TEAS WG Draft Status

# Definition of IETF Network Slices

draft-ietf-teas-ietf-network-slice-definition

**Reza Rokui (Nokia)-Presenting**
Shunsuke Homma (NTT)
Kiran Makhijani (Futurewei)
Luis M. Contreras (Telefonica)
Jeff Tantsura (Juniper)

IETF-110, Virtual March 08-12, 2021

# Current Status

- draft-ietf-teas-ietf-network-slice-definition accepted as TEAS WG document on Jan 2021
- Most notable change was renaming **“Transport slice”** to **“IETF Network Slice”**
  - For more info on this topic see https://mailarchive.ietf.org/arch/msg/teas/R81XHZcCM5UQJUNiXnpgYXXHeHk/
- Lots of good discussions on mailing list regarding the various aspects of the IETF network slice on:
  - Using IETF PE/CE terminology as much as possible
  - IETF network slice endpoints
  - Mapping to IETF network
  - IETF network slice use-cases
  - IETF network slice as a service

  These topics will be covered in more detail in next few slides
- Co-authors sent a comprehensive response to mailing list:
  - See https://mailarchive.ietf.org/arch/msg/teas/7f_-0MXIu3hwjUOXq6lRogbDi4A/

# Topics discussed in mailing list (1/5)

**IETF network slice as a Service**

- Co-authors agreed with the mailing list suggestion to define the IETF network slice as a service
- In summary, an IETF Network Slice Service contains:
  - multiple endpoints (see discussion below for endpoint)
  - multiple connections
  - multiple SLOs
- This is aligned with the mailing list

In consequence we propose to add “Service” to the text in the draft defining what an IETF network slice is.

# Topics discussed in mailing list (2/5)

**IETF network slice Endpoints:** Mailing list opinion to use the “CE/PE” terminology instead of endpoint

Following the WG guidelines, we would adopt “CE/PE” terminology.

However, we would need to define another term . Draft author's proposal is to use a term such as AP, NS-AP or similar.

**NS-AP is similar concept as VN-AP (see 8453)**

| | Term | Suggested by | Pros | Cons |
|---|---|---|---|---|
| 1 | **AP (access point)** | Adrian and others in mailing list | o aligned with RFC 8453<br>o AP is a logical identifier shared between customer and operator | Not discussed by the list. |
| 2 | **NS-AP (IETF Network Slice Access point)** | Draft Authors | o Similar to AP case, aligned with RFC 8453<br>o it shows that it belongs to IETF network slice specification (in a similar way as it is done in RFC8453 when referring to VNAP)<br>o It conveys the meaning without limiting it to specific technology or network type | Not considered in discussions. |
| 3 | **IETF network slice endpoints (NSE)** | original term used in draft | o It provides an independent way of expressing slice endpoint | o Not preferred by I-EAS mailing list because it is not consistent with the general usage in IETF. o RFC 3985 uses endpoints for connectivity (tunnels, links, etc). This limits the definition of network slices. |
| 4 | **Attachment Circuit (AC)** | mailing list | o RFC 3985 | Since the endpoint on IETF network slice is technology agnostics, this term seems not appropriate.<br>AS per RFC 3985, AC is the physical or virtual. So, it describes the layer-2 technology such as an ATM VPI/VCI, an Ethernet port, a VLAN, a PPP connection on a physical interface. |
| 5 | **CE** | mailing list | o implies a generic consumer/producer relationship. | o IEFT Network slices endpoints are logical entities. During realization of IETF network slices, they will be mapped to CE nodes<br>o CE itself is not the endpoint. Endpoints are mapped to CE<br>o Using CE in both logical context and realization context (mapping) can be confusing.<br>o CE is not a common terminology outside IP/MPLS domains e.g. optical, DWDM, microwave, and wireless networks.<br>o It may limit the implementations to VPN flavors. |

Potential terms for endpoint suggested by mailing list (without any specific order

# Topics discussed in mailing list (3/5)

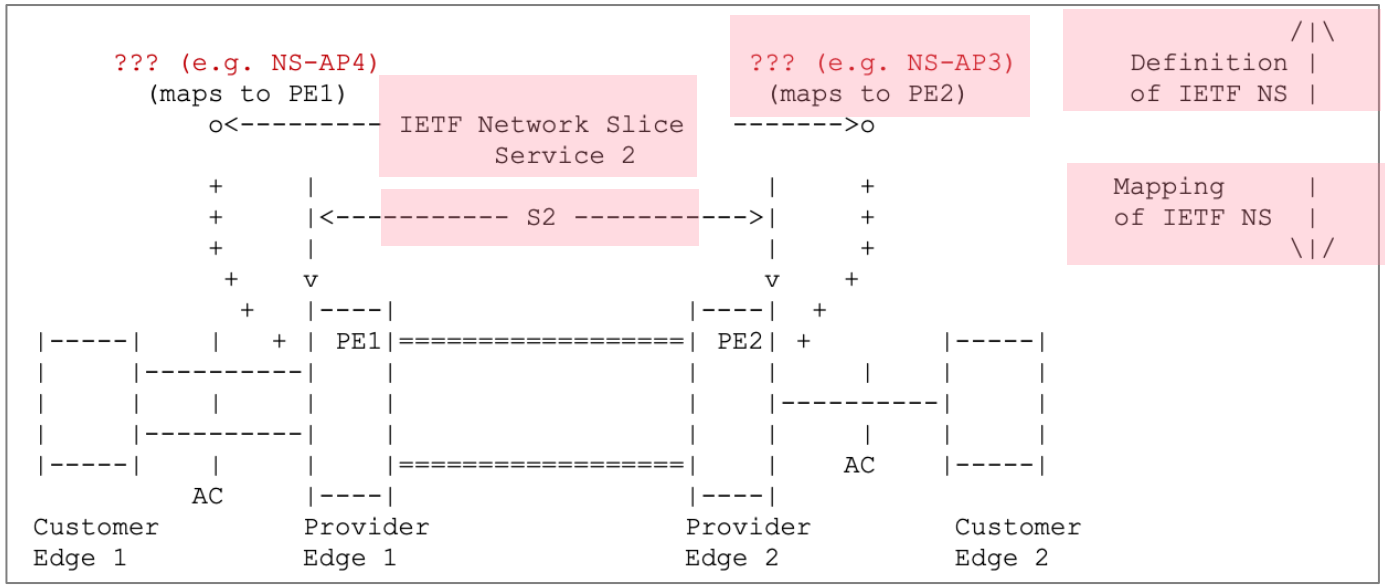
**IETF network slice mapping during the IETF network slice realization**

