

Mobility Aware Transport Network Slicing for 5G

draft-ietf-dmm-tn-aware-mobility-05

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IETF 116 Yokohama, March 27, 2023

Updates in draft-ietf-dmm-tn-aware-mobility-04 and 05

- Align terminology, concepts in teas Network Slices Framework
 - revised terminology throughout to align with teas framework
 - description and concepts use teas framework.
 - referenced by teas mobile network slice draft
- Revision to address relation to 3GPP functions
- Revisions for text to read consistently
- Shared and collaborating with teas slices authors

Updates to Abstract section

Abstract

Slices in a 5G system should be identified and mapped to the corresponding transport network underlay segments to provide the capabilities requested by the 5G customer. One set of slices in a 5G system correspond to resources and connectivity to carry signaling and data plane packets across a distributed infrastructure that make up the 5G system, for example, distributed entities of a radio network (gNB). Another set of 5G slices represent resource and connectivity capabilities offered by the 5G system to its end users (UE) for the lifetime of a session including UE mobility. Both depend in part on multiple transport network slice segments with requirements that include bandwidth, latency, and criteria such as isolation, directionality, and disjoint routes. This document describes how a 5G slice is mapped to a slice in IP or Layer 2 transport network for both above cases, including scenarios where the 5G customer network is separated from the provider transport network by an intermediate network. Mobile slice criteria are mapped to the appropriate transport slice and capabilities offered in backhaul, mid-haul and fronthaul connectivity segments between radio side network functions and user plane function(gateway). Applicability of this framework and underlying transport networks, which can enable different slice properties are also discussed. This is based on mapping between mobile and transport underlays (L2, Segment Routing, IPv6, MPLS and IPv4).

version 05

Abstract

This document specifies a framework and mapping of slices in 5G mobile systems to transport network slices in IP, Layer 2 or Layer 1 transport networks. Slices in 5G systems are characterized by latency bounds, reservation guarantees, jitter, data rates, availability, mobility speed, usage density, criticality and priority. These characteristics are mapped to transport network

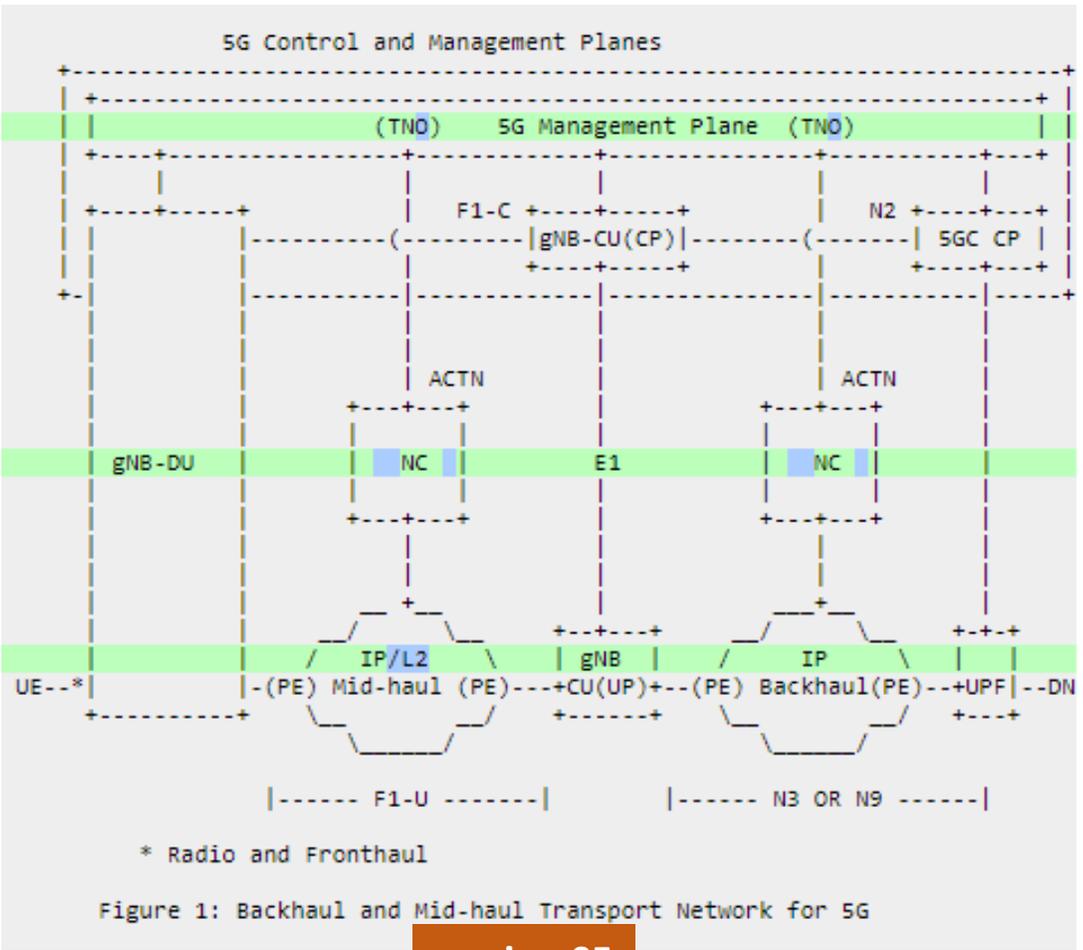
slice include bandwidth, latency and criteria such as isolation, directionality and disjoint routes. Mobile slice criteria are mapped

