**3GPP TSG-SA5 Meeting #145-e *S5-225540rev4***

e-meeting, 15 August - 24 August 2022

**Source: Samsung**

**Title: Rel-18 pCR 28.829 KI and solution for MNO exposes Network Performance Monitoring**

**Document for: Approval**

**Agenda Item: 6.9.3.4**

# 1 Decision/action requested

***The group is asked to discuss and approve the proposals.***

# 2 References

[1] 3GPP TS 28.554: "Management and orchestration; 5G end to end Key Performance Indicators (KPI)".

[2] 3GPP TS 28.552: "Management and orchestration; 5G performance measurements".

# 3 Rationale

This document propose the KI and solution for the use case of MNO exposes Network Performance Monitoring

# 4 Detailed proposal

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| **First modification** |

# 7 Key Issues and potential solutions

## 7.1 Key Issue: 1

### 7.1.1 Description

This describes the issues to be studied in context of the use case of MNO exposes Network Performance Monitoring.

This key issue assumes that DSO is an MNO trusted entity and can access MnSes provided by the 3GPP Management System. The existing performance assurance mechanism can be used to report network performance to DSO. However, the following need to be studied

1. How the existing ThresholdMonitor can be used for configuring the network monitoring.

2. How the existing NtfSubscriptionControl can be used for sending reports as notifications against monitoring.

3. Whether the existing performance measurements [Y] and KPIs [X] are enough to support the requirements (e.g. latency, throughput, packet loss, availability etc.)

### 7.1.2 Potential Solutions

#### 7.1.2.1 Potential Solution #1: MNO exposes network performance monitoring

##### 7.1.2.1.1 Introduction

This solution addresses Key Issue 1 and some of the requirements in 6.4 and 6.5.

The solution assumes that DSO is an MNO trusted entity and can access MnSes provided by the 3GPP Management System. In this solution, the existing provisioning MnS and related NRM fragments are used. DSO uses ThresholdMonitor to configure the related threshold for various network performance requirements e.g latency, throughput, packet loss, cell/network availability etc. DSO also uses the NtfSubscriptionControl to subscribe for NotifyThresholdCrossing notifications. The management system monitors the network and delivers the notification when the measurement or KPI crosses the configured threshold limit.

##### 7.1.2.1.2 Description



Figure 7.1.2.1.2-1: Monitoring Configuration Procedure

Editor's Note: This clause further details the potential solution and any assumptions made.

1. DSO sends createMOI request for perfMetricJob IOC to Performance Assurance Producer.
2. createMOI response is sent by Performance Assurance Producer to DSO.
3. Performance Assurance Producer calculates the required measurements and KPIs as per request.
4. Performance Assurance Producer provides the required measurements and KPIs to DSO.
5. DSO sends createMOI request for ThresholdMonitor IOC to Threshold Monitoring Producer.
	1. The attribute performanceMetrics, contains the measurements defined for each of the network performance requirements as required by DSO e.g latency, throughout, packet loss, availability etc.
	2. It also contains an attribute containing the location (Lat/long, TAC, cellid). This is used to scope the object instance to be monitored.

6. Threshold Monitoring Producer creates the MOI.

7. createMOI response is sent by Threshold Monitoring Producer to DSO.

8. DSO sends createMOI for NtfSubscriptionControl IOC to Threshold Monitoring Producer.

* 1. The attribute notificationRecipientAddress contains the address of the notification recipient i.e. DSO.

 9. Threshold Monitoring Producer creates the MOI.

 10. createMOI response is sent by Threshold Monitoring Producer to DSO.

 11. Threshold Monitoring Producer checks for threshold crossing based on the current state of the related performance measurement.

 12. Threshold Monitor Producer sends notifyThresholdCrossing notification to DSO if the performanceMetrics value crosses the configured thresholdValue.

Editor’s Note: This solution requires measurement and KPI to be defined for each network performance requirement as required by DSO.

Editor’s Note: The relevance of this solution with NPN and NSCE studies is FFS.

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| **Next modification** |

### 6.5.3 Potential Requirements

1. The 5G mobile network management system shall according to mobile network operator policy expose standarized interfaces to authorized third parties that provide the ability to initiate and terminate requests for monitoring including the configuration of the monitoring (e.g. monitoring report interval, monitoring measurement granularity, location of interest, etc.)

Editor's Note: The details of performance monitoring configuration are FFS.

2. The 5G mobile network management system shall according to mobile network operator policy expose standardized interfaces to authorized third parties that provide a mechanism for the mobile network operator to send reports to the third party.

3. The 5G mobile network management system shall support the following exposure standardized interfaces to authorized third parties to monitor information according to the associated configuration:

a) Latency between the DSO’s device and the DSO’s server the device is communicating with[an average for the third party's network traffic];

Editor's Note: It is FFS how to define latency in the context of triggering an alarm.

b) Throughput [an average for the third party's network traffic];

c) Packet loss [an average for the third party's network traffic];

Editor's Note: It is FFS how to define packet loss in the context of triggering an alarm.

d) Service loss [an indication of any intervals in which there was a full loss of service for the third party (e.g. no communication service is possible for DSO due to a cell outage in MNO’s network.)].

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| **Next modification** |

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 22.104: "Service requirements for cyber-physical control applications in vertical domains".

[3] 3GPP TS 22.261: "Service requirements for the 5G system".

[4] 3GPP TR 28.824: " Study on network slice management capability exposure"

[5] IT Process Wiki – The ITIL Wiki:. https://wiki.en.it-processmaps.com/index.php/ITIL\_Service\_Operation Content is available according to Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Germany License. Access 08.12.21.

[6] 3GPP TR 22.867: "Study on 5G smart energy and infrastructure"

[7] Connected Nations 2020, UK Report, Ofcom. https://www.ofcom.org.uk/\_\_data/assets/pdf\_file/0024/209373/connected-nations-2020.pdf Access 20.4.22.

[8] Telecom Services Security Incidents 2019 Annual Analysis Report, ENISA European Agency for Cybersecurity, July 23, 2020. https://www.enisa.europa.eu/publications/annual-report-telecom-security-incidents-2019 This publication is intended for information purposes only and is accessible free of charge. Reproduction is authorised provided the source is acknowledged. Access 20.4.22.

[9] DIRECTIVE (EU) 2019/ 944 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL - of 5 June 2019 - on common rules for the internal market for electricity and amending Directive 2012/ 27/ EU (europa.eu)
<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L0944&from=EN>

[10] IEC TC 57 <https://www.iec.ch/ords/f?p=103:7:511571509228708::::FSP_ORG_ID,FSP_LANG_ID:1273,25>

[11] 3GPP TR 22.867: "Study on 5G smart energy and infrastructure".

[X] 3GPP TS 28.554: "Management and orchestration; 5G end to end Key Performance Indicators (KPI)".

[Y] 3GPP TS 28.552: "Management and orchestration; 5G performance measurements".

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| **End of modification** |