**3GPP TSG-SA5 Meeting #143-e *S5-223239***

e-meeting, 9 - 17 May 2022

|  |
| --- |
| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **28.536** | **CR** | **0050** | **rev** | **-** | **Current version:** | **17.2.0** |  |
|  |
| *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)*.* |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network | **X** |

|  |
| --- |
|  |
| ***Title:***  | Add solution for disabling CL |
|  |  |
| ***Source to WG:*** | Lenovo, Ericsson? |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** | eCOSLA |  | ***Date:*** | 2022-03-25 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-17 |
|  | *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)* |
|  |  |
| ***Reason for change:*** | Support for use case in 28.535. |
|  |  |
| ***Summary of change:*** | Add disable list for a sepecific DN attribute of ACCL NRM as preffered solution over S5-222552 |
|  |  |
| ***Consequences if not approved:*** | Approved CR TS28.535 use case is not supported |
|  |  |
| ***Clauses affected:*** |  |
|  |  |
|  | **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 ...  |
|  |  |
| ***Other comments:*** | <<Forge link to be added>>https://forge.3gpp.org/rep/sa5/MnS/-/commits/28.536\_Rel-17\_CR0050\_Add\_solution\_for\_disable\_CL |
|  |  |
| ***This CR's revision history:*** |  |

#### Start of changes

#### 4.1.2.3 Class definitions

##### 4.1.2.3.1 AssuranceClosedControlLoop

4.1.2.3.1.1 Definition

This class represents the information for controlling and monitoring an assurance closed control loop associated with a NetworkSlice or NetworkSliceSubnet. It can be name-contained by SubNetwork or ManagedElement.

To express the assurance closed control loop goals, the MnS consumer needs to request the MnS producer to create an AssuranceClosedControlLoop on the MnS producer. The MnS producer may trigger to create the AssuranceClosedControlLoop as well, for example, when an instance of NetworkSlice or NetworkSliceSubnet is created, MnS producer may create an instance of AssuranceClosedControlLoop associated to the instance of NetworkSlice or NetworkSliceSubnet to assure the target described in ServiceProfile or SliceProfile. An ACCL will have the same NRM access rights as the consumer or producer who created it.

For the deletion of the assurance closed control loop, the MnS consumer needs to request the MnS producer to delete the AssuranceClosedControlLoop to free up resources on the MnS producer. MnS producer also can trigger to delete AssuranceClosedControlLoop to free up resources by itself.

For temporary deactivation of the assurance closed control loop, the MnS consumer can modify the value of the administrative state attribute to “LOCKED”. The MnS producer may disable the assurance closed control loop, for example in conflict situations, by setting the operational state attribute to “disabled”. When a closed control loop is enabled by the MnS producer, the operational state is set again to “enabled”. For the activation of an assurance closed control loop, the MnS consumer can modify the value of the administrative state attribute to “UNLOCKED”.

An AssuranceClosedControlLoop can name-contain multiple instances of AssuranceGoal which represents the assurance goal and corresponding observed or predicted goal fulfilment information (see clause 4.1.2.3.2). The AssuranceGoal may optionally include an assurance scope in terms of location (see clause 4.1.2.3.2).

The attribute “controlLoopLifeCyclePhase” is used to keep track of the lifecycle of an AssuranceClosedControlLoop

The attribute aCCLDisallowedList is used to descope the ACCL.See clause 6.1.6 of TS 28.535 [17]. Each value indicates a specific attribute instance which the ACCL is not allowed to modify.

4.1.2.3.1.2 Attributes

The AssuranceClosedControlLoop IOC includes attributes inherited from Top IOC (defined TS 28.622[5]) and the following attributes:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | S | isReadable | isWritable | isInvariant | isNotifyable |
| operationalState | M | T | F | F | T |
| administrativeState | M | T | T | F | T |
| controlLoopLifeCyclePhase | M | T | T | F | T |
| aCCLDisallowedList | O | T | T | F | T |

4.1.2.3.1.3 Constraints

No constraints have been defined for this document.

4.1.2.3.1.4 Notifications

The common notifications defined in clause 4.1.2.5 are valid for this IOC, without exceptions or additions.

