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| 3rd Generation Partnership Project;  Technical Specification Group Core Network and Terminals;  Enabling Edge Applications;  Protocol specification;  (Release 18) | |
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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 for EDGE-1 and EDGE-4 reference points. 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.

The present document defines the usage and interactions of the EEL layer with SEAL services.

# 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] 3GPP TS 29.122: "T8 reference point for Northbound APIs".

[4] 3GPP TS 29.558: "Enabling Edge Applications; Application Programming Interface (API) specification; Stage 3".

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

[6] 3GPP TS 29.572: "5G System; Location Management Services; Stage 3".

[7] 3GPP TS 33.558: "Security aspects of enhancement of support for enabling edge applications; Stage 2".

[8] 3GPP TS 29.522: "5G System; Network Exposure Function Northbound APIs; Stage 3".

[9] 3GPP TS 23.436: "Functional architecture and information flows for Application Data Analytics Enablement Service".

[10] 3GPP TS 24.542: "Notification Management - Service Enabler Architecture Layer for Verticals (SEAL); Protocol specification".

[11] 3GPP TS 23.434: "Service Enabler Architecture Layer for Verticals (SEAL); Functional architecture and information flows".

# 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 definitions given in 3GPP TS 23.558 [2] apply:

Application Context

Application Context Relocation

EEC Context

Instantiable EAS

For the purposes of the present document, the following terms and definitions given in 3GPP TS 23.434 [11] apply:

SEAL service

## 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

ACR Application Context Relocation

ADAES Application Data Analytics Enabler Server

API Application Programming Interface

EAS Edge Application Server

ECS Edge Configuration Server

ECSP Edge Computing Service Provider

EEC Edge Enabler Client

EES Edge Enabler Server

NAS Non Access Stratum

NID Network Identifier

SNPN Stand-alone Non-Public Network

URI Uniform Resource Locator

SEAL Service Enabler Architecture Layer for verticals

SNM-C SEAL Notification Management Client

# 4 Overview

## 4.0 General

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 and support for service continuity.

The present document specifies the APIs in detail, needed to support the services offered by the EES over EDGE-1 interface and offered by the ECS over EDGE-4 interface for enabling the edge applications over 3GPP network.

The EEL layer can utilize SEAL services provided by SEAL, which may include notification management (see 3GPP TS 24.542 [10]).

## 4.1 Information applicable to APIs over EDGE-1 and EDGE-4

The APIs as specified in this document allow secure access to the capabilities provided by the EES and ECS functional entity.

The stage-2 level requirements and signalling flows are defined in 3GPP TS 23.558 [2].

The usage of HTTP, content type, URI structure definition, notifications, error handling, feature negotiation, HTTP headers and Conventions for Open API specification files, as specified in clauses 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9 and 7.10 of 3GPP TS 29.558 [4] respectively, shall be applicable for the APIs in the current specification.

# 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\_EECRegistration | Request | Request/Response | EEC |
| Update | Request/Response | EEC |
| Deregister | Request/Response | EEC |
| Eees\_EASDiscovery | EasDiscRequest | Request/Response | EEC |
| Subscribe | Subscribe/Notify | EEC |
| Notify | EEC |
| UpdateSubscription | Subscribe/Notify | EEC |
| Unsubscribe | Subscribe/Notify | EEC |
| Eees\_ACREvents | Notify | Subscribe/Notify | EEC |
| UpdateSubscription | Subscribe/Notify | EEC |
| Unsubscribe | Subscribe/Notify | EEC |
| Eees\_AppContextRelocation | Determine | Request/Response | EEC, EAS |
| Initiate | Request/Response | EEC |
| Eees\_EASInformationProvisioning | Declare | Request/Response | EEC |
| Eees\_UEIdentifier | Get | Request/Response | EEC |

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\_EECRegistration | 6.2 | Eees EEC Registration | TS24558\_Eees\_EECRegistration.yaml | eees-eecregistration | A.2 |
| Eees\_EASDiscovery | 6.3 | Eees EAS Discovery | TS24558\_ Eees\_EASDiscovery.yaml | eees-easdiscovery | A.3 |
| Eees\_AppContextRelocation | 6.5 | Eees Application Context Relocation | TS24558\_Eees\_AppContextRelocation.yaml | Eees-appctxtreloc | A.5 |
| Eees\_EASInformationProvisioning | 6.y | Eees EAS Information Provisioning |  | eees-easinfoprov |  |

Editor's note: Details of the OpenAPI Specification for the Eees\_EASInformationProvisioning API are FFS.

## 5.2 Eees\_EECRegistration Service

### 5.2.1 Service Description

The Eees\_EECRegistration API, as defined in 3GPP TS 23.558 [2], allows an EEC via Eees interface to register, update its registration and deregister at a given EES.

### 5.2.2 Service Operations

#### 5.2.2.1 Introduction

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

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

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

#### 5.2.2.2 Eees\_EECRegistration\_Request

##### 5.2.2.2.1 General

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

##### 5.2.2.2.2 EEC registering to EES using Eees\_EECRegistration\_Request operation

For an EEC to register at the EES, the EEC shall send an HTTP POST message to the EES on the "EEC Registrations" collection resource to create the resource associated to or representing the EEC. The body of the HTTP POST message shall include the EEC ID, may include UE identifier, AC Profile(s), proposed expiration time for the registration, EEC context ID obtained from a previous registration, the ACR scenario(s) supported by the EEC for service continuity, as specified in clause 6.2.2.2.3.1. If EEC context ID is included in the body of the HTTP POST message, it shall also include Source EES ID and Source EES Endpoint of the EES that provided EEC context ID. If the EdgeApp\_2 feature is supported, the EEC may include indication for UE mobility support requirement and UE type to the EES.

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

a) Process the EEC registration request information;

b) verify if the EEC is authorized to register itself at EES; and

c) if the EEC is authorized to register with EES, then;

1) if the AC Profile(s) is included in the HTTP POST message, the EES further determines whether the registered EAS(s) fulfils the requirements that were indicated in the AC Profile(s):

i) if acSvcContSupp information is included in the AC Profile, the EEC, EES, and the matching EAS have to support ACRScenario indicated in the acSvcContSupp information; and

ii) For each AC Profile, if eass information is included in the AC Profile, the EES identifies the matching EAS such that the matching EAS shall:

A) be identified by the easId information; and

B) suffice all information included in the minimumReqSvcKPIs information.

NOTE 1: With respect to expectedSvcKPIs information, it is up to the EES implementation on how to identifies the matching EAS.

iii) if the EdgeApp\_2 feature is supported:

1. for each AC Profile, if easBundleInfo information is included in the AC Profile, the EES identifies the matching list of EAS bundle to which the EAS identified by the easId information belongs; and

B) if the EEC includes EAS selection request indication, the EES shall select EASs from the list of matching EASs based on EES local policies and provide the information to the EEC in the registration response as part of "discoveredEas" attribute. If easBundleInfo information is included, then the EES determines whether all or a subset of the EAS(s) in the bundle are registered and instantiated. If only a subset of bundle EASs is found, the EES may determine whether instantiable but not yet instantiated EASs match the subset of remaining (i.e. not yet found) bundle EASs and the EES may trigger the ECSP management system to instantiate the EAS.

When a matching EAS is identified, the EES determines that the corresponding requirements are fulfilled and are supported for the new resource.

When a matching EAS is not identified for even one AC profile, the EES shall reject the request message by sending an HTTP response to the EEC with a status code set to 404 Not Found and indicate the "RESOURCE\_NOT\_FOUND" error in the "cause" attribute of the "ProblemDetails" structure.

2) if the received EEC registration request contains an EEC context ID, a source EES endpoint, the EES retrieves the EEC's context from the source EES according to the procedures specified in clause 5.10 of 3GPP TS 29.558 [4];

3) the EES creates a new resource with the EEC registration information as specified in clause 6.2.2.1, and assigns and stores new EEC context ID;

i) if the EES cannot reserve the necessary resources while meeting the capability requirements of the existing registered EECs, the EES shall determine the EEC Context information stale and send a failure response with a corresponding cause as specified in clause 6.2.2.2.3.1; and

ii) Otherwise the EES shall return the EEC registration information in the response message. The response message may include expiration time to indicate when the EEC registration will automatically expire. The response message may include a newly assigned EEC context ID. The URI of the created resource shall be returned in the "Location" HTTP header. If the EEC registration request contains AC Profile(s), and the EES determines that the requirements indicated in the AC profile(s) cannot be fulfilled for some of the AC profile(s), the EES shall include "unfulfillAcProfs" or "unfulfilledAcProfs" attribute containing the list of ACIDs of such AC Profile(s) and appropriate reasons as specified in clause 6.2.5.2.2; and

4) if the EdgeApp\_2 feature is supported;

i) if the received EEC registration request contains an UE mobility support requirement information to the EES, the EES shall store the same in the EEC context. If UE mobility support requirement is set to true, the EES shall subscribe to UE’s location or analytics information using 3GPP core network capabilities and in case of false the EES as per ECSP policy and EAS requirements may decide to fetch one time UE location or subscribe to NEF or NWDAF for UE location information or its analytics; and

ii) if the received EEC registration request contains an UE type information, the EES shall check if the UE is a constrained device and shall store the received UE type information in the EEC context. The EES may use this information to apply UE-type-specific local policies.

NOTE 2: The "unfulfilledAcProfs" attribute can only be provided if there is only a single unfulfilled AC profile.

The EEC stores the new EEC context ID and uses it when it registers with another EES.

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

#### 5.2.2.3 Eees\_EECRegistration\_Update

##### 5.2.2.3.1 General

This service operation is used by the EEC to update its registration information at the EES.

##### 5.2.2.3.2 EEC updating registration information using Eees\_EECRegistration\_Update operation

To update the EEC registration information at the EES, the EEC shall send an HTTP PATCH request (for partial update) or HTTP PUT message (for fully replacement) to the EES on resource URI identifying the Individual EEC registration resource representation as specified in clause 6.2.2.3.3.3 for an HTTP PATCH message or in clause 6.2.2.3.3.1 for an HTTP PUT message.

The PATCH message includes the parameters (AC profiles or proposed expiry time) that need to be replaced in the existing registration information.

The PUT message shall replace all properties of the existing resource with the EEC registration information in the request. The value of the eecId provided during the EEC registration shall not be changed.

Upon receiving the HTTP PATCH or PUT message from the EEC, if the resource URI does not exist, the EES shall respond 404 Not Found error to the EEC. Otherwise, the EES shall:

a) check the registration update message from the EEC to see if the EEC is authorized to modify the requested registration resource; and

b) if the EEC is authorized to update the registration information and the eecId information in the request and the resource match, then the EES shall;

1) if the AC Profile(s) is included in the HTTP PATCH or PUT message, the EES further determines whether the registered EAS(s) fulfils the requirements that were indicated in the AC Profile(s):

i) if acSvcContSupp information is included in the AC Profile, the EEC, EES and the matching EAS have to support ACRScenario indicated in the acSvcContSupp information; and

ii) For each AC Profile, if EAS(s) information is included in the AC Profile, the EES identifies the matching EAS such that the matching EAS shall:

A) be identified by the easId information; and

B) suffice all information included in the minimumReqSvcKPIs information.

NOTE 1: With respect to expectedSvcKPIs information, it is up to the EES implementation on how to identifies the matching EAS.

iii) if the EdgeApp\_2 feature is supported:

1. for each AC Profile, if easBundleInfo information is included in the AC Profile, the EES identifies the matching list of EAS bundle to which the EAS identified by the easId information belongs; and

B) if the EEC includes EAS selection request indication, the EES shall select EASs from list of matching EASs based on EES local policies and provide the information to the EEC in the registration modification response as part of "discoveredEas" attribute. If easBundleInfo information is included, then the EES determines whether all or a subset of the EAS(s) in the bundle are registered and instantiated. If only a subset of bundle EASs is found, the EES may determine whether instantiable but not yet instantiated EASs match the subset of remaining (i.e. not yet found) bundle EASs and the EES may trigger the ECSP management system to instantiate the EAS.

When a matching EAS is identified for atleast one AC profile, the EES determines that the corresponding requirements are fulfilled and are supported and shall update the resource identified by Resource URI of the EEC registration information with the updated EEC registration information received in the HTTP PATCH or PUT request message.

2) return the updated EEC registration information in the response. In the response message, the EES may send "200 OK" response code to provide an updated expiration time to indicate to the EEC when the updated registration will automatically expire. Otherwise, the EES sends "204 No Content" response code. If the EEC registration request contains AC Profile(s), and the EES determines that the requirements indicated in the AC profile(s) cannot be fulfilled for some of the AC profile(s), the EES shall include "unfulfillAcProfs" or "unfulfilledAcProfs" attribute containing the list of ACIDs of such AC Profile(s) and appropriate reasons as specified in clause 6.2.5.2.2.

3) if the EdgeApp\_2 feature is supported;

i) if the received EEC registration update request contains an UE mobility support requirement information to the EES, the EES shall update the same in the EEC context. If UE mobility support requirement is set to true, the EES shall subscribe to UE’s location or analytics information using 3GPP core network capabilities and in case of false the EES as per ECSP policy and EAS requirements may decide to fetch one time UE location or subscribe to NEF or NWDAF for UE location information or its analytics; and

ii) if the received EEC registration update request contains an UE type information, the EES shall check if the UE is a constrained device and shall store the received UE type information in the EEC context. The EES may use this information to apply UE-type-specific local policies.

NOTE 2: The "unfulfilledAcProfs" attribute can only be provided if there is only a single unfulfilled AC profile.

If the expiration time is provided, the EEC shall send a registration update request prior to the expiration time if the EEC wants to maintain the registration. If a successful registration update request is not received prior to the expiration time, the EES shall treat the EEC as implicitly de-registered and remove the corresponding EEC registration resource.

#### 5.2.2.4 Eees\_EECRegistration\_Deregister

##### 5.2.2.4.1 General

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

##### 5.2.2.4.2 EEC deregistering from EES using Eees\_EECRegistration\_Deregister operation

To deregister itself from the EES, the EEC shall send HTTP DELETE message to the EES, on the resource URI identifying the Individual EEC registration resource representation as specified in clause 6.2.2.3.3.3. Upon receiving the HTTP DELETE request, the EES shall:

a) verify the identity of the EEC and check if the EEC is authorized to deregister the EEC registration information;

b) if the EEC is authorized to deregister the EEC registration information, then the EES shall

1) if the resource identified by registrationId is not found, return "404 Not Found" error message to the EEC;

2) otherwise, deregister the EEC profile from the EES and delete the resource representing EEC registration information; and

3) return the "204 No Content" message to the EEC, indicating the successful deregistration of the EEC information.

## 5.3 Eees\_EASDiscovery service

### 5.3.1 Service Description

The Eees\_EASDiscovery service enables a service consumer (e.g. EEC) to:

- request EAS discovery;

- request to subscribe to EAS discovery information reporting at the EES;

- request to update/modify/delete an existing subscription to EAS discovery information reporting; and

- receive notifications from the EES on EAS discovery information.

### 5.3.2 Service Operations

#### 5.3.2.1 Introduction

The service operations defined for Eees\_EASDiscovery API are shown in the table 5.3.2.1-1.

