

# Differentiated DetNet QoS for Deterministic Services

draft-xiong-detnet-differentiated-detnet-qos-00

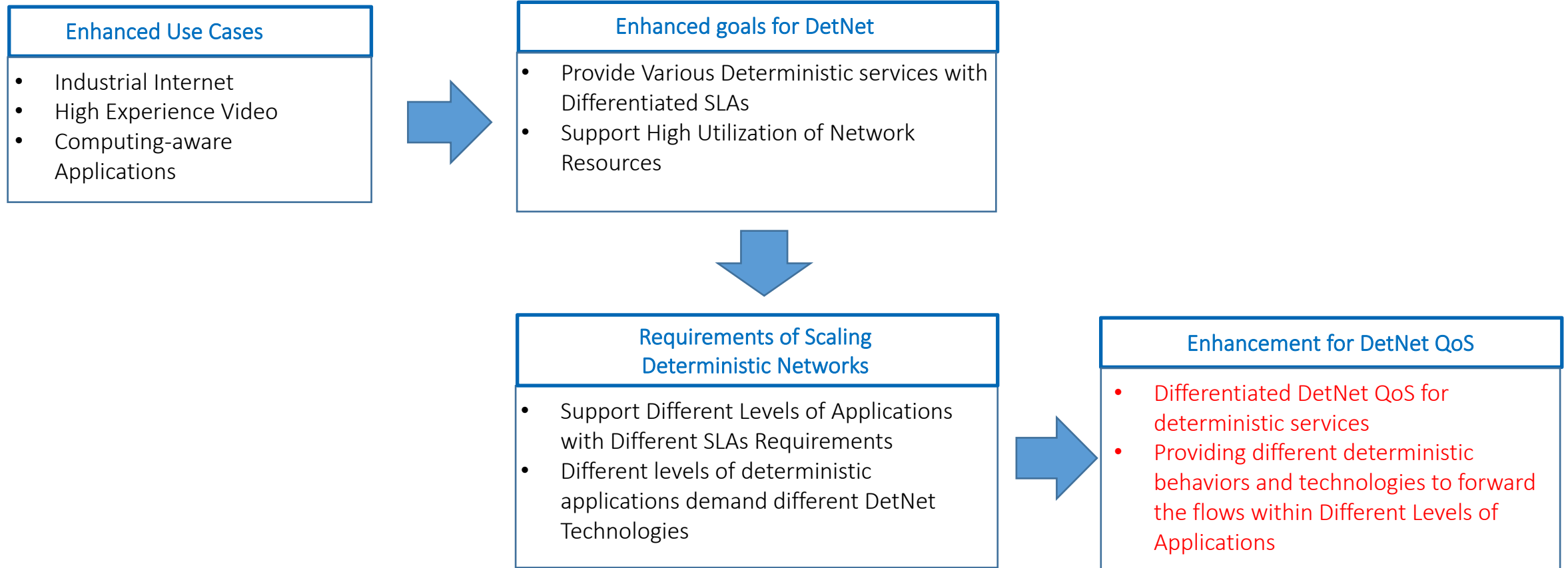
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# What is enhanced Goals for DetNet?

- The Primary Goals Defining the DetNet QoS as per RFC8655:
  - \* Minimum and maximum end-to-end latency from source to destination, timely delivery, and bounded jitter (packet delay variation) derived from these constraints.
  - \* Packet loss ratio under various assumptions as to the operational states of the nodes and links.
  - \* An upper bound on out-of-order packet delivery. It is worth noting that some DetNet applications are unable to tolerate any out-of-order delivery.
- The new goals for DetNet based on the enhanced use cases
  - **Provide various deterministic services with differentiated SLAs in scaling networks**
    - different applications co-existed in a use case (e.g. electrical utilities)
    - different applications differ in the network topologies and deterministic SLAs requirements
    - different flows within an application demand differentiated deterministic SLAs requirements
  - **Support high utilization of network resources**
    - make reasonable use of resources and optimize resources utilization
    - carry more deterministic traffic in deployment
    - make more money for services providers

# What is Enhancement for DetNet QoS?



# How to define enhanced DetNet QoS?

- The DetNet QoS MAY be classified and divided into several traffic classes based on the applications and differentiated SLAs requirements in scaling deterministic networks.
- Applications co-existed with different SLAs

Applications	Bandwidth	Bounded Latency	Reliability
AR/VR Video	High 10Gbps	Medium delay<10ms jitter<5ms	Medium
Smart grid	N/A	High delay<15ms jitter<50us	High 99.9999%
Industrial control	Low	High MaxDelay 500us~50ms	High 99.9999%
Internet of Vehicles	Low	Medium Delay 2ms -> 20ms	Medium 99.999%
Remote control	Medium 25Mbps~6Gbps	Medium Delay 5ms -> 20ms	High 99.9999%



- Differentiated DetNet QoS (DD-QoS)

DD-QoS Traffic class	Class-1	Class-2	Class-3	Class-4
Deterministic Forwarding and Behaviors	Jitter Guarantee	Delay Guarantee	Low Delay and Jitter Guarantee	Ultra-low Delay and Jitter Guarantee
SLAs	Delay <300ms, jitter<50ms, 99.9%	Delay <50ms, jitter<50ms, 99.99%	Delay<20ms, jitter<5ms, 99.999%	Delay<10ms, jitter<100us, 99.9999%
Applications Examples	Synchronous voice services	Video, production monitoring, and communication services	AR/VR, holographic communication, cloud video and cloud games services	Industrial services such as power protection and remote control

# Next Step

- Seek feedback about DetNet QoS.
- Comments and discussions are very welcome!

Thank you!