#### Second change

##### 4.1.2.3.X ACCLDisallowedAttribute <<datatype>>

4.1.2.3.X.1 Definition

This data type represents attributes which an ACCL is not able to change. The first entity “managedEntityIdentifier” identifies the DN of the SubNetwork or ManagedElement, the second a list of attributeNames of the Subnetwork or ManagedElement.

4.1.2.3.X.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| managedEntityIdentifier | M | T | T | F | T |
| attributeNameList | M | T | T | F | T |

4.1.2.3.X.3 Constraints

No constraints have been defined for this document.

4.1.2.3.X.4 Notifications

The common notifications defined in clause 4.1.2.5 are valid for this IOC, without exceptions or additions.

##### 4.1.2.3.Y AttributeName <<datatype>>

4.1.2.3.Y.1 Definition

This data type represents the name of an attribute.

4.1.2.3.Y.2 Attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Support Qualifier | isReadable | isWritable | isInvariant | isNotifyable |
| attributeName | M | T | T | F | T |

4.1.2.3.Y.3 Constraints

No constraints have been defined for this document.

4.1.2.3.Y.4 Notifications

The common notifications defined in clause 4.1.2.5 are valid for this IOC, without exceptions or additions.

#### Third change

#### 4.1.2.4 Attribute definitions

##### 4.1.2.4.1 Attribute properties

The following table defines the properties of attributes that are specified in the present document.

Table 4.1.2.4.1.1

| Attribute Name | Documentation and Allowed Values | Properties |
| --- | --- | --- |
| controlLoopLifeCyclePhase | It indicates the lifecycle phase of the AssuranceClosedControlLoop instance. AllowedValues: Preparation, Commissioning, Operation and Decommissioning.  | type: Enummultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NULL isNullable: False |
| assuranceTargetName | The name of the attribute which is part of AssuranceTarget.The assuranceTargetName shall be equal to the name of an attribute in the relevant ServiceProfile or SliceProfile. The relevant ServiceProfile or SliceProfile is identified by the attribute serviceProfileId or sliceProfileId in the AssuranceGoal. | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| assuranceTargetValue | The value of the attribute which is part of AssuranceTarget | type: Stringmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| assuranceTargetList | This is an attribute containing a list of AssuranceTarget(s) that are part of an AssuranceGoal | type: AssuranceTargetmultiplicity: 1..\*isOrdered: N/AisUnique: N/AdefaultValue: NoneisNullable: False |
| observationTime | It indicates the observation period of assuranceGoalStatusObserved and assuranceGoalStatusPredicted.The assurance goal will be observed from the start of each observation period, then at the end of each observation period, the value for assuranceGoalStatusObserved and assuranceGoalStatusPredicted will be derived and configured. The observation time is expressed in seconds. | type: Integermultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| assuranceGoalStatusObserved | It holds the status of the observed goal fulfilment to the assuranceGoal. The value is FULFILLED only if all the constituent assuranceTargetStatusObserved are FULFILLED.allowedValues: "FULFILLED", “NOT\_FULFILLED  | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| assuranceGoalStatusPredicted | It holds the status of the predicted future goal fulfilment to the assuranceGoal . The value is FULFILLED only if all the constituent assuranceTargetStatusPredicted are FULFILLED.allowedValues: "FULFILLED", “NOT\_FULFILLED" | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| assuranceTargetStatusObserved | It holds the status of the observed target fulfilment to the assuranceGoal. allowedValues: "FULFILLED", “NOT\_FULFILLED  | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| assuranceTargetStatusPredicted | It holds the status of the predicted future target fulfilment to the assuranceGoal allowedValues: "FULFILLED", “NOT\_FULFILLED" | type: ENUMmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| networkSliceRef | It holds the reference to the NetworkSlice instance subject to assurance requirements | type: Dnmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| networkSliceSubnetRef | It holds the reference to the NetworkSliceSubnet instance subject to assurance requirements | type: Dnmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: None isNullable: False |
| operationalState | It indicates the operational state of the AssuranceClosedControlLoop instance. It describes whether the resource is installed and partially or fully operable (Enabled) or the resource is not installed or not operable (Disabled).Allowed values; Enabled/DisabledallowedValues: "ENABLED", "DISABLED".The meaning of these values is as defined in 3GPP TS 28.625 [14] and ITU-T X.731 [15]. | type: ENUM multiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: DisabledallowedValues: Enabled, DisabledisNullable: False |
| administrativeState | It indicates the administrative state of the AssuranceClosedControlLoop instance. It describes the permission to use or the prohibition against using the AssuranceClosedControlLoop instance. The administrative state is set by the MnS consumer. Allowed values; Locked/UnlockedallowedValues: "LOCKED", "UNLOCKED".The meaning of these values is as defined in 3GPP TS 28.625 [14] and ITU-T X.731 [15]. | type: ENUM multiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: LockedallowedValues: Locked, UnlockedisNullable: False |
| assuranceScope | It indicates the target for assurance goal in terms of a particular location.Allowed values: Not Applicable | type: AssuranceScope multiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NAallowedValues: NAisNullable: False |
| ManagedEntityIdentifier | The DN of a managed entity | Type: DNmultiplicity: 1isOrdered: N/AisUnique: N/AdefaultValue: NAallowedValues: NAisNullable: True |
| attributeNameList | This parameter identifies a list of attributes of a ManagedElement or Subnetwork identified with ManagedEntityIdentifier that are not allowed to be modified by an ACCL. Allowed values: not applicable | Type: AttributeNamemultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NAallowedValues: NAisNullable: True |
| aCCLDisallowedList | This parameter identifies the ManagedElement or Subnetwork identified with ManagedEntityIdentifier and corresponding attributes that are not allowed to be modified by an ACCL. Allowed values: not applicable | Type: ACCLDisallowedAttributemultiplicity: 1..\*isOrdered: FalseisUnique: TruedefaultValue: NAallowedValues: NAisNullable: True |
| NOTE 1: VoidNOTE 2: Void |

