**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 can be 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: Enum  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: 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: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| assuranceTargetValue | The value of the attribute which is part of AssuranceTarget | type: String  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| assuranceTargetList | This is an attribute containing a list of AssuranceTarget(s) that are part of an AssuranceGoal | type: AssuranceTarget  multiplicity: 1..\*  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: 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: Integer  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: 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: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: 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: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| assuranceTargetStatusObserved | It holds the status of the observed target fulfilment to the assuranceGoal.  allowedValues: "FULFILLED", “NOT\_FULFILLED | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| assuranceTargetStatusPredicted | It holds the status of the predicted future target fulfilment to the assuranceGoal  allowedValues: "FULFILLED", “NOT\_FULFILLED" | type: ENUM  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| networkSliceRef | It holds the reference to the NetworkSlice instance subject to assurance requirements | type: Dn  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: None  isNullable: False |
| networkSliceSubnetRef | It holds the reference to the NetworkSliceSubnet instance subject to assurance requirements | type: Dn  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: 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/Disabled  allowedValues: "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: 1  isOrdered: N/A  isUnique: N/A  defaultValue: Disabled  allowedValues: Enabled, Disabled  isNullable: 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/Unlocked  allowedValues: "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: 1  isOrdered: N/A  isUnique: N/A  defaultValue: Locked  allowedValues: Locked, Unlocked  isNullable: False |
| assuranceScope | It indicates the target for assurance goal in terms of a particular location.  Allowed values: Not Applicable | type: AssuranceScope  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: NA  allowedValues: NA  isNullable: False |
| ManagedEntityIdentifier | The DN of a managed entity | Type: DN  multiplicity: 1  isOrdered: N/A  isUnique: N/A  defaultValue: NA  allowedValues: NA  isNullable: 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: AttributeName  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: NA  allowedValues: NA  isNullable: 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: ACCLDisallowedAttribute  multiplicity: 1..\*  isOrdered: False  isUnique: True  defaultValue: NA  allowedValues: NA  isNullable: True |
| NOTE 1: Void  NOTE 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