

DetNet Configuration YANG Model

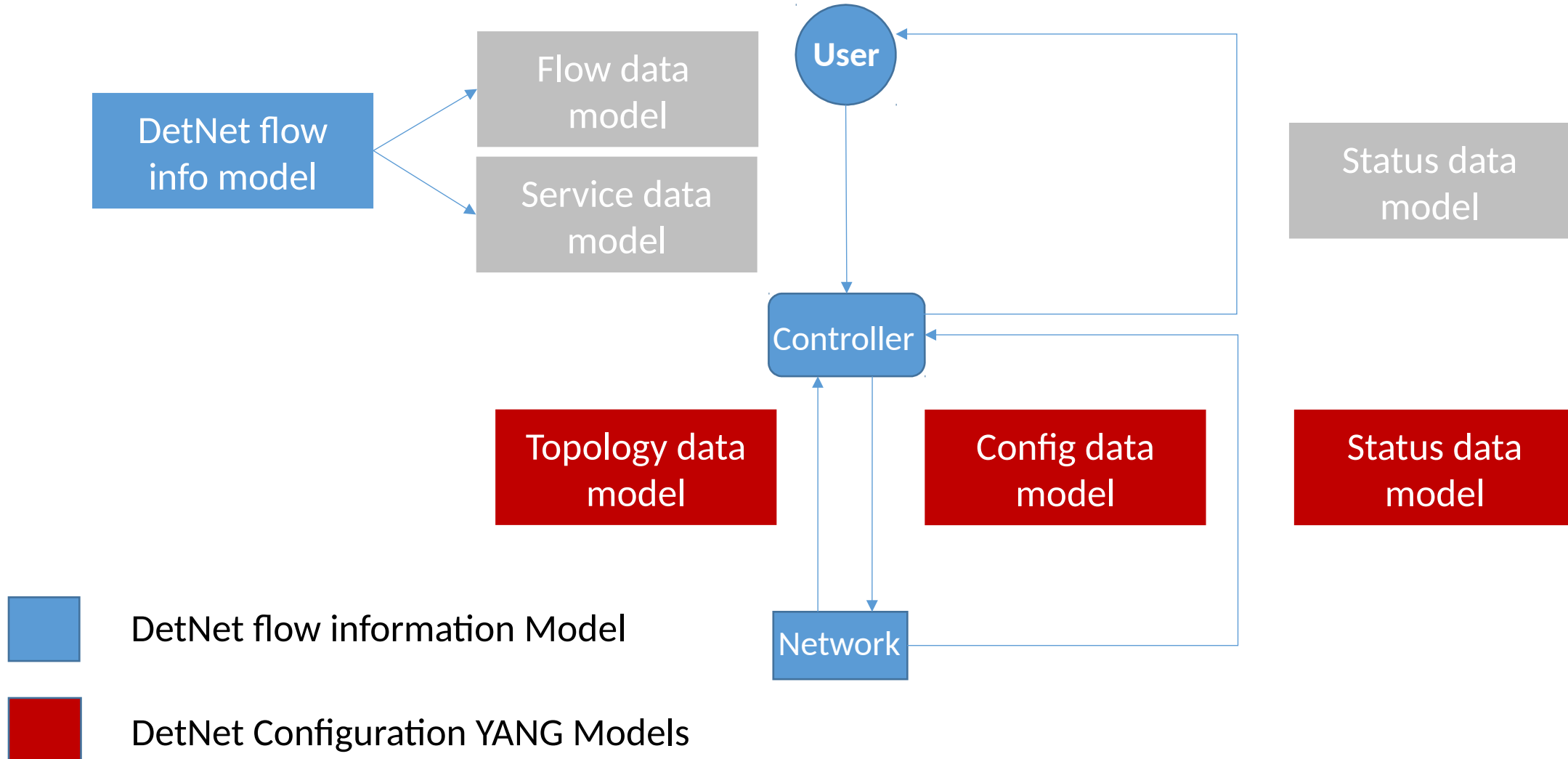
draft-geng-detnet-conf-yang-01

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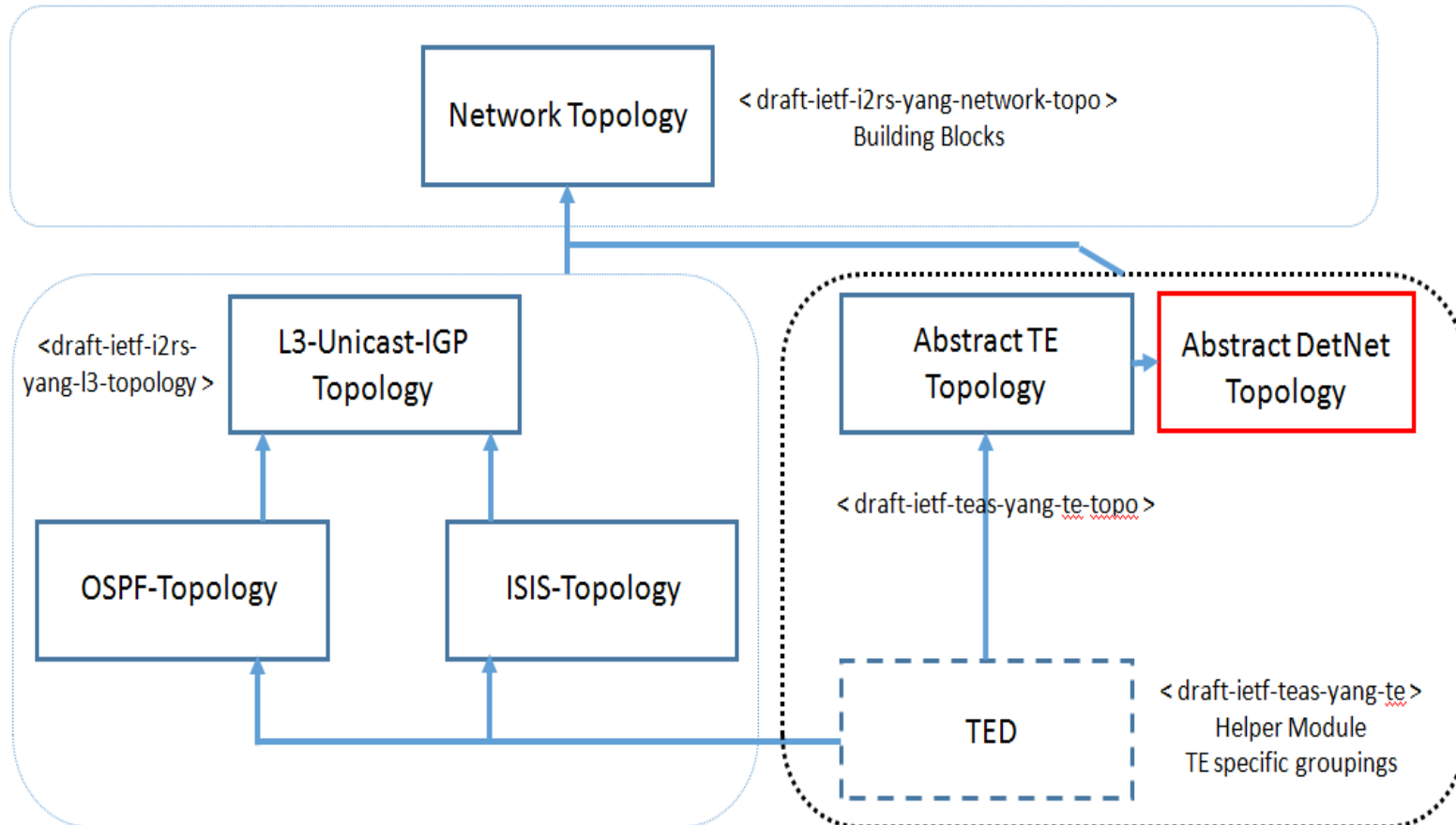
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DetNet Models Overview and Relationship



DetNet Topology Data Model



- Augmentation to TE Topology model
 - Node attribute augmentation
 - Link attribute augmentation

