3GPP TSG SA WG5 Meeting 137-e TDoc S5-213431

electronic meeting, online, 10 - 19 May 2021

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **28.535** | **CR** | **<**CR#> | **rev** | **-** | **Current version:** | **16.3.0** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network | **X** |

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| ***Title:***  | Update description of management control loops |
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| ***Source to WG:*** | S5 |
| ***Source to TSG:*** | Ericsson, Deutsche Telekom |
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| ***Work item code:*** | Cosla |  | ***Date:*** | 2021-04-20 |
|  |  |  |  |  |
| ***Category:*** | F |  | ***Release:*** | Rel-16 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
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| ***Reason for change:*** | To clarify the source of the requirements for closed control loops and the relationship to the goals.  |
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| ***Summary of change:*** | Added new clause in 4.2.To minor editorial corrections in the text under Figure 4.2.1.1 |
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| ***Consequences if not approved:*** | Clause 4.1 would be describing information not applicable to this and other relevant information would be missing, potentially causing confusion about the scope of stage 2 and 3 in TS 28.536. |
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| ***Clauses affected:*** | 4.2, 4.2.0 (new) |
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|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

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| **1st change** |

## 4.2 Management control loops

### 4.2.0 Goals and SLS

A CSP provides communication services to its CSCs (e.g. Enterprises) according to an SLS. The SLS may include detailed requirements on the network slice capabilities to be provided and the associated goals to be achieved.

Similarly, an NSP provides network slice to CSP according to a SLS. The SLS may include detailed requirements on the network slice subnet capabilities to be provided and the associated goals to be achieved.

An SLS is a formal specification of an agreement between two parties which can be documented as declaritive statement or as an imparitive statement. The requirements for assurance of a specific instance of a communication service are derived from either a declaritive statement or an imparitive statement, whichever is applicable.

### 4.2.1 Overview

For communication service assurance one can identify two interactions of management control loops:

1) Between the CSC and the CSP: In this case, the CSC provides the requirements for an assured communication service to the CSP, the CSP provides the corresponding communication service, the CSP also provides feedback to the CSC. The CSP adjusts the resources used by a communication service or the CSC adjusts the SLS continuously to achieve the assured requirements.

2) Between the CSP and the NSP: the communication service provided by CSP requires the network capabilities. For example, the CSP requires a certain network latency. The NSP management system adjusts the network or CSP adjusts the latency requirement continuously to satisfy the latency requirement.



Figure 4.2.1.1: Communication service closed control loop assurance

Figure 4.2.1.1 gives a high-level description of interaction process involved in the management closed control loop.

Generally, the management control loop for CSA consists of the steps Monitoring, Analysis, Decision and Execution. The adjustment of the resources used for the communication service is completed by the continuous iteration of the steps in a management control loop. As described in clause 4.1, the management closed control loop for the resources used for the communication service is deployed in the preparation phase and takes effect during the preparation phase and operation phase.

Figure 4.2.1.2 shows the overall process of communication service assurance using a management control loop.



Figure 4.2.1.2: Management Control Loop

### 4.2.2 Control loops

A control loop is a building block for management of networks and services. The basic principle of any control loop is to adjust the value of a measured or observed variable (expressed as for example an attribute) to equal the value of a desired goal (expressed as for example an attribute). The producer of the measurements or observations, the control service, and the controlled entity are all required to create a control loop.

For the control loop to act on input in the context of the set goal, the control loop provided through following four steps that continuously consume and produce information from each other in a loop in the following sequence monitor, analyse, decide and execute.

A control loop can be an open control loop in which case a human operator or other management entity intervenes inside the loop A control loop can be closed and operates without human operator or other management entity involvement inside the loop other than possibly the initial configuration of the measurement producer and configuration of control loop.

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| **End of changes** |