**3GPP TSG-CT3 Meeting #130C3-234180**

**Xiamen, China, 9 - 13 October, 2023 (Revision of C3-233284)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.558** | **CR** | **0089** | **rev** | **3** | **Current version:** | **18.3.0** |  |
|  | | | | | | | | |
| *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** |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Updates to Eees\_UEIdentifier API | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson, Samsung | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | EDGEAPP\_Ph2 | | | | |  | ***Date:*** | | | 2023-09-20 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | TS 23.558 clause 8.6.5.4 added EEC as service consumer of Eees\_UEIdentifier API, clause 8.6.5.2 procedure adding EEC invoking UE ID retrieval from EES with different handling requirements, clause 8.6.5.3 adding EEC related UE ID retrieval description and extended related paratemeters in the response, covering the approved TS 23.558 CR 0156 (S6-231035), CR 0326 (S6-231635), CR 0379 (S6-232016) and CR 0409 (S6-232190).  Hence needs to implement accordingly this specification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Update in Eees\_UEIdentifier API adding extended UE Identifier supporting with new feature and adding EEC related description aligned with stage 2.  Add new custom operation for EAS and EEC as service consumer and depreate existing custom operation upon new feature. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Not effectively supporting stage 2 required extension for Eees\_UEIdentifier API. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.4, 5.4.2.1, 5.4.2.2.1A(new), 5.4.2.2.2, 8.3.3.1, 8.3.3.3(new), 8.3.3.3.1(new), 8.3.3.3.2(new), 8.3.3.4(new), 8.3.3.4.1(new), 8.3.3.4.2(new), 8.3.5.1, 8.3.5.2.2, 8.3.5.2.3(new), 8.3.5.2.4(new), 8.3.5.2.5(new), 8.3.5.3, 8.3.5.3.1 (new), 8.3.5.3.2 (new), 8.3.5.3.3 (new), 8.3.7, A.4 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 feature to the OpenAPI file of Eees\_UEIdentifier API. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR’s revision history:*** | |  | | | | | | | | |

**Additional discussion(if needed):**

**Proposed changes:**

\*\*\* 1st Change \*\*\*

## 5.4 Eees\_UEIdentifier Service

#### 5.4.2.1 Introduction

The service operation defined for Eees\_UEIdentifier API is shown in the table 5.4.2.1-1.

Table 5.4.2.1-1: Operations of the Eees\_UEIdentifier API

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Eees\_UEIdentifier\_Get | This service operation is used by the EAS to request UE identifier information from a given EES that uses 3GPP CN capability to retrieve UE Identifier which is specific to the EAS. | EAS |

The Eees\_UEIdentifier\_Get service operation as defined in 3GPP TS 23.558 [2] is used by a service consumer to retrieve UE Identifier Information.

The following procedures using the Eees\_UEIdentifier\_Get service operation service operation are supported:

- EAS obtaining UE Identifier Information using the Get custom operation.

\*\*\* 2nd Change \*\*\*

##### 5.4.2.2.1A EAS obtaining UE Identifier Information using Get custom operation

In order to obtain an UE Identifier from the EES, the EAS shall send a HTTP POST message to the EES with the request custom operation URI set to "{apiRoot}/eees-ueidentifier/<apiVersion>/get" and the request body including the UserInfo data structure as defined in clause 8.3.5.2.3.

Upon receiving the HTTP POST message from the EAS, the EES shall:

1. process the EAS UE Identifier request;

2. verify the identity of the EAS and check if the EAS is authorized to obtain the UE Identifier; and

3. if the EAS is authorized to obtain the UE's Identifier information, the EES shall:

a. invoke the Nnef\_UEId service as specified in clause 4.4.32 of 3GPP TS 29.522 [10] to obtain the UE identifier based on the user information received, and may derive the coresponding DNN and/or S-NSSAI based on the verified identity of the EAS; and

b. upon successful retrieval of the UE identifier, respond with "200 OK" along with the retrieved UE identifier information in the UeIdInformation data type to the EAS. If the UE identifier cannot be successfully retrieved or an internal error or an error in the HTTP POST request, the EES shall send an HTTP error response as specified in clause 7.7.

If the EES determines the received HTTP POST request needs to be redirected, the EES may respond with an HTTP "307 Temporary Redirect" status code or an HTTP "308 Permanent Redirect" status code including an HTTP "Location" header containing an alternative URI representing the end point of an alternative EES where the notification should be sent. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6].

