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# Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 or greater indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the document.

In the present document, modal verbs have the following meanings:

**shall** indicates a mandatory requirement to do something

**shall not** indicates an interdiction (prohibition) to do something

The constructions "shall" and "shall not" are confined to the context of normative provisions, and do not appear in Technical Reports.

The constructions "must" and "must not" are not used as substitutes for "shall" and "shall not". Their use is avoided insofar as possible, and they are not used in a normative context except in a direct citation from an external, referenced, non-3GPP document, or so as to maintain continuity of style when extending or modifying the provisions of such a referenced document.

**should** indicates a recommendation to do something

**should not** indicates a recommendation not to do something

**may** indicates permission to do something

**need not** indicates permission not to do something

The construction "may not" is ambiguous and is not used in normative elements. The unambiguous constructions "might not" or "shall not" are used instead, depending upon the meaning intended.

**can** indicates that something is possible

**cannot** indicates that something is impossible

The constructions "can" and "cannot" are not substitutes for "may" and "need not".

**will** indicates that something is certain or expected to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

**will not** indicates that something is certain or expected not to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

**might** indicates a likelihood that something will happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

**might not** indicates a likelihood that something will not happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

In addition:

**is** (or any other verb in the indicative mood) indicates a statement of fact

**is not** (or any other negative verb in the indicative mood) indicates a statement of fact

The constructions "is" and "is not" do not indicate requirements.

# 1 Scope

The present document specifies the APIs for enabling the edge applications over 3GPP networks. The application layer architecture, functional requirements, procedures and information flows necessary for enabling edge applications over 3GPP networks are specified in 3GPP TS 23.558 [2]. The APIs are specified as RESTful APIs except for custom operations wherever required.

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 23.558: "Architecture for enabling Edge Applications".

[3] Open API: "OpenAPI Specification Version 3.0.0.", <https://spec.openapis.org/oas/v3.0.0>.

[4] 3GPP TR 21.900: "Technical Specification Group working methods".

[5] 3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".

[6] 3GPP TS 29.122: "T8 reference point for Northbound Application Programming Interfaces (APIs)".

[7] IETF RFC 6455: "The Websocket Protocol".

[8] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".

[9] 3GPP TS 29.510: "5G System; Network Function Repository Services; Stage 3".

[10] 3GPP TS 29.522: "5G System; Network Exposure Function Northbound APIs; Stage 3".

[11] 3GPP TS 29.572: "5G System; Location Management Services; Stage 3".

[12] 3GPP TS 29.520: "5G System; Network Data Analytics Services; Stage 3".

[13] 3GPP TS 29.523: "5G System; Policy Control Event Exposure Service; Stage 3".

[14] 3GPP TS 24.558: "Enabling Edge Applications; Protocol specification".

[15] 3GPP TS 29.214: "Policy and charging control over Rx reference point".

[16] 3GPP TS 29.514: "5G System; Policy Authorization Service; Stage 3".

[17] 3GPP TS 29.222: "Common API Framework for 3GPP Northbound APIs".

[18] 3GPP TS 33.122: "Security Aspects of Common API Framework for 3GPP Northbound APIs".

[19] IETF RFC 6749: "The OAuth 2.0 Authorization Framework".

[20] 3GPP TS 33.558: "Security aspects of enhancement of support for enabling edge applications; Stage 2".

[21] Void.

[22] 3GPP TS 29.503: "5G System; Unified Data Management Services; Stage 3".

[23] 3GPP TS 23.271: "Functional stage 2 description of Location Services (LCS)".

[24] 3GPP TS 23.273: "5G System (5GS) Location Services (LCS); Stage 2".

[25] IETF RFC 6733: "Diameter Base Protocol".

# 3 Definitions of terms, symbols and abbreviations

## 3.1 Terms

For the purposes of the present document, the terms given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

For the purposes of the present document, the following terms and its definitions given in 3GPP TS 23.558 [2] shall apply:

**Application Context**

**Application Context Relocation**

**Application Context Transfer**

**Application Server**

**Edge Computing Service Provider**

**Edge Data Network**

**EEC Context**

**Edge Hosting Environment**

**Instantiable EAS**

## 3.2 Symbols

For the purposes of the present document, the following symbols apply:

<symbol> <Explanation>

## 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

AC Application Client

ACID Application Client Identification

ACR Application Context Relocation

AEF API Exposing Function

AF Application Function

ASP Application Service Provider

CAPIF Common API Framework

CAS Cloud Application Server

CES Cloud Enabler Server

DN Data Network

DNAI Data Network Access Identifier

DNN Data Network Name

EAS Edge Application Server

EASID Edge Application Server Identification

ECI Edge and Cloud Interworking

ECS Edge Configuration Server

ECSP Edge Computing Service Provider

EDN Edge Data Network

EEC Edge Enabler Client

EECID Edge Enabler Client Identification

EEL Edge Enabler Layer

EES Edge Enabler Server

EESID Edge Enabler Server Identification

EHE Edge Hosting Environment

FQDN Fully Qualified Domain Name

GPSI Generic Public Subscription Identifier

LADN Local Area Data Network

NEF Network Exposure Function

NID Network Identifier

PCF Policy Control Function

S-EAS Source Edge Application Server

S-EES Source Edge Enabler Server

SCEF Service Capability Exposure Function

SEAL Service Enabler Architecture Layer for Verticals

SEALDD SEAL Data Delivery

SMF Session Management Function

SNPN Stand-alone Non-Public Network

SSID Service Set Identifier

T-EAS Target Edge Application Server

T-EES Target Edge Enabler Server

TAI Tracking Area Identity

UAS Uncrewed Aerial System

# 4 Overview

3GPP TS 23.558 [2] has specified the application layer architecture, requirements, procedures, information flows and the APIs, in order to support the edge applications over the 3GPP systems. Various features are defined to ensure the efficient use and deployment of edge applications, some of which include, registration, discovery, service provisioning, capability exposure, support for service continuity and support for roaming and federation.

The present document specifies the north-bound APIs in detail, needed to support the services offered by EES and ECS over EDGE-3/6/9/10 interfaces and by CES and CAS over ECI-1/2/3/4 interfaces for enabling the edge applications over 3GPP network.

Editor's note: The ECI interfaces’ naming is FFS.

# 5 Services offered by Edge Enabler Server

## 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\_EASRegistration | Request | Request/Response | EAS |
| Update | Request/Response | EAS |
| Deregister | Request/Response | EAS |
| Eees\_UELocation | Get | Request/Response | EAS |
| Subscribe | Subscribe/Notify | EAS |
| Notify |
| UpdateSubscription |
| Unsubscribe |
| Eees\_UEIdentifier | Get | Request/Response | EAS, EEC |
| Eees\_AppClientInformation | Subscribe | Subscribe/Notify | EAS |
| Notify |
| UpdateSubscription |
| Unsubscribe |
| Eees\_SessionWithQoS | Create | Request/Response | EAS |
| Update | Request/Response | EAS |
| Revoke | Request/Response | EAS |
| Notify | Subscribe/Notify | EAS |
| Eees\_EASDiscovery | TEasDiscRequest | Request/Response | EAS, EES |
| Eees\_ACRManagementEvent | Subscribe | Subscribe/Notify | EAS |
| Notify |
| UpdateSubscription |
| Unsubscribe |
| Eees\_EECContextRelocation | Push | Request/Response | EES, CES |
| Pull | Request/Response | EES |
| Eees\_EELManagedACR | Request | Request/Response | EAS |
| Subscribe | Subscribe/Notify | EAS |
| Notify |
| Eees\_ACRStatusUpdate | Request | Request/Response | EAS |
| Eees\_AppContextRelocation | ACRDetermination\_Request | Request/Response | EAS |
| SelectedTargetEAS\_Declare | Request/Response | EAS |
| Eees\_ACRParameterInformation | Request | Request/Response | EES, CES |
| Eees\_CommonEASAnnouncement | Declare | Request/Response | EES |

Editor's note: whether the CES is a consumer of the Eees\_ACRParameterInformation service is FFS.

Editor's note: whether the CES is a consumer of the Eees\_EECContextRelocation service is FFS.

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\_EASRegistration | 5.2 | EAS registration service | TS29558\_Eees\_EASRegistration.yaml | eees-easregistration | A.2 |
| Eees\_UELocation | 5.3 | Service for fetching UE location information | TS29558\_Eees\_UELocation.yaml | eees-uelocation | A.3 |
| Eees\_UEIdentifier | 5.4 | Service for fetching UE identifier. | TS29558\_Eees\_UEIdentifier.yaml | eees-ueidentifier | A.4 |
| Eees\_AppClientInformation | 5.5 | Service to obtain the capabilities of the ACs. | TS29558\_Eees\_AppClientInformation.yaml | eees-appclientinformation | A.5 |
| Eees\_SessionWithQoS | 5.6 | Service to setup data session between AC and EAS with specific QoS. | TS29558\_Eees\_SessionWithQoS.yaml | eees-session-with-qos | A.6 |
| Eees\_ACRManagementEvent | 5.8 | Service to receive notification related to ACR management events. | TS29558\_Eees\_ACRManagementEvent.yaml | eees-acrmgmtevent | A.7 |
| Eees\_EECContextRelocation | 5.10 | Service to push or pull EEC context information. | TS29558\_Eees\_EECContextRelocation.yaml | eees-eeccontextreloc | A.8 |
| Eees\_EELManagedACR | 5.11 | Service to request for handling of ACR related operations and receive ACT notifications. | TS29558\_Eees\_EELManagedACR.yaml | eees-eel-acr | A.9 |
| Eees\_ACRStatusUpdate | 5.12 | Service to update the status of ACR. | TS29558\_Eees\_ACRStatusUpdate.yaml | eees-acrstatus-update | A.10 |
| Eees\_ACRParameterInformation | 5.13 | Service to send ACR parameters information. | TS29558\_Eees\_ACRParameterInformation.yaml | eees-acr-param | A.13 |
| Eees\_CommonEASAnnouncement | 5.14 | Service to announce common EAS information. | TS29558\_Eees\_CommonEASAnnouncement.yaml | eees-common-eas | A.15 |

## 5.2 Eees\_EASRegistration Service

### 5.2.1 Service Description

The Eees\_EASRegistration API, as defined in 3GPP TS 23.558 [2], allows an Edge Application Server via Eees interface to register, update its registration and deregister at a given Edge Enabler Server.

### 5.2.2 Service Operations

#### 5.2.2.1 Introduction

The service operation defined for Eees\_EASRegistration API is shown in the table 5.2.2.1-1.

Table 5.2.2.1-1: Operations of the Eees\_EASRegistration API

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Eees\_EASRegistration\_Request | This service operation is used by the EAS to register itself to a given EES. | EAS |
| Eees\_EASRegistration\_Update | This service operation is used by the EAS to update its registration information at EES. | EAS |
| Eees\_EASRegistration\_Deregister | This service operation is used by the EAS to deregister itself from a given EES. | EAS |

#### 5.2.2.2 Eees\_EASRegistration\_Request

##### 5.2.2.2.1 General

This service operation is used by EAS to register itself to a given EES.

##### 5.2.2.2.2 EAS registering to EES using Eees\_EASRegistration\_Request operation

To register itself as an Edge Application Server at the EES, the EAS shall send an HTTP POST message to the Edge Enabler Server on the "EAS Registrations" collection resource. The body of the HTTP POST message shall include the EAS profile information, may include proposed expiration time for the registration, as specified in clause 8.1.2.2.3.1.

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

1. Process the EAS registration request information;

2. verify the identity of the Edge Application Server and check if the EAS is authorized to register itself at EES ;

3. if the EAS is authorized to register to EES, then the EES shall;

a. store the EAS profile and create a new resource with the EAS registration information as specified in clause 8.1.2.1;

b. return the EAS registration information, the resource URI of the EAS registration information, in the "201 Created" response message. The EES shall include a Location HTTP header field. The Location header field shall contain the URI of the created registration i.e. {apiRoot}/eees-easregistration/<apiVersion>/registrations/{registrationId}.

The response message may include expiration time to indicate when the EAS registration will automatically expire.

On failure, the EES shall take proper error handling actions, as specified in clause 8.1.6, and respond to the EAS with an appropriate error status code.

If the expiration time is provided, then to maintain the registration, the EAS shall send a registration update request (as described in clause 5.2.2.3) prior to the expiration time. If the registration update request is not sent before the expiry time, then the EES shall treat the EAS as deregistered and remove the corresponding EAS registration resource.

#### 5.2.2.3 Eees\_EASRegistration\_Update

##### 5.2.2.3.1 General

This service operation is used by EAS to update its registration information at a given EES.

##### 5.2.2.3.2 EAS updating registration information using Eees\_EASRegistration\_Update operation

To update the EAS registration information at the EES, the EAS shall send a HTTP PUT or PATCH message to the Edge Enabler Server on resource URI identifying the Individual EAS registration resource representation, as specified in clause 8.1.2.3.3.2 for HTTP PUT message and in clause 8.1.2.3.3.4 for HTTP PATCH message.

The HTTP PUT message shall replace all properties in the existing resource with the EAS registration information in the request. The EASRegistration data type in the request body of the HTTP PUT message shall include the EAS profile information, may include proposed expiration time to update the registration. This request shall not replace the easId property of the existing resource.

The HTTP PATCH message includes parameters (EAS Profile, expiry time) in the EASRegistrationPatch data type that need to modify the existing Individual EAS registration resource. This request shall not replace the easId property of the existing resource.

Upon receiving the HTTP PUT or PATCH message from the EAS, the EES shall:

1. check the registration update message from the EAS to see if the EAS is authorized to modify the requested registration resource;

2. if the EAS is authorized to update the registration information, then the EES shall:

a. update the resource identified by Resource URI of the EAS registration information with the updated EAS registration information received in the HTTP PUT or PATCH request message;

b. upon successful update of EAS registration information, respond to the EAS with "204 No Content", or "200 OK" along with the updated EAS registration information in the response. In the response message, the EES may provide an updated expiration time to indicate to the EAS when the updated registration will automatically expire.

On failure, the EES shall take proper error handling actions, as specified in clause 8.1.6, and respond to the EAS with an appropriate error status code.

If the EES determines that the received HTTP PUT or PATCH 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 message should be sent. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6].

If the expiration time is provided, then to maintain the registration, the EAS shall send a registration update prior to registration expiry time. If the registration update request is not sent before the expiry time, then the EES shall treat EAS as deregistered and remove the corresponding EAS registration resource.

#### 5.2.2.4 Eees\_EASRegistration\_Deregister

##### 5.2.2.4.1 General

This service operation is used by EAS to deregister itself from a given EES.

##### 5.2.2.4.2 EAS deregistering from EES using Eees\_EASRegistration\_Deregister operation

To deregister itself from the EES, the EAS shall send HTTP DELETE message to the EES, on the resource URI identifying the Individual EAS registration resource representation as specified in clause 8.1.2.3.3.3. Upon receiving the HTTP DELETE request, the EES shall:

1. verify the identity of the EAS and check if the EAS is authorized to deregister the EAS registration information;

2. if the EAS is authorized to deregister the EAS registration information, then the EES shall deregister the EAS profile from the EES and delete the resource representing EAS registration information;

3. return the "204 Not Content" message to the EAS, indicating the successful deregistration of the EAS information.

On failure, the EES shall take proper error handling actions, as specified in clause 8.1.6, and respond to the EAS with an appropriate error status code.

If the EES determines that the received HTTP DELETE 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 message should be sent. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6].

## 5.3 Eees\_UELocation Service

### 5.3.1 Service Description

The Eees\_UELocation API, as defined in 3GPP TS 23.558 [2], allows an Edge Application Server via Eees interface to obtain the UE location information as one time request or subscribe for continuous reporting.

### 5.3.2 Service Operations

#### 5.3.2.1 Introduction

The service operation defined for Eees\_UELocation API is shown in the table 5.3.2.1-1.

Table 5.3.2.1-1: Operations of the Eees\_UELocation API

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Eees\_UELocation\_Get | This service operation is used by the EAS to request UE location information from a given EES. | EAS |
| Eees\_UELocation\_Subscribe | This service operation is used by the EAS to subscribe to EES, for continuous reporting of UE location information. | EAS |
| Eees\_UELocation\_Notify | This service operation is used by the EES to notify the EAS about the UE location information. | EES |
| Eees\_UELocation\_UpdateSubscription | This service operation is used by the EAS to update its subscription at EES, for continuous reporting of UE location information. | EAS |
| Eees\_UELocation\_Unsubscribe | This service operation is used by the EAS to remove its subscription from EES, for continuous reporting of UE location information. | EAS |

#### 5.3.2.2 Eees\_UELocation\_Get

##### 5.3.2.2.1 General

This service operation is used by EAS to obtain a UE's location information from a given EES.

##### 5.3.2.2.2 EAS obtaining UE location information from EES using Eees\_UELocation\_Get operation

To obtain an UE's location information from the EES, the EAS shall send an HTTP POST message to the EES on the URI "{apiRoot}/eees-uelocation/<apiVersion>/fetch" as specified in clause 8.2.3.2. The POST request includes:

- the identifier of the UE for which location information is requested;

- the accuracy of the requested location in terms of granularity and location QoS.

Upon reception of the HTTP POST request from the EAS, the EES shall:

1. process the EAS UE location information request;

2. verify the identity of the Edge Application Server and check if the EAS is authorized to obtain UE location information;

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

a. consider the location granularity information received in the request message to obtain the UE's location information;

b. check if a valid locally cached UE location information is available, and if available then the EES shall return the UE location information in the format requested by the EAS along with the location accuracy and its timestamp;

c. if valid UE location information is not available in local cache, then the EES shall obtain the UE location information by consuming the 3GPP core network capabilities. The EES shall return the UE location information to EAS in the format requested by the EAS along with the location accuracy and its timestamp as a 200 OK response.

On failure, the EES shall take proper error handling actions, as specified in clause 8.2.6, and respond to the EAS with an appropriate error status code.

If the EES determines that 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 message should be sent. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6].

##### 5.3.2.2.3 User consent management

Based on local regulations' requirements and/or operator policies, user consent management specified in Annex V of 3GPP TS 33.501 [6] may be required for accessing the Eees\_UELocation API. When it is the case and the EES is accessing the 3GPP 5GC network services directly, the EES shall act as the consent enforcement entity, as specified in clause 5.1.3 of 3GPP TS 33.558 [20].

When user consent management and enforcement shall be undertaken for the Eees\_UELocation API, then:

- the EES shall check user consent for the targeted UE by retrieving the user consent subscription data via the Nudm\_SDM service API of the UDM, as specified in clause 5.2.2.2.24 of 3GPP TS 29.503 [22] and:

- if user consent is not granted for the targeted UE, the EES shall reject the request and respond to the EAS with an HTTP "403 Forbidden" status code with the response body containing a ProblemDetails data structure with the "cause" attribute including the "USER\_CONSENT\_NOT\_GRANTED" application error; and

- if user consent is granted for the targeted UE, the EES shall accept the request to retrieve UE location information and process it as specified in clause 5.3.2.2.2.

#### 5.3.2.3 Eees\_UELocation\_Subscribe

##### 5.3.2.3.1 General

This service operation is used by the EAS to subscribe for continuous UE(s) location reporting.

##### 5.3.2.3.2 EAS subscribing to continuous UE(s) location reporting from EES using Eees\_UELocation\_Subscribe operation

To subscribe to continuous UE(s) location information reporting at the EES, the EAS shall send a HTTP POST message to the EES on the "Location Information Subscriptions" resource. The body of the POST message shall include EAS identifier, the identifier of the UE or the identifier of the group uniquely identifying a group of UEs, Notification Destination URI and may include location format that is understood by EAS, location QoS, proposed expiry time of the subscription and reporting requirements, as specified in clause 8.2.2.2.3.1.

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

1. Process the EAS UE location information subscription request;

2. verify the identity of the Edge Application Server and check if the EAS is authorized to subscribe for the continuous UE(s) location reporting;

3. if the EAS is authorized to subscribe for the continuous UE(s) location information reporting, then the EES shall;

a. create a new resource with the Location Information Subscription as specified in clause 8.2.2.1;

b. return the EAS's location subscription information, the resource URI of the EAS location subscription, in the response message. The response message may include expiration time to indicate when the location information subscription will automatically expire;

On failure, the EES shall take proper error handling actions, as specified in clause 8.2.6, and respond to the EAS with an appropriate error status code.

EES shall obtain the UE location information by consuming the 3GPP core network capabilities from NEF as specified in 3GPP TS 29.522 [10], or from SCEF as specified in 3GPP TS 29.122 [6] or from LCS (Location Service) as specified in 3GPP TS 23.271 [23] or 3GPP TS 23.273 [24]. The EES may also consume the UE mobility analytics from NEF as specified in 3GPP TS 29.522 [10] or from NWDAF as specified in 3GPP TS 29.520 [12].

If the expiration time is provided, then to maintain the registration, the EAS shall send a subscription update request (as described in clause 5.3.2.5) prior to the expiration time. If the subscription update request is not sent before the expiry time, then the EES shall treat the subscription as unsubscribed and remove the corresponding EAS's Individual Location Information Subscription resource.

##### 5.3.2.3.3 User consent management

Based on local regulations' requirements and/or operator policies, user consent management specified in Annex V of 3GPP TS 33.501 [6] may be required for accessing the Eees\_UELocation API. When it is the case and the EES is accessing the 3GPP 5GC network services directly, the EES shall act as the consent enforcement entity, as specified in clause 5.1.3 of 3GPP TS 33.558 [20].

When user consent management and enforcement shall be undertaken for the Eees\_UELocation API, then:

- if the EAS does not support the "UserConsentRevocation" feature or does not indicate its support for this feature in the HTTP POST request to create a new "Individual Location Information Subscription" resource, the EES shall reject the request and respond to the EAS with an HTTP "403 Forbidden" status code with the response body containing a ProblemDetails data structure with the "cause" attribute including the "CONSENT\_REVOCATION\_NOT\_SUPPORTED" application error;

- if the EAS indicates its support for the "UserConsentRevocation" feature in the HTTP POST request to create a new "Individual Location Information Subscription" resource, the EES shall check user consent for the targeted UE(s) by retrieving the user consent subscription data via the Nudm\_SDM service API of the UDM as specified in clause 5.2.2.2.24 of 3GPP TS 29.503 [22], subscribe to user consent revocation notifications only for those UE(s) for which user consent is granted also using the Nudm\_SDM service API of the UDM and accept the request for the creation of the UE location information subscription only for the UE(s) for which user consent is granted;

- if user consent is not granted for all the targeted UE(s), the EES shall reject the request and respond to the EAS with an HTTP "403 Forbidden" status code with the response body containing a ProblemDetails data structure with the "cause" attribute including the "USER\_CONSENT\_NOT\_GRANTED" application error;

- the EAS shall provide within the payload body of the HTTP POST request to create a new UE location information subscription the URI via which it desires to receive user consent revocation notifications within the "revocationNotifUri" attribute. The EAS may update this URI in subsequent HTTP PUT/PATCH requests to update/modify the corresponding "Individual Location Information Subscription" resource;

- when becoming aware of user consent revocation for one or several UE(s), the EES shall:

- stop processing the data related to the concerned UE(s);

- send a user consent revocation notification to the EAS by sending an HTTP POST request with the request body including the ConsentRevocNotif data structure that shall contain the user consent revocation information (e.g. UE(s) for which user consent was revoked, etc.); and

- remove the concerned UE(s) from the "Individual Location Information Subscription" resource and from the related subscriptions at the 3GPP 5GC network entities, if any;

- unsubscribe from user consent revocation notifications for the concerned UE(s) at the UDM;

and

- at the reception of the user consent revocation notification from the EES, the EAS shall take the necessary actions to stop processing the data related to the concerned UE(s); and

- if user consent is revoked for all the UE(s), the EAS shall delete the corresponding "Individual Location Information Subscription" resource, as specified in clause 5.3.2.6.

#### 5.3.2.4 Eees\_UELocation\_Notify

##### 5.3.2.4.1 General

This service operation is used by the EES to send UE(s) location information notifications or user consent revocation notifications to the EAS.

##### 5.3.2.4.2 EES notifying the UE(s) location reporting to EAS using Eees\_UELocation\_Notify operation

The EES determines to notify the EAS with the UE location information, when the UE location information is available either locally cached or from the 3GPP core network.

To notify the UE(s) location information events, the EES shall send an HTTP POST message using the Notification Destination URI received in the subscription request. The body of the HTTP POST message shall include LocationNotification. LocationNotification includes location information of each UE with accuracy, and timestamp. The location information of each UE may be actual location change or predictive location report from the UE mobility analytics report from NEF as specified in 3GPP TS 29.522 [10] , or from SCEF as specified in 3GPP TS 29.122 [6], or from LCS (Location Service) as specified in 3GPP TS 29.271 [23] or 3GPP TS 29.273 [24] or from NWDAF as specified in 3GPP TS 29.520 [12]. The EES may modify the UE location information in the format requested by the EAS in the subscription request.

Upon receiving the HTTP POST message, the EAS shall process the Location Notification.

On failure, the EAS shall take proper error handling actions, as specified in clause 8.2.6, and respond to the EES with an appropriate error status code.

If the EAS determines that the received HTTP POST message needs to be redirected, the EAS 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 EAS where the notification should be redirected. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6].

##### 5.3.2.4.3 EES notifying the EAS about user consent revocation using Eees\_UELocation\_Notify operation

The EES determines to notify the EAS about user consent revocation, when becoming aware of user consent revocation for one or several UE(s) from the UDM as specified in 3GPP TS 29.503 [22].

To notify user consent revocation, the EES shall send an HTTP POST message using the revocation notification URI received from the EAS in the UE location information subscription creation/update/modification request as specified in clause 5.3.2.3.3. The body of the HTTP POST message shall include ConsentRevocNotif data structure.

Upon reception of the HTTP POST request, the EAS shall take the necessary actions to stop processing the data related to the UE(s) for which user consent was revoked.

On failure, the EAS shall take proper error handling actions, as specified in clause 8.2.6, and respond to the EES with an appropriate error status code.

If the EAS determines that the received HTTP POST message needs to be redirected, the EAS 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 EAS where the notification should be redirected. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6].

#### 5.3.2.5 Eees\_UELocation\_UpdateSubscription

##### 5.3.2.5.1 General

This service operation is used by the EAS to update its location information subscription at the EES.

##### 5.3.2.5.2 EAS updating continuous UE(s) location reporting subscription at EES using Eees\_UELocation\_UpdateSubscribe operation

To update continuous UE(s) location information reporting subscription at the EES, the EAS shall send a HTTP PATCH or PUT message to the EES on resource URI identifying the "Individual Location Information" Subscription resource representation, as specified in clause 8.2.2.3.3.2 for HTTP PATCH message and in clause 8.2.2.3.3.3 for HTTP PUT message.

The PATCH message includes the parameters (location QoS, location granularity, Notification Destination, Reporting requirements and proposed expiry time) that need to be replaced in the existing subscription resource.

The PUT message shall replace all the properties of the existing resource with the location subscription information in the request. The request shall not replace the easId, ueId and groupId properties of the existing resource.

Upon receiving the HTTP PATCH or PUT message from the EAS, the EES shall:

1. check the update subscription message from the EAS to see if the EAS is authorized to modify the requested subscription resource;

2. if the EAS is authorized to update the location information subscription, then the EES shall:

a. update the resource identified by Resource URI of the EAS location information subscription with the updated information received in the HTTP PATCH or PUT request message;

b. return the updated EAS Location information subscription in the response. In the response message, the EES may provide an updated expiration time to indicate to the EAS when the updated subscription will automatically expire.

On failure, the EES shall take proper error handling actions, as specified in clause 8.2.6, and respond to the EAS with an appropriate error status code.

If the EES determines that the received HTTP PATCH or PUT 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 message should be sent. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6].

If the expiration time is provided, then to maintain the subscription, the EAS shall send a update subscription prior to subscription expiry time. If the update subscription request is not sent before the expiry time, then the EES shall treat EAS subscription as unsubscribed and remove the corresponding EAS location information subscription resource.

##### 5.3.2.5.3 User consent management

Based on local regulations' requirements and/or operator policies, user consent management specified in Annex V of 3GPP TS 33.501 [6] may be required for accessing the Eees\_UELocation API. When it is the case and the EES is accessing the 3GPP 5GC network services directly, the EES shall act as the consent enforcement entity, as specified in clause 5.1.3 of 3GPP TS 33.558 [20].

When user consent management and enforcement shall be undertaken for the Eees\_UELocation API, then:

- the EAS may update/modify the revocation notification URI when updating/modifying an existing "Individual Location Information Subscription" resource;

- if user consent is still granted for the concerned UE(s), i.e. no user consent revocation notification is received by the EES from the UDM, then the EES shall process the request as specified in clause 5.3.2.5.2;

- if user consent is granted for only a subset of the UE(s), process the request as specified in clause 5.3.2.5.2 only for this subset of UE(s);

- otherwise, if the EES is made aware by the UDM that user consent is not granted for one or several UE(s) at the reception of the Eees\_UELocation\_UpdateSubscribe request, then the EES shall:

- stop processing the data related to the concerned UE(s);

- if user consent is not anymore granted for all the UE(s), reject the request and respond to the EAS with an HTTP "403 Forbidden" status code with the response body containing a ProblemDetails data structure with the "cause" attribute including the "USER\_CONSENT\_NOT\_GRANTED" application error;

- send a user consent revocation notification to the EAS by sending an HTTP POST request with the request body including the ConsentRevocNotif data structure that shall contain the user consent revocation information (e.g. UE(s) for which user consent was revoked, etc.); and

- remove the concerned UE(s) from the concerned "Individual Location Information Subscription" resource and from the related subscriptions at the 3GPP 5GC network entities, if any; and

- unsubscribe from user consent revocation notifications for the concerned UE(s) at the UDM;

and the EAS shall:

- at the reception of the user consent revocation notification from the EES, take the necessary actions to stop processing the data related to the concerned UE(s); and

- if user consent is revoked for all the UE(s), delete the corresponding "Individual Location Information Subscription" resource, as specified in clause 5.3.2.6.

#### 5.3.2.6 Eees\_UELocation\_Unsubscribe

##### 5.3.2.6.1 General

This service operation is used by the EAS to unsubscribe from an existing UE(s) location information subscription.

##### 5.3.2.6.2 EAS unsubscribing to continuous UE(s) location reporting from EES using Eees\_UELocation\_Unsubscribe operation

To unsubscribe its location information subscription from the EES, the EAS shall send HTTP DELETE message to the EES, on the resource URI identifying the "Individual Location Information Subscription" resource representation as specified in clause 8.2.2.3.3.4. Upon receiving the HTTP DELETE request, the EES shall:

1. verify the identity of the EAS and check if the EAS is authorized to unsubscribe the Individual Location Information Subscription resource;

2. if the EAS is authorized to unsubscribe the Individual Location Information Subscription resource, then the EES shall unsubscribe the EAS subscription identified by the subscriptionId from the EES and delete the resource representing Individual Location Information Subscription resource represented by subscriptionId;

3. return the "204 Not Content" message to the EAS, indicating the successful removal of the subscription information and may unsubscribe to the corresponding 3GPP core network service subscriptions.

On failure, the EES shall take proper error handling actions, as specified in clause 8.2.6, and respond to the EAS with an appropriate error status code.

If the EES determines that the received HTTP DELETE message 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 message should be sent. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6].

## 5.4 Eees\_UEIdentifier Service

### 5.4.1 Service Description

The Eees\_UEIdentifier API, as defined in 3GPP TS 23.558 [2], allows an Edge Application Server via Eees interface to obtain an identifier uniquely identifying a UE from the EES.

### 5.4.2 Service Operations

#### 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.

#### 5.4.2.2 Eees\_UEIdentifier\_Get

##### 5.4.2.2.1 General

This service operation is used by EAS to obtain a UE's identifier (UE ID, as specified in 3GPP TS 23.558 [2]) from a given EES that uses 3GPP CN capability to retrieve UE Identifier which is specific to the EAS.

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

2. 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 an error occurs when processing the 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].

##### 5.4.2.2.2 EAS obtaining UE identifier from EES using Eees\_UEIdentifier\_Fetch custom operation

This procedure and the corresponding custom operation are deprecated. The procedure in clause 5.4.2.2.1A should be used instead.

To obtain an UE's Identifier from the EES, the EAS shall send a HTTP POST message to the EES with the request URI set to "{apiRoot}/eees-ueidentifier/<apiVersion>/fetch" and the request body with the UserInformation data structure including the information about the user or UE available with EAS, for which the UE identifier is requested.

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;

3. if the EAS is authorized to obtain the UE's Identifier information, then 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 corresponding DNN and/or S-NSSAI based on the verified identity of the EAS;

b. upon successful retrieval of UE identifier, respond with "200 OK" along with the retrieved UE identifier 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].

## 5.5 Eees\_AppClientInformation Service

### 5.5.1 Service Description

The Eees\_AppClientInformation API, as defined in 3GPP TS 23.558 [2], allows an Edge Application Server via Eees interface to obtain the information about the capabilities of the ACs based on certain filter criteria.

### 5.5.2 Service Operations

#### 5.5.2.1 Introduction

The service operation defined for Eees\_AppClientInformation API is shown in the table 5.5.2.1-1.

Table 5.5.2.1-1: Operations of the Eees\_AppClientInformation API

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Eees\_AppClientInformation\_Subscribe | This service operation is used by the EAS to subscribe to EES, for reporting of AC information. | EAS |
| Eees\_AppClientInformation\_Notify | This service operation is used by the EES to notify the EAS about the AC information. | EES |
| Eees\_AppClientInformation\_UpdateSubscription | This service operation is used by the EAS to update its subscription at EES, for reporting of AC information. | EAS |
| Eees\_AppClientInformation\_Unsubscribe | This service operation is used by the EAS to remove its subscription from EES, for reporting of AC information. | EAS |

#### 5.5.2.2 Eees\_AppClientInformation\_Subscribe

##### 5.5.2.2.1 General

This service operation is used by the EAS to subscribe for AC(s) information reporting.

##### 5.5.2.2.2 EAS subscribing to AC information reporting from EES using Eees\_AppClientInformation\_Subscribe operation

To subscribe to AC information reporting at the EES, the EAS shall send an HTTP POST request to the EES targeting the "Application Client Information Subscriptions" resource, with the request body containing the ACInfoSubscription data structure, as specified in clause 8.4.2.2.3.1.

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

1. Process the EAS AC information subscription request;

2. verify the identity of the Edge Application Server and check if the EAS is authorized to subscribe for the AC information reporting;

3. if the EAS is authorized to subscribe for the AC information reporting, then the EES shall;

a. create a new resource with the AC Information Subscription as specified in clause 8.4.2.1; and

b. respond to the EAS with an HTTP "201 Created" status code including an HTTP Location header field containing the URI of the created "Individual Application Client Information Subscription" resource, and the response body containing a representation of the created resource within the ACInfoSubscription data structure.

On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the HTTP POST response body. If the EAS is not registered at the EES when sending the AC information reporting subscription creation request, the EES shall respond with an HTTP "403 Forbidden" status code with the response body containing the ProblemDetails data structure with the "cause" attribute set to "REGISTRATION\_REQUIRED".

The EES determines the matching AC information corresponding to the filter criteria information in the subscription request to compose the AC information to the EAS.

If the expiration time is provided, then to maintain the registration, the EAS shall send a subscription update request (as described in clause 5.5.2.4) prior to the expiration time. If the subscription update request is not sent before the expiry time, then the EES shall treat the subscription as unsubscribed and remove the corresponding EAS's Individual Application Client Information Subscription resource.

#### 5.5.2.3 Eees\_AppClientInformation\_Notify

##### 5.5.2.3.1 General

This service operation is used by the EES to send AC information notifications to the EAS.

##### 5.5.2.3.2 EES notifying the AC information to EAS using Eees\_AppClientInformation\_Notify operation

The EES determines to notify the EAS with the AC information matching the filter criteria, when the AC information updates are available to EES, e.g. EES receives registration request from EEC.

To notify the AC(s) information, the EES shall send an HTTP POST message using the Notification Destination URI received in the subscription request. The body of the HTTP POST message shall include "ACInfoNotification". "ACInfoNotification" includes AC(s) information matching the filter criteria. The AC(s) information consist of AC(s) profiles, UE identifiers hosting the AC(s) and the location information of the UE(s) hosting the AC(s).

Upon receiving the HTTP POST message, the EAS shall process the AC Information Notification and shall respond to the EES with "204 No Content" message.

On failure, the EAS shall take proper error handling actions, as specified in clause 8.4.6, and respond to the EES with an appropriate error status code.

If the EAS determines that the received HTTP POST message needs to be redirected, the EAS 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 EAS where the notification should be redirected. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6].

#### 5.5.2.4 Eees\_AppClientInformation\_UpdateSubscription

##### 5.5.2.4.1 General

This service operation is used by the EAS to update its AC information subscription at the EES.

##### 5.5.2.4.2 EAS updating AC information reporting subscription at EES using Eees\_AppClientInformation\_UpdateSubscribe operation

To update AC information reporting subscription at the EES, the EAS shall send a HTTP PATCH or PUT message to the EES on resource URI identifying the "Individual Application Client Information" Subscription resource representation, as specified in clause 8.4.2.3.3.2 for HTTP PATCH message and in clause 8.4.2.3.3.3 for HTTP PUT message.

The PATCH message includes the parameters (AC filter criteria, Notification Destination, Reporting requirements and proposed expiry time) that need to be replaced in the existing subscription resource.

The PUT message shall replace all the properties of the existing resource with the AC subscription information in the request. The request shall not replace the "easId" property of the existing resource.

Upon receiving the HTTP PATCH or PUT message from the EAS, the EES shall:

1. check the update subscription message from the EAS to see if the EAS is authorized to modify the requested subscription resource;

2. if the EAS is authorized to update the AC information subscription, then the EES shall:

a. update the resource identified by Resource URI of the EAS AC information subscription with the updated information received in the HTTP PATCH or PUT request message;

b. return the updated EAS AC information subscription in the "200 OK" response message or respond with the "204 No Content" message indicating to the EAS that the EAS AC information subscription is updated successfully. In the response message, the EES may provide an updated expiration time to indicate to the EAS when the updated subscription will automatically expire.

On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the HTTP PATCH or PUT response body. If the EAS is not registered at the EES when sending the AC information reporting subscription update request, the EES shall respond with an HTTP "403 Forbidden" status code with the response body containing the ProblemDetails data structure with the "cause" attribute set to "REGISTRATION\_REQUIRED".

If the EES determines that the received HTTP PATCH or PUT message 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 message should be sent. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6].

If the expiration time is provided, then to maintain the subscription, the EAS shall send an update subscription prior to subscription expiry time. If the update subscription request is not sent before the expiry time, then the EES shall treat EAS subscription as unsubscribed and remove the corresponding EAS AC information subscription resource.

#### 5.5.2.5 Eees\_AppClientInformation\_Unsubscribe

##### 5.5.2.5.1 General

This service operation is used by the EAS to unsubscribe from an existing AC information subscription.

##### 5.5.2.5.2 EAS unsubscribing to AC information reporting from EES using Eees\_AppClientInformation\_Unsubscribe operation

To unsubscribe its AC information subscription from the EES, the EAS shall send HTTP DELETE message to the EES, on the resource URI identifying the "Individual Application Client Information Subscription" resource representation as specified in clause 8.4.2.3.3.4. Upon receiving the HTTP DELETE request, the EES shall:

1. verify the identity of the EAS and check if the EAS is authorized to unsubscribe the Individual Application Client Information Subscription resource;

2. if the EAS is authorized to unsubscribe the Individual Application Client Information Subscription resource, then the EES shall unsubscribe the EAS subscription identified by the "subscriptionId" from the EES and delete the resource representing Individual Application Client Information Subscription resource represented by "subscriptionId";

3. return the "204 Not Content" message to the EAS, indicating the successful removal of the subscription information.

On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the HTTP POST response body. If the EAS is not registered at the EES when sending the AC information reporting subscription deletion request, the EES shall respond with an HTTP "403 Forbidden" status code with the response body containing the ProblemDetails data structure with the "cause" attribute set to "REGISTRATION\_REQUIRED".

If the EES determines that the received HTTP DELETE 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 message should be sent. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6].

## 5.6 Eees\_SessionWithQoS Service

### 5.6.1 Service Description

The Eees\_SessionWithQoS API, as defined in 3GPP TS 23.558 [2], allows an Edge Application Server via Eees interface to support the setup of a data session between AC and EAS with a specific QoS and the modification of the QoS of this data session.

### 5.6.2 Service Operations

#### 5.6.2.1 Introduction

The service operation defined for Eees\_SessionWithQoS API is shown in the table 5.6.2.1-1.

Table 5.6.2.1-1: Operations of the Eees\_SessionWithQoS API

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Eees\_SessionWithQoS\_Create | The service operation is used by the EAS to request reservation of resources for a data session between AC and EAS with a specific QoS and to subscribe to certain session with user plane event notifications. | EAS |
| Eees\_SessionWithQoS\_Update | The service operation is used by the EAS to request a modification of the QoS of the data session between AC and EAS. | EAS |
| Eees\_SessionWithQoS\_Revoke | The service operation is used by the EAS to revoke the data session between AC and EAS with a specific QoS and to unsubscribe to the related session with user plane event notifications. | EAS |
| Eees\_SessionWithQoS\_Notify | The service operation is used by the EES to notify the EAS about a user plane event associated with the established session between an AC and the EAS. | EES |

#### 5.6.2.2 Eees\_SessionWithQoS\_Create

##### 5.6.2.2.1 General

This service operation is used by EAS to request reservation of resources for a data session between AC and EAS with a specific QoS and to subscribe to certain session with user plane event notifications.

##### 5.6.2.2.2 EAS requesting reservation of resources for a data session between AC and EAS with specific QoS using Eees\_SessionWithQoS operation

To request establishment of a data session between AC and EAS with a specific QoS, the EAS shall send a HTTP POST message to the Edge Enabler Server on the "Sessions with QoS" resource as specified in clause 8.5.2.2.3.1. The body of POST message shall include the EAS identifier, only one of the UE's IP address or the Identifier of the UE or the identifier of the group uniquely identifying a group of UEs, IP flow description, and at least one of requested QoS reference. The body of POST message may include a list of associated events which the EAS subscribes, and if the event list is included, a Notification Destination URI shall also be provided.

Upon receiving the HTTP POST message from the EAS:

1. the EES shall process the EAS Session with QoS Create request;

2. the EES shall verify the identity of the EAS and check if the EAS is authorized to request reservation of resources for a data session between AC and EAS with a specific QoS;

3. if the EAS is authorized, then the EES shall;

a. create a new resource "Individual Session with QoS";

b. if the request is for a group of UEs identified by group ID (i.e., via the "intGrpId" or "extGrpId") or for a single UE identified via the "ueId" attribute, interact with the SCEF (as specified in 3GPP TS 29.122 [6]) or the NEF (as specified in 3GPP TS 29.522 [10]) by invoking the MonitroingEvent API with the monitoring type sets to "PDN\_CONNECTIVITY\_STATUS" to request to be notified when the 3GPP network detects the UE's PDN connection or PDU session is set up or torn down. If the IP address for the single UE or, the IP address(es) for one or more UEs within the group are received from the 3GPP network, then execute step 3c; and

c. if the request is for a single UE identified by the IP address or the IP address is obtained in step 3b, interact directly with the PCRF (as specified in 3GPP TS 29.214 [15]) or the PCF (as specified in 3GPP TS 29.514 [16]), or via the SCEF (as specified in 3GPP TS 29.122 [6]) or the NEF (as specified in 3GPP TS 29.522 [10]) by invoking the AsSessionWithQoS API, to provide the specific QoS information to the PCF.

4. if the EAS is authorized, then if one of the subscribed event(s) is "UP\_PATH\_CHG", "ACR\_MONITORING" and/or "ACR\_FACILITATION" event:

a) if the "EdgeApp\_2" feature is supported, the EAS may provide the traffic filter information in the "trafFilterInfo" attribute in the request body:

i) the EES may invoke the Nnef\_PfdManagement API as described in clause 4.4.6 of 3GPP TS 29.522 [10] and clause 4.4.10 of 3GPP TS 29.122 [18] with the same Application Identifier that is used for requesting user plane path management events monitoring as defined further below;

ii) if the Application Identifier is not provided by the EAS, the EES may map the EASID into the Application Identifier that is used to invoke the Nnef\_PfdManagement API; and

iii) if the invocation of the PFD Management procedures towards the 3GPP network fails (e.g. the PFD Management service is not supported by the 3GPP Core Network), the EES shall reject the request in step 6 with an appropriate error response

iv) if the PFD Management service is not supported by the 3GPP Core Network,the EES shall reject the request with an HTTP "403 Forbidden" status code with the response content containing a ProblemDetails data structure with the "cause" attribute including the "PFD\_MNGT\_NOT\_SUPPORTED" application error;

5. upon receipt of successful response from 3GPP network, respond to the EAS with "201 Created" and include the session with QoS context information. The new created resource URI shall also be included in the Location header field of the HTTP response message.in the response message.

On failure, the EES shall take proper error handling actions, as specified in clause 8.5.6, and respond to the EAS with an appropriate error status code.

#### 5.6.2.3 Eees\_SessionWithQoS\_Update

##### 5.6.2.3.1 General

This service operation is used by EAS to request updating QoS of a data session between AC and EAS and to modify the subscription of the session with user plane event notifications.

##### 5.6.2.3.2 EAS updating QoS of a data session between AC and EAS using Eees\_SessionWithQoS\_Update operation

To request modification of the QoS of the data session between AC and EAS, the EAS shall send a HTTP PATCH or PUT message to the EES on resource URI "Individual Session with QoS" resource as specified in clause 8.5.2.3.3.1 for HTTP PATCH message and in clause 8.5.2.3.3.2 for HTTP PUT message.

The PUT message shall replace all the QoS settings of the data session in the existing context. The request shall not change the values of the "easId", "ueId", "ueIpv4Addr", "ueIpv6Addr", "ipDomain", "intGrpId", "extGrpId", "dnn" and/or "snssai" attributes.

Upon receiving the HTTP PATCH or PUT message from the EAS:

1. the EES shall check the update of the existing Individual Session with QoS from the EAS is authorized or not;

2. if the EAS is authorized, then if one of the subscribed event(s) is "UP\_PATH\_CHG", "ACR\_MONITORING" and/or "ACR\_FACILITATION" event:

a) if the "EdgeApp\_2" the EAS may provide the traffic filter information in the "trafFilterInfo" attribute in the request body:

i) the EES may invoke the Nnef\_PfdManagement API as described in clause 4.4.6 of 3GPP TS 29.522 [10] and clause 4.4.10 of 3GPP TS 29.122 [18] with the same Application Identifier that is used for requesting user plane path management events monitoring as defined further below;

ii) if the Application Identifier is not provided by the EAS, the EES may map the EASID into the Application Identifier that is used to invoke the Nnef\_PfdManagement API; and

iii) if the invocation of the PFD Management procedures towards the 3GPP network fails (e.g. the PFD Management service is not supported by the 3GPP Core Network), the EES shall reject the request in step 6 with an appropriate error response

iv) , e.g. with an HTTP "403 Forbidden" status code with the response content containing a ProblemDetails data structure with the "cause" attribute including the "PFD\_MNGT\_NOT\_SUPPORTED" application error if the PFD Management service is not supported by the 3GPP Core Network;

3. if the EAS is authorized, and to update the QoS setting, then the EES shall:

a. interact with the 3GPP network to update the associated data session; and

b. upon receipt of successful response from 3GPP network, respond to the EAS with "204 No Content", or "200 OK" with the updated Individual session with QoS context in the response message.

On failure, the EES shall take proper error handling actions, as specified in clause 8.5.6, and respond to the EAS with an appropriate error status code.

If the EES determines that the received HTTP PATCH or PUT message 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 message should be sent. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6].

#### 5.6.2.4 Eees\_SessionWithQoS\_Revoke

##### 5.6.2.4.1 General

This service operation is used by EAS to revoke the data session between AC and EAS with a specific QoS and to unsubscribe to the related session with user plane event notifications.

##### 5.6.2.4.2 EAS revoking QoS of a data session between AC and EAS using Eees\_SessionWithQoS\_Revoke operation

To revoke the data session between AC and EAS with a specific QoS and unsubscribe the user plane event notifications, the EAS shall send a HTTP DELETE message to the EES targeting the Individual Session with QoS resource as specified in clause 8.5.2.3.3.3. Upon receiving the HTTP DELETE request, the EES shall:

1. verify the identity of the EAS and check if the EAS is authorized to revoke the data session between AC and EAS with a specific QoS;

2. if the EAS is authorized and the resource exists, then the EES shall interact with the 3GPP network to delete the associated data session.

3. upon receipt of successful response from 3GPP network, delete the Individual Session with QoS resource corresponding to the individual Session with QoS; and

4. return "204 No Content" message to the EAS, indicating the successful removal.

On failure, the EES shall take proper error handling actions, as specified in clause 8.5.6, and respond to the EAS with an appropriate error status code.

If the EES determines that the received HTTP DELETE message 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 message should be sent. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6].

#### 5.6.2.5 Eees\_SessionWithQoS\_Notify

##### 5.6.2.5.1 General

This service operation is used by EES to send user plane event notification information of the data session between AC and EAS with a specific QoS to the EAS.

##### 5.6.2.5.2 EES notifying QoS of a data session between AC and EAS using Eees\_SessionWithQoS\_Notify operation

The EES determines to notify the user plane event notification information to the EAS, when the EES receives the notification of the user plane event information from the 3GPP core network.

To notify the user plane event notification information, the EES shall send an HTTP POST message using the Notification Destination URI received during the creation or modification of resource request. The body of POST message shall include the event report information (e.g., resource allocation outcome or information that the QoS targets can no longer (or can again) be fulfilled).

Upon receiving the HTTP POST message, the EAS shall process the event report information and return "204 No Content" message to the EES.

On failure, the EAS shall take proper error handling actions, as specified in clause 8.5.6, and respond to the EES with an appropriate error status code.

If the EAS determines that the received HTTP POST message needs to be redirected, the EAS 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 EAS where the notification should be redirected. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6].

