**3GPP TSG-CT WG4 Meeting #105-eC4-214abc**

**E-Meeting, 17th – 27th August 2021 *was* C4-214459**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.503** | **CR** | **0713** | **rev** | **1** | **Current version:** | **16.8.0** |  |
|  | | | | | | | | |
| *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 |  | Core Network | **X** |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Sub-Notify shared data | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, Hewlett Packard Enterprise | | | | | | | | | |
| ***Source to TSG:*** | C4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | SBIProtoc16 | | | | |  | ***Date:*** | | | 2021-08-09 |
|  |  | | | |  | |  | | |  |
| ***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 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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | 1. There is no UE id in the uri of Subscription to notifications of shared data change service operation, therefore the description below (exerpt forn clause 5.2.2.3.3) is incorrect.   *The NF service consumer sends a POST request to the parent resource (collection of subscriptions) (.../shared-data-subscriptions), to create a subscription as present in message body. The payload body of the POST request shall contain a representation of the shared data individual subscription resource to be created. There shall be only one shared data individual subscription per UE per NF service consumer identified by the ueId in URI and NfInstanceId in SdmSubscription.*  Shared data is for the higher efficiency of data management, it is good to keep the subscription to the notifications of shared data change at a per NF Instance level of the NF service consumer in ordet to achieve the purpose of higher efficiency (i.e. less signals and less monitering events)   1. How to indicate the required monitoring resource of shared data is not clear. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. Removes the description related to subscription to notifications of shared data change higher at a UE level in clause 5.2.2.3.3. 2. Adds clear definition related to how to indicate the required monitoring resource of shared data. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Current description of subscription to notifications of shared data change and Modification of a subscription to notifications of shared data change is have some error and is also not clear, it may lead to different interpretations and implementations which may raise trouble in interoperability between different vendors. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.2.2.2.1, 5.2.2.3.3, 5.2.2.2.xx(new), 6.1.3.1, 6.1.3.xx(new), A.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | | This CR introduces backward compatible corrects any the OpenAPI specification files of TS29503\_Nudm\_SDM.yaml. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | Rev1:   1. Merged C4-214521 2. Added the definition of SharedDataIndividual resource and Individual Shared Subscription Data Retrieval service operation. 3. Proposed text for monitoredResourceURI removed | | | | | | | | |

\* \* \* Begin of Changes \* \* \* \*

##### 5.2.2.2.1 General

The following procedures using the Get service operation are supported:

- Slice Selection Subscription Data Retrieval

- Access and Mobility Subscription Data Retrieval

- SMF Selection Subscription Data Retrieval

- Session Management Subscription Data Retrieval

- SMS Subscription Data Retrieval

- SMS Management Subscription Data Retrieval

- UE Context in SMF Data Retrieval

- UE Context in SMSF Data Retrieval

- Retrieval Of Multiple Data Sets

- Identifier Translation

- Shared Subscription Data Retrieval

- Trace Data Retrieval

- LCS Privacy Data Retrieval

- LCS Mobile Originated Data Retrieval

- Enhanced Coverage Restriction Data Retrieval

- V2X Subscription Data Retrieval

- LCS Broadcast Assistance Subscription Data Retrieval

- UE Context in AMF Data Retrieval

- Individual Shared Subscription Data Retrieval

When the feature SharedData (see clause 6.1.8) is supported and the retrieved UE-individual data (i.e. data other than Shared Subscription Data) contain SharedDataIds, the NF service consumer shall also retrieve the shared data identified by the received shared data Ids unless the identified shared data are already available at the NF service consumer. The order of sequence of sharedDataIds within UE-individual data is significant: Individual data take precedence over shared data; shared data "SharedDataX" identified by a sharedDataId X takes precedence over shared data "SharedDataY" identified by a sharedDataId Y if X appears before Y within the list of SharedDataIds in the UE-individual data.