\*\*\* 3rd Change \*\*\*

##### 5.4.2.2.2 Void

\*\*\* 4th Change \*\*\*

#### 8.3.3.1 Overview

The structure of the custom operation URIs of the Eees\_UEIdentifier API is shown in Figure 8.3.3.1-1.



Figure 8.3.3.1-1: Custom operation URI structure of the Eees\_UEIdentifier API

Table 8.3.3.1-1 provides an overview of the custom operations and applicable HTTP methods defined for the Eees\_UEIdentifier API.

Table 8.3.3.1-1: Custom operations without associated resources

|  |  |  |  |
| --- | --- | --- | --- |
| Operation name | Custom operation URI | Mapped HTTP method | Description |
| Fetch | /fetch | POST | Fetch the identifier of a UE.  This custom operation is deprecated. |
| Get | /get | POST | EAS fetch the UE Identifier information. |

NOTE 1: Based on SA3 specified security mechanisms for EDGE-1 and EDGE-3 interfaces, the EES can identify the initiator of the API (EEC or EAS) and apply the appropriate security procedures as specified in 3GPP TS 33.558 [20].

NOTE 2: The same service API can be implemented on two different interfaces, i.e. EDGE-1 and EDGE-3, which are for separate endpoints, i.e. the EEC and the EAS.

\*\*\* 5th Change \*\*\*

#### 8.3.3.2 Void















\*\*\* 6th Change \*\*\*

#### 8.3.3.3 Operation: Get

##### 8.3.3.3.1 Description

This custom operation allows the NF service consumer to retrieve UE Identifier information from the EES for a given User information as specified in 3GPP TS 23.558 [2].

##### 8.3.3.3.2 Operation Definition

This operation shall support the request data structures and the response data structure and response codes specified in the tables 8.3.3.3.2-1 and 8.3.3.3.2-2.

Table 8.3.3.3.2-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| UserInfo | M | 1 | Information about the User or the UE, provided by the NF service consumer. |

Table 8.3.3.3.2-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| UeIdInfo | M | 1 | 200 OK | The operation is successful and the corresponding UE Identifier information, returned by the Edge Enabler Server is included in the response body. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative target URI located in an alternative EES.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative target URI located in an alternative EES.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6] |
| NOTE: The mandatory HTTP error status code for the POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.3.3.3.2-3: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative target URI located in an alternative EES. |

Table 8.3.3.3.2-4: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative target URI located in an alternative EES. |

\*\*\* 7th Change \*\*\*

#### 8.3.5.1 General

This clause specifies the application data model supported by the API. Data types listed in clause 7.2 apply to this API

Table 8.3.5.1-1 specifies the data types defined specifically for the Eees\_UEIdentifier API service.

Table 8.3.5.1-1: Eees\_UEIdentifier API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| UserInformation | 8.3.5.2.2 | Information about the User or the UE, that used by EES to use 3GPP CN capability to retrieve the EAS specific UE identifier.  Deprecated. |  |
| UserInfo | 8.3.5.2.3 | Information about the User or the UE, that used by EES to retrieve the UE identifier Information. |  |
| UeIdInfo | 8.3.5.2.4 | UE Identifier Information, including list of UE Identifier related information. |  |
| UeId | 8.3.5.2.5 | UE identifier. |  |
| UeIdType | 8.3.5.3.3 | Identifies the UE Identifier type. |  |

Table 8.3.5.1-2 specifies data types re-used by the Eees\_UEIdentifier API service.

Table 8.3.5.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| Gpsi | 3GPP TS 29.571 [8] | Used to identify the UE with GPSI. |  |
| IpAddr | 3GPP TS 29.571 [8] | IP address of the UE. |  |
| Port | 3GPP TS 29.122 [6] | Identifies a port, unsigned integer with valid values between 0 and 65535. |  |
| SupportedFeatures | 3GPP TS 29.571 [8] | Used to negotiate the applicability of optional features defined in table 8.3.7-1. |  |

