

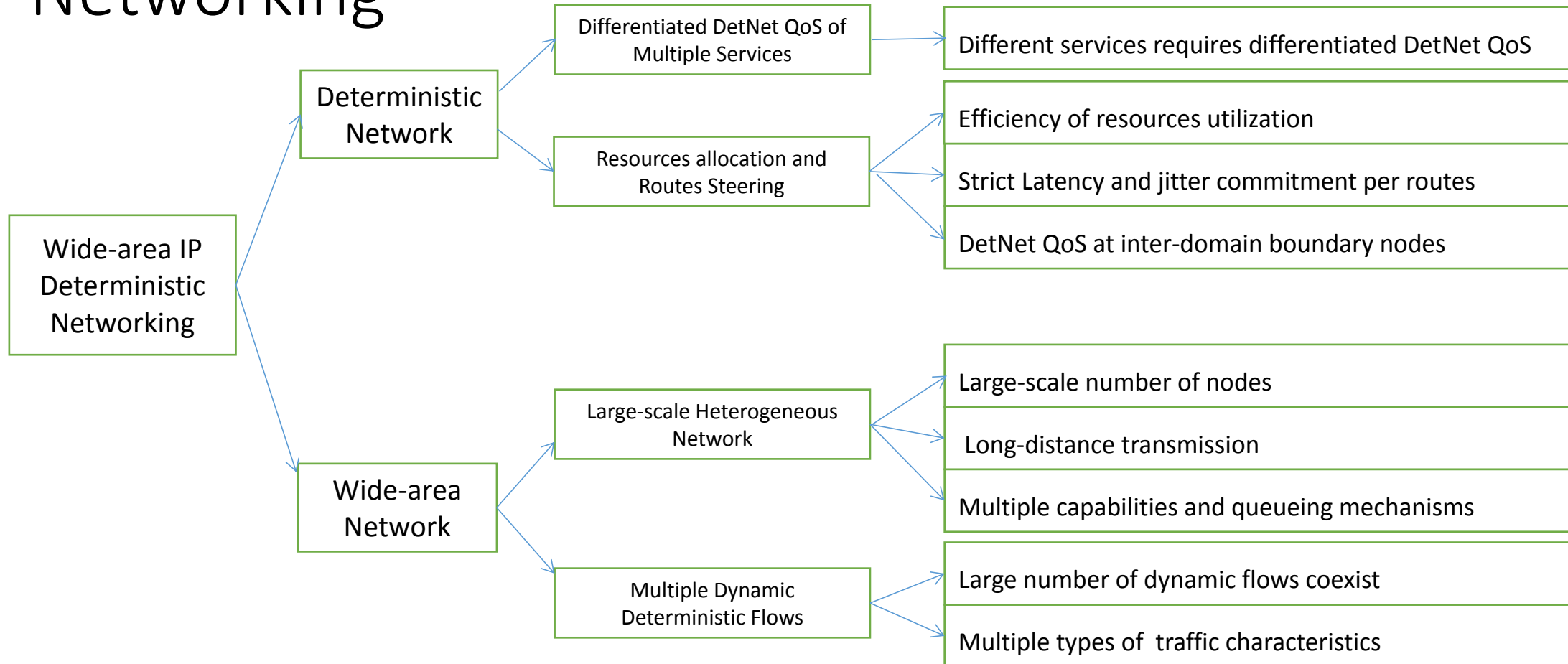
# The Requirements for Wide-area IP Deterministic Networking

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# Problems for Wide-area IP Deterministic Networking



# Requirements for Wide-area IP Deterministic Networking

- Differentiated DetNet QoS of Multiple Services
  - As described in [RFC8578], DetNet applications differ in their network topologies and specific desired behavior and different services requires differentiated DetNet QoS.

