**3GPP TSG-CT WG1 Meeting #133e-bisC1-220697**

**E-meeting, 17-21 January 2022**

**Source: Huawei, HiSilicon**

**Title: Pseudo-CR on defining the Eees\_AppContextRelocation and the and Eees\_SelectedTargetEAS APIs; solution B**

**Spec: 3GPP TS 24.558 V1.0.0**

**Agenda item: 17.2.16**

**Document for: Agreement**

**1. Introduction**

As per the proposal in the discussion paper C1-220399, it is proposed to define the Eees\_AppContextRelocation API and the Eees\_SelectedTargetEAS API as a single unified API.

**2. Reason for Change**

This CR proposes a first alternative to merge the the Eees\_AppContextRelocation API and the Eees\_SelectedTargetEAS API into a single unified API, based on having a single service operation and defining an ACR action attribute that conveys the requested ACR case, i.e. ACR initiation, ACR determination and selected target EAS declaration.

**3. Conclusions**

N/A.

**4. Proposal**

It is proposed to agree the following changes to 3GPP TS 24.558 V1.0.0.

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

## 5.1 Introduction

The table 5.1-1 lists the Edge Enabler Server APIs below the service name. A service description clause for each API gives a general description of the related API.

Table 5.1-1: List of EES Service APIs

|  |  |  |  |
| --- | --- | --- | --- |
| Service Name | Service Operations | Operation Semantics | Consumer(s) |
| Eees\_EECRegistration | Request | Request/Response | EEC |
| Update | Request/Response | EEC |
| Deregister | Request/Response | EEC |
| Eees\_AppContextRelocation | Request | Request/Response | EEC, EAS |

Table 5.1-2 summarizes the corresponding Edge Enabler Server APIs defined in this specification.

Table 5.1-2: API Descriptions

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Service Name | Clause | Description | OpenAPI Specification File | apiName | Annex |
| Eees\_AppContextRelocation | 6.5 | Eees Application Context Relocation | TS24558\_Eees\_AppContextRelocation.yaml | Eees-appctxtreloc | A.X |

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

## 5.x Eees\_AppContextRelocation Service

### 5.x.1 Service Description

The Eees\_AppContextRelocation API, as defined in 3GPP TS 23.558 [2], allows an EEC or an EAS to request to launch Application Context Relocation towards a given EES via the Eees interface.

### 5.x.2 Service Operations

#### 5.x.2.1 Introduction

The service operation defined for Eees\_AppContextRelocation API is shown in the table 5.x.2.1-1.

Table 5.x.2.1-1: Operations of the Eees\_AppContextRelocation API

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Eees\_AppContextRelocation\_Request | This service operation enables to request ACR determination, ACR initiation or selected target EAS declaration for ACR. | EEC, S-EAS |

#### 5.x.2.2 Eees\_AppContextRelocation\_Request

##### 5.x.2.2.1 General

This service operation is used by an EEC or S-EAS to request ACR determination, ACR initiation or selected target EAS declaration for ACR to the EES.

The following procedures are supported by the "Eees\_AppContextRelocation\_Determine" service operation:

- ACR Request.

##### 5.x.2.2.2 ACR Request

In order to request ACR determination, ACR initiation or selected target EAS declaration for ACR, the EEC or S-EAS shall send an HTTP POST request to the EES, with the request URI set to "{apiRoot}/eees-appctxtreloc/v1/Request" and the request body including the ACRData data structure that shall contain the necessary information to enable the EES to process the request. The "acrAction" attribute within the ACRData data structure shall contain the requested ACR action, i.e. "ACR\_DETERMINATION" (initiated either by an EEC or an EAS), "ACR\_INITIATION" (initiated only by an EEC) or "SELECT\_T\_EAS\_DEC" (initiated only by an EAS).

Upon success, the EES responds with an HTTP "204 No Content" status code.

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 \* \* \* \*

## 6.5 Eees\_AppContextRelocation API

### 6.5.1 Introduction

The Eees\_AppContextRelocation service shall use the Eees\_AppContextRelocation API.

