**3GPP TSG-CT WG4 Meeting #96eC4-200580**

**E-Meeting, 17th – 28th February 2020**

**Source: Ericsson**

**Title: Completion of SRVCC data**

**Spec: 3GPP TS 29.562 v0.3.0**

**Agenda item: 6.1.14**

**Document for: Agreement**

**1. Introduction**

-

**2. Reason for Change**

Complete SRVCC resource data.

**3. Conclusions**

-

**4. Proposal**

It is proposed to agree the following changes to 3GPP TS 29.562 v0.3.0.

\* \* \* First Change \* \* \* \*

##### 5.3.2.2.x SRVCC data retrieval

Figure 5.3.2.2.x-1 shows a scenario where the NF service consumer (e.g. AS) sends a request to the HSS to retrieve the SRVCC data for the UE. The request contains the UE's identity (/{imsUeId}), the type of the requested information (/srvcc-data) and query parameters (e.g. supported-features).



Figure 5.3.2.2.x-1: IMS SRVCC data Retrieval

1. The NF service consumer (e.g. AS) sends a GET request to the resource representing the UE's SRVCC data information with query parameters indicating the supported-features.

2a. On success, the HSS responds with "200 OK" with the message body containing the STN-SR and the UE SRVCC capability for the user.

2b. If there is no valid SRVCC data for the UE, HTTP status code "404 Not Found" shall be returned and it should include 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 \* \* \* \*

##### 5.3.2.x.2 STN-SR update

Figure 5.3.2.x.2-1 shows a scenario where the IMS-AS sends a request to the HSS to update the STN-SR. The request contains the UE's identity (/{imsUeId}) which shall be an IMS Public Identity or a Private Identity and an instruction to modify the STN-SR.



Figure 5.3.2.x.2-1: IMS AS creating or updating repository data

1. The IMS AS sends a PATCH request to the resource representing the UE's SRVCC Data.

2a. On success, the HSS responds with "204 No Content".

2b. If the resource does not exist (i.e. the user is not subscribed to SRVCC), HTTP status code "404 Not Found" should be returned including additional error information in the response body (in the "ProblemDetails" element).

2c. If the operation is not authorized due to e.g IMS AS does not have the required permissions for the operation requested, HTTP status code "403 Forbidden" should be returned including additional error information in the response body (in "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 PATCH response body.

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

#### 6.2.6.1 General

This clause specifies the application data model supported by the API.

Table 6.2.6.1-1 specifies the data types defined for the Nhss\_imsSDM service API.

Table 6.2.6.1-1: Nhss\_imsSDM specific Data Types

|  |  |  |
| --- | --- | --- |
| Data type | Clause defined | Description |
| ScscfCapabilityList | 6.2.6.2.2 | Information about mandatory and optional S-CSCF capabilities |
| ImsProfileData | 6.2.6.2.4 | User's IMS profile data |
| RepositoryData | 6.2.6.2.7 | Repository Data for the requested Service Indication |
| MsisdnList | 6.2.6.2.8 | List of MSISDNs associated to the IMS public Identity |
| PublicIdentities | 6.2.6.2.9 | IMS Public Identities which belong to the same Implicit Registration Set (if any) than the requested IMS Public Identity |
| PublicIdentity | 6.2.6.2.10 | IMS Public Identity and the related data (Alias Group Id, IRS default indication, Identity Type) |
| SrvccData | 6.2.6.2.x1 | UE SRVCC capability (if available) and STN-SR (if subscribed) |

Table 6.2.6.1-2 specifies data types re-used by the Nhss\_imsSDM service API from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Nhss\_imsSDM.

Table 6.2.6.1-2: Nhss\_imsSDM re-used Data Types

|  |  |  |
| --- | --- | --- |
| Data type | Reference | Comments |
| Uri | 3GPP TS 29.571 [16] | Uniform Resource Identifier |
| SupportedFeatures | 3GPP TS 29.571 [16] | see 3GPP TS 29.500 [4] clause 6.6 |
| StnSr | 3GPP TS 29.571 [16] | Session Transfer Number for SRVCC |
| PatchItem | 3GPP TS 29.571 [16] | Patch Item |
| PatchResult | 3GPP TS 29.571 [16] | Patch Result |

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

#### 6.2.3.x Resource: SRVCC data

##### 6.2.3.x.1 Description

This resource represents the SRVCC data. It is queried by the service consumer (e.g. AS) to retrieve the UE SRVCC capability and the STN-SR for the user.