to the appropriate transport slice and capabilities offered in backhaul, midhaul and fronthaul connectivity segments between radio side network functions and user plane function(gateway).

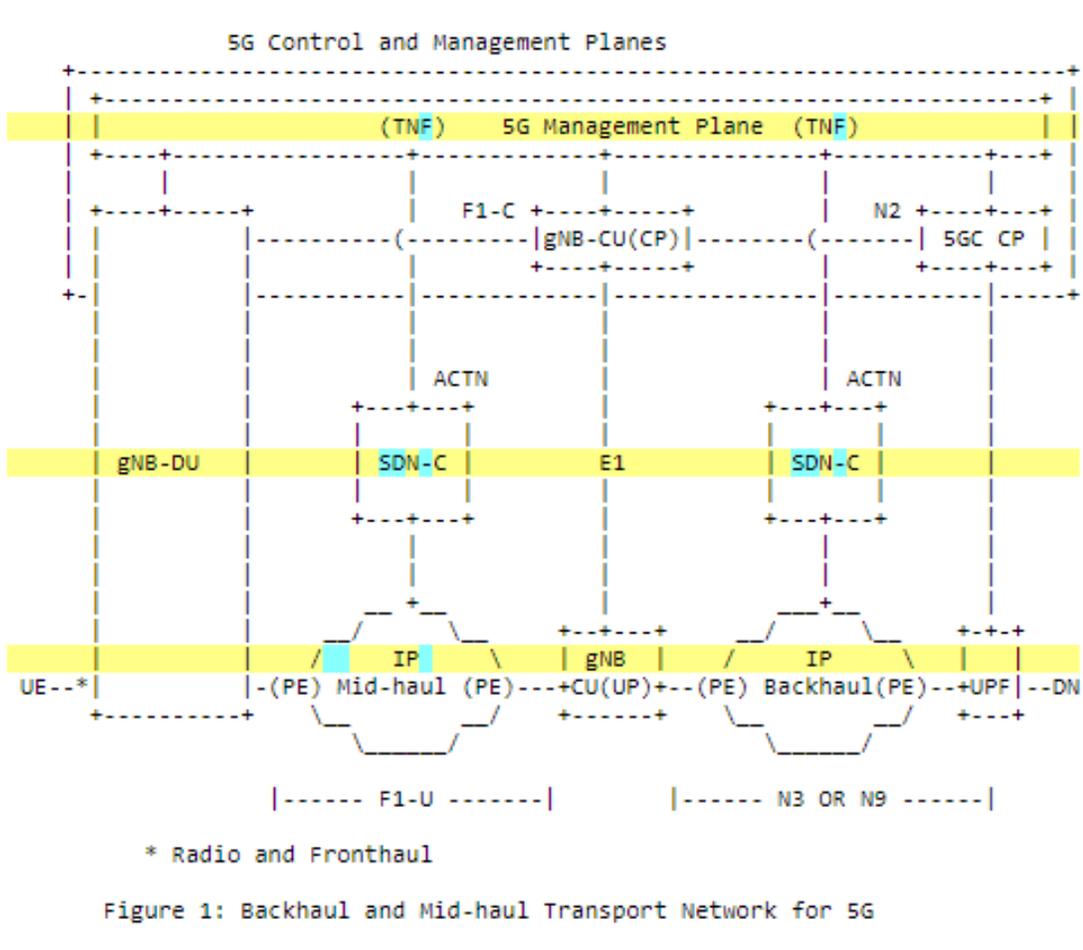
This document describes how a mobile network slice is mapped to a slice in IP or Layer 2 transport network between 3GPP provisioning end points. The same mapping mechanisms apply during initial UE session setup and following UE mobility. Applicability of this framework and underlying transport networks, which can enable different slice properties are also discussed. This is based on mapping between mobile and transport underlays (L2, Segment Routing, IPv6, MPLS and IPv4).