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

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Eees\_EASDiscovery\_EasDiscRequest | This service operation is used by the EEC to request for one-time EAS discovery information. | EEC |
| Eees\_EASDiscovery\_Subscribe | This service operation is used by the EEC to request to subscribe to EAS discovery information reporting. | EEC |
| Eees\_EASDiscovery\_Notify | This service operation is used by the EES to notify a previously subscribed EEC on EAS discovery information. | EES |
| Eees\_EASDiscovery\_UpdateSubscription | This service operation is used by the EEC to update an existing subscription to EAS discovery information reporting. | EEC |
| Eees\_EASDiscovery\_Unsubscribe | This service operation is used by the EEC to delete an existing subscription to EAS discovery information reporting. | EEC |

#### 5.3.2.2 Eees\_EASDiscovery\_EasDiscRequest

##### 5.3.2.2.1 General

This service operation is used by the EEC to request for one-time EAS discovery information.

##### 5.3.2.2.2 EEC requesting EAS discovery information using Eees\_EASDiscovery\_EasDiscRequest operation

To request for one-time EAS discovery, the EEC shall send an HTTP POST request to the EES as specified in clause 6.3.2.4.4. The body of the POST message shall include the EasDiscoveryReq data structure as specified in clause 6.3.5.2.2.

Upon reception of the HTTP POST message from the EEC, the EES shall:

a) process the EAS discovery request information;

b) the EES verifies and checks if the EEC is authorized to discover the requested EAS(s) from EES;

c) if EEC is authorized to discover the requested EAS(s) from EES, the EEC is not registered with the EES, and the ECSP policy requires the EEC to perform EEC registration prior to EAS discovery, the EES shall reject the request by sending an HTTP "403 Forbidden" status code to the EEC including the ProblemDetails data structure with the "cause" attribute containing the "REGISTRATION\_REQUIRED" application error;

d) if the EEC is authorized to discover the requested EAS(s) from EES and the EEC is registered as required by the ECSP policy, then the EES;

1) may obtain the UE's location as specified in clause 5.3 of 3GPP TS 29.122 [3];

2) if EAS discovery filters are provided by the EEC, the EES identifies the EAS(s) based on the provided EAS discovery filters and the UE location, and if the enNB1 feature is supported, the "userLocation" attribute may be provided in the "locInf" attribute within the EasDiscoveryReq data type;

3) if the EEC indicates that service continuity support is required, the EES shall take the indication which ACR scenarios are supported by the AC and the EEC and which of these are preferred by the AC into consideration. The EES identifies the EAS(s) who supports at least one of the ACR scenarios as indicated by EEC; and

i. the EES may select one EAS and determine to perform application traffic influence for this AC based on AC's service KPI or EAS(s) service KPI in desired response time, when the EES does not perform traffic influence in advance;

4) if EAS discovery filters are not provided:

i. if available, the EES identifies the EAS(s) based on the UE-specific service information at the EES and the UE location; and

ii. EES identifies the EAS(s) by applying the ECSP policy (e.g. based only on the UE location);

5) the EES may trigger the EAS management system to instantiate the EAS that matches with EAS discovery filter IEs;

6) if the EdgeApp\_2 feature is supported and the EEC indicates the EAS selection support within the "easSelSupInd" attribute, the EES shall select one matching EAS that fulfils the EEC requirements as described in bullets 2), 3) and 4), and the EES shall provide the selected EAS information to the EEC within the "discoveredEas" attribute;

e) if the EdgeApp\_2 feature is supported, and:

1) if the EEC indicates EAS Instantiation Triggering using "easIntTrigSup" attribute with the value set to true in the EAS discovery request, the EES may trigger the ECSP to instantiate the EAS that matches with EAS discovery filter IEs (e.g. ACID) and the EES supports such capability. If the "easIntTrigSup" attribute is omitted or set to value false the EES shall not trigger the ECSP to instantiate the EAS and the EES may determine instantiable EAS information using "easInstInfos" attribute, which is provided in the EAS discovery response, for EAS(s) that are instantiable but not yet instantiated and match the EAS discovery filter IEs; and

2) if the EEC indicates the predicted expiration time by which the UE reaches location using the "predictExpTime" attribute, the EES may also collect edge load analytics from the ADAES (as specified in clause 8.8.2 of 3GPP TS 23.436 [9]) or performance data from the OAM to find whether the EAS(s) satisfies the expected AC service KPIs or the minimum required AC service KPIs; and

Editor's note [CR#0053, EDGEAPP\_Ph2]: The EEC usage of the analytics information received in the EAS discovery response is FFS.

3) if the EEC indicates the UEs serving MNO information as part of the "servingPLMNInfo" attribute, the EES identifies the EAS(s) that matches the allowed MNO information in their EAS profiles and UE's serving MNO information as specified in clause 6.3.5.2.3; and

f) if the processing of the request was successful, the EES sends an EAS discovery response to the EEC as specified in clause 6.3.2.4.4.2.2, which includes information about the discovered EASs. The response shall include endpoint information for discovered EASs. Depending on the EAS discovery filters received in the EAS discovery request, the response may include additional information regarding matched capabilities, e.g. service permissions levels, KPIs, AC locations(s) that the EASs can support, ACR scenarios supported by the EAS, etc. The EAS discovery response may contain a list of EASs. This list may be based on EAS discovery filters containing a Geographical or Topological Service Area, e.g. a route, included in the EAS discovery request by the EEC.

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 "204 No Content" HTTP status code. Otherwise, the EES shall reject the EAS discovery request and respond with an appropriate failure HTTP status code.

The EEC may cache the EAS information (e.g. EAS endpoint) for subsequent use and avoid the need to repeat this procedure. If the EEC selects an EAS which is instantiable but not yet instantiated (i.e. an EAS profile is not provided), the EEC shall send the EAS information provisioning request for EAS selection indicating the selected EAS ID. If the "lifeTime" attribute is included in the response, the EEC may cache the EAS information only for the duration specified by the Lifetime IE.

If the failure response is received for the EAS discovery request, the EEC may resend the EAS discovery request, taking into account the received failure cause. If the failure cause indicated "REGISTRATION\_REQUIRED" error in the "cause" attribute of the "ProblemDetails" structure, the EEC shall perform an EEC registration as specified in clause 5.2.2.2.2 before resending the EAS discovery request.

#### 5.3.2.3 Eees\_EASDiscovery\_Subscribe

##### 5.3.2.3.1 General

This service operation is used by the EEC to subscribe to EES for reporting of EAS discovery information.

##### 5.3.2.3.2 EEC subscribing to EAS discovery information from EES using Eees\_EASDiscovery\_Subscribe operation

To subscribe to changes of EAS discovery information at the EES, the EEC shall send an HTTP POST message to the EES on the "EAS Discovery Subscriptions" resource. The body of the POST message shall include the EASDiscoverySubscription data structure as specified in clause 6.3.2.2.3.1.

Upon receiving the HTTP POST message from the EEC, the EES:

a) shall process the EAS discovery subscription request;

b) if the EEC is not registered with the EES, and if ECSP policy requires the EEC to perform EEC registration prior to EAS discovery, the EES shall reject the request message by sending an HTTP response to the EEC with a status code set to 403 Forbidden and may indicate the "REGISTRATION\_REQUIRED" error in the "cause" attribute of the "ProblemDetails" structure;

b) if the EEC is registered, the EES shall verify and check if the EEC is authorized to subscribe for information of the requested EAS(s) from EES;

c) if the EEC is authorized to discover the requested EAS(s) from EES, then the EES;

1) may obtain the UE's location as specified in clause 5.3 of 3GPP TS 29.122 [3];

2) shall create a new Individual EAS Discovery Subscription resource as specified in clause 6.3.2.2.3.1; and

d) if EdgeApp\_2 feature is supported;

1) if the EEC indicates EAS Instantiation Triggering using "easIntTrigSup" attribute set to true in the EAS discovery subscription request and the EAS instantiation is not in progress for the requested EASID, the EES may trigger dynamic instantiation of the EAS; and

2) if the EEC indicates EEC Trigger Request using "eecTriggerRequest" attribute set to true, then application triggering is supported and required by the EEC and the EES may send trigger towards the EEC to perform EAS discovery; and

e) if the processing of the request was successful, the EES shall send an EAS discovery subscription response to the EEC as specified in clause 6.3.2.2.3.1, which includes the subscription identifier and shall include the expiration time, indicating when the subscription will automatically expire.

If the EES is unable to process the request (e.g. was not able to determine the EAS using the input information in the request or using the locally available information), the EES shall reject the request with a with appropriate response code as specified in Table 5.2.6-1 of TS 29.122 [3].

If the expiration time is provided, the EEC shall send an EAS discovery subscription update request prior to the expiration time if the EEC wants to maintain the subscription. If an EAS discovery subscription update request is not received prior to the expiration time, the EES shall treat the EEC as implicitly unsubscribed.

If the failure response is received for the EAS discovery request, the EEC may resend the EAS discovery subscription request, taking into account the received failure cause. If the failure cause indicated "REGISTRATION\_REQUIRED" error in the "cause" attribute of the "ProblemDetails" structure, the EEC shall perform an EEC registration as specified in clause 5.2.2.2.2 before resending the EAS discovery request.

#### 5.3.2.4 Eees\_EASDiscovery\_Notify

##### 5.3.2.4.1 General

This service operation is used by the EES to notify the EEC about the EAS discovery information.

##### 5.3.2.4.2 EES notifying the EAS discovery information to EEC using Eees\_EASDiscovery\_Notify operation

The EES determines to notify the EEC with the EAS discovery information, when an event occurs at the EES that satisfies trigger conditions for updating EAS discovery information of a subscribed EEC. The EES may obtain the UE's location as specified in clause 5.3 of 3GPP TS 29.122 [3].

If EAS discovery filters are provided by the EEC, the EES identifies the EAS(s) based on the provided EAS discovery filters and the UE location.

If EAS discovery filters are not provided, the EES identifies the EAS(s), if available, based on the UE-specific service information at the EES and the UE location; and by applying the ECSP policy (e.g. based only on the UE location).

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. If obtaining UE location information from the 3GPP core network capabilities fails, then the EES may retry to obtain UE location information. If EES is unable to obtain UE location, then the EES fails to discover the EAS and the notification will not be sent.

If UE location is available and EES determines that the UE location is outside the Geographical or Topological Service Area of an EAS, then the EES shall not include this EAS in the EAS discovery notification.

If the EdgeApp\_2 feature is supported, the EES, based on local policy, may use the EAS endpoints received from the EEC or all registered EAS endpoints to get edge load analytics information from the ADAES services (e.g. as specified in clause 8.8.2 of 3GPP TS 23.436 [9]) to monitor EAS service status like EAS status and EAS schedule if the EEC subscribed to the "EAS\_DYNAMIC\_INFO\_CHANGE" event.

Editor's note [CR#0053, EDGEAPP\_Ph2]: The EEC usage of the analytics information received in the EAS discovery notification request is FFS.

If the EES identifies the EAS(s) then to notify the EAS discovery information events, the EES shall either send an HTTP POST message using the Notification Destination URI received in the subscription request, as specified in clause 6.3.4.2.

The EEC may cache the EAS information (e.g. EAS endpoint) for subsequent use. If the "lifeTime" attribute is included in the notification, the EEC may cache the EAS information only for the duration specified by the Lifetime IE.

NOTE: If the EEC provided an indication to support application triggering in "eecTriggerRequest" attribute of the EAS Discovery Subscription request, then the ECS sends the trigger message towards the EEC by invoking application triggering services or DeviceTrigerring API using the 3GPP core network capabilities in order to avoid sending the EAS Discovery notify.

#### 5.3.2.5 Eees\_EASDiscovery\_UpdateSubscription

##### 5.3.2.5.1 General

This service operation is used by the EEC to update its subscription at the EES for reporting of EAS discovery information.

##### 5.3.2.5.2 EEC updating EAS discovery information subscription at EES using Eees\_EASDiscovery\_UpdateSubscription operation

To request modification of an existing Individual EAS Discovery Subscription, the EEC shall send an HTTP PATCH request (for partial modification) or PUT request (for fully replacement) message to the EES using the resource URI identifying the concerned "Individual EAS Discovery Subscription" resource as specified in clause 6.3.2.3.3.3 for an HTTP PATCH message and in clause 6.3.2.3.3.1 for an HTTP PUT message.

The PATCH message includes the parameters (EAS discovery filters, EAS dynamic information filters, Service continuity support, or proposed expiry time) that need to be replaced in the existing subscription resource.

The PUT message shall replace all properties of the existing resource with the EAS Discovery subscription information in the request. The values of the easId and ueId provided during the subscription creation shall not be changed.

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

a) shall check the update subscription message from the EEC to see if the EEC is authorized to update the requested subscription resource;

b) if the EEC is authorized to update the EAS discovery subscription and if the eecId and the ueId of the request match the eecId and the ueId in the resource, then the EES;

1) shall update the resource identified by Resource URI of the EAS discovery subscription with the updated information received in the HTTP PATCH or PUT request message;

2) on success, shall either return an HTTP "200 OK" response with the payload body of the HTTP PATCH or PUT response containing the representation of the replaced resource or an HTTP "204 No Content" response.

c) if the EAS discovery subscription update operation is unsuccessful, shall return an appropriate error response as specified in Table 5.2.6-1 of 3GPP TS 29.122 [3];

d) may include an expiration time.

If the expiration time is provided, the EEC shall send the EAS discovery subscription update request prior to the expiration time if the EEC wants to maintain the subscription. If the EAS discovery subscription update request is not received prior to the expiration time, the EES shall treat the EEC as implicitly unsubscribed and remove the corresponding EAS discovery subscription resource.

#### 5.3.2.6 Eees\_EASDiscovery\_Unsubscribe

##### 5.3.2.6.1 General

This service operation is used by the EEC to unsubscribe from EAS discovery notification at the EES.

##### 5.3.2.6.2 EEC unsubscribing to EAS discovery subscription from EES using Eees\_EASDiscovery\_Unsubscribe operation

To unsubscribe from EAS discovery notification at the EES, the EEC shall send an HTTP DELETE request to the EES using the resource URI identifying the concerned Individual EAS Discovery Subscription resource as specified in clause 6.3.2.3.3.2. Upon receiving the HTTP DELETE request, the EES:

a) shall verify and check if the EEC is authorized to delete the Individual EAS Discovery Subscription resource;

b) if the EEC is authorized to perform the operation, then the EES shall delete the individual EAS Discovery subscription resource identified by the "subscriptionId" provided within the request URI;

c) on success, shall return a "204 No Content" message to the EEC, indicating the successful removal of the subscription resource.

d) if the operation fails, shall return an appropriate HTTP error response as specified in Table 5.2.6-1 of 3GPP TS 29.122 [3].

## 5.4 Eees\_ACREvents Service

### 5.4.1 Service Description

The Eees\_ACREvents API, as defined in 3GPP TS 23.558 [2], allows the EES to notify the EEC of the target information during the ACR procedures or the ACR complete events.

### 5.4.2 Service Operations

#### 5.4.2.1 Introduction

The service operations defined for Eees\_ACREvents API are shown in the table 5.4.2.1-1.