\*\*\* 8th Change \*\*\*

##### 8.3.5.2.2 Void



\*\*\* 9th Change \*\*\*

##### 8.3.5.2.3 Type: UserInfo

Table 8.3.5.2.3-1: Definition of type UserInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| easIds | array(string) | O | 1..N | The list of EAS Identifiers for which the UE IDs are requested by the NF service consumer for the given user information (e.g. IP address). |  |
| easProviderId | string | O | 0..1 | Identifier of the ASP that provides the EAS. |  |
| gpsi | Gpsi | O | 0..1 | Identify the UE with GPSI.  (NOTE 2) (NOTE 4) |  |
| ipAddr | IpAddr | C | 1 | IP address of the UE.  (NOTE 3) (NOTE 4) (NOTE 5) |  |
| portNumber | Port | C | 0..1 | Indicates the UDP or TCP port number associated with the UE IP address as provided in the "ipAddr" attribute.  (NOTE 5) | UEIdExt |
| suppFeat | SupportedFeatures | C | 0..1 | Used to negotiate the supported optional features of the API as described in clause 7.8.  This attribute shall be provided in the HTTP POST request and success response. |  |
| NOTE 1: If EAS ID list is not provided, it shall be interpreted by the EES that the EEC is requesting the UE ID for its own use (hence the EES shall use its own AF Id towards NEF).  NOTE 2: The"gpsi" attribute is used if the EEC has the UE ID in a form not desired to be shared with the EAS.  NOTE 3: Both UE's private IPv6 address (due to the existence of NAT66) and UE's private IPv4 address may be provided in the "ipAddr" attribute.  NOTE 4: At least one of the "gpsi" attribute and the "ipAddr" attribute shall be present.  NOTE 5: If the EAS recognizes the UE IP address is a public IP address different from the actual UE IP address (private IP address), i.e., the UE is behind a NAT, shall include the Port Number and associated IP address as part of the User information. | | | | | |

\*\*\* 10th Change \*\*\*

##### 8.3.5.2.4 Type: UeIdInfo

Table 8.3.5.2.4-1: Definition of type UeIdInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| easId | string | M | 0..1 | Represents the identifier of the EAS, e.g. URI, FQDN, requesting the UE Identifier information (as identified by the "easId" attribute in the UserInformation Data type).  Shall be present if the EAS ID was provided in the request. |  |
| ueIds | Array(UeId) | C | 1..N | Represents the UE Identifier(s). |  |

\*\*\* 11th Change \*\*\*

##### 8.3.5.2.5 Type: UeId

Table 8.3.5.2.5-1: Definition of type UeId

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| edgeUeId | string | C | 0..1 | Represents the EES generated EDGE UE Identifier of the UE.  Shall be provided if the ueIdType value is "EDGE\_UE\_ID".  (NOTE) |  |
| gpsi | Gpsi | C | 0..1 | Identifier of the AF specific UE Identifier in the GPSI fomat of External ID.  Shall be provided if the ueIdType value is "AF\_SPECIFIC\_UE\_ID". |  |
| ueIdType | UeIdType | M | 1 | Identifies the UE Identifier type. Indicates whether the UE ID is CN assigned AF-specific UE ID or Edge UE ID. |  |
| NOTE: If the EEC provided in the request the UE ID in the "gpsi" attribute, the EES may generate and provide the Edge UE ID in the "edgeUeId" attribute based on the received UE ID. | | | | | |

\*\*\* 12th Change \*\*\*

#### 8.3.5.3 Simple data types and enumerations

##### 8.3.5.3.1 Introduction

This clause defines simple data types and enumerations that can be referenced from data structures defined in the previous clauses.

##### 8.3.5.3.2 Simple data types

The simple data types defined in table 8.3.5.3.2-1 shall be supported.

Table 8.3.5.3.2-1: Simple data types

|  |  |  |  |
| --- | --- | --- | --- |
| Type Name | Type Definition | Description | Applicability |
|  |  |  |  |

##### 8.3.5.3.3 Enumeration: UeIdType

Table 8.3.5.3.3-1: Enumeration UeIdType

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| AF\_SPECIFIC\_UE\_ID | Identifies the AF specific UE Identifier. |  |
| EDGE\_UE\_ID | Identifier the EDGE UE Identifier. |  |

\*\*\* 13th Change \*\*\*

# A.4 Eees\_UEIdentifier API

openapi: 3.0.0

info:

title: EES UE Identifier Service

version: 1.1.0-alpha.1

description: |

EES UE Identifier Service.