Uses teas terminology, clarifies 3GPP context, clean up of text.

Network Figure updates to align terminology



version 05



Updates with teas terminology: Network Controller (NC), orchestrator (TNO).

Some updates in rest of the draft

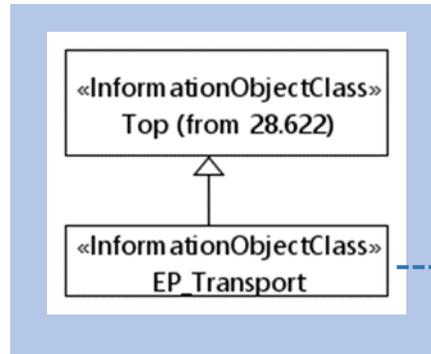
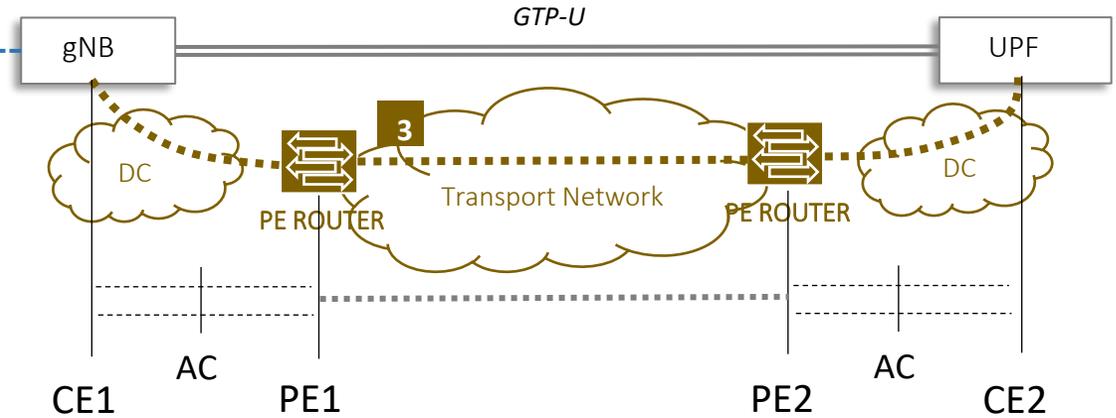
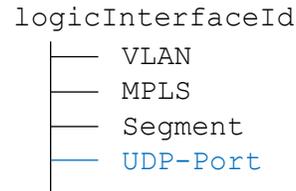


Figure - TS 28.541



- "... this is a scenario where there is an Attachment Circuit (AC) between the 3GPP entity (customer edge) and the SDP (Service Demarcation Point) in the IP transport network (provider edge). The Attachment Circuit(AC) may for example be between a UPF in a data center to a (provider edge) router that serves as the service demarcation point for the transport network slice. .."
- "...The TNO should be seen as a logical entity that can be part of NSSMF. The TNF should be seen as a logical entity that can be part of NSSMF in the 3GPP management plane [TS.28.533-3GPP]. .."
- Clarified that how the UDP port information is provided from slice establishment/management plane to user plane (UPF, gNB) is up to 3GPP. This draft is only looking at associating the slice information in the transport network.

Next Steps

Request for WG reviews and last call.