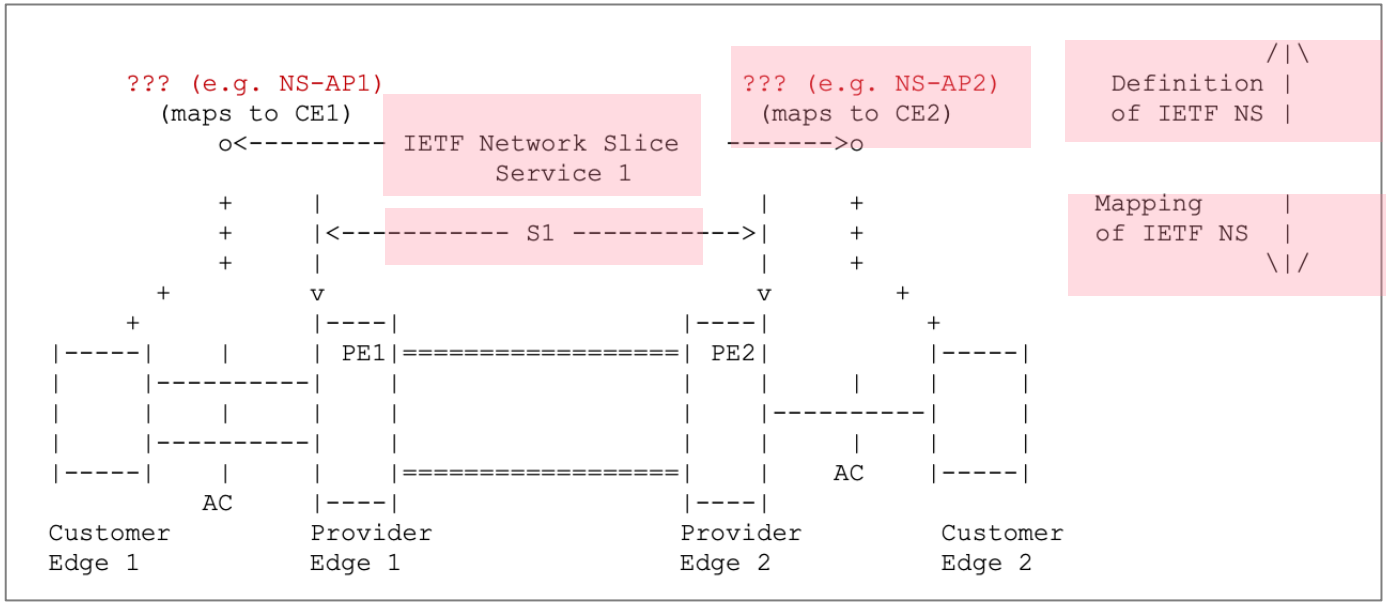
- Note that based on suggestion from mailing list, Figure-2 of RFC 3985 is used as a base
- Based on endpoint discussion above, there are various use-cases of the IETF network slice which in general fall into **two categories**:
    1. Use-cases where an endpoint maps to CE (See Ref [1] and [2])
        - Prime example of this use-case is 4G/5G network slicing in Backhaul network (i.e. IETF Network slice is between 4G/5G RAN-Core)
        - Second example is 4G/5G for Cloud-RAN in Midhaul network (i.e. IETF network slice is for DU-CU Connectivity)
    2. Use-cases where the endpoint maps to PE. A couple of examples:
        - Data Center Interconnect (DCI). i.e. IETF Network slice for DC-GW connectivity
        - Wholesale Transport between two Operators when one operator sells transport connectivity to another operator. (i.e. IETF network slice between PEs (ASBRs))

In all cases, the endpoints of IETF network slice realization are PE nodes (i.e. Cell Siter Routers, Border routers, DC-GW etc.)

[1] **Figure 4.7.1** https://www.etsi.org/deliver/etsi_ts/128500_128599/128530/15.00.00_60/ts_128530v150000p.pdf
[2] **Figure 1** of https://tools.ietf.org/id/draft-clt-dmm-tn-aware-mobility-06.html#TS.23.501-3GPP

# Topics discussed in mailing list (4/5)




Based on Figure-2 of RFC 3985

# Topics discussed in mailing list (5/5)

**Consumer vs. customer**

- The co-authors do agree with either term.
- Please see Adrian's view summarized here

https://mailarchive.ietf.org/arch/msg/teas/V8ow_uptUZXHemdvHXggd7mqxU4/

# Next Steps

- Working with TEAG WG to resolve any other issues
- Incorporate the WG's suggestions into next version of the draft
- More comments from TEAS WG are welcome

- Refer to latest version of the draft posted at:

https://tools.ietf.org/html/draft-ietf-teas-ietf-network-slice-definition-01

# Thank you