

# DetNet Service Model - discussion

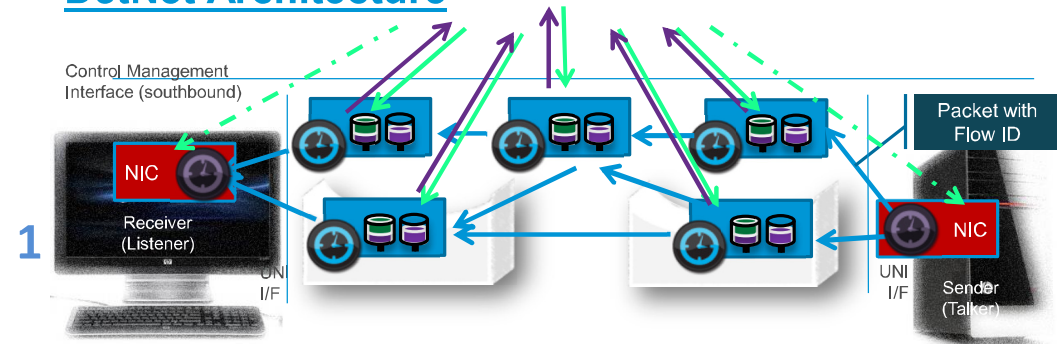
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# Purpose of this discussion?

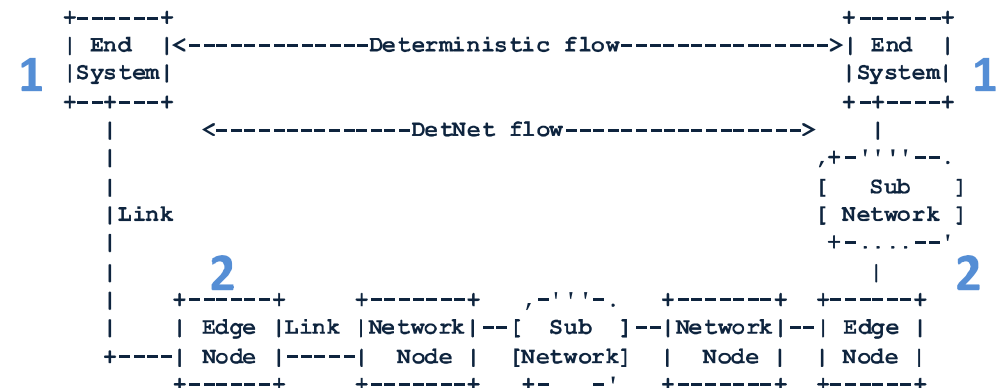
## Getting some agreement on the end-points of a DetNet Service

- Options:
  1. Application hosts/systems
    - (e.g., of L2VPNs connecting 802.1 TSN islands)
  2. Edge nodes
  3. Both: 1+2
    - If both, WG need to agree on ordering
  
- Out of scope for this discussion
  - How a DetNet Service is provided

### DetNet Architecture



### DetNet Data Plane Alternatives



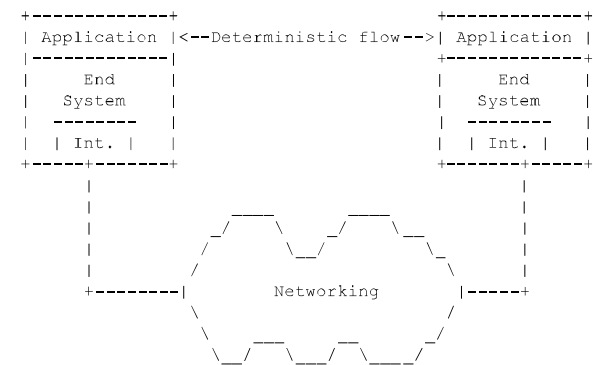
# How to define DetNet Service?