The API URI of the Eees\_AppContextRelocation API shall be:

**{apiRoot}/<apiName>/<apiVersion>**

The request URI used in HTTP requests shall have the Resource URI structure defined in clause 6.1, i.e.:

**{apiRoot}/<apiName>/<apiVersion>/<apiSpecificResourceUriPart>**

with the following components:

- The {apiRoot} shall be set as described in clause 6.1.

- The <apiName>shall be "eees-appctxtreloc".

- The <apiVersion> shall be "v1".

- The <apiSpecificResourceUriPart> shall be set as described in clause 6.1.

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

### 6.5.2 Resources

There are no resources defined for this API in this release of the specification.

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| --- | --- | --- | --- |
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\* \* \* Next Change \* \* \* \*

#### 6.5.3.1 Overview

The structure of the custom operation URIs of the Eees\_AppContextRelocation API is shown in Figure 6.5.3.1-1.



Figure 6.5.3.1-1: Resource URI structure of the Eees\_AppContextRelocation API

Table 6.5.3.1-1 provides an overview of the custom operations and applicable HTTP methods defined for the Eees\_AppContextRelocation API.

Table 6.5.3.1-1: Custom operations without associated resources

|  |  |  |  |
| --- | --- | --- | --- |
| Operation name | Custom operation URI | Mapped HTTP method | Description |
| Request | /request | POST | EEC or EAS sends an ACR launching request or the EAS declares the selected target EAS. |
|  |  |  |

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

#### 6.5.3.2 Operation: Request

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

##### 6.5.3.2.1 Description

This custom operation allows the EEC or the EAS to request ACR launching or the EAS to declare the selected target EAS.

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

##### 6.5.3.2.2 Operation Definition

This operation shall support the request data structures, the response data structures and response codes specified in tables 6.5.3.2.2-1 and 6.5.3.2.2-2.

Table 6.5.3.2.2-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| AcrData | M | 1 | Information about the requestor and requested ACR operation |

Table 6.5.3.2.2-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| n/a |  |  | 204 No Content | Successful case. The ACR request is successfully received and processed. |
| 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 [2]. |
| 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 [2] |
| NOTE: The manadatory HTTP error status code for the POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. |

Table 6.5.3.2.2-3: 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 6.5.3.2.2-4: 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. |

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

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| --- | --- | --- | --- | --- |
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\* \* \* Next Change \* \* \* \*

#### 6.5.5.1 General

This clause specifies the application data model supported by the Eees\_AppContextRelocation API.

Table 6.5.5.1-1 specifies the data types defined specifically for the Eees\_AppContextRelocation API service.

Table 6.5.5.1-1: Eees\_AppContextRelocation API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| AcrData | 6.5.5.2.2 |  |  |
| AcrDecReq | 6.5.5.2.y |  |  |
| AcrDetermReq | 6.5.5.2.u |  |  |
| AcrInitReq | 6.5.5.2.3 |  |  |
|  |  |  |  |
| EecCtxtReloc | 6.5.5.2.z |  |  |

Table 6.5.5.1-2 specifies data types re-used by the Eees\_AppContextRelocation API service from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Eees\_AppContextRelocation.

Table 6.5.5.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| RouteToLocation | 3GPP TS 29.571 [5] | Represent the N6 traffic routing information and/or routing profile ID for a DNAI. |  |
| EndPoint | 3GPP TS 29.558 [4] | Represents the endpoint information of an EAS. |  |
| Gpsi | 3GPP TS 29.571 [5] | Represents a GPSI. |  |

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

##### 6.5.5.2.1 Introduction

This clause defines the data structures to be used in resource representations.