##### 4.1.2.4.2 Constraints

No constraints have been identified for this document.

##### 4.1.2.4.3 Notifications

This subclause presents a list of notifications, defined in [7], that provisioning management service consumer can receive. The notification parameter objectClass/objectInstance, defined in [10], would capture the DN of an instance of an IOC defined in the present document.

#### Fourth change

# B.2 Solution Set (SS) definitions

## B.2.1 OpenAPI document "coslaNrm.yml"

openapi: 3.0.2

info:

 title: coslaNrm

 version: 16.4.0

 description:

 OAS 3.0.1 specification of the Cosla NRM

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externalDocs:

 description: 3GPP TS 28.536 V16.4.0; Cosla NRM

 url: http://www.3gpp.org/ftp/Specs/archive/28\_series/28.536/

paths: {}

components:

 schemas:

#------------ Type definitions ---------------------------------------------------

 ControlLoopLifeCyclePhase:

 type: string

 enum:

 - PREPARATION

 - COMMISSIONING

 - OPERATION

 - DECOMMISSIONING

 ObservationTime:

 type: integer

 AssuranceGoalStatusObserved:

 type: string

 enum:

 - FULFILLED

 - NOT\_FULFILLED

 AssuranceGoalStatusPredicted:

 type: string

 enum:

 - FULFILLED

 - NOT\_FULFILLED

 AssuranceTargetStatusObserved:

 type: string

 enum:

 - FULFILLED

 - NOT\_FULFILLED

 AssuranceTargetStatusPredicted:

 type: string

 enum:

 - FULFILLED

 - NOT\_FULFILLED

 AssuranceTarget:

 type: object

 properties:

 assuranceTargetName:

 type: string

 assuranceTargetValue:

 type: string

 assuranceTargetStatusObserved:

 $ref: '#/components/schemas/AssuranceTargetStatusObserved'

 assuranceTargetStatusPredicted:

 $ref: '#/components/schemas/AssuranceTargetStatusPredicted'

 AssuranceTargetList:

 type: array

 items:

 $ref: '#/components/schemas/AssuranceTarget'

