**3GPP TSG-SA5 Meeting #154 *S5-242019d1***

Changsha, China, 15 - 19 April 2024

**Source: China Mobile, Huawei, TIM, ZTE**

**Title: Add use case of Signaling storm analysis for TR 28.915**

**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 v0.1.0”.

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

# 3 Rationale

This contribution proposes to add structure for TR 28.915 based on SP-231727 [2]

# 4 Detailed proposal

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

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| **1st Change** |

# Use cases

## 5.X Use case #x: Signaling storm analysis

### 5.X.1 Description

Signaling storm refers to the situation where a large number of signaling messages suddenly surge in the mobile communication network, resulting in the network processing capacity overload, thus affecting the network performance and stability. Signaling storm may be caused because of big event happened that too many users request service at the same time, or by network failure, configuration error or malicious attacks. During this period, users will repeatedly try to establish the connection until reconnected, thus generating a large number of signaling messages surge suddenly, causing signaling storm.

Network digital twin can provide network optimization capabilities for signaling storm in the following aspects:

1. Network simulation: the NDT can simulates various network scenarios, for example, network failure or large amount of user subscribes at the same time because of big event. In this way, the network operator can determine whether the current network can defend against if signaling storm happened.
2. Fault prediction and early warning: the NDT can help to predict the probability and severity of signaling storm occurrence based on historical data and real-time data, and issue early warnings in time so that network operators can take measures to prevent it.
3. Optimization of Network Configuration: the NDT can help to optimize the network configuration and provide the adjust recommendations according to the actual situation of the network, thus reducing the possibility of signaling storm occurrence.

### 5.X.2 Potential requirements

**REQ-SIMULATION\_NDT-01:** NDT should have a capability allowing the consumer to request the network simulation for signaling storm analysis.

**REQ-SIMULATION\_NDT-02:** NDT should have a capability to provide the results of network simulation for signaling storm analysis.

### 5.X.3 Potential solutions

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| **End of Changes** |