\* \* \* Next Change \* \* \* \*

##### 5.2.2.3.3 Subscription to notifications of shared data change

Figure 5.2.2.3.3-1 shows a scenario where the NF service consumer sends a request to the UDM to subscribe to notifications of shared data change. The request contains a callback URI and the URI of the monitored resource.



Figure 5.2.2.3.3-1: NF service consumer subscribes to notifications of shared data change

1. The NF service consumer sends a POST request to the parent resource (collection of subscriptions) (.../shared-data-subscriptions), to create a subscription as present in message body. The payload body of the POST request shall contain a representation of the shared data individual subscription resource to be created. There shall be only one shared data individual subscription per NF service consumer identified by NfInstanceId in SdmSubscription.

2. On success, the UDM responds with "201 Created" with the message body containing a representation of the created subscription. The Location HTTP header shall contain the URI of the created subscription.

On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the POST response body.

\* \* \* Next Change \* \* \* \*

##### 5.2.2.2.xx Individual Shared Subscription Data Retrieval

Figure 5.2.2.2.xx-1 shows a scenario where the NF service consumer (e.g. AMF) sends a request to the UDM to receive the individual shared subscription data indicated by the sharedDataId. The request contains the type of the requested information (/shared-data/{sharedDataId}) and query parameter (supported-features).



Figure 5.2.2.2.xx-1: Requesting shared data

1. The NF service consumer (e.g. AMF) sends a GET request to the resource representing the individual SharedData indicated by the sharedDataId and with a query parameter indicating the supported-features.

2a. On success, the UDM responds with "200 OK" with the message body containing the individual SharedData.

2b. If there is no valid individual SharedData indicated by the sharedDataId, HTTP status code "404 Not Found" shall be returned including additional error information in the response body (in the "ProblemDetails" element).

On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the GET response body.

\* \* \* Next Change \* \* \* \*

#### 6.1.3.1 Overview



Figure 6.1.3.1-1: Resource URI structure of the nudm-sdm API

Table 6.1.3.1-1 provides an overview of the resources and applicable HTTP methods.