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

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Eees\_ACREvents\_Subscribe | This service operation is used by the EEC to subscribe to EES for ACR related events. | EEC |
| Eees\_ACREvents\_Notify | This service operation is used by the EES to notify the EEC about ACR related events. | EES |
| Eees\_ACREvents\_UpdateSubscription | This service operation is used by the EEC to update existing subscription for ACR related events. | EEC |
| Eees\_ACREvents\_Unsubscribe | This service operation is used by the EEC to unsubscribe for the previously subscribed ACR related events. | EEC |

#### 5.4.2.2 Eees\_ACREvents\_Subscribe

##### 5.4.2.2.1 General

This service operation is used by the EEC to subscribe to EES, for reporting following ACR information:

- target information, i.e. the details of the selected T-EAS and, if required, the selected T-EES, during the ACR procedures;

- ACR complete events.

##### 5.4.2.2.2 EEC subscribing to ACR information from EES using Eees\_ACREvents\_Subscribe operation

To subscribe to ACR information reporting at the EES, the EEC shall send an HTTP POST message to the EES on the "ACR events subscriptions" resource. The body of the POST message shall include "ACREventsSubscription" as specified in clause 6.4.5.2.2.

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

a) process the EEC ACR information subscription request;

b) verify and check if the EEC is authorized to subscribe ACR information about the requested EAS(s); and

c) if the EEC is authorized to subscribe for the ACR information notification, then the EES;

1) shall create a new resource with the Individual ACR events subscription resource as specified in clause 6.4.2.3;

2) if a list of identifier of ACs is provided by the EEC, the EES shall use it during ACR information notification as specified in clause 5.4.2.3; and

3) shall send an ACR information subscription response to the EEC. The URI of the created resource (including the subscription identifier) shall be returned in the "Location" HTTP header. The response may include the expiration time, indicating when the subscription will automatically expire.

If the expiration time is provided, then to maintain the subscription information, the EEC shall send an ACR information subscription update request (as described in clause 5.3.2.4) prior to the expiration time. If the ACR information subscription update request is not sent prior to the expiration time, the EES shall treat the EEC as implicitly unsubscribed and remove the corresponding Individual ACR information subscription resource.

#### 5.4.2.3 Eees\_ACREvents\_Notify

##### 5.4.2.3.1 General

This service operation is used by the EES to notify the EEC about the ACR information notification.

##### 5.4.2.3.2 EES notifying the ACR information to EEC using Eees\_ACREvents\_Notify operation

The EES determines to notify the EEC with the ACR information on following events:

- For EEC executed ACR via S-EES scenario, when S-EAS sends the ACR Complete message to the S-EES to confirm that the ACR has completed;

- For S-EAS decided ACR scenario, when T-EAS selection information received from the S-EAS or when S-EAS informs the S-EES of the complete of ACT;

- For S-EES executed ACR scenario, when S-EES determines T-EES and T-EAS via the Discover T-EAS procedure or when S-EAS informs the S-EES of the complete of ACT; and

- For EEC executed ACR via T-EES scenario, when T-EAS sends the ACR Complete message to the T-EES to confirm that the ACR has completed.

To notify the ACR information events, the EES shall:

a) identify ACs that satisfies trigger conditions for providing ACR information notification if a list of identifier of ACs was provided by the EEC when subscribing to ACR information; and

b) if the EdgeApp\_2 feature is supported and if the "expectedLocArea" attribute was provided in the service continuity request, then the S-EES shall detect if the UE has moved to the expected location or geographical service area; and

c) send an HTTP POST message using the Notification Destination URI received in the subscription request, as specified in clause 6.4.4. The EES shall include "eecCtxtReloc" attribute containing the registration ID and registration expiration time as specified in clause 6.4.5.2.3.

Upon receiving the HTTP POST message, the EEC shall process the ACR information Notification.

#### 5.4.2.4 Eees\_ACREvents\_UpdateSubscription

##### 5.4.2.4.1 General

This service operation is used by the EEC to update its subscription at EES, for reporting of ACR information notification.

##### 5.4.2.4.3 EEC updating ACR information subscription at EES using Eees\_ACREvents\_UpdateSubscription operation

To update ACR information subscription at the EES, the EEC shall send an HTTP PATCH message (for partial modification) or HTTP PUT message (for fully replacement) to the EES on resource URI identifying the Individual ACR events subscription resource representation, as specified in clause 6.4.2.3.3.3 for an HTTP PATCH message and in clause 6.4.2.3.3.1 for an HTTP PUT message.

The PATCH message includes the parameters (EASID, Event ID, Notification Destination and proposed expiry time) that need to be replaced in the existing subscription resource.

The PUT message shall replace all properties of the existing resource with the ACR information in the request. The values of the eecId and ueId provided during the subscription creation shall not be changed.

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

a) shall check the update subscription message from the EEC to see if the EEC is authorized to modify the requested subscription resource;

b) if the EEC is authorized to update the ACR information subscription and the eecId of the requesting EEC and the eecId in the resource match, then the EES;

1) shall update the resource identified by Resource URI of the ACR information subscription with the updated information received in the HTTP PATCH or PUT request message;

3) shall return the ACR information subscription response. The EES may send "200 OK" response code which includes the subscription identifier and the expiration time, indicating when the subscription will automatically expire. Otherwise, the EES sends "204 No Content" response code.

If the expiration time is provided, the EEC shall send an ACR information subscription update request prior to the expiration time if the EEC wants to maintain the subscription. If the ACR information subscription update request is not received prior to the expiration time, the EES shall treat the EEC as implicitly unsubscribed and remove the corresponding ACR information subscription resource.

#### 5.4.2.5 Eees\_ACREvents\_Unsubscribe

##### 5.4.2.5.1 General

This service operation is used by the EEC to remove its subscription from the EES for reporting of ACR information.

##### 5.4.2.5.2 EEC unsubscribing to service provisioning subscription from EES using Eees\_ACREvents\_Unsubscribe operation

To unsubscribe ACR information subscription from the EES, the EEC shall send an HTTP DELETE message to the EES, on the resource URI identifying the Individual ACR events subscription resource representation as specified in clause 6.4.2.3.3.2. Upon receiving the HTTP DELETE request, the EES:

a) shall verify and check if the EEC is authorized to unsubscribe the Individual ACR events subscription resource;

b) if the EEC is authorized to delete the Individual ACR events subscription resource, then the EES shall unsubscribe the EEC for the ACR information subscription identified by the subscriptionId;

c) shall return the "204 Not Content" message to the EEC, indicating the successful removal of the subscription information.

## 5.5 Eees\_AppContextRelocation Service

### 5.5.1 Service Description

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

### 5.5.2 Service Operations

#### 5.5.2.1 Introduction

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

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

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Eees\_AppContextRelocation\_Determine | This service operation enables to request ACR determination. | EEC |
| Eees\_AppContextRelocation\_Initiate | This service operation enables to request ACR initiation. | EEC |

#### 5.5.2.2 Eees\_AppContextRelocation\_Determine

##### 5.5.2.2.1 General

This service operation is used by an EEC to request ACR determination to the EES.

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

- ACR Determination.

##### 5.5.2.2.2 ACR Determination

In order to request ACR determination, the EEC shall send an HTTP POST request to the EES, with the request URI set to "{apiRoot}/eees-appctxtreloc/<apiVersion>/determine" and the request body including the ACRDetermReq data structure that shall contain the necessary information to enable the EES to carry out ACR determination as described in clause 6.5.5.2.2.

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

a) process the ACR determination request;

b) verify if the EEC is authorized to request ACR determination at the EES; and

c) if the EEC is authorized to request ACR determination with the EES, then:

1) 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; and

2) if the EdgeApp\_2 feature is supported and if the "expectedLocArea" attribute was provided, then the EES shall monitor the UE location or geographical service area.

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

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

#### 5.5.2.3 Eees\_AppContextRelocation\_Initiate

##### 5.5.2.3.1 General

This service operation is used by an EEC to request ACR initiation to the EES.

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

- ACR Initiation.

##### 5.5.2.3.2 ACR Initiation

In order to request ACR initiation, the EEC shall send an HTTP POST request to the EES, with the request URI set to "{apiRoot}/eees-appctxtreloc/<apiVersion>/initiate" and the request body including the ACRInitReq data structure that shall contain the necessary information to enable the EES to carry out ACR initiation as described in clause 6.5.5.2.3.

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

a) process the ACR initiation request information;

b) verify if the EEC is authorized to request ACR initiation at the EES and;

c) if the EEC is authorized to request ACR initiation with the EES, then;

1) if T-EAS routing information (i.e. N6 routing information) as specified in table 6.5.5.2.3-1 is included in HTTP POST message:

i) the EES may apply AF traffic influence with the N6 routing information in the 3GPP Core Network as specified in clause 4.4.7 of 3GPP TS 29.522 [8];

1A) if the "simInactTime" attribute indicating the simultaneous EAS connectivity in service continuity is required and the inactive time guidance for keeping connectivity towards the S-EAS as specified in table 6.5.5.2.3-1 are included in HTTP POST message:

i) the EES may apply AF traffic influence with the indication of simultaneous connectivity in the 3GPP Core Network as specified in clause 4.4.7 of 3GPP TS 29.522 [8];

2) if EAS notification indication as specified in table 6.5.5.2.3-1 is included in the HTTP POST message, the EES shall notify the EAS to start the ACR towards the T-EAS;

3) if EEC context relocation details as specified in table 6.5.5.2.3-1 is included in HTTP POST message, then

i) if the T-EES is different than the current EES, then the EES shall initiate EEC Context Push towards the T-EES as specified in clause 5.11 of 3GPP TS 29.558 [4]; or

ii) if the EEC context ID and the S-EES Endpoint are included, then EES shall initiate EEC Context Pull (using EEC Context ID) towards the S-EES as specified in clause 5.10 of 3GPP TS 29.558 [4];

iii) if Previous T-EAS Endpoint is included in HTTP POST message, then:

A) if the previous EAS notification indication is included in the HTTP POST message, the EES shall notify the cancellation of the ACR to the EAS;

4) if predicted expiration time by which the UE reaches location as specified in table 6.5.5.2.3-1 is included in HTTP POST message, the S-EES provides prediction expiration time to the T-EES and via the T-EES to the T-EAS:

5) if the EdgeApp\_2 feature is supported and if the "expectedLocArea" attribute was provided, then the EES shall monitor the UE location or geographical service area; and

6) the EES shall return the response message.

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

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

## 5.6 Eees\_UEIdentifier Service

### 5.6.1 Service Description

The Eees\_UEIdentifier API, as defined in 3GPP TS 23.558 [2], allows the EEC to obtain an identifier of a UE from the EES.

### 5.6.2 Service Operations

#### 5.6.2.1 Introduction

The service operations defined for the Eees\_UEIdentifier API are shown in the table 5.6.2.1-1.

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

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Eees\_UEIdentifier\_Get | This service operation is used by the EEC to request the UE identifier from the EES.  (NOTE) | EEC |
| NOTE: The Get custom operation specified in clause 8.3.3 of 3GPP TS 29.558 [4] is used by the EEC. | | |

#### 5.6.2.2 Eees\_UEIdentifier\_Get

##### 5.6.2.2.1 General

This service operation is used by the EEC to obtain an identifier of a UE from the EES. The EEC is using the Get custom operation specified in clause 8.3.3 of 3GPP TS 29.558 [4].

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

- Retrieve UE identifier.

##### 5.6.2.2.2 Retrieve UE identifier

In order to obtain an identifier of a UE from the EES, the EEC shall send an HTTP POST request to the EES, with the request URI set to "{apiRoot}/eees-ueidentifier/<apiVersion>/get" as specified in clause 8.3.3 of 3GPP TS 29.558 [4]. In the content of the request the EEC shall include the UserInfo data structure containing the information about the user or UE available at the EEC for which the UE identifier is requested as specified in clause 8.3.5.2.3 of 3GPP TS 29.558 [4].

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

a) verify the identity of the EEC and check if the EEC is authorized to obtain the UE identifier; and

b) if the EEC is authorized to obtain the UE's identifier information, then the EES shall:

1) invoke the Nnef\_UEId Retrieve service operation as specified in clause 4.4.32 of 3GPP TS 29.522 [8] to obtain the UE identifier based on the received user information, except if the UE ID was included in the request then the invocation of the Nnef\_UEId service operation shall be skipped; and

2) respond to the EEC with a "200 OK" response and include in content of the response the UeIdInfo data type as specified in clause 8.3.5.2.5 of 3GPP TS 29.558 [4].

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

## 5.7 Eees\_EASInformationProvisioning Service

### 5.7.1 Service Description

The Eees\_EASInformationProvisioning API, as defined in 3GPP TS 23.558 [2], allows an EEC to invoke via the Eees interface EAS information provisioning service operation with the EES.

### 5.7.2 Service Operations

#### 5.7.2.1 Introduction

The service operation defined for Eees\_EASInformationProvisioning API is shown in the table 5.7.2.1-1.

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

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Eees\_EASInformationProvisioning\_Declare | This service operation enables to declare EAS information. | EEC |

#### 5.7.2.2 Eees\_EASInformationProvisioning\_Declare

##### 5.7.2.2.1 General

This service operation is used by an EEC to declare EAS information to the EES.

##### 5.7.2.2.2 EEC exchanging EAS information in EES using Eees\_EASInformationProvisioning\_Declare operation

Editor’s note: Details of the Eees\_EASInformationProvisioning\_Declare operation are FFS.

# 6 Edge Enabler Server API Definitions

## 6.1 Void

## 6.2 Eees\_EECRegistration API

### 6.2.1 API URI

The request URI used in each HTTP request from the EEC towards the EES shall have the structure as defined in clause 7.5 of 3GPP TS 29.558 [4] with the following clarifications:

- The {apiRoot} shall be set as described in clause 7.5 of 3GPP TS 29.558 [4].

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

- The <apiVersion> shall be "v1".

- The <apiSpecificResourceUriPart> shall be set as described in clause 6.2.2.

### 6.2.2 Resources

#### 6.2.2.1 Overview



Figure 6.2.2.1-1: Resource URI structure of the Eees\_EECRegistration API

Table 6.2.2.1-1 provides an overview of the resources and applicable HTTP methods.

Table 6.2.2.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method or custom operation | Description |
| EEC Registrations | /registrations | POST | Create a new EEC registration at the EES |
| Individual EEC registration | /registrations/{registrationId} | PUT | Update an existing EEC registration a the EES |
| DELETE | Remove an existing ECC registration at EES |
| PATCH | Partially update an existing EEC registration a the EES |

#### 6.2.2.2 Resource: EEC Registrations

##### 6.2.2.2.1 Description

This resource represents a collection of EEC registrations with an EES.

##### 6.2.2.2.2 Resource Definition

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

This resource shall support the resource URI variables defined in table 6.2.2.2.2-1.

Table 6.2.2.2.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5 of 3GPP TS 29.558 [4]. |

##### 6.2.2.2.3 Resource Standard Methods

6.2.2.2.3.1 POST

This method creates a new registration. This method shall support the URI query parameters specified in table 6.22.2.3.1-

Table 6.2.2.2.3.1-1: 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 6.2.2.2.3.1-2 and the response data structures and response codes specified in table 6.2.2.2.3.1-3

Table 6.2.2.2.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| EECRegistration | M | 1 | EEC registration request information |

Table 6.2.2.2.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| EECRegistration | M | 1 | 201 Created | EEC information is registered successfully at EES. EEC 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 manadatory HTTP error status code for the POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

Table 6.2.2.2.3.1-4: Headers supported by the POST method on this resource

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

Table 6.2.2.2.3.1-5: 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-eecregistration/<apiVersion>/registrations/{registrationId} |

##### 6.2.2.2.4 Resource Custom Operations

None.