© 2022, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC).

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externalDocs:

description: >

3GPP TS 29.558 V18.0.0; Enabling Edge Applications;

Application Programming Interface (API) specification; Stage 3.

url: https://www.3gpp.org/ftp/Specs/archive/29\_series/29.558/

security:

- {}

- oAuth2ClientCredentials: []

servers:

- url: '{apiRoot}/eees-ueidentifier/v1'

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in clause 5.2.4 of 3GPP TS 29.122

paths:

/fetch:

post:

deprecated: true

summary: Fetch the identifier of an UE.

operationId: FetchUEId

tags:

- Fetch UE Identifier

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'200':

description: >

The communicated ACR update information was successfully received.

The response body contains the feedback of the EES.

content:

application/json:

schema:

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

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29122\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29122\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29122\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

/get:

post:

summary: Get the identifier of an UE.

operationId: GetUEId

tags:

- Get UE Identifier

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'200':

description: >

The operation is successful and the corresponding UE Identifier information, returned

by the Edge Enabler Server is included in the response body.

content:

application/json:

schema:

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

'307':

$ref: 'TS29122\_CommonData.yaml#/components/responses/307'

'308':

$ref: 'TS29122\_CommonData.yaml#/components/responses/308'

'400':

$ref: 'TS29122\_CommonData.yaml#/components/responses/400'

'401':

$ref: 'TS29122\_CommonData.yaml#/components/responses/401'

'403':

$ref: 'TS29122\_CommonData.yaml#/components/responses/403'

'404':

$ref: 'TS29122\_CommonData.yaml#/components/responses/404'

'411':

$ref: 'TS29122\_CommonData.yaml#/components/responses/411'

'413':

$ref: 'TS29122\_CommonData.yaml#/components/responses/413'

'415':

$ref: 'TS29122\_CommonData.yaml#/components/responses/415'

'429':

$ref: 'TS29122\_CommonData.yaml#/components/responses/429'

'500':

$ref: 'TS29122\_CommonData.yaml#/components/responses/500'

'503':

$ref: 'TS29122\_CommonData.yaml#/components/responses/503'

default:

$ref: 'TS29122\_CommonData.yaml#/components/responses/default'

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{tokenUrl}'

scopes: {}

schemas:

UserInformation:

deprecated: true

description: >

Represents information about the User or the UE, that used by EES to use 3GPP CN capability

to retrieve the EAS specific UE identifier.

type: object

properties:

easId:

description: >

The application identifier of the EAS, e.g. URI, FQDN, requesting the UE Identifier

information

type: string

easProviderId:

description: Identifier of the ASP that provides the EAS.

type: string

ipAddr:

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

suppFeat:

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

required:

- easId

- ipAddr

UserInfo:

description: >

Represents information about the User or the UE, that used by EES to retrieve the UE

Identifier information.

type: object

properties:

easIds:

type: array

items:

type: string

minItems: 1

description: >

The additional list of EAS Identifier for which the UE IDs are requested for by EAS or

EEC given the User information (e.g. IP address).

easProviderId:

description: Identifier of the ASP that provides the EAS.

type: string

gpsi:

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

ipAddr:

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

suppFeat:

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

UeIdInfo:

description: >

Represents UE Identifier Information, including list of UE Identifier related information.

type: object

properties:

easId:

description: >

The application identifier of the EAS, e.g. URI, FQDN, requesting the UE Identifier

Information.

type: string

ueIds:

type: array

items:

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

minItems: 1

required:

- ueIds

UeId:

description: >

Represents UE Identifier Information, including list of UE Identifier related information.

type: object

properties:

edgeUeId:

description: Represents EDGE UE Identifier.

type: string

gpsi:

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

ueIdType:

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

required:

- ueIdType

#

# ENUMERATIONS DATA TYPES

#

UeIdType:

anyOf:

- type: string

enum:

- AF\_SPECIFIC\_UE\_ID

- EDGE\_UE\_ID

- type: string

description: >

This string provides forward-compatibility with future

extensions to the enumeration but is not used to encode

content defined in the present version of this API.

description: |

Identifies the UE Identifier type.

Possible values are:

- AF\_SPECIFIC\_UE\_ID: Identifies the AF specific UE Identifier.

- EDGE\_UE\_ID: Identifies the EDGE UE Identifier.

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