## 5.7 Eees\_EASDiscovery Service

### 5.7.1 Service Description

The Eees\_EASDiscovery service API enables a service consumer (i.e. EAS, EES) to:

- request EAS discovery.

### 5.7.2 Service Operations

#### 5.7.2.1 Introduction

The service operations defined for Eees\_EASDiscovery API are shown in the table 5.7.2.1-1.

Table 5.7.2.1-1: Operations of the Eees\_EASDiscovery API

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Eees\_EASDiscovery\_TEasDiscRequest | This service operation is used by the EAS or EES to request EAS discovery information. | EES, EAS |

#### 5.7.2.2 Eees\_EASDiscovery\_TEasDiscRequest

##### 5.7.2.2.1 General

This service operation is used by the S-EES or S-EAS to request for T-EAS discovery information, as specified for the Eees\_TargetEASDiscovery API defined in 3GPP TS 23.558 [2].

##### 5.7.2.2.2 EES or EAS requesting T-EAS discovery information using Eees\_EASDiscovery\_TEasDiscRequest operation

To request for T-EAS discovery, the service consumer (i.e. EAS or EES) shall send an HTTP POST request to the EES as specified in clause 6.3.2.4.4.2 of 3GPP TS 24.558 [14]. The body of the POST message shall include the EasDiscoveryReq data structure as specified in clause 6.3.5.2.2 of 3GPP TS 24.558 [14].

Upon reception of the HTTP POST request from the service consumer (i.e. EAS or EES), the EES shall:

a) process the EAS discovery request information;

b) the EES verifies and checks if the service consumer (i.e. EAS or EES) is authorized to discover the requested EAS(s) from the EES;

c) if the service consumer (i.e. EAS or EES) is authorized to discover the requested EAS(s) from the EES, then upon successful processing of the request, the EES responds with an HTTP "200 OK" status code with the response body including the EasDiscoveryResp data structure as specified in clause 6.3.5.2.3 of 3GPP TS 24.558 [14] and in clause 8.8.3.2 of 3GPP TS 23.558 [2]. If the successful processing of the request does not result in finding a matching EAS (i.e. there is no client side error), the EES responds with an HTTP "204 No Content" status code.

If the EES determines that 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].

On failure, the EES shall take proper error handling actions, as specified in clause 6.3.6 of 3GPP TS 24.558 [14], and respond to the EAS or EES with an appropriate error status code.

## 5.8 Eees\_ACRManagementEvent Service

### 5.8.1 Service Description

The Eees\_ACRManagementEvent API, as defined in 3GPP TS 23.558 [2], allows an Edge Application Server via Eees interface to support (un)subscription to the notifications of ACR management events.

### 5.8.2 Service Operations

#### 5.8.2.1 Introduction

The service operation defined for Eees\_ACRManagementEvent API is shown in the table 5.8.2.1-1.

Table 5.8.2.1-1: Operations of the Eees\_ACRManagementEvent API

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Eees\_ACRManagementEvent\_Subscribe | The service operation is used by the EAS to subscribe to notifications of ACR management event(s). | EAS |
| Eees\_ACRManagementEvent\_UpdateSubscription | The service operation is used by the EAS to request a modification of an existing subscription of notifications of ACR management event(s). | EAS |
| Eees\_ACRManagementEvent\_Unsubscribe | The service operation is used by the EAS to unsubscribe to an existing subscription of notifications of ACR management event(s). | EAS |
| Eees\_ACRManagementEvent\_Notify | The service operation is used by the EES to notify the EAS about ACR management event(s) if detected. | EES |

#### 5.8.2.2 Eees\_ACRManagementEvent\_Subscribe

##### 5.8.2.2.1 General

This service operation is used by EAS to subscribe to notifications of ACR management events.

##### 5.8.2.2.2 EAS requesting to get notifications of ACR management events using Eees\_ACRManagementEvent\_Subscribe service operation

In order to subscribe to notifications of ACR management events, the EAS shall send a HTTP POST request message to the EES targeting the "ACR Management Events Subscriptions" resource as specified in clause 8.6.2.2.3.1. The body of the HTTP POST request message shall include the AcrMgntEventsSubscription data type as specified in clause 8.6.5.2.2.

Upon reception of the HTTP POST request message from the EAS:

1. the EES shall process the ACR management events subscription request;

2. the EES shall verify the identity of the EAS and check if the EAS is authorized to subscribe to notifications of ACR management events;

3. if the EAS is authorized, then if one of the subscribed event(s) is "UP\_PATH\_CHG", "ACR\_MONITORING" and/or "ACR\_FACILITATION" event:

a) if the "EdgeApp\_2" feature is supported, the EAS may provide the traffic filter information in the "trafFilterInfo" attribute in the request body. Then:

i) the EES may invoke the Nnef\_PfdManagement API as described in clause 4.4.6 of 3GPP TS 29.522 [10] and clause 4.4.10 of 3GPP TS 29.122 [18] with the same Application Identifier that is used for requesting UP path management events monitoring as defined further below;

ii) if the Application Identifier is not provided by the EAS, the EES may map the EAS ID into the Application Identifier that is used to invoke the Nnef\_PfdManagement API; and

iii) if the invocation of the PFD Management procedures towards the 3GPP network fails (e.g. the PFD Management service is not supported by the 3GPP Core Network), the EES shall reject the request in step 6 with an appropriate error response

iv) if the PFD Management service is not supported by the 3GPP Core Network, the EES shall reject the request with an HTTP "403 Forbidden" status code with the response content containing a ProblemDetails data structure with the "cause" attribute including the "PFD\_MNGT\_NOT\_SUPPORTED" application error;

4. if the EAS is authorized, then if one of the subscribed event(s) is the UP path change event, or when the "EdgeApp\_2" feature is supported, at least one of the "UP\_PATH\_CHG", "ACR\_MONITORING" and/or "ACR\_FACILITATION" event, the EES shall:

a) if already subscribed to the 3GPP core network (i.e. either directly through the PCF or via the NEF TrafficInfluence API) on UP path management events and there is locally cached UP path change event information, perform step 6, and include the locally cached UP path change event information in the HTTP POST response body; or

b) if not yet subscribed to the 3GPP core network on UP path management events, interact with the NEF by invoking the TrafficInfluence API as specified in 3GPP TS 29.522 [10] or directly towards the PCF to request to be notified of the UP path change event. Upon receipt of a successful response from the NEF, the EES shall perform step 6;

NOTE: Only the trusted EES can subscribe to the 3GPP core network directly through the PCF, the untrusted EES needs to subscribe to the 3GPP core network via the NEF.

5 the EES may interact with the NEF by invoking the AnalyticsExposure API as specified in 3GPP TS 29.522 [10] to subscribe to notifications of, or retrieve the UE mobility and UE communication events;

6a. on success, the EES shall create a new resource "Individual ACR Management Events Subscription" and respond to the EAS with "201 Created" and include the Individual ACR Management Events Subscription information. The new created resource URI shall also be included in the Location header field of the HTTP response message;

6b. on failure, the EES shall take proper error handling actions, as specified in clause 8.6.6, and respond to the EAS with an appropriate error status code;

and

7. if the target UE and the 3GPP network supports mobility between 5GC and EPC, interact with the SCEF+NEF by invoking the MonitroingEvent API as specified in 3GPP TS 29.122 [6] with the monitoring type sets to "API\_SUPPORT\_CAPABILITY" or interact with the CAPIF core function by invoking the CAPIF\_Events\_API service as specified in 3GPP TS 29.222 [17] to request to be notified the availability of the TrafficInfluence API.

On failure, the EES shall take proper error handling actions, as specified in clause 8.6.6, and respond to the EAS with an appropriate error status code.

#### 5.8.2.3 Eees\_ACRManagementEvent\_UpdateSubscription

##### 5.8.2.3.1 General

This service operation is used by EAS to request updating an existing Individual ACR Management Events Subscription.

##### 5.8.2.3.2 EAS updating an existing Individual ACR Management Events Subscription using Eees\_ACRManagementEvent\_UpdateSubscription service operation

To request modification of an existing Individual ACR Management Events Subscription, the EAS shall send a HTTP PATCH request (for partial modification) or PUT request (for fully replacement) message to the EES on resource URI "Individual ACR Management Events Subscription" resource as specified in clause 8.6.2.3.3.1 for HTTP PATCH message and in clause 8.6.2.3.3.2 for HTTP PUT message. This request shall not replace the easId property of the existing resource.

Upon receiving the HTTP PATCH or PUT message from the EAS:

1. the EES shall check the update of the existing Individual ACR Management Events Subscription from the EAS is authorized or not;

2. if the EAS is authorized, then if one of the subscribed event(s) is UP path change event, the EES shall:

a) if already successful subscribed to the 3GPP core network and there is local cached UP path change event information, perform step 3, and include the local cached UP path change event information in the HTTP PUT or PATCH response; or

b) if not subscribed to the 3GPP core network yet, interact with the NEF by invoking the TrafficInfluence API as specified in 3GPP TS 29.522 [10] to request to be notified of the UP path change event. Upon receipt of successful response from the NEF, then the EES shall perform step 3.

The EES may interact with the NEF by invoking the AnalyticsExposure API as specified in 3GPP TS 29.522 [10] to subscribe to notifications of, or retrieve the UE mobility and UE communication events.

3. if the EAS is authorized, then if one of the subscribed event(s) is "UP\_PATH\_CHG", "ACR\_MONITORING" and/or "ACR\_FACILITATION" event:

a) if the "EdgeApp\_2", the EAS may update/modify/provide the traffic filter information within the "trafFilterInfo" attribute in the request body. Then:

i) the EES may invoke the Nnef\_PfdManagement API as described in clause 4.4.6 of 3GPP TS 29.522 [10] and clause 4.4.10 of 3GPP TS 29.122 [18] with the same Application Identifier that is used for requesting or updating/modifying UP path management events monitoring as defined further below;

ii) if the Application Identifier is not provided by the EAS, the EES may map the EAS ID into the Application Identifier that is used to invoke the Nnef\_PfdManagement API; and

iii) if the invocation of the PFD Management procedures towards the 3GPP network fails (e.g. the PFD Management service is not supported by the 3GPP Core Network), the EES shall reject the request in step 6 with an appropriate error response

iv) if the PFD Management service is not supported by the 3GPP Core Network, the EES shall reject the request with an HTTP "403 Forbidden" status code with the response content containing a ProblemDetails data structure with the "cause" attribute including the "PFD\_MNGT\_NOT\_SUPPORTED" application error;

4. on success, the EES shall update the existing resource "Individual ACR Management Events Subscription", respond to the EAS with "204 No Content", or "200 OK" with the updated Individual ACR Management Events Subscription message.

On failure, the EES shall take proper error handling actions, as specified in clause 8.6.6, and respond to the EAS with an appropriate error status code.

If the EES determines that the received HTTP PATCH or PUT message 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 message should be redirected. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6].

#### 5.8.2.4 Eees\_ACRManagementEvent\_Unsubscribe

##### 5.8.2.4.1 General

This service operation is used by EAS to delete an existing ACR Management Events Subscription.

##### 5.8.2.4.2 EAS deleting an existing Individual ACR Management Events Subscription using Eees\_ACRManagementEvent\_Unsubscribe service operation

To delete an existing "Individual ACR Management Events Subscription", the EAS shall send a HTTP DELETE request message to the EES targeting the concerned "Individual ACR Management Events Subscription" resource as specified in clause 8.6.2.3.3.3. Upon receiving the HTTP DELETE request:

1. the EES shall verify the identity of the EAS and check if the EAS is authorized to delete the concerned ACR Management Events Subscription;

2. if the EAS is authorized and the resource exists, then the EES may interact with the 3GPP network to delete the associated Subscription(s), if needed; And

NOTE: The EES can keep the existing subscription(s) with the 3GPP network, e.g. if they are useful for other existing ACR Management Events subscriptions from other EASs.

3. upon successful processing of the request and the receipt of a successful response from 3GPP network, if needed as per step 2 above, the EES shall delete the Individual ACR Management Events Subscription; and respond with an HTTP "204 No Content" status code to the EAS, indicating the successful deletion of the concerned "Individual ACR Management Events Subscription" resource.

On failure, the EES shall take proper error handling actions, as specified in clause 8.6.6, and respond to the EAS with an appropriate error status code.

If the EES determines that the received HTTP DELETE message 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 message should be redirected. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6].

#### 5.8.2.5 Eees\_ACRManagementEvent\_Notify

##### 5.8.2.5.1 General

This service operation is used by EES to send ACR management event notification information or the availability of user path management events monitoring via the 3GPP 5GC network to the EAS.

##### 5.8.2.5.2 EES notifying ACR management events using Eees\_ACRManagementEvent\_Notify operation

In order to notify the ACR management event information, the EES shall send an HTTP POST message using the Notification Destination URI received during the creation or modification of subscription. The body of POST message shall include the AcrMgntEventsNotification data type as specified in clause 8.6.5.2.4.

Upon receiving the HTTP POST message, the EAS shall process the event report information and return to the EES, either:

1. "204 No Content" message; or

2. "200 OK" message including EasAckInformation data type as specified in clause 8.6.5.2.15.

On failure, the EAS shall take proper error handling actions, as specified in clause 8.6.6, and respond to the EES with an appropriate error status code.

If the EAS determines that the received HTTP POST request needs to be redirected, the EAS 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 EAS where the notification should be redirected. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6].

##### 5.8.2.5.3 EES notifying the availability of user path management events monitoring via the 3GPP 5GC network using Eees\_ACRManagementEvent\_Notify operation

In order to notify of the availability of user path management events monitoring via the 3GPP 5GC network, the EES shall send an HTTP POST request message targeting the URI "{notificationDestination}/report-availability", where the Notification Destination URI is the one received during the creation or modification of the ACR management event subscription. The body of HTTP POST request message shall include the AvailabilityNotif data type as specified in clause 8.6.5.2.11.

NOTE: The EAS is subscribed by default to the reception of notifications on the availability of user path management events monitoring via the 3GPP 5GC network.

Upon receiving the HTTP POST request message, the EAS shall process the received information and respond to the EES with an HTTP "204 No Content" status code.

On failure, the EAS shall take proper error handling actions, as specified in clause 8.6.6, and respond to the EES with an appropriate error status code.

If the EAS determines that the received HTTP POST request needs to be redirected, the EAS 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 EAS where the notification should be redirected. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6].

## 5.9 Eees\_AppContextRelocation Service

### 5.9.1 Service Description

The Eees\_AppContextRelocation API, allows S-EAS to declare to the S-EES about the T-EAS selected by the S-EAS or allows S-EAS to request ACR determination to the S-EES.

### 5.9.2 Service Operations

#### 5.9.2.1 Introduction

The service operation defined for Eees\_AppContextRelocation API is shown in the table 5.9.2.1-1.

Table 5.9.2.1-1: Operations of the Eees\_AppContextRelocation API

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Eees\_AppContextRelocation\_SelectedTargetEAS\_Declare | This service operation is used by the S-EAS to inform the S-EES about selection of the T-EAS. | EAS |
| Eees\_AppContextRelocation\_ACRDetermination\_Request | This service operation is used by the S-EAS to request the S-EES to determine the ACR. | EAS |

#### 5.9.2.2 Eees\_AppContextRelocation\_SelectedTargetEAS\_Declare

##### 5.9.2.2.1 General

This service operation is used by S-EAS to declare the selected T-EAS information to the S-EES, as specified in 3GPP TS 23.558 [2].

##### 5.9.2.2.2 S-EAS informing the S-EES about the selected T-EAS using Eees\_AppContextRelocation\_SelectedTargetEAS\_Declare operation

To declare the selected T-EAS information to the S-EES, the S-EAS shall send an HTTP POST request message to the S-EES targeting the URI "{apiRoot}/eees-appctxtreloc/v1/declare" as specified in clause 6.5.3.4 of 3GPP TS 24.558 [14]. The request body of the POST request message (i.e. "Declare" custom operation) includes the AcrDecReq data structure as specified in clause 6.5.5.2.4 of 3GPP TS 24.558 [14].

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

1. Process the EAS request;

2. verify the identity of the EAS and check if the EAS is authorized to declare the T-EAS information;

3. if the EAS is authorized to declare T-EAS information, then the EES shall send successful declaration response message to S-EAS.

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.

If the EES determines that the received HTTP POST message 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 message should be redirected. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6].

#### 5.9.2.3 Eees\_AppContextRelocation\_ACRDetermination\_Request

##### 5.9.2.3.1 General

This service operation is used by S-EAS to request the S-EES to determine the ACR, as specified in the Eees\_AppContextRelocation\_Request operation with ACR determination part in 3GPP TS 23.558 [2].

##### 5.9.2.3.2 S-EAS request the S-EES to determine the ACR using Eees\_AppContextRelocation\_ACRDetermination\_Request operation

To request the S-EES to determine the ACR, the S-EAS shall send a HTTP POST message to the S-EES on the custom URI "{apiRoot}/eees-appctxtreloc/v1/determine" as specified in clause 6.5.3.2 of 3GPP TS 24.558 [14]. The request body of the POST message includes the AcrDetermReq data structure with information about the S-EAS end point information and may include other optional information on UE and/or EASID as specified in clause 6.5.5.2.2 of 3GPP TS 24.558 [14].

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

1. process the EAS request;

2. verify the identity of the EAS and check if the EAS is authorized to request ACR determination;

3. if the EAS is authorized to request the ACR , then the EES shall;

a. send successful ACR determination response to S-EAS with an HTTP "204 No Content" status code;

b. additionally, the S-EES determines the T-EES via the Discover T-EAS procedure and may notify the EEC with target information and/or ACR result notification as specified in 3GPP TS 24.558 [14];

c. if the ACR determination handling met with failure case , the S-EES shall send a proper HTTP error status code and may include additional error information in the POST response body.

If the EES determines that the received HTTP POST message 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 message should be redirected. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6].

## 5.10 Eees\_EECContextRelocation Service

### 5.10.1 Service Description

The Eees\_EECContextRelocation API enables the EEC context relocation from a service consumer (e.g.S-EES or CES) to T-EES, as defined in 3GPP TS 23.558 [2]. The Eees\_EECContextRelocation\_Pull service operation enables EEC context relocation from service consumer (e.g., S-EES or CES) to T-EES, upon request from the T-EES to S-EES or CES, as specified by Eees\_EECContextPull API in 3GPP TS 23.558 [2]. The Eees\_EECContextRelocation\_Push service operation enables EEC context relocation from a service consumer (e.g., S-EES, CES) to T-EES, upon a request from the service consumer to T-EES, as specified by Eees\_EECContextPush API in 3GPP TS 23.558 [2].

### 5.10.2 Service Operations

#### 5.10.2.1 Introduction

The service operation defined for Eees\_EECContextRelocation API is shown in the table 5.10.2.1-1.

Table 5.10.2.1-1: Operations of the Eees\_EECContextRelocation API

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Eees\_EECContextRelocation\_Pull | This service operation is used by the T-EES to fetch the EEC context information from a service consumer (e.g., S-EES or CES) to relocate the EEC context information from the service consumer to T-EES. | EES, CES |
| Eees\_EECContextRelocation\_Push | This service operation is used by the service consumer (e.g., S-EES, CES) to push the EEC context information to T-EES to relocate the EEC context information form the service consumer to T-EES. | EES, CES |

#### 5.10.2.2 Eees\_EECContextRelocation\_Pull

##### 5.10.2.2.1 General

This service operation is used by T-EES to relocate the EEC context information from the S-EES or CES, as specified in 3GPP TS 23.558 [2].

##### 5.10.2.2.2 T-EES relocating EEC context information from a service consumer S-EES or CES to T-EES using Eees\_EECContextRelocation\_Pull operation

To relocate the EEC context information from a service consumer (e.g., S-EES or CES) to the T-EES, the T-EES shall send HTTP GET message to the service consumer S-EES or CES, with the request URI set to "{apiRoot}/eees-eeccontextreloc/v1/eec-contexts" as specified in the clause 8.7.2.2.3.1. The query parameters shall include EEC context identifier, identifier of the requesting T-EES and may include the list of service context information.

Upon receiving the HTTP GET message from the T-EES, the service consumer S-EES or CES shall:

1. Validate the request and verifies if the T-EES is authorized to relocate the EEC context;

2. if the T-EES is authorised, then authorizes the EEC context relocation, based on EEC context identifier in the request;

3. respond with HTTP "200 OK" status code, with the response body including the EECContext data type, containing the EEC context information corresponding to the query parameters provided in the HTTP GET message.

On failure, the service consumer S-EES or CES shall take proper error handling actions, as specified in clause 8.7.6, and respond to the T-EES with an appropriate error status code.

#### 5.10.2.3 Eees\_EECContextRelocation\_Push

##### 5.10.2.3.1 General

This service operation is used by a service consumer (e.g., S-EES, CES) to relocate the EEC context information to the T-EES, as specified in 3GPP TS 23.558 [2].

##### 5.10.2.3.2 Service consumer relocating EEC context information from the service consumer to T-EES using Eees\_EECContextRelocation\_Push operation

To transfer the EEC context information from a service consumer (e.g., S-EES, CES) to the T-EES, the service consumer shall send HTTP POST message to the T-EES, with the request URI set to "{apiRoot}/eees-eeccontextreloc/v1/eec-contexts" as specified in the clause 8.7.2.2.3.2. The request body shall include the EEC Context information and identifier of the service consumer requesting to relocate the EEC Context.

Upon receiving the HTTP POST message from the service consumer, the T-EES shall:

1. Validate the request and verifies if the service consumer is authorized to transfer the EEC context;

2. if the service consumer is authorised, then authorizes the EEC context relocation, based on EEC context identifier in the request;

3. if authorized, the T-EES stores the EEC Context and respond with either:

- an HTTP "200 OK" status code with the response body including the EECContextPushRes data structure containing the EEC registration identifier, and if available, the associated expiration time, if implicit registration of the EEC at the T-EES is performed, i.e. in the case of S-EAS decided ACR scenario specified in clause 8.8.2.4 and 8.8.2B.2.4 of 3GPP TS 23.558 [2] or S-EES executed ACR scenarios specified in clause 8.8.2.5 and 8.8.2B.2.5 of 3GPP TS 23.558 [2]; or

- an HTTP "204 No content" status code, indicating that the EEC Context transfer is successful, if implicit registration of the EEC at the T-EES is not performed.

NOTE: If the EEC, for which the EEC context is pushed by the service consumer, is not registered with the T-EES, then the T-EES determines that the push request is for S-EAS decided ACR in clause 8.8.2.4 and 8.8.2B.2.4 of 3GPP TS 23.558 [2] or S-EES executed ACR scenarios defined in clauses  8.8.2.5 and 8.8.2B.2.5 of 3GPP TS 23.558 [2].

On failure, the T-EES shall take proper error handling actions, as specified in clause 8.7.6, and respond to the service consumers with an appropriate error status code.

On success, if the EEC registration ID and the associated expiration time are provided by the T-EES in the EEC context push response, then the service consumer stores them, and when required, includes them in the subsequent ACR information notification towards the EEC.

## 5.11 Eees\_EELManagedACR Service

### 5.11.1 Service Description

The Eees\_EELManagedACR service exposed by the EES enables a service consumer (i.e. EAS) to:

- request the EES (i.e. S-EES) to handle all the operations of an ACR;

- subscribe to ACT status reporting during an EEL Managed ACR; and

- receive notifications from the EES (i.e. T-EES) on ACT status during an EEL Managed ACR.

### 5.11.2 Service Operations

#### 5.11.2.1 Introduction

The service operations defined for Eees\_EELManagedACR API are shown in the table 5.11.2.1-1.

Table 5.11.2.1-1: Eees\_EELManagedACR Service Operations

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Eees\_EELManagedACR\_Request | This service operation enables a service consumer (i.e. S-EAS) to request the EES (i.e. S-EES) to handle all the operations of an ACR. | EAS |
| Eees\_EELManagedACR\_Subscribe | This service operation enables a service consumer (i.e. T-EAS) to subscribe to ACT status reporting during an EEL Managed ACR. | EAS |
| Eees\_EELManagedACR\_Notify | This service operation enables a service consumer (i.e. T-EAS) to receive notifications from the EES (i.e. T-EES) on ACT status during an EEL Managed ACR. | EES |

#### 5.11.2.2 Eees\_EELManagedACR\_Request

##### 5.11.2.2.1 General

This service operation is used by a service consumer (i.e. S-EAS) to request the EES (i.e. S-EES) to handle all the operations of an ACR.

The following procedures are supported by the "Eees\_EELManagedACR\_Request" service operation:

- EEL Managed ACR Request procedure.

##### 5.11.2.2.2 EEL Managed ACR Request

The EEL Managed ACR Request procedure enables a service consumer (i.e. S-EAS) to request the EES (i.e. S-EES) to handle all the operations of an ACR (see also clause 8.8.3.6 of 3GPP°TS°23.558°[2]).

1. The service consumer (i.e. S-EAS) shall send for this purpose an HTTP POST request (custom operation: "Request") to the EES, with the request URI set to "{apiRoot}/eees-eel-acr/<apiVersion>/request-eelacr" and the request body including the EELACRReq data structure as defined in clause 8.8.6.2.2.

2a. Upon success, the EES shall respond with an HTTP "200 OK" status code with the response body including the feedback from the EES within the EELACRResp data structure as defined in clause 8.8.6.2.3.

2b. On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the HTTP POST response body.

#### 5.11.2.3 Eees\_EELManagedACR\_Subscribe

##### 5.11.2.3.1 General

This service operation is used by a service consumer (i.e. T-EAS) to subscribe to ACT status information reporting at the EES (i.e. T-EES).

The following procedures are supported by the "Eees\_EELManagedACR\_Subscribe" service operation:

- Subscribe to ACT status information reporting.

##### 5.11.2.3.2 Subscribe to ACT status information reporting

This procedure enables a service consumer (i.e. T-EAS) to request the creation of a subscription to ACT status information reporting (see also clause 8.8.3.6 of 3GPP°TS°23.558°[2]).

1. In order to subscribe to ACT status reporting, the service consumer (i.e. T-EAS) shall send an HTTP POST request to the EES, with the request URI set to "{apiRoot}/eees-eel-acr/<apiVersion>/subscriptions" and the request body including the ACTStatusSubsc data structure as defined in clause 8.8.6.2.4.

2a. Upon success, the EES shall respond with an HTTP "201 Created" status code with the response body containing a representation of the created Individual ACT Status Subscription resource within the ACTStatusSubsc data structure as defined in clause 8.8.6.2.4.

2b. On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the HTTP POST response body.

#### 5.11.2.4 Eees\_EELManagedACR\_Notify

##### 5.11.2.4.1 General

This service operation is used by an EES (i.e. T-EES) to notify a previously subscribed service consumer (i.e. T-EAS) on ACT status information.

The following procedures are supported by the "Eees\_EELManagedACR\_Notify" service operation:

- ACT Status Notification.

##### 5.11.2.4.2 ACT Status Notification

The ACT Status Notification procedure enables an EES (i.e. T-EES) to notify a previously subscribed service consumer (i.e. T-EAS) on ACT status information (see also clause 8.8.3.6 of 3GPP°TS°23.558°[2]).

1. The EES (i.e. T-EES) shall send for this purpose an HTTP POST request to the service consumer (i.e. T-EAS) with the request URI set to "{notificationUri}/act-status", where the "notificationUri" is set to the value received from the service consumer (i.e. T-EAS) during the ACT status reporting subscription procedure defined in clause 5.11.2.3, and the request body including the ACTStatusNotif data structure as defined in clause 8.8.6.2.5.

2a. Upon success, the service consumer (i.e. T-EAS) shall respond with an HTTP "204 No Content" status code to acknowledge the reception of the notification to the EES.

2b. On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the HTTP POST response body.

If the service consumer (i.e. T-EAS) is not able to handle the notification request or determines that the received HTTP POST request needs to be redirected, the EAS 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 EAS where the notification should be redirected. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6].

## 5.12 Eees\_ACRStatusUpdate Service

### 5.12.1 Service Description

The Eees\_ACRStatusUpdate service exposed by the EES enables a service consumer (i.e. S-EAS or T-EAS) to:

- update the information related to ACR (e.g. indicate the status of ACT, update the notification target address); and

- receive from the EES (i.e. T-EES) the status of EDGE-3 subscription relocation, including subscription ID update for EDGE-3 subscriptions.

### 5.12.2 Service Operations

#### 5.12.2.1 Introduction

The service operations defined for Eees\_ACRStatusUpdate API are shown in the table 5.12.2.1-1.

Table 5.12.2.1-1: Eees\_ACRStatusUpdate Service Operations

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Eees\_ACRStatusUpdate\_Request | This service operation enables a service consumer (i.e. S-EAS or T-EAS) to update the information related to ACR (e.g. indicate the status of ACT, update the notification target address) at the EES. | EAS |

#### 5.12.2.2 Eees\_ACRStatusUpdate\_Request

##### 5.12.2.2.1 General

This service operation is used by a service consumer (i.e. S-EAS or T-EAS) to update the information related to ACR (e.g. indicate the status of ACT, update the notification target address) at the EES.

The following procedures are supported by the "Eees\_ACRStatusUpdate\_Request" service operation:

- ACR Status Update Request procedure.

##### 5.12.2.2.2 ACR Status Update Request

The ACR Status Update Request procedure enables a service consumer (i.e. S-EAS or T-EAS) to request to update the EES to request to update the information related to ACR (see also clause 8.8.3.8 of 3GPP°TS°23.558°[2]).

1. The service consumer (S-EAS or T-EAS) shall send for this purpose an HTTP POST request (custom operation: "Request") to the EES, with the request URI set to "{apiRoot}/eees-acrstatus-update/<apiVersion>/request-acrupdate" and the request body including the ACRUpdateData data structure defined in clause 8.9.6.2.2.

2. Upon receiving the HTTP POST request message from the EAS, the EES shall check whether the EAS is autorized to update the ACR status. Then:

2a. Upon success, the EES shall respond with an HTTP "200 OK" status code with the response body including the feedback from the EES within the ACRDataStatus data structure defined in clause 8.9.6.2.3, or an HTTP "204 No Content" status code.

2b. On failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information should be returned in the HTTP POST response body.

If the EES determines that 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 message should be redirected. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6].

## 5.13 Eees\_ACRParameterInformation Service

### 5.13.1 Service Description

The Eees\_ACRParameterInformation service exposed by the EES enables a service consumer (e.g., S-EES, CES) to:

- send ACR parameters information to the EES (i.e.,T-EES).

### 5.13.2 Service Operations

#### 5.13.2.1 Introduction

The service operations defined for the Eees\_ACRParameterInformation API are shown in the table 5.13.2.1-1.

Table 5.13.2.1-1: Eees\_ACRParameterInformation Service Operations

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Eees\_ACRParameterInformation\_Request | This service operation enables a service consumer (e.g., S-EES, CES) to send ACR parameters information to the EES (i.e., T-EES). | EES, CES |

#### 5.13.2.2 Eees\_ACRParameterInformation\_Request

##### 5.13.2.2.1 General

This service operation is used by a service consumer (e.g., S-EES, CES) to send ACR parameters information to the EES (i.e., T-EES).

The following procedures are supported by the "Eees\_ACRParameterInformation\_Request" service operation:

- ACR Parameters Information Request procedure.

##### 5.13.2.2.2 ACR Parameter Information Request

The ACR Parameter Information Request procedure enables a service consumer (e.g., S-EES, CES) to send ACR parameters information to the EES (i.e., T-EES) (see clause 8.8.3.9 of 3GPP°TS°23.558°[2]).

1. The service consumer (e.g., S-EES, CES) shall send for this purpose an HTTP POST request (custom operation: "Request") to the EES (i.e., T-EES), targeting the custom operation URI "{apiRoot}/eees-acr-param/<apiVersion>/send-acrparamsinfo" and the request body including the ACRParamsInfo data structure defined in clause 8.10.6.2.2.

2. Upon reception of the HTTP POST request message from the service consumer (e.g., S-EES, CES), the EES (i.e., T-EES) shall check whether the S-EES is autorized to send the ACR parameter information. Then:

2a. upon success, the EES (i.e., T-EES) shall respond with an HTTP "200 OK" status code with the response body including the ACRParamsInfo data structure defined in clause 8.10.6.2.3, or an HTTP "204 No Content" status code; and

2b. on failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information, as defined in clause 8.10.7, should be returned in the HTTP POST response body.

If the EES (i.e., T-EES) is not able to handle the request, it 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 target URI of the custom operation in an alternative EES (i.e. T-EES), as defined in clause 5.2.10 of 3GPP TS 29.122 [2].

## 5.14 Eees\_CommonEASAnnouncement Service

### 5.14.1 Service Description

The Eees\_CommonEASAnnouncement service exposed by the EES enables a service consumer (i.e. announcing EES) to:

- send common EAS information to the receiving EES.

### 5.14.2 Service Operations

#### 5.14.2.1 Introduction

The service operations defined for the Eees\_CommonEASAnnouncement API are shown in the table 5.14.2.1-1.

Table 5.14.2.1-1: Eees\_CommonEASAnnouncement Service Operations

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Eees\_CommonEASAnnouncement\_Declare | This service operation enables a service consumer (i.e. announcing EES) to send common EAS information to the receiving EES. | EES |

#### 5.14.2.2 Eees\_CommonEASAnnouncement\_Declare

##### 5.14.2.2.1 General

This service operation is used by a service consumer (i.e. announcing EES) to send common EAS information to the receiving EES.

The following procedures are supported by the "Eees\_CommonEASAnnouncement\_Declare" service operation:

- Declare Common EAS Information Request procedure.

##### 5.14.2.2.2 Declare Common EAS Information Request

The Declare Common EAS Information Request procedure enables a service consumer (i.e. announcing EES) to send common EAS information to the receiving EES (see clause 8.19.2 of 3GPP°TS°23.558°[2]).

1. The service consumer (i.e. announcing EES) shall send for this purpose an HTTP POST request (custom operation: "Declare") to the EES (i.e. receiving EES), with the request URI set to "{apiRoot}/eees-common-eas/<apiVersion>/declare" and the request body including the CommonEASInfo data structure defined in clause 8.11.6.2.2.

2. Upon reception of the HTTP POST request message from the service consumer (i.e. announcing EES), the EES (i.e. receiving EES) shall check whether the declaring EES is authorized to declare the common EAS information. Then:

2a. upon success, the EES (i.e. announcing EES) shall respond with an HTTP "204 No Content" status code indicating that the common EAS information is successfully received.; and

2b. on failure, the appropriate HTTP status code indicating the error shall be returned and appropriate additional error information, as defined in clause 8.11.7, should be returned in the HTTP POST response body.

If the receiving EES is not able to handle the request, it 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 target URI of the custom operation in an alternative EES (i.e. T-EES), as defined in clause 5.2.10 of 3GPP TS 29.122 [2].

# 6 Services offered by Edge Configuration Server

## 6.1 Introduction

The table 6.1-1 lists the Edge Configuration Server APIs below the service name. A service description clause for each API gives a general description of the related API.

Table 6.1-1: List of ECS Service APIs

|  |  |  |  |
| --- | --- | --- | --- |
| Service Name | Service Operations | Operation Semantics | Consumer(s) |
| Eecs\_EESRegistration | Request | Request/Response | EES |
| Update | Request/Response | EES |
| Deregister | Request/Response | EES |
| Eecs\_TargetEESDiscovery | Request | Request/Response | EES, CES |

Editor's note: whether the CES is a consumer of the Eecs\_TargetEESDiscovery is FFS.

Table 6.1-2 summarizes the corresponding Edge Configuration Server APIs defined in this specification.

Table 6.1-2: API Descriptions

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Service Name** | **Clause** | **Description** | **OpenAPI Specification File** | **apiName** | **Annex** |
| Eecs\_EESRegistration | 9.1 | EES registration service. | TS29558\_Eecs\_EESRegistration.yaml | eecs-eesregistration | A.11 |
| Eecs\_TargetEESDiscovery | 9.2 | Service to discover the target EES information. | TS29558\_Eecs\_TargetEESDiscovery.yaml | eecs-targeteesdiscovery | A.12 |

## 6.2 Eecs\_EESRegistration Service

### 6.2.1 Service Description

The Eecs\_EESRegistration API, as defined in 3GPP TS 23.558 [2], allows an Edge Enabler Server via Eecs interface to register, update its registration and deregister at a given Edge Configuration Server.

### 6.2.2 Service Operations

#### 6.2.2.1 Introduction

The service operation defined for Eecs\_EESRegistration API is shown in the table 6.2.2.1-1.

Table 6.2.2.1-1: Operations of the Eecs\_EESRegistration API

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Eecs\_EESRegistraiton\_Request | This service operation is used by the EES to register itself to a given ECS. | EES |
| Eecs\_EESRegistraiton\_Update | This service operation is used by the EES to update its registration information at ECS. | EES |
| Eecs\_EESRegistraiton\_Deregister | This service operation is used by the EES to deregister itself from a given ECS. | EES |

#### 6.2.2.2 Eecs\_EESRegistration\_Request

##### 6.2.2.2.1 General

This service operation is used by EES to register itself to a given ECS.

##### 6.2.2.2.2 EES registering to ECS using Eecs\_EESRegistration\_Request operation

To register itself as an Edge Enabler Server at the ECS, the EES shall send an HTTP POST message to the Edge Configuration Server on the "EES Registrations" collection resource. The body of the HTTP POST message shall include the EES profile information, may include proposed expiration time for the registration, as specified in clause 9.1.2.2.3.1.

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

1. Process the EES registration request information;

2. verify the identity of the Edge Enabler Server and check if the EES is authorized to register itself at ECS ;

3. if the EES is authorized to register to ECS, then the ECS shall;

a. store the EES profile and create a new resource with the EES registration information as specified in clause 9.1.2.1;

b. return the EES registration information, the resource URI of the EES registration information, in the "201 Created" response message. It shall include a Location HTTP header field. The Location header field shall contain the URI of the created registration i.e. {apiRoot}/eecs-eesregistration/<apiVersion>/registrations/{registrationId}. The response message may include expiration time to indicate when the EES registration will automatically expire.

On failure, the ECS shall take proper error handling actions, as specified in clause 9.1.6, and respond to the EES with an appropriate error status code.

If the expiration time is provided, then to maintain the registration, the EES shall send a registration update request (as described in clause 6.2.2.3) prior to the expiration time. If the registration update request is not sent before the expiry time, then the ECS shall treat the EES as deregistered and remove the corresponding EES registration resource.

#### 6.2.2.3 Eecs\_EESRegistration\_Update

##### 6.2.2.3.1 General

This service operation is used by EES to update its registration information at a given ECS.

##### 6.2.2.3.2 EES updating registration information using Eecs\_EESRegistration\_Update operation

To update the EES registration information at the ECS, the EES shall send a HTTP PUT or PATCH message to the Edge Configuration Server on resource URI identifying the individual EES registration resource representation, as specified in clause 9.1.2.3.3.2 for HTTP PUT message and in clause 9.1.2.3.3.4 for HTTP PATCH message. The HTTP PUT message shall replace all properties in the existing resource with the EES registration information in the request. The EESRegistration data type in the request body of the HTTP PUT message shall include the EES profile information, and may include proposed expiration time to update the registration. This request shall not replace the eesId property of the existing resource.

The HTTP PATCH request message in the EESRegistrationPatch data type includes parameters (EES Profile, and/or expiry time) that need to be replaced in the existing Individual EAS registration resource. This request shall not replace the eesId property of the existing resource.

Upon receiving the HTTP PUT or PATCH message from the EES, the ECS shall:

1. check the registration update message from the EES to see if the EES is authorized to modify the requested registration resource;

2. if the EES is authorized to update the registration information:

a. update the resource identified by Resource URI of the EES registration information with the updated EES registration information received in the HTTP PUT or PATCH request message;

b. return the updated EES registration information in the "200 OK" response message or respond with the "204 No Content" message indicating to the EES that the EES registration information is updated successfully. In the response message, the ECS may provide an updated expiration time to indicate to the EES when the updated registration will automatically expire.

On failure, the ECS shall take proper error handling actions, as specified in clause 9.1.6, and respond to the EES with an appropriate error status code.

If the ECS determines that the received HTTP PUT or PATCH request needs to be redirected, the ECS 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 ECS where the message should be redirected. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6].

If the expiration time is provided, then to maintain the registration, the EES shall send a registration update prior to registration expiry time. If the registration update request is not sent before the expiry time, then the ECS shall treat EES as deregistered and remove the corresponding EES registration resource.

#### 6.2.2.4 Eecs\_EESRegistration\_Deregister

##### 6.2.2.4.1 General

This service operation is used by EES to deregister itself from a given ECS.

##### 6.2.2.4.2 EES deregistering from ECS using Eecs\_EESRegistration\_Deregister operation

To deregister itself from the ECS, the EES shall send HTTP DELETE message to the ECS, on the resource URI identifying the individual EES registration resource representation as specified in clause 9.1.2.3.3.3. Upon receiving the HTTP DELETE request, the ECS shall:

1. verify the identity of the EES and check if the EES is authorized to deregister the EES registration information;

2. if the EES is authorized to deregister the EES registration information, then the ECS shall deregister the EES profile from the ECS and delete the resource representing EES registration information.

3. return the "204 Not Content" message to the EES, indicating the successful deregistration of the EES information.

On failure, the ECS shall take proper error handling actions, as specified in clause 9.1.6, and respond to the EES with an appropriate error status code.

If the ECS determines that the received HTTP DELETE request needs to be redirected, the ECS 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 ECS where the message should be redirected. Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6].

## 6.3 Eecs\_TargetEESDiscovery Service

### 6.3.1 Service Description

The Eecs\_TargetEESDiscovery API, as defined in 3GPP TS 23.558 [2], allows an Edge Enabler Server or a Cloud Enabler Server via Eecs interface to retrieve the target EES (T-EES) information at a given ECS.

### 6.3.2 Service Operations

#### 6.3.2.1 Introduction

The service operation defined for Eecs\_TargetEESDiscovery API is shown in the table 6.3.2.1-1.

Table 6.3.2.1-1: Operations of the Eecs\_TargetEESDiscovery API

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Eecs\_TargetEESDiscovery\_Request | This service operation is used by the service consumer (e.g., S-EES, CES) to retrieve the T-EES information. | EES, CES |

#### 6.3.2.2 Eecs\_TargetEESDiscovery\_Request

##### 6.3.2.2.1 General

This service operation is used by the service consumer (e.g., S-EES, CES) to retrieve the T-EES information from the ECS.

##### 6.3.2.2.2 Service consumer fetching the T-EES information from the ECS using Eecs\_TargetEESDiscovery\_Request operation

To retrieve the T-EES information from the ECS, the service consumer shall send a HTTP GET message to the Edge Configuration Server on the "EES Profiles" collection resource as specified in clause 9.2.2.2.3.1. The service consumer includes the discovery filter information in the query parameters of the GET message, as specified in clause 9.2.2.2.3.1, to assist the ECS to determine the T-EES that has the EAS available to serve the given AC in the UE.

Upon receiving the HTTP GET message from the service consumer, the ECS shall:

1. Process the request information;

2. verify the identity of the service consumer and check if it is authorized to retrieve the T-EES information;

3. if the service consumer is authorized to retrieve the T-EES information, then the ECS shall;

a. determine the T-EES(s) based on the provided query parameters in the request. If UE location information is not included in the request or not known to the ECS, then the ECS may fetch the UE location information from the 3GPP core network as specified in 3GPP TS 29.522 [10];

b. returns the 200 OK message including the EDN configuration and the list of T-EES(s) information to the service consumer. The list of T-EES(s) includes the endpoint information to reach the T-EES(s).

On failure, the ECS shall take proper error handling actions, as specified in clause 9.2.6, and respond to the service consumer with an appropriate error status code.

# 6A Service offered by CAS

## 6A.1 Introduction

The table 6A.1-1 lists the CAS APIs below with the service name. A service description clause for each API gives a general description of the related API.

Table 6A.1-1: List of CAS Service APIs

|  |  |  |  |
| --- | --- | --- | --- |
| Service Name | Service Operations | Operation Semantics | Consumer(s) |
| Ecas\_SelectedEES | Declare | Request/Response | EES |

Table 6A.1-2 summarizes the corresponding CAS APIs defined in this specification.

Table 6A.1-2: API Descriptions

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Service Name | Clause | Description | OpenAPI Specification File | apiName | Annex |
| Ecas\_SelectedEES | 8A.1 | The service consumer declares the selected EES information to the CAS. | TS29558\_Ecas\_SelectedEES.yaml | Ecas-selected-ees | A.14 |

## 6A.2 Ecas\_SelectedEES Service

### 6A.2.1 Service Description

The Ecas\_SelectedEES API, as defined in 3GPP TS 23.558 [2], allows an service consumer to inform the CAS of the selected EES during the ACR from EAS to CAS.

### 6A.2.2 Service Operations

#### 6A.2.2.1 Introduction

The service operation defined for Ecas\_SelectedEES API is shown in the table 6A.2.2.1-1.

Table 6A.2.2.1-1: Operations of the Ecas\_SelectedEES API

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Ecas\_SelectedEES\_Declare | This service operation is used by the service consumer (e.g., EES) to inform the CAS of the selected EES during the ACR from EAS to CAS. | EES |

#### 6A.2.2.2 Ecas\_SelectedEES\_Request

##### 6A.2.2.2.1 General

This service operation is used by the service consumer (e.g., EES) to inform the CAS of the selected EES.

##### 6A.2.2.2.2 Service consumer inform the CAS of the selected EES using Ecas\_SelectedEES\_Declare operation

To inform the CAS of the selected EES during the ACR from EAS to CAS, the service consumer (e.g., EES) shall send a HTTP POST request (custom operation "Declare") to the CAS with the request URI set to "{apiRoot}/ecas-selected-ees/<apiVersion>/declare" and the request body shall include the SelEESDecInfo data structure defined in clause 8a.1.6.2.2.

Upon receiving the HTTP POST request message from the service consumer, the CAS shall:

1. process the service consumer request information;

2. check if the service consumer is authorized to declare the selected EES information;

3. if the service consumer is authorized, the CAS stores the received information and respond with the "204 No Content" status code.

On failure, the CAS shall take proper error handling actions, as specified in clause 8A.1.7, and respond to the service consumer with an appropriate error status code.

# 7 Information applicable to several APIs

*This clause will provide the design aspects that are common for several APIs.*

## 7.1 General

The EDGEAPP APIs as specified in this document allow secure access to the capabilities provided by the functional entities, Edge Enabler Server and Edge Configuration Server.

This document specifies the procedures triggered at different functional entities as a result of API invocation requests and event notifications. The stage-2 level requirements and signalling flows are defined in 3GPP TS 23.558 [2].

Several design aspects, as mentioned in the following clauses, are specified in 3GPP TS 29.122 [6] and referenced by this specification.

## 7.2 Data Types

### 7.2.1 General

This clause defines structured data types, simple data types and enumerations that are applicable to several APIs defined in the present specification and can be referenced from data structures defined in the subsequent clauses.

In addition, data types that are defined in OpenAPI 3.0.0 Specification [3] can also be referenced from data structures defined in the subsequent clauses.

NOTE: As a convention, data type's names in the present specification are with an upper-case letter in the beginning. Parameters are with a lower-case letter in the beginning. As an exception, data types that are also defined in OpenAPI 3.0.0 Specification [3] can use a lower-case case letter in the beginning for consistency.

Table 7.2.1-1 specifies data types re-used by APIs in this specification from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the APIs of this specification.

Table 7.2.1-1: Re-used Data Types

|  |  |  |
| --- | --- | --- |
| Data type | Reference | Comments |
| Uri | 3GPP TS 29.122 [6] |  |

### 7.2.2 Referenced structured data types

Table 7.2.2-1 lists structured data types defined in this specification referenced by multiple services:

Table 7.2.2-1: Referenced Structured Data Types

|  |  |  |
| --- | --- | --- |
| Data type | Reference | Description |
|  |  |  |

### 7.2.3 Referenced simple data types and enumerations

Following simple data types defined in Table 7.2.3-1 are applicable to several APIs in this document:

Table 7.2.3-1: Simple data types applicable to several APIs

|  |  |  |
| --- | --- | --- |
| Type name | Reference | Description |
|  |  |  |

## 7.3 Usage of HTTP

For all the APIs in this document, the usage of HTTP shall be as specified in clause 5.2.2 of 3GPP TS 29.122 [6], with the clarification that SCA/AS is the functional entity invoking an EDGEAPP API.

For all the APIs, to provide the interface protection over EDGE-3/6/9/10 interfaces, HTTP over TLS shall be used as specified in 3GPP TS 33.558 [20].

## 7.4 Content type

The content type for the HTTP messages shall be as specified in clause 5.2.3 of 3GPP TS 29.122 [6].

## 7.5 URI structure

### 7.5.1 Resource URI structure

The resource URI structure of all the APIs specified in this document shall be as specified in clause 5.2.4 of 3GPP TS 29.122 [6].

### 7.5.2 Custom operations URI structure

The custom operation definition is in Annex C of 3GPP TS 29.501 [5].

The URI of a custom operation which is associated with a resource shall have the following structure:

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

Custom operations can also be associated with the service instead of a resource. The URI of a custom operation which is not associated with a resource shall have the following structure:

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

In the above URI structures, "apiRoot", "apiName", "apiVersion" and "apiSpecificResourceUriPart" are as defined in clause 7.5.1 and "custOpName" represents the name of the custom operation as defined in clause 5.1.3.2 of 3GPP TS 29.501 [5].

## 7.6 Notifications

The functional entities

- shall support the delivery of notifications using a separate HTTP connection towards an address;

- may support testing delivery of notifications; and

- may support the delivery of notification using WebSocket protocol (see IETF RFC 6455 [7]),

as described in 3GPP TS 29.122 [6], with the following clarifications:

- the SCEF is EES for Eees APIs; and

- the SCS/AS is the Subscriber entity invoking an EDGEAPP API.

