**3GPP TSG-SA5 Meeting #154 *S5-242082***

Changsha, China, 15 - 19 April 2024 revision of 241129

**Source: Ericsson**

**Title: pCR TR 28.871 Alarm definition**

**Document for: Approval**

**Agenda Item: 6.19.8**

# 1 Decision/action requested

***Approve the proposal.***

# 2 References

[1] 3GPP TR 28.871 Study on Service Based Management Architecture enhancement phase 3 (Release 19) v0.0.0

[2] S5-238120 Discussion paper on Alarm definition

# 3 Rationale

The Study on Service Based Management Architecture enhancement phase 3 [1] includes the work task:

WT-3.1 Study whether a new 3GPP alarm type in Alarm definition is needed.

This document specifies the use-cases and potential requirements and solution for this topic. The main goals include:

* Simplified identification of alarming conditions. Use the specificProblem as an identifier as this solution is already used by multiple vendors.
* Supplying supporting data for each alarming conditions in the form of an Alarm Definition
* Simplifying alarm notification filtering for each alarming condition

# 4 Detailed proposal

**First change**

# 4 Concepts and background

## 4.a Alarm definition

**Observation 1:** Difficult to identify the Reason for an alarm

Consider this definition of Alarm-Identifying-Attributes TS 28.111:

**Alarm identifying attributes:** A set of attributes (*objectInstance, alarmType, probableCause and specificProblem*, if present) that identify an alarm. *ObjectInstance* identifies the network resource, while *alarmType, probableCause* and *specificProblem* (if present) identify the alarming condition.

Of these alarm-identifying-attributes, objectInstance identifies the network resource that has sent the alarm notification, i.e., (a). The remaining attributes, i.e., alarmType, probableCause and specificProblem, represent the reason for the alarm, the alarming condition, i.e. (b).

This definition implies, on a conceptual level, that alarm notifications can be grouped together based on the values of alarmType, probableCause and specificProblem indicating (b) the same alarming condition. This concept has not yet been explored in 3GPP SA5.

**Problem**: Today identifying the alarming condition based on 2 or 3 parameters is unnecesarily complicated. Management systems would benefit from having a single parameter they can use to identify the reason for the alarm. Offline information systems would benefit from having a single parameter that can be used to reference information/documents related to the alarming condition.

A potential name for this new concept is “Alarm definition”. “Alarm definition” is a set of information about a specific alarming condition. It has a single unique identifier. It includes the information in alarmType, probableCause and specificProblem and potentially other information too. Identifying an alarming condition based on the above 2 mandatory and one optional parameter is complicated both for SW and even more for a human user. None of the three parameters are guaranteed to be unique. Identifying the alarming condition based on a single unique parameter is much simpler. A single parameter can be used as a key or id of the alarming condition.

A number of vendors started using specificProblem as a single unique identifier for the alarming condition, however, that is not a standard solution and as a further problem specificProblem is optional.

We propose to **introduce the concept of alarm-definition with a single unique identifier to describe the alarming condition**. In the following observations we identify multiple use-cases where alarm definition would be useful. It could also be expanded to include other information useful to the management of an alarm.

**Observation 2:** Alarm capability

Currently, there is no mechanism defined that a Fault MnS consumer can use to retrieve the set of all alarming conditions that a network resource could notify about.

If the concept of “Alarm definition” would have a representation in an NRM, then a network resource could use it to present the alarm notifications that this network resource can generate.

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**Observation 3:** Alarm definitions as input to alarm filtering

Filtering alarm notifications would be easier if based on alarm definitions including a single identifier for the alarming condition instead of the 2 or 3 parameters that would be needed today.

**Next change**

# 5 Use cases and potential requirements

## 5.a Alarm definition

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| **Requirement label** | **Description** | **Related use case(s)/Motivation** |
| REQ-MS-FMAL-1 | Every alarm shall have a single unique identifier that identifies the alarming condition. The identifier shall be a short (recommended no more than 64 characters), human readable string. | Motivation: it should be easy to identify the alarming condition. This facilitates easier understanding the situation, easier referencing the alarming condition and easier filtering of alarm notifications. |
| REQ-MS- FMAL-2 | Every alarming condition as identified in REQ-MS-FMAL-1 shall have a set of associated data that describes the alarming condition. The information set shall include: alarmType, probableCause, specificProblemThe information set should include: description, configuredSeverity | The identifier specified in REQ-MS- FMAL-1 and the information set defined in REQ-MS- FMAL-2 together constitute the "Alarm definition".Motivation: The consumer wants to list the supported alarms and related information. |
| REQ-MS- FMAL-3 | The unique identifier specified in REQ-MS-FMAL-1 shall be an input parameter of all notifications about an individual alarm. | Motivation: Facilitate easy notification filtering to allow consumers to receive only relevant notifications. |
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| REQ-MS- FMAL-4 | The information set defined by REQ-MS- FMAL-2 about an individual alarming condition should be made available in the NRM. | Motivation: The consumer wants to list the supported alarms and related information. |
| REQ-MS- FMAL-6 | The identifier defined in REQ-MS-FMAL-1 shall be usable in notification filtering. | Motivation: Facilitate easy notification filtering to allow consumers to receive only notifications relevant for them. |
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**Next change**

# 6 Potential solutions

## 6.a Alarm definition

The specificProblem shall be used as the unique identifier (unique within a producer) identifying the alarming condition as required by REQ-MS-FMAL-1.

SpecificProblem shall be mandatory to support in the notifications notifyNewAlarm, notifyClearedAlarm, notifyChangedAlarmGeneral, notifyChangedAlarm, notifyCorrelatedNotificationChanged, notifyAckStateChanged, notifyComments.

SpecificProblem shall be mandatory to be included in all the notifications listed above.

## 6.b Advertisement of supported alarming conditions

Define an AlarmDefinition IOC.

**End of change**