#### 6.2.2.3 Resource: Individual EEC registration

##### 6.2.2.3.1 Description

This resource represents an individual registration of an EEC.

##### 6.2.2.3.2 Resource Definition

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

This resource shall support the resource URI variables defined in table 6.2.2.3.2-1.

Table 6.2.2.3.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5 of 3GPP TS 29.558 [4]. |
| registrationId | string | The Identifier of a specific EEC registration. |

##### 6.2.2.3.3 Resource Standard Methods

6.2.2.3.3.1 PUT

This method updates the EEC registration data by completely replacing the existing registration data. This method shall support the URI query parameters specified in table 6.2.2.3.3.1-1.

Table 6.2.2.3.3.1-1: 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 6.2.2.3.3.1-2 and the response data structures and response codes specified in table 6.2.2.3.3.1-3.

Table 6.2.2.3.3.1-2: Data structures supported by the PUT Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| EECRegistration | M | 1 | An Individual registration resource to be updated. |

Table 6.2.2.3.3.1-3: Data structures supported by the PUT Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| EECRegistration | M | 1 | 200 OK | An individual EEC registration resource updated successfully and the EECRegistration data shall be included in the response. |
| n/a |  |  | 204 No Content | An individual EEC registration resource updated successfully. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection, during resource 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 [3] with the difference that the SCEF is replaced by the EES and the SCS/AS is replaced by the EEC. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection, during resource 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 [3] with the difference that the SCEF is replaced by the EES and the SCS/AS is replaced by the EEC. |
| NOTE: The manadatory HTTP error status code for the PUT method listed in Table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

Table 6.2.2.3.3.1-4: Headers supported by the PUT method on this resource

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

Table 6.2.2.3.3.1-5: Headers supported by the 200 response code on this resource

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

Table 6.2.2.3.3.1-6: Links supported by the 200 Response Code on this endpoint

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Resource name | HTTP method or custom operation | Link parameter(s) | Description |
| n/a |  |  |  |  |

Table 6.2.2.3.3.1-7: 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 6.2.2.3.3.1-8: 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. |

6.2.2.3.3.2 DELETE

This method deregisters (removes) an existing EEC registration. This method shall support the URI query parameters specified in table 6.2.2.3.3.2-1.

Table 6.2.2.3.3.2-1: 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 6.2.2.3.3.2-2 and the response data structures and response codes specified in table 6.2.2.3.3.2-3.

Table 6.2.2.3.3.1-2: Data structures supported by the DELETE Request Body on this resource

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

Table 6.2.2.3.3.1-3: Data structures supported by the DELETE Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| n/a |  |  | 204 No Content | An individual EEC registration resource deleted successfully. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection, during resource 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 [3] with the difference that the SCEF is replaced by the EES and the SCS/AS is replaced by the EEC. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection, during resource 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 [3] with the difference that SCEF is replaced by the EES and the SCS/AS is replaced by the EEC. |
| NOTE: The manadatory HTTP error status code for the DELETE method listed in Table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

Table 6.2.2.3.3.3-4: Headers supported by the DELETE method on this resource

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

Table 6.2.2.3.3.3-5: Headers supported by the 204 response code on this resource

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

Table 6.2.2.3.3.3-6: Links supported by the 200 Response Code on this endpoint

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Resource name | HTTP method or custom operation | Link parameter(s) | Description |
| n/a |  |  |  |  |

Table 6.2.2.3.3.3-7: 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 6.2.2.3.3.3-8: 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. |

6.2.2.3.3.3 PATCH

This method partially updates the EEC registration at EES. This method shall support the URI query parameters specified in table 6.2.2.3.3.3-1.

Table 6.2.2.3.3.3-1: 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 6.2.2.3.3.3-2 and the response data structures and response codes specified in table 6.2.2.3.3.3-3.

Table 6.2.2.3.3.3-2: Data structures supported by the PATCH Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| EECRegistrationPatch | M | 1 | An Individual registration resource to be updated. |

Table 6.2.2.3.3.3-3: Data structures supported by the PATCH Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| EECRegistration | M | 1 | 200 OK | An individual EEC registration resource updated successfully and the EECRegistration data shall be included in the response. |
| n/a |  |  | 204 No Content | An individual EEC registration resource updated successfully. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection, during resource 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 [3] with the difference that the SCEF is replaced by the EES and the SCS/AS is replaced by the EEC. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection, during resource 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 [3] with the difference that the SCEF is replaced by the EES and the SCS/AS is replaced by the EEC. |
| NOTE: The manadatory HTTP error status code for the PATCH method listed in Table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

Table 6.2.2.3.3.3-4: Headers supported by the PATCH method on this resource

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

Table 6.2.2.3.3.3-5: Headers supported by the 200 response code on this resource

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

Table 6.2.2.3.3.3-6: Links supported by the 200 Response Code on this endpoint

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Resource name | HTTP method or custom operation | Link parameter(s) | | Description |
| n/a |  |  |  |  | |

Table 6.2.2.3.3.3-7: 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 6.2.2.3.3.3-8: 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. |

##### 6.2.2.3.4 Resource Custom Operations

None.

### 6.2.3 Custom Operations without associated resources

None.

### 6.2.4 Notifications

None.

### 6.2.5 Data Model

#### 6.2.5.1 General

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

Table 6.2.5.1-1 specifies the data types defined specifically for the Eees\_EECRegistration API service.

Table 6.2.5.1-1: Eees\_EECRegistration API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| ACProfile | 6.2.5.2.3 | Describes information about AC used to determine services and service characteristics required |  |
| ACServiceKPIs | 6.2.5.2.5 | Describes the KPIs required by the AC in order to receive required services |  |
| DeviceType | 6.2.5.3.4 | Indicates devices characteristics of UE. |  |
| EASDetail | 6.2.5.2.4 | Describes EAS along with service KPIs that serves the AC. |  |
| EecRegistration | 6.2.5.2.2 | Describes the parameters to perform EEC Registration related operations. |  |
| EecRegistrationPatch | 6.2.5.2.6 | Represents modifications of an Individual EEC registration resource. |  |
| UnfulfillACProfRsn | 6.2.5.3.3 | Represents the reasons for AC profile failure during EEC Registration. |  |
| UnfulfilledAcProfile | 6.2.5.2.7 | Contains AC Profile ID and reason why requirements indicated in the AC profile cannot be fulfilled. |  |

Table 6.2.5.1-2 specifies data types re-used by the Eees\_EECRegistration API service.

Table 6.2.5.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| ACRScenario | 3GPP TS 29.558 [4] |  |  |
| BitRate | 3GPP TS 29.571 [5] |  |  |
| DateTime | 3GPP TS 29.122 [3] |  |  |
| DiscoveredEas | Clause 6.3.5.2.8 |  |  |
| DurationSec | 3GPP TS 29.122 [3] |  |  |
| EASBundleInfo | 3GPP TS 29.558 [4] |  |  |
| EndPoint | 3GPP TS 29.558 [4] |  |  |
| Gpsi | 3GPP TS 29.571 [5] |  |  |
| LocationArea5G | 3GPP TS 29.122 [3] |  |  |
| ScheduledCommunicationTime | 3GPP TS 29.122 [3] |  |  |
| SupportedFeatures | 3GPP TS 29.571 [5] |  |  |
| Uinteger | 3GPP TS 29.571 [5] |  |  |

#### 6.2.5.2 Structured data types

##### 6.2.5.2.1 Introduction

##### 6.2.5.2.2 Type: EecRegistration

Table 6.2.5.2.2-1: Definition of type EecRegistration

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| eecId | string | M | 0..1 | Represents a unique identifier of the EEC. |  |
| ueId | Gpsi | O | 0..1 | Represents the identifier of the UE. |  |
| acProfs | array(ACProfile) | O | 1..N | Profiles of ACs for which the EEC provides edge enabling services. |  |
| eecSvcContSupp | array(ACRScenario) | O | 1..N | The ACR scenarios supported by the EEC for service continuity. If this attribute is not present, then the EEC does not support service continuity. |  |
| expTime | DateTime | O | 0..1 | Represents an expiration time for the registration.  This attribute shall be present in the response of the HTTP POST message from EEC to create a new registration or in the response of the HTTP PUT message from EEC to update a specific registration.  If abesent, then it indicates that the registration of EEC never expires. |  |
| eecCntxId | string | O | 0..1 | Identifier of the EEC context obtained from a previous registration. |  |
| srcEesId | string | O | 0..1 | Identifier of the EES that provided EEC context ID. |  |
| endPt | EndPoint | O | 0..1 | The endpoint address of the EES that provided EEC context ID. |  |
| ueMobilityReq | 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 |
| easSelReqInd | boolean | O | 0..1 | Indicates the EAS selection requirement to EES.  When set to "true", this attribute indicates the EES support for EAS selection. When set to "false" or omitted, this attribute indicates the EES shall not select the EAS. | EdgeApp\_2 |
| discoveredEas | array(DiscoveredEas) | O | 0..1 | List of discovered EAS(s) information. | EdgeApp\_2 |
| unfulfilledAcProfs | UnfulfilledAcProfile | O | 0..1 | Represents the ACID of the AC Profile sent from EES, for which the requirements indicated in the AC profile cannot be fulfilled as shared in reason  (NOTE) |  |
| ueType | DeviceType | O | 0..1 | Indicates the device type (e.g. constrained device). | EdgeApp\_2 |
| unfulfillAcProfs | array(UnfulfilledAcProfile) | O | 1..N | Represents the list of ACIDs of the AC Profile(s) sent from EES, for which the requirements indicated in the AC profile(s) cannot be fulfilled as shared in reason.  (NOTE) |  |
| NOTE: The attributes "unfulfilledAcProfs" and "unfulfillAcProfs" are mutually exclusive. The "unfulfilledAcProfs" may only be provided if there is only a single unfulfilled AC profile. | | | | | |

##### 6.2.5.2.3 Type: ACProfile

Table 6.2.5.2.3-1: Definition of type ACProfile

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| acId | string | M | 1 | Identity of the AC. |  |
| acType | string | O | 0..1 | The category or type of AC. |  |
| prefEcsps | array(string) | O | 1..N | Indicates to the ECS which ECSPs are preferred for the AC. The ECS may use this information in the selection of EESs. |  |
| acSchedule | ScheduledCommunicationTime | O | 0..1 | Indicates the expected operation schedule of the AC (e.g. time windows) |  |
| expAcGeoServArea | LocationArea5G | O | 0..1 | Indicates the expected location(s) (e.g. route) of the hosting UE during the AC's operation schedule. |  |
| acSvcContSupp | array(ACRScenario) | O | 1..N | Indicates if service continuity support is required or not for the application.  The ACR scenarios supported by the AC for service continuity. If this attribute is not present, then the AC does not support service continuity. |  |
| simInactTime | DurationSec | O | 0..1 | Indicates whether a simultaneous EAS connectivity in service continuity is required and the inactive time guidance for keeping connectivity towards the S-EAS. |  |
| eass | array(EasDetail) | O | 1..N | Provides the list of EAS that serve the AC along with the service KPIs required by the AC |  |
| easBundleInfo | array(EASBundleInfo) | O | 1..N | Represents a list of EAS bundles to which the EAS (identified via the "easId" attribute) belongs. | EdgeApp\_2 |

##### 6.2.5.2.4 Type: EasDetail

Table 6.2.5.2.4-1: Definition of type EasDetail

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| easId | string | M | 1 | The application identifier of the EAS, e.g. FQDN, URI. |  |
| expectedSvcKPIs | ACServiceKPIs | O | 0..1 | Describes the KPIs expected in order for ACs to receive currently required services from the EAS |  |
| minimumReqSvcKPIs | ACServiceKPIs | O | 0..1 | Describes the minimum KPIs required in order for ACs to receive meaningful services from the EAS |  |

##### 6.2.5.2.5 Type: ACServiceKPIs

Table 6.2.5.2.5-1: Definition of type ACServiceKPIs

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| connBand | BitRate | O | 0..1 | The required connection bandwidth in Kbit/s for the application. |  |
| reqRate | Uinteger | O | 0..1 | The request rate to be generated by the AC. |  |
| respTime | DurationSec | O | 0..1 | Response time required for the server servicing the requests. |  |
| avail | Uinteger | O | 0..1 | Percentage of time the server is required to be available for the AC's use. |  |
| reqComp | string | O | 0..1 | The compute resources required by the AC. |  |
| reqGrapComp | string | O | 0..1 | The graphical compute resources required by the AC. |  |
| reqMem | string | O | 0..1 | The memory resources required by the AC. |  |
| reqStrg | string | O | 0..1 | The storage resources required by the AC. |  |

##### 6.2.5.2.6 Type: EecRegistrationPatch

Table 6.2.5.2.6-1: Definition of type EecRegistrationPatch

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| acProfs | array(ACProfile) | O | 1..N | Profiles of ACs for which the EEC provides edge enabling services. |  |
| expTime | DateTime | O | 0..1 | Represents an expiration time for the registration. |  |
| ueMobilityReq | 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" this attribute indicates that UE Mobility support is not required. | EdgeApp\_2 |
| easSelReqInd | boolean | O | 0..1 | Indicates the EAS selection requirement to EES.  When set to "true", this attribute indicates the EES shall select the EAS. When set to "false", this attribute indicates the EES shall not select the EAS. | EdgeApp\_2 |
| ueType | DeviceType | O | 0..1 | Indicates the device type (e.g. constrained device). | EdgeApp\_2 |

##### 6.2.5.2.7 Type: UnfulfilledAcProfile

Table 6.2.5.2.7-1: Definition of type UnfulfilledAcProfile

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| acId | string | M | 0..1 | The list of identifier of the AC profile |  |
| reason | UnfulfillACProfRsn | O | 0..1 | Reason indicating the cause (e.g. EAS not available, requirements cannot be fulfilled) |  |

#### 6.2.5.3 Simple data types and enumerations

##### 6.2.5.3.1 Introduction

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

##### 6.2.5.3.2 Simple data types

The simple data types defined in table 6.2.5.3.2-1 shall be supported.

Table 6.2.5.3.2-1: Simple data types

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

##### 6.2.5.3.3 Enumeration: UnfulfillACProfRsn

The enumeration UnfulfillACProfRsn represents the reasons for AC profile failure during EEC Registration. It shall comply with the provisions defined in table 6.2.5.3.3-1.

Table 6.2.5.3.3-1: Enumeration UnfulfillACProfRsn

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| EAS\_NOT\_AVAILABLE | EAS not available |  |
| REQ\_UNFULFILLED | Requirements cannot be fulfilled |  |

##### 6.2.5.3.4 Enumeration: DeviceType

The enumeration DeviceType indicates the devices characteristics of UE (e.g. constrained device). It shall comply with the provisions defined in table 6.2.5.3.4-1.