Table 6.1.3.1-1: Resources and methods overview

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Resource name (Archetype) | | | Resource URI | | | HTTP method or custom operation | | | Description | | |
| Supi (Document) | | | /{supi} | | | GET | | | Retrieve UE's subscription data | | |
| Nssai (Document) | | | /{supi}/nssai | | | GET | | | Retrieve the UE's subscribed Network Slice Selection Assistance Information | | |
| UeContextInAmfData (Document) | /{supi}/ue-context-in-amf-data | | | GET | | | Retrieve the UE's Context in AMF Data | | |
| AccessAndMobilitySubscriptionData (Document) | | | /{supi}/am-data | | | GET | | | Retrieve the UE's subscribed Access and Mobility Data | | |
| /{supi}/am-data/update-sor | | | update-sor (POST) | | | Trigger the update of Steering of Roaming Information at the UE | | |
| SorAck (Document) | | | /{supi}/am-data/sor-ack | | | PUT | | | Providing acknowledgement of Steering of Roaming | | |
| UpuAck (Document) | | | | | /{supi}/am-data/upu-ack | | | PUT | | | Providing acknowledgement of UE parameters update | | |
| CagAck (Document) | | | | | /{supi}/am-data/cag-ack | | | PUT | | | Providing acknowledgement of UE CAG configuration update | | |
| EnhancedCoverageRestrictionData | | | | | /{supi}/am-data/ecr-data | | | GET | | | Retrieve the UE's subscribed Enhance Coverage Restriction Data | | |
| SmfSelectionSubscriptionData (Document) | | | /{supi}/smf-select-data | | | GET | | | Retrieve the UE's subscribed SMF Selection Data | | |
| UeContextInSmfData (Document) | | | /{supi}/ue-context-in-smf-data | | | GET | | | Retrieve the UE's Context in SMF Data | | |
| SessionManagementSubscriptionData (Document) | | | /{supi}/sm-data | | | GET | | | Retrieve the UE's session management subscription data | | |
| SMSSubscriptionData (Document) | | | /{supi}/sms-data | | | GET | | | Retrieve the UE's SMS subscription data | | |
| SMSManagementSubscriptionData (Document) | | | /{supi}/sms-mng-data | | | GET | | | Retrieve the UE's SMS management subscription data | | |
| LcsPrivacySubscriptionData (Document) | | | /{ueId}/lcs-privacy-data | | | GET | | | Retrieve the UE's LCS privacy subscription data | | |
| LcsMobileOriginatedSubscriptionData (Document) | | | /{supi}/lcs-mo-data | | | GET | | | Retrieve the UE's LCS Mobile Originated subscription data | | |
| LcsBroadcastAssistanceSubscriptionData (Document) | | | /{supi}/lcs-bca-data | | | GET | | | Retrieve the UE's LCS Broadcast Assistance subscription data | | |
| V2xSubscriptionData (Document) | | | /{supi}/v2x-data | | | GET | | | Retrieve the UE's V2X subscription data | | |
| SdmSubscriptions (Collection) | | | /{ueId}/sdm-subscriptions | | | POST | | | Create a subscription | | |
| Individual subscription (Document) | | | /{ueId}/sdm-subscriptions/{subscriptionId} | | | DELETE | | | Delete the subscription identified by {subscriptionId}, i.e. unsubscribe | | |
| PATCH | | | Modify the sdm-subscription identified by {subscriptionId} | | |
| IdTranslationResult (Document) | | | /{ueId}/id-translation-result | | | GET | | | Retrieve a UE's SUPI or GPSI | | |
| UeContextInSmsfData (Document) | | | /{supi}/ue-context-in-smsf-data | | | GET | | | Retrieve the UE's Context in SMSF Data | | |
| TraceData  (Document) | | | /{supi}/trace-data | | | GET | | | Retrieve Trace Configuration Data | | |
| SharedData (Collection) | | | /shared-data | | | GET | | | Retrieve shared data | | |
| IndividualSharedData (Document) | | | /shared-data/{sharedDataId} | | | GET | | | Retrieve the individual Shared Data | | |
| SharedDataSubscriptions (Collection) | | | /shared-data-subscriptions | | | POST | | | Create a subscription | | |
| SharedDataIndividual subscription (Document) | | | /shared-data-subscriptions/{subscriptionId} | | | DELETE | | | Delete the subscription identified by {subscriptionId}, i.e. unsubscribe | | |
| PATCH | | | Modify the shared data subscription identified by {subscriptionId} | | |
| GroupIdentifiers  (Document) | | | /group-data/group-identifiers | | | GET | | | Retrieve group identifiers and the UE identifiers belong to the group identifiers. | | |
| SnssaisAck (Document) | | | /{supi}/am-data/subscribed-snssais-ack | | | PUT | | | Providing acknowledgement of UE for subscribed S-NSSAIs | | |

\* \* \* Next Change \* \* \* \*

#### 6.1.3.xx Resource: IndividualSharedData (Document)

##### 6.1.3.xx.1 Description

This resource represents the individual Shared Data.

##### 6.1.3.xx.2 Resource Definition

Resource URI: {apiRoot}/nudm-sdm/<apiVersion>/shared-data/{sharedDataId}

This resource shall support the resource URI variables defined in table 6.1.3.xx.2-1.

Table 6.1.3.xx.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| apiRoot | string | See clause 6.1.1 |
| sharedDataId | SharedDataId | Contains the individual Shared Data Identifier. |

##### 6.1.3.xx.3 Resource Standard Methods

###### 6.1.3.xx.3.1 GET

This method shall support the URI query parameters specified in table 6.1.3.xx.3.1-1.

Table 6.1.3.xx.3.1-1: URI query parameters supported by the GET method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| supported-features | SupportedFeatures | O | 0..1 | see 3GPP TS 29.500 [4] clause 6.6 |

This method shall support the request data structures specified in table 6.1.3.xx.3.1-2 and the response data structures and response codes specified in table 6.1.3.xx.3.1-3.

