**3GPP TSG-SA5 Meeting #142-e *S5-222376rev3***

**e-meeting, 4-12 April 2022**

**Source: China Mobile, HUAWEI**

**Title: pCR 28.104 Add alarm analysis use case**

**Document for: Approval**

**Agenda Item: 6.6.5**

# 1 Decision/action requested

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

# 2 References

[1] 3GPP TR 28.809 Management and orchestration; Study on enhancement of Management Data Analytics (MDA)

[2] 3GPP TS 28.104-000 “Management and orchestration; Management Data Analytics”

# 3 Rationale

In 5G system, millions of alarms are generated due to the more complex network with high density of network functions and end users. Huge amount of alarms brings difficulties in network operation and maintenance. Therefore, the alarms and deteriorated performance measurements of same root cause should be correlated and analysed to relieve the stress of manually alarm handling.

This contribution is proposed to add alarm analysis capability of MDAS in [2].

# 4 Detailed proposal

It proposes to make the following changes to TS 28.104[1].

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| **1st Modified Section** |

## 2.2 Informative reference

[x] 3GPP TS 28.545: Management and orchestration; Fault Supervision (FS);

[y] 3GPP TS 32.121: Telecommunication management; Advanced Alarm Management (AAM); Integration Reference Point (IRP): Requirements

[z] 3GPP TS 32.122Telecommunication management; Advanced Alarm Management (AAM); Integration Reference Point (IRP): Information Service (IS)

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| **2nd Modified Section** |

## 7.2 MDA Capabilities

## 7.2.Z Intelligent alarm analysis

#### 7.2.Z.1 Description

This MDA capability is for intelligent alarm analysis.

#### 7.2.Z.2 Use case

Fault supervision and alarm management are study focuses in 3GPP. There are several projects that are related to these management services, such as TS 28.532 [11], TS 28.545 [x], TS 32.121 [y], TS 32.122 [z]. However, it should be pointed out that, the evolution of 5G system and the increase of the number of NFs take the system to a new level of complexity. Furthermore, the number of alarms and the types of the alarms are reaching to a higer level as well. In addition to these situations, with the increase of the service requirements for 5G networks, rapid and accurate alarm ananlysis of single-domain and cross-domain has also become a new focus. The 3GPP management system is expected to have analytical capability to support, 1) relief the workload of Operators, 2) improve the accuracy and efficiency of alarm analysis. Therefore, MDA is expected to have the capabilities to provide intelligent alarm ananlysis to correlate, filter and compress the alarms in an accurate and efficient way and provide recovery recommendations as needed.

To satisfy the expectations above, MDA is expected to provide intelligent alarm analytical capabilities (e.g., AI/ML and other intelligent techniques) which can be used in single-domain or cross-domain to achieve rapid and accurate alarm ananlysis.

#### 7.2.Z.3 Requirements

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| **Requirement label** | **Description** | **Related use case(s)** |
| **REQ-ALARM\_ MDA-1** | MDA capability for intelligent alarm ananlysis shall have the capability to provide the alarm related fault demarcation and root cause analysis used in single-domain or cross-domain. | Intelligent Alarm Analysis |
| **REQ-ALARM\_MDA-2** | Same with REQ-FAULT\_PRED\_MDA-01, but the capability is for intelligent alarm analysis. | Intelligent Alarm Analysis |
| **REQ-ALARM\_ MDA-3** | Same with REQ-FAULT\_PRED\_MDA-01, but the capability is for intelligent alarm analysis. | Intelligent Alarm Analysis |
| **REQ-ALARM\_MDA-4** | MDA capability for intelligent alarm ananlysis shall have the capability to provide the analytics output with following information describing the alarm related fault:  - Alarm-analyzed Identifier  - The root cause(s) of the Alarm related fault(s)  - Severity level  - Affected objects (MOIs, NFs, etc.)  - The recommended recovery action(s) | Intelligent Alarm Analysis |

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| **End of Modified Sections** |