## 7.7 Error handling

Response bodies for error handling, as described in clause 5.2.6 of 3GPP TS 29.122 [6], are applicable to all APIs in the present specification unless specified otherwise, with the following clarifications:

- the SCEF is EES for Eees APIs or ECS for Eecs APIs ; and

- the SCS/AS is the functional entity invoking an EDGEAPP API

## 7.8 Feature negotiation

The functional entity invoking an API (i.e. the EAS server) and the EDGEAPP server use feature negotiation procedures defined in clause 5.2.7 of 3GPP TS 29.122 [6] to negotiate the supported features, with the following clarifications:

- description of the SCEF applies to the EES for Eees APIs or ECS for Eecs APIs; and

- description of the SCS/AS applies to the functional entity invoking an EDGEAPP API.

## 7.9 HTTP headers

The HTTP headers described in 3GPP TS 29.122 [6] are applicable to all APIs in this document.

## 7.10 Conventions for Open API specification files

The conventions for Open API specification files as specified in clause 5.2.9 of 3GPP TS 29.122 [6] shall be applicable for all APIs in this document.

# 8 Edge Enabler Server API Definitions

## 8.1 Eees\_EASRegistration API

### 8.1.1 Introduction

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

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

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

The request URIs used in HTTP requests shall have the Resource URI structure as defined in clause 7.5, i.e.:

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

with the following components:

- The {apiRoot} shall be set as described in clause 7.5.

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

- The <apiVersion> shall be "v1".

- The <apiSpecificResourceUriPart> shall be set as described in clause 8.1.2.

### 8.1.2 Resources

#### 8.1.2.1 Overview

This clause describes the structure for the Resource URIs and the resources and methods used for the service.

Figure 8.1.2.1-1 depicts the resource URIs structure for the Eees\_EASRegistration API.



Figure 8.1.2.1-1: Resource URI structure of the Eees\_EASRegistration API

Table 8.1.2.1-1 provides an overview of the resources and applicable HTTP methods.

Table 8.1.2.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method or custom operation | Description |
| EAS Registrations | /registrations | POST | Registers a new EAS at the Edge Enabler Server. |
| Individual EAS Registration | /registrations/{registrationId} | GET | Fetch an individual EAS registration resource. |
| PUT | Fully replace an individual EAS registration resource. |
| DELETE | Remove an individual EAS registration resource. |
| PATCH | Partially update an individual EAS registration resource. |

#### 8.1.2.2 Resource: EAS Registrations

##### 8.1.2.2.1 Description

This resource represents all the Edge Application Servers that are registered at a given Edge Enabler Server.

##### 8.1.2.2.2 Resource Definition

Resource URI: **{apiRoot}/eees-easregistration/<apiVersion>/registrations**

This resource shall support the resource URI variables defined in the table 8.1.2.2.2-1.

Table 8.1.2.2.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5 |

##### 8.1.2.2.3 Resource Standard Methods

###### 8.1.2.2.3.1 POST

This method shall support the URI query parameters specified in table 8.1.2.2.3.1-1.

Table 8.1.2.2.3.1-1: URI query parameters supported by the POST method on this resource

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

This method shall support the request data structures specified in table 8.1.2.2.3.1-2 and the response data structures and response codes specified in table 8.1.2.2.3.1-3.

Table 8.1.2.2.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| EASRegistration | M | 1 | EAS registration request information. |

Table 8.1.2.2.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| EASRegistration | M | 1 | 201 Created | EAS information is registered successfully at EES. EAS information registered with EES is provided in the response body.  The URI of the created resource shall be returned in the "Location" HTTP header. |
| 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 8.1.2.2.3.1-4: Headers supported by the 201 response code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains the URI of the newly created resource, according to the structure: {apiRoot}/eees-easregistration/<apiVersion>/registrations/{registrationId} |

##### 8.1.2.2.4 Resource Custom Operations

None.

#### 8.1.2.3 Resource: Individual EAS Registration

##### 8.1.2.3.1 Description

This Individual EAS Registration resource represents an individual EAS registered at a given Edge Enabler Server.

##### 8.1.2.3.2 Resource Definition

Resource URI: **{apiRoot}/eees-easregistration/<apiVersion>/registrations/{registrationId}**

This resource shall support the resource URI variables defined in the table 8.1.2.3.2-1.

Table 8.1.2.3.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5 |
| registrationId | string | The EAS registration identifier. |

##### 8.1.2.3.3 Resource Standard Methods

###### 8.1.2.3.3.1 GET

This method retrieves the EAS information registered at Edge Enabler Server. This method shall support the URI query parameters specified in table 8.1.2.3.3.1-1.

Table 8.1.2.3.3.1-1: URI query parameters supported by the GET method on this resource

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

This method shall support the request data structures specified in table 8.1.2.3.3.1-2 and the response data structures and response codes specified in table 8.1.2.3.3.1-3.

Table 8.1.2.3.3.1-2: Data structures supported by the GET Request Body on this resource

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

Table 8.1.2.3.3.1-3: Data structures supported by the GET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| EASRegistration | M | 1 | 200 OK | The EAS registration information at the Edge Enabler Server. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| NOTE: The mandatory HTTP error status code for the GET method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.1.2.3.3.1-4: Headers supported by the 307 Response Code on this resource

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

Table 8.1.2.3.3.1-5: Headers supported by the 308 Response Code on this resource

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

###### 8.1.2.3.3.2 PUT

This method updates the EAS registration information at Edge Enabler Server by completely replacing the existing registration data (except the value of "suppFeat" attribute within the EASRegistration data type, and the value of "easId" attribute within the EASProfile data type). This method shall support the URI query parameters specified in the table 8.1.2.3.3.2-1.

Table 8.1.2.3.3.2-1: URI query parameters supported by the PUT method on this resource

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

This method shall support the request data structures specified in table 8.1.2.3.3.2-2 and the response data structures and response codes specified in table 8.1.2.3.3.2-3.

Table 8.1.2.3.3.2-2: Data structures supported by the PUT Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| EASRegistration | M | 1 | Details of the EAS registration information to be updated |

Table 8.1.2.3.3.2-3: Data structures supported by the PUT Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| EASRegistration | M | 1 | 200 OK | The EAS registration information updated successfully and the updated EAS registration information is returned in the response. |
| n/a |  |  | 204 No Content | The EAS registration information was updated successfully. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| NOTE: The manadatory HTTP error status code for the PUT method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.1.2.3.3.2-4: Headers supported by the 307 Response Code on this resource

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

Table 8.1.2.3.3.2-5: Headers supported by the 308 Response Code on this resource

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

###### 8.1.2.3.3.3 DELETE

This method deregisters an EAS registration from the EES. This method shall support the URI query parameters specified in the table 8.1.2.3.3.3-1.

Table 8.1.2.3.3.3-1: URI query parameters supported by the DELETE method on this resource

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

This method shall support the request data structures specified in table 8.1.2.3.3.3-2 and the response data structures and response codes specified in table 8.1.2.3.3.3-3.

Table 8.1.2.3.3.3-2: Data structures supported by the DELETE Request Body on this resource

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

Table 8.1.2.3.3.3-3: Data structures supported by the DELETE Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| n/a |  |  | 204 No Content | The individual EAS registration information matching the registrationId is deleted. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| NOTE: The manadatory HTTP error status code for the DELETE method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.1.2.3.3.3-4: Headers supported by the 307 Response Code on this resource

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

Table 8.1.2.3.3.3-5: Headers supported by the 308 Response Code on this resource

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

###### 8.1.2.3.3.4 PATCH

This method partially updates the EAS registration information (except the easId) at Edge Enabler Server. This method shall support the URI query parameters specified in the table 8.1.2.3.3.4-1.

Table 8.1.2.3.3.4-1: URI query parameters supported by the PATCH method on this resource

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

This method shall support the request data structures specified in table 8.1.2.3.3.4-2 and the response data structures and response codes specified in table 8.1.2.3.3.4-3.

Table 8.1.2.3.3.4-2: Data structures supported by the PATCH Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| EASRegistrationPatch | M | 1 | Details of the EAS registration information to be updated |

Table 8.1.2.3.3.4-3: Data structures supported by the PATCH Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| EASRegistration | M | 1 | 200 OK | The Individual EAS registration information was updated successfully and the updated EAS registration information is returned in the response. |
| n/a |  |  | 204 No Content | The Individual EAS registration information was updated successfully. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| NOTE: The mandatory HTTP error status code for the PUT method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.1.2.3.3.4-4: Headers supported by the 307 Response Code on this resource

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

Table 8.1.2.3.3.4-5: Headers supported by the 308 Response Code on this resource

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

##### 8.1.2.3.4 Resource Custom Operations

None.

### 8.1.3 Custom Operations without associated resources

None.

### 8.1.4 Notifications

None.

### 8.1.5 Data Model

#### 8.1.5.1 General

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

Table 8.1.5.1-1 specifies the data types defined specifically for the Eees\_EASRegistration API service.

Table 8.1.5.1-1: Eees\_EASRegistration API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| Affinity | 8.1.5.3.7 | Represents the affinity requirements of an EAS bundle. | EdgeApp\_2 |
| BdlType | 8.1.5.3.6 | Represents the EAS bundle type. | EdgeApp\_2 |
| CoordinatedAcrReq | 8.1.5.2.10 | Represents the coordinated ACR related requirements for an EAS bundle. | EdgeApp\_2 |
| EASBdlReqs | 8.1.5.2.9 | Represents EAS bundle requirements. | EdgeApp\_2 |
| EASBundleInfo | 8.1.5.2.8 | Represents EAS bundle information. | EdgeApp\_2 |
| EASCategory | 8.1.5.3.4 | Used to indicate the category or type of the EAS. |  |
| EASProfile | 8.1.5.2.3 | The profile information related to the EAS in the EASRegistration data type. |  |
| EASRegistration | 8.1.5.2.2 | The EAS registration information on EES. |  |
| EASRegistrationPatch | 8.1.5.2.6 | To partially update the EAS Registration information. |  |
| EASServiceKPI | 8.1.5.2.4 | Service characteristics provided by EAS, captured in EAS profile information. |  |
| EndPoint | 8.1.5.2.5 | The end point information of the Edge Application Server in the EAS profile. |  |
| FailureAction | 8.1.5.3.8 | Represents the EAS bundle related failure action during ACR. |  |
| PermissionLevel | 8.1.5.3.3 | Used to indicate the level of service permissions supported by the EAS. |  |
| TransContSuppDetails | 8.1.5.2.7 | Represents the detailed information about the EAS (e.g. SEALDD Server) capability for seamless transport layer service contnuity. | SEALDDSupport |
| TransportProtocol | 8.1.5.3.5 | Indicates the supported transport layer protocol for EAS context transfer. | SEALDDSupport |

Table 8.1.5.1-2 specifies data types re-used by the Eees\_EASRegistration API service.

Table 8.1.5.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| SupportedFeatures | 3GPP TS 29.571 [8] | Used to negotiate the applicability of optional features defined in table 8.1.7-1. |  |
| DateTime | 3GPP TS 29.122 [6] | Used to capture the expiration time of EAS registration. |  |
| DateTimeRm | 3GPP TS 29.571 [8] | Used to capture the expiration time EAS registration patch. |  |
| ScheduledCommunicationTime | 3GPP TS 29.122 [6] | Used to define the schedule of EAS availability. |  |
| RouteToLocation | 3GPP TS 29.571 [8] | Used to define the DNAIs associated with EAS and the corresponding N6 routing information for each EAS DNAI. |  |
| DurationSec | 3GPP TS 29.122 [6] | Duration in seconds, used to define the availability reporting period for EES to check EAS availability. |  |
| BitRate | 3GPP TS 29.571 [8] | Used to express the connection bandwidth of EAS service KPI. |  |
| Ipv4Addr | 3GPP TS 29.122 [6] | Identifying the IPv4 address of the Edge Application Server. |  |
| Ipv6Addr | 3GPP TS 29.122 [6] | Identifying the IPv6 address of the Edge Application Server. |  |
| ServiceArea | Clause 9.1.5.2.5 | Represents the topological and geographical service area information of the EAS. |  |
| Uinteger | 3GPP TS 29.571 [8] | Used to express the maximum response time of EAS service KPI. |  |
| Fqdn | 3GPP TS 29.571 [8] | Used to express the Fully Qualified Domain Name of EAS end point. |  |

#### 8.1.5.2 Structured data types

##### 8.1.5.2.1 Introduction

##### 8.1.5.2.2 Type: EASRegistration

Table 8.1.5.2.2-1: Definition of type EASRegistration

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| easProf | EASProfile | M | 1 | The profile information of the EAS. |  |
| expTime | DateTime | O | 0..1 | Identifies the expiration time for the EAS registration. If the expiration time is not present, then it indicates that the registration of EAS never expires. |  |
| 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 in the response of successful resource creation. |  |

##### 8.1.5.2.3 Type: EASProfile

Table 8.1.5.2.3-1: Definition of type EASProfile

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| easId | string | M | 1 | The application identifier of the EAS (e.g. URI, FQDN). |  |
| endPt | EndPoint | M | 1 | Endpoint information (URI, FQDN, IP address) used to communicate with the EAS. This information maybe discovered by EEC and exposed to ACs so that ACs can establish contact with the EAS. |  |
| easBdlInfos | array(EASBundleInfo) | O | 1..N | Represents the list of EAS bundle(s) to which the EAS (identified by the "easId" attribute) belongs, and for each one of them, the corresponding EAS bundle information. | EdgeApp\_2 |
| acIds | array(string) | O | 1..N | Identities of the Application Clients that can be served by the EAS |  |
| provId | string | O | 0..1 | Identifier of the ASP that provides the EAS. |  |
| type | EASCategory | O | 0..1 | The EAS type with the 3GPP standardized value set.  (NOTE). |  |
| flexEasType | string | O | 0..1 | The EAS type with the flexible value set.  (NOTE) |  |
| scheds | array(ScheduledCommunicationTime) | O | 1..N | The availability schedule of the EAS. |  |
| svcArea | ServiceArea | O | 0..1 | The list of geographical and topological areas that the EAS serves. ACs in the UE that are outside the area shall not be served. |  |
| svcKpi | EASServiceKPI | O | 0..1 | Service characteristics provided by the EAS. |  |
| permLvl | array(PermissionLevel) | O | 1..N | Level of service permissions supported by the EAS. |  |
| easFeats | array(string) | O | 1..N | Service specific features supported by the EAS (e.g. single vs multi-player gaming service). |  |
| svcContSupp | array(ACRScenario) | O | 1..N | The ACR scenarios supported by the EAS for service continuity. If this attribute is not present, then the EAS does not support service continuity. |  |
| svcContSuppExt1 | array(EASBundleInfo) | O | 1..N | Represents the information related to the EAS ability to handle bundled EAS ACRs.  This attribute may be present only when the "svcContSupp" attribute is also present.  When this attribute is present, it indicates that the EAS (identified by the "easId" attribute) is able to handle bundled EAS ACRs and contains the information of the EAS bundle(s) for which the EAS is able to handle bundled EAS ACRs. | EdgeApp\_2 |
| transContSupp | TransContSuppDetails | O | 0..1 | Represents the detailed information about the EAS (e.g. SEALDD Server) capability for seamless transport layer service continuity.  If this attribute is not present, then the EAS does not support the seamless transport layer service continuity capability. | SEALDDSupport |
| appLocs | array(RouteToLocation) | O | 1..N | List of DNAI(s) and the corresponding N6 traffic routing information/routing profile ID, associated with the EAS.  It is a subset of the DNAI(s) associated with the EDN where the EAS resides. |  |
| avlRep | DurationSec | O | 0..1 | The period indicating to the EES, how often the EES needs to check the EAS's availability after a successful registration. |  |
| status | string | O | 0..1 | EAS status (e.g. Enabled, Disabled etc.) |  |
| genCtxDur | DurationSec | O | 0..1 | Contains the general context holding time duration, which indicates the time duration during which the EAS holds the application context in case of an ACR for service continuity planning. | EdgeApp\_2 |
| easSyncSupp | boolean | O | 0..1 | Indicates whether the EAS supports content synchronization between EASs.  - When set to "true", it indicates that content synchronization between EASs is supported by the EAS.  - When set to "false", it indicates that content synchronization between EASs is not supported by the EAS.  - The default value when this attribute is omitted is "false". | EdgeApp\_2 |
| NOTE: The "flexEasType" attribute and the "type" attribute are mutually exclusive. Either one of them may be provided. The same attribute should be used when this data type is conveyed over the EDGE-1 and EDGE-3 interfaces (i.e. for the Eees\_EASRegistration and the Eees\_EASDiscovery APIs).NOTE 2: Void. | | | | | |

##### 8.1.5.2.4 Type: EASServiceKPI

Table 8.1.5.2.4-1: Definition of type EASServiceKPI

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| maxReqRate | Uinteger | O | 0..1 | Maximum request rate from the Application Client supported by the EAS. The minimum and maximum value shall be 0 and 100 respectively. |  |
| maxRespTime | Uinteger | O | 0..1 | The maximum response time, in the units of milliseconds, advertised for the AC's service requests. This includes the round trip time of the request and response packet, the processing time at the EAS and time required by EAS to consume any 3GPP core network capabilities. |  |
| avail | Uinteger | O | 0..1 | Advertised percentage of time the server is available for the AC's use. The minimum and maximum value shall be 0 and 100 respectively. |  |
| avlComp | Uinteger | O | 0..1 | The maximum compute resource available for the AC. |  |
| avlGraComp | Uinteger | O | 0..1 | The maximum graphical compute resource available for the AC. |  |
| avlMem | Uinteger | O | 0..1 | The maximum memory resource available for the AC. |  |
| avlStrg | Uinteger | O | 0..1 | The maximum storage resource available for the AC. |  |
| connBand | BitRate | O | 0..1 | The connection bandwidth in Kbit/s advertised for the AC's use. |  |

##### 8.1.5.2.5 Type: EndPoint

Table 8.1.5.2.5-1: Definition of type EndPoint

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| fqdn | Fqdn | C | 0..1 | Fully Qualified Domain Name of the Edge server. (NOTE) |  |
| ipv4Addrs | array(Ipv4Addr) | C | 1..N | IPv4 addresses of the Edge server. (NOTE) |  |
| ipv6Addrs | array(Ipv6Addr) | C | 1..N | IPv6 addresses of the Edge server. (NOTE) |  |
| uri | Uri | C | 0..1 | URI information of the Edge server (NOTE) |  |
| NOTE: One of the addressing parameters (fqdn, ipv4Addrs, ipv6Addrs, uri attributes) shall be included. | | | | | |

##### 8.1.5.2.6 Type: EASRegistrationPatch

Table 8.1.5.2.6-1: Definition of type EASRegistrationPatch

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| easProf | EASProfile | O | 0..1 | The profile information of the EAS. |  |
| expTime | DateTimeRm | O | 0..1 | Identifies the expiration time for the EAS registration. If the expiration time is not present, then it indicates that the registration of EAS never expires. |  |

##### 8.1.5.2.7 Type: TransContSuppDetails

Table 8.1.5.2.7-1: Definition of type TransContSuppDetails

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| transProtocs | array(TransportProtocol) | M | 1..N | Indicates the transport layer protocols supported for EAS (e.g. SEALDD Server) context transfer using the seamless transport layer service continuity capability. |  |

##### 8.1.5.2.8 Type: EASBundleInfo

Table 8.1.5.2.8-1: Definition of type EASBundleInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| bdlType | BdlType | M | 1 | Represents the EAS bundle type. |  |
| bdlId | string | C | 0..1 | Contains the identifier of the EAS bundle.  (NOTE) |  |
| easIdsList | array(string) | C | 1..N | Contains the list of the identifier(s) of the EAS(s) constituting the EAS bundle.  (NOTE) |  |
| easBdlReqs | EASBdlReqs | O | 0..1 | Contains the EAS Bundle Requirements. |  |
| mainEasId | string | O | 0..1 | Represents the identifier of the EAS that plays the role of the main EAS within the EAS bundle. |  |
| NOTE: At least one of these attributes shall be present. | | | | | |

##### 8.1.5.2.9 Type: EASBdlReqs

Table 8.1.5.2.9-1: Definition of type EASBdlReqs

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| coordinatedEasDisc | boolean | O | 0..1 | Indicates whether or not coordinated EAS discovery is required (i.e., when the EAS discovery request for one of the EAS(s) of the bundle is processed, then the corresponding EAS discovery response should include information of all the EAS(s) of the bundle).  - When set to "true", it indicates that coordianted EAS discovery is required.  - When set to "false", it indicates that coordianted EAS discovery is not required.  - The default value when this attribute is omitted is "false". |  |
| coordinatedAcr | CoordinatedAcrReqs | O | 0..1 | Represents the coordinated ACR requirements for the EAS bundle. |  |
| affinity | Affinity | O | 0..1 | Represents the affinity requirements of the EAS bundle. |  |

##### 8.1.5.2.10 Type: CoordinatedAcrReqs

Table 8.1.5.2.10-1: Definition of type CoordinatedAcrReqs

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| coordinatedAcrInd | boolean | M | 1 | Indicates whether or not coordinated ACR is required (i.e., when ACR is initiated for one of the EAS(s) of the bundle, then ACR should be initiated for all the other EAS(s) of the bundle).  - When set to "true", it indicates that coordianted ACR is required.  - When set to "false", it indicates that coordianted ACR is not required.  - The default value when this attribute is omitted is "false". |  |
| failureAction | FailureAction | O | 0..1 | Indicates the action to be taken when ACR for one or more EAS(s) of the EAS bundle fails, i.e., whether the ACR for all the other EAS(s) of the bundle shall proceed or be cancelled. |  |

#### 8.1.5.3 Simple data types and enumerations

##### 8.1.5.3.1 Introduction

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

##### 8.1.5.3.2 Simple data types

The simple data types defined in table 8.1.5.3.2-1 shall be supported.

Table 8.1.5.3.2-1: Simple data types

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

##### 8.1.5.3.3 Enumeration: PermissionLevel

Table 8.1.5.3.3-1: Enumeration PermissionLevel

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| TRIAL | Level of service permission supported is TRIAL. |  |
| GOLD | Level of service permission supported is GOLD. |  |
| SILVER | Level of service permission supported is SILVER. |  |
| OTHER | Any other level of service permissions supported. |  |

##### 8.1.5.3.4 Enumeration: EASCategory

Table 8.1.5.3.3-1: Enumeration EASCategory

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| UAS | Indicates that the EAS category is for UAS services. |  |
| V2X | Category of EAS is for V2X Services. |  |
| OTHER | Any other type of EAS category |  |

##### 8.1.5.3.5 Enumeration: TransportProtocol

Table 8.1.5.3.5-1: Enumeration TransportProtocol

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| QUIC | Indicates the QUIC protocol. |  |
| TCP | Indicate the Transmission Control Protocol.(TCP) protocol |  |
| TCP\_TLS | Indicates the Transmission Control Protocol (TCP) with Transport Layer Security (TLS) protocol. |  |

##### 8.1.5.3.6 Enumeration: BdlType

Table 8.1.5.3.6-1: Enumeration BdlType

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| DIRECT | Indicates that the EAS Bundle type is direct bundle.  The AC interacts with multiple EASs of the EAS bundle directly (i.e., with no coordination between the EAS(s)). |  |
| PROXY | Indicates that the EAS Bundle type is proxy bundle.  The AC interacts with only one EAS of the EAS bundle, which in turn coordinates with the other EAS(s) of the EAS bundle to provide the services required by the AC. |  |

##### 8.1.5.3.7 Enumeration: Affinity

Table 8.1.5.3.7-1: Enumeration Affinity

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| STRONG | Indicates that the affinity is strong, i.e., all the EASs of the bundle shall be in the same EDN. |  |
| PREFERRED | Indicates that the affinity is preferred, i.e., it is nice to have all the EASs of the bundle in the same EDN, but it is not essential. |  |
| WEAK | Indicates that the affinity is weak, i.e., it is not essential to have all the EASs of the bundle in the same EDN. |  |

##### 8.1.5.3.8 Enumeration: FailureAction

Table 8.1.5.3.8-1: Enumeration FailureAction

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| CANCEL | Indicates that ACR shall be cancelled for the other EAS(s) of the bundle for which ACR is not failed. |  |
| PROCEED | Indicates that ACR shall proceed for the other EAS(s) of the bundle for which ACR is not failed. |  |

### 8.1.6 Error Handling

General error responses are defined in clause 7.7.

### 8.1.7 Feature negotiation

General feature negotiation procedures are defined in clause 7.8. Table 8.1.7-1 lists the supported features for Eees\_EASRegistration API.

Table 8.1.7-1: Supported Features

|  |  |  |
| --- | --- | --- |
| **Feature number** | **Feature Name** | **Description** |
| 1 | SEALDDSupport | This feature indicates the support of the SEALDD functionality related enhancements.  The following functionalities are supported:  - Support the EAS capability for seamless transport layer service continuity within the EAS profile. |
| 2 | EdgeApp\_2 | This feature indicates the support of the enhancements to the Edge Applications.  The following functionalities are supported:  - Support of the indication of the general context holding time.  - Support of the EAS bundle functionality.  - Support of the indication of the EAS ability to handle bundled EAS ACRs within the EAS profile. |

## 8.2 Eees\_UELocation API

### 8.2.1 Introduction

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

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

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

The request URIs used in HTTP requests shall have the Resource URI structure as defined in clause 7.5, i.e.:

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

with the following components:

- The {apiRoot} shall be set as described in clause 7.5.

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

- The <apiVersion> shall be "v1".

- The <apiSpecificResourceUriPart> shall be set as described in clause 8.2.2.

### 8.2.2 Resources

#### 8.2.2.1 Overview

This clause describes the structure for the Resource URIs and the resources and methods used for the service.

Figure 8.2.2.1-1 depicts the resource URIs structure for the Eees\_UELocation API.



Figure 8.2.2.1-1: Resource URI structure of the Eees\_UELocation API

Table 8.2.2.1-1 provides an overview of the resources and applicable HTTP methods.

Table 8.2.2.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method or custom operation | Description |
| Location Information Subscriptions | /subscriptions | POST | Creates a subscription for continuous reporting of UE(s) location information to the EAS. |
| Individual Location Information Subscription | /subscriptions/{subscriptionId} | GET | Retrieves the Individual location information subscription information identified by subscriptionId. |
| PATCH | Partially updates the Individual location information subscription identified by subscriptionId. |
| PUT | Fully replace the Individual location information subscription identified by subscriptionId. |
| DELETE | Removes the Individual location information subscription identified by subscriptionId. |

#### 8.2.2.2 Resource: Location Information Subscriptions

##### 8.2.2.2.1 Description

This resource represents all location information subscriptions at a given EES.

##### 8.2.2.2.2 Resource Definition

Resource URI: **{apiRoot}/eees-uelocation/<apiVersion>/subscriptions**

This resource shall support the resource URI variables defined in the table 8.2.2.2.2-1.

Table 8.2.2.2.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5 |

##### 8.2.2.2.3 Resource Standard Methods

###### 8.2.2.2.3.1 POST

This method creates the location information subscription at the EES for continuous reporting of UE(s) location information. This method shall support the URI query parameters specified in the table 8.2.2.2.3.1-1.

Table 8.2.2.2.3.1-1: URI query parameters supported by the POST method on this resource

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

This method shall support the request data structures specified in table 8.2.2.2.3.1-2 and the response data structures and response codes specified in table 8.2.2.2.3.1-3.

Table 8.2.2.2.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| LocationSubscription | M | 1 | Create a new location information subscription. |

Table 8.2.2.2.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| LocationSubscription | M | 1 | 201 Created | The individual location information subscription resource created successfully. The information about the confirmed subscription at the EES is provided in the response body.  The URI of the created resource shall be returned in the "Location" HTTP header. |
| ProblemDetails | O | 0..1 | 403 Forbidden | (NOTE 2) |
| NOTE 1: 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.  NOTE 2: Failure cases are described in clause 8.2.6.3. | | | | |

Table 8.2.2.2.3.1-4: Headers supported by the 201 response code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains the URI of the newly created resource, according to the structure:  {apiRoot}/eees-uelocation/<apiVersion>/subscriptions/{subscriptionId} |

##### 8.2.2.2.4 Resource Custom Operations

None.

#### 8.2.2.3 Resource: Individual Location Information Subscription

##### 8.2.2.3.1 Description

This resource represents the individual location information subscription of an EAS at a given EES.

##### 8.2.2.3.2 Resource Definition

Resource URI: **{apiRoot}/eees-uelocation/<apiVersion>/subscriptions/{subscriptionId}**

This resource shall support the resource URI variables defined in the table 8.2.2.3.2-1.

Table 8.2.2.3.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5 |
| subscriptionId | string | Identifies an individual location information subscription. |

##### 8.2.2.3.3 Resource Standard Methods

###### 8.2.2.3.3.1 GET

This method retrieves the location information subscription information at EES. This method shall support the URI query parameters specified in the table 8.2.2.3.3.1-1.

Table 8.2.2.3.3.1-1: URI query parameters supported by the GET method on this resource

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

This method shall support the request data structures specified in table 8.2.2.3.3.1-2 and the response data structures and response codes specified in table 8.2.2.3.3.1-3.

Table 8.2.2.3.3.1-2: Data structures supported by the GET Request Body on this resource

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

Table 8.2.2.3.3.1-3: Data structures supported by the GET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| LocationSubscription | M | 1 | 200 OK | The location information subscription information is returned by the EES. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| NOTE: The manadatory HTTP error status code for the GET method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.2.2.3.3.1-4: Headers supported by the 307 Response Code on this resource

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

Table 8.2.2.3.3.1-5: Headers supported by the 308 Response Code on this resource

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

###### 8.2.2.3.3.2 PATCH

This method partially updates the location information subscription information at the EES. This method shall support the URI query parameters specified in the table 8.2.2.3.3.2-1.

Table 8.2.2.3.3.2-1: URI query parameters supported by the PATCH method on this resource

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

This method shall support the request data structures specified in table 8.2.2.3.3.2-2 and the response data structures and response codes specified in table 8.2.2.3.3.2-3.

Table 8.2.2.3.3.2-2: Data structures supported by the PATCH Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| LocationSubscriptionPatch | M | 1 | Request to partially update the individual location information subscription matching the subscriptionId at the EES. |

Table 8.2.2.3.3.2-3: Data structures supported by the PATCH Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| LocationSubscription | M | 1 | 200 OK | The individual Location information subscription matching the subscriptionId was modified successfully and the updated Location subscription information is returned in the response. |
| n/a |  |  | 204 No Content | The individual Location information subscription matching the subscriptionId was modified successfully. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| ProblemDetails | O | 0..1 | 403 Forbidden | (NOTE 2) |
| NOTE 1: The manadatory HTTP error status code for the PATCH method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply.  NOTE 2: Failure cases are described in clause 8.2.6.3. | | | | |

Table 8.2.2.3.3.2-4: Headers supported by the 307 Response Code on this resource

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

Table 8.2.2.3.3.2-5: Headers supported by the 308 Response Code on this resource

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

###### 8.2.2.3.3.3 PUT

This method updates the location information subscription information at the EES by completely replacing the existing subscription data (except easId, ueId, groupId). This method shall support the URI query parameters specified in the table 8.2.2.3.3.3-1.

Table 8.2.2.3.3.3-1: URI query parameters supported by the PUT method on this resource

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

This method shall support the request data structures specified in table 8.2.2.3.3.3-2 and the response data structures and response codes specified in table 8.2.2.3.3.3-3.

Table 8.2.2.3.3.3-2: Data structures supported by the PUT Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| LocationSubscription | M | 1 | Details of individual location information subscription matching the subscriptionId to be updated at the EES. |

Table 8.2.2.3.3.3-3: Data structures supported by the PUT Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| LocationSubscription | M | 1 | 200 OK | The individual Location information subscription matching the subscriptionId was modified successfully and the updated Location subscription information is returned in the response. |
| n/a |  |  | 204 No Content | The individual Location information subscription matching the subscriptionId was modified successfully. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| ProblemDetails | O | 0..1 | 403 Forbidden | (NOTE 2) |
| NOTE 1: The manadatory HTTP error status code for the PUT method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply.  NOTE 2: Failure cases are described in clause 8.2.6.3. | | | | |

Table 8.2.2.3.3.3-4: Headers supported by the 307 Response Code on this resource

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

Table 8.2.2.3.3.3-5: Headers supported by the 308 Response Code on this resource

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

###### 8.2.2.3.3.4 DELETE

This method removes the location information subscription information from the EES. This method shall support the URI query parameters specified in the table 8.2.2.3.3.4-1.

Table 8.2.2.3.3.4-1: URI query parameters supported by the DELETE method on this resource

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

This method shall support the request data structures specified in table 8.2.2.3.3.4-2 and the response data structures and response codes specified in table 8.2.2.3.3.4-3.

Table 8.2.2.3.3.4-2: Data structures supported by the DELETE Request Body on this resource

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

Table 8.2.2.3.3.4-3: Data structures supported by the DELETE Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| n/a | M | 1 | 204 No Content | The individual Location information subscription matching the subscriptionId is deleted. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| NOTE: The mandatory HTTP error status code for the DELETE method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.2.2.3.3.4-4: Headers supported by the 307 Response Code on this resource

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

Table 8.2.2.3.3.4-5: Headers supported by the 308 Response Code on this resource

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

##### 8.2.2.3.4 Resource Custom Operations

None.

### 8.2.3 Custom Operations without associated resources

#### 8.2.3.1 Overview

The structure of the custom operation URIs of the Eees\_UELocation API is shown in Figure 8.2.3.1-1.



Figure 8.2.3.1-1: Custom operation URI structure of the Eees\_UELocation API

Custom operations used for this API are summarized in table 8.2.3.1-1.

Table 8.2.3.1-1: Custom operations without associated resources

|  |  |  |  |
| --- | --- | --- | --- |
| Operation name | Custom operation URI | Mapped HTTP method | Description |
| Fetch | /fetch | POST | Fetch an UE location information. |

#### 8.2.3.2 Operation: Fetch

##### 8.2.3.2.1 Description

This custom operation allows the EAS to fetch an UE's location information from the EES.

##### 8.2.3.2.2 Operation Definition

This operation shall support the request data structures and response codes and data structures specified in tables 8.2.3.2.2-1 and 8.2.3.2.2-2.

Table 8.2.3.2.2-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| LocationRequest | M | 1 | Parameters to request to fetch the UE location information. |

Table 8.2.3.2.2-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| LocationResponse | M | 1 | 200 OK | Upon success, the UE location information returned by the EES. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| ProblemDetails | O | 0..1 | 403 Forbidden | (NOTE 2) |
| NOTE 1: The manadatory HTTP error status code for the POST method listed in the Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply.  NOTE 2: Failure cases are described in clause 8.2.6.3. | | | | |

Table 8.2.3.2.2-3: Headers supported by the 307 Response Code on this resource

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

Table 8.2.3.2.2-4: Headers supported by the 308 Response Code on this resource

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

### 8.2.4 Notifications

#### 8.2.4.1 General

Table 8.2.4.1-1: Notifications overview

|  |  |  |  |
| --- | --- | --- | --- |
| Notification | Callback URI | HTTP method or custom operation | Description  (service operation) |
| Location Information Notification | {notificationDestination} | POST | Notifies the subscriber EAS the UE(s) location information. |
| User Consent Revocation Notification | {revocationNotifUri} | POST | The user consent revocation notification from the EES to the EAS to inform about the revocation of user consent for one or several UE(s). |

#### 8.2.4.2 Location Information Notification

##### 8.2.4.2.1 Description

Location Information Notification is used by the EES to notify an EAS with location information of UE(s). The EES shall subscribe to the location information for UE(s) via the Individual Location Information Subscription resource.

##### 8.2.4.2.2 Target URI

The callback URI **{notificationDestination}** shall be used with the callback URI variables defined in table 8.2.4.2.2-1.

Table 8.2.4.2.2-1: Callback URI variables

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| notificationDestination | Uri | Callback reference provided by the EAS during the UE location information subscription creation/update/modification procedure. |

##### 8.2.4.2.3 Standard Methods

###### 8.2.4.2.3.1 POST

This method shall support the request data structures specified in table 8.2.4.2.3.1-1 and the response data structures and response codes specified in table 8.2.4.2.3.1-2.

Table 8.2.4.2.3.1-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| LocationNotification | M | 1 | Notification of UE(s) location information. |

Table 8.2.4.2.3.1-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| n/a |  |  | 204 No Content | The receipt of the Notification is acknowledged. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI representing the end point of an alternative EAS where the notification should be sent.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI representing the end point of an alternative EAS where the notification should be sent.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| NOTE: The manadatory HTTP error status code for the POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.2.4.2.3.1-3: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative EAS towards which the notification should be redirected. |

Table 8.2.4.2.3.1-4: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative EAS towards which the notification should be redirected. |

#### 8.2.4.3 User Consent Revocation Notification

##### 8.2.4.3.1 Description

The User Consent Revocation Notification is used by the EES to report the revocation of user consent for one or several UE(s) to the EAS.

##### 8.2.4.3.2 Target URI

The Callback URI **"{revocationNotifUri}"** shall be used with the callback URI variables defined in table 8.2.4.3.2-1.

Table 8.2.4.3.2-1: Callback URI variables

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| revocationNotifUri | Uri | Callback reference provided by the EAS during the UE location information subscription creation or modification procedure if the UserConsentRevocation feature is supported, within the LocationSubscription data structure as specified in clauses 8.2.2.2.3.1, 8.2.2.3.3.3 and 8.2.5.2.2, or the LocationSubscriptionPatch data structure as specified in clauses 8.2.2.3.3.2, and 8.2.5.2.3. |

##### 8.2.4.3.3 Standard Methods

8.2.4.3.3.1 POST

This method shall support the request data structures specified in table 8.2.4.3.3.1-1 and the response data structures and response codes specified in table 8.2.4.3.3.1-2.

Table 8.2.4.3.3.1-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| ConsentRevocNotif | M | 1 | Contains the user consent revocation information. |

8.2.4.3.3.1-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| n/a |  |  | 204 No Content | Successful case. The user consent revocation notification is successfully received. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI representing the end point of an alternative EAS where the notification should be sent.  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 URI representing the end point of an alternative EAS where the notification should be sent.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6]. |
| NOTE: The manadatory HTTP error status code for the HTTP POST method listed in Table 5.2.6-1 of TS 29.122 [6] also apply. | | | | |

Table 8.2.4.3.3.1-3: Headers supported by the 307 Response Code on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Data type | Cardinality | Description |
| Location | string | 1 | An alternative URI representing the end point of an alternative EAS towards which the notification should be redirected. |

Table 8.2.4.3.3.1-4: Headers supported by the 308 Response Code on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Data type | Cardinality | Description |
| Location | string | 1 | An alternative URI representing the end point of an alternative EAS towards which the notification should be redirected. |

### 8.2.5 Data Model

#### 8.2.5.1 General

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

Table 8.2.5.1-1 specifies the data types defined specifically for the Eees\_UELocation API service.

Table 8.2.5.1-1: Eees\_UELocation API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| ConsentRevoked | 8.2.5.2.9 | Represents the information related to revoked user consent(s). | UserConsentRevocation |
| ConsentRevocNotif | 8.2.5.2.8 | Represents the user consent revocation information conveyed in a user consent revocation notification. | UserConsentRevocation |
| LocationSubscription | 8.2.5.2.2 | Represents the location information subscription. |  |
| LocationSubscriptionPatch | 8.2.5.2.3 | Used to request the partial update of location information subscription. |  |
| LocationNotification | 8.2.5.2.4 | UE location information notification from EES to EAS. |  |
| LocationEvent | 8.2.5.2.5 | Location information related an Individual UE. |  |
| LocationRequest | 8.2.5.2.6 | UE location information request |  |
| LocationResponse | 8.2.5.2.7 | Contains the response to a UE location information retrieval request. |  |

Table 8.2.5.1-2 specifies data types re-used by the Eees\_UELocation API service.

Table 8.2.5.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| Gpsi | 3GPP TS 29.571 [8] | Used to identify the UE in the query parameter, for which location information is queried. |  |
| LocationQoS | 3GPP TS 29.572 [11] | Used to indicate the location quality of service, of the location information queried. |  |
| LocationInfo | 3GPP TS 29.122 [6] | The location information related to the UE . |  |
| DateTime | 3GPP TS 29.122 [6] | Used to capture the expiration time of EAS subscription for location information reporting. |  |
| ReportingInformation | 3GPP TS 29.523 [13] | Used to indicate the reporting requirement, only the following information are applicable:  - immRep  - notifMethod  - maxReportNbr  - monDur  - repPeriod |  |
| SupportedFeatures | 3GPP TS 29.571 [8] | Used to negotiate the applicability of optional features. |  |
| TestNotification | 3GPP TS 29.122 [6] | Following differences apply:  - The SCEF is the EES; and  - The SCS/AS is the subscribing EAS. |  |
| UcPurpose | 3GPP TS 29.503 [22] | Represents the purpose of a user consent. | UserConsentRevocation |
| Uri | 3GPP TS 29.122 [6] |  |  |
| WebsockNotifConfig | 3GPP TS 29.122 [6] | Following differences apply:  - The SCEF is the EES; and  - The SCS/AS is the subscribing EAS. |  |
| UeMobilityExposure | 3GPP TS 29.522 [10] | The predictive location information related to the UE, |  |
| GroupId | 3GPP TS 29.571 [8] | Used to present the internal group identifier in location subscription. |  |
| ExternalId | TS 29.122 [6] | Represents an external identifier. |  |
| ExternalGroupId | 3GPP TS 29.571 [8] | Used to present the external group identifier in location subscription. |  |
| Accuracy | 3GPP TS 29.122 [6] | Used by EAS to indicate the desired granularity of the requested location information. |  |

#### 8.2.5.2 Structured data types

##### 8.2.5.2.1 Introduction

##### 8.2.5.2.2 Type: LocationSubscription

Table 8.2.5.2.2-1: Definition of type LocationSubscription

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| easId | string | M | 1 | The application identifier of the EAS (e.g. URI, FQDN) subscribing for location information report. |  |
| ueId | Gpsi | O | 0..1 | Identifier of the UE for which the location information reporting is subscribed for. (NOTE) |  |
| intGrpId | GroupId | O | 0..1 | The internal group identifier, identifying the group of UEs for which the location information reporting is subscribed for. (NOTE) |  |
| extGrpId | ExternalGroupId | O | 0..1 | The external group identifier, identifying the group of UEs for which the location information reporting is subscribed for. (NOTE) |  |
| expTime | DateTime | O | 0..1 | Indicates the expiration time of the subscription. If the expiration time is not present, then it indicates that the EAS subscription never expires. |  |
| locGran | Accuracy | O | 0..1 | Indicates the format of the location information that the EAS supports. EAS wishes to receive the location information report from the EES in the indicated format. |  |
| locQos | LocationQoS | O | 0..1 | Indicates the location QoS as specified in 3GPP TS 29.572 [11]. |  |
| eventReq | ReportingInformation | O | 0..1 | Represents the reporting requirements of the location information event subscription. |  |
| notificationDestination | Uri | C | 0..1 | URI where the location information notification should be delivered to. This attribute shall be present in HTTP POST message to EES and shall be present in HTTP PUT request. |  |
| revocationNotifUri | Uri | C | 0..1 | Contains the URI via which the EAS desires to receive user consent revocation notifications.  If the "UserConsentRevocation" feature is supported by the EAS, this attribute shall be present in an HTTP POST request/response, and HTTP PUT request/response, and HTTP PATCH responses, and may be present in an HTTP PATCH request, if the revocation notification needs to be updated. | UserConsentRevocation |
| requestTestNotification | boolean | O | 0..1 | Set to true by Subscriber to request the EES to send a test notification as defined in clause 7.6. Set to false or omitted otherwise. | Notification\_test\_event |
| websockNotifConfig | WebsockNotifConfig | O | 0..1 | Configuration parameters to set up notification delivery over Websocket protocol as defined in clause 7.6. | Notification\_websocket |
| 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 to create a new subscription resource, if at least one feature is supported, and in the HTTP POST response of successful resource creation, if it was present in the associated HTTP POST request. |  |
| NOTE: Only one of UE Identifier (ueId), Internal group identifier (intGrpId), and External group identifier (extGrpId) shall be included. | | | | | |

NOTE: To protect the privacy of the user, the MSISDN can be used as GPSI only after obtaining user's consent.

##### 8.2.5.2.3 Type: LocationSubscriptionPatch

Table 8.2.5.2.3-1: Definition of type LocationSubscriptionPatch

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| eventReq | ReportingInformation | O | 0..1 | The reporting requirements of the location information event subscription to be updated. |  |
| expTime | DateTime | O | 0..1 | Indicates the proposed expiration time of the subscription. |  |
| notificationDestination | Uri | O | 0..1 | Updated URI where the location information notification should be delivered to. |  |
| revocationNotifUri | Uri | O | 0..1 | Contains the updated URI via which the EAS desires to receive user consent revocation notifications.  This attribute may be present if the "UserConsentRevocation" feature is supported by the EAS. | UserConsentRevocation |
| locGran | Accuracy | O | 0..1 | Updated format of the location information that the EAS supports. |  |
| locQos | LocationQoS | O | 0..1 | Updated location QoS, as specified in 3GPP TS 29.572 [11]. |  |

##### 8.2.5.2.4 Type: LocationNotification

Table 8.2.5.2.4-1: Definition of type LocationNotification

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| subId | string | M | 1 | String identifying the individual Location information subscription for which the location notification is delivered. |  |
| locEvs | array(LocationEvent) | M | 1..N | List of notifications that include the location information of the UE(s). |  |

##### 8.2.5.2.5 Type: LocationEvent

Table 8.2.5.2.5-1: Definition of type LocationEvent

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| ueId | Gpsi | M | 1 | Identifier of the UE for which the location information is reported. |  |
| locInf | LocationInfo | C | 0..1 | Actual Location information of the UE. (NOTE) |  |
| locInfPred | UeMobilityExposure | C | 0..1 | Predictive location information of the UE. (NOTE) |  |
| NOTE: Only one of "locInf" or "locInfPred" shall be included. | | | | | |

##### 8.2.5.2.6 Type: LocationRequest

Table 8.2.5.2.6-1: Definition of type LocationRequest

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| ueId | Gpsi | M | 1 | Identifier of the UE for which the location information is requested. |  |
| gran | Accuracy | O | 0..1 | Format in which the location information is requested by the EAS. |  |
| locQos | LocationQoS | O | 0..1 | Indicates the location quality of service of the requested location information. |  |
| 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 to retrieve UE location information, if at least one feature is supported. |  |

##### 8.2.5.2.7 Type: LocationResponse

Table 8.2.5.2.7-1: Definition of type LocationResponse

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| ueLocation | LocationInfo | M | 1 | Contains the requested UE location information. |  |
| 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 response for UE location information retrieval, if it was present in the associated HTTP POST request. |  |

##### 8.2.5.2.8 Type: ConsentRevocNotif

Table 8.2.5.2.8-1: Definition of type ConsentRevocNotif

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| subscriptionId | string | M | 1 | Contains the identifier of the subscription to which the notification is related. |  |
| consentsRevoked | array(ConsentRevoked) | M | 1..N | Indicates the revoked user consents. |  |

##### 8.2.5.2.9 Type: ConsentRevoked

Table 8.2.5.2.9-1: Definition of type ConsentRevoked

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| ucPurpose | UcPurpose | M | 1 | Identifies the purpose of the revoked user consent. |  |
| ueId | Gpsi | C | 0..1 | Contains the identifiers(s) of the UE(s) for which user consent was revoked.  (NOTE) |  |
| externalId | ExternalId | C | 0..1 | Indicates the user(s) for which user consent was revoked.  (NOTE) |  |
| NOTE: One of the "ueId" or "externalId" attributes shall be present. | | | | | |

#### 8.2.5.3 Simple data types and enumerations

None.

### 8.2.6 Error Handling

#### 8.2.6.1 General

For the Eees\_UELocation API, HTTP error handling shall be supported as specified in clause 7.7. In addition, the requirements in the following clauses are applicable for the Eees\_UELocation API.

#### 8.2.6.2 Protocol Errors

No specific protocol errors for the Eees\_UELocation API are specified.

#### 8.2.6.3 Application Errors

The application errors defined for the Eees\_UELocation API are listed in Table 8.2.6.3-1.

Table 8.2.6.3-1: Application errors

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
| CONSENT\_REVOCATION\_NOT\_SUPPORTED | 403 Forbidden | Indicates that the request is rejected because user consent management and enforcement is not supported by the client. |
| USER\_CONSENT\_NOT\_GRANTED | 403 Forbidden | Indicates that the request is rejected because user consent is not granted. |

### 8.2.7 Feature negotiation

General feature negotiation procedures are defined in clause 7.8. Table 8.2.7-1 lists the supported features for Eees\_UELocation API.

Table 8.2.7-1: Supported Features

|  |  |  |
| --- | --- | --- |
| **Feature number** | **Feature Name** | **Description** |
| 1 | Notification\_test\_event | Testing of notification connection is supported according to clause 7.6. |
| 2 | Notification\_websocket | The delivery of notifications over Websocket is supported according to clause 7.6. This feature requires that the Notification\_test\_event feature is also supported. |
| 3 | UserConsentRevocation | This feature indicates the support of user consent revocation management and enforcement (e.g. stop data processing). |
| 4 | enNB1 | This feature indicates the support of enhancements to this application layer API in Rel-18. |

## 8.3 Eees\_UEIdentifier API

### 8.3.1 Introduction

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

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

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

The request URIs used in HTTP requests shall have the Resource URI structure as defined in clause 7.5, i.e.:

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

with the following components:

- The {apiRoot} shall be set as described in clause 7.5.

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

- The <apiVersion> shall be "v1".

- The <apiSpecificResourceUriPart> shall be set as described in clause 8.3.2.

### 8.3.2 Resources

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

### 8.3.3 Custom Operations without associated resources

#### 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. The "Get" operation should be used instead. |
| 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.

#### 8.3.3.2 Operation: Fetch

This operation is deprecated. The operation defined in clause 8.3.3.3 should be used instead.

##### 8.3.3.2.1 Description

This custom operation allows the EAS to fetch a UE's identifier, which is UE ID as specified in 3GPP TS 23.558 [2], from the EES for a given UE information.

##### 8.3.3.2.2 Operation Definition

This operation shall support the request data structures and the response data structure and response codes specified in the tables 8.3.3.2.2-1 and 8.3.3.2.2-2.

