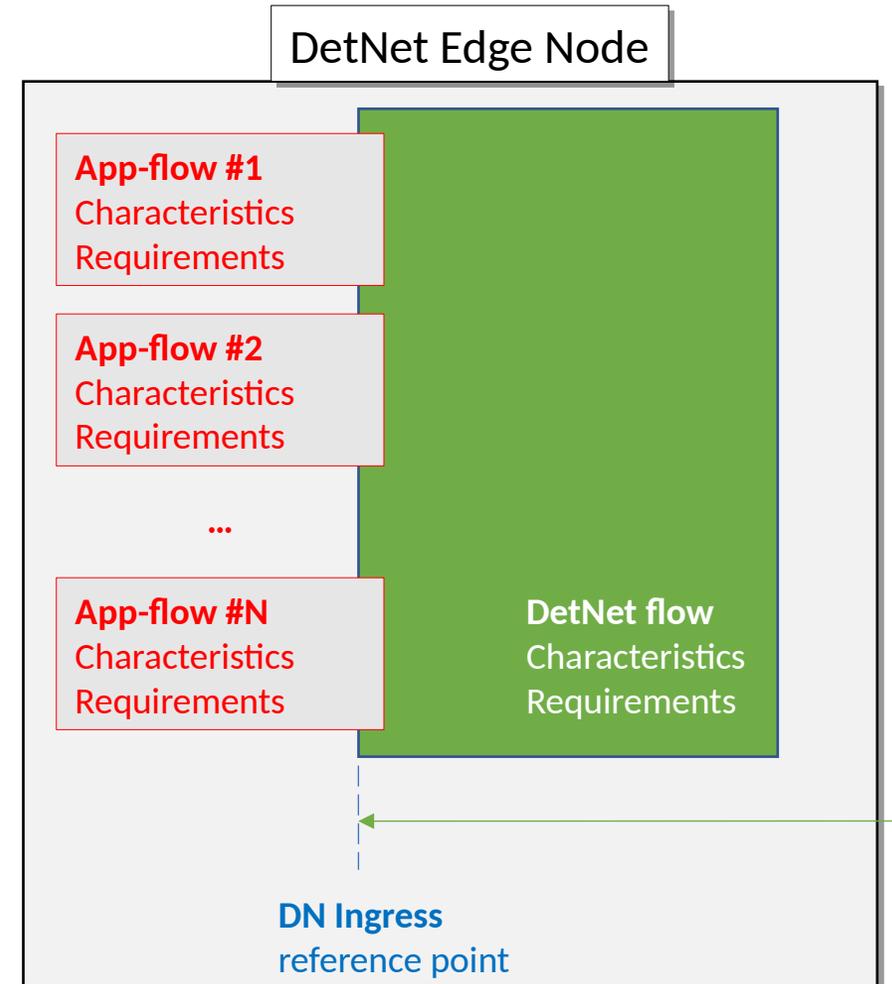
- DnServiceID: unique (manag.) ID
- DnServiceDeliveryType: Eth, MPLS, IP
- DnServiceConnectivity: p2p, p2mp
- DnServiceRank
- *DnServiceDeliveryProfile*:  
MaxBW, MaxLatency, MaxLatencyVariation,  
MaxLoss, MaxConsecutiveLossTolerance,  
MaxMisordering
- DnServiceBiDir
- DnServiceStatus

# App-flow(s) to DetNet Flow Mapping

## N:1 mapping

- A DetNet flow contains
  - one or more App-flows (N:1 mapping).
- During DetNet aggregation the aggregated DetNet flows are treated as App-flows and the aggregate is a DetNet flow.

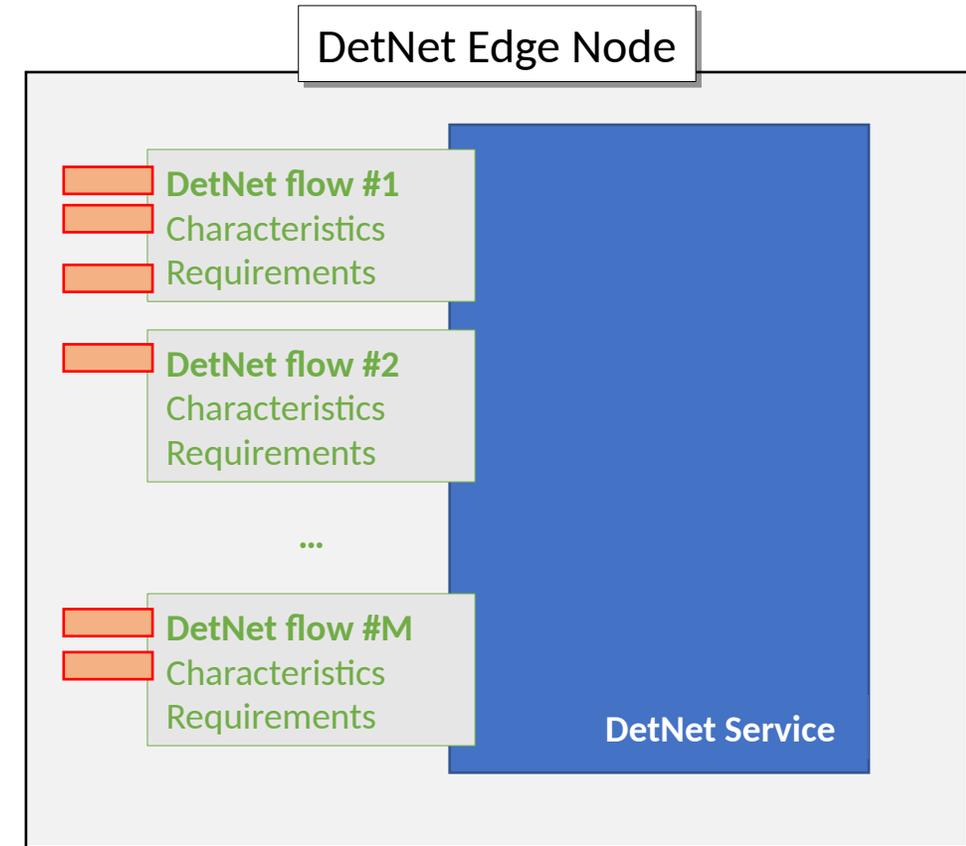
Note: App-flow specific reference points are the Source and the Destination. Similarly, DetNet flow specific reference points are the DN Ingress and the DN Egress. These reference points may coexist in the same node (e.g., in a DetNet IP end system). DN Ingress and DN Egress reference points are intermediate reference points for a served App-flow.



# DetNet flow(s) to DetNet Service Mapping

M:1 mapping

- A DetNet service supports
  - one or more DetNet flows (M:1 mapping).



# Next Steps

- Collecting feedbacks
- Any missing attributes?

Thanks ...