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

##### 6.5.5.2.2 Type: AcrData

Table 6.5.5.2.2-1: Definition of type AcrData

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| requestorId | string | M | 1 | Contains the identifier of the EEC or the EAS that is sending the request. |  |
| easId | string | O | 0..1 | Contains the identifier of the EAS. |  |
| acrAction | AcrAction | M | 1 | Contains the targeted ACR action. |  |
| ueId | Gpsi | C | 0..1 | Contains the identifier of the concerned UE.This attribute shall be provided if the ACR request originates from an EEC or when the "acrAction" attribute is set to "SELEC\_T\_EAS\_DEC". |  |
| acId | string | O | 0..1 | Contains the identifier of the AC. |  |
| acrDetermData | AcrDetermReq | C | 0..1 | Contains the parameters to request ACR with action determination.This attribute shall be provided when the "acrAction" attribute is set to "ACR\_DETERMINATION". |  |
| acrInitData | AcrInitReq | C | 0..1 | Contains the parameters to request ACR with action initiation.This attribute shall be provided when the "acrAction" attribute is set to "ACR\_INITIATION". |  |
| acrDecData | AcrDecReq | C | 0..1 | Contains the parameters to declare the selected target EAS.This attribute shall be provided when the "acrAction" attribute is set to "SELEC\_T\_EAS\_DEC". |  |

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

##### 6.5.5.2.3 Type: AcrDetermReq

Table 6.5.5.2.3-1: Definition of type AcrDetermReq

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| sEasEndpoint | EndPoint | M | 1 | Contains the endpoint information of the selected S-EAS. |  |

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

##### 6.5.5.2.u Type: AcrInitReq

Table 6.5.5.2.u-1: Definition of type AcrInitReq

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| tEasEndpoint | EndPoint | M | 1 | Contains the endpoint information of the T-EAS. |  |
| sEasEndpoint | EndPoint | C | 0..1 | Contains the endpoint information of the S-EAS.This attribute shall be provided when the "easNotifInd" attribute is set to "true" or when the "prevEasNotifInd" attribute is present and set to "true". |  |
| prevTEasEndpoint | EndPoint | C | 0..1 | Contains the endpoint information of the previous T-EAS.This attribute shall be provided when the EEC re-sends the ACR request to indicate that a previous ACR is to be cancelled. |  |
| routeReq | RouteToLocation | O | 0..1 | Contains the T-EAS's DNAI information and the corresponding N6 traffic routing information and/or routing profile ID. |  |
| easNotifInd | boolean | M | 1 | Indicates whether the EAS should be notified about the need for ACR."true": Notification required."false" (default): Notification not required. |  |
| prevEasNotifInd | boolean | C | 0..1 | Indicates whether the EAS should be notified about ACR cancellation."true": Notification required."false" (default): Notification not required.This attribute shall be provided when the EEC re-sends the ACR request to indicate that a previous ACR is to be cancelled. |  |
| eecCtxtReloc | EecCtxtReloc | O | 0..1 | Contains EEC context relocation information. |  |

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

##### 6.5.5.2.y Type: AcrDecReq

Table 6.5.5.2.y-1: Definition of type AcrDecReq

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| tEasId | string | M | 1 | Contains the identifier of the selected target EAS. |  |
| tEasEndpoint | EndPoint | M | 1 | Contains the endpoint information of the selected target EAS. |  |

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

##### 6.5.5.2.z Type: EecCtxtReloc

Table 6.5.5.2.z-1: Definition of type EecCtxtReloc

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| eecCtxtId | string | M | 1 | Contains the identifier of the concerned EEC context. |  |
| sEesId | string | O | 0..1 | Contains the identifier of the S-EES.This attribute may be provided only if the ACR request is from the EEC to the T-EES. |  |
| sEesEndpoint | EndPoint | O | 0..1 | Contains the endpoint information of the selected S-EES.This attribute may be provided only if the ACR request is from the EEC to the T-EES. |  |
| tEesId | string | O | 0..1 | Contains the identifier of the T-EES.This attribute may be provided only if the ACR request is from the EEC to the S-EES. |  |
| tEesEndpoint | EndPoint | O | 0..1 | Contains the endpoint information of the selected T-EES.This attribute may be provided only if the ACR request is from the EEC to the S-EES. |  |

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

#### 6.5.5.3 Simple data types and enumerations

##### 6.5.5.3.1 Introduction

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

##### 6.5.5.3.2 Simple data types

The simple data types defined in table 6.5.5.3.2-1 shall be supported.

Table 6.5.5.3.2-1: Simple data types

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

##### 6.5.5.3.3 Enumeration: AcrAction

The enumeration AcrAction represents the requested ACR action. It shall comply with the provisions defined in table 6.5.5.3.3-1.