Table 6.2.5.3.4-1: Enumeration DeviceType

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| CONSTRAINED\_UE | UE is constrained with resources. |  |
| NORMAL\_UE | UE is not constrained. |  |

### 6.2.6 Error Handling

#### 6.2.6.0 General

General error handling are described in clause 7.7 of 3GPP TS 29.558 [4].

#### 6.2.6.1 Application Errors

The application errors defined for the Eees\_EECRegistration service are listed in Table 6.2.6.1-1. The EES shall include in the HTTP status code a "ProblemDetails" data structure with the "cause" attribute indicating the application error as listed in table 6.2.6.1-1.

Table 6.2.6.1-1: Application errors

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
| RESOURCE\_NOT\_FOUND | 404 Not Found | Indicates that the requirements included in the EEC registration request e.g., the AC Profile(s) cannot be fulfilled. |

### 6.2.7 Feature negotiation

General feature negotiation procedures are described in clause 7.8 of 3GPP TS 29.558 [4]. Table 6.2.7-1 lists the supported features for Eees\_EECRegistration API.

Table 6.2.7-1: Supported Features

|  |  |  |
| --- | --- | --- |
| Feature number | Feature Name | Description |
| 1 | EdgeApp\_2 | This feature indicates support of the enhancements for the Enabling Edge Applications. Within this feature the following enhancements are covered:  - support of EAS bundle information;  - sharing EAS selection indication;  - UE Mobility Support; and  - the EEC support of application triggering to perform EAS discovery. |

## 6.3 Eees\_EASDiscovery API

### 6.3.1 API URI

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

The request URIs used in HTTP requests shall have the Resource URI structure defined in clause 7.5 of 3GPP TS 29.558 [4] with the following clarifications:

- The {apiRoot} shall be set as described in clause 7.5 of 3GPP TS 29.558 [4].

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

- The <apiVersion> shall be "v1".

- The <apiSpecificResourceUriPart> shall be set as described in clause 6.3.2.

### 6.3.2 Resources

#### 6.3.2.1 Overview



Figure 6.3.2.1-1: Resource URI structure of the Eees\_EASDiscovery API

Table 6.3.2.1-1 provides an overview of the resources and applicable HTTP methods.

Table 6.3.2.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method or custom operation | Description |
| EAS Discovery Subscriptions | /subscriptions | POST | Creates a new individual EAS discovery subscription. |
| Individual EAS Discovery Subscription | /subscriptions/{subscriptionId} | PUT | Updates an existing individual EAS discovery subscription identified by the subscriptionId. |
| DELETE | Deletes an existing individual EAS discovery subscription identified by the subscriptionId. |
| PATCH | Partial update an existing EAS Discovery Subscription resource identified by a subscriptionId. |
| EAS Profiles | /eas-profiles/request-discovery | request-discovery (POST) | Request EAS discovery. |

NOTE 1: Based on SA3 specified security mechanisms for EDGE-1, EDGE-3 and EDGE-9 interfaces, the EES can identify the initiator of the API (i.e. EEC, EAS or EES) and apply the appropriate security procedures as specified in 3GPP TS 33.558 [20].

NOTE 2: The same service API can be implemented on different interfaces, i.e. EDGE-1, EDGE-3 and EDGE-9, which are for separate endpoints, i.e. EEC, EAS and EES.

#### 6.3.2.2 Resource: EAS Discovery Subscriptions

##### 6.3.2.2.1 Description

This resource represents the collection of EAS Discovery Subscriptions managed by the EES.

##### 6.3.2.2.2 Resource Definition

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

This resource shall support the resource URI variables defined in table 6.3.2.2.2-1.

Table 6.3.2.2.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5 of 3GPP TS 29.558 [4]. |

##### 6.3.2.2.3 Resource Standard Methods

6.3.2.2.3.1 POST

This method shall support the URI query parameters specified in table 6.3.2.2.3.1-1.

Table 6.3.2.2.3.1-1: 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 6.3.2.2.3.1-2 and the response data structures and response codes specified in table 6.3.2.2.3.1-3.

Table 6.3.2.2.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| EASDiscoverySubscription | M | 1 | Create an Individual EAS Discovery Subscription resource. |

Table 6.3.2.2.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| EASDiscoverySubscription | M | 1 | 201 Created | Successful case. An Individual EAS Discovery Subscription resource was successfully created and a representation of the created resource is returned in the response body.  The URI of the created resource shall be returned in an HTTP "Location" header |
| NOTE: The mandatory HTTP error status code for the POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

Table 6.3.2.2.3.1-4: 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-easdiscovery/<apiVersion>/subscriptions/{subscriptionId} |

##### 6.3.2.2.4 Resource Custom Operations

None.

#### 6.3.2.3 Resource: Individual EAS Discovery Subscription

##### 6.3.2.3.1 Description

This resource represents of an Individual EAS Discovery Subscription resource managed by the EES.

##### 6.3.2.3.2 Resource Definition

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

This resource shall support the resource URI variables defined in table 6.3.2.3.2-1.

Table 6.3.2.3.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5 of 3GPP TS 29.558 [4]. |
| subscriptionId | string | The identifier of the individual EAS discovery subscription. |

##### 6.3.2.3.3 Resource Standard Methods

6.3.2.3.3.1 PUT

This method shall support the URI query parameters specified in table 6.3.2.3.3.1-1.

Table 6.3.2.3.3.1-1: 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 6.3.2.3.3.1-2 and the response data structures and response codes specified in table 6.3.2.3.3.1-3.

Table 6.3.2.3.3.1-2: Data structures supported by the PUT Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| EASDiscoverySubscription | M | 1 | An individual EAS discovery subscription resource to be updated. |

Table 6.3.2.3.3.1-3: Data structures supported by the PUT Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| EASDiscoverySubscription | M | 1 | 200 OK | The Individual EAS Discovery Subscription resource was successfully updated and a representation of the updated resource is returned in the response body. |
| n/a |  |  | 204 No Content | The Individual EAS Discovery Subscription resource was successfully updated 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 URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [3] with the difference that the SCEF is replaced by the EES and the SCS/AS is replaced by the EEC. |
| 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 [3] with the difference that the SCEF is replaced by the EES and the SCS/AS is replaced by the EEC. |
| NOTE: The mandatory HTTP error status code for the PUT method listed in Table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

Table 6.3.2.3.3.1-4: 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 6.3.2.3.3.1-5: 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. |

6.3.2.3.3.2 DELETE

This method shall support the URI query parameters specified in table 6.3.2.3.3.2-1.

Table 6.3.2.3.3.2-1: 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 6.3.2.3.3.2-2 and the response data structures and response codes specified in table 6.3.2.3.3.2-3.

Table 6.3.2.3.3.2-2: Data structures supported by the DELETE Request Body on this resource

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

Table 6.3.2.3.3.2-3: Data structures supported by the DELETE Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| n/a |  |  | 204 No Content | The targeted Individual EAS Discovery Subscription resource was 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 3GPP TS 29.122 [3] with the difference that the SCEF is replaced by the EES and the SCS/AS is replaced by the EEC. |
| 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 [3] with the difference that the SCEF is replaced by the EES and the SCS/AS is replaced by the EEC. |
| NOTE: The manadatory HTTP error status code for the DELETE method listed in Table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

Table 6.3.2.3.3.2-4: 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 6.3.2.3.3.2-5: 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. |

6.3.2.3.3.3 PATCH

This method shall support the URI query parameters specified in the table 6.3.2.3.3.3-1.

Table 6.3.2.3.3.3-1: 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 6.3.2.3.3.3-2 and the response data structures and response codes specified in table 6.3.2.3.3.3-3.

Table 6.3.2.3.3.3-2: Data structures supported by the PATCH Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| EasDiscoverySubscriptionPatch | M | 1 | Contains the parameters to request the modification of an existing Individual EAS Discovery Subscription resource. |

Table 6.3.2.3.3.3-3: Data structures supported by the PATCH Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| EasDiscoverySubscription | M | 1 | 200 OK | The Individual EAS Discovery Subscription resource was successfully modified and a representation of the modified resource is returned in the response body. |
| n/a |  |  | 204 No Content | The Individual EAS Discovery Subscription resource was successfully modified 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 URI of the resource located in an alternative EES.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [3] with the difference that the SCEF is replaced by the EES and the SCS/AS is replaced by the EEC. |
| 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 [3] with the difference that the SCEF is replaced by the EES and the SCS/AS is replaced by the EEC. |
| NOTE: The mandatory HTTP error status code for the PATCH method listed in table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

Table 6.3.2.3.3.3-4: 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 6.3.2.3.3.3-5: 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. |

##### 6.3.2.3.4 Resource Custom Operations

None.

#### 6.3.2.4 Resource: EAS Profiles

##### 6.3.2.4.1 Description

This resource represents the collection of EAS Profiles managed by the EES.

##### 6.3.2.4.2 Resource Definition

Resource URI: **{apiRoot}/eees-easdiscovery/<apiVersion>/eas-profiles**

This resource shall support the resource URI variables defined in table 6.3.2.2.2-1.

Table 6.3.2.2.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5 of 3GPP TS 29.558 [4]. |

##### 6.3.2.4.3 Resource Standard Methods

None.

##### 6.3.2.4.4 Resource Custom Operations

6.3.2.4.4.1 Overview

Resource custom operations defined for this resource are summarized in table 6.3.2.4.4.1-1.

Table 6.3.2.4.4.1-1: Custom operations

|  |  |  |  |
| --- | --- | --- | --- |
| Operation name | Custom operaration URI | Mapped HTTP method | Description |
| Request-Discovery | eees-easdiscovery/<apiVersion>/ eas-profile /request-discovery | POST | Request EAS discovery information |

6.3.2.4.4.2 Operation: RequestDiscovery

6.3.2.4.4.2.1 Description

The custom operation allows a service consumer (e.g. EEC, EAS, EES) to request EAS discovery, as specified in 3GPP TS 23.558 [2], from the EES.

6.3.2.4.4.2.2 Operation Definition

This operation shall support the request of data structures specified in table 6.3.2.4.4.2.2-1 and the response data structure and response codes specified in table 6.3.2.4.4.2.2-2.

Table 6.3.2.4.4.2.2-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| EASDiscoveryReq | M | 1 | Contains the necessary information to request EAS discovery. |

Table 6.3.2.4.4.2.2-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| EASDiscoveryResp | M | 1 | 200 OK | The requested EAS discovery information was successfully returned. |
| n/a |  |  | 204 No Content | The processing of the request is successful but no matching EAS was found. |
| NOTE: The mandatory HTTP error status code for the POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

### 6.3.3 Custom operations without associated resources

There are no custom operations without associated resources defined for this API in this release of the specification.

### 6.3.4 Notifications

#### 6.3.4.1 General

Table 6.3.4.1-1: Notifications overview

|  |  |  |  |
| --- | --- | --- | --- |
| Notification | Callback URI | HTTP method or custom operation | Description  (service operation) |
| EAS Discovery Notification | {notificationDestination} | POST | Notifies a subscribed EEC about EAS discovery information. |

#### 6.3.4.2 EAS Discovery Notification

##### 6.3.4.2.1 Description

EAS Discovery notification is used by the EES to notify an EEC on EAS discovery information. The EEC may subscribe to the EAS discovery information as a pre-condition for receiving notification.

##### 6.3.4.2.2 Target URI

The Callback URI **"{notificationDestination}"** shall be used with the callback URI variables defined in table 8.6.4.2.2-1.

Table 6.3.4.2.2-1: Callback URI variables

|  |  |
| --- | --- |
| Name | Definition |
| notificationDestination | String formatted as URI with the Callback Uri. |

##### 6.3.4.2.3 Standard Methods

6.3.4.2.3.1 POST

This method shall support the request data structures specified in table 6.3.4.2.3.1-1 and the response data structures and response codes specified in table 6.3.4.2.3.1-2.

Table 6.3.4.2.3.1-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| EasDiscoveryNotification | M | 1 | Notification of EAS discovery information. |

Table 6.3.4.2.3.1-2: 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 EEC 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 EEC 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 code for the POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

Table 6.3.4.2.3.1-3: 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 6.3.4.2.3.1-4: 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. |

### 6.3.5 Data Model

#### 6.3.5.1 General

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

Table 6.3.5.1-1 specifies the data types defined specifically for the Eees\_EASDiscovery API service.

Table 6.3.5.1-1: Eees\_EASDiscovery API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| ACCharacteristics | 6.3.5.2.11 |  |  |
| DiscoveredEas | 6.3.5.2.8 |  |  |
| EasCharacteristics | 6.3.5.2.7 |  |  |
| EASDiscEventIDs | 6.3.5.3.3 |  |  |
| EasDiscoveryFilter | 6.3.5.2.6 |  |  |
| EasDiscoveryNotification | 6.3.5.2.5 |  |  |
| EasDiscoveryReq | 6.3.5.2.2 |  |  |
| EasDiscoveryResp | 6.3.5.2.3 |  |  |
| EasDiscoverySubscription | 6.3.5.2.4 |  |  |
| EasDiscoverySubscriptionPatch | 6.3.5.2.12 |  |  |
| EasDynamicInfoFilter | 6.3.5.2.9 |  |  |
| EasDynamicInfoFilterData | 6.3.5.2.10 |  |  |
| EdgeLoadAnalytic | 6.3.5.2.14 | Contains the statistical analytics data and predictive analytics data. |  |
| PredictiveData | 6.3.5.2.15 | Contains the predictive analytics data for each discovered EAS service change. |  |
| RequestorId | 6.3.5.2.13 |  |  |
| StatisticalData | 6.3.5.2.16 | Contains the statistical analytics data, |  |

Table 6.3.5.1-2 specifies data types re-used by the Eees\_EASDiscovery API service.