DetNet Topology Attribute

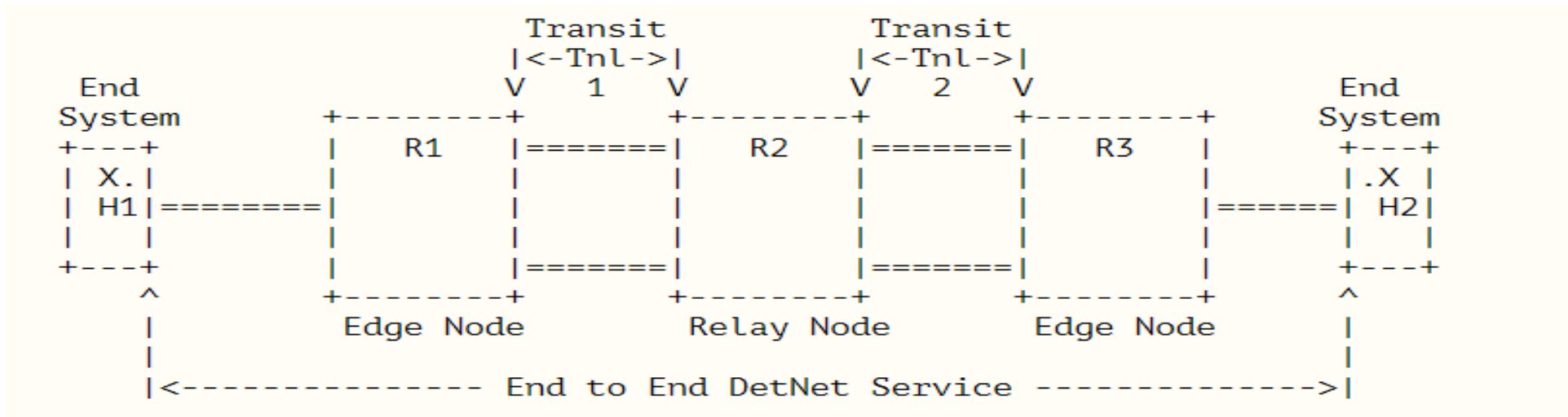
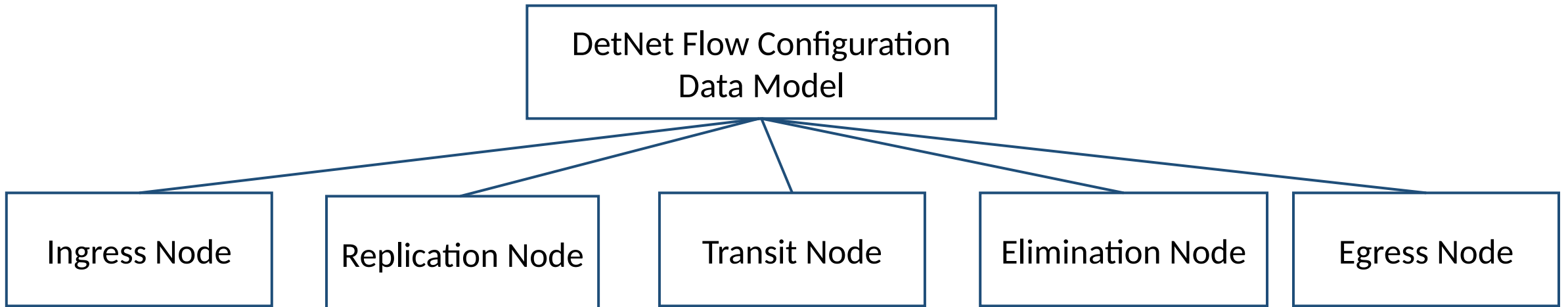
- Node Type
 - Edge Node/Relay Node/ Transit Node
- Replication Capability
- Elimination Capability
- Queuing Management Algorithm
 - Type
 - Basic Parameters
- Resource Reservation Base
 - Max FanIn Ports
 - Max Packet Size
 - *Max DetNet Classes(?)*

Do we need more than one DetNet Traffic Classes?