##### 6.2.3.x.2 Resource Definition

Resource URI: **{**apiRoot}/nhss-ims-sdm/{apiVersion}/{imsUeId}/srvcc-data

This resource shall support the resource URI variables defined in table 6.2.3.x.2-1.

Table 6.2.3.x.2-1: Resource URI variables for this resource

|  |  |
| --- | --- |
| Name | Definition |
| apiRoot | See clause 6.2.1 |
| apiVersion | See clause 6.2.1 |
| imsUeId | Represents the IMS Public Identity (i.e. non-shared IMS Public User identity or Public Service Identity) or the IMS private Identity.  pattern: "^(impu-sip\:([a-zA-Z0-9\_\-.!~\*()&=+$,;?\/]+)\@([A-Za-z0-9]+([-A-Za-z0-9]+)\.)+[a-z]{2,}|impu-tel\:\+[0-9]{5,15}|impi-.+|.+)$" |

##### 6.2.3.x.3 Resource Standard Methods

###### 6.2.3.x.3.1 GET

This method shall support the URI query parameters specified in table 6.2.3.x.3.1-1.

Table 6.2.3.x.3.1-1: URI query parameters supported by the GET method on this resource

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description | Applicability |
| 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 6.2.3.x.3.1-2 and the response data structures and response codes specified in table 6.2.3.x.3.1-3.

Table 6.2.3.x.3.1-2: Data structures supported by the GET Request Body on this resource

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

Table 6.2.3.x.3.1-3: Data structures supported by the GET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| SrvccData | M | 1 | 200 OK | A response body containing the STN-SR and the UE SRVCC capabilities for the user shall be returned. |
| ProblemDetails | O | 0..1 | 404 Not Found | The "cause" attribute may be used to indicate one of the following application errors:  - USER\_NOT\_FOUND  - DATA\_NOT\_FOUND  DATA\_NOT\_FOUND indicates that the user is not subscribed to SRVCC. |
| ProblemDetails | O | 0..1 | 403 Forbidden | The "cause" attribute may be used to indicate the following application error:  - OPERATION\_NOT\_ALLOWED |
| NOTE: In addition, common data structures as listed in table xx are supported. | | | | |

###### 6.2.3.x.3.2 PATCH

This method shall support the URI query parameters specified in table 6.2.3.x.3.2-1.

Table 6.2.3.x.3.2-1: URI query parameters supported by the PATCH 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 6.2.3.x.3.2-2 and the response data structures and response codes specified in table 6.2.3.x.3.2-3.

Table 6.2.3.2.3.2-2: Data structures supported by the PATCH Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| array(PatchItem) | M | 1..N | Items describe the modifications to the SRVCC data.  Modification are not applicable to UE SRVCC capabilities. |

Table 6.2.3.x.3.2-3: Data structures supported by the PATCH Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| n/a |  |  | 204 No Content | Upon success, an empty response body shall be returned. (NOTE 1) |
| PatchResult | M | 1 | 200 OK | Upon success, the execution report is returned. (NOTE 1) |
| ProblemDetails | M | 1 | 404 Not Found | The "cause" attribute shall be set to one of the following application errors:  - USER\_NOT\_FOUND  - DATA\_NOT\_FOUND  DATA\_NOT\_FOUND indicates that the user is not subscribed to SRVCC. |
| M | 1 | 403 Forbidden | One or more attributes are not allowed to be modified.  The "cause" attribute shall be set to:  - MODIFICATION\_NOT\_ALLOWED, see GPP TS 29.500 [4] table 5.2.7.2-1.  - OPERATION\_NOT\_ALLOWED |
| NOTE 1: If all the modification instructions in the PATCH request have been implemented, the HSS shall respond with 204 No Content response; if some of the modification instructions in the PATCH request have been discarded, and the NF service consumer has included in the supported-feature query parameter the "PatchReport" feature number, the HSS shall respond with PatchResult. | | | | |