Table 8.3.3.2.2-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| UserInformation | M | 1 | Information about the User or the UE, available at the EAS. |

Table 8.3.3.2.2-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| Gpsi | M | 1 | 200 OK | The UE Identifier (UE ID), returned by the Edge Enabler Server. |
| 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 manadatory HTTP error status code for the POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.3.3.2.2-3: 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 8.3.3.2.2-4: 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. |

#### 8.3.3.3 Operation: Get

##### 8.3.3.3.1 Description

This custom operation allows the 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 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. |

### 8.3.4 Notifications

None.

### 8.3.5 Data Model

#### 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. |  |

#### 8.3.5.2 Structured data types

##### 8.3.5.2.1 Introduction

##### 8.3.5.2.2 Type: UserInformation

This data type is deprecated.

Table 8.3.5.2.2-1: Definition of type UserInformation

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| easId | string | M | 1 | The application identifier of the EAS (e.g. URI, FQDN) requesting the UE Identifier information. |  |
| easProviderId | string | O | 0..1 | Identifier of the ASP that provides the EAS. |  |
| ipAddr | IpAddr | M | 1 | IP address of the UE. |  |
| 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. |  |

##### 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) | C | 1..N | The list of EAS Identifiers for which the UE IDs are requested by the service consumer for the given user information (e.g. IP address).  (NOTE 1) |  |
| easProviderId | string | O | 0..1 | Identifier of the ASP that provides the EAS. |  |
| ueId | 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) |  |
| 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) |  |
| 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: This attribute shall be present when the service consumer is an EAS. If this attribute is not present, it shall be interpreted by the EES that it is an EEC that is requesting the UE ID.  NOTE 2: This attribute may be present only if the service consumer is an EEC.  NOTE 3: This attribute shall be present when the service consumer is an EAS. When the service consumer is an EEC, this attribute, if provided, may contain both UE's private IPv6 address and UE's private IPv4 address.  NOTE 4: At least one of these attributes shall be present.  NOTE 5: This attribute shall be present only when the service consumer is an EAS and the EAS recognizes the UE IP address is a public IP address different from the actual UE IP address (private IP address). | | | | | |

##### 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 |
| ueIds | array(UeId) | C | 1..N | Represents the UE Identifier(s). |  |

##### 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.  This attribute shall be provided only if it is the Edge UE ID that needs to be returned.  (NOTE) |  |
| afSpecUeId | Gpsi | C | 0..1 | Identifier of the AF specific UE Identifier in the GPSI fomat of External ID.  This attribute shall be provided only if it is the AF-specific UE ID that needs to be returned.  (NOTE) |  |
| easId | string | M | 0..1 | Represents the identifier of the EAS for which the provided UE ID is related.  This attribute shall be present only if the "easIds" attribute was provided in the corresponding request. |  |
| NOTE: These attributes are mutually exclusive. Either one of them shall be present. | | | | | |

#### 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 |
|  |  |  |  |

### 8.3.6 Error Handling

General error responses are defined in clause 7.7.

### 8.3.7 Feature negotiation

General feature negotiation procedures are defined in clause 7.8. Table 8.3.7-1 lists the supported features for Eees\_UEIdentifier API.

Table 8.3.7-1: Supported Features

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

## 8.4 Eees\_AppClientInformation API

### 8.4.1 Introduction

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

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

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

The request URIs used in HTTP requests shall have the Resource URI structure as defined in clause 7.5, i.e.:

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

with the following components:

- The {apiRoot} shall be set as described in clause 7.5.

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

- The <apiVersion> shall be "v1".

- The <apiSpecificResourceUriPart> shall be set as described in clause 8.4.2.

### 8.4.2 Resources

#### 8.4.2.1 Overview

This clause describes the structure for the Resource URIs and the resources and methods used for the service.

Figure 8.4.2.1-1 depicts the resource URIs structure for the Eees\_AppClientInformation API.



Figure 8.4.2.1-1: Resource URI structure of the Eees\_AppClientInformation API

Table 8.4.2.1-1 provides an overview of the resources and applicable HTTP methods.

Table 8.4.2.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method or custom operation | Description |
| Application Client Information Subscriptions | /subscriptions | POST | Creates a subscription for reporting of AC information to the EAS. |
| Individual Application Client Information Subscription | /subscriptions/{subscriptionId} | GET | Retrieves the Individual AC information subscription information identified by subscriptionId. |
| PATCH | Partially updates the Individual AC information subscription identified by subscriptionId. |
| PUT | Fully replaces the Individual AC information subscription identified by subscriptionId. |
| DELETE | Removes the Individual AC information subscription identified by subscriptionId. |

#### 8.4.2.2 Resource: Application Client Information Subscriptions

##### 8.4.2.2.1 Description

This resource represents all AC information subscriptions at a given EES.

##### 8.4.2.2.2 Resource Definition

Resource URI: **{apiRoot}/eees-appclientinformation/<apiVersion>/subscriptions**

This resource shall support the resource URI variables defined in the table 8.4.2.2.2-1.

Table 8.4.2.2.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5 |

##### 8.4.2.2.3 Resource Standard Methods

###### 8.4.2.2.3.1 POST

This method creates the AC information subscription at the EES for reporting of the AC capabilities. This method shall support the URI query parameters specified in the table 8.4.2.2.3.1-1.

Table 8.4.2.2.3.1-1: URI query parameters supported by the POST method on this resource

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

This method shall support the request data structures specified in table 8.4.2.2.3.1-2 and the response data structures and response codes specified in table 8.4.2.2.3.1-3.

Table 8.4.2.2.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| ACInfoSubscription | M | 1 | Create a new AC information subscription. |

Table 8.4.2.2.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| ACInfoSubscription | M | 1 | 201 Created | The individual AC information subscription resource created successfully. The information about the confirmed subscription at the EES is provided in the response body.  The URI of the created resource shall be retruned in the "Location" HTTP header. |
| 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 8.4.2.2.3.1-4: Headers supported by the 201 response code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains the URI of the newly created resource, according to the structure: {apiRoot}/eees-appclientinformation/<apiVersion>/subscriptions/{subscriptionId} |

##### 8.4.2.2.4 Resource Custom Operations

None.

#### 8.4.2.3 Resource: Individual Application Client Information Subscription

##### 8.4.2.3.1 Description

This resource represents the individual application client information subscription of an EAS at a given EES.

##### 8.4.2.3.2 Resource Definition

Resource URI: **{apiRoot}/eees-appclientinformation/<apiVersion>/subscriptions/{subscriptionId}**

This resource shall support the resource URI variables defined in the table 8.4.2.3.2-1.

Table 8.4.2.3.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5 |
| subscriptionId | string | Identifies an individual AC information subscription. |

##### 8.4.2.3.3 Resource Standard Methods

###### 8.4.2.3.3.1 GET

This method retrieves the AC information subscription information at EES. This method shall support the URI query parameters specified in the table 8.4.2.3.3.1-1.

Table 8.4.2.3.3.1-1: URI query parameters supported by the GET method on this resource

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

This method shall support the request data structures specified in table 8.4.2.3.3.1-2 and the response data structures and response codes specified in table 8.4.2.3.3.1-3.

Table 8.4.2.3.3.1-2: Data structures supported by the GET Request Body on this resource

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

Table 8.4.2.3.3.1-3: Data structures supported by the GET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| ACInfoSubscription | M | 1 | 200 OK | The AC information subscription information is returned by the EES. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| NOTE: The manadatory HTTP error status code for the GET method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.4.2.3.3.1-4: Headers supported by the 307 Response Code on this resource

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

Table 8.4.2.3.3.1-5: Headers supported by the 308 Response Code on this resource

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

###### 8.4.2.3.3.2 PATCH

This method partially updates the individual AC information subscription information at the EES. This method shall support the URI query parameters specified in the table 8.4.2.3.3.2-1.

Table 8.4.2.3.3.2-1: URI query parameters supported by the PATCH method on this resource

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

This method shall support the request data structures specified in table 8.4.2.3.3.2-2 and the response data structures and response codes specified in table 8.4.2.3.3.2-3.

Table 8.4.2.3.3.2-2: Data structures supported by the PATCH Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| ACInfoSubscriptionPatch | M | 1 | Request to partially update the individual AC information subscription matching the subscriptionId at the EES. |

Table 8.4.2.3.3.2-3: Data structures supported by the PATCH Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| ACInfoSubscription | M | 1 | 200 OK | The individual AC information subscription matching the subscriptionId was modified successfully and the updated AC information subscription information is returned in the response. |
| n/a |  |  | 204 No Content | The individual AC information subscription matching the subscriptionId was modified successfully. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| NOTE: The manadatory HTTP error status code for the PATCH method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.4.2.3.3.2-4: Headers supported by the 307 Response Code on this resource

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

Table 8.4.2.3.3.2-5: Headers supported by the 308 Response Code on this resource

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

###### 8.4.2.3.3.3 PUT

This method updates the AC information subscription information at the EES by completely replacing the existing subscription data (except easId). This method shall support the URI query parameters specified in the table 8.4.2.3.3.3-1.

Table 8.4.2.3.3.3-1: URI query parameters supported by the PUT method on this resource

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

This method shall support the request data structures specified in table 8.4.2.3.3.3-2 and the response data structures and response codes specified in table 8.4.2.3.3.3-3.

Table 8.4.2.3.3.3-2: Data structures supported by the PUT Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| ACInfoSubscription | M | 1 | Details of individual AC information subscription matching the subscriptionId to be updated at the EES. |

Table 8.4.2.3.3.3-3: Data structures supported by the PUT Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| ACInfoSubscription | M | 1 | 200 OK | The individual AC information subscription matching the subscriptionId was modified successfully and the updated AC subscription information is returned in the response. |
| n/a |  |  | 204 No Content | The individual AC information subscription matching the subscriptionId was modified successfully. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| NOTE: The manadatory HTTP error status code for the PUT method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.4.2.3.3.3-4: Headers supported by the 307 Response Code on this resource

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

Table 8.4.2.3.3.3-5: Headers supported by the 308 Response Code on this resource

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

###### 8.4.2.3.3.4 DELETE

This method removes the AC information subscription information from the EES. This method shall support the URI query parameters specified in the table 8.4.2.3.3.4-1.

Table 8.4.2.3.3.4-1: URI query parameters supported by the DELETE method on this resource

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

This method shall support the request data structures specified in table 8.4.2.3.3.4-2 and the response data structures and response codes specified in table 8.4.2.3.3.4-3.

Table 8.4.2.3.3.4-2: Data structures supported by the DELETE Request Body on this resource

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

Table 8.4.2.3.3.4-3: Data structures supported by the DELETE Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| n/a | M | 1 | 204 No Content | The individual AC information subscription matching the subscriptionId is deleted. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| NOTE: The mandatory HTTP error status code for the DELETE method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.4.2.3.3.4-4: Headers supported by the 307 Response Code on this resource

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

Table 8.4.2.3.3.4-5: Headers supported by the 308 Response Code on this resource

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

##### 8.4.2.3.4 Resource Custom Operations

None.

### 8.4.3 Custom Operations without associated resources

None.

### 8.4.4 Notifications

#### 8.4.4.1 General

Table 8.4.4.1-1: Notifications overview

|  |  |  |  |
| --- | --- | --- | --- |
| Notification | Callback URI | HTTP method or custom operation | Description  (service operation) |
| AC Information Notification | {notificationDestination} | POST | Notifies the subscriber EAS the AC information. |

#### 8.4.4.2 AC Information Notification

##### 8.4.4.2.1 Description

AC Information Notification is used by the EES to notify an EAS with AC information matching the filter criteria.

##### 8.4.4.2.2 Target URI

The callback URI **{notificationDestination}** shall be used with the callback URI variables defined in table 8.4.4.2.2-1.

Table 8.4.4.2.2-1: Callback URI variables

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| notificationDestination | Uri | Callback reference provided by the EAS during AC information subscription creation/update/modification procedure. |

##### 8.4.4.2.3 Standard Methods

###### 8.4.4.2.3.1 POST

This method shall support the request data structures specified in table 8.4.4.2.3.1-1 and the response data structures and response codes specified in table 8.4.4.2.3.1-2.

Table 8.4.4.2.3.1-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| ACInfoNotification | M | 1 | Notification of AC(s) information. |

Table 8.4.4.2.3.1-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| n/a |  |  | 204 No Content | The receipt of the Notification is acknowledged. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI representing the end point of an alternative EAS where the notification should be sent.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI representing the end point of an alternative EAS where the notification should be sent.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| NOTE: The manadatory HTTP error status code for the POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.2.4.4.3.1-3: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative EAS towards which the notification should be redirected. |

Table 8.2.4.4.3.1-4: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative EAS towards which the notification should be redirected. |

### 8.4.5 Data Model

#### 8.4.5.1 General

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

Table 8.4.5.1-1 specifies the data types defined specifically for the Eees\_AppClientInformation API service.

Table 8.4.5.1-1: Eees\_AppClientInformation API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| ACInfoSubscription | 8.4.5.2.2 | Represents the AC information subscription. |  |
| ACInfoSubscriptionPatch | 8.4.5.2.3 | Used to request the partial update of AC information subscription. |  |
| ACFilters | 8.4.5.2.4 | Used to list the set of characteristics to discover the ACs. |  |
| ACInfoNotification | 8.4.5.2.5 | AC information notification matching the filter criteria. |  |
| ACInformation | 8.4.5.2.6 | Used to represent the AC information in the AC information notification. |  |

Table 8.4.5.1-2 specifies data types re-used by the Eees\_AppClientInformation API service.

Table 8.4.5.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| DateTime | 3GPP TS 29.122 [6] | Used to capture the expiration time of EAS subscription for application client information reporting. |  |
| ReportingInformation | 3GPP TS 29.523 [13] | Used to indicate the reporting requirement, only the following information are applicable:  - immRep  - notifMethod  - maxReportNbr  - monDur  - repPeriod |  |
| Uri | 3GPP TS 29.122 [6] |  |  |
| WebsockNotifConfig | 3GPP TS 29.122 [6] | Following differences apply:  - The SCEF is the EES; and  - The SCS/AS is the subscribing EAS. |  |
| SupportedFeatures | 3GPP TS 29.571 [8] | Used to negotiate the applicability of optional features. |  |
| TestNotification | 3GPP TS 29.122 [6] | Following differences apply:  - The SCEF is the EES; and  - The SCS/AS is the subscribing EAS. |  |
| LocationArea5G | 3GPP TS 29.122 [6] | Used to define the geographic and topological area. |  |
| ScheduledCommunicationTime | 3GPP TS 29.122 [6] | Used to define the operation schedule of AC. |  |
| Gpsi | 3GPP TS 29.571 [8] | Used to identify the UE in the query parameter, for which location information is queried. |  |
| ACProfile | 3GPP TS 24.558 [14] | Used to represent the profile the information of the Application Client. |  |
| ServiceArea | Clause 9.1.5.2.5 | Used to represent the EAS service area in ACFilters data type. |  |
| ACServiceKPIs | 3GPP TS 24.558 [14] | Used to represent the minimum and maximum AC service KPI information of the Application Client. |  |

#### 8.4.5.2 Structured data types

##### 8.4.5.2.1 Introduction

##### 8.4.5.2.2 Type: ACInfoSubscription

Table 8.4.5.2.2-1: Definition of type ACInfoSubscription

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| easId | string | M | 1 | The application identifier of the EAS (e.g. URI, FQDN) subscribing for AC information report. |  |
| acFltrs | array(ACFilters) | O | 1..N | Filters to retrieve the information about particular ACs. |  |
| expTime | DateTime | O | 0..1 | Indicates the expiration time of the subscription. If the expiration time is not present, then it indicates that the EAS subscription never expires. |  |
| eventReq | ReportingInformation | O | 0..1 | Represents the reporting requirements of the AC information subscription. (NOTE) |  |
| notificationDestination | Uri | C | 0..1 | URI where the notification on information about particular ACs should be delivered to. This attribute shall be present in HTTP POST message to EES and maybe present in HTTP PUT request. |  |
| requestTestNotification | boolean | O | 0..1 | Set to true by Subscriber to request the EES to send a test notification as defined in clause 7.6. Set to false or omitted otherwise. | Notification\_test\_event |
| websockNotifConfig | WebsockNotifConfig | O | 0..1 | Configuration parameters to set up notification delivery over Websocket protocol as defined in clause 7.6. | Notification\_websocket |
| 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 in the response of successful resource creation. |  |
| NOTE: The applicable values of the ReportingInformation data type are, "immRep", "notifMethod", "maxReportNbr", "monDur", "repPeriod". | | | | | |

##### 8.4.5.2.3 Type: ACInfoSubscriptionPatch

Table 8.4.5.2.3-1: Definition of type ACInfoSubscriptionPatch

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| eventReq | ReportingInformation | O | 0..1 | The reporting requirements of the AC information event subscription to be updated. |  |
| expTime | DateTime | O | 0..1 | Indicates the proposed expiration time of the subscription. |  |
| notificationDestination | Uri | O | 0..1 | Updated URI where the AC information notification should be delivered to. |  |
| acFltrs | array(ACFilters) | O | 1..N | Filters to retrieve the information about particular ACs. |  |

##### 8.4.5.2.4 Type: ACFilters

Table 8.4.5.2.4-1: Definition of type ACFilters

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| acTypes | array(string) | O | 1..N | List of AC types or categories to be matched. |  |
| ecspIds | array(string) | O | 1..N | The list of identifiers of the ECSPs associated with the EEC. |  |
| acIds | array(string) | O | 1..N | List of the identifiers of the AC(s) to be matched. |  |
| svcArea | ServiceArea | O | 0..1 | EAS service area for identifying the UEs with matching expected geographical and topological location(s). |  |
| maxAcKpi | ACServiceKPIs | O | 0..1 | Maximum value of the AC service KPIs to identify the matched ACs. The service KPI values in this attribute need to be higher than the service KPIs information of the AC profiles provided during registrations and/or discovery need to be lower. |  |
| minAcKpi | ACServiceKPIs | O | 0..1 | Minimum value of the AC service KPIs to identify the matched ACs. The service KPI values in this attribute need to be lower than the service KPIs information of the AC profiles provided during registrations and/or discovery need to be lower. |  |
| opSchds | array(ScheduledCommunicationTime) | O | 1..N | The operation schedule of the EAS to be matched with operation schedule of the AC. |  |
| ueIds | array(Gpsi) | O | 1..N | List of UE identifiers hosting the AC. |  |
| locInfs | LocationArea5G | O | 0..1 | List of location(s) of the UE(s) hosting the AC. |  |

##### 8.4.5.2.5 Type: ACInfoNotification

Table 8.4.5.2.5-1: Definition of type ACInfoNotification

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| subId | string | M | 1 | String identifying the individual AC information subscription for which the AC information notification is delivered. |  |
| acInfs | array(ACInformation) | M | 1..N | List of notifications that include the information of the ACs matching the filter criteria. |  |

##### 8.4.5.2.6 Type: ACInformation

Table 8.4.5.2.6-1: Definition of type ACInformation

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| acProfs | array(ACProfile) | M | 1..N | List of ACs profile information. |  |
| ueIds | array(Gpsi) | O | 1..N | List of UE identifiers hosting the ACs. |  |
| ueLocInfs | LocationArea5G | O | 0..1 | Location information of the UEs hosting the AC. |  |

#### 8.4.5.3 Simple data types and enumerations

None.

### 8.4.6 Error Handling

#### 8.4.6.1 General

For the Eees\_AppClientInformation API, HTTP error responses, protocol errors and application errors shall be supported as specified in clause 7.7.

In addition, the requirements in the following clauses are applicable for the Eees\_AppClientInformation API.

#### 8.4.6.2 Protocol Errors

No specific protocol errors for the Eees\_AppClientInformation API are specified.

#### 8.4.6.3 Application Errors

The application errors defined for the Eees\_AppClientInformation API are listed in Table 8.4.6.3-1.

Table 8.4.6.3-1: Application errors

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
| REGISTRATION\_REQUIRED | 403 Forbidden | Indicates that registration at the EES is required for the EAS to be authorized to perform the operation. |

### 8.4.7 Feature negotiation

General feature negotiation procedures are defined in clause 7.8. Table 8.4.7-1 lists the supported features for Eees\_AppClientInformation API.

Table 8.4.7-1: Supported Features

|  |  |  |
| --- | --- | --- |
| **Feature number** | **Feature Name** | **Description** |
| 1 | Notification\_test\_event | Testing of notification connection is supported according to clause 7.6. |
| 2 | Notification\_websocket | The delivery of notifications over Websocket is supported according to clause 7.6. This feature requires that the Notification\_test\_event feature is also supported. |

## 8.5 Eees\_SessionWithQoS API

### 8.5.1 Introduction

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

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

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

The request URIs used in HTTP requests shall have the Resource URI structure as defined in clause 7.5, i.e.:

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

with the following components:

- The {apiRoot} shall be set as described in clause 7.5.

- The <apiName>shall be "eees-session-with-qos".

- The <apiVersion> shall be "v1".

- The <apiSpecificResourceUriPart> shall be set as described in clause 8.5.2.

### 8.5.2 Resources

#### 8.5.2.1 Overview

This clause describes the structure for the Resource URIs and the resources and methods used for the service.

Figure 8.5.2.1-1 depicts the resource URIs structure for the Eees\_SessionWithQoS API.



Figure 8.5.2.1-1: Resource URI structure of the Eees\_SessionWithQoS API

Table 8.5.2.1-1 provides an overview of the resources and applicable HTTP methods.

Table 8.5.2.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method or custom operation | Description |
| Sessions with QoS | /sessions | POST | Create a new individual Session with QoS |
| GET | Read all subscription resources for given EAS. |
| Individual Session with QoS | /sessions/{sessionId} | PUT | Fully replace an existing Individual Session with QoS resource identified by a sessionId. |
| PATCH | Partially update an existing Individual Session with QoS resource identified by a sessionId |
| DELETE | Remove an Individual Session with QoS resource identified by a sessionId. |
| GET | Read a subscription resource for a sessionId. |

#### 8.5.2.2 Resource: Sessions with QoS

##### 8.5.2.2.1 Description

This resource represents session information of all the data sessions with a specific QoS setting at a given Edge Enabler Server.

##### 8.5.2.2.2 Resource Definition

Resource URI: **{apiRoot}/eees-session-with-qos/<apiVersion>/sessions**

This resource shall support the resource URI variables defined in the table 8.5.2.2.2-1.

Table 8.5.2.2.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5 |

##### 8.5.2.2.3 Resource Standard Methods

###### 8.5.2.2.3.1 POST

This method requests resources for a data session between AC and EAS with a specific QoS and may create the session information subscription at the Edge Enabler Server for receiving the user plane event notification of the session information. This method shall support the URI query parameters specified in table 8.5.2.2.3.1-1.

Table 8.5.2.2.3.1-1: URI query parameters supported by the POST method on this resource

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

This method shall support the request data structures specified in table 8.5.2.2.3.1-2 and the response data structures and response codes specified in table 8.5.2.2.3.1-3.

Table 8.5.2.2.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| SessionWithQoS | M | 1 | Parameters to create a subscription for a session with required QoS for the service requirement. |

Table 8.5.2.2.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| SessionWithQoS | M | 1 | 201 Created | The session is successfully set up with requested QoS, and the session information is provided in the response body.  The URI of the created resource shall be returned in the "Location" HTTP header. |
| ProblemDetails | O | 0..1 | 403 Forbidden | (NOTE 2) |
| NOTE 1: 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.  NOTE 2: Failure cases are described in clause 8.5.6.3. | | | | |

Table 8.5.2.2.3.1-4: Headers supported by the 201 response code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains the URI of the newly created resource, according to the structure: {apiRoot}/ eees-session-with-qos/<apiVersion>/sessions/{sessionId} |

###### 8.5.2.2.3.2 GET

The GET method allows to read all active subscriptions for a given EAS. The EAS shall initiate the HTTP GET request message and the EES shall respond to the message. This method shall support the URI query parameters specified in table 8.5.2.2.3.2-1.

Table 8.5.2.2.3.2-1: URI query parameters supported by the GET method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| eas-id | string | M | 1 | Represents the application identifier of the EAS , e.g. URI, FQDN, that is querying the status of subscriptions. |

This method shall support the request data structures specified in table 8.5.2.2.3.2-2 and the response data structures and response codes specified in table 8.5.2.2.3.2-3.

Table 8.5.2.2.3.2-2: Data structures supported by the GET Request Body on this resource

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

Table 8.5.2.2.3.2-3: Data structures supported by the GET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| array(SessionWithQoS) | M | 1..N | 200 OK | The subscription information related to the request URI is returned. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| NOTE: The mandatory HTTP error status code for the GET method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.5.2.2.3.2-4: Headers supported by the 307 Response Code on this resource

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

Table 8.5.2.2.3.2-5: Headers supported by the 308 Response Code on this resource

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

##### 8.5.2.2.4 Resource Custom Operations

None.

#### 8.5.2.3 Resource: Individual Session with QoS

##### 8.5.2.3.1 Description

This resource represents an individual session information of the data session with a specific QoS setting at a given Edge Enabler Server.

##### 8.5.2.3.2 Resource Definition

Resource URI: **{apiRoot}/eees-session-with-qos/<apiVersion>/sessions/{sessionId}**

This resource shall support the resource URI variables defined in the table 8.5.2.3.2-1.

Table 8.5.2.3.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5. |
| sessionId | string | Contains the identifier of a Session with QoS. |

##### 8.5.2.3.3 Resource Standard Methods

###### 8.5.2.3.3.1 PATCH

This method partially updates the QoS of the data session between AC and EAS. This method shall support the URI query parameters specified in the table 8.5.2.3.3.1-1.

Table 8.5.2.3.3.1-1: URI query parameters supported by the PATCH method on this resource

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

This method shall support the request data structures specified in table 8.5.2.3.3.1-2 and the response data structures and response codes specified in table 8.5.2.3.3.1-3.

Table 8.5.2.3.3.1-2: Data structures supported by the PATCH Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| SessionWithQoSPatch | M | 1 | Request to partially update the data session between AC and EAS with a specific QoS |

Table 8.5.2.3.3.1-3: Data structures supported by the PATCH Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| SessionWithQoS | M | 1 | 200 OK | The individual Session with QoS is successfully modified and the updated session with QoS context information is returned in the response |
| n/a |  |  | 204 No Content | The individual Session with QoS is successfully modified. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| ProblemDetails | O | 0..1 | 403 Forbidden | (NOTE 2) |
| NOTE 1: The manadatory HTTP error status code for the PATCH method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply.  NOTE 2: Failure cases are described in clause 8.5.6.3. | | | | |

Table 8.5.2.3.3.1-4: Headers supported by the 307 Response Code on this resource

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

Table 8.5.2.3.3.1-5: Headers supported by the 308 Response Code on this resource

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

###### 8.5.2.3.3.2 PUT

This method requests modification of QoS of the data session between AC and EAS and may modify the subscription of the event monitoring by subscribing to new events or removing subscriptions to existing events at the Edge Enabler Server for receiving the user plane event notification of the session information. This method shall support the URI query parameters specified in the table 8.5.2.3.3.2-1.

Table 8.5.2.3.3.2-1: URI query parameters supported by the PUT method on this resource

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

This method shall support the request data structures specified in table 8.5.2.3.3.2-2 and the response data structures and response codes specified in table 8.5.2.3.3.2-3.

Table 8.5.2.3.3.2-2: Data structures supported by the PUT Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| SessionWithQoS | M | 1 | Parameters to create a subscription for a session with required QoS for the service requirement. |

Table 8.5.2.3.3.2-3: Data structures supported by the PUT Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| SessionWithQoS | M | 1 | 200 OK | The individual Session with QoS is successfully modified and the updated session with QoS context information is returned in the response. |
| n/a |  |  | 204 No Content | The individual Session with QoS is successfully modified. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| ProblemDetails | O | 0..1 | 403 Forbidden | (NOTE 2) |
| NOTE 1: The manadatory HTTP error status code for the PUT method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply.  NOTE 2: Failure cases are described in clause 8.5.6.3. | | | | |

Table 8.5.2.3.3.2-4: Headers supported by the 307 Response Code on this resource

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

Table 8.5.2.3.3.2-5: Headers supported by the 308 Response Code on this resource

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

###### 8.5.2.3.3.3 DELETE

This method revokes the data session between AC and EAS with a specific QoS and unsubscribes to the related session with user plane event notification. This method shall support the URI query parameters specified in table 8.5.2.3.3.3-1.

Table 8.5.2.3.3.3-1: URI query parameters supported by the DELETE method on this resource

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

This method shall support the request data structures specified in table 8.5.2.3.3.3-2 and the response data structures and response codes specified in table 8.5.2.3.3.3-3.

Table 8.5.2.3.3.3-2: Data structures supported by the DELETE Request Body on this resource

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

Table 8.5.2.3.3.3-3: Data structures supported by the DELETE Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| n/a | M | 1 | 204 No Content | The individual Session with QoS resource matching the sessionId is successfully deleted. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| NOTE: The manadatory HTTP error status code for the DELETE method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.5.2.3.3.3-4: Headers supported by the 307 Response Code on this resource

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

Table 8.5.2.3.3.3-5: Headers supported by the 308 Response Code on this resource

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

###### 8.5.2.3.3.4 GET

The GET method allows to read a subscription. The EAS shall initiate the HTTP GET request message and the EES shall respond to the message. This method shall support the URI query parameters specified in table 8.5.2.3.3.4-1.

Table 8.5.2.3.3.4-1: URI query parameters supported by the GET method on this resource

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

This method shall support the request data structures specified in table 8.5.2.3.3.4-2 and the response data structures and response codes specified in table 8.5.2.3.3.4-3.

Table 8.5.2.3.3.4-2: Data structures supported by the GET Request Body on this resource

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

Table 8.5.2.3.3.4-3: Data structures supported by the GET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| SessionWithQoS | M | 1 | 200 OK | The subscription information related to the request URI is returned. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| NOTE: The manadatory HTTP error status code for the GET method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.5.2.3.3.4-4: Headers supported by the 307 Response Code on this resource

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

Table 8.5.2.3.3.4-5: Headers supported by the 308 Response Code on this resource

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

##### 8.5.2.3.4 Resource Custom Operations

None.

### 8.5.3 Custom Operations without associated resources

None.

### 8.5.4 Notifications

#### 8.5.4.1 General

Table 8.5.4.1-1: Notifications overview

|  |  |  |  |
| --- | --- | --- | --- |
| Notification | Callback URI | HTTP method or custom operation | Description  (service operation) |
| User Plane Event Notification | {notificationDestination} | POST | Notifies the EAS the subscribed user plane event(s). |

#### 8.5.4.2 User Plane Event Notification

##### 8.5.4.2.1 Description

##### 8.5.4.2.2 TargetURI

The callback URI **{notificationDestination}** shall be used with the callback URI variables defined in table 8.5.4.2.2-1.

Table 8.5.4.2.2-1: Callback URI variables

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| notificationDestination | Uri | Callback reference provided by the EAS during session with QoS creation/update/modification procedure. |

##### 8.5.4.2.3 Standard Methods

###### 8.5.4.2.3.1 POST

This method shall support the request data structures specified in table 8.5.4.2.3.1-1 and the response data structures and response codes specified in table 8.5.4.2.3.1-2.

Table 8.5.4.2.3.1-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| UserPlaneEventNotification | M | 1 | Notification of the user plane event on the data session. |

Table 8.5.4.2.3.1-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| n/a |  |  | 204 No Content | The receipt of the Notification is acknowledged. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI representing the end point of an alternative EAS where the notification should be sent.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI representing the end point of an alternative EAS where the notification should be sent.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| NOTE: The mandatory HTTP error status codes for the POST method listed in table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.5.4.2.3.1-3: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative EAS towards which the notification should be redirected. |

Table 8.5.4.2.3.1-4: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative EAS towards which the notification should be redirected. |

### 8.5.5 Data Model

#### 8.5.5.1 General

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

Table 8.5.5.1-1 specifies the data types defined specifically for the Eees\_SessionWithQoS API service.

Table 8.5.5.1-1: Eees\_SessionWithQoS API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| SessionWithQoS | 8.5.5.2.2 |  |  |
| SessionWIthQoSPatch | 8.5.5.2.3 |  |  |
| UserPlaneEventNotification | 8.5.5.2.4 |  |  |

Table 8.5.5.1-2 specifies data types re-used by the Eees\_SessionWithQoS API service.

Table 8.5.5.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| Gpsi | 3GPP TS 29.571 [8] | Used to identify the UE, for which the related session with QoS is requested to. |  |
| Ipv4Addr | 3GPP TS 29.122 [6] | Identifying the IPv4 address of the UE. |  |
| Ipv6Addr | 3GPP TS 29.122 [6] | Identifying the IPv6 address of the UE. |  |
| UserPlaneEvent | 3GPP TS 29.122 [6] | Indicates the event reported by the EES. |  |
| SponsorInformation | 3GPP TS 29.122 [6] | Indicates a sponsor information |  |
| QosMonitoringInformation | 3GPP TS 29.122 [6] | Indicates the Qos Monitoring information |  |
| DurationSecRm | 3GPP TS 29.571 [8] | This data type is defined in the same way as the "DurationSec" data type, but with the OpenAPI "nullable: true" property. |  |
| SupportedFeatures | 3GPP TS 29.571 [8] | Used to negotiate the applicability of optional features. |  |
| TestNotification | 3GPP TS 29.122 [6] | This type represents a notification that can be sent to test whether a chosen notification mechanism works |  |
| Uri | 3GPP TS 29.122 [6] |  |  |
| WebsockNotifConfig | 3GPP TS 29.122 [6] | This type represents configuration for the delivery of notifications over Websockets. |  |
| Dnn | 3GPP TS 29.571 [8] | Identifies a DNN. |  |
| GroupId | 3GPP TS 29.571 [8] | Used to present the internal group identifier in the AS session with QoS subscription/request. |  |
| ExternalGroupId | 3GPP TS 29.571 [8] | Used to present the external group identifier in the AS session with QoS subscription/request. |  |
| Snssai | 3GPP TS 29.571 [8] | Identifies a S-NSSAI |  |
| FlowDescription | 3GPP TS 29.514 [16] | Identifies an IP flow description. |  |
| BitRateRm | 3GPP TS 29.571 [8] | This data type is defined in the same way as the "BitRate" data type, but with the OpenAPI "nullable: true" property. |  |
| UserPlaneEventReport | 3GPP TS 29.122 [6] | Represents an event report for user plane. |  |
| SupportedFeatures | 3GPP TS 29.571 [8] | Used to negotiate the applicability of optional features. |  |
| TrafficFilterInfo | 8.6.5.2.12 | Represents the traffic filter information. | EdgeApp\_2 |

#### 8.5.5.2 Structured data types

##### 8.5.5.2.1 Introduction

##### 8.5.5.2.2 Type: SessionWithQoS

Table 8.5.5.2.2-1: Definition of type SessionWIthQoS

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| self | Uri | C | 0..1 | Link to the "Individual Session with QoS" resource.  Shall only be present in the HTTP GET response on the "Sessions with QoS" resource. |  |
| easId | string | M | 1 | The application identifier of the EAS (e.g. URI, FQDN). |  |
| ueIpv4Addr | Ipv4Addr | O | 0..1 | IPv4 address of the UE. (NOTE 1) |  |
| ueIpv6Addr | Ipv6Addr | O | 0..1 | IPv6 address of the UE. (NOTE 1) |  |
| ipDomain | string | O | 0..1 | Identifies the IP domain. The attribute may only be provided if the ueIpv4Addr attribute is present. |  |
| ueId | Gpsi | O | 0..1 | Identifier of the UE for which related session with QoS is requested to. (NOTE 1) |  |
| intGrpId | GroupId | O | 0..1 | The internal group identifier, identifying the group of UEs for which related session with QoS is requested to. (NOTE 1) |  |
| extGrpId | ExternalGroupId | O | 0..1 | The external group identifier, identifying the group of UEs for which the related session with QoS is requested to. (NOTE 1) |  |
| ipFlows | array(FlowDescription) | M | 1..N | Contains the flow description for the Uplink and/or Downlink IP flows.  (NOTE 3) |  |
| qosReference | string | O | 0..1 | Identifies a pre-defined QoS information (NOTE 2) |  |
| trafFilterInfo | TrafficFilterInfo | O | 0..1 | Represents the traffic filter information.  This attribute may be present only if the "event" attribute is set to "UP\_PATH\_CHG", "ACR\_MONITORING" and/or "ACR\_FACILITATION".  (NOTE 3) | EdgeApp\_2 |
| altQosReference | array(string) | O | 1..N | Identifies an ordered list of pre-defined QoS information. The lower the index of the array for a given entry, the higher the priority. |  |
| events | array(UserPlaneEvent) | O | 1..N | Indicates the events subscribed by the EAS. |  |
| sponsorInformation | SponsorInformation | O | 0..1 | Describes the sponsor information. |  |
| qosMonInfo | QosMonitoringInformation | O | 0..1 | Qos Monitoring information. It may be present when the event "QOS\_MONITORING" is subscribed. |  |
| notificationDestination | Uri | C | 0..1 | URI where the event notification shall be delivered to.  This attribute shall be present if the "events" attribute is included. |  |
| dnn | Dnn | O | 0..1 | Dnn of the PDU session, a full DNN with both the Network Identifier and Operator Identifier, or a DNN with the Network Identifier only. |  |
| snssai | Snssai | O | 0..1 | S-NSSAI of the PDU session. |  |
| maxbrUl | BitRate | O | 0..1 | Indicates the (requested) maximum bandwidth in uplink. (NOTE 2) |  |
| maxbrDl | BitRate | O | 0..1 | Indicates the (requested) maximum bandwidth in downlink. (NOTE 2) |  |
| disUeNotif | boolean | O | 0..1 | Indicates to disable QoS flow parameters signalling to the UE when the SMF is notified by the NG-RAN of changes in the fulfilled QoS situation when it is included and set to "true". The fulfilled situation is either the QoS profile or an Alternative QoS Profile. The default value "false" shall apply, if the attribute is not present and has not been supplied previously. |  |
| requestTestNotification | boolean | O | 0..1 | Set to true by Subscriber to request the EES to send a test notification as defined in 3GPP TS 29.122 [6]. Set to false or omitted otherwise. | Notification\_test\_event |
| websockNotifConfig | WebsockNotifConfig | O | 0..1 | Configuration parameters to set up notification delivery over Websocket protocol as defined in 3GPP TS 29.122 [6]. | Notification\_websocket |
| 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 in the response of successful resource creation. |  |
| NOTE 1: Only one of UE IP address (ipv4Addr or ipv6Addr), UE Identifier (ueId), Internal group identifier (intGrpId), or External group identifier (extGrpId) shall be included.  NOTE 2: Only one of requested QoS (qosReference) or Requested bandwidth (maxbuUl and/or maxbtDl) shall be included.  NOTE 3: If the "EdgeApp\_2” feature is supported, the "ipFlows" attribute within the "trafFilterInfo” attribute take the precedence over the "ipFlows" attribute when both are provided. | | | | | |

##### 8.5.5.2.3 Type: SessionWithQoSPatch

Table 8.5.5.2.3-1: Definition of type SessionWIthQoSPatch

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| ipFlows | array(FlowDescription) | O | 1..N | Contains the flow description for the Uplink and/or Downlink IP flows.  (NOTE) |  |
| trafFilterInfo | TrafficFilterInfo | O | 0..1 | Represents the traffic filter information.  This attribute may be present only if the "event" attribute is set to "UP\_PATH\_CHG","ACR\_MONITORING" and/or"ACR\_FACILITATION".  (NOTE) | EdgeApp\_2 |
| qosReference | string | O | 0..1 | Identifies a pre-defined QoS information. |  |
| altQosReference | array(string) | O | 1..N | Identifies an ordered list of pre-defined QoS information. The lower the index of the array for a given entry, the higher the priority. |  |
| Events | array(UserPlaneEvent) | O | 1..N | Indicates the event subscribed by the EAS. |  |
| sponsorInformation | SponsorInformation | O | 0..1 | Describes the sponsor information such as who is sponsoring the traffic. |  |
| qosMonInfo | QosMonitoringInformationRm | O | 0..1 | Qos Monitoring information. It can be present when the event "QOS\_MONITORING" is subscribed. |  |
| notificationDestination | Uri | O | 0..1 | URI where the monitoring event notification should be delivered to. |  |
| maxbrUl | BitRateRm | O | 0..1 | Indicates the (requested) maximum bandwidth in uplink. |  |
| maxbrDl | BitRateRm | O | 0..1 | Indicates the (requested) maximum bandwidth in downlink. |  |
| disUeNotif | boolean | O | 0..1 | Indicates to disable QoS flow parameters signalling to the UE when the SMF is notified by the NG-RAN of changes in the fulfilled QoS situation when it is included and set to "true". The fulfilled situation is either the QoS profile or an Alternative QoS Profile. The default value "false" shall apply, if the attribute is not present and has not been supplied previously. |  |
| NOTE: If the "EdgeApp\_2” feature is supported, the "ipFlows" attribute within the "trafFilterInfo” attribute take the precedence over the "ipFlows" attribute when both are provided. | | | | | |

##### 8.5.5.2.4 Type: UserPlaneEventNotification

Table 8.5.5.2.4-1: Definition of type UserPlaneEventNotifiation

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| sessionId | string | M | 1 | String identifying the individual data session information for which the QoS event notification is delivered. |  |
| eventReports | array(UserPlaneEventReport) | M | 1..N | List of user plane event reports and application information that include the QoS event information of the data session. |  |

#### 8.5.5.3 Simple data types and enumerations

None.

### 8.5.6 Error Handling

#### 8.5.6.1 General

For the Eees\_SessionWithQoS API, HTTP error handling shall be supported as specified in clause 7.7. In addition, the requirements in the following clauses are applicable for the Eees\_SessionWithQoS API.

#### 8.5.6.2 Protocol Errors

No specific protocol errors for the Eees\_SessionWithQoS API are specified.

#### 8.5.6.3 Application Errors

The application errors defined for the Eees\_SessionWithQoS API are listed in Table 8.5.6.3-1.

Table 8.5.6.3-1: Application errors

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
| PFD\_MNGT\_NOT\_SUPPORTED | 403 Forbidden | Indicates that the AS Session with QoS Subscription creation/update is rejected because PFD Management is needed to fulfill the request but it is not supported by the 3GPP network. |

### 8.5.7 Feature negotiation

General feature negotiation procedures are defined in clause 7.8. Table 8.5.7-1 lists the supported features for Eees\_SessionWithQoS API.

Table 8.5.7-1: Supported Features

|  |  |  |
| --- | --- | --- |
| Feature number | Feature Name | Description |
| 1 | Notification\_test\_event | Testing of notification connection is supported according to clause 7.6. |
| 2 | Notification\_websocket | The delivery of notifications over Websocket is supported according to clause 7.6. This feature requires that the Notification\_test\_event feature is also supported. |

## 8.6 Eees\_ACRManagementEvent API

### 8.6.1 Introduction

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

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

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

The request URIs used in HTTP requests shall have the Resource URI structure as defined in clause 7.5, i.e:

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

with the following components:

- The {apiRoot} shall be set as described in clause 7.5.

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

- The <apiVersion> shall be "v1".

- The <apiSpecificResourceUriPart> shall be set as described in clause 8.6.2.

### 8.6.2 Resources

#### 8.6.2.1 Overview

This clause describes the structure for the Resource URIs and the resources and methods used for the service.

Figure 8.6.2.1-1 depicts the resource URIs structure for the Eees\_ACRManagementEvent API.



Figure 8.6.2.1-1: Resource URI structure of the Eees\_ACRManagementEvent API

Table 8.6.2.1-1 provides an overview of the resources and applicable HTTP methods.

Table 8.6.2.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method or custom operation | Description |
| ACR Management Events Subscriptions | /subscriptions | GET | Query all the subscriptions. |
| POST | Create a new Individual ACR Management Events Subscription resource. |
| Individual ACR Management Events Subscription | /subscriptions/{subscriptionId} | GET | Query an existing Individual ACR Management Events Subscription resource identified by a subscriptionId. |
| PUT | Fully replace an existing Individual ACR Management Events Subscription resource identified by a subscriptionId. |
| PATCH | Partially update an existing Individual ACR Management Events Subscription resource identified by a subscriptionId. |
| DELETE | Remove an Individual ACR Management Events Subscription resource identified by a subscriptionId. |

#### 8.6.2.2 Resource: ACR Management Events Subscriptions

##### 8.6.2.2.1 Description

This resource represents ACR Management Events Subscriptions at a given Edge Enabler Server.

##### 8.6.2.2.2 Resource Definition

Resource URI: **{apiRoot}/eees-acrmgntevent/<apiVersion>/subscriptions**

This resource shall support the resource URI variables defined in the table 8.6.2.2.2-1.

Table 8.6.2.2.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5 |

##### 8.6.2.2.3 Resource Standard Methods

###### 8.6.2.2.3.1 POST

This method requests to create an Individual ACR Management Event Subscription resource at the EES for receiving the notifications of ACR management events. This method shall support the URI query parameters specified in table 8.6.2.2.3.1-1.

Table 8.6.2.2.3.1-1: URI query parameters supported by the POST method on this resource

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

This method shall support the request data structures specified in table 8.6.2.2.3.1-2 and the response data structures and response codes specified in table 8.6.2.2.3.1-3.

Table 8.6.2.2.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| AcrMgntEventsSubscription | M | 1 | Parameters to create a subscription for notifications of ACR management events. |

Table 8.6.2.2.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| AcrMgntEventsSubscription | M | 1 | 201 Created | An Individual ACR Management Events Subscription resource is successfully created, and the subscription information is provided in the response body.  The URI of the created resource shall be returned in the "Location" HTTP header. |
| ProblemDetails | O | 0..1 | 403 Forbidden | (NOTE 2) |
| NOTE 1: 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.  NOTE 2: Failure cases are described in clause 8.6.6.3. | | | | |

Table 8.6.2.2.3.1-4: Headers supported by the 201 response code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains the URI of the newly created resource, according to the structure: {apiRoot}/eees-acrmgntevent/<apiVersion>/subscriptions/{subscriptionId} |

###### 8.6.2.2.3.2 GET

This method retrieves all the ACR Management Events Subscriptions information at EES. This method shall support the URI query parameters specified in the table 8.6.2.2.3.2-1.

Table 8.6.2.2.3.2-1: URI query parameters supported by the GET method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| supp-feat | SupportedFeatures | O | 0..1 | The features supported by the EAS. |

This method shall support the request data structures specified in table 8.6.2.2.3.2-2 and the response data structures and response codes specified in table 8.6.2.2.3.2-3.

Table 8.6.2.2.3.2-2: Data structures supported by the GET Request Body on this resource

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

Table 8.6.2.2.3.2-3: Data structures supported by the GET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| array(AcrMgntEventsSubscription) | M | 1..N | 200 OK | All the ACR Management Events Subscriptions information is returned by the EES. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection, during subscription retrieval. The response shall include a Location header field containing an alternative URI of the resource 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, during subscription retrieval. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6]. |
| NOTE: The manadatory HTTP error status code for the GET method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.6.2.2.3.2-4: Headers supported by the 307 Response Code on this resource

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

Table 8.6.2.2.3.2-5: Headers supported by the 308 Response Code on this resource

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

##### 8.6.2.2.4 Resource Custom Operations

None.

#### 8.6.2.3 Resource: Individual ACR Management Events Subscription

##### 8.6.2.3.1 Description

This resource represents an existing Individual ACR Management Events Subscription at a given EES.

##### 8.6.2.3.2 Resource Definition

Resource URI: **{apiRoot}/eees-acrmgntevent/<apiVersion>/subscriptions/{subscriptionId}**

This resource shall support the resource URI variables defined in the table 8.6.2.3.2-1.

Table 8.6.2.3.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5. |
| subscriptionId | string | Contains the identifier of an ACR Management Events Subscription. |

##### 8.6.2.3.3 Resource Standard Methods

###### 8.6.2.3.3.1 PATCH

This method partially updates an existing Individual ACR Management Events Subscription. This method shall support the URI query parameters specified in the table 8.6.2.3.3.1-1.

Table 8.6.2.3.3.1-1: URI query parameters supported by the PATCH method on this resource

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

This method shall support the request data structures specified in table 8.6.2.3.3.1-2 and the response data structures and response codes specified in table 8.6.2.3.3.1-3.

Table 8.6.2.3.3.1-2: Data structures supported by the PATCH Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| AcrMgntEventsSubscriptionPatch | M | 1 | Request to partially update an existing Individual ACR Management Events Subscription. |

Table 8.6.2.3.3.1-3: Data structures supported by the PATCH Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| AcrMgntEventsSubscription | M | 1 | 200 OK | The Individual ACR Management Events Subscription is successfully modified and the updated subscription information is returned in the response. |
| n/a |  |  | 204 No Content | The Individual ACR Management Events Subscription is successfully modified. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection, during subscription modification. The response shall include a Location header field containing an alternative URI of the resource 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, during subscription modification. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6]. |
| ProblemDetails | O | 0..1 | 403 Forbidden | (NOTE 2) |
| NOTE 1: The mandatory HTTP error status code for the PATCH method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply.  NOTE 2: Failure cases are described in clause 8.6.6.3. | | | | |

Table 8.6.2.3.3.1-4: Headers supported by the 307 Response Code on this resource

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

Table 8.6.2.3.3.1-5: Headers supported by the 308 Response Code on this resource

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

###### 8.6.2.3.3.2 PUT

This method requests fully replacement of an existing Individual ACR Management Events Subscription at the EES. The request shall not change the values of the "easId", "tgtUeId", "requestTestNotification", "websockNotifConfig" and/or "suppFeat" attributes within the AcrMgntEventsSubscription data type. This method shall support the URI query parameters specified in the table 8.6.2.3.3.2-1.

Table 8.6.2.3.3.2-1: URI query parameters supported by the PUT method on this resource

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

This method shall support the request data structures specified in table 8.6.2.3.3.2-2 and the response data structures and response codes specified in table 8.6.2.3.3.2-3.