Table 6.3.5.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| ACProfile | clause 6.2.5.2.3 |  |  |
| ACRScenario | 3GPP TS 29.558 [4] |  |  |
| DateTime | 3GPP TS 29.122 [3] |  |  |
| Dnai | 3GPP TS 29.571 [5] |  |  |
| DurationSec | 3GPP TS 29.122 [3] |  |  |
| EASBundleInfo | 3GPP TS 29.558 [4] | Represents EAS bundle information. | EdgeApp\_2 |
| EASCategory | 3GPP TS 29.558 [4] | Represents the EAS type. |  |
| EASInstantiationInfo | 3GPP TS 29.558 [4] |  | EdgeApp\_2 |
| EASProfile | 3GPP TS 29.558 [4] |  |  |
| EndPoint | 3GPP TS 29.558 [4] |  |  |
| Gpsi | 3GPP TS 29.571 [5] | Used to identify a UE. |  |
| LocationArea5G | 3GPP TS 29.122 [3] |  |  |
| LocationInfo | 3GPP TS 29.122 [3] |  |  |
| PlmnIdNid | 3GPP TS 29.571 [5] | Identifies the network: PLMN Identifier or the SNPN Identifier (the PLMN Identifier and the NID). | EdgeApp\_2 |
| RouteToLocation | 3GPP TS 29.571 [5] |  |  |
| ScheduledCommunicationTime | 3GPP TS 29.122 [3] | Represents the scheduled communication time. | EdgeApp\_2 |
| SupportedFeatures | 3GPP TS 29.571 [5] |  |  |
| TimeWindow | 3GPP TS 29.122 [3] |  |  |
| Uinteger | 3GPP TS 29.571 [5] | Unsigned Integer, i.e. only value 0 and integers above 0 are permissible. | EdgeApp\_2 |
| Uri | 3GPP TS 29.122 [3] |  |  |
| WebsockNotifConfig | 3GPP TS 29.122 [3] |  |  |

#### 6.3.5.2 Structured data types

##### 6.3.5.2.1 Introduction

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

##### 6.3.5.2.2 Type: EasDiscoveryReq

Table 6.3.5.2.2-1: Definition of type EasDiscoveryReq

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| requestorId | RequestorId | M | 1 | Represents a unique identifier of the requestor (e.g. EEC, EAS, EES). |  |
| ueId | Gpsi | O | 0..1 | Represents the identifier of the UE. |  |
| easDiscoveryFilter | EasDiscoveryFilter | O | 0..1 | Contains EAS characteristics |  |
| eecSvcContinuity | array(ACRScenario) | O | 1..N | Contains service continuity support; indicates EEC supported ACR scenarios.  If this attribute is not present, then the EEC does not support service continuity. |  |
| eesSvcContinuity | array(ACRScenario) | O | 1..N | Contains service continuity support; indicates EES supported ACR scenarios.  If this attribute is not present, then the EES does not support service continuity. |  |
| easSvcContinuity | array(ACRScenario) | O | 1..N | Contains service continuity support; indicates EAS supported ACR scenarios.  If this attribute is not present, then the EAS does not support service continuity. |  |
| locInf | LocationInfo | O | 0..1 | Represents location information of the UE. |  |
| easTDnai | Dnai | O | 0..1 | Contains the target DNAI information which can be associated with potential target-EAS(s) |  |
| easSelSupInd | boolean | O | 0..1 | Indicates if the EEC requires the EAS selection support from the EES (e.g., for constrained device).  "true": the EAS selection is required from the EES.  "false" (default): the EAS selection is not required from the EES. | EdgeApp\_2 |
| suppFeat | SupportedFeatures | C | 0..1 | Represents a list of Supported features used as described in clause 6.3.7.  Shall be present in the HTTP POST request/response. |  |
| easIntTrigSup | boolean | O | 0..1 | Indicates to the EES whether the EAS instantiation triggering should be performed for the current request.  "false" (default): the EAS instantiation triggering should not be performed.  "true": the EAS instantiation triggering should be performed.  If the attribute is omitted, then it default value is "false". | EdgeApp\_2 |
| predictExpTime | DateTime | O | 0..1 | Represents the predicted expiration time by which the UE reaches location.  It is used by the EES as analytics input to get edge load analytics information from the ADAES service as described in clause 8.8.2 of 3GPP TS 23.436 [9]. | EdgeApp\_2 |
| servingPLMNInfo | PlmnIdNid | O | 0..1 | Represents the serving PLMN information (e.g. PLMN ID) which is serving the subscriber. (NOTE 1) | EdgeApp\_2 |
| svcContinuityPlanInd | boolean | O | 0..1 | Indicates to the EES whether the EAS discovery request is triggered as part of service continuity planning.  "true": this request is part of service continuity planning.  "false" (default): this request is not of part service continuity planning.  (NOTE 2) | EdgeApp\_2 |
| NOTE 1: This IE shall be included if edge node sharing is used.  NOTE 2: This attribute is used by EAS when invoking T-EAS discovery procedure. | | | | | |

Editor’s Note: Representing the MNO name in "EasDiscoveryReq" type needs to be clarified by stage-2.

##### 6.3.5.2.3 Type: EasDiscoveryResp

Table 6.3.5.2.3-1: Definition of type EasDiscoveryResp

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| discoveredEas | array(DiscoveredEas) | M | 1..N | List of EAS discovery information. (NOTE) |  |
| easInstInfos | map(EASInstantiationInfo) | O | 1..N | Contains the EAS instantiation information for each EAS identified by the "discoveredEas" attribute.  The key of the map shall be the EAS ID to which the provided instantiation information within the map value relates. | EdgeApp\_2 |
| edgeLoadAnalytics | map(EdgeLoadAnalytic) | O | 1..N | Contains the statistical analytics data and predictive analytics data for each discovered application server.  The key of the map shall be the EAS ID to which the provided analytics data within the map value relates. | EdgeApp\_2 |
| NOTE: If EAS discovery is used for ENS scenario, discovered EAS list contains only those EAS(s) which are allowed to be used by the subscribers of the serving MNO. | | | | | |

##### 6.3.5.2.4 Type: EasDiscoverySubscription

Table 6.3.5.2.4-1: Definition of type EasDiscoverySubscription

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| eecId | string | M | 1 | Represents a unique identifier of the EEC. |  |
| ueId | Gpsi | O | 0..1 | Represents the identifier of the UE. |  |
| easEventType | EASDiscEventIDs | M | 1 | Event type for which the EEC should be notified; |  |
| easDiscoveryFilter | EasDiscoveryFilter | O | 0..1 | EAS characteristics filter; Applicable when easEventType is set to "EAS\_AVAILABILITY\_CHANGE" event |  |
| easDynInfoFilter | EasDynamicInfoFilter | O | 0..1 | EAS dynamic information changes filter; Applicable when easEventType is set to "EAS\_DYNAMIC\_INFO\_CHANGE" event |  |
| easSvcContinuity | array(ACRScenario) | O | 1..N | Service continuity support; indicates EEC supported ACR scenarios.  (NOTE 1) |  |
| notificationDestination | Uri | O | 0..1 | URI where the EAS discovery notification should be delivered to. This attribute may be present in HTTP POST message to EES.  (NOTE 2, NOTE 3) |  |
| expTime | DateTime | O | 0..1 | Expiration time of the subscription. If the expiration time is not present, then it indicates that the EEC subscription never expires. |  |
| 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 of 3GPP TS 29.558 [4]. 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 of 3GPP TS 29.558 [4]. | Notification\_websocket |
| suppFeat | SupportedFeatures | C | 0..1 | Represents a list of Supported features used as described in clause 6.3.7.  Shall be present in the HTTP POST request/response. |  |
| easIntTrigSup | boolean | O | 0..1 | Indicates to the EES whether the EAS instantiation triggering should be performed for the current request.  "false" (default): the EAS instantiation triggering should not be performed.  "true": the EAS instantiation triggering should be performed.  If the attribute is omitted, then it default value is "false". | EdgeApp\_2 |
| eecTriggerRequest | boolean | O | 0..1 | Indicates to the EES, whether the application triggering is required by the EEC  "false" (default): the EEC doesn’t not require triggers.  "true": the EEC requires triggers.  (NOTE 2) | EdgeApp\_2 |
| NOTE 1: In the OpenAPI file this attribute is named as "easSvcContinuity", and for backward compatibility considerations kept as currently defined although it indicates the EEC supported ACR scenarios.  NOTE 2: Either notificationDestination or eecTriggerRequest may be included in the EAS discovery subscription request.  NOTE 3: The notificationDestination attribute may contain Notification Target Address URL received from the SNM-C as defined in clause 10. | | | | | |

##### 6.3.5.2.5 Type: EasDiscoveryNotification

Table 6.3.5.2.5-1: Definition of type EasDiscoveryNotification

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| subId | string | M | 1 | String identifying the individual subscription for which the service provisioning notification is delivered. |  |
| eventType | EASDiscEventIDs | M | 1 | Event type for which the notification is delivered; |  |
| discoveredEas | array(DiscoveredEas) | M | 1..N | List of EAS discovery information |  |
| easInstInfos | map(EASInstantiationInfo) | O | 1..N | Contains the EAS instantiation information for each EAS identified by the "discoveredEas" attribute.  The key of the map shall be the EAS ID to which the provided instantiation information within the map value relates. | EdgeApp\_2 |
| edgeLoadAnalytics | map(EdgeLoadAnalytic) | O | 1..N | Contains the statistical analytics data and predictive analytics data for each discovered application server.  The key of the map shall be the EAS ID to which the provided analytics data within the map value relates. | EdgeApp\_2 |

##### 6.3.5.2.6 Type: EasDiscoveryFilter

Table 6.3.5.2.6-1: Definition of type EasDiscoveryFilter

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| acChars | array(ACCharacteristics) | O | 1..N | AC description for which an EAS is needed |  |
| easChars | array(EasCharacteristics) | O | 1..N | Required EAS characteristics |  |
| NOTE 1: Either acChars or easChars shall be present.  NOTE 2: prefEcsps from the ACProfile shall not be present. | | | | | |

##### 6.3.5.2.7 Type: EasCharacteristics

Table 6.3.5.2.7-1: Definition of type EasCharacteristics

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| easId | string | O | 0..1 | The application identifier of the EAS, e.g. FQDN, URI. |  |
| easProvId | string | O | 0..1 | EAS provider identifier |  |
| appGrpId | string | O | 0..1 | The application group identifier, identifying a group of UEs using the same application service. | EdgeApp\_2 |
| easSyncInd | boolean | O | 0..1 | Indicates whether the synchronization between the EASs is required.  "true": the EAS synchronization is required.  "false" (default): the EAS synchronization is not required. | EdgeApp\_2 |
| stdEasType | EASCategory | O | 0..1 | The EAS type with the 3GPP standardized value set.  (NOTE 2) |  |
| easType | string | O | 0..1 | The EAS type with flexible value set between the EEC and the EAS. |  |
| easSched | TimeWindow | O | 0..1 | EAS availability schedule |  |
| svcArea | LocationArea5G | O | 0..1 | Service availability area (geographical and topological) |  |
| easSvcContinuity | array(ACRScenario) | O | 1..N | The ACR scenarios required by the EAS for service continuity. If this attribute is not present, then the EAS does not require to support service continuity. |  |
| svcPermLevel | string | O | 0..1 | Service permissions level |  |
| svcFeats | array(string) | O | 1..N | Service features |  |
| easBundleInfo | EASBundleInfo | O | 0..1 | Represents the EAS bundle information. | EdgeApp\_2 |
| NOTE 1: Must include at least one optional IE.  NOTE 2: The "stdEasType" attribute and the "easType" 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). | | | | | |

##### 6.3.5.2.8 Type: DiscoveredEas

Table 6.3.5.2.8-1: Definition of type DiscoveredEas

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| eas | EASProfile | M | 1 | Contains an EAS matching the discovery request filters |  |
| lifeTime | DateTime | O | 0..1 | Indicates the time duration for which the EAS information is valid and supposed to be cached in the EEC. |  |

##### 6.3.5.2.9 Type: EasDynamicInfoFilter

Table 6.3.5.2.9-1: Definition of type EasDynamicInfoFilter

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| dynInfoFilter | array(EasDynamicInfoFilterData) | M | 1..N | List of EAS dynamic information required by the EEC per EAS |  |

##### 6.3.5.2.10 Type: EasDynamicInfoFilterData

Table 6.3.5.2.10-1: Definition of type EasDynamicInfoFilterData

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| easId | string | M | 1 | The application identifier of the EAS, e.g. FQDN, URI. |  |
| easStatus | boolean | O | 0..1 | Notify if EAS status changed |  |
| easAcIds | boolean | O | 0..1 | Notify if list of AC identifiers changed |  |
| easDesc | boolean | O | 0..1 | Notify if EAS description changed |  |
| easPt | boolean | O | 0..1 | Notify if EAS endpoint changed |  |
| easEndPoint | EndPoint | O | 0..1 | Contains the EAS endpoint to be monitored by the EES. | EdgeApp\_2 |
| easFeature | boolean | O | 0..1 | Notify if EAS feature changed |  |
| easSchedule | boolean | O | 0..1 | Notify if EAS schedule changed |  |
| svcArea | boolean | O | 0..1 | Notify if EAS service area changed |  |
| svcKpi | boolean | O | 0..1 | Notify if EAS KPIs changed |  |
| svcCont | boolean | O | 0..1 | Notify if EAS supported ACR changed |  |

##### 6.3.5.2.11 Type: ACCharacteristics

Table 6.3.5.2.11-1: Definition of type ACCharacteristics

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| acProf | ACProfile | M | 1 | Profiles of ACs for which the EEC provides edge enabling services. |  |

##### 6.3.5.2.12 Type: EasDiscoverySubscriptionPatch

Table 6.3.5.2.12-1: Definition of type EasDiscoverySubscriptionPatch

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| easDiscoveryFilter | EasDiscoveryFilter | O | 0..1 | EAS characteristics filter; Applicable when easEventType is set to "EAS\_AVAILABILITY\_CHANGE" event. |  |
| easDynInfoFilter | EasDynamicInfoFilter | O | 0..1 | EAS dynamic information changes filter; Applicable when easEventType is set to "EAS\_DYNAMIC\_INFO\_CHANGE" event. |  |
| easSvcContinuity | array(ACRScenario) | O | 1..N | Service continuity support; indicates EEC supported ACR scenarios.  (NOTE) |  |
| expTime | DateTime | O | 0..1 | Expiration time of the subscription. |  |
| easEventType | EASDiscEventIDs | O | 0..1 | Event type for which the EEC should be notified. |  |
| NOTE: In the OpenAPI file this attribute is named as "easSvcContinuity", and for backward compatibility considerations kept as currently defined although it indicates the EEC supported ACR scenarios. | | | | | |

##### 6.3.5.2.13 Type: RequestorId

Table 6.3.5.2.13-1: Definition of type RequestorId

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| eesId | string | C | 0..1 | The identifier of the EES (e.g. S-EES). |  |
| easId | string | C | 0..1 | The application identifier of the EAS (e.g. S-EAS), e.g. FQDN, URI. |  |
| eecId | string | C | 0..1 | The identifier of the EEC. |  |
| NOTE: Either the "eecId" attribute, the "eesId" attribute or the "easId" attribute shall be provided, they are mutually exclusive. | | | | | |

##### 6.3.5.2.14 Type: EdgeLoadAnalytic

Table 6.3.5.2.14-1: Definition of type EdgeLoadAnalytic

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| easId | string | M | 1 | The application identifier of the EAS, e.g. FQDN, URI. |  |
| predictData | PredictiveData | O | 0..1 | Contains the predictive analytics data for each discovered EAS service status (e.g. EAS schedule, EAS status) change.  (NOTE 1) |  |
| statisticData | StatisticalData | O | 0..1 | Contains the statistical analytics data (e.g. number of times the client received expected performance from the EAS).  (NOTE 2) |  |
| NOTE 1: The EES may provide the "predictData" attribute within the EAS discovery response and if the eventType is set to the "EAS\_DYNAMIC\_INFO\_CHANGE" event within the EAS discovery notification request.  NOTE 2: The EES may provide the "statisticData" attribute within the EAS discovery response and if the eventType is set to the "EAS\_AVAILABILITY\_CHANGE" event within the EAS discovery notification request. | | | | | |

##### 6.3.5.2.15 Type: PredictiveData

Table 6.3.5.2.15-1: Definition of type PredictiveData

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| scheds | array(ScheduledCommunicationTime) | O | 1..N | Indicates the availability schedule of the EAS. |  |
| status | string | O | 0..1 | Indicates the EAS status (e.g. Enabled, Disabled etc.). |  |

##### 6.3.5.2.16 Type: StatisticalData

Table 6.3.5.2.16-1: Definition of type StatisticalData

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| numRecPerf | Uinteger | O | 0..1 | Indicates a number of times the client received expected performance from the EAS. |  |

#### 6.3.5.3 Simple data types and enumerations

##### 6.3.5.3.1 Introduction

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

##### 6.3.5.3.2 Simple data types

The simple data types defined in table 6.3.5.3.2-1 shall be supported.

