Routing Area Working Group WG

5G Transport Slice Connectivity Interface (TSCI)

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End-to-end network slicing

RAN slices

Transport slices

Core slices

RAN slice controller

Transport slice controller

Core slice controller

BMW infotainment

BMW HD maps

Multi-source artificial intelligence

PS video surveillance

Public and private clouds

Tenants

Video surveillance

Automated driving

HD maps

Infotainment

Public safety

E2E network slices = 

NS1    NS2    NS3    NS4    NS5

E2E network slice orchestrator
Customer (tenant) requests MNO for creation of a new 5G network slice:

- MNO: “X operator”
- Customer: “Gaming company Y”
- Service: URLLC
- SLA: latency < 5 mses

**Note:** Steps shown are logical and they can be combined. For example, step 3 can be combined with steps 4 or 5.
Transport Slice is aligned with 3GPP definitions

http://www.3gpp.org/NEWS-EVENTS/3GPP-NEWS/1951-SA5_5G

Ref: 3GPP TS 28.530
Each controller/orchestrator performs:

1. Automation (aka creation)
2. Monitoring and analytics
3. Optimization

E2E NSMF (i.e. E2E Network Slice Orchestrator)

- E2E NSI (Network Slice Instance)
- AN Abstraction
- TN Abstraction
- CN Abstraction

AN NSSMF (i.e. RAN Slice Controller)

- AN NSSI
- AN Automation
- AN Monitoring
- AN Optimization

Transport NSSMF (i.e. Transport Slice Controller)

- Transport NSSI
- Transport Automation
- Transport Monitoring
- Transport Optimization

CN NSSMF (i.e. Core Slice Controller)

- CN NSSI
- CN Automation
- CN Monitoring
- CN Optimization

3GPP

5G Transport Slice Connectivity interface

NSMF: Network slice management function
NSSMF: Network sub-slice management function
NSI: Network Slice Instance
NSSI: Network Sub-Slice Instance
What is this work about..?

- 3GPP defines the RESTful interface from e2e network slice controller to 5G RAN and Core slice controllers
- This work defines the same interface to “Transport Slice controller”
- This new interface called **Transport Slice Connectivity interface (TSCi)**
- Addresses automation (creation), monitoring and optimization of transport slices
“Transport Slice Connectivity Interface” in action

Transport Connectivity API provides:
- Abstraction
- Assist the Transport Controller to map Connection request to Service/Tunnel implementation
- Transport slice monitoring, assurance and Optimization

1- Create transport connectivity (gNB1.tp1, gNB2.tp1, UPF1.tp1, UPF2.tp1 for S-NSSAI=20, SLA:5ms and 10 M, Tenant: HONDA, Infotainment,...) Also enable transport slice monitoring & Optimization

2- find the resources (e.g. routers CSG1.tp1 and BR1.tp1)

3- Implement (aka realize) the connection using Service (e.g. L3VPN, L2, etc.) using and tunnels (e.g. Ethernet, MPLS, SR etc)

RAN Controller

Core Controller

Network Slice Orchestrator

5G E2e network slice for S-NSSAI=20 for customer HONDA & service type Infotainment SLA: latency < 5ms and B/W > 10Mbps
More reviews needed

Addresses more details on three main functions:
  • Automation (aka creation) of transport slices
  • Monitoring and analytics on transport slices
  • Optimization on transport slices

Define the requirements for TSCi informational model

Target for IETF 106 with new version to continue addressing the above-mentioned functions
Thank you