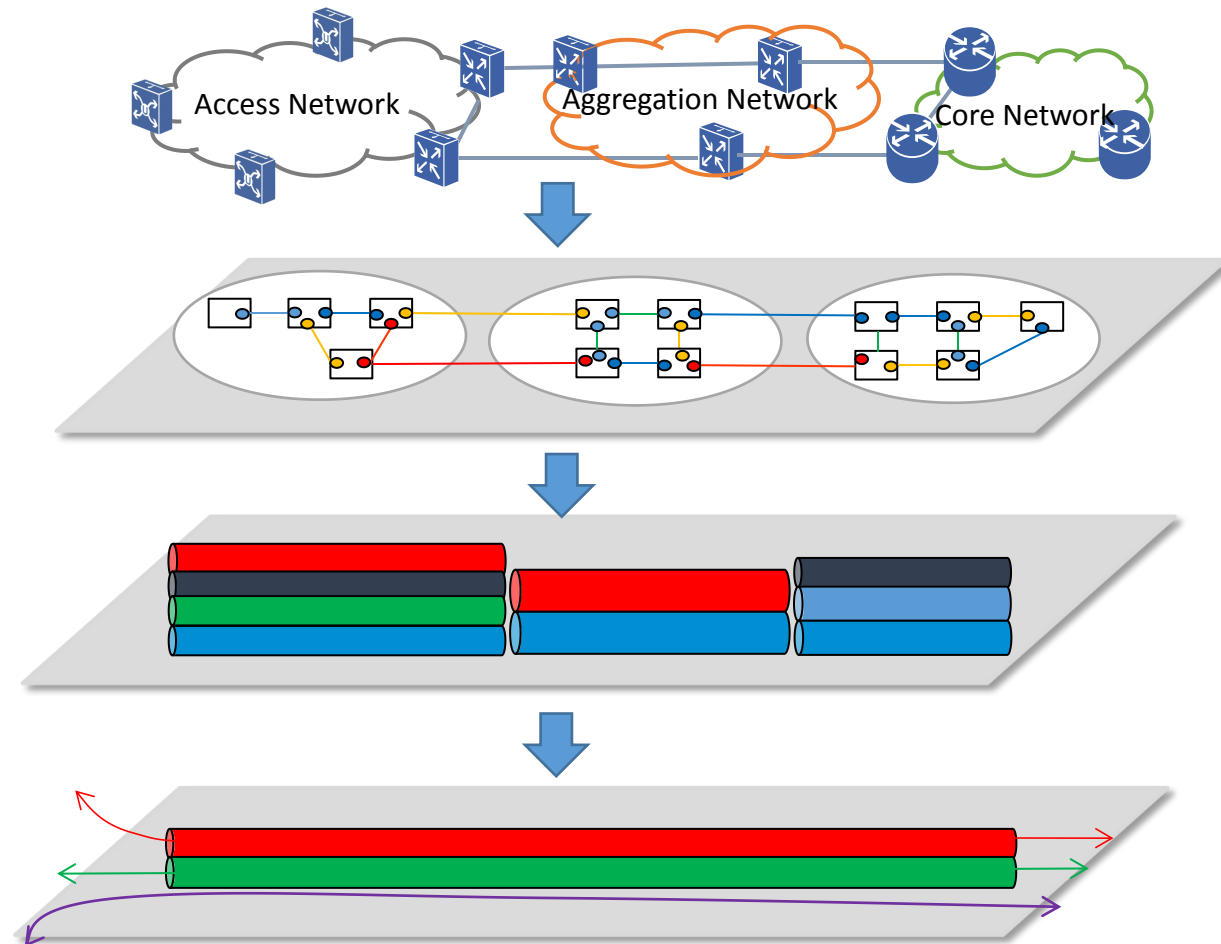
Item	Level-1	Level-2	Level-3	Level-4
Applications Examples	Industrial	VR/AR	Audio and Video	Broadcast
DetNet QoS	Ultra-low latency and jitter	Low latency and jitter	Low latency	Best Effort

Figure 1: Figure 1: The classification of multiple services

- Integration of Large-scale Heterogeneous Network
  - In WAN application, large-scale number of nodes and long-distance transmission in the network will lead to latency and jitter, such as increasing transmission latency, jitter and packet loss.
- Efficiency of Resources Utilization and Routes Steering
  - Resource classification and modeling is required along with the explicit path with more SLA guarantee parameters like bandwidth, latency, jitter, packet loss and so on.
- Guarantees of Multiple Dynamic Deterministic Flows
  - As described in [RFC8557], deterministic forwarding can only apply to flows with such well-defined characteristics as periodicity and burstiness.

# Solutions Considerations of Wide-area IP Deterministic Networking

- The Deterministic Resources
  - The deterministic resources require planning and arrangement of network resources, resources modeling, resource allocation and reservation, resource isolation and resource scheduling, etc.
- The Deterministic Routes
  - The deterministic routes refers to the requirements to establish the SLA/QoS based routes for the deterministic flows to guarantee the stability of the routing at least during the packets transmission, and the path will not change within the real-time change of network topology.
- The Deterministic QoS
  - The deterministic QoS is to arrange and schedule the deterministic flows on the basis of providing deterministic resources and routes, so as to control of each flow and meet the DetNet QoS goals.



# Next Step

- Comments and discussions are very welcome!

Thank you!