Table 8.6.2.3.3.2-2: Data structures supported by the PUT Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| AcrMgntEventsSubscription | M | 1 | Parameters to replace an existing Individual ACR Management Events Subscription. |

Table 8.6.2.3.3.2-3: Data structures supported by the PUT Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| AcrMgntEventsSubscription | M | 1 | 200 OK | The existing Individual ACR Management Events Subscription is successfully replaced and the updated subscription information is returned in the response. |
| n/a |  |  | 204 No Content | The existing Individual ACR Management Events Subscription is successfully modified. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection, during subscription modification. The response shall include a Location header field containing an alternative URI of the resource 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, during subscription modification. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6]. |
| ProblemDetails | O | 0..1 | 403 Forbidden | (NOTE 2) |
| NOTE 1: The mandatory HTTP error status code for the PUT method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply.  NOTE 2: Failure cases are described in clause 8.6.6.3 | | | | |

Table 8.6.2.3.3.2-4: Headers supported by the 307 Response Code on this resource

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

Table 8.6.2.3.3.2-5: Headers supported by the 308 Response Code on this resource

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

###### 8.6.2.3.3.3 DELETE

This method deletes an existing Individual ACR Management Events Subscription. This method shall support the URI query parameters specified in table 8.6.2.3.3.3-1.

Table 8.6.2.3.3.3-1: URI query parameters supported by the DELETE method on this resource

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

This method shall support the request data structures specified in table 8.6.2.3.3.3-2 and the response data structures and response codes specified in table 8.6.2.3.3.3-3.

Table 8.6.2.3.3.3-2: Data structures supported by the DELETE Request Body on this resource

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

Table 8.6.2.3.3.3-3: Data structures supported by the DELETE Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| n/a |  |  | 204 No Content | The existing Individual ACR Management Events Subscription is successfully deleted. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection, during subscription termination. The response shall include a Location header field containing an alternative URI of the resource 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, during subscription termination. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6]. |
| NOTE: The manadatory HTTP error status code for the DELETE method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.6.2.3.3.3-4: Headers supported by the 307 Response Code on this resource

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

Table 8.6.2.3.3.3-5: Headers supported by the 308 Response Code on this resource

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

###### 8.6.2.3.3.4 GET

This method retrieves the location information subscription information at EES. This method shall support the URI query parameters specified in the table 8.6.2.3.3.4-1.

Table 8.6.2.3.3.4-1: URI query parameters supported by the GET method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| supp-feat | SupportedFeatures | O | 0..1 | The features supported by the EAS. |

This method shall support the request data structures specified in table 8.6.2.3.3.4-2 and the response data structures and response codes specified in table 8.6.2.3.3.4-3.

Table 8.6.2.3.3.4-2: Data structures supported by the GET Request Body on this resource

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

Table 8.6.2.3.3.4-3: Data structures supported by the GET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| AcrMgntEventsSubscription | M | 1 | 200 OK | The Individual ACR Management Events Subscription is returned by the EES. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection, during subscription retrieval. The response shall include a Location header field containing an alternative URI of the resource 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, during subscription retrieval. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6]. |
| NOTE: The manadatory HTTP error status code for the GET method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.6.2.3.3.4-4: Headers supported by the 307 Response Code on this resource

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

Table 8.6.2.3.3.4-5: Headers supported by the 308 Response Code on this resource

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

##### 8.6.2.3.4 Resource Custom Operations

None.

### 8.6.3 Custom Operations without associated resources

None.

### 8.6.4 Notifications

#### 8.6.4.1 General

Table 8.6.4.1-1: Notifications overview

|  |  |  |  |
| --- | --- | --- | --- |
| Notification | Callback URI | HTTP method or custom operation | Description  (service operation) |
| ACR Management Events Notification | {notificationDestination} | POST | Notifies the EAS the subscribed ACR management event(s). |
| User Plane Path Change Availability Notification | {notificationDestination}/report-availability | report-availability (POST) | Notifies the EAS of the availability of user plane path management events monitoring via the 3GPP 5GC network (e.g. due to UE mobility from 5GC to EPC). |

#### 8.6.4.2 ACR Management Events Notification

##### 8.6.4.2.1 Description

##### 8.6.4.2.2 Notification definition

The POST method is used by the EES for the notifications of subscribed ACR management event(s) and the callback URI shall be provided by the EAS during the creation of the Individual ACR Management Events Subscription resource.

Callback URI: **{notificationDestination}**

This method shall support the URI query parameters specified in table 8.6.4.2.2-1.

Table 8.6.4.2.2-1: URI query parameters supported by the POST method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
|  |  |  |  |  |

This method shall support the request data structures specified in table 8.6.4.2.2-2 and the response data structures and response codes specified in table 8.6.4.2.2-3.

Table 8.6.4.2.2-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| AcrMgntEventsNotification | M | 1 | Notification of the ACR management events. |

Table 8.6.4.2.2-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| n/a |  |  | 204 No Content | The receipt of the Notification is acknowledged. |
| EasAckInformation | M | 1 | 200 OK | The receipt of the Notification is acknowledged and includes the acknowledgement information. |
| N/A |  |  | 307 Temporary Redirect | Temporary redirection, during event notification. The response shall include a Location header field containing an alternative URI representing the end point of an alternative EAS where the notification should be sent.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6]. |
| N/A |  |  | 308 Permanent Redirect | Permanent redirection, during event notification. The response shall include a Location header field containing an alternative URI representing the end point of an alternative EAS where the notification should be sent.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6]. |
| NOTE: The mandatory HTTP error status codes for the POST method listed in table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.6.4.2.2-4: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative EAS towards which the notification should be redirected. |

Table 8.6.4.2.2-5: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative EAS towards which the notification should be redirected. |

#### 8.6.4.3 User Plane Path Change Availability Notification

##### 8.6.4.3.1 Description

The User Plane Path Change Availability Notification is used by the EES to notify the EAS of the availability of user plane path management events monitoring via the 3GPP 5GC network (e.g. due to UE mobility from 5GC to EPC).

##### 8.6.4.3.2 Target URI

The Callback URI **"{notificationDestination}/report-availability"** shall be used with the callback URI variables defined in table 8.6.4.3.2-1.

Table 8.6.4.3.2-1: Callback URI variables

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| notificationDestination | Uri | Callback reference provided by the EAS during the ACR Management Event subscription creation/update/modification procedure. |

##### 8.6.4.3.3 Standard Methods

8.6.4.3.3.1 POST

This method shall support the request data structures specified in table 8.6.4.3.3.1-1 and the response data structures and response codes specified in table 8.6.4.3.3.1-2.

Table 8.6.4.3.3.1-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| AvailabilityNotif | M | 1 | Notification of the ACR management events. |

Table 8.6.4.3.3.1-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| n/a |  |  | 204 No Content | The notification is successfully received. |
| N/A |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI representing the end point of an alternative EAS where the notification should be sent.  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 URI representing the end point of an alternative EAS where the notification should be sent.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6]. |
| NOTE: The mandatory HTTP error status codes for the POST method listed in table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.6.4.3.3.1-3: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative EAS towards which the notification should be redirected. |

Table 8.6.4.3.3.1-4: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative EAS towards which the notification should be redirected. |

### 8.6.5 Data Model

#### 8.6.5.1 General

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

Table 8.6.5.1-1 specifies the data types defined specifically for the Eees\_ACRManagementEvent API service.

Table 8.6.5.1-1: Eees\_ACRManagementEvent API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| AcrMgntEventFailureCode | 8.6.5.3.6 | Represents the reason for ACR Management subscription failure for an event. |  |
| AcrMgntEventFilter | 8.6.5.3.4 | Represents the ACR Management Event filter. |  |
| AcrMgntEventsSubscription | 8.6.5.2.2 |  |  |
| AcrMgntEventSubsc | 8.6.5.2.3 |  |  |
| AcrMgntEventsSubscriptionPatch | 8.6.5.2.4 |  |  |
| AcrMgntEventsNotification | 8.65.2.5 |  |  |
| AcrMgntEventReport | 8.6.5.2.6 |  |  |
| ACRParameters | 8.6.5.2.13 | Represents ACR parameters. | EdgeApp\_2 |
| ActStatus | 8.6.5.3.5 | Represents ACT status, i.e. ACT start or stop. |  |
| AvailabilityNotif | 8.6.5.2.11 | Represents the availability information of user plane path management events monitoring via the 3GPP 5GC network. |  |
| AvailabilityStatus | 8.6.5.3.7 | Represents the availability status. |  |
| EasAckInformation | 8.6.5.2.15 | Represents the acknowledgement information from EAS in response to ACR notifications. | EdgeApp\_2 |
| EasInBundleInfo | 8.6.5.2.16 | Represents EAS in a bundle information. | EdgeApp\_2 |
| FailureAcrMgntEventInfo | 8.6.5.2.7 |  |  |
| AcrMgntEvent | 8.6.5.3.3 |  |  |
| IndtUeIdentification | 8.6.5.2.10 | Contains individual UE identification information. |  |
| ResultCode | 8.6.5.3.8 | Contains the EAS acknowledgement response message. | EdgeApp\_2 |
| SelectedACRScenarios | 8.6.5.2.12 | Represents the selected ACR scenario(s) applicable for a given combination of AC and UE. | EdgeApp\_2 |
| TargetUeIdentification | 8.6.5.2.8 | Contains target UE(s) identification information. |  |
| TrafficFilterInfo | 8.6.5.2.14 | Represents the traffic filter information. | EdgeApp\_2 |
| UpPathChangeInfo | 8.6.5.2.9 | Contains user plane path change information. |  |

Table 8.6.5.1-2 specifies data types re-used by the Eees\_ACRManagementEvent API service.

Table 8.6.5.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| ACRScenario | 9.1.5.3.3 | Represent the ACR scenarios. | EdgeApp\_2 |
| EasCharacteristics | 3GPP TS 24.558 [14] | Represents the EAS characteristics. |  |
| DateTime | 3GPP TS 29.122 [6] |  |  |
| Dnai | 3GPP TS 29.571 [8] | Identifies a DNAI. |  |
| DnaiChangeType | 3GPP TS 29.571 [8] |  |  |
| DnaiChangeTypeRm | 3GPP TS 29.571 [8] |  |  |
| DomainNameProtocol | 3GPP TS 29.122 [6] | Indicates the additional protocol and protocol field for domain names to be matched. | EdgeApp\_2 |
| Endpoint | Clause 8.1.5.2.5 | Represents the endpoint information. |  |
| ExternalGroupId | 3GPP TS 29.571 [8] | Represents an external group of UEs. |  |
| ExternalId | 3GPP TS 29.122 [6] | Represents an external identifier of a UE. |  |
| Gpsi | 3GPP TS 29.571 [8] |  |  |
| GroupId | 3GPP TS 29.571 [8] | Represents an internal group of UEs. |  |
| IpAddr | 3GPP TS 29.571 [8] |  |  |
| Ipv4Addr | 3GPP TS 29.122 [6] | Identifying the IPv4 address of the UE. |  |
| Ipv6Prefix | 3GPP TS 29.571 [8] | Identifies an IPv6 Prefix. |  |
| ReportingInformation | 3GPP TS 29.523 [13] |  |  |
| RouteToLocation | 3GPP TS 29.571 [8] | Describes the traffic routes to the locations of the application. |  |
| SupportedFeatures | 3GPP TS 29.571 [8] | Used to negotiate the applicability of optional features. |  |
| ServiceArea | 9.1.5.2.5 | Represents the topological and geographic areas. | EdgeApp\_2 |
| TestNotification | 3GPP TS 29.122 [6] | This type represents a notification that can be sent to test whether a chosen notification mechanism works |  |
| Uri | 3GPP TS 29.122 [6] |  |  |
| WebsockNotifConfig | 3GPP TS 29.122 [6] | This type represents configuration for the delivery of notifications over Websockets. |  |

#### 8.6.5.2 Structured data types

##### 8.6.5.2.1 Introduction

##### 8.6.5.2.2 Type: AcrMgntEventsSubscription

Table 8.6.5.2.2-1: Definition of type AcrMgntEventsSubscription

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| self | Uri | C | 0..1 | Link to the "Individual ACR Management Events Subscription" resource.  Shall only be present in the HTTP GET response on the "ACR Management Events Subscriptions" resource. |  |
| easId | string | M | 1 | Contains the application identifier of the EAS (e.g. URI, FQDN). |  |
| eventSubscs | array(AcrMgntEventSubsc) | M | 1..N | Indicates the subscribed ACR management events and the related information. |  |
| evtReq | ReportingInformation | O | 0..1 | Indicates the event reporting information.  (NOTE 1, NOTE 2) |  |
| notificationDestination | Uri | M | 1 | Contains the URI towards which the event notifications shall be delivered. |  |
| eventReports | array(AcrMgntEventReport) | C | 1..N | Represents ACR management event report(s).  This attribute shall be present in an HTTP POST response if the immediate reporting indication in the "immRep" attribute within the "evtReq" attribute sets to true in the corresponding HTTP POST request, and the report(s) are available.  This attribute may be present in an HTTP PUT or PATCH response when the report(s) are available. |  |
| availabilityInfo | AvailabilityNotif | C | 0..1 | Indicates the availability information of user plane path management events monitoring via the 3GPP 5GC network.  This attribute may only be present in an HTTP POST/PUT/PATCH response, if the availability status information is available. |  |
| failEventReports | array(FailureAcrMgntEventInfo) | O | 1..N | Represents the event(s) for which the subscription is not successful including the failure reason(s). |  |
| requestTestNotification | boolean | O | 0..1 | Set to true by the EAS to request the EES to send a test notification as defined in 3GPP TS 29.122 [6]. Set to false or omitted otherwise. | Notification\_test\_event |
| websockNotifConfig | WebsockNotifConfig | O | 0..1 | Configuration parameters to set up notification delivery over Websocket protocol as defined in 3GPP TS 29.122 [6]. | Notification\_websocket |
| suppFeat | SupportedFeatures | C | 0..1 | Represents the list of Supported features.  This attribute shall be present in the HTTP POST request if at least one feature is supported by the consumer. It shall be present in an HTTP POST response if it was provided in the corresponding HTTP POST request, or in the HTTP GET response if the "supp-feat" attribute query parameter is included in the corresponding HTTP GET request. |  |
| NOTE 1: The "evtReq" of an AcrMgntEventSubsc data structure within the "eventSubscs" attribute takes precedence over the "evtReq" attribute defined in this data structure when both are present.  NOTE 2: When the "evtReq" is not provided in an AcrMgntEventSubsc data structure within the "eventSubscs" attribute, the "evtReq" attribute defined in this data structure applies for the corresponding ACR management event subscription. | | | | | |

##### 8.6.5.2.3 Type: AcrMgntEventSubsc

Table 8.6.5.2.3-1: Definition of type AcrMgntEventSubsc

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| event | AcrMgntEvent | M | 1 | Indicates the subscribed ACR management event. |  |
| eventFilter | AcrMgntEventFilter | O | 0..1 | Represents the event filter for the subscribed ACR management event.  This attribute may be provided only if the "event" attribute is set to "ACR\_MONITORING". |  |
| evtReq | ReportingInformation | O | 0..1 | Indicates the event reporting requirements (e.g. reporting periodicity, immediate reporting indication, etc).  (NOTE) |  |
| tgtUeId | TargetUeIdentification | C | 0..1 | Contains the UE identification information.  This attribute shall be provided only if the "event" attribute is set to either "UP\_PATH\_CHG", "ACR\_MONITORING" or "ACR\_FACILITATION". |  |
| dnaiChgType | DnaiChangeType | O | 0..1 | Identifies a type of notification regarding UP path management event.  This attribute may be provided only if the "event" attribute is set to "UP\_PATH\_CHG". |  |
| easAckInd | boolean | O | 0..1 | Identifies whether EAS acknowledgement of UP path change event notifications is to be expected.  Set to "true" if the EAS acknowledgement is expected.  Set to "false" if the EAS acknowledgement is not expected.  Default value is "false".  This attribute may be provided only if the "event" attribute is set to "UP\_PATH\_CHG". |  |
| easChars | array(EasCharacteristics) | O | 1..N | Represents a list of EAS characteristics.  This attribute may be provided only if the "event" attribute is set to either "ACR\_MONITORING" or "ACR\_FACILITATION". |  |
| trafFilterInfo | TrafficFilterInfo | O | 0..1 | Represents the traffic filter information.  This attribute may be present only if the "event" attribute is set to "UP\_PATH\_CHG", "ACR\_MONITORING" and/or "ACR\_FACILITATION". | EdgeApp\_2 |
| servContPlanInd | boolean | O | 0..1 | Contains the service continuity planning indication (i.e., whether or not the EES shall monitor whether the UE(s) enter the predicted location).  - When set to "true", it indicates that service continuity planning is required.  - When set to "false", it indicates that service continuity planning is not required.  - The default value when this attribute is omitted is false.  This attribute may be present only when the "event" attribute is set to "ACR\_MONITORING" or "ACR\_FACILITATION". | EdgeApp\_2 |
| easAckSvcCont | boolean | O | 0..1 | Indicates that the EAS will provide an acknowledgement as a response to the notification of ACR management notification related to service continuity planning.  Set to "true" if the EAS acknowledgement is expected. Set to "false" if the EAS acknowledgement is not expected. Default value is "false".  This attribute may be provided only if the "event" attribute is set to "ACR\_MONITORING" and/or "ACR\_FACILITATION". | EdgeApp\_2 |
| NOTE: The "evtReq" takes precedence over the "evtReq" attribute of the AcrMgntEventsSubscription data structure when both are present. | | | | | |

##### 8.6.5.2.4 Type: AcrMgntEventsSubscriptionPatch

Table 8.6.5.2.4-1: Definition of type AcrMgntEventsSubscriptionPatch

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| eventSubscs | array(AcrMgntEventSubsc) | O | 1..N | Indicates the subscribed ACR management events. |  |
| evtReq | ReportingInformation | O | 0..1 | Indicates the event reporting information. |  |
| notificationDestination | Uri | O | 0..1 | URI where the event notification shall be delivered to. |  |

##### 8.6.5.2.5 Type: AcrMgntEventsNotification

Table 8.6.5.2.5-1: Definition of type AcrMgntEventsNotification

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| subpId | string | M | 1 | String identifying the Individual ACR Management Events Subscription to which the notification is related. |  |
| eventReports | array(AcrMgntEventReport) | M | 1..N | Represents a list of ACR management event `report(s). |  |

##### 8.6.5.2.6 Type: AcrMgntEventReport

Table 8.6.5.2.6-1: Definition of type AcrMgntEventReport

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| event | AcrMgntEvent | M | 1 | Indicates the subscribed ACR management event. |  |
| timeStamp | DateTime | O | 0..1 | Represents the time stamp of the detected event. |  |
| easEndPoint | EndPoint | C | 0..1 | Represents the endpoint information of the EAS.  This attribute shall be provided either:  - when the "event" attribute is set to either "ACR\_MONITORING" or "ACR\_FACILITATION". In such case, it shall contain the endpoint information of the T-EAS; or  - when the "event" attribute is set to "ACT\_START\_STOP". In such case, it shall contain the endpoint information of the EAS to/from which the ACT needs to be started/stopped. |  |
| actStatus | ActStatus | C | 0..1 | Represents the reported ACT status, i.e. ACT start or ACT stop.  This attribute shall be provided only when the "event" attribute is set to "ACT\_START\_STOP". |  |
| acId | string | C | 0..1 | Represents the identifier of the concerned AC.  This attribute shall be provided only when the "event" attribute is set to "ACT\_START\_STOP". |  |
| gpsi | Gpsi | C | 0..1 | Represents external UE identifier.  This attribute shall be provided only when the "event" attribute is set to "ACT\_START\_STOP". | EdgeApp\_2 |
| selACRScen | array(SelectedACRScenarios) | C | 1..N | Represents the selected ACR scenario(s) for a given combination of AC and UE.  This attribute shall be provided only when the "event" attribute is set to "ACR\_SELECTION". | EdgeApp\_2 |
| easInBdlInfoList | array(EasInBundleInfo) | C | 1..N | Represents the list of EAS in a bundle related information.  This attribute shall be provided only when the "event" attribute is set to "ACR\_SELECTION". | EdgeApp\_2 |
| acrParams | ACRParameters | O | 0..1 | Represents the ACR Parameters.  This attribute may only be present when the "actStatus" attribute is present and set to "ACT\_START". | EdgeApp\_2 |
| upPathChgInfo | UpPathChangeInfo | C | 0..1 | Represents the UP Path change information.  This attribute shall be provided when the "event" attribute is set to "UP\_PATH\_CHG". |  |
| servContPlanInd | boolean | O | 0..1 | Contains the service continuity planning indication (i.e., whether or not the EES will monitor whether the UE(s) enter the predicted location or not).  - When set to "true", it indicates that service continuity planning will be performed.  - When set to "false", it indicates that service continuity planning will not be performed.  - The default value when this attribute is omitted is false.  This attribute may be present only when the "event" attribute is set to "ACR\_MONITORING" or "ACR\_FACILITATION". | EdgeApp\_2 |

Editor's Note: The definition and encoding of the "gpsi" attribute and whether they are needed or not is FFS and pending stage 2 progress.

##### 8.6.5.2.7 Type: FailureAcrMgntEventInfo

Table 8.6.5.2.7-1: Definition of type FailureAcrMgntEventInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| event | AcrMgntEvent | M | 1 | Indicates the subscribed ACR management event. |  |
| failureCode | AcrMgntEventFailureCode | M | 1 | Identifies the failure reason. |  |

##### 8.6.5.2.8 Type: TargetUeIdentification

Table 8.6.5.2.8-1: Definition of type TargetUeIdentification

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| gpsi | Gpsi | O | 0..1 | Represents external UE identifier. |  |
| intGrpId | GroupId | O | 0..1 | Represents a group of UEs identified by an Internal Group Identifier. |  |
| extGrpId | ExternalGroupId | O | 0..1 | Represents a group of UEs identified by an External Group Identifier. |  |
| ueIpAddr | IpAddr | O | 0..1 | Represents the UE IP address. |  |
| NOTE: Only one of the above attributes shall be present. | | | | | |

##### 8.6.5.2.9 Type: UpPathChangeInfo

Table 8.6.5.2.9-1: Definition of type UpPathChangeInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| ueId | IndUeIdentification | M | 1 | Contains the concerned UE's identification information. |  |
| dnaiChgType | DnaiChangeType | M | 1 | Identifies the type of notification regarding UP path management event. |  |
| sourceTrafficRoute | RouteToLocation | O | 0..1 | Identifies the N6 traffic routing information associated to the source DNAI. |  |
| targetTrafficRoute | RouteToLocation | O | 0..1 | Identifies the N6 traffic routing information associated to the target DNAI. |  |
| sourceDnai | Dnai | O | 0..1 | Source DN Access Identifier. |  |
| targetDnai | Dnai | O | 0..1 | Target DN Access Identifier. |  |
| srcUeIpv4Addr | Ipv4Addr | O | 0..1 | The IPv4 Address of the served UE for the source DNAI. |  |
| srcUeIpv6Prefix | Ipv6Prefix | O | 0..1 | The Ipv6 Address Prefix of the served UE for the source DNAI. |  |
| tgtUeIpv4Addr | Ipv4Addr | O | 0..1 | The IPv4 Address of the served UE for the target DNAI. |  |
| tgtUeIpv6Prefix | Ipv6Prefix | O | 0..1 | The Ipv6 Address Prefix of the served UE for the target DNAI. |  |

##### 8.6.5.2.10 Type: IndUeIdentification

Table 8.6.5.2.10-1: Definition of type IndUeIdentification

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| gpsi | Gpsi | O | 0..1 | Represents the GPSI of the UE. |  |
| externalId | ExternalId | O | 0..1 | Represents the External Identifier of the UE. |  |
| ueIpAddr | IpAddr | O | 0..1 | Represents the UE IP address. |  |
| NOTE: Only one of the above attributes shall be present. | | | | | |

##### 8.6.5.2.11 Type: AvailabilityNotif

Table 8.6.5.2.11-1: Definition of type AvailabilityNotif

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| availabilityStatus | AvailabilityStatus | M | 1 | Indicates the availability information of user plane path management events monitoring via the 3GPP 5GC network. |  |

##### 8.6.5.2.12 Type: SelectedACRScenarios

Table 8.6.5.2.12-1: Definition of type SelectedACRScenarios

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| acrList | array(ACRScenario) | M | 0..N | Indicates the list of selected ACR scenario(s) for the combination of AC (identified by the "acId" attribute) and UE (identified by the "ueId" attribute.  If no ACR scenario applies, an empty array is provided within this attribute. |  |
| acId | string | M | 1 | The identifier of the AC for which the selected ACR scenario(s) provided within the "acrList" attribute apply. |  |
| ueId | Gpsi | M | 1 | Represents identifier of the UE for which the selected ACR scenario(s) provided within the "acrList" attribute apply. |  |

##### 8.6.5.2.13 Type: ACRParameters

Table 8.6.5.2.13-1: Definition of type ACRParameters

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| predictExpTime | DateTime | O | 0..1 | The estimated time at which the UE may reach the Predicted/Expected UE location or EAS service area at the latest. |  |

##### 8.6.5.2.14 Type: TrafficFilterInfo

Table 8.6.5.2.14-1: Definition of type TrafficFilterInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| ipFlows | array(string) | C | 1..N | Represents a 3-tuple with protocol, server ip and server port for UL/DL application traffic. The content of the string has the same encoding as the IPFilterRule AVP value as defined in IETF RFC 6733 [25].  (NOTE) |  |
| urls | array(string) | C | 1..N | Indicates URL(s) matching criteria.  (NOTE) |  |
| domainNames | array(string) | C | 1..N | Indicates domain name(s) matching criteria.  (NOTE) |  |
| dnProtocol | DomainNameProtocol | C | 0..1 | Indicates the additional protocol and protocol field for domain names to be matched.  This attribute may only be provided when "domainNames" attribute is present. |  |
| NOTE: At least one of these attributes shall be present. If more than one of these attributes are present, the traffic flow is matched only when every provided attribute has a matching value. | | | | | |

##### 8.6.5.2.15 Type: EasAckInformation

Table 8.6.5.2.15-1: Definition of type EasAckInformation

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| resCode | ResultCode | M | 1 | Indicates the acceptance or rejection of the ACT. |  |

##### 8.6.5.2.16 Type: EasInBundleInfo

Table 8.6.5.2.16-1: Definition of type EasInBundleInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| easId | string | O | 0..1 | Contains the identifier of the EAS that is within an EAS bundle. |  |
| dnais | array(Dnai) | O | 1..N | Contains the List of DNAI(s) associated with the EAS. |  |
| svcArea | ServiceArea | O | 0..1 | Contains the list of geographical and/or topological area(s) that the EAS serves. |  |

#### 8.6.5.3 Simple data types and enumerations

##### 8.6.5.3.1 Introduction

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

##### 8.6.5.3.2 Simple data types

The simple data types defined in table 8.6.5.3.2-1 shall be supported.

Table 8.6.5.3.2-1: Simple data types

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

##### 8.6.5.3.3 Enumeration: AcrMgntEvent

Table 8.6.5.3.3-1: Enumeration AcrMgntEvent

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| UP\_PATH\_CHG | Indicates that the ACR Management Event is user plane path change. |  |
| ACR\_MONITORING | Indicates that the ACR Management Event is ACR monitoring. |  |
| ACR\_FACILITATION | Indicates that the ACR Management Event is ACR facilitation. |  |
| ACT\_START\_STOP | Indicates that the ACR Management Event is ACT start/stop. |  |
| ACR\_SELECTION | Indicates that the ACR Management Event is ACR selection. | EdgeApp\_2 |

##### 8.6.5.3.4 Enumeration: AcrMgntEventFilter

Table 8.6.5.3.4-1: Enumeration AcrMgntEventFilter

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| INTRA\_EDN\_MOBILITY | Indicates that the ACR Management Event filter is intra-EDN mobility. |  |
| INTER\_EDN\_MOBILITY | Indicates that the ACR Management Event filter is inter-EDN mobility. |  |

##### 8.6.5.3.5 Enumeration: ActStatus

Table 8.6.5.3.5-1: Enumeration ActStatus

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| ACT\_START | Indicates ACT start. |  |
| ACT\_STOP | Indicates ACT stop. |  |

##### 8.6.5.3.6 Enumeration: AcrMgntEventFailureCode

Table 8.6.5.3.6-1: Enumeration AcrMgntEventFailureCode

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| 3GPP\_UP\_PATH\_CHANGE\_MON\_NOT\_AVAILABLE | Indicates that the ACR Management Event Subscription failed because user plane path management event notifications from the 3GPP network is NOT available.  This value is only applicable for the "UP\_PATH\_CHG", "ACR\_MONITORING" and "ACR\_FACILITATION" events. |  |
| OTHER\_REASONS | Indicates that the ACR Management Event Subscription failed for other reasons.  This value is applicable for all events. |  |

##### 8.6.5.3.7 Enumeration: AvailabilityStatus

Table 8.6.5.3.7-1: Enumeration AvailabilityStatus

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| AVAILABLE | Indicates availability. |  |
| NOT\_AVAILABLE | Indicates unavailability. |  |

##### 8.6.5.3.8 Enumeration: ResultCode

Table 8.6.5.3.8-1: Enumeration ResultCode

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| ACCEPTED | Indicates acceptance of the ACT. |  |
| REJECTED | Indicates rejection of the ACT. |  |

### 8.6.6 Error Handling

#### 8.6.6.1 General

For the Eees\_ACRManagementEvent API, HTTP error handling shall be supported as specified in clause 7.7. In addition, the requirements in the following clauses are applicable for the Eees\_ACRManagementEvent API.

#### 8.6.6.2 Protocol Errors

No specific protocol errors for the Eees\_ACRManagementEvent API are specified.

#### 8.6.6.3 Application Errors

The application errors defined for the Eees\_ACRManagementEvent API are listed in Table 8.6.6.3-1.

Table 8.6.6.3-1: Application errors

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
| PFD\_MNGT\_NOT\_SUPPORTED | 403 Forbidden | Indicates that the ACR Management Events Subscription creation/update is rejected because PFD Management is needed to fulfill the request but it is not supported by the 3GPP network. |

### 8.6.7 Feature negotiation

General feature negotiation procedures are defined in clause 7.8. Table 8.6.7-1 lists the supported features for Eees\_ACRManagementEvent API.

Table 8.6.7-1: Supported Features

|  |  |  |
| --- | --- | --- |
| Feature number | Feature Name | Description |
| 1 | Notification\_test\_event | Testing of notification connection is supported according to clause 7.6. |
| 2 | Notification\_websocket | The delivery of notifications over Websocket is supported according to clause 7.6. This feature requires that the Notification\_test\_event feature is also supported. |
| 3 | EdgeApp\_2 | This feature indicates the support of the enhancements to the Edge Applications. Within this feature the following enhacements are covered:  - Support of ACR selection event reporting.  - Support of additional ACT start/stop event related information.  - Support of service continuity planning support indication.  - Support of EAS acknowledgement for service continuity planning.  - Support of EAS bundle information reporting. |

## 8.7 Eees\_EECContextRelocation API

### 8.7.1 API URI

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

The request URIs used in HTTP requests shall have the Resource URI structure as defined in clause 7.5 with the following clarifications:

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

- The <apiVersion> shall be "v1".

- The <apiSpecificResourceUriPart> shall be set as described in clause 8.7.2.

### 8.7.2 Resources

#### 8.7.2.1 Overview

This clause describes the structure for the Resource URIs and the resources and methods used for the service.

Figure 8.7.2.1-1 depicts the resource URIs structure for the Eees\_EECContextRelocation API.



Figure 8.7.2.1-1: Resource URI structure of the Eees\_EECContextRelocation API

Table 8.7.2.1-1 provides an overview of the resources and applicable HTTP methods.

Table 8.7.2.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method or custom operation | Description |
| Collection of EEC contexts | /eec-contexts | GET | Retrieve the EEC Context information from a service consumer (e.g., S-EES or CES) |
| POST | Push the EEC Context information to the T-EES. |

#### 8.7.2.2 Resource: Collection of EEC Contexts

##### 8.7.2.2.1 Description

This resource allows to transfer the EEC Context from an service consumer (e.g. S-EES or CES) to the T-EES, for EEC context relocation.

##### 8.7.2.2.2 Resource Definition

Resource URI: **{apiRoot}/eees-eeccontextreloc/<apiVersion>/eec-contexts**

This resource shall support the resource URI variables defined in the table 8.7.2.2.2-1.

Table 8.7.2.2.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5 |

##### 8.7.2.2.3 Resource Standard Methods

###### 8.7.2.2.3.1 GET

This method allows a T-EES to pull the EEC Context from the service consumer (e.g. S-EES or CES as specified in 3GPP TS 23.558 [2], based on the information in the discovery filters. This method shall support the URI query parameters specified in table 8.7.2.2.3.1-1.

Table 8.7.2.2.3.1-1: URI query parameters supported by the GET method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| ees-id | string | M | 1 | The identifier of the requesting EES (T-EES). |
| eec-cntx-id | string | M | 1 | Unique identifier of the EEC Context to authorize the transfer. |
| sess-cntxs | SessionContexts | O | 0..1 | List of service session context information being requested. |

This method shall support the request data structures specified in table 8.7.2.2.3.1-2 and the response data structures and response codes specified in table 8.7.2.2.3.1-3.

Table 8.7.2.2.3.1-2: Data structures supported by the GET Request Body on this resource

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

Table 8.7.2.2.3.1-3: Data structures supported by the GET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| EECContext | M | 1 | 200 OK | The EEC context information matching the input parameters in the request is returned by the service consumer (e.g.S-EES or CES). |
| NOTE: The mandatory HTTP error status code for the GET method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

###### 8.7.2.2.3.2 POST

This method allows the service consumer (e.g. S-EES, CES) to transfer the EEC Context to T-EES to relocate the EEC Context, as specified in 3GPP TS 23.558 [2]. This method shall support the URI query parameters specified in table 8.7.2.2.3.2-1.

Table 8.7.2.2.3.2-1: URI query parameters supported by the POST method on this resource

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

This method shall support the request data structures specified in table 8.7.2.2.3.2-2 and the response data structures and response codes specified in table 8.7.2.2.3.2-3.

Table 8.7.2.2.3.2-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| EECContextPush | M | 1 | EEC Context information of an EEC available at the service consumer. |

Table 8.7.2.2.3.2-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| n/a |  |  | 204 No Content | The EEC context has been successfully transferred to the T-EES. |
| EECContextPushRes | M | 1 | 200 OK | The EEC context has been successfully transferred to the T-EES and the EEC is implicitly registered. |
| 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. | | | | |

##### 8.7.2.2.4 Resource Custom Operations

None.

### 8.7.3 Custom Operations without associated resources

None.

### 8.7.4 Notifications

None.

### 8.7.5 Data Model

#### 8.7.5.1 General

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

Table 8.7.5.1-1 specifies the data types defined specifically for the Eees\_EECContextRelocation API service.

Table 8.7.5.1-1: Eees\_EECContextRelocation API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| EECContext | 8.7.5.2.5 | To represent the EEC context information to be relocated. |  |
| EECContextPush | 8.7.5.2.4 | To represent the EEC context information to be pushed to the T-EES. |  |
| EECContextPushRes | 8.7.5.2.6 | Represents the EEC context push relocation response. |  |
| EECSrvContinuitySupport | 8.7.5.2.8 | Represents the EEC service continuity support and the supported ACR scenarios. |  |
| ImplicitRegDetails | 8.7.5.2.7 | Represents the EEC implicit registration information. |  |
| IndividualSessionContext | 8.7.5.2.3 | To represent single Service session context information. |  |
| SessionContexts | 8.7.5.2.2 | To represent the Service session contexts information in EEC context pull request. |  |

Table 8.7.5.1-2 specifies data types re-used by the Eees\_EECContextRelocation API service.

Table 8.7.5.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| EndPoint | 8.1.5.2.5 | To represent the end point information of the EAS in service session context information. |  |
| ACProfile | 3GPP TS 24.558 [14] | Used to represent the application clients profiles in EEC context. |  |
| ACRScenario | 9.1.5.3.3 | Represents the ACR scenarios. | EdgeApp\_2 |
| EndPoint | 8.1.5.2.5 | Represents the end point information. | EdgeApp\_2 |
| Gpsi | 3GPP TS 29.571 [8] | Used to indicate the identifier of the UE. |  |
| LocationArea5G | 3GPP TS 29.122 [6] | Used to indicate the location information of the UE in the EEC context. |  |
| DateTime | 3GPP TS 29.122 [6] | To indicate the expiry time of the implicit registration. |  |

#### 8.7.5.2 Structured data types

##### 8.7.5.2.1 Introduction

The data type for the Eees\_EECContextRelocation API are defined in the clauses below.

##### 8.7.5.2.2 Type: SessionContexts

Table 8.7.5.2.2-1: Definition of type SessionContexts

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| sessCntxs | array(IndividualSessionContext) | M | 1..N | List of service session context information. |  |

##### 8.7.5.2.3 Type: IndividualSessionContext

Table 8.7.5.2.3-1: Definition of type IndividualSessionContext

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| easId | string | M | 1 | The application identifier of the EAS (e.g. URI, FQDN) providing the application services. |  |
| endPt | EndPoint | M | 1 | End point information of the EAS in easId attribute. |  |
| acId | string | O | 0..1 | Identifier of the AC for which the service session information is provided. |  |
| acrList | array(ACRScenario) | O | 1..N | List of the selected ACR scenarios. | EdgeApp\_2 |

##### 8.7.5.2.4 Type: EECContextPush

Table 8.7.5.2.4-1: Definition of type EECContextPush

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| eesId | string | M | 1 | Identifier of the S-EES pushing the EEC context. |  |
| eecCntx | EECContext | M | 1 | EEC Context to be relocated to T-EES. |  |
| tgtEas | EndPoint | O | 0..1 | Contains the endpoint information of the selected T-EAS. | EdgeApp\_2 |
| acrScenariosSelReq | boolean | O | 0..1 | Contains the ACR scenarios selection request.  When set to "true", this attribute indicates to the T-EES to select the ACR scenarios list. When set to "false" or omitted, this attribute indicates to the T-EES that ACR scenarios selection is not needed.  The default value when omitted is "false". | EdgeApp\_2 |

##### 8.7.5.2.5 Type: EECContext

Table 8.7.5.2.5-1: Definition of type EECContext

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| eecId | string | M | 1 | Unique identifier of the EEC |  |
| cntxId | string | M | 1 | Unique identifier assigned to the EEC Context |  |
| ueId | Gpsi | O | 0..1 | The identifier of the UE hosting the EEC. |  |
| e1Subs | array(string) | O | 1..N | List of subscription IDs for the capability exposure for the EEC ID. |  |
| ueLoc | LocationArea5G | O | 0..1 | Latest location information of the UE hosting the EEC, that is available at the EES. |  |
| acProfs | array(ACProfile) | O | 1..N | List of ACs profiles |  |
| sessCntxs | SessionContexts | O | 0..1 | List of associated Service Session Contexts. Each Service Session Context includes information maintained by the EES for the services (involving UE related resources) received from an EAS registered to the EES. |  |
| eecSrvContSupp | EECSrvContinuitySupport | O | 0..1 | Represent service continuity support related information. | EdgeApp\_2 |
| ueMobSuppInd | boolean | O | 0..1 | Contains the UE Mobility Support indication.  When set to "true", this attribute indicates that UE Mobility Support is required. When set to "false" or omitted, this attribute indicates that UE Mobility Support is not required.  The default value when omitted is "false". | EdgeApp\_2 |

##### 8.7.5.2.6 Type: EECContextPushRes

Table 8.7.5.2.6-1: Definition of type EECContextPushRes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| implReg | ImplicitRegDetails | C | 0..1 | Provides implicit registration details.  (NOTE) |  |
| selAcrScenariosList | array(ACRScenario) | O | 1..N | Contains the list of ACR scenarios selected by the T-EES. | EdgeApp\_2 |
| NOTE: This attribute shall be included if the T-EES has performed implicit registration of the EEC. | | | | | |

##### 8.7.5.2.7 Type: ImplicitRegDetails

Table 8.7.5.2.7-1: Definition of type ImplicitRegDetails

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| regId | string | M | 1 | Represents registration ID of the EEC whose EEC context is pushed |  |
| expTime | DateTime | O | 0..1 | Represents the expiration time of the registration. If absent, then it indicates that the registration of the EEC never expires. |  |

##### 8.7.5.2.8 Type: EECSrvContinuitySupport

Table 8.7.5.2.8-1: Definition of type EECSrvContinuitySupport

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| srvContSupp | boolean | M | 1 | This attribute is to indicate EEC service continuity support.  When set to "true", this attribute indicates  EEC supports service continuity.  When set to "false", this attribute indicates EEC does not support service continuity.  The default value when omitted is "false". |  |
| acrScenarios | array(ACRScenario) | C | 1..N | This attribute indicates the list of ACR scenarios supported by EEC.  This attribute shall be present only when the "srvContSupp" attribute is set to "true". |  |

#### 8.7.5.3 Simple data types and enumerations

None.

### 8.7.6 Error Handling

General error responses are defined in clause 7.7.

### 8.7.7 Feature negotiation

General feature negotiation procedures are defined in clause 7.8. Table 8.7.7-1 lists the supported features for Eees\_EECContextRelocation API.

Table 8.7.7-1: Supported Features

|  |  |  |
| --- | --- | --- |
| **Feature number** | **Feature Name** | **Description** |
| 1 | EdgeApp\_2 | This feature indicates the support of the phase 2 of the definition of EDGE applications support. Within this feature, the following enhancements are covered:  - support the "ACR Selection" event subscription and reporting. |

## 8.8 Eees\_EELManagedACR API

### 8.8.1 Introduction

The Eees\_EELManagedACR service shall use the Eees\_ACRStatusUpdate API.

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

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

The request URIs used in HTTP requests shall have the Resource URI structure defined in clause 5.2.4 of 3GPP TS 29.122 [6], i.e.:

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

with the following components:

- The {apiRoot} shall be set as described in clause 5.2.4 of 3GPP TS 29.122 [6].

- The <apiName>shall be "eees-eel-acr".

- The <apiVersion> shall be "v1".

- The <apiSpecificSuffixes> shall be set as described in clause 5.2.4 of 3GPP TS 29.122 [6].

### 8.8.2 Usage of HTTP

The provisions of clause 5.2.2 of 3GPP TS 29.122 [6] shall apply for the Eees\_EELManagedACR API.

### 8.8.3 Resources

#### 8.8.3.1 Overview

This clause describes the structure for the Resource URIs and the resources and methods used for the service.

Figure 8.8.3.1-1 depicts the resource URIs structure for the Eees\_EELManagedACR API.



Figure 8.8.3.1-1: Resource URIs structure of the Eees\_EELManagedACR API

Table 8.8.3.1-1 provides an overview of the resources and applicable HTTP methods for the Eees\_EELManagedACR API.

Table 8.8.3.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method or custom operation | Description |
| ACT Status Subscriptions | /subscriptions | GET | Retrieve all the active ACT Status Subscription resources managed by the EES. |
| POST | Request the creation of a subscription to ACT status reporting during an EEL Managed ACR. |
| Individual ACT Status Subscription | /subscriptions/{subscriptionId} | GET | Retrieve an Individual ACT Status Subscription resource identified by the provided subscription identifier. |

#### 8.8.3.2 Resource: ACT Status Subscriptions

##### 8.8.3.2.1 Description

This resource represents the collection of ACT Status Subscriptions managed by the EES.

##### 8.8.3.2.2 Resource Definition

Resource URI: **{apiRoot}/eees-eel-acr/<apiVersion>/subscriptions**

This resource shall support the resource URI variables defined in table 8.8.3.2.2-1.

Table 8.8.3.2.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| apiRoot | string | See clause 5.2.4 of 3GPP TS 29.122 [6]. |

##### 8.8.3.2.3 Resource Standard Methods

The following clauses specify the standard methods supported by the resource.

###### 8.8.3.2.3.1 GET

The GET method allows a service consumer to retrieve all the active ACT Status Subscriptions managed by the EES.This method shall support the URI query parameters specified in table 8.8.3.2.3.1-1.

Table 8.8.3.2.3.1-1: URI query parameters supported by the GET method on this resource

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

This method shall support the request data structures specified in table 8.8.3.2.3.1-2 and the response data structures and response codes specified in table 8.8.3.2.3.1-3.

Table 8.8.3.2.3.1-2: Data structures supported by the GET Request Body on this resource

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

Table 8.8.3.2.3.1-3: Data structures supported by the GET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| array(ACTStatusSubsc) | M | 0..N | 200 OK | Successful case. All the active ACT Status Subscriptions managed by the EES are returned. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource 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 URI of the resource 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 HTTP GET method listed in table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.8.3.2.3.1-4: Headers supported by the 307 Response Code on this resource

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

Table 8.8.3.2.3.1-5: Headers supported by the 308 Response Code on this resource

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

###### 8.8.3.2.3.2 POST

The POST method allows a service consumer (i.e. T-EAS) to request the creation of a subscription to ACT status reporting at the EES (i.e. T-EES). This method shall support the URI query parameters specified in table 8.8.3.2.3.2-1.

Table 8.8.3.2.3.2-1: URI query parameters supported by the POST method on this resource

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

This method shall support the request data structures specified in table 8.8.3.2.3.2-2 and the response data structures and response codes specified in table 8.8.3.2.3.2-3.

Table 8.8.3.2.3.2-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| ACTStatusSubsc | M | 1 | Represents the parameters to request the creation of a subscription to ACT status reporting. |

Table 8.8.3.2.3.2-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| ACTStatusSubsc | M | 1 | 201 Created | Successful case. The subscription is successfully created and a representation of the created Individual ACT Status Subscription resource is returned.  An HTTP "Location" header that contains the resource URI of the created Individual ACT Status Subscription resource shall also be included. |
| NOTE: The mandatory HTTP error status code for the HTTP POST method listed in table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.8.3.2.3.2-4: Headers supported by the 201 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains the URI of the newly created resource, according to the structure: {apiRoot}/eees-eel-act/<apiVersion>/subscriptions/{subscriptionId} |

##### 8.8.3.2.4 Resource Custom Operations

There are no resource custom operations defined for this resource in this release of the specification.

#### 8.8.3.3 Resource: Individual ACT Status Subscription

##### 8.8.3.3.1 Description

This resource represents an Individual ACT Status subscription managed by the EES.

##### 8.8.3.3.2 Resource Definition

Resource URI: **{apiRoot}/eees-eel-acr/<apiVersion>/subscriptions/{subscriptionId}**

This resource shall support the resource URI variables defined in table 8.8.3.3.2-1.

Table 8.8.3.3.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| apiRoot | string | See clause 5.2.4 of 3GPP TS 29.122 [6]. |
| subscriptionId | string | Represents the subscription identifier. |

##### 8.8.3.3.3 Resource Standard Methods

The following clauses specify the standard methods supported by the resource.

###### 8.8.3.3.3.1 GET

The GET method allows a service consumer to retrieve an ACT status subscription identified by the subscription identifier included in the request URI (i.e. within the "/{subscriptionId}" path segment).This method shall support the URI query parameters specified in table 8.8.3.3.3.1-1.

Table 8.8.3.3.3.1-1: URI query parameters supported by the GET method on this resource

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

This method shall support the request data structures specified in table 8.8.3.3.3.1-2 and the response data structures and response codes specified in table 8.8.3.3.3.1-3.

Table 8.8.3.3.3.1-2: Data structures supported by the GET Request Body on this resource

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

Table 8.8.3.3.3.1-3: Data structures supported by the GET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| ACTStatusSubsc | M | 1 | 200 OK | Successful case. The requested Individual ACT Status Subscription resource is returned. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource 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 URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6]. |
| NOTE: The manadatory HTTP error status code for the HTTP GET method listed in table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.8.3.3.3.1-4: Headers supported by the 307 Response Code on this resource

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

Table 8.8.3.3.3.1-5: Headers supported by the 308 Response Code on this resource

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

##### 8.8.3.3.4 Resource Custom Operations

There are no resource custom operations defined for this resource in this release of the specification.

### 8.8.4 Custom Operations without associated resources

#### 8.8.4.1 Overview

The structure of the custom operation URIs of the Eees\_EELManagedACR API is shown in Figure 8.8.4.1-1.



Figure 8.8.4.1-1: Custom operation URI structure of the Eees\_EELManagedACR API

Table 8.8.4.1-1 provides an overview of the custom operations and applicable HTTP methods defined for the Eees\_EELManagedACR API.

Table 8.8.4.1-1: Custom operations without associated resources

|  |  |  |  |
| --- | --- | --- | --- |
| Operation name | Custom operation URI | Mapped HTTP method | Description |
| RequestEELManagedACR | /request-eelacr | POST | Enables a service consumer (i.e. S-EAS) to request the EES (i.e. S-EES) to handle all the operations of an ACR. |

#### 8.8.4.2 Operation: RequestEELManagedACR

##### 8.8.4.2.1 Description

The custom operation enables a service consumer (i.e. S-EAS) to request the EES (i.e. S-EES) to handle all the operations of an ACR.

##### 8.8.4.2.2 Operation Definition

This operation shall support the request data structures and the response data structures and response codes specified in tables 8.8.4.2.2-1 and 8.8.4.2.2-2.

Table 8.8.4.2.2-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| EELACRReq | M | 1 | Parameters to request the EES (i.e. S-EES) to handle all the operations of an ACR. |

Table 8.8.4.2.2-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| EELACRResp | M | 1 | 200 OK | The requested EEL Managed ACR initiation was successfully received and processed.  The response body contains the feedback of the EES. |
| 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 manadatory HTTP error status code for the HTTP POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.8.4.2.2-3: 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 8.8.4.2.2-4: 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. |

### 8.8.5 Notifications

#### 8.8.5.1 General

Notifications shall comply to clause 5.2.5 of 3GPP TS 29.122 [6].

Table 8.8.5.1-1: Notifications overview

|  |  |  |  |
| --- | --- | --- | --- |
| Notification | Callback URI | HTTP method or custom operation | Description  (service operation) |
| ACT Status Notification | {notificationUri}/act-status | act-status (POST) | This service operation enables an EES to notify a previously subscribed a service consumer (i.e. EAS) on ACT status information. |

#### 8.8.5.2 ACT Status Notification

##### 8.8.5.2.1 Description

The ACT Status Notification is used by an EES to notify a previously subscribed service consumer (i.e. EAS) on ACT status information.

