**3GPP TSG-SA5 Meeting #156 *S5-244446***

**Maastricht, Netherlands, 19th Aug 2024 – 23rd Aug 2024**

**Source: Samsung**

**Title: Rel-19 pCR TR 28.867 Performance monitoring of Closed control loop**

**Document for: Approval**

**Agenda Item: 6.19.4**

# 1 Decision/action requested

***In this box give a very clear / short /concise statement of what is wanted.***

# 2 References

None

# 3 Rationale

# 4 Detailed proposal

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| **First Change** |

5. Use Cases

5.X Use case X: Performance Evaluation of a Closed Control Loop

5.X.1 Description

The advanced monitoring functionalities of a CCL can provide real-time insights into the performance and outcomes of a CCL. The monitoring activity for a Closed Control Loop may result in further actions that happen in the operation phase, e.g. evaluate and update, in order to change the closed control loop settings and improve its performance. So there is a need to evaluate performance of a Closed Control Loop itself. Such metrics are important to understand and change a CCL’s behaviour and to improve its performance to pursue the assigned goal(s).

For example, certain performance aspects of a CCL can be very crucial to know in order to evaluate and decide upon a CCL’s performance, such as number of breached goals, time taken to meet a breached goal, number of conflicts occurred by a CCL etc. With the knowledge of such performance aspects of an existing CCL a MnS consumer can more effectively update or create a new CCL.

An operator can also compare different CCLs based on these performances and choose the best one for its network deployment.

5.X.2 Potential Requirements

REQ-CCL-PERF-1: The 3GPP management system should be able to obtain a CCL’s performance with respect to the total number of occurrences of an assurance goal breach.

REQ-CCL-PERF-2: The 3GPP management system should be able to obtain a CCL’s performance with respect to the time taken by CCL to meet a breached goal.

REQ-CCL-PERF-3: The 3GPP management system should be able to obtain a CCL’s performance with respect to the total number of conflicts occurred by a CCL.

5.X.3 Potential Solutions

5.X.3.1 Solution-1

This solution involves defining new performance metrics to evaluate performance of a CCL for its optimal execution. This enables operators to track the effectiveness of closed loop automation, identify areas for improvement, and make informed adjustments to CCL functionalities.

These new metrics are as follows –

1. Total number of occurrences of an assurance goal breach
2. This measurement provides the total number of occurrences when an assurance goal, as defined in CCL is breached during an observation time period.
3. CC.
4. This is measured by counting each incidence when an assurance goal is breached and incrementing the corresponding counter by one for each such occurrence within an observation time period.
5. An integer value.
6. The measurement name has the form TotalAssuranceGoalBreach.
7. CCL Provider.
8. Valid for packet switched traffic.
9. 5GS.
10. Time taken by CCL to meet a breached goal

a) This measurement provides the time taken by a CCL to meet a breached goal after activating it again.

b) DER.

c) This is measured by considering the time stamp when an assurance goal is breached and subtracting it from the time stamp when that goal is met after activating the CCL with required changes.

d) Each measurement is an integer representing the mean delay in milliseconds.

e) The measurement name has the form TimeBreachedGoalRecovery.

f) CCL Provider.

g) Valid for packet switched traffic.

h) 5GS.

1. Total number of conflicts occurred by a CCL

a) This measurement provides the total number of conflicts that occur between a CCL under consideration and any other CCL during an observation time period.

b) CC

c) This is measured by counting each incidence when conflict occurs between a CCL under consideration and the other CCL and incrementing the corresponding counter by one for each such occurrence within an observation time period.

d) An integer value.

e) The measurement name has the form TotalCclConflicts\_Filter, where filter is either Implicit or Explicit. Implicit represents the action conflict i.e. conflict between two existing CCL and target represents the explicit conflict i.e. conflict between an existing CCL and a requested CCL.

f) CCL Provider

g) Valid for packet switched traffic

h) 5GS

These measurements can be used for performance evaluation of a closed control loop. For example when the SLS performance starts degrading for certain metric, the PA/CCL MnS consumer obtains information of attributes of all ACCLs from the PA/CCL MnS producer. Then PA/CCL MnS consumer identifies the ACCL ‘n’ which contains that SLS metric and obtains the status of its performance metrics (i.e. TotalAssuranceGoalBreach, TimeCorrectiveGoalMeet, TotalCclConflicts\_Filter) via PerfMetricJob MOI from producer.

Then PA/CCL MnS consumer can either update an existing ACCL ‘n’ in the producer (by sending modifyMOIAttributes or changeMOIs request message to PA/CCL MnS producer) or it can create a new ACCL for the desired SLS/assurance goal (by sending createMOI Request message to PA/CCL MnS producer). For both the scenarios a suitable response message is sent by PA/CCL MnS producer to consumer for the updated attributes in ACCL ‘n’ or for newly created ACCL MOI.

5.X.3.2 Solution-y

5.X.4 Evaluation of solutions

TBD

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| **End of Change** |