Table 6.1.3.xx.3.1-2: Data structures supported by the GET Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| n/a |  |  |  |

Table 6.1.3.xx.3.1-3: Data structures supported by the GET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| SharedData | M | 1 | 200 OK | Upon success, a response body containing the individual Shared Data shall be returned. |
| ProblemDetails | O | 0..1 | 404 Not Found | The "cause" attribute may be used to indicate one of the following application errors:  - DATA\_NOT\_FOUND |
| NOTE: In addition common data structures as listed in table 5.2.7.1-1 of 3GPP TS 29.500 [4] are supported. | | | | |

\* \* \* Next Change \* \* \* \*

## A.2 Nudm\_SDM API

openapi: 3.0.0

**\*\*\*\*\*\*\*\*\*\*text skipped for clarity\*\*\*\*\*\*\*\*\***

/group-data/group-identifiers:

get:

summary: Mapping of Group Identifiers

operationId: GetGroupIdentifiers

tags:

- Group Identifiers

parameters:

- name: ext-group-id

in: query

description: External Group Identifier

required: false

schema:

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

- name: int-group-id

in: query

description: Internal Group Identifier

required: false

schema:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/GroupId'

- name: ue-id-ind

in: query

description: Indication whether UE identifiers are required or not

required: false

schema:

type: boolean

default: false

- name: supported-features

in: query

description: Supported Features

schema:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SupportedFeatures'

- name: If-None-Match

in: header

description: Validator for conditional requests, as described in RFC 7232, 3.2

schema:

type: string

- name: If-Modified-Since

in: header

description: Validator for conditional requests, as described in RFC 7232, 3.3

schema:

type: string

responses:

'200':

description: Expected response to a valid request

content:

application/json:

schema:

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

headers:

Cache-Control:

description: Cache-Control containing max-age, as described in RFC 7234, 5.2

schema:

type: string

ETag:

description: Entity Tag, containing a strong validator, as described in RFC 7232, 2.3

schema:

type: string

Last-Modified:

description: Timestamp for last modification of the resource, as described in RFC 7232, 2.2

schema:

type: string

'400':

$ref: 'TS29571\_CommonData.yaml#/components/responses/400'

'404':

$ref: 'TS29571\_CommonData.yaml#/components/responses/404'

'500':

$ref: 'TS29571\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29571\_CommonData.yaml#/components/responses/503'

default:

description: Unexpected error

/shared-data/{sharedDataId}:

get:

summary: retrieve the individual shared data

operationId: GetIndividualSharedData

tags:

- Retrieval of the individual shared data

parameters:

- name: sharedDataId

in: path

description: Id of the Shared data

required: true

schema:

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

- name: supported-features

in: query

description: Supported Features

schema:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/SupportedFeatures'

- name: If-None-Match

in: header

description: Validator for conditional requests, as described in RFC 7232, 3.2

schema:

type: string

- name: If-Modified-Since

in: header

description: Validator for conditional requests, as described in RFC 7232, 3.3

schema:

type: string

responses:

'200':

description: Expected response to a valid request

content:

application/json:

schema:

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

headers:

Cache-Control:

description: Cache-Control containing max-age, as described in RFC 7234, 5.2

schema:

type: string

ETag:

description: Entity Tag, containing a strong validator, as described in RFC 7232, 2.3

schema:

type: string

Last-Modified:

description: Timestamp for last modification of the resource, as described in RFC 7232, 2.2

schema:

type: string

'400':

$ref: 'TS29571\_CommonData.yaml#/components/responses/400'

'404':

$ref: 'TS29571\_CommonData.yaml#/components/responses/404'

'500':

$ref: 'TS29571\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29571\_CommonData.yaml#/components/responses/503'

default:

description: Unexpected error

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{nrfApiRoot}/oauth2/token'

scopes:

nudm-sdm: Access to the nudm-sdm API

**\*\*\*\*\*\*\*\*\*\*text skipped for clarity\*\*\*\*\*\*\*\*\***

\* \* \* End of Changes \* \* \* \*