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

##### 6.2.6.2.x1 Type: SrvccData

Table 6.2.6.2.x1-1: Definition of type SrvccData

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description |
| stnSr | StnSr | M | 1 | Iindicates the STN-SR (Session Transfer Number for SRVCC) of the UE. |
| ueSrvccCapabilities | array(SrvccCapabilty) | O | 1..N | List of accesses supported by UE SRVCC capability (e.g. 4G, 5G).  Absence of this attribute indicates that UE is not SRVCC capable. |

Editor’s note: It is still under analysis whether there is a need to indicate the SCC-AS the specific type of SRVCC support (4G only, 5G only, or both) or it is enough with a generic SRVCC capability, regardless of the type of support. Additionally, the need for CS to PS capabilities needs to be addressed.

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

##### 6.2.6.3.x Enumeration: SrvccCapability

The enumeration SrvccCapability represents the type of UE support for SRVCC. It shall comply with the provisions defined in table 6.2.6.3.x-1.

Table 6.2.6.3.4-1: Enumeration IdentityType

|  |  |
| --- | --- |
| Enumeration value | Description |
| "UE\_4G\_SRVCC\_CAPABLE" | UE is 4G SRVCC capable |
| "UE\_5G\_SRVCC\_CAPABLE" | UE is 5G SRVCC capable |

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

## A.3 Nhss\_imsSDM API

openapi: 3.0.0

info:

version: '1.0.0.alpha-1'

title: 'Nhss\_imsSDM'

description: |

Nhss Subscriber Data Management Service for IMS.

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externalDocs:

description: 3GPP TS 29.562 Unified Data Management Services, version 0.3.0

url: 'http://www.3gpp.org/ftp/Specs/archive/29\_series/29.562/'

servers:

- url: '{apiRoot}/nhss-ims-sdm/v1'

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in clause 4.4 of 3GPP TS 29.501.

security:

- oAuth2ClientCredentials:

- nhss-ims-sdm

- {}

paths:

/{imsUeId}/ims-data/location-data/scscf-capabilities:

get:

summary: Retrieve the S-CSCF capabilities for the associated IMS subscription

operationId: GetScscfCapabilities

tags:

- Retrieval of the S-CSCF capabilities for the IMS subscription

parameters:

- name: imsUeId

in: path

description: IMS Identity

required: true

schema:

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

responses:

'200':

description: Expected response to a valid request

content:

application/json:

schema:

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

'404':

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

'405':

$ref: 'TS29571\_CommonData.yaml#/components/responses/405'

'500':

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

'503':

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

'504':

$ref: 'TS29571\_CommonData.yaml#/components/responses/504'

default:

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

/{imsUeId}/repository-data/{serviceIndication}:

get:

summary: Retrieve the repository data associated to an IMPU and service indication

operationId: GetRepositoryDataServInd

tags:

- Repository data

parameters:

- name: imsUeId

in: path

description: IMS Identity

required: true

schema:

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

- name: serviceIndication

in: path

description: Identifier of a service related data

required: true

schema:

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

responses:

'200':

description: Expected response to a valid request

content:

application/json:

schema:

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

'400':

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

'404':

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

'405':

$ref: 'TS29571\_CommonData.yaml#/components/responses/405'

'500':

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

'503':

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

default:

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

/{imsUeId}/identities/msisdns:

get:

summary: retrieve the Msisdns associated to requested identity

operationId: GetMsisdns

tags:

- Retrieval of the associated Msisdns

parameters:

- name: imsUeId

in: path

description: IMS Identity

required: true

schema:

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

- name: privateId

in: query

description: Private identity

schema:

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

responses:

'200':

description: Expected response to a valid request

content:

application/json:

schema:

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

'400':

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

'404':

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

'405':

$ref: 'TS29571\_CommonData.yaml#/components/responses/405'

'500':

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

'503':

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

default:

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

/{imsUeId}/identities/ims-associated-identities:

get:

summary: Retrieve the associated identities to the IMS public identity included in the service request

operationId: GetImsAssocIds

tags:

- Retrieval of associated IMS public identities

parameters:

- name: imsUeId

in: path

description: IMS Public Identity

required: true

schema:

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

responses:

'200':

description: Expected response to a valid request

content:

application/json:

schema:

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

'400':

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

'404':

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

'405':

$ref: 'TS29571\_CommonData.yaml#/components/responses/405'

'500':

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

'503':

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

default:

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

/{imsUeId}/srvcc-data:

get:

summary: Retrieve the srvcc data

operationId: GetSrvccData

tags:

- Retrieval of UE SRVCC capability and STN-SR

parameters:

- name: imsUeId

in: path

description: IMS Public Identity or IMS Private Identity

required: true

schema:

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

- name: supported-features

in: query

description: Supported Features

schema:

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

responses:

'200':

description: Expected response to a valid request

content:

application/json:

schema:

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

'400':

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

'404':

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

'405':

$ref: 'TS29571\_CommonData.yaml#/components/responses/405'

'500':

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

'503':

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

default:

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

patch:

summary: Patch

operationId: UpdateSrvccData

tags:

- Update SRVCC data

parameters:

- name: imsUeId

in: path

description: IMS Public Identity or IMS Private Identity

required: true

schema:

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

- name: supported-features

in: query

description: Supported Features

schema:

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

requestBody:

content:

application/json-patch+json:

schema:

type: array

items:

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

minItems: 1

required: true

responses:

'200':

description: Expected response to a valid request

content:

application/json:

schema:

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

'204':

description: Successful response

'403':

$ref: 'TS29571\_CommonData.yaml#/components/responses/403'

'404':

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

default:

description: Unexpected error

components:

schemas:

# COMPLEX TYPES:

ScscfCapabilityList:

type: object

properties:

mandatoryCapabilityList:

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

optionalCapabilityList:

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

anyOf:

- required: [mandatoryCapabilityList]

- required: [optionalCapabilityList]

Capabilities:

type: array

items:

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

minItems: 1

uniqueItems: true

RepositoryData:

type: object

required:

- serviceData

- sequenceNumber

properties:

sequenceNumber:

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

serviceData:

type: string

format: byte

MsisdnList:

type: object

required:

- basicMsisdn

properties:

basicMsisdn:

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

additionalMsisdns:

type: array

minItems: 1

items:

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

PublicIdentities:

type: object

required:

- publicIdentities

properties:

publicIdentities:

type: array

items:

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

minItems: 1

uniqueItems: true

PublicIdentity:

type: object

required:

- imsPublicId

- identityType

properties:

imsPublicId:

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

identityType:

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

irsIsDefault:

type: boolean

aliasGroupId:

type: integer

SrvccData:

type: object

required:

- stnSr

properties:

stnSr:

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

ueSrvccCapabilities:

type: array

items:

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

minItems: 1

uniqueItems: true

# SIMPLE TYPES:

Capability:

type: integer

ImsUeId:

type: string

pattern: '^sip\:([a-zA-Z0-9\_\-.!~\*()&=+$,;?\/]+)\@([A-Za-z0-9]+([-A-Za-z0-9]+)\.)+[a-z]{2,}$|^tel\:\+[0-9]{5,15}$'

SequenceNumber:

type: integer

minimum: 0

ServiceIndication:

type: string

Msisdn:

type: string

pattern: '[0-9]{5,15}$'

PrivateId:

type: string

ImsPublicId:

type: string

pattern: '^(sip\:([a-zA-Z0-9\_\-.!~\*()&=+$,;?\/]+)\@([A-Za-z0-9]+([-A-Za-z0-9]+)\.)+[a-z]{2,}|tel\:\+[0-9]{5,15})$'

# ENUMS:

IdentityType:

anyOf:

- type: string

enum:

- DISTINCT\_IMPU

- DISTINCT\_PSI

- WILDCARDED\_IMPU

- WILDCARDED\_PSI

- type: string

SrvccCapability:

anyOf:

- type: string

enum:

- UE\_4G\_SRVCC\_CAPABLE

- UE\_5G\_SRVCC\_CAPABLE

- type: string

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