Table 6.5.5.3.3-1: Enumeration AcrAction

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| ACR\_DETERMINATION | Indicates ACR action "determination". |  |
| ACR\_INITIATION | Indicates ACR action "initiation". |  |
| SELECT\_T\_EAS\_DEC | Indicates ACR action "selected T-EAS declaration". |  |

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

### 6.5.7 Feature negotiation

General feature negotiation procedures are defined in clause 6.1. Table 6.5.7-1 lists the supported features for Eees\_AppContextRelocation API.

Table 6.5.7-1: Supported Features

|  |  |  |
| --- | --- | --- |
| Feature number | Feature Name | Description |
|  |  |  |

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

## A.X Eees\_AppContextRelocation API

openapi: 3.0.0

info:

 title: Eees Application Context Relocation Service

 version: 1.0.0-alpha.1

 description: |

 Eees Application Context Relocation Service.

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externalDocs:

 description: 3GPP TS 24.558 V1.1.0; Enabling Edge Applications; Protocol specification; Stage 3.

 url: http://www.3gpp.org/ftp/Specs/archive/29\_series/24.558/

servers:

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

 variables:

 apiRoot:

 default: https://example.com

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

security:

 - {}

 - oAuth2ClientCredentials:

 - eees-appctxtreloc

paths:

 /request:

 post:

 summary: Request ACR launch or declare the selected target EAS.

 operationId: ACRRequest

 tags:

 - Request ACR

 requestBody:

 required: true

 content:

 application/json:

 schema:

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

 responses:

 '204':

 description: No Content.

 '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: '{nrfApiRoot}/oauth2/token'

 scopes:

 eees-appctxtreloc: Access to the Eees\_AppContextRelocation API

 schemas:

 AcrData:

 description: Represents the parameters to request to ACR launch or declare the selected target EAS.

 type: object

 properties:

 requestorId:

 type: string

 ueId:

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

 easId:

 type: string

 acrAction:

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

 acrDetermData:

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

 acrInitData:

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

 acrDecData:

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

 required:

 - requestorId

 - acrAction

 AcrDetermReq:

 description: Represents the parameters to request ACR with action determination.

 type: object

 properties:

 sEasEndpoint:

 $ref: 'TS29558\_Eees\_EASRegistration.yaml#/components/schemas/EndPoint'

 required:

 - sEasEndpoint

 AcrInitReq:

 description: Represents the parameters to request ACR with action initiation.

 type: object

 properties:

 tEasEndpoint:

 $ref: 'TS29558\_Eees\_EASRegistration.yaml#/components/schemas/EndPoint'

 sEasEndpoint:

 $ref: 'TS29558\_Eees\_EASRegistration.yaml#/components/schemas/EndPoint'

 prevTEasEndpoint:

 $ref: 'TS29558\_Eees\_EASRegistration.yaml#/components/schemas/EndPoint'

 routeReq:

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

 easNotifInd:

 type: boolean

 default: false

 prevEasNotifInd:

 type: boolean

 default: false

 eecCtxtReloc:

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

 required:

 - tEasEndpoint

 - easNotifInd

 AcrDecReq:

 description: Represents the parameters to inform about the selected target EAS and provide the associated information.

 type: object

 properties:

 tEasId:

 type: string

 tEasEndpoint:

 $ref: 'TS29558\_Eees\_EASRegistration.yaml#/components/schemas/EndPoint'

 required:

 - tEasId

 - tEasEndpoint

 EecCtxtReloc:

 description: Represents EEC Context relocation information.

 type: object

 properties:

 eecCtxtId:

 type: string

 sEesId:

 type: string

 sEecEndpoint:

 $ref: 'TS29558\_Eees\_EASRegistration.yaml#/components/schemas/EndPoint'

 tEesId:

 type: string

 tEecEndpoint:

 $ref: 'TS29558\_Eees\_EASRegistration.yaml#/components/schemas/EndPoint'

 required:

 - eecCtxtId

# ENUMS:

 AcrAction:

 description: Represents the request ACR action.

 anyOf:

 - type: string

 enum:

 - ACR\_DETERMINATION

 - ACR\_INITIATION

 - SELEC\_T\_EAS\_DEC

 - type: string

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