**3GPP TSG-SA5 Meeting #157 *S5-246012***

Hyderabad, India, 14 - 18 October 2024

**Source: Huawei, Nokia**

**Title: Add conclusion for Use case 4 closed control loop for problem recovery**

**Document for: Approval**

**Agenda Item: 6.19.3**

# 1 Decision/action requested

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

# 2 References

[1] 3GPP TR 28.867: "Study on closed control loop management v0.4.1"

# 3 Rationale

The description and requirements for closed control loop for problem recovery are described in clause 5.4.1 and 5.4.2. Only one potential solution is proposed to satisfy the requirements and evaluated feasible for normative. So, this pCR proposes to add conclusion and recommendation for Use case 4: closed control loop for problem recovery.

# 4 Detailed proposal

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| **1st Change** |

## 5.4 Use case 4: closed control loop for problem recovery

### 5.4.1 Description

Based on the concept in 3GPP TS 28.104 [3], MDA reports may contain root cause analysis of ongoing issues, predictions of potential issues and corresponding relevant causes and recommended actions for preventions, and/or prediction of network and/or service demands. For example:

1. MDA for Coverage problem analysis can provide the following information in the MDA report:

- coverageProblemId;

- coverageProblemType;

- coverageProblemAreas; and

- recommendedActions.

1. MDA for Energy saving analysis can provide the following information in the MDA report:

- energyEfficiencyProblematicObject;

- energyEfficiencyProblemType;

- rANenergySavingRecommendations; and

- cNenergySavingRecommendations.

MnS consumer may decide to resolve the observed problems based on the analytics reports (e.g. provided by MDA) and other management data (e.g. historical decisions made previously) if necessary. It can be possible that one MnF (e.g. Domain MnF) is responsible for problem observation and recovery, while another MnF (e.g. Cross Domain MnF) is responsible for decision on whether the problem needs to be resolved. In this scenario, The Cross Domain MnF can decide whether needs the Domain MnF to recovery the observed problems (e.g. coverage problem) based on MDA report (e.g. root cause information, recommended solutions) and other information (e.g. user experience information, information from other domains). If decides to recovery the observed problems, Cross Domain MnF needs to request Domain MnF to recovery the specified problems observed from the MDA report by using closed control loop. MnS consumer may specifies the time window for problem recovery, which means the MnS producer needs to recovery the problem at the specified time window. During problem recovery phase, MnS consumer also needs to be obtain the progress information for the problem process. When the last step of the problem process is completed, MnS producer needs to send the result of this problem recovery process to the MnS consumers.

If a closed control loop instance can be used to resolve network problem, the MnS consumer may need to know the result of resolving the network problem by the closed control loop instance, including the network problems which are resolved by the closed control loop as well as network problem resolution statistics (e.g. the number of network problem resolved by the closed control loop in the specified period).

### 5.4.2 Potential requirements

**REQ-CSA-CON-1:** The 3GPP management system should have the capability to allow the MnS consumer to request a CCL for resolving the network problems identified in the MDA report.

**REQ-CSA-CON-2:** The 3GPP management system should have the capability to allow the MnS consumer to get the result of network problem resolved by the closed control loop.

### 5.4.3 Potential solutions

It proposes to introduce the ProblemRecoveryRequest IOC name contained by AssuranceClosedControlLoop defined in 3GPP TS 28.536 [4] to represent the MnS consumer's requirements for resolving network problem. The ProblemRecoveryRequest IOC may include following attribute:

1. ProblemIdList, a list of problem Ids to indicates which network problems are requested to be resolved by the closed control loop instance. The ProblemId is defined in 3GPP TS 28.104 [3].
2. ProblemRecoveryPolicyList, a list of ProblemRecoveryPolicy <<dataType>> for resolving the network problems. Each ProblemRecoveryPolicy <<dataType>> indicates which network problems are requested to be resolved by the closed control loop instance automatically. The ProblemRecoveryPolicy <<dataType>> can includes following attributes:

- networkProblemTypes, represent which network problem types (e.g. coverageProblem, energyEfficiencyProblem) are requested to be resolved by the ACCL. The allowed values for networkProblemType are defined in 3GPP TS 28.104 [3].

- networkProblemAreas, represent the network problem identified in the specified geographical areas are requested to be resolved by the ACCL.

- networkProblemOccurTimes, represent the network problem identified in the specified time windows are requested to be resolved by the ACCL.

It proposes to introduce the ProblemRecoveryReport IOC name contained by AssuranceClosedControlLoop defined in 3GPP TS 28.536 [4] to represent the result of network problem resolved by the closed control loop. The ProblemRecoveryResult IOC may include the following attributes:

- reportTimeWindow, indicates the ProblemRecoveryResult is observed in the specified time window.

- problemIdList, a list of problem Id to indicates which network problems are resolved by the closed control loop instance. The ProblemId is defined in 3GPP TS 28.104 [3].

### 5.4.4 Evaluation of potential solutions

Only one potential solution is proposed, which is feasible.

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| **Next Change** |

## 6.4 Use case 4: closed control loop for problem recovery

The use case of closed control loop for problem recovery is introduced in clause 5.4. In this scenario, the MnS producer for CCL management needs to support the capability to allow the MnS consumer to request a CCL for resolving the network problems identified in the MDA report and get the result of network problem resolved by the closed control loop.

The solution proposes to introduce the ProblemRecoveryRequest IOC to represent the MnS consumer's requirements for resolving network problem and ProblemRecoveryReport IOC to represent the result of network problem resolved by the closed control loop.

It is recommended to introduce the use case, requirements and corresponding solution for closed control loop for problem recovery in normative work. The detailed solution in clause 5.4.3 is used as baseline for normative work with following additional considerations during normative phase:

* Clarify the goal and target for the ACCL for problem recovery during normative phase.
* The information model defined in clause 5.4.3 may be restructured to integrate with information models defined in other use cases during the normative phase.

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| **End of Changes** |