 AssuranceScope:

 type: object

 properties:

 taiList:

 $ref: 'nrNrm.yaml#/components/schemas/TaiList'

 AttributeName:

 type: string

 AttributeNameList:

 type: array

 items:

 $ref: '#/components/schemas/AttributeName'

 ACCLDisallowedAttribute:

 type: object

 properties:

 managedEntityIdentifier:

 $ref: 'comDefs.yaml#/components/schemas/Dn'

 attributeNameList:

 $ref: '#/components/schemas/AttributeNameList'

#-------- Definition of concrete IOCs --------------------------------------------

 SubNetwork-Single:

 allOf:

 - $ref: 'genericNrm.yaml#/components/schemas/Top'

 - type: object

 properties:

 attributes:

 allOf:

 - $ref: 'genericNrm.yaml#/components/schemas/SubNetwork-Attr'

 - $ref: 'genericNrm.yaml#/components/schemas/SubNetwork-ncO'

 - type: object

 properties:

 AssuranceClosedControlLoop:

 $ref: '#/components/schemas/AssuranceClosedControlLoop-Multiple'

 ManagedElement-Single:

 allOf:

 - $ref: 'genericNrm.yaml#/components/schemas/Top'

 - type: object

 properties:

 attributes:

 allOf:

 - $ref: 'genericNrm.yaml#/components/schemas/ManagedElement-Attr'

 - $ref: 'genericNrm.yaml#/components/schemas/ManagedElement-ncO'

 - type: object

 properties:

 AssuranceClosedControlLoop:

 $ref: '#/components/schemas/AssuranceClosedControlLoop-Multiple'

 AssuranceClosedControlLoop-Single:

 allOf:

 - $ref: 'genericNrm.yaml#/components/schemas/Top'

 - type: object

 properties:

 attributes:

 type: object

 properties:

 operationalState:

 $ref: 'comDefs.yaml#/components/schemas/OperationalState'

 administrativeState:

 $ref: 'comDefs.yaml#/components/schemas/AdministrativeState'

 controlLoopLifeCyclePhase:

 $ref: '#/components/schemas/ControlLoopLifeCyclePhase'

 aCCLDisallowedList:

 $ref: '#/components/schemas/ACCLDisallowedAttribute'

 AssuranceGoal:

 $ref: '#/components/schemas/AssuranceGoal-Multiple'

 AssuranceGoal-Single:

 allOf:

 - $ref: 'genericNrm.yaml#/components/schemas/Top'

 - type: object

 properties:

 attributes:

 allOf:

 - type: object

 properties:

 observationTime:

 $ref: '#/components/schemas/ObservationTime'

 assuranceTargetList:

 $ref: '#/components/schemas/AssuranceTargetList'

 assuranceGoalStatusObserved:

 $ref: '#/components/schemas/AssuranceGoalStatusObserved'

 assuranceGoalStatusPredicted:

 $ref: '#/components/schemas/AssuranceGoalStatusPredicted'

 assuranceScope:

 $ref: '#/components/schemas/AssuranceScope'

 serviceProfileId:

 type: string

 sliceProfileId:

 type: string

 networkSliceRef:

 $ref: 'comDefs.yaml#/components/schemas/Dn'

 networkSliceSubnetRef:

 $ref: 'comDefs.yaml#/components/schemas/Dn'

#-------- Definition of JSON arrays for name-contained IOCs ----------------------

 AssuranceClosedControlLoop-Multiple:

 type: array

 items:

 $ref: '#/components/schemas/AssuranceClosedControlLoop-Single'

 AssuranceGoal-Multiple:

 type: array

 items:

 $ref: '#/components/schemas/AssuranceGoal-Single'

#------------ Definitions in TS 28.536 for TS 28.623 -----------------------------

 resources-coslaNrm:

 oneOf:

 - $ref: '#/components/schemas/AssuranceClosedControlLoop-Single'

 - $ref: '#/components/schemas/AssuranceGoal-Single'

 - $ref: '#/components/schemas/SubNetwork-Single'

 - $ref: '#/components/schemas/ManagedElement-Single'

#### End of changes