##### 8.8.5.2.2 Target URI

The Callback URI **"{notificationUri}**/**act-status"** shall be used with the callback URI variables defined in table 8.8.5.2.2-1.

Table 8.8.5.2.2-1: Callback URI variables

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| notificationUri | Uri | String formatted as a URI containing the Callback URI. |

##### 8.8.5.2.3 Standard Methods

###### 8.8.5.2.3.1 POST

This method shall support the request data structures specified in table 8.8.5.2.3.1-1 and the response data structures and response codes specified in table 8.8.5.2.3.1-2.

Table 8.8.5.2.3.1-1: Data structures supported by the POST Request Body

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| ACTStatusNotif | M | 1 | Represents an ACT status notification. |

Table 8.8.5.2.3.1-2: Data structures supported by the POST Response Body

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| n/a |  |  | 204 No Content | Successful case. The ACT status notification is successfully received and acknowledged. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI representing the end point of an alternative EAS where the notification should be sent.  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 URI representing the end point of an alternative EAS where the notification should be sent.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [6]. |
| NOTE: The mandatory HTTP error status codes for the POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.8.5.2.3.1-3: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative EAS towards which the notification should be redirected. |

Table 8.8.5.2.3.1-4: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI representing the end point of an alternative EAS towards which the notification should be redirected. |

### 8.8.6 Data Model

#### 8.8.6.1 General

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

Table 8.8.6.1-1 specifies the data types defined for the Eees\_EELManagedACR API.

Table 8.8.6.1-1: Eees\_EELManagedACR API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Clause defined | Description | Applicability |
| EELACRReq | 8.8.6.2.2 | Represents the parameters to request the EES (e.g. S-EES) to handle all the operations of an ACR. |  |
| EELACRResp | 8.8.6.2.3 | Represents the feedback of the EES on EEL Managed ACR request. |  |
| ACTStatusSubsc | 8.8.6.2.4 | Represents the parameters to request the creation of a subscription to ACT status reporting. |  |
| ACTStatusNotif | 8.8.6.2.5 | Represents an ACT status notification. |  |

Table 8.8.6.1-2 specifies data types re-used by the Eees\_EELManagedACR API from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Eees\_EELManagedACR API.

Table 8.8.6.1-2: Eees\_EELManagedACR API re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| ACTResult | Clause 8.11.6.3.3 | Represents the result of ACT. |  |
| EasCharacteristics | 3GPP TS 24.558 [14] | Represents the EAS characteristics. |  |
| Gpsi | 3GPP TS 29.571 [8] | Represents the identifier of a UE. |  |
| SupportedFeatures | 3GPP TS 29.571 [8] | Used to negotiate the applicability of the optional features. |  |
| Uri | 3GPP TS 29.122 [6] | Represents a URI. |  |

#### 8.8.6.2 Structured data types

##### 8.8.6.2.1 Introduction

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

##### 8.8.6.2.2 Type: EELACRReq

Table 8.8.6.2.2-1: Definition of type EELACRReq

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| ueId | Gpsi | M | 1 | Contains the UE identifier in the form of a GPSI. |  |
| easCharacs | array(EasCharacteristics) | M | 1 | Contains a set of EAS characteristics to be used to determine the required EASs. |  |
| appCtxtStoreAddr | Uri | O | 0..1 | Contains the URI via which the Application Context can be accessed for ACT. |  |
| suppFeat | SupportedFeatures | C | 0..1 | Contains the list of supported features among the ones defined in clause 8.8.8.  This parameter shall be provided if at least one feature is supported by the EAS. |  |

##### 8.8.6.2.3 Type: EELACRResp

Table 8.8.6.2.3-1: Definition of type EELACRResp

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| appCtxtStoreAddr | Uri | C | 0..1 | Contains the URI via which the Application Context can be accessed for ACT.  This attribute shall be included if it was not received from the EAS in the related EEL Managed ACR request. |  |
| suppFeat | SupportedFeatures | C | 0..1 | Indicates the list of negotiated supported features.  This parameter shall be provided by the EES in the response to a request in which the EAS provided the list of features that it supports. |  |

##### 8.8.6.2.4 Type: ACTStatusSubsc

Table 8.8.6.2.4-1: Definition of type ACTStatusSubsc

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| easId | string | M | 1 | Contains the application identifier of the EAS (e.g. URI, FQDN). |  |
| notificationUri | Uri | M | 1 | Contains the URI via which the EAS desires to receive ACT status notifications. |  |
| suppFeat | SupportedFeatures | C | 0..1 | Contains the list of supported features among the ones defined in clause 8.8.8.  This parameter shall be provided if at least one feature is supported by the EAS. |  |

##### 8.8.6.2.5 Type: ACTStatusNotif

Table 8.8.6.2.5-1: Definition of type ACTStatusNotif

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| subscriptionId | string | M | 1 | Subscription identifier. |  |
| actStatus | ACTResult | M | 1 | Contains the reported ACT status. |  |

#### 8.8.6.3 Simple data types and enumerations

##### 8.8.6.3.1 Introduction

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

##### 8.8.6.3.2 Simple data types

The simple data types defined in table 8.8.6.3.2-1 shall be supported.

Table 8.8.6.3.2-1: Simple data types

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

#### 8.8.6.4 Data types describing alternative data types or combinations of data types

There are no data types describing alternative data types or combinations of data types defined for this API in this release of the specification.

#### 8.8.6.5 Binary data

##### 8.8.6.5.1 Binary Data Types

Table 8.8.6.5.1-1: Binary Data Types

|  |  |  |
| --- | --- | --- |
| Name | Clause defined | Content type |
|  |  |  |

### 8.8.7 Error Handling

#### 8.8.7.1 General

For the Eees\_EELManagedACR API, HTTP error responses shall be supported as specified in clause 5.2.6 of 3GPP TS 29.122 [6]. Protocol errors and application errors specified in clause 5.2.6 of 3GPP TS 29.122 [6] shall be supported for the HTTP status codes specified in table 5.2.6-1 of 3GPP TS 29.122 [6].

In addition, the requirements in the following clauses are applicable for the Eees\_EELManagedACR API.

#### 8.8.7.2 Protocol Errors

No specific protocol errors for the Eees\_EELManagedACR API are specified.

#### 8.8.7.3 Application Errors

The application errors defined for the Eees\_EELManagedACR API are listed in Table 8.8.7.3-1.

Table 8.8.7.3-1: Application errors

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
|  |  |  |

### 8.8.8 Feature negotiation

The optional features in table 8.8.8-1 are defined for the Eees\_EELManagedACR API. They shall be negotiated using the extensibility mechanism defined in clause 5.2.7 of 3GPP TS 29.122 [6].

Table 8.8.8-1: Supported Features

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

## 8.9 Eees\_ACRStatusUpdate API

### 8.9.1 Introduction

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

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

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

The request URIs used in HTTP requests shall have the Resource URI structure defined in clause 5.2.4 of 3GPP TS 29.122 [6], i.e.:

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

with the following components:

- The {apiRoot} shall be set as described in clause 5.2.4 of 3GPP TS 29.122 [6].

- The <apiName>shall be "eees-acrstatus-update".

- The <apiVersion> shall be "v1".

- The <apiSpecificSuffixes> shall be set as described in clause 5.2.4 of 3GPP TS 29.122 [6].

### 8.9.2 Usage of HTTP

The provisions of clause 5.2.2 of 3GPP TS 29.122 [6] shall apply for the Eees\_ACRStatusUpdate API.

### 8.9.3 Resources

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

### 8.9.4 Custom Operations without associated resources

#### 8.9.4.1 Overview

The structure of the custom operation URIs of the Eees\_ACRStatusUpdate API is shown in Figure 8.9.4.1-1.



Figure 8.9.4.1-1: Custom operation URI structure of the Eees\_ACRStatusUpdate API

Table 8.9.4.1-1 provides an overview of the custom operations and applicable HTTP methods defined for the Eees\_ACRStatusUpdate API.

Table 8.9.4.1-1: Custom operations without associated resources

|  |  |  |  |
| --- | --- | --- | --- |
| Operation name | Custom operation URI | Mapped HTTP method | Description |
| RequestACRUpdate | /request-acrupdate | POST | Enables a service consumer (i.e. S-EAS or T-EAS) to update the information related to ACR (e.g. indicate the status of ACT, update the notification target address) at the EES. |

#### 8.9.4.2 Operation: RequestACRUpdate

##### 8.9.4.2.1 Description

The custom operation enables a service consumer (i.e. S-EAS or T-EAS) to update the information related to ACR (e.g. indicate the status of ACT, update the notification target address) at the EES.

##### 8.9.4.2.2 Operation Definition

This operation shall support the request data structures and the response data structures and response codes specified in tables 8.9.4.2.2-1 and 8.9.4.2.2-2.

Table 8.9.4.2.2-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| ACRUpdateData | M | 1 | Parameters to update the information related to ACR (e.g. indicate the status of ACT, update the notification target address). |

Table 8.9.4.2.2-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| ACRDataStatus | M | 1 | 200 OK | The communicated ACR update information was successfully received.  The response body contains the feedback of the EES. |
| n/a |  |  | 204 No Content | The communicated ACR update information was successfully received. |
| 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 manadatory HTTP error status code for the HTTP POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.9.4.2.2-3: 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 8.9.4.2.2-4: 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. |

### 8.9.5 Notifications

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

### 8.9.6 Data Model

#### 8.9.6.1 General

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

Table 8.9.6.1-1 specifies the data types defined for the Eees\_ACRStatusUpdate API.

Table 8.9.6.1-1: Eees\_ACRStatusUpdate API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Clause defined | Description | Applicability |
| ACRUpdateData | 8.9.6.2.2 | Represents the parameters to update the information related to ACR (e.g. indicate the status of ACT, update the notification target address). |  |
| ACRDataStatus | 8.9.6.2.3 | Represents the ACR status information. |  |
| ACTFailureCause | 8.9.6.3.5 | Represents the cause of ACT failure. |  |
| ACTResult | 8.9.6.3.3 | Represents the result of ACT. |  |
| ACTResultInfo | 8.9.6.2.4 | Represents the result of ACT and the related information. |  |
| E3SubscsStatus | 8.9.6.3.4 | Represents the status of the initialization of EDGE-3 subscriptions. |  |

Table 8.9.6.1-2 specifies data types re-used by the Eees\_ACRStatusUpdate API from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Eees\_ACRStatusUpdate API.

Table 8.9.6.1-2: Eees\_ACRStatusUpdate API re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| EndPoint | Clause 8.1.5.2.5 | Represents the endpoint information. |  |
| Gpsi | 3GPP TS 29.571 [8] | Represents the identifier of a UE. |  |
| Uri | 3GPP TS 29.122 [6] | Represents a URI. |  |

#### 8.9.6.2 Structured data types

##### 8.9.6.2.1 Introduction

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

##### 8.9.6.2.2 Type: ACRUpdateData

Table 8.9.6.2.2-1: Definition of type ACRUpdateData

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| easId | string | M | 1 | Contains the application identifier of the EAS (e.g. URI, FQDN) that is sending the ACR status update request. |  |
| acId | string | O | 0..1 | Contains the identifier of the concerned AC. |  |
| actResultInfo | ACTResultInfo | O | 0..1 | Contains the status of ACT, i.e. whether it was successful or failed, and the related information.  This attribute may be included if the service consumer is the S-EAS or the T-EAS. In the case of an EEL Managed ACR, this attribute shall not be included by a T-EAS acting as the service consumer.  (NOTE) |  |
| e3SubscIds | array(string) | O | 1..N | Contains a list of EDGE-3 subscription identifiers.  This attribute may be included only if the service consumer sending the request is the T-EAS.  (NOTE) |  |
| e3NotificationUri | Uri | O | 0..1 | Contains the updated notification URI via which the EAS desires to receive notifications (related to EDGE-3 subscriptions) from the EES.  This attribute may be included only if the service consumer sending the request is the T-EAS.  (NOTE) |  |
| NOTE: At least one of the "actResultInfo", "e3SubscIds" or "e3NotificationUri" attributes shall be present. | | | | | |

##### 8.9.6.2.3 Type: ACRDataStatus

Table 8.9.6.2.3-1: Definition of type ACRDataStatus

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| e3SubscsStatus | E3SubscsStatus | M | 1 | Contains the status of the initialization of EDGE-3 subscriptions, i.e. whether it was successful or failed. |  |
| e3SubscIds | array(string) | O | 1..N | Contains an updated list of EDGE-3 subscription identifiers. The absence of a subscription identifier implies no change for this subscription identifier.  This attribute may be provided if the "e3SubscsStatus" attribute is set to "SUCCESSFUL". |  |

##### 8.9.6.2.4 Type: ACTResultInfo

Table 8.9.6.2.4-1: Definition of type ACTResultInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| actResult | ACTResult | M | 1 | Contains the status of ACT, i.e. whether it was successful or failed. |  |
| actFailureCause | ACTFailureCause | C | 0..1 | Contains the cause of ACT failure.  This attribute shall be provided only if the "actResult" attribute is set to "FAILED". |  |
| ueId | Gpsi | M | 1 | Contains the identifier of the concerned UE. |  |
| easEndPoint | EndPoint | M | 1 | Contains the endpoint of the other EAS to or from which the ACT was performed. |  |

#### 8.9.6.3 Simple data types and enumerations

##### 8.9.6.3.1 Introduction

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

##### 8.9.6.3.2 Simple data types

The simple data types defined in table 8.9.6.3.2-1 shall be supported.

Table 8.9.6.3.2-1: Simple data types

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

##### 8.9.6.3.3 Enumeration: ACTResult

The enumeration ACTResult represents the result of ACT. It shall comply with the provisions defined in table 8.9.6.3.3-1.

Table 8.9.6.3.3-1: Enumeration ACTResult

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| SUCCESSFUL | Indicates that the ACT was successful. |  |
| FAILED | Indicates that the ACT failed. |  |

##### 8.9.6.3.4 Enumeration: E3SubscsStatus

The enumeration E3SubscsStatus represents the status of the initialization of EDGE-3 subscriptions. It shall comply with the provisions defined in table 8.9.6.3.4-1.

Table 8.9.6.3.4-1: Enumeration E3SubscsStatus

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| SUCCESSFUL | Indicates that the initialization of EDGE-3 subscriptions was successful. |  |
| FAILED | Indicates that the initialization of EDGE-3 subscriptions failed. |  |

##### 8.9.6.3.5 Enumeration: ACTFailureCause

The enumeration ACTFailureCause represents the cause of ACT failure. It shall comply with the provisions defined in table 8.9.6.3.5-1.

Table 8.9.6.3.5-1: Enumeration ACTFailureCause

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| ACR\_CANCELLATION | Indicates that the ACT failed due to the cancellation of the ACR. |  |
| OTHER | Indicates that the ACT failed for other reasons. |  |

#### 8.9.6.4 Data types describing alternative data types or combinations of data types

There are no data types describing alternative data types or combinations of data types defined for this API in this release of the specification.

#### 8.9.6.5 Binary data

##### 8.9.6.5.1 Binary Data Types

Table 8.9.6.5.1-1: Binary Data Types

|  |  |  |
| --- | --- | --- |
| Name | Clause defined | Content type |
|  |  |  |

### 8.9.7 Error Handling

#### 8.9.7.1 General

For the Eees\_ACRStatusUpdate API, HTTP error responses shall be supported as specified in clause 5.2.6 of 3GPP TS 29.122 [6]. Protocol errors and application errors specified in clause 5.2.6 of 3GPP TS 29.122 [6] shall be supported for the HTTP status codes specified in table 5.2.6-1 of 3GPP TS 29.122 [6].

In addition, the requirements in the following clauses are applicable for the Eees\_ACRStatusUpdate API.

#### 8.9.7.2 Protocol Errors

No specific protocol errors for the Eees\_ACRStatusUpdate API are specified.

#### 8.9.7.3 Application Errors

The application errors defined for the Eees\_ACRStatusUpdate API are listed in Table 8.9.7.3-1.

Table 8.9.7.3-1: Application errors

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
|  |  |  |

### 8.9.8 Feature negotiation

The optional features in table 8.9.8-1 are defined for the Eees\_ACRStatusUpdate API. They shall be negotiated using the extensibility mechanism defined in clause 5.2.7 of 3GPP TS 29.122 [6].

Table 8.9.8-1: Supported Features

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

## 8.10 Eees\_ACRParameterInformation API

### 8.10.1 Introduction

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

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

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

The request URIs used in HTTP requests shall have the Resource URI structure defined in clause 5.2.4 of 3GPP TS 29.122 [6], i.e.:

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

with the following components:

- The {apiRoot} shall be set as described in clause 5.2.4 of 3GPP TS 29.122 [6].

- The <apiName>shall be "eees-acr-param".

- The <apiVersion> shall be "v1".

- The <apiSpecificSuffixes> shall be set as described in clause 5.2.4 of 3GPP TS 29.122 [6].

### 8.10.2 Usage of HTTP

The provisions of clause 5.2.2 of 3GPP TS 29.122 [6] shall apply for the Eees\_ACRParameterInformation API.

### 8.10.3 Resources

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

### 8.10.4 Custom Operations without associated resources

#### 8.10.4.1 Overview

The structure of the custom operation URIs of the Eees\_ACRParameterInformation API is shown in Figure 8.10.4.1-1.



Figure 8.10.4.1-1: Custom operation URI structure of the Eees\_ACRParameterInformation API

Table 8.10.4.1-1 provides an overview of the custom operations and applicable HTTP methods defined for the Eees\_ACRParameterInformation API.

Table 8.10.4.1-1: Custom operations without associated resources

|  |  |  |  |
| --- | --- | --- | --- |
| Operation name | Custom operation URI | Mapped HTTP method | Description |
| Request | /send-acrparamsinfo | POST | Enables a service consumer (e.g. S-EES, CES) to send ACR parameters information to the T-EES. |

#### 8.10.4.2 Operation: Request

##### 8.10.4.2.1 Description

The custom operation enables a service consumer (e.g., S-EES, CES) to send ACR parameters information to the T-EES.

##### 8.10.4.2.2 Operation Definition

This operation shall support the request data structures and the response data structures and response codes specified in tables 8.10.4.2.2-1 and 8.10.4.2.2-2.

Table 8.10.4.2.2-1: Data structures supported by the POST Request Body

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| ACRParamsInfo | M | 1 | Contains the ACR parameters information to be provisioned/updated. |

Table 8.10.4.2.2-2: Data structures supported by the POST Response Body

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| ACRParamsInfo | M | 1 | 200 OK | Successful case. The ACR parameters information is successfully received and the content of these ACR parameters information is returned in the response body. |
| n/a |  |  | 204 No Content | Successful case. The ACR parameter information is successfully received and no content is returned 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 manadatory HTTP error status code for the HTTP POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.10.4.2.2-3: Headers supported by the 307 Response Code

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

Table 8.10.4.2.2-4: Headers supported by the 308 Response Code

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

### 8.10.5 Notifications

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

### 8.10.6 Data Model

#### 8.10.6.1 General

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

Table 8.10.6.1-1 specifies the data types defined for the Eees\_ACRParameterInformation API.

Table 8.10.6.1-1: Eees\_ACRParameterInformation API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Clause defined | Description | Applicability |
| ACRParamsInfo | 8.10.6.2.2 | Represents the ACR parameters information. |  |

Table 8.10.6.1-2 specifies data types re-used by the Eees\_ACRParameterInformation API from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Eees\_ACRParameterInformation API.

Table 8.10.6.1-2: Eees\_ACRParameterInformation API re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| ACRParameters | Clause 8.6.5.2.13 | Represents ACR parameters. |  |
| EndPoint | Clause 8.1.5.2.5 | Represents the endpoint information. |  |

#### 8.10.6.2 Structured data types

##### 8.10.6.2.1 Introduction

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

##### 8.10.6.2.2 Type: ACRParamsInfo

Table 8.10.6.2.2-1: Definition of type ACRParamsInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| eesId | string | M | 1 | Contains the identifier of the service consumer (e.g., S-EES, CES) that is sending the request. |  |
| eecId | string | M | 1 | Contains the identifier of the concerned EEC. |  |
| acId | string | M | 1 | Contains the identifier of the concerned AC. |  |
| sEasEndPoint | EndPoint | M | 1 | Contains the endpoint information of the S-EAS. |  |
| tEasEndPoint | EndPoint | M | 1 | Contains the endpoint information of the T-EAS. |  |
| acrParams | ACRParameters | M | 1 | Contains the ACR Parameters. |  |

#### 8.10.6.3 Simple data types and enumerations

##### 8.10.6.3.1 Introduction

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

##### 8.10.6.3.2 Simple data types

The simple data types defined in table 8.10.6.3.2-1 shall be supported.

Table 8.10.6.3.2-1: Simple data types

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

#### 8.10.6.4 Data types describing alternative data types or combinations of data types

There are no data types describing alternative data types or combinations of data types defined for this API in this release of the specification.

#### 8.10.6.5 Binary data

##### 8.10.6.5.1 Binary Data Types

Table 8.10.6.5.1-1: Binary Data Types

|  |  |  |
| --- | --- | --- |
| Name | Clause defined | Content type |
|  |  |  |

### 8.10.7 Error Handling

#### 8.10.7.1 General

For the Eees\_ACRParameterInformation API, HTTP error responses shall be supported as specified in clause 5.2.6 of 3GPP TS 29.122 [6]. Protocol errors and application errors specified in clause 5.2.6 of 3GPP TS 29.122 [6] shall be supported for the HTTP status codes specified in table 5.2.6-1 of 3GPP TS 29.122 [6].

In addition, the requirements in the following clauses are applicable for the Eees\_ACRParameterInformation API.

#### 8.10.7.2 Protocol Errors

No specific protocol errors for the Eees\_ACRParameterInformation API are specified.

#### 8.10.7.3 Application Errors

The application errors defined for the Eees\_ACRParameterInformation API are listed in Table 8.10.7.3-1.

Table 8.10.7.3-1: Application errors

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
|  |  |  |

### 8.10.8 Feature negotiation

The optional features in table 8.10.8-1 are defined for the Eees\_ACRParameterInformation API. They shall be negotiated using the extensibility mechanism defined in clause 5.2.7 of 3GPP TS 29.122 [6].

Table 8.10.8-1: Supported Features

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

## 8.11 Eees\_CommonEASAnnouncement API

### 8.11.1 Introduction

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

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

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

The request URIs used in HTTP requests shall have the Resource URI structure defined in clause 5.2.4 of 3GPP TS 29.122 [6], i.e.:

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

with the following components:

- The {apiRoot} shall be set as described in clause 5.2.4 of 3GPP TS 29.122 [6].

- The <apiName>shall be "eees-common-eas".

- The <apiVersion> shall be "v1".

- The <apiSpecificSuffixes> shall be set as described in clause 5.2.4 of 3GPP TS 29.122 [6].

### 8.11.2 Usage of HTTP

The provisions of clause 5.2.2 of 3GPP TS 29.122 [6] shall apply for the Eees\_CommonEASAnnouncement API.

### 8.11.3 Resources

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

### 8.11.4 Custom Operations without associated resources

#### 8.11.4.1 Overview

The structure of the custom operation URIs of the Eees\_CommonEASAnnouncement API is shown in Figure 8.11.4.1-1.



Figure 8.11.4.1-1: Custom operation URI structure of the Eees\_CommonEASAnnouncement API

Table 8.11.4.1-1 provides an overview of the custom operations and applicable HTTP methods defined for the Eees\_CommonEASAnnouncement API.

Table 8.11.4.1-1: Custom operations without associated resources

|  |  |  |  |
| --- | --- | --- | --- |
| Operation name | Custom operation URI | Mapped HTTP method | Description |
| Declare | /declare | POST | Enables a service consumer (i.e. announcing EES) to send common EAS information to the receiving EES. |

#### 8.11.4.2 Operation: Declare

##### 8.11.4.2.1 Description

The custom operation enables a service consumer (i.e. announcing EES) to send common EAS information to the receiving EES.

##### 8.11.4.2.2 Operation Definition

This operation shall support the request data structures and the response data structures and response codes specified in tables 8.11.4.2.2-1 and 8.11.4.2.2-2.

Table 8.11.4.2.2-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| CommonEASInfo | M | 1 | Contains the common EAS information that is announced. |

Table 8.11.4.2.2-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| n/a |  |  | 204 No Content | Successful case. The common EAS information is successfully received and no content is returned 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 manadatory HTTP error status code for the HTTP POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.11.4.2.2-3: Headers supported by the 307 Response Code on this resource

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

Table 8.11.4.2.2-4: Headers supported by the 308 Response Code on this resource

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

### 8.11.5 Notifications

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

### 8.11.6 Data Model

#### 8.11.6.1 General

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

Table 8.11.6.1-1 specifies the data types defined for the Eees\_CommonEASAnnouncement API.

Table 8.10.6.1-1: Eees\_CommonEASAnnouncement API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Clause defined | Description | Applicability |
| CommonEASInfo | 8.11.6.2.2 | Represents the common EAS information. |  |

Table 8.11.6.1-2 specifies data types re-used by the Eees\_CommonEASAnnouncement API from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Eees\_CommonEASAnnouncement API.

Table 8.11.6.1-2: Eees\_CommonEASAnnouncement API re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| EndPoint | 8.1.5.2.5 | To indicate the end point information of the common EAS. |  |

#### 8.11.6.2 Structured data types

##### 8.11.6.2.1 Introduction

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

##### 8.11.6.2.2 Type: CommonEASInfo

Table 8.11.6.2.2-1: Definition of type CommonEASInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| requestorId | string | M | 1 | Contains the identifier of the service consumer (i.e. announcing EES) that is sending the request. |  |
| easId | string | M | 1 | Contains the identifier of the selected common EAS. |  |
| appGrpId | string | M | 1 | The application group identifier. |  |
| endPt | EndPoint | M | 1 | The endpoint information of the selected common EAS. |  |

#### 8.11.6.3 Simple data types and enumerations

##### 8.11.6.3.1 Introduction

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

##### 8.11.6.3.2 Simple data types

The simple data types defined in table 8.11.6.3.2-1 shall be supported.

Table 8.11.6.3.2-1: Simple data types

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

#### 8.11.6.4 Data types describing alternative data types or combinations of data types

There are no data types describing alternative data types or combinations of data types defined for this API in this release of the specification.

#### 8.11.6.5 Binary data

##### 8.11.6.5.1 Binary Data Types

Table 8.11.6.5.1-1: Binary Data Types

|  |  |  |
| --- | --- | --- |
| Name | Clause defined | Content type |
|  |  |  |

### 8.11.7 Error Handling

#### 8.11.7.1 General

For the Eees\_CommonEASAnnouncement API, HTTP error responses shall be supported as specified in clause 5.2.6 of 3GPP TS 29.122 [6]. Protocol errors and application errors specified in clause 5.2.6 of 3GPP TS 29.122 [6] shall be supported for the HTTP status codes specified in table 5.2.6-1 of 3GPP TS 29.122 [6].

In addition, the requirements in the following clauses are applicable for the Eees\_CommonEASAnnouncement API.

#### 8.11.7.2 Protocol Errors

No specific protocol errors for the Eees\_CommonEASAnnouncement API are specified.

#### 8.11.7.3 Application Errors

The application errors defined for the Eees\_CommonEASAnnouncement API are listed in Table 8.11.7.3-1.

Table 8.11.7.3-1: Application errors

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
|  |  |  |

### 8.11.8 Feature negotiation

The optional features in table 8.10.8-1 are defined for the Eees\_CommonEASAnnouncement API. They shall be negotiated using the extensibility mechanism defined in clause 5.2.7 of 3GPP TS 29.122 [6].

Table 8.11.8-1: Supported Features

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

# 8A CAS API Definitions

## 8A.1 Ecas\_SelectedEES API

### 8A.1.1 Introduction

The Ecas\_SelectedEES service shall use the Ecas\_SelectedEES API.

The API URI of the Ecas\_SelectedEES API shall be:

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

The request URIs used in HTTP requests shall have the Resource URI structure defined in clause 5.2.4 of 3GPP TS 29.122 [6], i.e.:

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

with the following components:

- The {apiRoot} shall be set as described in clause 5.2.4 of 3GPP TS 29.122 [6].

- The <apiName>shall be "ecas-selected-ees".

- The <apiVersion> shall be "v1".

- The <apiSpecificSuffixes> shall be set as described in clause 5.2.4 of 3GPP TS 29.122 [6].

NOTE: When 3GPP TS 29.122 [2] is referenced for the common protocol and interface aspects for API definition in the clauses under clause 5, the service producer (i.e. CAS) takes the role of the SCEF and the service consumer (e.g., EES) takes the role of the SCS/AS.

### 8A.1.2 Usage of HTTP

The provisions of clause 5.2.2 of 3GPP TS 29.122 [6] shall apply for the Ecas\_SelectedEES API.

### 8A.1.3 Resources

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

### 8A.1.4 Custom Operations without associated resources

#### 8A.1.4.1 Overview

The structure of the custom operation URIs of the Ecas\_SelectedEES API is shown in Figure 8A.1.4.1-1.



Figure 8A.1.4.1-1: Custom operation URI structure of the Ecas\_SelectedEES API

Table 8A.1.4.1-1 provides an overview of the custom operations and applicable HTTP methods defined for the Ecas\_SelectedEES API.

Table 8A.1.4.1-1: Custom operations without associated resources

|  |  |  |  |
| --- | --- | --- | --- |
| Operation name | Custom operation URI | Mapped HTTP method | Description |
| Declare | /declare | POST | Enables the service consumer (e.g. EES) to declare the selected target EES related information. |

#### 8A.1.4.2 Operation: Declare

##### 8A.1.4.2.1 Description

The custom operation enables the service consumer (e.g.; EES) to inform the selected EES to the CAS during the ACR from EAS to CAS.

##### 8A.1.4.2.2 Operation Definition

This operation shall support the request data structures and the response data structures and response codes specified in tables 8A.1.4.2.2-1 and 8A.1.4.2.2-2.

Table 8A.1.4.2.2-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| SelEESDecInfo | M | 1 | Contains the parameters to declare the selected target EES related information. |

Table 8A.1.4.2.2-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| n/a |  |  | 204 No Content | The selected EES declaration request is successfully received. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative target URI located in an alternative CAS.  Redirection handling is described in clause 5.2.10 of 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 CAS.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| NOTE: The mandatory HTTP error status code for the HTTP POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8A.1.4.2.2-3: 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 CAS. |

Table 8A.1.4.2.2-4: 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 CAS. |

### 8A.1.5 Notifications

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

### 8A.1.6 Data Model

#### 8A.1.6.1 General

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

Table 8A.1.6.1-1 specifies the data types defined for the Ecas\_SelectedEES API.

Table 8A.1.6.1-1: Ecas\_SelectedEES API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Clause defined | Description | Applicability |
| SelEESDecInfo | 8A.1.6.2.2 | Represent the selected target EES related information. |  |

Table 8A.1.6.1-2 specifies data types re-used by the Ecas\_SelectedEES API from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Ecas\_SelectedEES API.

Table 8A.1.6.1-2: Ecas\_SelectedEES API re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| EndPoint | Clause 8.1.5.2.5 | Represents the endpoint information. |  |
| Gpsi | 3GPP TS 29.571 [8] | Used to identify the UE with GPSI. |  |
| SupportedFeatures | 3GPP TS 29.571 [8] | Indicates the features supported. |  |

#### 8A.1.6.2 Structured data types

##### 8A.1.6.2.1 Introduction

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

##### 8A.1.6.2.2 Type: SelEESDecInfo

Table 8A.1.6.2.2-1: Definition of type SelEESDecInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| ueId | Gpsi | M | 1 | Contains the identifier of the UE. |  |
| seleEesId | string | M | 1 | Contains the identifier of the selected EES. |  |
| seleEesEndPoint | EndPoint | M | 1 | Contains Endpoint information (e.g. URI, FQDN, IP address) used to communicate with the selected EES. |  |
| easId | string | M | 1 | Contains the identifier of the concerned EAS. |  |
| acId | string | O | 0..1 | Contains the identifier of the concerned AC. |  |
| suppFeat | SupportedFeatures | C | 0..1 | Used to negotiate the applicability of the optional features if applicable. |  |

#### 8A.1.6.3 Simple data types and enumerations

None,

### 8A.1.7 Error Handling

#### 8A.1.7.1 General

For the Ecas\_SelectedEES API, HTTP error responses shall be supported as specified in clause 5.2.6 of 3GPP TS 29.122 [6]. Protocol errors and application errors specified in clause 5.2.6 of 3GPP TS 29.122 [6] shall be supported for the HTTP status codes specified in table 5.2.6-1 of 3GPP TS 29.122 [6].

In addition, the requirements in the following clauses are applicable for the Ecas\_SelectedEES API.

#### 8A.1.7.2 Protocol Errors

No specific protocol errors for the Ecas\_SelectedEES API are specified.

#### 8A.1.7.3 Application Errors

The application errors defined for the Ecas\_SelectedEES API are listed in Table 8A.1.7.3-1.

Table 8A.1.7.3-1: Application errors

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
|  |  |  |

### 8A.1.8 Feature negotiation

The optional features in table 8A.1.8-1 are defined for the Ecas\_SelectedEES API. They shall be negotiated using the extensibility mechanism defined in clause 5.2.7 of 3GPP TS 29.122 [6].

Table 8A.1.8-1: Supported Features

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

# 9 Edge Configuration Server API Definitions

## 9.1 Eecs\_EESRegistration API

### 9.1.1 Introduction

The Eecs\_EESRegistration service shall use the Eecs\_EESRegistration API.

The API URI of the Eecs\_EESRegistration API shall be:

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

The request URIs used in HTTP requests shall have the Resource URI structure as defined in clause 7.5, i.e.:

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

with the following components:

- The {apiRoot} shall be set as described in clause 7.5.

- The <apiName>shall be "eecs-eesregistration".

- The <apiVersion> shall be "v1".

- The <apiSpecificResourceUriPart> shall be set as described in clause 9.1.2.

### 9.1.2 Resources

#### 9.1.2.1 Overview

This clause describes the structure for the Resource URIs and the resources and methods used for the service.

Figure 9.1.2.1-1 depicts the resource URIs structure for the Eecs\_EESRegistration API.



Figure 9.1.2.1-1: Resource URI structure of the Eecs\_EESRegistration API

Table 9.1.2.1-1 provides an overview of the resources and applicable HTTP methods.

Table 9.1.2.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method or custom operation | Description |
| EES Registrations | /registrations | POST | Registers a new EES at the Edge Configuration Server. |
| Individual EES Registration | /registrations/{registrationId} | GET | Fetch an individual EES registration resource. |
| PUT | Fully replace an individual EES registration resource. |
| DELETE | Remove an individual EES registration resource. |
| PATCH | Partially update an individual EES registration resource. |

#### 9.1.2.2 Resource: EES Registrations

##### 9.1.2.2.1 Description

This resource represents all the Edge Enabler Servers that are registered at a given Edge Configuration Server.

##### 9.1.2.2.2 Resource Definition

Resource URI: **{apiRoot}/eecs-eesregistration/<apiVersion>/registrations**

This resource shall support the resource URI variables defined in the table 9.1.2.2.2-1.

Table 9.1.2.2.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5 |

##### 9.1.2.2.3 Resource Standard Methods

###### 9.1.2.2.3.1 POST

This method shall support the URI query parameters specified in table 9.1.2.2.3.1-1.

Table 9.1.2.2.3.1-1: URI query parameters supported by the POST method on this resource

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

This method shall support the request data structures specified in table 9.1.2.2.3.1-2 and the response data structures and response codes specified in table 9.1.2.2.3.1-3.

Table 9.1.2.2.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| EESRegistration | M | 1 | EES registration request information. |

Table 9.1.2.2.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| EESRegistration | M | 1 | 201 Created | EES information is registered successfully at ECS. EES information registered with ECS is provided in the response body.  The URI of the created resource shall be returned in the "Location" HTTP header. |
| 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 9.1.2.2.3.1-4: Headers supported by the 201 response code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | Contains the URI of the newly created resource, according to the structure: {apiRoot}/eecs-eesregistration/<apiVersion>/registrations/{registrationId} |

##### 9.1.2.2.4 Resource Custom Operations

None.

#### 9.1.2.3 Resource: Individual EES Registration

##### 9.1.2.3.1 Description

This Individual EES Registration resource represents an individual EES registered at a given Edge Configuration Server.

##### 9.1.2.3.2 Resource Definition

Resource URI: **{apiRoot}/eecs-eesregistration/<apiVersion>/registrations/{registrationId}**

This resource shall support the resource URI variables defined in the table 9.1.2.3.2-1.

Table 9.1.2.3.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5 |
| registrationId | string | The EES registration identifier. |

##### 9.1.2.3.3 Resource Standard Methods

###### 9.1.2.3.3.1 GET

This method retrieves the EES information registered at Edge Configuration Server. This method shall support the URI query parameters specified in table 9.1.2.3.3.1-1.

Table 9.1.2.3.3.1-1: URI query parameters supported by the GET method on this resource

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

This method shall support the request data structures specified in table 9.1.2.3.3.1-2 and the response data structures and response codes specified in table 9.1.2.3.3.1-3.

Table 9.1.2.3.3.1-2: Data structures supported by the GET Request Body on this resource

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

Table 9.1.2.3.3.1-3: Data structures supported by the GET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| EESResgistration | M | 1 | 200 OK | The EES registration information at the Edge Configuration Server. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative ECS.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative ECS.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| NOTE: The manadatory HTTP error status code for the GET method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 9.1.2.3.3.1-4: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative ECS. |

Table 9.1.2.3.3.1-5: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative ECS. |

###### 9.1.2.3.3.2 PUT

This method updates the EES registration information at Edge Configuration Server by completely replacing the existing registration data (except the value of "eesId" within EESProfile data type and the value of "suppFeat" attribute within the EESRegistration data type). This method shall support the URI query parameters specified in the table 9.1.2.3.3.2-1.

Table 9.1.2.3.3.2-1: URI query parameters supported by the PUT method on this resource

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

This method shall support the request data structures specified in table 9.1.2.3.3.2-2 and the response data structures and response codes specified in table 9.1.2.3.3.2-3.

Table 9.1.2.3.3.2-2: Data structures supported by the PUT Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| EESRegistration | M | 1 | Details of the EES registration information to be updated |

Table 9.1.2.3.3.2-3: Data structures supported by the PUT Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| EESRegistration | M | 1 | 200 OK | The EES registration information updated successfully and the updated EES registration information is returned in the response. |
| n/a |  |  | 204 No Content | The EES registration information was updated successfully. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative ECS.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative ECS.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| NOTE: The manadatory HTTP error status code for the PUT method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 9.1.2.3.3.2-4: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative ECS. |

Table 9.1.2.3.3.2-5: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative ECS. |

###### 9.1.2.3.3.3 DELETE

This method deregisters an EES registration from the ECS. This method shall support the URI query parameters specified in the table 9.1.2.3.3.3-1.

Table 9.1.2.3.3.3-1: URI query parameters supported by the DELETE method on this resource

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

This method shall support the request data structures specified in table 9.1.2.3.3.3-2 and the response data structures and response codes specified in table 9.1.2.3.3.3-3.

Table 9.1.2.3.3.3-2: Data structures supported by the DELETE Request Body on this resource

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

Table 9.1.2.3.3.3-3: Data structures supported by the DELETE Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| n/a |  |  | 204 No Content | The individual EES registration information matching the registrationId is deleted. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative ECS.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative ECS.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| NOTE: The manadatory HTTP error status code for the DELETE method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 9.1.2.3.3.3-4: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative ECS. |

Table 9.1.2.3.3.3-5: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative ECS. |

###### 9.1.2.3.3.4 PATCH

This method partially updates the EES registration information at Edge Configuration Server. This method shall support the URI query parameters specified in the table 9.1.2.3.3.4-1.

Table 9.1.2.3.3.4-1: URI query parameters supported by the PATCH method on this resource

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

This method shall support the request data structures specified in table 9.1.2.3.3.4-2 and the response data structures and response codes specified in table 9.1.2.3.3.4-3.

Table 9.1.2.3.3.4-2: Data structures supported by the PATCH Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| EESRegistrationPatch | M | 1 | Details of the EES registration information to be updated |

Table 9.1.2.3.3.4-3: Data structures supported by the PATCH Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| EESRegistration | M | 1 | 200 OK | The Individual EES registration information was updated successfully and the updated EES registration information is returned in the response. |
| n/a |  |  | 204 No Content | The Individual EES registration information was updated successfully. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative ECS.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative ECS.  Redirection handling is described in clause 5.2.10 of TS 29.122 [6]. |
| NOTE: The mandatory HTTP error status code for the PUT method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 9.1.2.3.3.4-4: Headers supported by the 307 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative ECS. |

Table 9.1.2.3.3.4-5: Headers supported by the 308 Response Code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URI of the resource located in an alternative ECS. |

##### 9.1.2.3.4 Resource Custom Operations

None.

### 9.1.3 Custom Operations without associated resources

None.

### 9.1.4 Notifications

None.

### 9.1.5 Data Model

#### 9.1.5.1 General

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

Table 9.1.5.1-1 specifies the data types defined specifically for the Eecs\_EESRegistration API service.

Table 9.1.5.1-1: Eecs\_EESRegistration API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| EDNInfo | 9.1.5.2.10 | Represents EDN related information | EdgeApp\_2 |
| EESRegistration | 9.1.5.2.2 | The EES registration information on ECS. |  |
| EESProfile | 9.1.5.2.3 | The profile information related to the EES in the EESRegistration data type. |  |
| ACRScenario | 9.1.5.3.3 | The ACR scenarios supported by EES. |  |
| EESRegistrationPatch | 9.1.5.2.4 | To partially update the EES Registration information. |  |
| ServiceArea | 9.1.5.2.5 | The topological and geographic areas served by EES. |  |
| TopologicalServiceArea | 9.1.5.2.6 | The topological areas served by EES. |  |
| GeographicalServiceArea | 9.1.5.2.7 | The geographic areas served by EES. |  |
| EASInstantiationInfo | 9.1.5.2.8 | Represents the EAS instantiation information. | EdgeApp\_2 |
| InstantiationCriteria | 9.1.5.2.9 | Represents the instantiation cirteria. | EdgeApp\_2 |
| InstantiationStatus | 9.1.5.3.4 | Represents the instantiation status. | EdgeApp\_2 |

Table 9.1.5.1-2 specifies data types re-used by the Eecs\_EESRegistration API service.

Table 9.1.5.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| SupportedFeatures | 3GPP TS 29.571 [8] | Used to negotiate the applicability of optional features defined in table 9.1.7-1. |  |
| ScheduledCommunicationTime | 3GPP TS 29.122 [6] | Represents the schedule information. |  |
| DateTime | 3GPP TS 29.122 [6] | Represents a date and a time. |  |
| Ecgi | 3GPP TS 29.571 [8] | Represents an EUTRA cell identifier. |  |
| Ncgi | 3GPP TS 29.571 [8] | Represents an NR cell identifier. |  |
| Tai | 3GPP TS 29.571 [8] | Represents a tracking area identity. |  |
| GeographicArea | 3GPP TS 29.572 [11] | Identifies the geographical information of the user(s). |  |
| CivicAddress | 3GPP TS 29.572 [11] | Identifies the civic address information of the user(s). |  |
| PlmnIdNid | 3GPP TS 29.571 [8] | Identifies the network: PLMN Identifier or the SNPN Identifier (the PLMN Identifier and the NID). Used to indicate the serving network as part of topological service areas. |  |
| Dnn | 3GPP TS 29.571 [8] | Represents a DNN. | EdgeApp\_2 |
| Dnai | 3GPP TS 29.571 [8] | Used to represent the list of DNAI(s) information associated with EES. |  |
| TimeWindow | 3GPP TS 29.122 [6] | Represents the time window. |  |
| DateTimeRm | 3GPP TS 29.571 [8] | Used to capture the expiration time EES registration patch. |  |
| EndPoint | 8.1.5.2.5 | The end point information of the Edge Enabler Server in the EES profile. |  |
| EASBundleInfo | 8.1.5.3.8 | Represents EAS bundle information. | EdgeApp\_2 |

#### 9.1.5.2 Structured data types

##### 9.1.5.2.1 Introduction

##### 9.1.5.2.2 Type: EESRegistration

Table 9.1.5.2.2-1: Definition of type EESRegistration

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| eesProf | EESProfile | M | 1 | The profile information of the EES. |  |
| expTime | DateTime | O | 0..1 | Identifies the expiration time for the EES registration. If the expiration time is not present, then it indicates that the registration of EES never expires. |  |
| 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 in the response of successful resource creation. |  |

##### 9.1.5.2.3 Type: EESProfile

Table 9.1.5.2.3-1: Definition of type EESProfile

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| eesId | string | M | 1 | The identifier of the EES |  |
| endPt | EndPoint | M | 1 | Endpoint information (e.g. URI, FQDN, IP address) used to communicate with the EES. This information is provided to the EEC to connect to the EES. |  |
| easIds | array(string) | O | 1..N | The application identities of the Edge Application Servers (e.g. URI, FQDN) registered with the EES or expected to be registered with the EES. |  |
| easBdlInfos | map(array(EASBundleInfo)) | O | 1..N(1..M) | Represents the list of EAS bundles to which each EAS among the ones identified by the "easIds" attribute belongs.  The key of the map shall be the identifier of the EAS to which the provided EAS bundle information within the map value corresponds.  (NOTE) | EdgeApp\_2 |
| ednInfoSets | EDNInfo | O | 1..N | Contains information related to the EDN where the EES resides. | EdgeApp\_2 |
| easInstInfo | map(EASInstantiationInfo) | O | 1..N | Contains the EAS instantiation information for each EAS identified by the "easIds" arrtibute.  The key of the map shall be the EAS ID to which the provided instantiation information within the map value relates. | EdgeApp\_2 |
| provId | string | O | 0..1 | Identifier of the ECSP that provides the EES provider. |  |
| svcArea | ServiceArea | O | 0..1 | The list of geographical and topological areas that the EES serves. EECs in the UE that are outside the area shall not be served. |  |
| appLocs | array(Dnai) | O | 1..N | List of DNAI(s) associated with the EES. This is a list of potential locations of the applications.  It is a subset of the DNAI(s) associated with the EDN, where the EES resides. |  |
| svcContSupp | array(ACRScenario) | O | 1..N | The ACR scenarios supported by the EES for service continuity. If this attribute is not present, then the EES does not support service continuity. |  |
| svcContSuppExt1 | array(EASBundleInfo) | O | 1..N | Represents the information related to the EES ability to handle bundled EAS ACRs.  This attribute may be present only when the "svcContSupp" attribute is also present.  When this attribute is present, it indicates that the EES (identified by the "eesId" attribute) is able to handle bundled EAS ACRs and contains the information of the EAS bundle(s) for which the EES is able to handle bundled EAS ACRs. | EdgeApp\_2 |
| eecRegConf | boolean | M | 1 | Set to "true" if the EEC is required to register on the EES to use edge services. Set to "false" if EEC is not required to register on the EES to use edge services. Default value is "false" if omitted. |  |
| NOTE: Within each EASBundleInfo encoded map entry of this attribute, the "mainEasId" attribute shall not be present. | | | | | |

##### 9.1.5.2.4 Type: EESRegistrationPatch

Table 9.1.5.2.4-1: Definition of type EESRegistrationPatch

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| eesProf | EESProfile | O | 0..1 | The profile information of the EES. |  |
| expTime | DateTimeRm | O | 0..1 | Identifies the expiration time for the EES registration. If the expiration time is not present, then it indicates that the registration of EES never expires. |  |
| NOTE: The value of the "eesId" attribute within the EESProfile data type shall be the same as the one within the EES Registration data type during the creation of resource procedure. | | | | | |

##### 9.1.5.2.5 Type: ServiceArea

Table 9.1.5.2.5-1: Definition of type ServiceArea

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| topServAr | TopologicalServiceArea | O | 0..1 | The topological service areas. (NOTE) |  |
| geoServAr | GeographicalServiceArea | O | 0..1 | The geographical service areas. |  |
| NOTE: The "topServAr" attribute is not applicable for untrusted functional elements (EESs and/or EASs deployed outside the MNO trust domain). | | | | | |

##### 9.1.5.2.6 Type: TopologicalServiceArea

Table 9.1.5.2.6-1: Definition of type TopologicalServiceArea

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| ecgis | array(Ecgi) | O | 1..N | This IE contains a list of E‑UTRA cell identities. |  |
| ncgis | array(Ncgi) | O | 1..N | This IE contains a list of NR cell identities. |  |
| tais | array(Tai) | O | 1..N | This IE contains a list of tracking area identities. |  |
| plmnIds | array(PlmnIdNid) | O | 1..N | List of serving network (PLMN or SNPN) identities . For a SNPN, a NID together with a PLMN ID identifies the SNPN. (NOTE) |  |
| NOTE: A combination of these information elements should not have duplicate or overlapping information for the same topological Service Area. | | | | | |

##### 9.1.5.2.7 Type: GeographicalServiceArea

Table 9.1.5.2.7-1: Definition of type GeographicalServiceArea

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| geoArs | array(GeographicArea) | O | 1..N | Identifies a list of geographic area of the user where the UE is located. |  |
| civicAddrs | array(CivicAddress) | O | 1..N | Identifies a list of civic addresses of the user where the UE is located. |  |

##### 9.1.5.2.8 Type: EASInstantiationInfo

Table 9.1.5.2.8-1: Definition of type EASInstantitionInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| easId | string | M | 1 | The application identities of the Edge Application Servers. |  |
| status | InstantiationStatus | M | 1 | Contains the instantiation status of the EAS. |  |
| instCrit | InstantiationCriteria | C | 0..1 | Contains the criteria information upon which the EAS can be instantiated.  This attribute shall be present only when the value of the "status" attribute is set to "INSTANTIABLE". |  |

##### 9.1.5.2.9 Type: InstantiationCriteria

Table 9.1.5.2.9-1: Definition of type InstantiationCriteria

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| instantiationTime | DateTime | C | 0..1 | Identifies the time at which the EAS shall be instantiated.  (NOTE) |  |
| instWindows | array(TimeWindow) | C | 1..N | The time windows at which the EAS shall be instantiated.  (NOTE) |  |
| scheds | array(ScheduledCommunicationTime) | C | 1..N | The schedules at which the EAS shall be instantiated.  (NOTE) |  |
| NOTE : These attributes are mutually exclusive. Either one of them shall be present. | | | | | |

##### 9.1.5.2.10 Type: EDNInfo

Table 9.1.5.2.10-1: Definition of type EDNInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| dnn | Dnn | M | 1 | Contains the DNN identifying the EDN |  |
| dnais | array(Dnai) | O | 1..N | Contains the DNAI(s) associated with the EDN. |  |

#### 9.1.5.3 Simple data types and enumerations

##### 9.1.5.3.1 Introduction

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

##### 9.1.5.3.2 Simple data types

The simple data types defined in table 9.1.5.3.2-1 shall be supported.