Target of this discussion: DetNet Service

- Does it reach out to final source/sink nodes?  
*I.e. it is an e2e service between application hosting devices.*
- Does it connect networking islands?  
*I.e. it is a service between domain borders.*

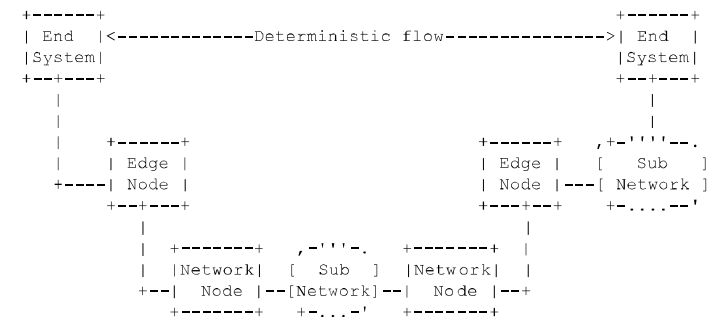
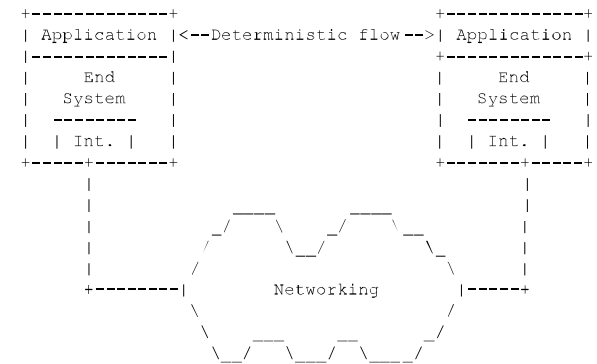
Methodology to sort it out:

- What is connected to a DetNet?
- What is a DetNet Service?
- Where DetNet starts/ends?



# What to connect to DetNet?

- We have a (long) list of scenarios (draft-use-case)
  - Mobile, Industrial, AVB, etc.
- "Applications" running on End-systems
  - Various requirements
- End systems (hosts):
  - Producing/terminating (source/sink) a "flow" (CBR or VBR) that requires deterministic transport
  - The flow can be: L1 or L2 or L3 (e.g., TDM, Ethernet, IP)
  - May or may not be directly connected to the PSN
  - End system's interface can be: L1 or L2 or L3



# Use Case Considerations Discussion

Use Case	Host Service (usable)	xVPN Service (usable)
Professional audio		
Electrical utilities		
Building automation systems		
Wireless for industrial applications		
Radio/mobile access networks	Integrated Radio & Transport	Separated Radio & Transport
Industrial Machine-to-Machine (M2M)	For new installations	For legacy systems

# Conclusion: End-points

## Getting some agreement on the end-points of a DetNet Service

- Opinions from the room:

1. Application hosts/systems

2. Edge nodes

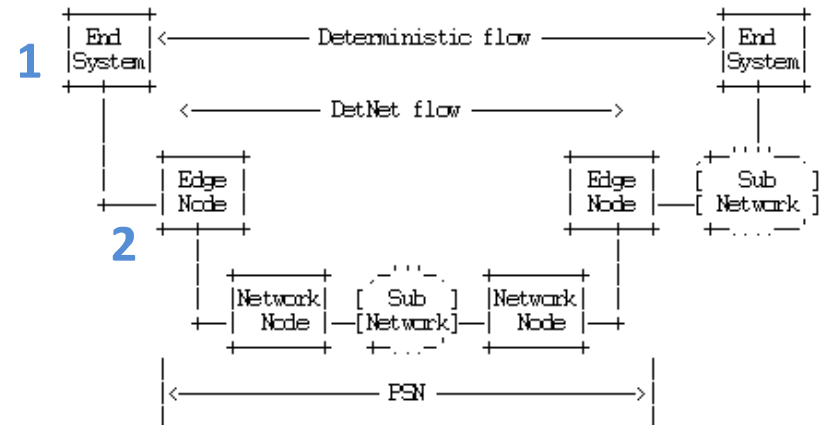
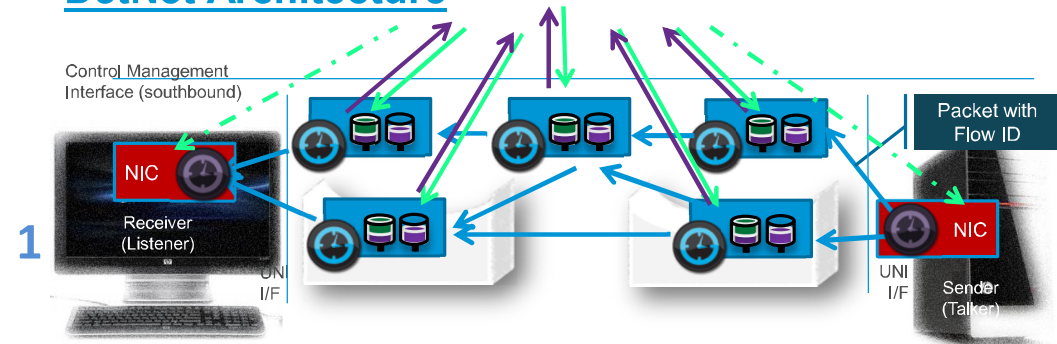
- (e.g., of L2VPNs connecting 802.1 TSN islands)

