Connecting 3GPP slices through IETF Network Slice services

draft-contreras-teas-3gpp-ietf-slice-mapping-00

L.M. Contreras (Telefonica), I. Bykov (Ribbon Communications),
J. Ordonez-Lucena (Telefonica)

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Motivation

• 3GPP defines slicing for 5G through a number of logical constructs with the intent of being served with specific characteristics, determined by different QoS profiles
• IETF intends to serve different Network Slice services, including 5G services developing means for requesting and monitoring slices using IETF technologies
• There is however no document describing the details on how 3GPP and IETF can interwork for the purpose of honoring 5G slice requests
• This document aims to describe such way of interworking
3GPP Network Slicing in Rel.16

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URLL

eMBB

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EP_N3 link to UPF1

EP_N3 link to UPF2

EP_N3 link to UPF3

EP_N3 link to UPF 1

EP_N3 link to UPF 2

EP_N3 link to UPF N

UPF 1

UPF 2

UPF 3

EP_Transport S-NSSAI 1

CU-UP VLAN 1

+ CU-UP IP 1

EP_NgU link to UPF1

EP_NgU link to UPF2

EP_NgU link to UPF3

UPF 1

UPF 2

UPF 3

S-NSSAI 1

S-NSSAI 2

S-NSSAI 1

S-NSSAI 2
EP_Transport construct and combination of the parameters for IETF Network Slice definition

**EP_Transport**

- **ipAddress** (mandatory), i.e. IPv4 or IPv6
- **logicInterfaceInfo** (mandatory), incl. `logicInterfaceType` and `logicInterfaceId`
- **nextHopInfo** (optional), referring to the ingress transport node
- **qosProfile** (optional), provisioned on logical transport interface
- **epApplicationRef** (mandatory), as list of application endpoints associated with the logical transport interface. e.g. NgU(N3), F1_U interfaces

<table>
<thead>
<tr>
<th>EP_Transport attribute name</th>
<th>ipAddress</th>
<th>logicInterfaceId</th>
<th>nextHopInfo</th>
<th>qosProfile</th>
</tr>
</thead>
<tbody>
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<td>Same for all slices</td>
<td>Different per slice</td>
<td>Same for all slices</td>
<td>Same for all slices</td>
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Mapping of 3GPP slice and IETF network slice endpoints

It is necessary to solve two kind of mappings:

- Mapping of EP_Transport (3GPP concern) to the endpoint at the CE side of the IETF network slice (IETF concern)
  - Not clear if EP_Transport information could be sufficient for doing that in the case of virtualized component in 3GPP

- Mapping between CE and PE endpoints (i.e. IETF NS service customer and provider views)
  - Should be aligned with progress in framework /NBI documents
Discussion

• 3GPP is characterizes slice endpoints (i.e., EP_Transport) based on Layer 3 information (e.g., the IP Address)
  • Some other information could be needed (e.g. mask, MTU, connectivity type, etc)
• For purpose-specific network elements running the 3GPP entity, IP address could be sufficient, but probably not in case of virtualization of such entity
• Other information on additional objects as defined in 3GPP can complement the information necessary for triggering the slice request in TN
Next steps

- Fix editorial typos
- Collect feedback / comments from the WG to enhance the document
- Collect feedback / comments to improve 3GPP IM/DM to better align with IETF IM/DM
- Prepare a new (more detailed version) for IETF 114
  - Work on some example to complement the discussion