Table 9.1.5.3.2-1: Simple data types

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

##### 9.1.5.3.3 Enumeration: ACRScenario

The enumeration ACRScenario represents the ACR scenarios supported. It shall comply with the provisions defined in table 9.1.5.3.3-1.

Table 9.1.5.3.3-1: Enumeration ACRScenario

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| EEC\_INITIATED | Represents the EEC initiated ACR scenario. |  |
| EEC\_EXECUTED\_VIA\_SOURCE\_EES | Represents the EEC ACR scenario executed via the S-EES. |  |
| EEC\_EXECUTED\_VIA\_TARGET\_EES | Represents the EEC ACR scenario executed via the T-EES. |  |
| SOURCE\_EAS\_DECIDED | Represents the EEC ACR scenario where the S-EAS decides to perform ACR. |  |
| SOURCE\_EES\_EXECUTED | Represents the EEC ACR scenario where S-EES executes the ACR. |  |
| EEL\_MANAGED\_ACR | Represents the EEC ACR scenario where the ACR is managed by the Edge Enabler Layer. |  |

##### 9.1.5.3.4 Enumeration: InstantiationStatus

The enumeration InstantiationStatus represents the instantiation status of the EAS. It shall comply with the provisions defined in table 9.1.5.3.4-1.

Table 9.1.5.3.4-1: Enumeration InstantiationStatus

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| INSTANTIATED | Indicates that the EAS is instantiated. |  |
| INSTANTIABLE | Indicates that the EAS is instantiable but not yet instantiated. |  |

### 9.1.6 Error Handling

General error responses are defined in clause 7.7.

### 9.1.7 Feature negotiation

General feature negotiation procedures are defined in clause 7.8 Table 9.1.7-1 lists the supported features for Eecs\_EESRegistration API.

Table 9.1.7-1: Supported Features

|  |  |  |
| --- | --- | --- |
| **Feature number** | **Feature Name** | **Description** |
| 1 | EdgeApp\_2 | This feature indicates the support of the enhancements to the Edge Applications. Within this feature, the following enhancements are covered:  - support of EAS bundle information.  - support of EAS instantiation information management.  - support of EDN information provisioning within the EES profile.  - Support of the indication of the EAS ability to handle bundled EAS ACRs within the EAS profile. |

## 9.2 Eecs\_TargetEESDiscovery API

### 9.2.1 Introduction

The Eecs\_TargetEESDiscovery service shall use the Eecs\_TargetEESDiscovery API.

The API URI of the Eecs\_TargetEESDiscovery API shall be:

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

The request URIs used in HTTP requests shall have the Resource URI structure as defined in clause 7.5, i.e.:

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

with the following components:

- The {apiRoot} shall be set as described in clause 7.5.

- The <apiName>shall be "eecs-targeteesdiscovery".

- The <apiVersion> shall be "v1".

- The <apiSpecificResourceUriPart> shall be set as described in clause 9.2.2.

### 9.2.2 Resources

#### 9.2.2.1 Overview

This clause describes the structure for the Resource URIs and the resources and methods used for the service.

Figure 9.2.2.1-1 depicts the resource URIs structure for the Eecs\_TargetEESDiscovery API.



Figure 9.2.2.1-1: Resource URI structure of the Eecs\_TargetEESDiscovery API

Table 9.2.2.1-1 provides an overview of the resources and applicable HTTP methods.

Table 9.2.2.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method or custom operation | Description |
| EES Profiles | /ees-profiles | GET | Retrieve the T-EES information. |

#### 9.2.2.2 Resource: EES Profiles

##### 9.2.2.2.1 Description

This resource allows the source service consumer (e.g., EES (S-EES) , CES) to retrieve the target (T-EES) information from the ECS.

##### 9.2.2.2.2 Resource Definition

Resource URI: **{apiRoot}/eecs-targeteesdiscovery/<apiVersion>/ees-profiles**

This resource shall support the resource URI variables defined in the table 9.2.2.2.2-1.

Table 9.2.2.2.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5 |

##### 9.2.2.2.3 Resource Standard Methods

###### 9.2.2.2.3.1 GET

This method allows the service consumer to fetch the T-EES information as specified in 3GPP TS 23.558 [2], from the ECS with a given discovery filters. This method shall support the URI query parameters specified in table 9.2.2.2.3.1-1.

Table 9.2.2.2.3.1-1: URI query parameters supported by the GET method on this resource

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description | Applicability |
| ees-id | string | M | 1 | Unique identifier of the T-EES. |  |
| eas-id | string | M | 1 | Represents the application identifier of the S-EAS, e.g. URI, FQDN. |  |
| target-dnai | Dnai | O | 0..1 | The DNAI information associated with the potential T-EES(s) and/or T-EAS(s). |  |
| ue-id | Gpsi | O | 0..1 | Identifier of the UE. |  |
| ue-location | LocationArea5G | O | 0..1 | The location information of the UE. |  |
| eec-srv-cont-supp | EECSrvContinuitySupport | O | 0..1 | Indicates whether the EEC supports service continuity or not and the related service continuity support information. | EdgeApp\_2 |
| ac-svc-cont-supp | array(ACRScenario) | O | 1..N | Indicates that the AC supports service continuity and contains the related service continuity support information (i.e., supported ACR scenarios). | EdgeApp\_2 |
| bdl-id | string | O | 0..1 | Contains the identifier of the EAS bundle. | EdgeApp\_2 |
| bdl-type | BdlType | O | 0..1 | Contains the EAS bundle type. | EdgeApp\_2 |
| ens-ind | boolean | O | 0..1 | Indicates whether edge node sharing is requested.  When set to "true", it indicates that edge node sharing is requested.  When set to "false" (default if omitted), it indicates that node sharing is not requested. | EdgeApp\_2 |
| app-grp-id | string | O | 0..1 | Contains the application group identifier.  When this query parameter is provided, then it indicates that the request is for the retrieval of an EES list for the announcement of common EAS. | EdgeApp\_2 |

This method shall support the request data structures specified in table 9.2.2.2.3.1-2 and the response data structures and response codes specified in table 9.2.2.2.3.1-3.

Table 9.2.2.2.3.1-2: Data structures supported by the GET Request Body on this resource

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

Table 9.2.2.2.3.1-3: Data structures supported by the GET Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| ECSServProvResp | M | 1 | 200 OK | The EDN configuration and the T-EES information determined by the ECS based on the query parameters. |
| NOTE: The mandatory HTTP error status code for the GET method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

##### 9.2.2.2.4 Resource Custom Operations

None.

### 9.2.3 Custom Operations without associated resources

None.

### 9.2.4 Notifications

None.

### 9.2.5 Data Model

#### 9.2.5.1 General

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

Table 9.2.5.1-1 specifies the data types defined specifically for the Eecs\_TargetEESDiscovery API.

Table 9.2.5.1-1: Eecs\_TargetEESDiscovery API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
|  |  |  |  |

Table 9.2.5.1-2 specifies data types re-used by the Eecs\_TargetEESDiscovery API service.

Table 9.2.5.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| ACRScenario | Clause 9.1.5.3.3 | Represents ACR scenarios. | EdgeApp\_2 |
| Dnai | 3GPP TS 29.571 [8] | Used to indicate the target DNAI information. |  |
| BdlType | Clause 8.1.5.3.6 | Represent EAS Bundle type. | EdgeApp\_2 |
| EECSrvContinuitySupport | Clause 8.7.5.2.8 | Represent service continuity support related information for an EEC. | EdgeApp\_2 |
| Gpsi | 3GPP TS 29.571 [8] | Used to identify the UE in the query parameter. |  |
| LocationArea5G | 3GPP TS 29.122 [6] | Used to indicate the location information of the UE in the query parameter. |  |
| ECSServProvResp | 3GPP TS 24.558 [14] | The response to the target EES discovery request, which includes the EDN configuration along with list of EES(s) information. |  |

#### 9.2.5.2 Structured data types

None.

#### 9.2.5.3 Simple data types and enumerations

None.

### 9.2.6 Error Handling

General error responses are defined in clause 7.7.

### 9.2.7 Feature negotiation

General feature negotiation procedures are defined in clause 7.8. Table 9.2.7-1 lists the supported features for Eecs\_TargetEESDiscovery API.

Table 9.2.7-1: Supported Features

|  |  |  |
| --- | --- | --- |
| **Feature number** | **Feature Name** | **Description** |
| 1 | EdgeApp\_2 | This feature indicates the support of the enhancements to the Edge Applications. Within this feature, the following enhancements are covered:  - Support T-EAS discovery based on EEC service continuity information and/or AC service continuity information.  - Support EAS bundle information management.  - Support of requesting edge node sharing.  - Support of T-EES discovery based on application group identifier. |

# 10 Using Common API Framework

## 10.1 General

EES may expose its services to EAS with support of CAPIF. Also, the EES may also re-expose the network capabilities of the 3GPP core network to the EAS(s) with support of CAPIF architecture, as specified in 3GPP TS 23.558 [2]. When CAPIF is used with EES services, the EES shall support the following as defined in 3GPP TS 29.222 [17]:

- the API exposing function and related APIs over CAPIF-2/2e and CAPIF-3/3e reference points;

- the API publishing function and related APIs over CAPIF-4/4e reference point;

- the API management function and related APIs over CAPIF-5/5e reference point; and

- at least one of the security methods for authentication and authorization, and related security mechanisms.

The EAS supports the role of API Invoker as specified in 3GPP TS 29.222 [17]. In a centralized deployment as defined in 3GPP TS 23.222 [17], where the CAPIF core function and API provider domain functions are co-located, the interactions between the CAPIF core function and API provider domain functions may be independent of CAPIF-3/3e, CAPIF-4/4e and CAPIF-5/5e reference points.

When CAPIF is used with an EES service, the EES shall register all the features for northbound APIs in the CAPIF Core Function.

The EAS may expose its services to other EAS(s) using CAPIF as specified in 3GPP TS 23.558 [2]. When CAPIF is used for exposure of EAS services to other EAS(s), the above procedure shall be applicable with the following differences:

- the provisions related to the EES apply to the EAS;

- the provisions related to the EAS apply to the other EAS(s) as consumer(s) of the exposed EAS service APIs.

## 10.2 Security

When CAPIF is used for external exposure of EES services to EAS, before invoking the API exposed by the EES, the EAS as API invoker shall negotiate the security method (PKI, TLS-PSK or OAUTH2) with CAPIF core function and ensure the EAS has enough credential to authenticate the EAS (see 3GPP TS 29.222 [17], clause 5.6.2.2 and clause 6.2.2.2).

If PKI or TLS-PSK is used as the selected security method between the EAS and the EES, upon API invocation, the EES shall retrieve the authorization information from the CAPIF core function as described in 3GPP TS 29.222 [17], clause 5.6.2.4.

As indicated in 3GPP TS 33.122 [18], the access to the EES APIs may be authorized by means of the OAuth2 protocol (see IETF RFC 6749 [19]), where the CAPIF core function (see 3GPP TS 29.222 [17]) plays the role of the authorization server.

If OAuth2 is used as the selected security method between the EAS and the EES, then the EAS, prior to consuming services offered by the EES APIs, shall obtain a "token" from the authorization server, by invoking the Obtain\_Authorization service, as described in 3GPP TS 29.222 [17], clause 5.6.2.3.2.

The EES APIs do not define any scopes for OAuth2 authorization. It is the EES responsibility to check whether the EAS is authorized to use an API based on the "token". Once the EES verifies the "token", it shall check whether the EES identifier in the "token" matches its own published identifier, and whether the API name in the "token" matches its own published API name. If those checks are passed, the EAS has full authority to access any resource or operation for the invoked API

NOTE: For aforementioned security methods, the EES needs to apply admission control according to access control policies after performing the authorization checks.

When CAPIF is used for exposure of EAS services to other EAS(s), the above security procedure shall be applicable with the following differences:

- the provisions related to the EES apply to the EAS;

- the provisions related to the EAS apply to the other EAS(s) as consumer(s) of the exposed EAS service APIs.

# 11 Security

The authentication and authorization between EES and ECS shall be as specified in 3GPP TS 33.558 [20].

The authentication and authorization in EES capability exposure shall be as specified in 3GPP TS 33.558 [20]. When CAPIF is used, the aspects specified in clause 10 shall be used.

The security credentials to be used for verification and authorization of various API requests from EAS and EES shall be as specified in 3GPP TS 33.558 [20].

Annex A (normative):  
OpenAPI specification

# A.1 General

This annex is based on the OpenAPI 3.0.0 specification [3] and provides corresponding representations of all APIs defined in the present specification in YAML format.

This Annex shall take precedence when being discrepant to other parts of the specification with respect to the encoding of information elements and methods within the API.

NOTE: The semantics and procedures, as well as conditions, e.g. for the applicability and allowed combinations of attributes or values, not expressed in the OpenAPI definitions but defined in other parts of the specification also apply.

Informative copies of the OpenAPI specification file contained in this 3GPP Technical Specification are available on a Git-based repository that uses the GitLab software version control system (see clause 5B of the 3GPP TR 21.900 [4] and clause 5.3.1 of the 3GPP TS 29.501 [5] for further information).

# A.2 Eees\_EASRegistration API

openapi: 3.0.0

info:

title: EES EAS Registration\_API

description: |

API for EAS Registration.

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version: 1.1.0-alpha.5

externalDocs:

description: >

3GPP TS 29.558 V18.4.0 Enabling Edge Applications;

Application Programming Interface (API) specification; Stage 3

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

servers:

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

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in clause 7.5 of 3GPP TS 29.558.

security:

- {}

- oAuth2ClientCredentials: []

paths:

/registrations:

post:

summary: Creates a new Individual EAS Registration resource

operationId: CreateEASRegistration

tags:

- EAS Registrations (Collection)

description: Registers a new EAS at an EES.

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'201':

description: EAS information is registered successfully at EES.

content:

application/json:

schema:

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

headers:

Location:

description: 'Contains the URI of the newly created resource'

required: true

schema:

type: string

'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'

/registrations/{registrationId}:

get:

summary: Read an Individual EAS Registration resource

operationId: ReadIndEASRegistration

tags:

- Individual EAS Registration (Document)

description: Retrieve an Individual EAS registration resource.

parameters:

- name: registrationId

in: path

description: Registration Id.

required: true

schema:

type: string

responses:

'200':

description: OK (The EAS registration information at the EES).

content:

application/json:

schema:

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

'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'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'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'

put:

summary: Update an Individual EAS Registration resource

operationId: UpdateIndEASRegistration

tags:

- Individual EAS Registration (Document)

description: Fully replace an existing EAS Registration resource.

parameters:

- name: registrationId

in: path

description: EAS registration Id.

required: true

schema:

type: string

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'200':

description: OK (The EAS registration information is updated successfully).

content:

application/json:

schema:

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

'204':

description: >

No Content. The individual EAS registration information is updated successfully.

'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'

patch:

summary: Modify an Individual EAS Registration resource

operationId: ModifyIndEASRegistration

tags:

- Individual EAS Registration (Document)

description: Partially update an existing EAS Registration resource.

parameters:

- name: registrationId

in: path

description: EAS registration Id.

required: true

schema:

type: string

requestBody:

description: Partial update of an existing EAS registration resource.

required: true

content:

application/merge-patch+json:

schema:

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

responses:

'200':

description: >

The Individual EAS registration is successfully modified and the updated

registration information is returned in the response.

content:

application/json:

schema:

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

'204':

description: >

No Content. The individual EAS registration information is updated successfully.

'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'

delete:

summary: Delete an Individual EAS Registration resource

operationId: DeleteIndEASRegistration

tags:

- Individual EAS Registration (Document)

description: Delete an existing EAS registration at EES.

parameters:

- name: registrationId

in: path

description: EAS registration Id.

required: true

schema:

type: string

responses:

'204':

description: The individual EAS registration is deleted.

'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'

'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:

EASRegistration:

type: object

description: Represents an EAS registration information.

properties:

easProf:

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

expTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

suppFeat:

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

required:

- easProf

EASProfile:

type: object

description: Represents the EAS profile information.

properties:

easId:

type: string

description: Identifier of the EAS.

endPt:

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

easBdlInfos:

type: array

items:

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

minItems: 1

acIds:

type: array

items:

type: string

minItems: 1

description: Identities of application clients that are served by the EAS.

provId:

type: string

description: Identifier of the ASP that provides the EAS.

type:

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

flexEasType:

type: string

description: The EAS type with flexible value set.

scheds:

type: array

items:

$ref: 'TS29122\_CpProvisioning.yaml#/components/schemas/ScheduledCommunicationTime'

minItems: 1

description: The availability schedule of the EAS.

svcArea:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/ServiceArea'

svcKpi:

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

permLvl:

type: array

items:

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

minItems: 1

description: level of service permissions supported by the EAS.

easFeats:

type: array

items:

type: string

minItems: 1

description: Service specific features supported by EAS.

appLocs:

type: array

items:

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

minItems: 1

description: List of DNAI(s) and the N6 traffic information associated with the EAS.

svcContSupp:

type: array

items:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/ACRScenario'

minItems: 1

description: The ACR scenarios supported by the EAS for service continuity.

svcContSuppExt1:

type: array

items:

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

minItems: 1

description: >

Represents the information related to the EAS ability to handle bundled EAS ACRs.

This attribute may be present only when the "svcContSupp" attribute is also present.

When this attribute is present, it indicates that the EAS (identified by the "easId"

attribute) is able to handle bundled EAS ACRs and contains the information of the EAS

bundle(s) for which the EAS is able to handle bundled EAS ACRs.

transContSupp:

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

avlRep:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DurationSec'

status:

type: string

description: EAS status information.

genCtxDur:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DurationSec'

easSyncSupp:

type: boolean

default: false

description: >

Set to true to indicate that content synchronization between EASs is supported.

Set to false to indicate that content synchronization between EASs is not supported.

The default value when this attribute is omitted is false.

required:

- easId

- endPt

not:

required: [ type, flexEasType ]

EASRegistrationPatch:

type: object

description: Represents partial update request of individual EAS registration information.

properties:

easProf:

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

expTime:

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

EASServiceKPI:

type: object

description: Represents the EAS service KPI information.

properties:

maxReqRate:

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

maxRespTime:

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

avail:

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

avlComp:

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

avlGraComp:

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

avlMem:

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

avlStrg:

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

connBand:

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

EASBundleInfo:

type: object

description: Represents the EAS bundle information.

properties:

bdlType:

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

bdlId:

type: string

description: Indicates a bundle ID.

easIdsList:

type: array

items:

type: string

minItems: 1

easBdlReqs:

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

mainEasId:

type: string

required:

- bdlType

anyOf:

- required: [bdlId]

- required: [easIdsList]

EASBdlReqs:

type: object

description: Represents the EAS bundle requirements.

properties:

coordinatedEasDisc:

type: boolean

default: false

description: >

Set to true to indicate that coordianted EAS discovery is required.

Set to false to indicate that coordianted EAS discovery is not required.

The default value when this attribute is omitted is false.

coordinatedAcr:

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

affinity:

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

CoordinatedAcrReqs:

type: object

description: Represents the coordinated ACR related requirements for an EAS bundle.

properties:

coordinatedAcrInd:

type: boolean

default: false

description: >

Set to true to indicate that coordianted ACR is required.

Set to false to indicate that coordianted ACR is not required.

The default value when this attribute is omitted is false.

failureAction:

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

required:

- coordinatedAcrInd

EndPoint:

type: object

description: The end point information to reach EAS.

properties:

fqdn:

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

ipv4Addrs:

type: array

items:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Ipv4Addr'

minItems: 1

description: IPv4 addresses of the edge server.

ipv6Addrs:

type: array

items:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Ipv6Addr'

minItems: 1

description: IPv6 addresses of the edge server.

uri:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

oneOf:

- required: [uri]

- required: [fqdn]

- required: [ipv4Addrs]

- required: [ipv6Addrs]

PermissionLevel:

anyOf:

- type: string

enum:

- TRIAL

- GOLD

- SILVER

- OTHER

- 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: |

Indicates the level of service permissions supported by the EAS.

Possible values are:

- TRIAL: Level of service permission supported is TRIAL.

- GOLD: Level of service permission supported is GOLD.

- SILVER: Level of service permission supported is SILVER.

- OTHER: Any other level of service permissions supported.

EASCategory:

anyOf:

- type: string

enum:

- UAS

- V2X

- SEAL\_SEALDD\_SERVERS

- OTHER

- 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: |

Indicates the category or type of the EAS.

Possible values are:

- UAS: Indicates that the EAS category is for UAS services.

- V2X: Category of EAS is for V2X Services.

- SEALDD: Indicates that the EAS category is SEALDD Server for SEALDD services.

- OTHER: Any other type of EAS category.

TransContSuppDetails:

type: object

description: >

Represents the detailed information about the EAS (e.g. SEALDD Server) capability for

seamless transport layer service continuity.

properties:

transProtocs:

type: array

items:

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

minItems: 1

description: >

Indicates the transport layer protocols supported for EAS context transfer using

the seamless transport layer service continuity capability.

required:

- transProtocs

TransportProtocol:

anyOf:

- type: string

enum:

- QUIC

- TCP

- TCP\_TLS

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

description: |

Indicates the transport layer protocol.

Possible values are:

- QUIC: Indicates the QUIC protocol.

- TCP: Indicates the Transmission Control (TCP) Protocol.

- TCP\_TLS: Indicates the Transmission Control Protocol (TCP) with Transport Layer Security

(TLS) protocol.

BdlType:

anyOf:

- type: string

enum:

- DIRECT

- PROXY

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration and

is not used to encode content defined in the present version of this API.

description: |

Represents the EAS Bundle type.

Possible values are:

- DIRECT: Indicates that the EAS Bundle type is direct bundle.

- PROXY: Indicates that the EAS Bundle type is proxy bundle.

Affinity:

anyOf:

- type: string

enum:

- STRONG

- PREFERRED

- WEAK

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration and

is not used to encode content defined in the present version of this API.

description: |

Represents the affinity requirements of an EAS bundle.

Possible values are:

- STRONG: Indicates that the affinity is strong, i.e., all the EASs of the bundle shall be

in the same EDN.

- PREFERRED: Indicates that the affinity is preferred, i.e., it is nice to have all the EASs

of the bundle in the same EDN, but it is not essential.

- WEAK: Indicates that the affinity is weak, i.e., it is not essential to have all the EASs

of the bundle in the same EDN.

FailureAction:

anyOf:

- type: string

enum:

- CANCEL

- PROCEED

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration and

is not used to encode content defined in the present version of this API.

description: |

Represents the EAS bundle related failure action during ACR.

Possible values are:

- CANCEL: Indicates that ACR shall be cancelled for the other EAS(s) of the bundle for which

ACR is not failed.

- PROCEED: Indicates that ACR shall proceed for the other EAS(s) of the bundle for which

ACR is not failed.

# A.3 Eees\_UELocation API

openapi: 3.0.0

info:

title: EES UE Location Information\_API

description: |

API for EES UE Location Information.

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version: 1.1.0-alpha.2

externalDocs:

description: >

3GPP TS 29.558 V18.1.0 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-uelocation/v1'

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in clause 7.5 of 3GPP TS 29.558.

paths:

/fetch:

post:

summary: Fetch an UE location information.

operationId: FetchUELocation

tags:

- Fetch an UE location information

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'200':

description: OK (The requested location information)

content:

application/json:

schema:

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

'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'

/subscriptions:

post:

summary: Creates a new Individual Location Information Subscription resource

operationId: CreateLocationInfoSubscription

tags:

- Location Information Subscriptions (Collection)

description: >

Create a Subscription resource for continious reporting of UE location

information to the EAS.

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'201':

description: >

Created (The individual location information subscription resource

is created successfully)

content:

application/json:

schema:

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

headers:

Location:

description: 'Contains the URI of the newly created resource'

required: true

schema:

type: string

'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'

callbacks:

LocationInformationNotification:

'{request.body#/notificationDestination}':

post:

requestBody: # contents of the callback message

required: true

content:

application/json:

schema:

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

responses:

'204':

description: No Content (successful notification)

'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'

UserConsentRevocationNotif:

'{request.body#/revocationNotifUri}':

post:

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'204':

description: No Content (successful notification).

'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'

/subscriptions/{subscriptionId}:

get:

summary: Read an Individual Location Information Subscription resource

operationId: ReadIndLocationInfoSubscription

tags:

- Individual Location Information Subscription (Document)

description: Retrieve an Individual location information subscription information.

parameters:

- name: subscriptionId

in: path

description: Subscription Id.

required: true

schema:

type: string

responses:

'200':

description: OK (Successfully get the location information subscription).

content:

application/json:

schema:

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

'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'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'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'

put:

summary: Update an Individual Location Information Subscription resource

operationId: UpdateIndLocationInfoSubscription

tags:

- Individual Location Information Subscription (Document)

description: Fully replace an existing Individual location information Subscription.

parameters:

- name: subscriptionId

in: path

description: Subscription Id.

required: true

schema:

type: string

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'200':

description: OK (The individual location information subscription was modified successfully).

content:

application/json:

schema:

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

'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'

patch:

summary: Modify an Individual Location Information Subscription resource

operationId: ModifyIndLocationInfoSubscription

tags:

- Individual Location Information Subscription (Document)

description: Partially update an existing Individual location information Subscription.

parameters:

- name: subscriptionId

in: path

description: Subscription Id.

required: true

schema:

type: string

requestBody:

description: Partial update an existing Individual AC information Subscription.

required: true

content:

application/merge-patch+json:

schema:

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

responses:

'200':

description: >

OK (The Individual location information Subscription is successfully

modified and the updated subscription information is returned in the response).

content:

application/json:

schema:

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

'204':

description: >

No Content (The individual location information subscription was modified successfully).

'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'

delete:

summary: Delete an Individual Location Information Subscription resource

operationId: DeleteIndLocationInfoSubscription

tags:

- Individual Location Information Subscription (Document)

description: Delete an existing Individual location information Subscription.

parameters:

- name: subscriptionId

in: path

description: Subscription Id.

required: true

schema:

type: string

responses:

'204':

description: The individual subscription is deleted.

'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'

'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

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{tokenUrl}'

scopes: {}

schemas:

LocationSubscription:

type: object

description: Represents an Individual Location Information Subscription.

properties:

easId:

type: string

description: Identifier of the EAS subscribing for location information report.

ueId:

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

intGrpId:

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

extGrpId:

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

expTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

locGran:

$ref: 'TS29122\_MonitoringEvent.yaml#/components/schemas/Accuracy'

locQos:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/LocationQoS'

eventReq:

$ref: 'TS29523\_Npcf\_EventExposure.yaml#/components/schemas/ReportingInformation'

notificationDestination:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

requestTestNotification:

type: boolean

description: >

Set to true by the EAS to request the EES to send a test notification.

Set to false or omitted otherwise.

revocationNotifUri:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

websockNotifConfig:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/WebsockNotifConfig'

suppFeat:

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

oneOf:

- required: [ueId]

- required: [intGrpId]

- required: [extGrpId]

required:

- easId

LocationSubscriptionPatch:

type: object

description: Represents the partial update of Individual AC Information Subscription.

properties:

eventReq:

$ref: 'TS29523\_Npcf\_EventExposure.yaml#/components/schemas/ReportingInformation'

expTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

notificationDestination:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

revocationNotifUri:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

locGran:

$ref: 'TS29122\_MonitoringEvent.yaml#/components/schemas/Accuracy'

locQos:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/LocationQoS'

LocationNotification:

type: object

description: Represents the filters information for AC Information Subscription.

properties:

subId:

type: string

description: >

Identifier of the location information subscription for which the

location information notification is related to.

locEvs:

type: array

items:

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

minItems: 1

description: List of notifications with location information.

required:

- subId

- locEvs

LocationEvent:

type: object

description: Location Information event notification.

properties:

ueId:

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

locInf:

$ref: 'TS29122\_MonitoringEvent.yaml#/components/schemas/LocationInfo'

locInfPred:

$ref: 'TS29522\_AnalyticsExposure.yaml#/components/schemas/UeMobilityExposure'

oneOf:

- required: [locInf]

- required: [locInPred]

required:

- ueId

LocationRequest:

type: object

description: To request location information request.

properties:

ueId:

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

gran:

$ref: 'TS29122\_MonitoringEvent.yaml#/components/schemas/Accuracy'

locQos:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/LocationQoS'

suppFeat:

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

required:

- ueId

LocationResponse:

type: object

description: Contains the response location information request.

properties:

ueLocation:

$ref: 'TS29122\_MonitoringEvent.yaml#/components/schemas/LocationInfo'

suppFeat:

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

required:

- ueLocation

ConsentRevocNotif:

description: >

Represents the user consent revocation information conveyed in a user consent

revocation notification.

type: object

properties:

subscriptionId:

type: string

description: >

Contains the identifier of the subscription to which the notification is related.

consentsRevoked:

type: array

items:

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

minItems: 1

required:

- subscriptionId

- consentsRevoked

ConsentRevoked:

description: Represents the information related to a revoked user consent.

type: object

properties:

ucPurpose:

$ref: 'TS29503\_Nudm\_SDM.yaml#/components/schemas/UcPurpose'

externalId:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/ExternalId'

ueId:

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

required:

- ucPurpose

oneOf:

- required: [externalId]

- required: [ueId]

# A.4 Eees\_UEIdentifier API

openapi: 3.0.0

info:

title: EES UE Identifier Service

version: 1.1.0-alpha.2

description: |

EES UE Identifier Service.

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externalDocs:

description: >

3GPP TS 29.558 V18.4.0; 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: '#/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

ueId:

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

ipAddr:

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

suppFeat:

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

anyOf:

- required: [ueId]

- required: [ipAddr]

UeIdInfo:

description: >

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

type: object

properties:

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

afSpecUeId:

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

easId:

description: >

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

Information.

type: string

oneOf:

- required: [edgeUeId]

- required: [afSpecUeId]

# A.5 Eees\_AppClientInformation API

openapi: 3.0.0

info:

title: EES Application Client Information\_API

description: |

API for EES Application Client Information.

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version: 1.1.0-alpha.2

externalDocs:

description: >

3GPP TS 29.558 V18.1.0 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-appclientinformation/v1'

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in clause 7.5 of 3GPP TS 29.558.

paths:

/subscriptions:

post:

summary: Creates a new Individual Application Client Information Subscriptions resource

operationId: CreateAppClientInfoSubscription

tags:

- Application Client Information Subscriptions (Collection)

description: Create a Subscription resource for reporting of AC information to the EAS.

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'201':

description: >

Created (The individual AC information subscription resource is created successfully)

content:

application/json:

schema:

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

headers:

Location:

description: 'Contains the URI of the newly created resource'

required: true

schema:

type: string

'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'

callbacks:

ACInformationNotification:

'{request.body#/notificationDestination}':

post:

requestBody: # contents of the callback message

required: true

content:

application/json:

schema:

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

responses:

'204':

description: No Content (successful notification)

'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'

/subscriptions/{subscriptionId}:

get:

summary: Read an Individual Application Client Information Subscriptions resource

operationId: ReadIndAppClientInfoSubscription

tags:

- Individual Application Client Information Subscription (Document)

description: Retrieve an Individual AC information subscription information.

parameters:

- name: subscriptionId

in: path

description: Subscription Id.

required: true

schema:

type: string

responses:

'200':

description: OK (Successfully get the AC information subscription).

content:

application/json:

schema:

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

'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'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'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'

put:

summary: Update an Individual Application Client Information Subscriptions resource

operationId: UpdateIndAppClientInfoSubscription

tags:

- Individual Application Client Information Subscription (Document)

description: Fully replace an existing Individual AC information Subscription.

parameters:

- name: subscriptionId

in: path

description: Subscription Id.

required: true

schema:

type: string

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'200':

description: OK (The individual AC information subscription was modified successfully).

content:

application/json:

schema:

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

'204':

description: No Content.

'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'

patch:

summary: Modify an Individual Application Client Information Subscriptions resource

operationId: ModifyIndAppClientInfoSubscription

tags:

- Individual Application Client Information Subscription (Document)

description: Partially update an existing Individual AC information Subscription.

parameters:

- name: subscriptionId

in: path

description: Subscription Id.

required: true

schema:

type: string

requestBody:

description: Partial update an existing Individual AC information Subscription.

required: true

content:

application/merge-patch+json:

schema:

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

responses:

'200':

description: >

OK (The Individual AC information Subscription is successfully modified

and the updated subscription information is returned in the response).

content:

application/json:

schema:

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

'204':

description: >

No Content (The individual AC information subscription was modified successfully).

'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'

delete:

summary: Delete an Individual Application Client Information Subscriptions resource

operationId: DeleteIndAppClientInfoSubscription

tags:

- Individual Application Client Information Subscription (Document)

description: Delete an existing Individual AC information Subscription.

parameters:

- name: subscriptionId

in: path

description: Subscription Id.

required: true

schema:

type: string

responses:

'204':

description: The individual subscription is deleted.

'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'

'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

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{tokenUrl}'

scopes: {}

schemas:

ACInfoSubscription:

type: object

description: Represents an Individual AC Information Subscription.

properties:

easId:

type: string

description: Identifier of the EAS subscribing for AC information report.

acFltrs:

type: array

items:

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

minItems: 1

description: Filters to retrieve the information about specific ACs.

expTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

eventReq:

$ref: 'TS29523\_Npcf\_EventExposure.yaml#/components/schemas/ReportingInformation'

notificationDestination:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

requestTestNotification:

type: boolean

description: >

Set to true by the EAS to request the EES to send a test notification.

Set to false or omitted otherwise.

websockNotifConfig:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/WebsockNotifConfig'

suppFeat:

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

required:

- easId

ACInfoSubscriptionPatch:

type: object

description: Represents the partial update of Individual AC Information Subscription.

properties:

acFltrs:

type: array

items:

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

minItems: 1

description: Filters to retrieve the information about specific ACs.

expTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

eventReq:

$ref: 'TS29523\_Npcf\_EventExposure.yaml#/components/schemas/ReportingInformation'

notificationDestination:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

ACFilters:

type: object

description: Represents the filters information for AC Information Subscription.

properties:

acTypes:

items:

type: string

minItems: 1

description: List of AC Types or categories.

ecspIds:

items:

type: string

minItems: 1

description: The list of identifiers of ECSPs associated with the EEC.

acIds:

items:

type: string

minItems: 1

description: List of identifiers of ACs to be matched.

svcArea:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/ServiceArea'

maxAcKpi:

$ref: 'TS24558\_Eees\_EECRegistration.yaml#/components/schemas/ACServiceKPIs'

minAcKpi:

$ref: 'TS24558\_Eees\_EECRegistration.yaml#/components/schemas/ACServiceKPIs'

opSchds:

type: array

items:

$ref: 'TS29122\_CpProvisioning.yaml#/components/schemas/ScheduledCommunicationTime'

minItems: 1

description: Operation schedule of EAS to be matched with operation schedule of the AC.

ueIds:

type: array

items:

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

minItems: 1

description: List of UE identifiers hosting the AC.

locInfs:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/LocationArea5G'

ACInfoNotification:

type: object

description: AC Information notification.

properties:

subId:

type: string

description: >

Identifier of the AC information subscription for which this notification is related to.

acInfs:

type: array

items:

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

minItems: 1

description: Notifications that include the ACs information matching filter criteria.

required:

- subId

- acInfs

ACInformation:

type: object

description: AC Information matching the filter criteria.

properties:

acProfs:

type: array

items:

$ref: 'TS24558\_Eees\_EECRegistration.yaml#/components/schemas/ACProfile'

minItems: 1

description: List of profile information of ACs.

ueIds:

type: array

items:

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

minItems: 1

description: List of UE identifiers hosting the AC.

ueLocInfs:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/LocationArea5G'

required:

- acProfs

# A.6 Eees\_SessionWithQoS API

openapi: 3.0.0

info:

title: EES Session with QoS API

description: |

API for EES Session with Qos service.

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version: 1.1.0-alpha.2

externalDocs:

description: >

3GPP TS 29.558 V18.2.0 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-session-with-qos/v1'

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in clause 7.5 of 3GPP TS 29.558.

paths:

/sessions:

post:

summary: Create a new Individual Session with QoS resource

operationId: CreateIndSessionWithQoS

tags:

- Sessions with QoS (Collection)

description: >

Request reservation of resources for a data session between AC and EAS with a specific QoS.

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'201':

description: Created (Successful creation)

content:

application/json:

schema:

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

headers:

Location:

description: 'Contains the URI of the newly created resource'

required: true

schema:

type: string

'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'

callbacks:

notificationDestination:

'{request.body#/notificationDestination}':

post:

requestBody: # contents of the callback message

required: true

content:

application/json:

schema:

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

responses:

'204':

description: No Content (successful notification)

'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:

summary: Read all Sessions with QoS resource

operationId: ReadAllSessionsWithQoS

tags:

- Sessions with QoS (Collection)

description: Retrieve all the Session With QoS information.

parameters:

- name: eas-id

in: query

description: Identifier of the EAS which querying the status of subscriptions.

required: true

schema:

type: string

responses:

'200':

description: OK (Successful get all of the active subscriptions)

content:

application/json:

schema:

type: array

items:

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

minItems: 1

description: >

All the subscription information related to the request URI is returned

'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'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'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'

/sessions/{sessionId}:

put:

summary: Update an Individual Session with QoS resource

operationId: UpdateIndSessionWithQoS

tags:

- Individual Session with QoS (Document)

description: >

Fully replace an existing Individual Session with QoS resource identified by a sessionId.

parameters:

- name: sessionId

in: path

description: Session Id.

required: true

schema:

type: string

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'200':

description: >

The individual Session with QoS is successfully modified and the updated

session with QoS context information is returned in the response.

content:

application/json:

schema:

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

'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'

patch:

summary: Modify an Individual Session with QoS resource

operationId: ModifyIndSessionWithQoS

tags:

- Individual Session with QoS (Document)

parameters:

- name: sessionId

in: path

description: session Id.

required: true

schema:

type: string

requestBody:

description: >

Partial update an existing Individual Session with QoS resource identified by a sessionId.

required: true

content:

application/merge-patch+json:

schema:

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

responses:

'200':

description: >

The individual Session with QoS is successfully modified and the updated

session with QoS context information is returned in the response.

content:

application/json:

schema:

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

'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'

delete:

summary: Delete an Individual Session with QoS resource

operationId: DeleteIndSessionWithQoS

tags:

- Individual Session with QoS (Document)

description: Remove an Individual Session with QoS resource identified by a sessionId.

parameters:

- name: sessionId

in: path

description: session Id.

required: true

schema:

type: string

responses:

'204':

description: >

The individual Session with QoS resource matching the sessionId is successfully deleted.

'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'

'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:

summary: Read Individual Session with QoS resource

operationId: ReadIndSessionWithQoS

tags:

- Individual Session with QoS (Document)

description: Read a subscription resource for a sessionId.

parameters:

- name: sessionId

in: path

description: Session Id.

required: true

schema:

type: string

responses:

'200':

description: The subscription information related to the request URI is returned.

content:

application/json:

schema:

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

'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'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'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

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{tokenUrl}'

scopes: {}

schemas:

SessionWithQoS:

type: object

description: Represents an Individual Session with QoS Subscription.

properties:

self:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

easId:

type: string

description: Identifier of an EAS.

ueIpv4Addr:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Ipv4Addr'

ueIpv6Addr:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Ipv6Addr'

ipDomain:

type: string

ueId:

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

intGrpId:

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

extGrpId:

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

ipFlows:

type: array

items:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/FlowDescription'

minItems: 1

description: Contains the flow description for the Uplink and/or Downlink IP flows.

trafFilterInfo:

$ref: 'TS29558\_Eees\_ACRManagementEvent.yaml#/components/schemas/TrafficFilterInfo'

qosReference:

type: string

description: Identifies a pre-defined QoS information.

altQosReference:

type: array

items:

type: string

description: >

Identifies an ordered list of pre-defined QoS information.

The lower the index of the array for a given entry, the higher the priority.

events:

type: array

items:

$ref: 'TS29122\_AsSessionWithQoS.yaml#/components/schemas/UserPlaneEvent'

description: Indicates the events subscribed by the EAS.

sponsorInformation:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/SponsorInformation'

qosMonInfo:

$ref: 'TS29122\_AsSessionWithQoS.yaml#/components/schemas/QosMonitoringInformation'

notificationDestination:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

dnn:

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

snssai:

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

maxbrUl:

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

maxbrDl:

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

disUeNotif:

type: boolean

description: >

Indicates to disable QoS flow parameters signalling to the UE when the SMF is notified

by the NG-RAN of changes in the fulfilled QoS situation when it is included and set to

"true". The fulfilled situation is either the QoS profile or an Alternative QoS Profile.

The default value "false" shall apply, if the attribute is not present and has not been

supplied previously.

requestTestNotification:

type: boolean

description: >

Set to true by Subscriber to request the EES to send a test notification

as defined in 3GPP TS 29.122. Set to false or omitted otherwise.

websockNotifConfig:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/WebsockNotifConfig'

suppFeat:

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

required:

- easId

- ipFlows

SessionWithQoSPatch:

type: object

description: Represents a modification request of Individual Session with QoS Subscription.

properties:

ipFlows:

type: array

items:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/FlowDescription'

minItems: 1

description: Contains the flow description for the Uplink and/or Downlink IP flows.

trafFilterInfo:

$ref: 'TS29558\_Eees\_ACRManagementEvent.yaml#/components/schemas/TrafficFilterInfo'

qosReference:

type: string

description: Identifies a pre-defined QoS information.

altQosReference:

type: array

items:

type: string

description: >

Identifies an ordered list of pre-defined QoS information.

The lower the index of the array for a given entry, the higher the priority.

events:

type: array

items:

$ref: 'TS29122\_AsSessionWithQoS.yaml#/components/schemas/UserPlaneEvent'

description: Indicates the events subscribed by the EAS.

sponsorInformation:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/SponsorInformation'

qosMonInfo:

$ref: 'TS29122\_AsSessionWithQoS.yaml#/components/schemas/QosMonitoringInformationRm'

notificationDestination:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

maxbrUl:

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

maxbrDl:

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

disUeNotif:

type: boolean

UserPlaneEventNotification:

type: object

description: Represents the user plane event notification.

properties:

sessionId:

type: string

description: >

String identifying the individual data session information for which

the QoS event notification is delivered.

eventReports:

type: array

items:

$ref: 'TS29122\_AsSessionWithQoS.yaml#/components/schemas/UserPlaneEventReport'

minItems: 1

description: >

Contains the flow description for the Uplink and/or Downlink IP flows.

required:

- sessionId

- eventReports

# A.7 Eees\_ACRManagementEvent API

openapi: 3.0.0

info:

title: EES ACR Management Event\_API

description: |

API for EES ACR Management Event.

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version: 1.1.0-alpha.5

externalDocs:

description: >

3GPP TS 29.558 V18.4.0 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-acrmgntevent/v1'

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in clause 7.5 of 3GPP TS 29.558.

paths:

/subscriptions:

post:

summary: Creates a new Individual ACR Management Events Subscription

operationId: CreateACRMngEventSubscr

tags:

- ACR Management Events Subscriptions (Collection)

description: Create an Individual ACR Management Event Subscription resource.

requestBody:

required: true

content:

application/json:

schema:

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

callbacks:

ACRManagementEventsNotification:

'{request.body#/notificationDestination}':

post:

requestBody: # contents of the callback message

required: true

content:

application/json:

schema:

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

responses:

'200':

description: OK (The notification is received successfully)

content:

application/json:

schema:

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

'204':

description: No Content (successful notification)

'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'

UPPathChangeAvailabilityNotif:

'{request.body#/notificationDestination}/report-availability':

post:

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'204':

description: No Content. The notification is successful received.

'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'

responses:

'201':

description: Created (Successful creation)

content:

application/json:

schema:

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

headers:

Location:

description: 'Contains the URI of the newly created resource'

required: true

schema:

type: string

'204':

description: >

Successful case. The resource has been successfully created and no

additional content is to be sent in the response message.

'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:

summary: Read all ACR Management Events Subscriptions

operationId: GetACRMngEventSubscrs

tags:

- ACR Management Events Subscriptions (Collection)

description: Retrieve all the ACR Management Events Subscriptions information.

parameters:

- name: supp-feat

in: query

description: Features supported by the EAS.

required: false

schema:

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

responses:

'200':

description: OK (Successful get all of the active subscriptions)

content:

application/json:

schema:

type: array

items:

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

minItems: 1

description: All the active ACR management events subscriptions

'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'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'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'

/subscriptions/{subscriptionId}:

get:

summary: Read an Individual ACR Management Events Subscription

operationId: GetIndACRMngEventSubscr

tags:

- Individual ACR Management Events Subscription (Document)

description: Retrieve an Individual ACR Management Events Subscription.

parameters:

- name: subscriptionId

in: path

description: Subscription Id.

required: true

schema:

type: string

- name: supp-feat

in: query

description: Features supported by the EAS.

required: false

schema:

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

responses:

'200':

description: OK (Successful get the active subscription).

content:

application/json:

schema:

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

'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'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'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'

put:

summary: Update an Individual ACR Management Events Subscription

operationId: UpdateIndACRMngEventSubscr

tags:

- Individual ACR Management Events Subscription (Document)

description: Fully replace an existing Individual ACR Management Events Subscription.

parameters:

- name: subscriptionId

in: path

description: Subscription Id.

required: true

schema:

type: string

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'200':

description: OK (Successful get the active subscription).

content:

application/json:

schema:

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

'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'

patch:

summary: Modify an Individual ACR Management Events Subscription

operationId: ModifyIndACRMngEventSubscr

tags:

- Individual ACR Management Events Subscription (Document)

parameters:

- name: subscriptionId

in: path

description: Subscription Id.

required: true

schema:

type: string

requestBody:

description: Partial update an existing Individual ACR Management Events Subscription.

required: true

content:

application/merge-patch+json:

schema:

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

responses:

'200':

description: >

The Individual ACR Management Events Subscription is successfully modified

and the updated subscription information is returned in the response.

content:

application/json:

schema:

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

'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'

delete:

summary: Delete an Individual ACR Management Events Subscription

operationId: DeleteIndACRMngEventSubscr

tags:

- Individual ACR Management Events Subscription (Document)

description: Delete an existing Individual ACR Management Events Subscription.

parameters:

- name: subscriptionId

in: path

description: Subscription Id.

required: true

schema:

type: string

responses:

'204':

description: The individual subscription is deleted.

'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'

'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

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{tokenUrl}'

scopes: {}

schemas:

AcrMgntEventsSubscription:

type: object

description: Represents an Individual ACR Management Events Subscription.

properties:

self:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

easId:

type: string

description: Identifier of an EAS.

eventSubscs:

type: array

items:

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

minItems: 1

description: The subscribed ACR management events.

evtReq:

$ref: 'TS29523\_Npcf\_EventExposure.yaml#/components/schemas/ReportingInformation'

notificationDestination:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

eventReports:

type: array

items:

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

minItems: 1

description: The ACR management event report(s).

availabilityInfo:

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

failEventReports:

type: array

items:

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

minItems: 1

description: Failure event reports.

requestTestNotification:

type: boolean

description: >

Set to true by the EAS to request the EES to send a test notification.

Set to false or omitted otherwise.

websockNotifConfig:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/WebsockNotifConfig'

suppFeat:

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

required:

- easId

- eventSubscs

- notificationDestination

AcrMgntEventSubsc:

type: object

description: Represents an ACR Management Event Subscription.

properties:

event:

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

eventFilter:

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

evtReq:

$ref: 'TS29523\_Npcf\_EventExposure.yaml#/components/schemas/ReportingInformation'

tgtUeId:

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

dnaiChgType:

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

easAckInd:

type: boolean

description: >

Identifies whether EAS acknowledgement of UP path change event notifications is to be

expected. Set to "true" if the EAS acknowledgement is expected. Set to "false" if

the EAS acknowledgement is not expected. Default value is "false" if ommited.

This attribute may be provided only if the "event" attribute is set to "UP\_PATH\_CHG".

easChars:

type: array

items:

$ref: 'TS24558\_Eees\_EASDiscovery.yaml#/components/schemas/EasCharacteristics'

minItems: 1

description: A list of EAS characteristics.

trafFilterInfo:

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

servContPlanInd:

type: boolean

description: >

Represents the service continuity planning indication (i.e., whether or not the EES

shall monitor whether the UE(s) enter the predicted location).

When set to true, it indicates that service continuity planning is required.

When set to false, it indicates that Service continuity planning is not required.

The default value when this attribute is omitted is false.

easAckSvcCont:

type: boolean

description: >

Indicates that the EAS will provide an acknowledgement as a response to the notification

of ACR management notification related to service continuity planning. Set to "true" if

the EAS acknowledgement is expected. Default value is "false". This attribute may be

provided only if the "event" attribute is set to "ACR\_MONITORING" and/or

"ACR\_FACILITATION".

required:

- event

AcrMgntEventsSubscriptionPatch:

type: object

description: >

Represents a modification request of Individual ACR Management Events Subscription.

properties:

eventSubscs:

type: array

items:

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

minItems: 1

description: The subscribed ACR management events.

evtReq:

$ref: 'TS29523\_Npcf\_EventExposure.yaml#/components/schemas/ReportingInformation'

notificationDestination:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

AcrMgntEventsNotification:

type: object

description: Represents the ACR management events notification.

properties:

subpId:

type: string

description: >

String identifying the Individual ACR Management Events Subscription

for which the notification is delivered.

eventReports:

type: array

items:

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

minItems: 1

description: A list of ACR management event reports.

required:

- subpId

- eventReports

AcrMgntEventReport:

type: object

description: Represents an ACR management event report.

properties:

event:

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

timeStamp:

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

upPathChgInfo:

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

easEndPoint:

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

actStatus:

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

acrParams:

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

acId:

type: string

selACRScen:

type: array

items:

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

minItems: 1

easInBdlInfoList:

type: array

items:

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

minItems: 1

description: Represents the list of EAS in a bundle related information.

servContPlanInd:

type: boolean

description: >

Represents the service continuity planning indication (i.e., whether or not the EES will

monitor whether the UE(s) enter the predicted location).