3. Both: 1+2

- If both, WG need to agree on ordering

1. Priority: higher/lower/same
2. Priority: higher/lower/same

### DetNet Architecture

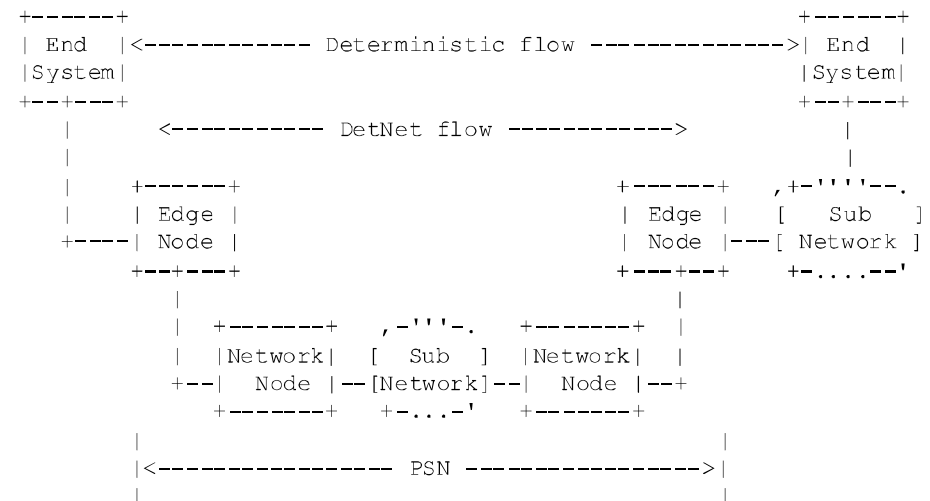


If have time

# **SERVICE SEMANTICS**

# Parameterizing a DetNet Service?

- Deterministic Networking (DetNet) (draft-arch)
  - provides a capability to carry specified unicast or multicast data flows for real-time applications with extremely low data loss rates and bounded latency
- Delay and Loss
  - Somewhat correlated:
    - too late is like lost for the application
    - finite amount of buffer space + zero congestion loss necessarily results in an upper bound for delay
  - DetNet tool set targeting both (delay and loss)
- "Delay and Loss" OR "Delay or Loss"
  - Some real-time applications
    - allow graceful degradation if loss happens (e.g., samples based processing, media)
    - require too much BW to make "redundancy" economical
  - Some applications
    - may not tolerate loss, but are not delay sensitive (e.g., bufferless sensors)





# Parameterizing (cont'd)?

- Service attributes
  - Delay parameters
  - Loss parameters
  - Applications may have non-usual requirements (e.g. no loss in two consecutive cycles, outage time)
- Summary:
  - Applications may require "Delay and/or Loss"
  - DetNet provides tools for BOTH delay and loss, which are used as needed by flows