Table 6.3.5.3.2-1: Simple data types

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

##### 6.3.5.3.3 Enumeration: EASDiscEventIDs

The enumeration EASDiscEventIDs represents the ACR events supported. It shall comply with the provisions defined in table 6.3.5.3.3-1.

Table 6.3.5.3.3-1: Enumeration EASDiscEventIDs

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| EAS\_AVAILABILITY\_CHANGE | Represents the EAS availability change event |  |
| EAS\_DYNAMIC\_INFO\_CHANGE | Represents the EAS dynamic information change event |  |

### 6.3.6 Error Handling

#### 6.3.6.1 General

For the Eees\_EASDiscovery API, HTTP error responses shall be supported as specified in clause 5.2.6 of 3GPP TS 29.122 [3]. Protocol errors and application errors specified in clause 5.2.6 of 3GPP TS 29.122 [3] shall be supported for the HTTP status codes specified in table 5.2.6-1 of 3GPP TS 29.122 [3].

In addition, the requirements in the following clauses are applicable for the Eees\_EASDiscovery API.

#### 6.3.6.2 Protocol Errors

No specific protocol errors for the Eees\_EASDiscovery API are specified.

#### 6.3.6.3 Application Errors

The application errors defined for the Eees\_EASDiscovery service are listed in Table 6.3.6.3-1.

Table 6.3.6.1-1: Application errors

|  |  |  |
| --- | --- | --- |
| Application Error | HTTP status code | Description |
| REGISTRATION\_REQUIRED | 403 Forbidden | Indicates that the registration is required for the EEC to perform the operation. |

### 6.3.7 Feature negotiation

General feature negotiation procedures are described in clause 7.8 of 3GPP TS 29.558 [4]. Table 6.3.7-1 lists the supported features for Eees\_EASDiscovery API.

Table 6.3.7-1: Supported Features

|  |  |  |
| --- | --- | --- |
| Feature number | Feature Name | Description |
| 1 | Notification\_test\_event | Testing of notification connection is supported according to clause 7.6 of 3GPP TS 29.558 [4]. |
| 2 | Notification\_websocket | The delivery of notifications over Websocket is supported according to clause 7.6 of 3GPP TS 29.558 [4]. This feature requires that the Notification\_test\_event feature is also supported. |
| 3 | enNB1 | This feature indicates the support of the support of enhancements to this northbound API in Rel-18. |
| 4 | EdgeApp\_2 | This feature indicates support of the enhancements for the Enabling Edge Applications. Within this feature the following enhancements are covered:  - support of constrained devices for Edge (e.g. support of the EEC with Reduced Capabilities);  - support of the EAS instantiation triggering;  - support of the EAS synchronization;  - support of EAS bundle information;  - support for predicted/expected UE location or Geographical service area during service continuity; and  - obtaining edge load analytics information. |

## 6.4 Eees\_ACREvents API

### 6.4.1 API URI

The request URI used in each HTTP request from the EEC towards the EES shall have the structure as defined in clause 7.5 of 3GPP TS 29.558 [4] with the following clarifications:

- The {apiRoot} shall be set as described in clause 7.5 of 3GPP TS 29.558 [4].

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

- The <apiVersion> shall be "v1".

- The <apiSpecificResourceUriPart> shall be set as described in clause 6.4.2.

### 6.4.2 Resources

#### 6.4.2.1 Overview



Figure 6.4.2.1-1: Resource URI structure of the Eees\_ACREvents API

Table 6.4.2.1-1 provides an overview of the resources and applicable HTTP methods.

Table 6.4.2.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method or custom operation | Description |
| ACR events subscriptions | /subscriptions | POST | Creates a new individual ACR events subscription. |
| Individual ACR events subscription | /subscriptions/{subscriptionId} | PUT | Updates an existing individual ACR events subscription identified by the subscriptionId. |
| DELETE | Deletes an existing individual ACR events subscription identified by the subscriptionId. |
| PATCH | Partially updates an existing individual ACR events subscription identified by the subscriptionId. |

#### 6.4.2.2 Resource: ACR events subscriptions

##### 6.4.2.2.1 Description

This resource represents a collection of ACR related events subscriptions with an EES.

##### 6.4.2.2.2 Resource Definition

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

This resource shall support the resource URI variables defined in table 6.4.2.2.2-1.

Table 6.4.2.2.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5 of 3GPP TS 29.558 [4]. |

##### 6.4.2.2.3 Resource Standard Methods

6.4.2.2.3.1 POST

This method creates a new subscription. This method shall support the URI query parameters specified in table 6.4.2.2.3.1-1.

Table 6.4.2.2.3.1-1: 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 6.4.2.2.3.1-2 and the response data structures and response codes specified in table 6.4.2.2.3.1-3.

Table 6.4.2.2.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| ACREventsSubscription | M | 1 | Create an Individual ACR events subscription resource. |

Table 6.4.2.2.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| ACREventsSubscription | M | 1 | 201 Created | Individual ACR events subscription resource created successfully.  The URI of the created resource shall be returned in the "Location" HTTP header |
| NOTE: The manadatory HTTP error status code for the POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

Table 6.4.2.2.3.1-4: Headers supported by the POST method on this resource

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

Table 6.4.2.2.3.1-5: 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-acrevents/<apiVersion>/subscriptions/{subscriptionId} |

##### 6.4.2.2.4 Resource Custom Operations

None.

#### 6.4.2.3 Resource: Individual ACR events subscription

##### 6.4.2.3.1 Description

This resource represents modification or deletion of an Individual ACR events subscription resource.

##### 6.4.2.3.2 Resource Definition

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

This resource shall support the resource URI variables defined in table 6.4.2.3.2-1.

Table 6.4.2.3.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5 of 3GPP TS 29.558 [4]. |
| subscriptionId | string | The identifier of a specific individual ACR events subscription. |

##### 6.4.2.3.3 Resource Standard Methods

6.4.2.3.3.1 PUT

This method updates the individual ACR events subscription resource by completely replacing the existing subscription data (except subscriptionId). This method shall support the URI query parameters specified in table 6.4.2.3.3.1-1.

Table 6.4.2.3.3.1-1: 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 6.4.2.3.3.1-2 and the response data structures and response codes specified in table 6.4.2.3.3.1-3.

Table 6.4.2.3.3.1-2: Data structures supported by the PUT Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| ACREventsSubscription | M | 1 | An individual ACR events subscription resource to be updated. |

Table 6.4.2.3.3.1-3: Data structures supported by the PUT Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| ACREventsSubscription | M | 1 | 200 OK | An individual ACR events subscription resource updated successfully and the ACREventsSubscription data shall be included in the response. |
| n/a |  |  | 204 No Content | An individual ACE events subscription resource updated successfully. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection, during resource 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 [3] with the difference that the SCEF is replaced by the EES and the SCS/AS is replaced by the EEC. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection, during resource 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 [3] with the difference that the SCEF is replaced by the EES and the SCS/AS is replaced by the EEC. |
| NOTE: The manadatory HTTP error status code for the PUT method listed in Table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

Table 6.4.2.3.3.1-4: Headers supported by the PUT method on this resource

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

Table 6.4.2.3.3.1-5: Headers supported by the 200 response code on this resource

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

Table 6.4.2.3.3.1-6: Links supported by the 200 Response Code on this endpoint

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Resource name | HTTP method or custom operation | Link parameter(s) | Description |
| n/a |  |  |  |  |

Table 6.4.2.3.3.1-7: 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 6.4.2.3.3.1-8: 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. |

6.4.2.3.3.2 DELETE

This method terminates an existing individual ACR events subscription. This method shall support the URI query parameters specified in table 6.4.2.3.3.2-1.

Table 6.4.2.3.3.2-1: 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 6.4.2.3.3.2-2 and the response data structures and response codes specified in table 6.4.2.3.3.2-3.

Table 6.4.2.3.3.2-2: Data structures supported by the DELETE Request Body on this resource

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

Table 6.4.2.3.3.2-3: Data structures supported by the DELETE Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| n/a |  |  | 204 No Content | An individual individual ACR events subscription resource deleted successfully. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection, during resource 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 [3] with the difference that the SCEF is replaced by the EES and the SCS/AS is replaced by the EEC. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection, during resource 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 [3] with the difference that the SCEF is replaced by the EES and the SCS/AS is replaced by the EEC. |
| NOTE: The manadatory HTTP error status code for the DELETE method listed in Table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

Table 6.4.2.3.3.2-4: Headers supported by the DELETE method on this resource

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

Table 6.4.2.3.3.2-5: Headers supported by the 204 response code on this resource

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

Table 6.4.2.3.3.2-6: 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 6.4.2.3.3.2-7: 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. |

6.4.2.3.3.3 PATCH

This method partially updates the individual ACR events subscription resource. This method shall support the URI query parameters specified in table 6.4.2.3.3.3-1.

Table 6.4.2.3.3.3-1: 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 6.4.2.3.3.3-2 and the response data structures and response codes specified in table 6.4.2.3.3.3-3.

Table 6.4.2.3.3.3-2: Data structures supported by the PATCH Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| ACREventsSubscriptionPatch | M | 1 | An individual ACR events subscription resource to be updated. |

Table 6.4.2.3.3.3-3: Data structures supported by the PATCH Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| ACREventsSubscription | M | 1 | 200 OK | An individual ACR events subscription resource updated successfully and the ACREventsSubscription data shall be included in the response. |
| n/a |  |  | 204 No Content | An individual ACE events subscription resource updated successfully. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection, during resource 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 [3] with the difference that the SCEF is replaced by the EES and the SCS/AS is replaced by the EEC. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection, during resource 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 [3] with the difference that the SCEF is replaced by the EES and the SCS/AS is replaced by the EEC. |
| NOTE: The manadatory HTTP error status code for the PATCH method listed in Table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

Table 6.4.2.3.3.3-4: Headers supported by the PATCH method on this resource

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

Table 6.4.2.3.3.3-5: Headers supported by the 200 response code on this resource

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

Table 6.4.2.3.3.3-6: Links supported by the 200 Response Code on this endpoint

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Resource name | HTTP method or custom operation | Link parameter(s) | Description |
| n/a |  |  |  |  |

Table 6.4.2.3.3.3-7: 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 6.4.2.3.3.3-8: 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. |

##### 6.4.2.3.4 Resource Custom Operations

None.

### 6.4.3 Custom operations without associated resources

None.

### 6.4.4 Notifications

#### 6.4.4.1 General

Table 6.4.4.1-1: Notifications overview

|  |  |  |  |
| --- | --- | --- | --- |
| Notification | Callback URI | HTTP method or custom operation | Description  (service operation) |
| ACR Information Notification | {notificationDestination} | POST | Notifies EEC for the ACR information notification. |

#### 6.4.4.2 ACR Information Notification

##### 6.4.4.2.1 Description

ACR Information Notification is used by the EES to notify an EEC for the following ACR information:

- target information, i.e. the details of the selected T-EAS, if required, the selected T-EES, during the ACR procedures and, if required, the identifier of the AC;

- ACR complete events.

##### 6.4.4.2.2 Notification definition

The POST method shall be used by the EES for sending notifications and the notification destination shall be the callback URI as provided by the EEC during the ACR events subscription.

Callback URI: **{notificationDestination}**

This method shall support the URI query parameters specified in table 6.4.4.2.2-1.

Table 6.4.4.2.2-1: 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 6.4.4.2.2-2 and the response data structures and response codes specified in table 6.4.4.2.2-3.

Table 6.4.4.2.2-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| ACRInfoNotification | M | 1 | Notification of ACR information. |

Table 6.4.4.2.2-3: 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. |
| NOTE: The mandatory HTTP error status code for the POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

### 6.4.5 Data Model

#### 6.4.5.1 General

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

Table 6.4.5.1-1 specifies the data types defined specifically for the Eees\_ACREvents API service.

Table 6.4.5.1-1: Eees\_ACREvents API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| ACRCompleteEventInfo | 6.4.5.2.7 |  |  |
| ACREventIDs | 6.4.5.3.3 |  |  |
| ACREventsSubscription | 6.4.5.2.2 |  |  |
| ACREventsSubscriptionPatch | 6.4.5.2.5 |  |  |
| ACRInfoNotification | 6.4.5.2.3 |  |  |
| EecCtxtRelocStatus | 6.4.5.2.6 |  |  |
| TargetInfo | 6.4.5.2.4 |  |  |

Table 6.4.5.1-2 specifies data types re-used by the Eees\_ACREvents API service.

Table 6.4.5.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| DateTime | 3GPP TS 29.122 [3] |  |  |
| DiscoveredEas | Clause 6.3.5.2.8 |  |  |
| EDNConfigInfo | Clause 8.1.5.2.7 |  |  |
| EndPoint | 3GPP TS 29.558 [4] |  |  |
| Gpsi | 3GPP TS 29.571 [5] |  |  |
| ImplicitRegDetails | 3GPP TS 29.558 [4] |  |  |
| SupportedFeatures | 3GPP TS 29.571 [5] |  |  |
| Uri | 3GPP TS 29.122 [3] |  |  |
| WebsockNotifConfig | 3GPP TS 29.122 [3] |  |  |

#### 6.4.5.2 Structured data types

##### 6.4.5.2.1 Introduction

##### 6.4.5.2.2 Type: ACREventsSubscription

Table 6.4.5.2.2-1: ACREventsSubscription

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| eecId | string | M | 0..1 | Represents a unique identifier of the EEC. |  |
| ueId | Gpsi | O | 0..1 | Represents the identifier of the UE. |  |
| expTime | DateTime | O | 0..1 | Indicates the expiration time of the subscription. If the expiration time is not present, then it indicates that the EEC subscription never expires. |  |
| easIds | array(string) | M | 1..N | The list of application identifiers of the EASs, e.g. FQDN, URI. |  |
| acIds | array(string) | O | 1..N | The list of identifier of the AC(s) (NOTE 1) |  |
| eventIds | ACREventIDs | M | 1 | Specifies the events for which EEC is subscribing. |  |
| notificationDestination | Uri | M | 1 | URI where the ACR Information Notification should be delivered to. (NOTE 2) |  |
| requestTestNotification | boolean | O | 0..1 | Set to true by Subscriber to request the ECS to send a test notification as defined in clause 7.6 of 3GPP TS 29.558 [4]. 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 of 3GPP TS 29.558 [4]. | Notification\_websocket |
| suppFeat | SupportedFeatures | O | 0..1 | Used to negotiate the supported optional features of the API as described in clause 7.8 of 3GPP TS 29.558 [4].  This attribute shall be provided in the HTTP POST request and in the response of successful resource creation. |  |
| NOTE 1: If acIds attribute is not included, it implies that the subscription corresponds to all ACs that can be served by the EAS(s) included this message.  NOTE 2: The notificationDestination attribute may contain Notification Target Address URL received from the SNM-C as defined in clause 10. | | | | | |

