**3GPP TSG-SA5 Meeting #156 *S5-244686***

Maastricht, The Netherlands, 19 - 23 August 2024

**Source: Vodafone, Nokia, Ericsson**

**Title: Discussion paper on signaling monitoring activation**

**Document for: Endorsement**

**Agenda Item: 6.1**

# 1 Decision/action requested

***The group to discuss and endorse the proposal.***

# 2 References

[1] 3GPP TS 28.532 Management and orchestration; Generic management services

# 3 Rationale

The current 5G system prevents continuation of the network surveillance capabilities carried out by MNOs. This is due to the introduction of encryption of the signalling exchanged between network functions and the different implementations of VNFs/CNFs from vendors in the 5G network. For network operators, standard monitoring capabilities are thus essential to continue performing health checks and troubleshooting of networks without additional integration costs and without the need to standardise, in 3GPP, the internals of VNFs/CNFs.

This work was triggered by the GSMA which expressed their concerns about the monitoring of encrypted signalling traffic looking for a mechanism for a copy of this traffic to be sent to a monitoring system. This concern was reflected in a Liaison Statement sent from the GSMA to 3GPP (WGs SA2, SA3 and SA5) explaining that the current encryption mechanism sending the information with (m)TLS prevents the operators of doing proper troubleshooting for operation and management procedures.

SA WG1 has agreed the feature level requirements needed for monitoring of signalling traffic in a secure way:

NOTE 1: The monitoring system is outside of the 5G network. Both the monitoring system and the monitored network elements in the requirements below are fully under the control of the MNO.

* The monitored network elements in the 5G network shall support the transmission of a secured copy of the outgoing and incoming signalling traffic to a monitoring system.
* The 5G network shall enable the MNO to configure network monitoring, e.g., switching on/off per network element, selecting what type of elements and what type of signalling from these elements is the target for monitoring.
* The 5G network shall allow the monitoring (i.e., transmit secured copies of outgoing and incoming signalling traffic) of a transmitting network element and, separately, the monitoring of the receiving network element while facilitating correlation of the information received from both network elements by the external system.

NOTE 2: These requirements do not imply/assume any design of the network elements. How the copies are created within the element, e.g., physical, virtual or container based, is expected to be implementation specific.

* The signalling traffic shall be securely transmitted from the monitored network elements of the 5G network to the monitoring system while minimizing the degradation of network performance.

NOTE 3: The monitoring system is not integrated with the key management scheme of the 5G core.

* The transmission of signalling traffic from the monitored network elements of the 5G network to the monitoring system shall be compliant with privacy legislation, data protection regulations and protection of confidential system internal data.
* The transmission of signalling traffic from the monitored network elements of the 5G network to the monitoring system shall be limited regarding the number of file formats (e.g., JSON, PCAP, etc.) to assist with the ingestion of traffic feeds.
* One of the written above SA1 requirements is:
	+ The 5G network shall enable the MNO to configure network monitoring, e.g., switching on/off per network element, selecting what type of elements and what type of signalling from these elements is the target for monitoring.

SA5 should be the WG enabling this mechanism.

The requirement from SA1 implies that the external monitoring system that will receive copies of the signalling traffic needs to be able to interact with the monitored NEs to enable the signalling monitoring. For doing so a mechanism to instruct the delivery of the monitored traffic needs to be put in place. A new functionality needs to be created completely dedicated to this purpose. That functionality would be simpler from specification and implementation perspective, only used for this purpose and including only the needed operations.

 The new solution must fulfil the requirement of activation/deactivation of the signalling monitoring.

This new functionality allows the external Monitoring System that will receive the flow of Signalling Packets to instruct the Network Element to send the copies of the signalling traffic. It will comply with the requirement of having a switching on/off per network element.

 This functionality would need to be supported by a subscribe-notify mechanism

NOTE: The security requirements for authentication, authorisation, integrity protection, application level protection, transport protection, etc are within the scope of SA3.

# 4 Detailed proposal

The contributors ask SA5 to endorse the creation of a new functionality, to fulfil the following requirement from SA1:

* + The 5G network shall enable the MNO to configure network monitoring, e.g., switching on/off per network element, selecting what type of elements and what type of signalling from these elements is the target for monitoring.

to accommodate the stage 2 specification for MonStra.