**3GPP TSG-SA5 Meeting #156 *S5-244835***

Maastricht, Netherlands, 19 - 23 August 2024 revision of S5-243698

**Source: Huawei**

**Title: Add solution for visualization**

**Document for: Approval**

**Agenda Item: 6.19.5**

# 1 Decision/action requested

***The group is asked to discuss and approval.***

# 2 References

[1] 3GPP draft TR 28.915: “Management and orchestration; Study on management aspects of Network Digital Twin v0.3.0”.

[2] SP-231727 "New Study on management aspects of Network Digital Twin"

# 3 Rationale

This contribution proposes to add a potential solution for network visualization for TR 28.915 based on [1]

# 4 Detailed proposal

It proposes to make the following changes to TR 28.915[1].

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| **1st Change** |

## 5.8 Use case 8: Visualization of network topology and traffic

### 5.8.1 Description

The visualization of the network is helpful in some management capabilities for the network operators. For example, the visualization of network shows the network topology and information of each contained NFs including the overall performance statistics information (including, the number of simutaneous UEs and PDU sessions), this helps to knowledge the real time status and performance related information of the network. Another example is that based on the visualization of user or signaling traffic, it helps to quickly detect abnormal traffic and root cause of a service failure.

By collecting and the synchronizing real time data from the mobile network, the management system can create a network digital twin. The created network digital twin can provide the capability of network visualization, which not only shows the topology of the network, but also displays the simulation image of the real network which includes both network elements (e.g., 5GC NFs or gNB) information and *infrastructure resource information*.

The consumer could request the NDT for the supported capability of visualization of network topology and traffic and may further receive the detail information (e.g., the location information) for the consumer to obtain the visualization information of the network.

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### 5.8.2 Potential requirements

**REQ-VISUAL\_NDT-01:** NDT should have a capability to indicate its support visualization of network topology and traffic.

**REQ-VISUAL\_NDT-01:** NDT should have a capability to report the visualization information of the network.

### 5.8.3 Potential solutions

After creation and/or configuration of the NDT instance, as the output of NDT, it can provide supported output data to the MnS consumer.

* Introduce an attribute to represent the supported output data in the NDT output. This may be called supportedOutputData, which contains what network information (e.g., topology (e.g., NF list), traffic (e.g., UP/DL throughput, number of subscribers), etc) is capable to be provided .

### 5.8.4 Evaluation of solutions

Only potential solution #1 is proposed, the requirements are satisfied and this solution is feasible for normative work.

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| **2nd Change** |

# 6 Conclusions

## 6.x Use case #8: Visualization of network topology and traffic

The use case, requirements and solution for Use case: Visualization of network topology and traffic is described in clause 5.8. It is recommended to add new attribute supportedOutputData in the NDT output.

The detailed solution is described in clause 5.8.3.

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| **End of Changes** |