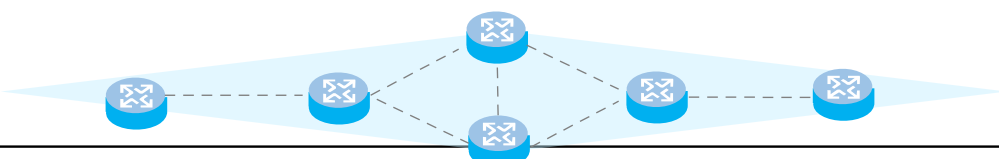
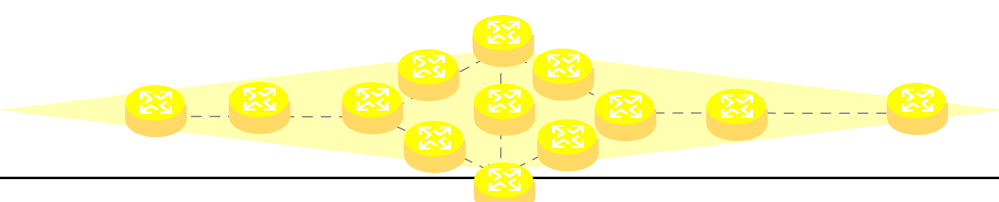
Whether such delay classification(link delay + processing delay + output queuing delay) is reasonable?

- Bandwidth Metric
 - DetNet Unreserved Bandwidth
 - Maximum DetNet Reservable Bandwidth
- *Delay Metric(?)*
 - Link Delay (defined in RFC7471 and RFC 7810)
 - Maximum Packet Processing Delay
 - Minimum Packet Processing Delay
 - Maximum Output Queuing Delay
 - Minimum Output Queuing Delay

DetNet Flow Configuration Data Model



Configuration Based on DetNet Architecture

Network Architecture	Encapsulation Layer	Node Type	Main Function
 A diagram showing two red circular nodes with a network icon, connected by a horizontal dashed line. A yellow, hourglass-shaped area is centered on the dashed line, tapering at both ends.	Service Layer proxy	Edge Node	Encapsulation/Decapsulation
 A diagram showing five blue circular nodes with a network icon. They are arranged in a network topology: one at the far left, one at the far right, and three in the middle. The middle three nodes are connected to each other and to the left and right nodes. A light blue, hourglass-shaped area is centered on the network.	Service Layer	Relay Node	Packet Replication and Elimination
 A diagram showing a large number of yellow circular nodes with a network icon. They are arranged in a complex, multi-layered network topology. A yellow, hourglass-shaped area is centered on the network.	Transport Layer	Transit Node	Congestion Protection

DetNet Transit Node Configuration

- Transit Node Configuration
 - Flow Priority
 - Flow Identification
 - Queuing Management Algorithm Configuration
 - Explicit Route (covered by draft-ietf-mpls-static-yang-05)

Whether it can be the extension of the Qos YANG Mode defined in [draft-asechoud-rtgwg-qos-model-05](#)

- Qos YANG Model
 - IETF - QoS - CLASSIFIER
 - IETF - QoS - POLICY
 - IETF - QoS - ACTION
 - IETF - QoS - TARGET
 - IETF - DIFFSERV

DetNet Relay Node Configuration

- Replication Node Configuration
 - Flow Identification (e.g., incoming s-Label)
 - Operation: replication
 - Copy Number
 - Flow Identifications in next reply/edge nodes (e.g., outgoing s-Labels)
- Elimination Node Configuration
 - Flow Identification
 - Operation: elimination
 - Flow Identification in next reply/edge node (e.g., outgoing s-Label)

