A Realization of IETF Network Slices for 5G Networks Using Current IP/MPLS Technologies

draft-srld-teas-5g-slicing-06

Krzysztof Szarkowicz , Richard Roberts , Julian Lucek , John Drake (*Juniper*)
Mohamed Boucadair (*Orange*)
Luis M. Contreras (*Telefonica*)
Ivan Bykov (*Ribbon Communications*)
Reza Rokui (Ciena)
Luay Jalil (Verizon)
Beny Dwi Setyawan (XL Axiata)
Amit Dhamija (Rakuten)
Mojdeh Amani (British Telecom)

Overall Goal & Approach

- Main Goal
  - Assess to what extent IETF Network Slices can be implemented using ***current IP/MPLS technologies without requiring extensions***
  - ***Provide a reference*** to document approaches to deploy slices with such technologies

- Approach
  - Rather than generic claims, pick a slice deployment context and ***exemplify the assessment***

  - Pick 5G for the applicability assessment
    - Because 5G is an iconic slicing case

CAUTION

- We are using 5G terminology, specifically RAN/CN/TN, and slicing in the transport domain on purpose.
- Some of the key consumers of this document are mobile engineers, so we are using the terminology that they are familiar with
- Whenever we mention transport, it refers to IP/MPLS network, so transport slice refers to IETF Network Slice

What's in?

- Overview of 5G Network Slicing Integration in Transport Networks
  - NF-to-NF end-to-end data path segmentation
  - IETF/non-IETF orchestration domains boundaries
  - where IETF Network Slice fits into this
- Different hand-off methods between RAN/CN and TN
- How to realize transport for 5G slices using currently available IP/MPLS technologies
  - Brownfield deployments
  - Aligning the 5G SLO deployment models with other SLO deployment models (business services, wholesale, …) used typically at SP
- QoS mapping models (5QI-unaware, 5QI-aware)
- Transport Planes mapping models (5QI-unaware, 5QI-aware)
- Capacity planning/management

Updates/changes since IETF 115

- More detailed discussion about 5G Network Slicing Integration with Transport Networks
  - 5G Network Slicing versus Transport Network Slicing
  - NF-to-NF Datapath vs Transport Network
    - Segmentation of the NF-to-NF Datapath
      - TN Segment (controlled by IETF NSC)
      - Local Segment (not controlled by IETF NSC), for example
        - Cloud (controlled by Cloud orchestrator)
        - DC (controlled by DC orchestrator)
        - NF (controlled by SMO)
      - Clarification of SDP realization in the context of 5G network slicing
      - Clarification of AC realization in the context of 5G network slicing
      - Orchestration of Local Segment Terminations at ETN
  - Model alignment with other SDOs (mainly with O-RAN Alliance)

Updates/changes since IETF 115 (cont.)

- Enhancements in RAN/CN to TN mapping models
- Further clarification of QoS mapping models
- Addition of transport planes mapping models (5QI-aware, 5QI-unaware)
- Overall language adjustments and polishing, and figure updates based on the comments we received

Next Steps

- We are asking for WG adoption
- We will trim the list of authors to follow IETF rules
- Comments and suggestions are welcome

- Any question?