DetNet Configuration YANG Model Update

draft-ietf-detnet-yang-09

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Status

Merged YANG models working on Yanglint data instances for various configuration scenarios.

• Need to check terminology for consistency and clarity.
• Need to confirm data plane match data plane drafts.
• Need Updated reference pointers in the YANG model.
History

• Version 00: accepted as a WG document after IETF 102

• Version 01: `ietf-detnet-topology-yang` is defined independently

• Version 02: updated following the feedback from IETF103
  • Add ‘Sequence Number Generation’
    • OAM considerations
  • Add ‘DetNet Service Decapsulation’
  • Add ‘DetNet Transport Tunnel Decapsulation’

• Version 03: DetNet Configuration Structure Update in IETF104 and IETF105

• Version 04:
  • Modify the scope of DetNet YANG Model

• Version 05/06:
  • Two YANG Models Discussion -> Comparison

• Version 07
  • Merging Models. Some terminology alignment.

• Version 08
  • Aggregation and Instance Models

• Version 09
  • Terminology and name changing

WG Call Meeting Every Week
Scenarios Covered by DetNet YANG Model
(w/o Aggregation)

Corresponding Data Plane drafts:
draft-ietf-detnet-ip-06
draft-ietf-detnet-ip-over-mpls-06
draft-ietf-detnet-mpls-07
draft-ietf-detnet-mpls-over-udp-ip-06 (Partial)
draft-ietf-detnet-tns-vpn-over-mpls-03 (Partial)
draft-ietf-detnet-mpls-over-tns-03 (Not yet)
draft-ietf-detnet-ip-over-tns-03 (Not yet)

Not shown Ethernet or other Tunnels as be underlay
Flow Model Attributes Supported by YANG

App-flow, DetNet flow and DetNet service

**App-flow**

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

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

**DetNet flow**

**Characteristics**
- DnFlowID: unique (manag.) ID
- DnPayloadType: Eth, MPLS, IP
- DnFlowFormat: MPLS, IP
- DnFlowSpecification: Label, 6-tuple
- DnTrafficSpecification: interval, pckt-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

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

A DetNet flow contains one or more App-flows (N:1 mapping).

A DetNet service supports one or more DetNet-flows (M:1 mapping).
Naming update
Data Plane scenarios (2)

- Ingress-Edge Node
  - app (outgoing-service)
  - svc (incoming app-flow)
  - fwd (outgoing forwarding)

- Transit Node
  - TSN
  - over
  - MPLS
  - incoming service
  - fwd (incoming forwarding-identification)

- Relay Node
  - SVC
  - outgoing forwarding
  - outgoing upper-service
  - incoming service
  - fwd (incoming forwarding-identification)

- Egress-Edge Node
  - app (incoming-service)
  - svc (outgoing upper-app-flow)
  - fwd (incoming forwarding-identification)
Aggregation (1)

Case A-1 Ingress 1

App to Svc

- app (outgoing-service)
- incoming app-flow
- SVC
- outgoing forwarding
- fwd (outgoing interface)

Svc to Fwd

- app (outgoing-service)
- incoming app-flow
- SVC
- outgoing forwarding
- fwd (outgoing interface)

Svc to Svc

- app (outgoing-service)
- incoming service
- SVC
- outgoing service
- fwd (outgoing interface)

Case B-1 Ingress 1

Case B-2 Ingress 1
Disaggregation (1)

App to Svc

Case A-1 Egress 1

Svc to Fwd

Case B-1 Egress 1

Svc to Svc

Case B-2 Egress 1

App to Svc

incoming-service

outgoing upper-app-flow

Svc

incoming service-identification

outgoing upper-service

fwd

incoming forwarding-identification

Svc to Fwd

incoming-service

outgoing upper-app-flow

Svc

incoming service-identification

outgoing upper-service

fwd

incoming forwarding-identification

Svc to Svc

incoming-service

outgoing upper-app-flow

Svc

incoming service-identification

outgoing upper-service

fwd

incoming forwarding-identification
Disaggregation (2)

Case C-1 (Relay 2)
Fwd to Fwd
Aggregation (3)

Svc to Fwd

Case C-2 (Relay 1)

Aggregation (3)
Disaggregation (3)
Aggregation (4)

Svc toSvc

incoming
case.
svc
outgoing
service

forwarding
identification

outgoing
service

incoming
service

outgoing
service

incoming
service

outgoing
service

outgoing
upper
service

incoming
forwarding
identification

incoming
service

outgoing
service

interface

incoming
service

outgoing
service

interface

incoming
service

outgoing
service

interface

incoming
service

outgoing
service

interface

incoming
service

outgoing
service

interface

CaseC-3(Relay1)
Disaggregation (4) Svc to Svc

Case C-3 (Relay 2)
Aggregation (6)
De-aggregation (6)

Case D-1 (Transit 4)
Plan

• Comments and reviewing the current Model.
  • Double check Flow Model consistency
  • Removing unnecessary cases.

• General clean up
  • Add references
  • Include Yanglint sample configuration
Thanks