Example : Relay Node Configuration

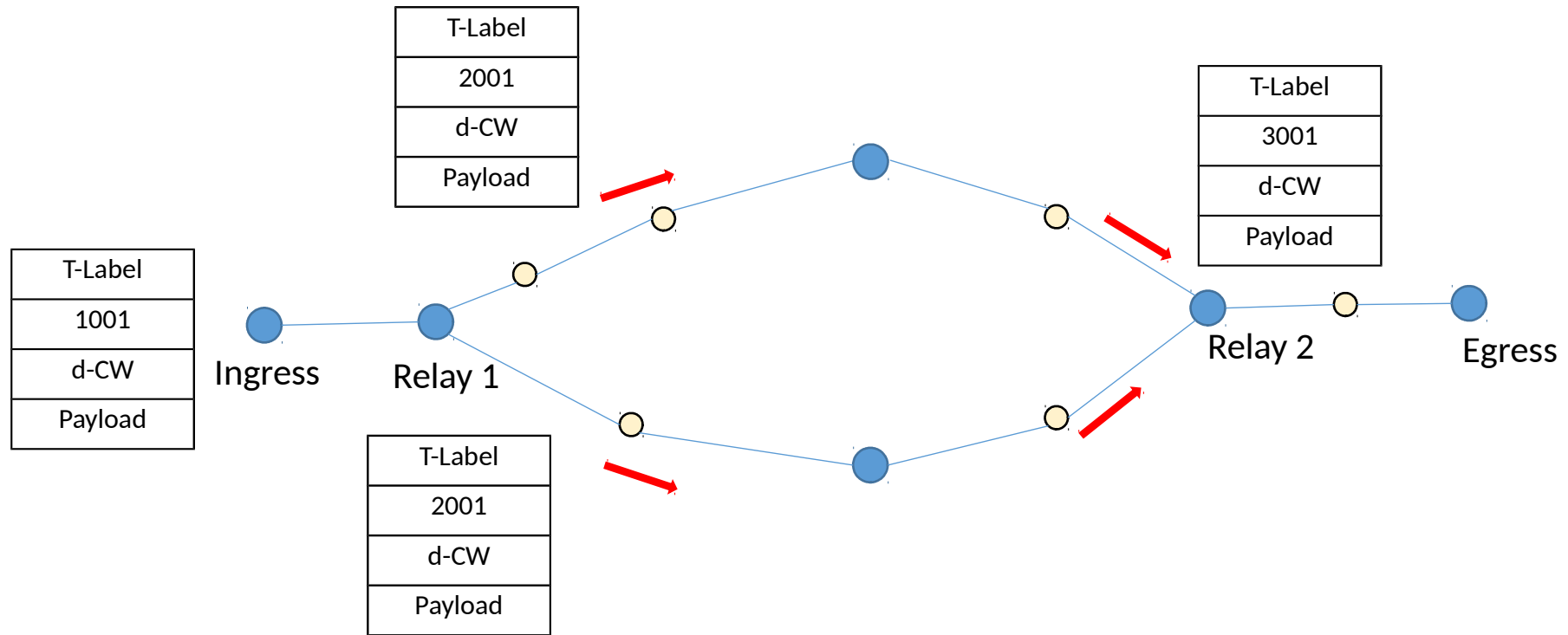
Configuration Parameters:

- **Flow Identification:** in the current data plane design, 5-tuple, S-label or other relevant information can be used in flow identification.
- **Operation:** replication/ elimination / elimination & replication;
- **Next Relay Node;**
- **Output Port;**

For example :

Incoming S-Label	Replication	Elimination	Outgoing S-Label	Output Port
1001	Yes	No	2001	1
1001	Yes	No	2001	2
1002	No	Yes	2002	3

Example : Relay Node Configuration(con t.)



Configuration in Relay Node 1:

Incoming S-Label	Replication	Elimination	Outgoing S-Label	Output Port
1001	Yes	No	2001	1
1001	Yes	No	2001	2

Configuration in Relay Node 2:

Incoming S-Label	Replication	Elimination	Outgoing S-Label	Output Port
2001	No	Yes	3001	1

DetNet Edge Node Configuration

- Ingress Node Configuration
 - Flow Identification
 - Packet Sequencing
 - Packet Encapsulation
 - Traffic Specification
 - *Flow Aggregation (?)*
- Egress Node Configuration
 - Flow Identification
 - Packet Reordering
 - Packet Decapsulation

What is the next?

- This is just the beginning of this part of work:
 - More Considerations about Queuing Algorithm Configuration
 - Improve the replication and elimination part
 - Add DetNet Status Data Model
- Solicit more contributions and comments

Thanks