When set to true, it indicates that service continuity planning will be performed.

When set to false, it indicates that Service continuity planning will not be performed.

The default value when this attribute is omitted is false.

required:

- event

ACRParameters:

type: object

description: Represents the ACR parameters.

properties:

predictExpTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

FailureAcrMgntEventInfo:

type: object

description: Represents a failure ACR management event.

properties:

event:

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

failureCode:

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

required:

- event

- failureCode

TargetUeIdentification:

description: Identifies the target UE information.

type: object

properties:

gpsi:

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

intGrpId:

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

extGrpId:

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

ueIpAddr:

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

oneOf:

- required: [gpsi]

- required: [intGrpId]

- required: [extGrpId]

- required: [ueIpAddr]

AvailabilityNotif:

type: object

description: >

Represents the availability information of user plane path management events monitoring

via the 3GPP 5GC network.

properties:

availabilityStatus:

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

required:

- availabilityStatus

UpPathChangeInfo:

description: Represents user plane path change information.

type: object

properties:

ueId:

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

dnaiChgType:

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

sourceTrafficRoute:

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

targetTrafficRoute:

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

sourceDnai:

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

targetDnai:

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

srcUeIpv4Addr:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Ipv4Addr'

srcUeIpv6Prefix:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Prefix'

tgtUeIpv4Addr:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Ipv4Addr'

tgtUeIpv6Prefix:

$ref: 'TS29571\_CommonData.yaml#/components/schemas/Ipv6Prefix'

required:

- ueId

- dnaiChgType

IndUeIdentification:

description: Represents identification information of a UE.

type: object

properties:

gpsi:

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

externalId:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/ExternalId'

ueIpAddr:

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

oneOf:

- required: [gpsi]

- required: [externalId]

- required: [ueIpAddr]

TrafficFilterInfo:

description: Represents the Traffic Filter Information.

type: object

properties:

ipFlows:

type: array

items:

$ref: 'TS29514\_Npcf\_PolicyAuthorization.yaml#/components/schemas/FlowDescription'

minItems: 1

description: Contains the flow description for the Uplink and/or Downlink IP flows.

uris:

type: array

items:

type: string

minItems: 1

description: Indicates URI(s) matching criteria.

domainNames:

type: array

items:

type: string

minItems: 1

description: Indicates Domain Name matching criteria.

dnProtocol:

$ref: 'TS29122\_PfdManagement.yaml#/components/schemas/DomainNameProtocol'

anyOf:

- required: [ipFlows]

- required: [uris]

- required: [domainNames]

SelectedACRScenarios:

type: object

description: >

Represents the selected ACR scenario(s) applicable for a given combination of AC and UE.

properties:

acrList:

type: array

items:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/ACRScenario'

minItems: 0

acId:

type: string

ueId:

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

required:

- acrList

- acId

- ueId

EasAckInformation:

type: object

description: Represents the EAS acknowledgement information.

properties:

resCode:

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

required:

- resCode

EasInBundleInfo:

type: object

description: >

Represents EAS in a bundle information.

properties:

easId:

type: string

description: Contains the identifier of the EAS that is within an EAS bundle.

dnais:

type: array

items:

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

minItems: 1

svcArea:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/ServiceArea'

#

# ENUMERATIONS DATA TYPES

#

AcrMgntEvent:

anyOf:

- type: string

enum:

- UP\_PATH\_CHG

- ACR\_MONITORING

- ACR\_FACILITATION

- ACT\_START\_STOP

- ACR\_SELECTION

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

description: |

Represents the ACR Management event.

Possible values are:

- UP\_PATH\_CHG: Indicates that ACR Management Event is the User plane path change event.

- ACR\_MONITORING: Indicates that ACR Management Event is the ACR monitoring event.

- ACR\_FACILITATION: Indicates that ACR Management Event is the ACR facilitation event.

- ACT\_START\_STOP: Indicates that ACR Management Event is the ACT start/stop event.

- ACR\_SELECTION: Indicates that ACR Management Event is the ACR selection event.

AcrMgntEventFilter:

anyOf:

- type: string

enum:

- INTRA\_EDN\_MOBILITY

- INTER\_EDN\_MOBILITY

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

description: |

Represents the filtering criteria for the ACR Management event.

Possible values are:

- INTRA\_EDN\_MOBILITY: Indicates that the ACR Management Event filter is intra-EDN mobility.

- INTER\_EDN\_MOBILITY: Indicates that the ACR Management Event filter is inter-EDN mobility.

ActStatus:

anyOf:

- type: string

enum:

- ACT\_START

- ACT\_STOP

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

description: |

Represents the ACT status.

Possible values are:

- ACT\_START: Indicates ACT start.

- ACT\_STOP: Indicates ACT stop.

AcrMgntEventFailureCode:

anyOf:

- type: string

enum:

- 3GPP\_UP\_PATH\_CHANGE\_MON\_NOT\_AVAILABLE

- OTHER\_REASONS

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

description: |

Represents the failure reason for the ACR Management event.

Possible values are:

- 3GPP\_UP\_PATH\_CHANGE\_MON\_NOT\_AVAILABLE: Indicates that the ACR Management Event

Subscription failed because user plane path management event notifications from the 3GPP

network is NOT available. This value is only applicable for the "UP\_PATH\_CHG",

"ACR\_MONITORING" and "ACR\_FACILITATION" events.

- OTHER\_REASONS: Indicates that the ACR Management Event Subscription failed for other

reasons. This value is applicable for all events.

AvailabilityStatus:

anyOf:

- type: string

enum:

- AVAILABLE

- NOT\_AVAILABLE

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

description: |

Represents the availability status.

Possible values are:

- AVAILABLE: Indicates availability.

- NOT\_AVAILABLE: Indicates unavailability.

ResultCode:

anyOf:

- type: string

enum:

- ACCEPTED

- REJECTED

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

description: |

Represents the result code of ACT acceptance by EAS.

Possible values are:

- ACCEPTED: Indicates acceptance of the ACT.

- REJECTED: Indicates rejection of the ACT.

# A.8 Eees\_EECContextRelocation API

openapi: 3.0.0

info:

title: EES EEC Context Relocation API

description: |

API for EEC Context Relocation.

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version: 1.1.0-alpha.3

externalDocs:

description: >

3GPP TS 29.558 V18.2.0 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-eeccontextreloc/v1'

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in clause 7.5 of 3GPP TS 29.558.

paths:

/eec-contexts:

post:

summary: Push EEC Context information

operationId: PushEecContexts

tags:

- Collection of EEC contexts (Collection)

description: S-EES transfers the EEC context information to T-EES.

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'200':

description: >

OK. The EEC context has been successfully transferred to the T-EES and

the EEC is implicitly registered.

content:

application/json:

schema:

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

'204':

description: No Content. The EEC context has been successfully transferred to the T-EES.

'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:

summary: Pull EEC Context information

operationId: PullEecContexts

tags:

- Collection of EEC contexts (Collection)

description: T-EES pulls an EEC context information from S-EES.

parameters:

- name: ees-id

in: query

description: Unique identifier of the requesting EES.

required: true

schema:

type: string

- name: eec-cntx-id

in: query

description: Unique identifier of the EEC context.

required: true

schema:

type: string

- name: sess-cntxs

in: query

description: List of service session context information being requested.

required: false

schema:

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

responses:

'200':

description: >

OK (The EEC context information matching the input parameters in the request

is returned by the S-EES).

content:

application/json:

schema:

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

'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'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'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:

SessionContexts:

type: object

description: Represents the list of service session contexts information.

properties:

sessCntxs:

type: array

items:

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

minItems: 1

description: List of service session contexts information.

required:

- sessCntxs

IndividualSessionContext:

type: object

description: Represents a single service session context information.

properties:

easId:

type: string

description: Identifier of the EAS providing the application services.

endPt:

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

acId:

type: string

description: Identifier of the AC for which the service session information is provided.

acrList:

type: array

items:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/ACRScenario'

minItems: 1

description: The list of selected ACR scenarios.

required:

- easId

- endPt

EECContextPush:

type: object

description: Represents the EEC context push request data.

properties:

eesId:

type: string

description: Identifier of the S-EES pushing the EEC context information.

eecCntx:

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

tgtEas:

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

acrScenariosSelReq:

type: boolean

description: >

Set to true if the EEC indicates the T-EES to select the ACR scenarisos.

Set to false if the T-EES is not required to select the ACR scenarios.

The default value when omitted is false.

required:

- eesId

- eecCntx

EECContextPushRes:

type: object

description: Represents the EEC context push response data.

properties:

implReg:

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

selAcrScenariosList:

type: array

items:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/ACRScenario'

minItems: 1

description: The list of ACR scenarios selected by T-EES.

ImplicitRegDetails:

type: object

description: Represents the EEC implicit registration details.

properties:

regId:

type: string

description: Identifier of the EEC registration.

expTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

required:

- regId

EECContext:

type: object

description: Represents the EEC context information.

properties:

eecId:

type: string

description: Unique idenitfier of the EEC.

cntxId:

type: string

description: Unique idenitfier assigned to the EEC context.

ueId:

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

e1Subs:

type: array

items:

type: string

minItems: 1

description: List of subscription IDs for the capability expsoure for the EEC ID.

ueLoc:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/LocationArea5G'

acProfs:

type: array

items:

$ref: 'TS24558\_Eees\_EECRegistration.yaml#/components/schemas/ACProfile'

minItems: 1

description: List AC profiles.

sessCntxs:

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

eecSrvContSupp:

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

ueMobSuppInd:

type: boolean

description: >

Set to true to indicate that UE Mobility support is required.

Set to false to indicate that UE mobility support is not required.

The default value when omitted is false.

required:

- eecId

- cntxId

EECSrvContinuitySupport:

type: object

description: Represents the EEC service continuity support details.

properties:

srvContSupp:

type: boolean

description: >

Set to true if EEC supports service continuity.

Set to false if EEC does not supports service continuity.

The default value when omitted is false.

acrScenarios:

type: array

items:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/ACRScenario'

minItems: 1

description: The list of ACR scenarios supported by EEC.

required:

- srvContSupp

# A.9 Eees\_EELManagedACR API

openapi: 3.0.0

info:

title: EES EEL Managed ACR Service

version: 1.1.0-alpha.2

description: |

EES EEL Managed ACR Service.

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externalDocs:

description: >

3GPP TS 29.558 V18.1.0; 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-eel-acr/v1'

variables:

apiRoot:

default: https://example.com

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

paths:

/request-eelacr:

post:

summary: Request the EES (e.g. S-EES) to handle all the operations of an ACR.

operationId: RequestEELManagedACR

tags:

- Request EEL Managed ACR

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'200':

description: >

The requested EEL Managed ACR initiation was successfully received and

processed. The response body contains the feedback of the EES.

content:

application/json:

schema:

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

'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'

/subscriptions:

get:

summary: Retrieve all the active ACT Status Subscriptions managed by the EES.

operationId: GetACTStatusSubscriptions

tags:

- ACT Status Subscriptions (Collection)

responses:

'200':

description: >

OK. All the active ACT status subscriptions managed by the EES shall

be returned.

content:

application/json:

schema:

type: array

items:

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

'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'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'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'

post:

summary: Request the creation of a subscription to ACT status reporting.

operationId: CreateACTStatusSubsc

tags:

- ACT Status Subscriptions (Collection)

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'201':

description: >

Created. The subscription is successfully created and a representation of the

created Individual ACT Status Subscription resource shall be returned.

content:

application/json:

schema:

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

headers:

Location:

description: >

Contains the URI of the created Individual ACT Status Subscription resource.

required: true

schema:

type: string

'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'

callbacks:

ACTStatusNotification:

'{$request.body#/notificationUri}/act-status':

post:

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'204':

description: >

No Content. The ACT status notification is successfully received

and acknowledged.

'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'

/subscriptions/{subscriptionId}:

get:

summary: Retrieve an ACT status subscription resource.

operationId: GetACTStatusSubscription

tags:

- Individual ACT Status Subscription (Document)

parameters:

- name: subscriptionId

in: path

description: Individual ACT Status Subscription identifier.

required: true

schema:

type: string

responses:

'200':

description: >

OK. The requested real-time UAV status subscription resource is returned.

content:

application/json:

schema:

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

'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'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'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:

EELACRReq:

description: >

Represents the parameters to request the EES (e.g. S-EES) to handle all the

operations of an ACR.

type: object

properties:

ueId:

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

easCharacs:

type: array

items:

$ref: 'TS24558\_Eees\_EASDiscovery.yaml#/components/schemas/EasCharacteristics'

minItems: 1

appCtxtStoreAddr:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

suppFeat:

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

required:

- ueId

- easCharacs

EELACRResp:

description: Represents the feedback of the EES on EEL Managed ACR request.

type: object

properties:

appCtxtStoreAddr:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

suppFeat:

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

ACTStatusSubsc:

description: >

Represents the parameters to request the creation of a subscription to ACT

status reporting.

type: object

properties:

easId:

type: string

description: Contains the application identifier of the EAS, e.g. URI, FQDN.

notificationUri:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

suppFeat:

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

required:

- easId

- notificationUri

ACTStatusNotif:

description: Represents an ACT status notification.

type: object

properties:

subscriptionId:

type: string

description: Subscription identifier.

actStatus:

$ref: 'TS29558\_Eees\_ACRStatusUpdate.yaml#/components/schemas/ACTResult'

required:

- subscriptionId

- actStatus

# ENUMS:

# A.10 Eees\_ACRStatusUpdate API

openapi: 3.0.0

info:

title: EES ACR Status Update Service

version: 1.1.0-alpha.2

description: |

EES ACR Status Update Service.

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externalDocs:

description: >

3GPP TS 29.558 V18.1.0; 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-acrstatus-update/v1'

variables:

apiRoot:

default: https://example.com

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

paths:

/request-acrupdate:

post:

summary: Request to update the information related to ACR (e.g. indicate the status of ACT, update the notification target address).

operationId: RequestACRUpdate

tags:

- Request ACR Update

requestBody:

required: true

content:

application/json:

schema:

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

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: '#/components/schemas/ACRDataStatus'

'204':

description: >

No Content. The communicated ACR update information was successfully

received.

'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:

ACRUpdateData:

description: >

Represents the parameters to update the information related to ACR (e.g. indicate

the status of ACT, update the notification target address).

type: object

properties:

easId:

type: string

acId:

type: string

actResultInfo:

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

e3SubscIds:

type: array

items:

type: string

minItems: 1

e3NotificationUri:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

required:

- easId

anyOf:

- required: [actResultInfo]

- required: [e3SubscIds]

- required: [e3NotificationUri]

ACRDataStatus:

description: Represents the ACR status information.

type: object

properties:

e3SubscsStatus:

$ref: '#/components/schemas/E3SubscsStatus'

e3SubscIds:

type: array

items:

type: string

minItems: 1

required:

- e3SubscsStatus

ACTResultInfo:

description: Represents the result of ACT and the related information.

type: object

properties:

actResult:

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

actFailureCause:

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

ueId:

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

easEndPoint:

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

required:

- actResult

- ueId

- easEndPoint

# ENUMS:

ACTResult:

anyOf:

- type: string

enum:

- SUCCESSFUL

- FAILED

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

description: |

Represents the result of ACT.

Possible values are:

- SUCCESSFUL: Indicates that the ACT was successful.

- FAILED: Indicates that the ACT failed.

E3SubscsStatus:

anyOf:

- type: string

enum:

- SUCCESSFUL

- FAILED

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

description: |

Represents the status of the initialization of EDGE-3 subscriptions.

Possible values are:

- SUCCESSFUL: Indicates that the initialization of EDGE-3 subscriptions was successful.

- FAILED: Indicates that the initialization of EDGE-3 subscriptions failed.

ACTFailureCause:

anyOf:

- type: string

enum:

- ACR\_CANCELLATION

- OTHER

- type: string

description: >

This string provides forward-compatibility with future extensions to the enumeration

and is not used to encode content defined in the present version of this API.

description: |

Represents the cause of ACT failure.

Possible values are:

- ACR\_CANCELLATION: Indicates that the ACT failed due to the cancellation of the ACR.

- OTHER: Indicates that the ACT failed for other reasons.

# A.11 Eecs\_EESRegistration API

openapi: 3.0.0

info:

title: ECS EES Registration\_API

description: |

API for EES Registration.

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version: 1.1.0-alpha.5

externalDocs:

description: >

3GPP TS 29.558 V18.4.0 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}/eecs-eesregistration/v1'

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in clause 7.5 of 3GPP TS 29.558.

paths:

/registrations:

post:

summary: Create a new EES Registration

operationId: CreateEESRegistration

tags:

- EES Registrations (Collection)

description: Registers a new EES at the Edge Configuration Server.

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'201':

description: EES information is registered successfully at ECS.

content:

application/json:

schema:

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

headers:

Location:

description: 'Contains the URI of the newly created resource'

required: true

schema:

type: string

'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'

/registrations/{registrationId}:

get:

summary: Get an Individual EES Registration

operationId: GetIndEESReg

tags:

- Individual EES Registration (Document)

description: Retrieve an Individual EES registration resource.

parameters:

- name: registrationId

in: path

description: Registration Id.

required: true

schema:

type: string

responses:

'200':

description: OK (The EES registration information at the Edge Configuration Server).

content:

application/json:

schema:

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

'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'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'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'

put:

summary: Update an Individual EES Registration

operationId: UpdateIndEESReg

tags:

- Individual EES Registration (Document)

description: Fully replace an existing EES Registration resource.

parameters:

- name: registrationId

in: path

description: EES Registration Id.

required: true

schema:

type: string

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'200':

description: OK (The EES registration information is updated successfully).

content:

application/json:

schema:

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

'204':

description: >

No Content. The individual EES registration information is updated successfully.

'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'

patch:

summary: Modify an Individual EES Registration

operationId: ModifyIndEESReg

tags:

- Individual EES Registration (Document)

description: Partially update an existing EES Registration resource.

parameters:

- name: registrationId

in: path

description: EES registration Id.

required: true

schema:

type: string

requestBody:

description: Partial update an existing EES registration resource.

required: true

content:

application/merge-patch+json:

schema:

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

responses:

'200':

description: >

The Individual EES registration is successfully modified and

the updated registration information is returned in the response.

content:

application/json:

schema:

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

'204':

description: >

No Content. The individual EES registration information is updated successfully.

'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'

delete:

summary: Delete an Individual EES Registration

operationId: DeleteIndEESReg

tags:

- Individual EES Registration (Document)

description: Delete an existing EES registration at ECS.

parameters:

- name: registrationId

in: path

description: Registration Id.

required: true

schema:

type: string

responses:

'204':

description: The individual EES registration is deleted.

'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'

'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:

EESRegistration:

type: object

description: Represents an EES registration information.

properties:

eesProf:

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

expTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

suppFeat:

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

required:

- eesProf

EESProfile:

type: object

description: Represents the EES profile information.

properties:

eesId:

type: string

description: Identifier of the EES.

endPt:

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

easIds:

type: array

items:

type: string

minItems: 1

description: Application identifiers of EASs that are registered with EES.

easBdlInfos:

type: object

additionalProperties:

type: array

items:

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

minItems: 1

minProperties: 1

description: >

The key used in this map for each entry is the EAS ID of the concerned EAS.

Within each EASBundleInfo encoded map entry of this attribute, the "mainEasId" attribute

shall not be present.

ednInfoSets:

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

easInstInfo:

type: object

additionalProperties:

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

minProperties: 1

description: >

Represents the EAS instantiation information for the EAS(s) registered at the EES.

The key of the map shall be the EAS ID to which the provided instantiation information

within the map value relates.

provId:

type: string

description: Identifier of the ECSP that provides the EES provider.

svcArea:

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

appLocs:

type: array

items:

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

minItems: 1

description: List of DNAI(s) associated with the EES.

svcContSupp:

type: array

items:

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

minItems: 1

description: The ACR scenarios supported by the EES for service continuity.

svcContSuppExt1:

type: array

items:

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

minItems: 1

description: >

Represents the information related to the EES ability to handle bundled EAS ACRs.

This attribute may be present only when the "svcContSupp" attribute is also present.

When this attribute is present, it indicates that the EES (identified by the "eesId"

attribute) is able to handle bundled EAS ACRs and contains the information of the EAS

bundle(s) for which the EES is able to handle bundled EAS ACRs.

eecRegConf:

type: boolean

description: >

Set to true if the EEC is required to register to the EES to use edge service.

Set to false if the EEC is not required to register to use edge services. Default

Value is false if omitted.

required:

- eesId

- endPt

- eecRegConf

EESRegistrationPatch:

type: object

description: Represents partial update request of individual EES registration information.

properties:

eesProf:

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

expTime:

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

ServiceArea:

type: object

description: Represents a service area information of the EdgeApp entity.

properties:

topServAr:

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

geoServAr:

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

TopologicalServiceArea:

type: object

description: Represents topological service area information.

properties:

ecgis:

type: array

items:

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

minItems: 1

description: A list of E-UTRA cell identities.

ncgis:

type: array

items:

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

minItems: 1

description: A list of NR cell identities.

tais:

type: array

items:

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

minItems: 1

description: A list of tracking area identities.

plmnIds:

type: array

items:

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

minItems: 1

description: A list of serving network identities.

GeographicalServiceArea:

type: object

description: Represents geographical service area information.

properties:

geoArs:

type: array

items:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/GeographicArea'

minItems: 1

description: A list of geographic area information.

civicAddrs:

type: array

items:

$ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/CivicAddress'

minItems: 1

description: A list of civic address information.

EASInstantiationInfo:

type: object

description: Represents the EAS instantiation information.

properties:

easId:

type: string

description: Identifier of the EAS.

status:

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

instCrit:

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

required:

- easId

- status

InstantiationCriteria:

type: object

description: Represents the instantiation criteria for an EAS.

properties:

instantiationTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

instWindows:

type: array

items:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/TimeWindow'

minItems: 1

description: A list time windows at which the EAS is instantiated.

scheds:

type: array

items:

$ref: 'TS29122\_CpProvisioning.yaml#/components/schemas/ScheduledCommunicationTime'

minItems: 1

description: Represents the EAS instantiation schedule.

oneOf:

- required: [instantiationTime]

- required: [instWindows]

- required: [scheds]

EDNInfo:

type: object

description: Represents EDN related information.

properties:

dnn:

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

dnais:

type: array

items:

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

minItems: 1

required:

- dnn

ACRScenario:

anyOf:

- type: string

enum:

- EEC\_INITIATED

- EEC\_EXECUTED\_VIA\_SOURCE\_EES

- EEC\_EXECUTED\_VIA\_TARGET\_EES

- SOURCE\_EAS\_DECIDED

- SOURCE\_EES\_EXECUTED

- EEL\_MANAGED\_ACR

- 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: |

Represents the ACR scenarios supported by EES.

Possible values are:

- EEC\_INITIATED: Represents the EEC initiated ACR scenario.

- EEC\_EXECUTED\_VIA\_SOURCE\_EES: Represents the EEC ACR scenario executed via the S-EES.

- EEC\_EXECUTED\_VIA\_TARGET\_EES: Represents the EEC ACR scenario executed via the T-EES.

- SOURCE\_EAS\_DECIDED: Represents the EEC ACR scenario where the S-EAS decides to perform

ACR.

- SOURCE\_EES\_EXECUTED: Represents the EEC ACR scenario where S-EES executes the ACR.

- EEL\_MANAGED\_ACR: Represents the EEC ACR scenario where the ACR is managed by the

Edge Enabler Layer.

InstantiationStatus:

anyOf:

- type: string

enum:

- INSTANTIATED

- INSTANTIABLE

- 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: |

Represents the instantiation status information of an EAS.

Possible values are:

- INSTANTIATED: Indicates that the EAS status is instantiated.

- INSTANTIABLE: Indicates that the EAS status is instantiable but not yet instantiated.

# A.12 Eecs\_TargetEESDiscovery API

openapi: 3.0.0

info:

title: ECS Target EES Discovery API

description: |

API for Target EES Discovery.

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version: 1.1.0-alpha.3

externalDocs:

description: >

3GPP TS 29.558 V18.4.0 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}/eecs-targeteesdiscovery/v1'

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in clause 7.5 of 3GPP TS 29.558.

paths:

/ees-profiles:

get:

summary: Read all EES Profiles

operationId: GetEESProfiles

tags:

- EES Profiles (Collection)

description: Retrieve the T-EES information.

parameters:

- name: ees-id

in: query

description: Unique identifier of the S-EES.

required: true

schema:

type: string

- name: eas-id

in: query

description: Unique identifier of the S-EAS.

required: true

schema:

type: string

- name: target-dnai

in: query

description: The DNAI information associated with the potential T-EES(s) and/or T-EAS(s).

required: false

schema:

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

- name: ue-id

in: query

description: Identifier of the UE.

required: false

schema:

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

- name: ue-location

in: query

description: The location information of the UE.

required: false

schema:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/LocationArea5G'

- name: eec-srv-cont-supp

in: query

description: >

Indicates whether the EEC supports service continuity or not and the related service

continuity support information.

required: false

schema:

$ref: 'TS29558\_Eees\_EECContextRelocation.yaml#/components/schemas/EECSrvContinuitySupport'

- name: ac-svc-cont-supp

in: query

description: >

Indicates that the AC supports service continuity and contains the related service

continuity support information (i.e., supported ACR scenarios).

required: false

schema:

type: array

items:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/ACRScenario'

minItems: 1

- name: bdl-id

in: query

description: >

Contains EAS bundle identifier.

required: false

schema:

type: string

- name: bdl-type

in: query

description: >

Contains EAS bundle type.

required: false

schema:

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

- name: ens-ind

in: query

description: indicates whether edge node sharing is requested.

required: false

schema:

type: boolean

description: >

Set to true if edge node sharing is requested.

Set to false if edge node sharing is not requested.

The default value when omitted is false.

- name: app-grp-id

in: query

description: >

Contains the application group identifier.

required: false

schema:

type: string

responses:

'200':

description: The EDN configuration and the T-EES information determined by ECS.

content:

application/json:

schema:

$ref: 'TS24558\_Eecs\_ServiceProvisioning.yaml#/components/schemas/ECSServProvResp'

'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'

'406':

$ref: 'TS29122\_CommonData.yaml#/components/responses/406'

'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: {}

# A.13 Eees\_ACRParameterInformation API

openapi: 3.0.0

info:

title: EES ACR Parameters Information Service

version: 1.0.0-alpha.2

description: |

EES ACR Parameters Information Service.

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externalDocs:

description: >

3GPP TS 29.558 V18.3.0; 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-acr-param/v1'

variables:

apiRoot:

default: https://example.com

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

paths:

/send-acrparamsinfo:

post:

summary: Request to send ACR parameters information.

operationId: Request

tags:

- Send ACR Parameter Information

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'200':

description: >

The ACR parameters information is successfully received and the content of these ACR

parameters information is returned in the response body

content:

application/json:

schema:

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

'204':

description: >

No Content. The ACR parameter information is successfully received and no content is

returned in the response body.

'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:

ACRParamsInfo:

description: >

Represents the ACR parameters information.

type: object

properties:

eesId:

type: string

description: Represents the EES ID.

eecId:

type: string

description: Represents the EEC ID.

acId:

type: string

description: Represents the AC ID.

sEasEndPoint:

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

tEasEndPoint:

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

acrParams:

$ref: 'TS29558\_Eees\_ACRManagementEvent.yaml#/components/schemas/ACRParameters'

required:

- eesId

- eecId

- acId

- sEasEndPoint

- tEasEndPoint

- acrParams

# A.14 Ecas\_SelectedEES API

openapi: 3.0.0

info:

title: Selected EES Service

version: 1.0.0-alpha.1

description: |

Selected EES Service.

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externalDocs:

description: >

3GPP TS 29.558 V18.3.0; 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}/ecas-selected-ees/v1'

variables:

apiRoot:

default: https://example.com

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

paths:

/declare:

post:

summary: Declare the selected EES to the CAS.

operationId: DeclareSelectedEES

tags:

- Declare Selected EES

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'204':

description: >

No Content. The Seleted EES Declaration request is received

successfully.

'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:

SelEESDecInfo:

description: >

Represents the information elements for the selected EES declaration.

type: object

properties:

ueId:

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

seleEesId:

type: string

seleEndpoint:

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

easId:

type: string

acId:

type: string

suppFeat:

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

required:

- ueId

- seleEesId

- seleEndpoint

- easId

# A.15 Eees\_CommonEASAnnouncement API

openapi: 3.0.0

info:

title: EES Announce Common EAS Information Service

version: 1.0.0-alpha.2

description: |

EES Announce Common EAS Information Service.

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externalDocs:

description: >

3GPP TS 29.558 V18.4.0; 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-common-eas/v1'

variables:

apiRoot:

default: https://example.com

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

paths:

/declare:

post:

summary: Request to declare common EAS information.

operationId: Declare

tags:

- Declare common EAS Information

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'204':

description: >

No Content. The common EAS information is successfully received and no content is

returned in the response body.

'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:

CommonEASInfo:

description: >

Represents the common EAS information.

type: object

properties:

requestorId:

type: string

description: Represents the identifier of the announcing EES sending the request.

easId:

type: string

description: Represents the EAS ID of the selected common EAS

appGrpId:

type: string

description: Represents the application group identifier.

endPt:

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

required:

- requestorId

- easId

- appGrpId

- endPt

Annex B (informative):  
Change history

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Change history** | | | | | | | |
| **Date** | **Meeting** | **TDoc** | **CR** | **Rev** | **Cat** | **Subject/Comment** | **New version** |
| 2021-01 | CT3#113e | C3-210300 |  |  |  | TS skeleton for Enabling Edge Applications, Application Programming Interface (API) specification; Stage 3. | 0.0.0 |
| 2021-01 | CT3#113e | C3-210322 |  |  |  | Inclusion of documents agreed in CT3#113e:  C3-210182, C3-210301, C3-210321 | 0.1.0 |
| 2021-03 | CT3#114e | C3-211508 |  |  |  | Inclusion of documents agreed in CT3#114e:  C3-211365, C3-211503, C3-211504, C3-211505, C3-211506,  C3-211507 | 0.2.0 |
| 2021-04 | CT3#115e | C3-212520 |  |  |  | Inclusion of documents agreed in CT3#115e:  C3-212367, C3-212368, C3-212369, C3-212370 | 0.3.0 |
| 2021-05 | CT3#116e | C3-213328 |  |  |  | Inclusion of documents agreed in CT3#116e:  C3-213324, C3-213325, C3-213326, C3-213327, C3-213547 | 0.4.0 |
| 2021-08 | CT3#117e | C3-214571 |  |  |  | Inclusion of documents agreed in CT3#117e:  C3-214387, C3-214513, C3-214389, C3-214570, C3-214388,  C3-214390, C3-214391, C3-214392 | 0.5.0 |
| 2021-09 | CT#93e | CP-212164 |  |  |  | Version 1.0.0 created for presentation for information. | 1.0.0 |
| 2021-10 | CT3#118e | C3-215471 |  |  |  | Inclusion of documents agreed in CT3#118e:  C3-215236, C3-215338, C3-215339, C3-215340, C3-215341,  C3-215342, C3-215377, C3-215378 | 1.1.0 |
| 2021-11 | CT3#119e | C3-216515 |  |  |  | Inclusion of documents agreed in CT3#119e:  C3-216182, C3-216347, C3-216348, C3-216385, C3-216386,  C3-216396 | 1.2.0 |
| 2022-01 | CT3#119-Bis-e | C3-220447 |  |  |  | Inclusion of documents agreed in CT3#119-Bis-e:  C3-220133, C3-220419, C3-220420, C3-220421, C3-220459,  C3-220275, C3-220276 | 1.3.0 |
| 2022-02 | CT3#120e | C3-221510 |  |  |  | Inclusion of documents agreed in CT3#120e:  C3-221401, C3-221635, C3-221408, C3-221636, C3-221407,  C3-221637, C3-221630, C3-221631, C3-221632, C3-221633,  C3-221634, C3-221410, C3-221726, C3-221727, C3-221687 | 1.4.0 |
| 2022-04 | CT3#121e | C3-222481 |  |  |  | Inclusion of documents agreed in CT3#121e:  C3-222136, C3-222137, C3-222139, C3-222141, C3-222143,  C3-222362, C3-222363, C3-222364, C3-222409, C3-222410,  C3-222411, C3-222449, C3-222508, C3-222576 | 1.5.0 |
| 2022-05 | CT3#122e | C3-223504 |  |  |  | Inclusion of documents agreed in CT3#122e:  C3-223195, C3-223321, C3-223323, C3-223325, C3-223326, C3-223327, C3-223331, C3-223334, C3-223336, C3-223337, C3-223575, C3-223606, C3-223607, C3-223608, C3-223646, C3-223647, C3-223648, C3-223649, C3-223650, C3-223675, C3-223676, C3-223677, C3-223691, C3-223756, C3-223781, C3-223792, C3-223793, C3-223794 | 1.6.0 |
| 2022-06 | CT#96 | CP-221100 |  |  |  | Presentation to TSG CT for approval | 2.0.0 |
| 2022-06 | CT#96 | CP-221100 |  |  |  | Approved by TSG CT | 17.0.0 |
| 2022-09 | CT#97e | CP-222097 | 0001 | 1 | F | Corrections to Eees\_EASDiscovery\_TeasDiscRequest operation | 17.1.0 |
| 2022-09 | CT#97e | CP-222097 | 0002 | 1 | F | Add failure handling descriptions for EES services | 17.1.0 |
| 2022-09 | CT#97e | CP-222097 | 0003 | 1 | F | Add failure handling descriptions for ECS services | 17.1.0 |
| 2022-09 | CT#97e | CP-222097 | 0004 | 1 | F | Add redirect descriptions for EES services | 17.1.0 |
| 2022-09 | CT#97e | CP-222097 | 0005 | 1 | F | Add redirect descriptions for ECS services | 17.1.0 |
| 2022-09 | CT#97e | CP-222097 | 0006 | 1 | F | Corrections on ACRDataStatus and ACTResultInfo | 17.1.0 |
| 2022-09 | CT#97e | CP-222097 | 0007 |  | F | Corrections on HTTP methods in EES services | 17.1.0 |
| 2022-09 | CT#97e | CP-222097 | 0008 |  | F | Correction on OpenenAPI Eees\_ EECContextRelocation | 17.1.0 |
| 2022-09 | CT#97e | CP-222097 | 0009 |  | F | Corrections on OpenAPI Eees\_EELManagedACR | 17.1.0 |
| 2022-09 | CT#97e | CP-222098 | 0010 | 1 | F | Corrections to EES APIs definition | 17.1.0 |
| 2022-09 | CT#97e | CP-222098 | 0011 | 1 | F | Corrections to Eees\_EELManagedACR API definition | 17.1.0 |
| 2022-09 | CT#97e | CP-222097 | 0012 |  | F | Remove unused reference to OMA | 17.1.0 |
| 2022-09 | CT#97e | CP-222205 | 0014 | 1 | F | Correcting the name of the data type related to availability status information | 17.1.0 |
| 2022-09 | CT#97e | CP-222206 | 0015 | 2 | F | Clarifications to the "easId" | 17.1.0 |
| 2022-09 | CT#97e | CP-222098 | 0017 | 1 | F | Corrections to user consent revocation management for the Eees\_UELocation API | 17.1.0 |
| 2022-09 | CT#97e | CP-222121 | 0018 |  | F | Update of info and externalDocs fields | 17.1.0 |
| 2022-12 | CT#98e | CP-223170 | 0020 | 1 | F | Miscellaneous corrections in EES, ECS services | 17.2.0 |
| 2022-12 | CT#98e | CP-223170 | 0021 | 1 | F | Correction in Eees\_EECContextRelocation , Eees\_EELManagedACR API | 17.2.0 |
| 2022-12 | CT#98e | CP-223170 | 0022 | 1 | F | Correction in Eees\_UEIdentifier, Eees\_ACRManagementEvent API | 17.2.0 |
| 2022-12 | CT#98e | CP-223170 | 0023 | 1 | F | Corrections on easId verification in update procedures in EES services | 17.2.0 |
| 2022-12 | CT#98e | CP-223170 | 0027 | 1 | F | Correction on user consent procedure description | 17.2.0 |
| 2022-12 | CT#98e | CP-223170 | 0033 | 1 | F | Editor’s note resolution for Eees\_UEIdentifier | 17.2.0 |
| 2022-12 | CT#98e | CP-223170 | 0034 |  | F | Essential correction to Application Client Information | 17.2.0 |
| 2022-12 | CT#98e | CP-223170 | 0035 |  | F | Correction on attribute name within EndPoint | 17.2.0 |
| 2022-12 | CT#98e | CP-223170 | 0036 |  | F | Correction on request URI for Eees\_EECContextRelocation\_Push | 17.2.0 |
| 2022-12 | CT#98e | CP-223170 | 0037 | 1 | F | Corrections on Location information report | 17.2.0 |
| 2022-12 | CT#98e | CP-223170 | 0039 | 1 | F | Corrections on the Notification Destination URI | 17.2.0 |
| 2022-12 | CT#98e | CP-223170 | 0040 | 1 | F | Corrections on the Revocation Notification URI | 17.2.0 |
| 2022-12 | CT#98e | CP-223170 | 0041 | 1 | F | Missing supported features for Eees\_UEIdentifier API | 17.2.0 |
| 2022-12 | CT#98e | CP-223170 | 0042 | 1 | F | Corrections for data types of Eees\_ACRManagementEvent service | 17.2.0 |
| 2022-12 | CT#98e | CP-223170 | 0043 |  | F | Corrections for data types of Eees\_SessionWithQoS service | 17.2.0 |
| 2022-12 | CT#98e | CP-223170 | 0044 | 1 | F | Corrections on presence of the attribute in UserInformation data type | 17.2.0 |
| 2022-12 | CT#98e | CP-223188 | 0050 |  | F | Update of info and externalDocs fields | 17.2.0 |
| 2022-12 | CT#98e | CP-223200 | 0024 | 1 | F | Correction on eesId verification in update procedure in ECS service | 18.0.0 |
| 2022-12 | CT#98e | CP-223200 | 0025 | 1 | F | Correction on ACRManagementEvent\_Subscribe service operation | 18.0.0 |
| 2022-12 | CT#98e | CP-223200 | 0026 | 1 | F | Corrections on EES UE location information description | 18.0.0 |
| 2022-12 | CT#98e | CP-223198 | 0028 |  | F | Remove duplicated description for EELManagedACR | 18.0.0 |
| 2022-12 | CT#98e | CP-223185 | 0029 | 1 | F | Adding operationId and tags fields | 18.0.0 |
| 2022-12 | CT#98e | CP-223185 | 0030 | 1 | F | Eees\_ACRManagementEvent and Eees\_ACRStatusUpdate APIs: enumeration definitions | 18.0.0 |
| 2022-12 | CT#98e | CP-223185 | 0031 | 1 | F | Corrections on the description of PUT and PATCH | 18.0.0 |
| 2022-12 | CT#98e | CP-223199 | 0038 | 1 | F | Corrections on the apiNames | 18.0.0 |
| 2022-12 | CT#98e | CP-223185 | 0045 | 1 | F | Add the missing description fields of some attributes in the OpenAPI file | 18.0.0 |
| 2022-12 | CT#98e | CP-223190 | 0051 |  | F | Update of info and externalDocs fields | 18.0.0 |
| 2023-03 | CT#99 | CP-230156 | 0055 | 1 | B | Updates on location reporting in Eees\_UELocation API | 18.1.0 |
| 2023-03 | CT#99 | CP-230156 | 0056 | 1 | F | Correction of the description fields in enumerations | 18.1.0 |
| 2023-03 | CT#99 | CP-230169 | 0057 | 1 | B | Seamless service continuity support for transport layer in the EAS | 18.1.0 |
| 2023-03 | CT#99 | CP-230138 | 0060 | 1 | A | Corrections to the EAS Type definition | 18.1.0 |
| 2023-03 | CT#99 | CP-230139 | 0061 | 1 | B | EAS profile update with general context holding time | 18.1.0 |
| 2023-03 | CT#99 | CP-230162 | 0063 |  | F | Update of info and externalDocs fields | 18.1.0 |
| 2023-06 | CT#100 | CP-231139 | 0064 | 1 | F | Updates to the EAS type for UAS services | 18.2.0 |
| 2023-06 | CT#100 | CP-231185 | 0065 | 1 | B | Completing the support of the seamless transport layer service continuity functionality | 18.2.0 |
| 2023-06 | CT#100 | CP-231144 | 0068 | 3 | B | ACR scenario re-selection after successful ACR | 18.2.0 |
| 2023-06 | CT#100 | CP-231310 | 0069 | 2 | B | ACR Selection event and update ACR start stop event | 18.2.0 |
| 2023-06 | CT#100 | CP-231144 | 0070 | 1 | B | EEC context update with UE mobility requirement | 18.2.0 |
| 2023-06 | CT#100 | CP-231237 | 0071 | 4 | B | Update EES Profile with Instantiable EAS information | 18.2.0 |
| 2023-06 | CT#100 | CP-231144 | 0072 | 1 | B | Completion of the definition of the general context holding time duration | 18.2.0 |
| 2023-06 | CT#100 | CP-231321 | 0073 | 3 | B | Defining the EAS bundle information | 18.2.0 |
| 2023-06 | CT#100 | CP-231328 | 0075 | 2 | B | Enhancements to ACR management events | 18.2.0 |
| 2023-06 | CT#100 | CP-231144 | 0076 | 1 | B | Exposure of EAS service APIs via CAPIF | 18.2.0 |
| 2023-06 | CT#100 | CP-231144 | 0077 |  | B | Support for federation and roaming | 18.2.0 |
| 2023-06 | CT#100 | CP-231312 | 0078 | 2 | B | Updates to Eees\_ACRManagementEvent API | 18.2.0 |
| 2023-06 | CT#100 | CP-231144 | 0079 | 1 | B | Updates to Eees\_SessionWithQoS API | 18.2.0 |
| 2023-06 | CT#100 | CP-231144 | 0080 |  | B | Supporting SNPN for the EES Topological Service Area | 18.2.0 |
| 2023-06 | CT#100 | CP-231153 | 0084 | 1 | A | Correction to EndPoint | 18.2.0 |
| 2023-06 | CT#100 | CP-231153 | 0086 |  | A | Correct data type in Eees\_EASRegistration API | 18.2.0 |
| 2023-06 | CT#100 | CP-231144 | 0088 | 1 | B | Add consumer for Eees\_UEIdentifier and support EDGE-10 | 18.2.0 |
| 2023-06 | CT#100 | CP-231139 | 0090 |  | F | Corrections on certain terminology | 18.2.0 |
| 2023-06 | CT#100 | CP-231139 | 0091 |  | F | Corrections on supported feature in EDGEAPP APIs | 18.2.0 |
| 2023-06 | CT#100 | CP-231144 | 0093 | 1 | B | Definition of the service description clauses of the Eees\_ACRParameterInformation API | 18.2.0 |
| 2023-06 | CT#100 | CP-231144 | 0094 | 1 | B | Definition of the API clauses of the Eees\_ACRParameterInformation API | 18.2.0 |
| 2023-06 | CT#100 | CP-231144 | 0095 | 1 | B | Definition of the OpenAPI description of the Eees\_ACRParameterInformation API | 18.2.0 |
| 2023-06 | CT#100 | CP-231320 | 0097 | 1 | A | Corrections to the ACT start/stop event related information | 18.2.0 |
| 2023-06 | CT#100 | CP-231134 | 0098 | 1 | D | Clarifications to the EAS ID definition | 18.2.0 |
| 2023-06 | CT#100 | CP-231141 | 0100 |  | F | Update of info and externalDocs fields | 18.2.0 |
| 2023-09 | CT#101 | CP-232089 | 0101 | 1 | B | Service continuity support related updates Eecs\_TargetEESDiscovery\_Request service operation | 18.3.0 |
| 2023-09 | CT#101 | CP-232089 | 0102 | 1 | B | Composite EAS support related updates | 18.3.0 |
| 2023-09 | CT#101 | CP-232089 | 0103 | 1 | B | Resolving the SelectedACRScenarios data type Editor's Notes | 18.3.0 |
| 2023-09 | CT#101 | CP-232089 | 0104 |  | B | Supporting the indication of service continuity planning | 18.3.0 |
| 2023-09 | CT#101 | CP-232089 | 0105 | 1 | F | Corrections to the definition of the Eees\_ACRParameterInformation API | 18.3.0 |
| 2023-09 | CT#101 | CP-232089 | 0106 |  | F | Instantiable EAS information related updates | 18.3.0 |
| 2023-09 | CT#101 | CP-232089 | 0107 | 1 | B | Selected EES declaration service descriptions and procedures | 18.3.0 |
| 2023-09 | CT#101 | CP-232089 | 0108 | 1 | B | Selected EES declaration service API Definitions | 18.3.0 |
| 2023-09 | CT#101 | CP-232254 | 0109 | 2 | B | Selected EES declaration service OpenAPI file definitions | 18.3.0 |
| 2023-09 | CT#101 | CP-232089 | 0113 | 1 | B | Update the Eecs\_TargetEESDiscovery to support ECI-3 | 18.3.0 |
| 2023-09 | CT#101 | CP-232253 | 0114 | 2 | B | Update the Eecs\_TargetEESDiscovery API to support ENS | 18.3.0 |
| 2023-09 | CT#101 | CP-232089 | 0115 | 1 | B | Update the Eees\_EASDiscovery\_TEasDiscRequest to support EAS synchronization | 18.3.0 |
| 2023-09 | CT#101 | CP-232089 | 0116 | 1 | B | Update to ACR parameter information procedure to support ECI-4 | 18.3.0 |
| 2023-09 | CT#101 | CP-232089 | 0117 | 1 | B | Update to EEC context relocation to support ECI-4 | 18.3.0 |
| 2023-09 | CT#101 | CP-232089 | 0118 |  | B | Common EAS announcement | 18.3.0 |
| 2023-09 | CT#101 | CP-232085 | 0121 |  | F | Update of info and externalDocs fields | 18.3.0 |
| 2023-12 | CT#102 | CP-233241 | 0089 | 5 | B | Updates to Eees\_UEIdentifier API | 18.4.0 |
| 2023-12 | CT#102 | CP-233241 | 0122 |  | B | Remove the remaining Editor's Note on EAS bundle requirements | 18.4.0 |
| 2023-12 | CT#102 | CP-233241 | 0123 |  | B | Remove the remaining Editor's Note on the ACRScenario data type | 18.4.0 |
| 2023-12 | CT#102 | CP-233241 | 0124 | 3 | B | Remove the remaining Editor's Notes on the "servContPlanInd" attribute | 18.4.0 |
| 2023-12 | CT#102 | CP-233241 | 0125 |  | B | Remove the remaining Editor's Note on the "acIds" attribute | 18.4.0 |
| 2023-12 | CT#102 | CP-233241 | 0126 | 2 | B | Complete the definition of the ACR Selection event | 18.4.0 |
| 2023-12 | CT#102 | CP-233241 | 0127 |  | B | Resolve the remaining Editor's Note on the "teasEndPoint" attribute | 18.4.0 |
| 2023-12 | CT#102 | CP-233273 | 0129 | 1 | A | Corrections to boolean type definitions | 18.4.0 |
| 2023-12 | CT#102 | CP-233241 | 0130 | 1 | B | ACR Management subscription API update | 18.4.0 |
| 2023-12 | CT#102 | CP-233241 | 0132 | 1 | B | ACRManagementEvent - EAS ack and service continuity | 18.4.0 |
| 2023-12 | CT#102 | CP-233241 | 0133 | 1 | B | Updates to Common EAS Announcement service | 18.4.0 |
| 2023-12 | CT#102 | CP-233241 | 0134 | 1 | B | Eees\_EASRegistration - EAS sync and Bundle updates | 18.4.0 |
| 2023-12 | CT#102 | CP-233241 | 0136 | 1 | B | Retreive EES using application group identifier | 18.4.0 |
| 2023-12 | CT#102 | CP-233287 | 0138 | 1 | F | SEALDD feature related updates | 18.4.0 |
| 2023-12 | CT#102 | CP-233241 | 0139 | 1 | B | Corrections and updates to the EAS bundle information | 18.4.0 |
| 2023-12 | CT#102 | CP-233241 | 0140 | 1 | B | Adding EDN information to the EES profile | 18.4.0 |
| 2023-12 | CT#102 | CP-233241 | 0141 | 1 | B | Support indicating the EAS ability of handling bundled EAS ACR | 18.4.0 |
| 2023-12 | CT#102 | CP-233241 | 0142 |  | F | Corrections to the definition of the general context holding time duration | 18.4.0 |
| 2023-12 | CT#102 | CP-233241 | 0143 | 1 | B | Resolve ENs in Eees\_ACRManagementEvent API | 18.4.0 |
| 2023-12 | CT#102 | CP-233241 | 0144 | 1 | B | Resolve ENs in Eees\_SessionWithQoS API | 18.4.0 |
| 2023-12 | CT#102 | CP-233242 | 0145 | 1 | B | Update ACR management event notification | 18.4.0 |
| 2023-12 | CT#102 | CP-233231 | 0146 |  | F | Miscellaneous Corrections | 18.4.0 |
| 2023-12 | CT#102 | CP-233241 | 0147 | 1 | B | Instantiation criteria update and add missing abbreviations | 18.4.0 |
| 2023-12 | CT#102 | CP-233237 | 0149 |  | F | Update of info and externalDocs fields | 18.4.0 |