##### 6.4.5.2.3 Type: ACRInfoNotification

Table 6.4.5.2.3-1: ACRInfoNotification

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| subId | string | M | 1 | String identifying the Individual ACR events subscription for which the ACT Information notification is delivered. |  |
| easId | string | M | 1 | The application identifier of the EAS, e.g. FQDN, URI. |  |
| eventId | ACREventIDs | M | 1 | Specifies the events for which notification is sent |  |
| acId | string | O | 0..1 | Contains the identifier of the AC. |  |
| trgtInfo (NOTE 1) | TargetInfo | O | 0..1 | Details of the selected T-EAS and the T-EES. |  |
| acrStatus | ACRCompleteEventInfo | C | 0..1 | Details of a completed ACR and its result.  This attribute shall be included when Event ID indicates 'ACR\_COMPLETE' event |  |
| eecCtxtReloc (NOTE 3) | EecCtxtRelocStatus | O | 0..1 | Specifies the registration id and expiry time of the registration. |  |
| NOTE 1: This attribute shall be included when Event ID indicates 'TARGET\_INFORMATION' event  NOTE 2: This attribute shall be included when the ACRRes attribute indicates failure.  NOTE 3: This attribute shall be included when eventId indicates 'ACR\_COMPLETE' event and EEC context relocation was attempted. | | | | | |

##### 6.4.5.2.4 Type: TargetInfo

Table 6.4.5.2.4-1: TargetInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| trgetEASInfo | DiscoveredEas | M | 1 | EAS discovery information. |  |
| trgetEESInfo | EDNConfigInfo | O | 0..1 | Provides EDN configuration information. This attribute shall be included only if the selected T-EES is different from the S-EES. |  |

##### 6.4.5.2.5 Type: ACREventsSubscriptionPatch

Table 6.4.5.2.5-1: ACREventsSubscriptionPatch

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| expTime | DateTime | O | 0..1 | Indicates the expiration time of the subscription. |  |
| easIds | array(string) | O | 1..N | The list of application identifiers of the EASs, e.g. FQDN, URI. |  |
| eventIds | ACREventIDs | O | 0..1 | Specifies the events for which EEC is subscribing. |  |
| notificationDestination | Uri | O | 0..1 | URI where the ACR Information Notification should be delivered to. (NOTE) |  |
| NOTE: The notificationDestination attribute may contain with Notification Target Address URL received from the SNM-C as defined in clause 10. | | | | | |

##### 6.4.5.2.6 Type: EecCtxtRelocStatus

Table 6.4.5.2.6-1: EecCtxtRelocStatus

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| implReg | ImplicitRegDetails | O | 0..1 | Provides implicit registration details  (NOTE) |  |
| NOTE 1: This attribute shall be included when the S-EES has received it in EEC Context Push response. | | | | | |

##### 6.4.5.2.7 Type: ACRCompleteEventInfo

Table 6.4.5.2.7-1: ACRCompleteEventInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| acrRes | boolean | M | 1 | Indicates whether the ACR is successful or failure |  |
| tEasEndpoint | EndPoint | M | 1 | Contains the endpoint address of the T-EAS to which an ACR has been performed. |  |
| failReason | string | C | 0..1 | Indicates the cause information for the failure  This attribute shall be included when the acrRes attribute indicates failure |  |

#### 6.4.5.3 Simple data types and enumerations

##### 6.4.5.3.1 Introduction

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

##### 6.4.5.3.2 Simple data types

The simple data types defined in table 6.4.5.3.2-1 shall be supported.

Table 6.4.5.3.2-1: Simple data types

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

##### 6.4.5.3.3 Enumeration: ACREventIDs

The enumeration ACREventIDs represents the ACR events supported. It shall comply with the provisions defined in table 6.4.5.3.3-1.

Table 6.4.5.3.3-1: Enumeration ACREventIDs

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| TARGET\_INFORMATION |  |  |
| ACR\_COMPLETE |  |  |

### 6.4.6 Error Handling

General error handling are described in clause 7.7 of 3GPP TS 29.558 [4].

### 6.4.7 Feature negotiation

General feature negotiation procedures are described in clause 7.8 of 3GPP TS 29.558 [4]. Table 6.4.7-1 lists the supported features for Eees\_ACREvents API.

Table 6.4.7-1: Supported Features

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

## 6.5 Eees\_AppContextRelocation API

### 6.5.1 Introduction

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

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

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

The request URI used in HTTP requests shall have the Resource URI structure defined in clause 7.5 of 3GPP TS 29.558 [4], i.e:

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

with the following components:

- The {apiRoot} shall be set as described in clause 7.5 of 3GPP TS 29.558 [4].

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

- The <apiVersion> shall be "v1".

- The <apiSpecificResourceUriPart> shall be set as described in clause 6.5.2.

### 6.5.2 Resources

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

### 6.5.3 Custom Operations without associated resources

#### 6.5.3.1 Overview

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



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

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

Table 6.5.3.1-1: Custom operations without associated resources

|  |  |  |  |
| --- | --- | --- | --- |
| Operation name | Custom operation URI | Mapped HTTP method | Description |
| Determine | /determine | POST | EES or EAS determines if ACR is needed and may initiate the procedure |
| Initiate | /initiate | POST | EES initiates the requested ACR procedure |
| Declare | /declare | POST | EAS declares the selected target EAS and the associated 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 [7].

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. EEC and EAS.

#### 6.5.3.2 Operation: Determine

##### 6.5.3.2.1 Description

This custom operation allows the EEC or the EAS to request that the EES evaluates if ACR is needed and subsequently initiate the ACR procedure if required.

##### 6.5.3.2.2 Operation Definition

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

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

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

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| n/a |  |  | 204 No Content | Successful case. The ACR request is successfully received and processed. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative target URI located in an alternative EES.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [2]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative target URI located in an alternative EES.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [2] |
| NOTE: The manadatory HTTP error status code for the POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

Table 6.5.3.2.2-3: Headers supported by the 307 Response Code on this resource

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

Table 6.5.3.2.2-4: Headers supported by the 308 Response Code on this resource

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

#### 6.5.3.3 Operation: Initiate

##### 6.5.3.3.1 Description

This custom operation allows the EEC to request initiation of an ACR procedure.

##### 6.5.3.3.2 Operation Definition

This operation shall support the request data structures and the response data structures and response codes specified in tables 6.5.3.3.2-1 and 6.5.3.3.2-2.

Table 6.5.3.3.2-1: Data structures supported by the POST Request Body on this resource

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

Table 6.5.3.3.2-2: 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 ACR request is successfully received and processed. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative target URI located in an alternative EES.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [2]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative target URI located in an alternative EES.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [2] |
| NOTE: The manadatory HTTP error status code for the POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

Table 6.5.3.3.2-3: 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 6.5.3.3.2-4: 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. |

#### 6.5.3.4 Operation: Declare

##### 6.5.3.4.1 Description

This custom operation allows an S-EAS to declare the selected target EAS and the associated information.

##### 6.5.3.4.2 Operation Definition

This operation shall support the request data structures and the response data structures and response codes specified in tables 6.5.3.4.2-1 and 6.5.3.4.2-2.

Table 6.5.3.4.2-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| AcrDecReq | M | 1 | Contains the selected target EAS information. |

Table 6.5.3.4.2-2: 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 selected target EAS information 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 EES.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [2]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative target URI located in an alternative EES.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [2] |
| NOTE: The mandatory HTTP error status code for the POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

Table 6.5.3.4.2-3: Headers supported by the 307 Response Code on this resource

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

Table 6.5.3.4.2-4: 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. |

### 6.5.4 Notifications

None

### 6.5.5 Data Model

#### 6.5.5.1 General

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

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

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

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| AcrDecReq | 6.5.5.2.4 |  |  |
| AcrDetermReq | 6.5.5.2.2 |  |  |
| AcrInitReq | 6.5.5.2.3 |  |  |
| EecCtxtReloc | 6.5.5.2.5 |  |  |
| ExpectedLocationArea | 6.5.5.2.6 | Represents the predicted/expected location information of the UE or the geographical service area | EdgeApp\_2 |

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

Table 6.5.5.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| DateTime | 3GPP TS 29.122 [3] | Represents the predicted expiration time by which the UE reaches location. |  |
| DurationSec | 3GPP TS 29.122 [3] | Unsigned integer identifying a period of time in units of seconds. |  |
| EndPoint | 3GPP TS 29.558 [4] | Represents the endpoint information of an EAS. |  |
| Gpsi | 3GPP TS 29.571 [5] | Represents a GPSI. |  |
| LocationArea5G | 3GPP TS 29.122 [3] | Represents the service area of the UE. | EdgeApp\_2 |
| LocationInfo | 3GPP TS 29.122 [3] | Represents the location information of the UE. | EdgeApp\_2 |
| RouteToLocation | 3GPP TS 29.571 [5] | Represent the N6 traffic routing information and/or routing profile ID for a DNAI. |  |

#### 6.5.5.2 Structured data types

##### 6.5.5.2.1 Introduction

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

##### 6.5.5.2.2 Type: AcrDetermReq

Table 6.5.5.2.2-1: Definition of type AcrDetermReq

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| requestorId | string | M | 1 | Contains the identifier of the EEC or the EAS that is sending the request. |  |
| easId | string | O | 0..1 | Contains the application identifier of the EAS, e.g. FQDN, URI.. |  |
| sEasEndpoint | EndPoint | M | 1 | Contains the endpoint information of the selected S-EAS. |  |
| ueId | Gpsi | M | 1 | Contains the identifier of the concerned UE. |  |
| acId | string | O | 0..1 | Contains the identifier of the AC. |  |
| expectedLocArea | ExpectedLocationArea | O | 0..1 | Represents the predicted/expected location information of the UE or the geographical service area. | EdgeApp\_2 |

##### 6.5.5.2.3 Type: AcrInitReq

Table 6.5.5.2.3-1: Definition of type AcrInitReq

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| requestorId | string | M | 1 | Contains the identifier of the EEC that is sending the request. |  |
| easId | string | O | 0..1 | Contains the application identifier of the EAS, e.g. FQDN, URI. |  |
| ueId | Gpsi | M | 1 | Contains the identifier of the concerned UE. |  |
| acId | string | O | 0..1 | Contains the identifier of the AC. |  |
| tEasEndpoint | EndPoint | M | 1 | Contains the endpoint information of the T-EAS. |  |
| sEasEndpoint | EndPoint | C | 0..1 | Contains the endpoint information of the S-EAS.  This attribute shall be provided when the "easNotifInd" attribute is set to "true" or when the "prevEasNotifInd" attribute is present and set to "true". |  |
| prevTEasEndpoint | EndPoint | C | 0..1 | Contains the endpoint information of the previous T-EAS.  This attribute shall be provided when the EEC re-sends the ACR request to indicate that a previous ACR is to be cancelled. |  |
| routeReq | RouteToLocation | O | 0..1 | Contains the T-EAS's DNAI information and the corresponding N6 traffic routing information and/or routing profile ID. |  |
| simInactTime | DurationSec | O | 0..1 | Indicates whether a simultaneous EAS connectivity in service continuity is required and the inactive time guidance for keeping connectivity towards the S-EAS. |  |
| easNotifInd | boolean | M | 1 | Indicates whether the EAS should be notified about the need for ACR or ACR cancellation.  "true": Notification required.  "false" (default): Notification not required. |  |
| prevEasNotifInd | boolean | C | 0..1 | Indicates whether the EAS should be notified about ACR cancellation.  "true": Notification required.  "false" (default): Notification not required.  This attribute shall be provided when the EEC re-sends the ACR request to indicate that a previous ACR is to be cancelled. |  |
| eecCtxtReloc | EecCtxtReloc | O | 0..1 | Contains EEC context relocation information. |  |
| predictExpTime | DateTime | O | 0..1 | Represents the predicted expiration time by which the UE reaches location. | EdgeApp\_2 |
| expectedLocArea | ExpectedLocationArea | O | 0..1 | Represents the predicted/expected location information of the UE or the geographical service area. | EdgeApp\_2 |

##### 6.5.5.2.4 Type: AcrDecReq

Table 6.5.5.2.4-1: Definition of type AcrDecReq

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| requestorId | string | M | 1 | Contains the identifier of the EAS that is sending the request. |  |
| ueId | Gpsi | M | 1 | Contains the identifier of the concerned UE. |  |
| acId | string | O | 0..1 | Contains the identifier of the AC. |  |
| tEasId | string | M | 1 | Contains the application identifier of the selected target EAS, e.g. FQDN, URI. |  |
| tEasEndpoint | EndPoint | M | 1 | Contains the endpoint information of the selected target EAS. |  |
| expectedLocArea | ExpectedLocationArea | O | 0..1 | Represents the predicted/expected location information of the UE or the geographical service area. | EdgeApp\_2 |

##### 6.5.5.2.5 Type: EecCtxtReloc

Table 6.5.5.2.5-1: Definition of type EecCtxtReloc

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

##### 6.5.5.2.6 Type: ExpectedLocationArea

Table 6.5.5.2.6-1: Definition of type ExpectedLocationArea

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| locInfo | LocationInfo | O | 0..1 | Represents location information of the UE. |  |
| svcArea | LocationArea5G | O | 0..1 | The list of geographical and topological areas that the EES serves. |  |
| NOTE: Either location information or service area will be provided during service continuity. | | | | | |

#### 6.5.5.3 Simple data types and enumerations

##### 6.5.5.3.1 Introduction

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

##### 6.5.5.3.2 Simple data types

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

Table 6.5.5.3.2-1: Simple data types

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

### 6.5.6 Error Handling

General error handling are described in clause 7.7 of 3GPP TS 29.558 [4].

### 6.5.7 Feature negotiation

General feature negotiation procedures are defined in clause 7.8 of 3GPP TS 29.558 [4]. Table 6.5.7-1 lists the supported features for Eees\_AppContextRelocation API.

Table 6.5.7-1: Supported Features

|  |  |  |
| --- | --- | --- |
| Feature number | Feature Name | Description |
| 1 | EdgeApp\_2 | This feature indicates support of the enhancements for the Enabling Edge Applications. Within this feature the following enhacements are covered:  - support of prediction expiration time in the ACR request. |

## 6.6 Eees\_EASInformationProvisioning API

### 6.6.1 API URI

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

The request URIs used in HTTP requests shall have the Resource URI structure defined in clause 6.1 with the following clarifications:

- The {apiRoot} shall be set as described in clause 7.5 of 3GPP TS 29.558 [4].

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

- The <apiVersion> shall be "v1".

- The <apiSpecificResourceUriPart> shall be set as described in clause 6.6.3.1.

### 6.6.2 Resources

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

### 6.6.3 Custom operations without associated resources

#### 6.6.3.1 Overview

The structure of the custom operation URIs of the Eees\_EASInformationProvisioning API is shown in figure 6.6.3.1‑1.



Figure 6.6.3.1-1: Resource URI structure of the Eees\_EASInformationProvisioning API

Table 6.6.3.1-1 provides an overview of the custom operations and applicable HTTP methods defined for the Eees\_EASInformationProvisioning API.

Table 6.6.3.1-1: Custom operations without associated resources

|  |  |  |  |
| --- | --- | --- | --- |
| Operation name | Custom operation URI | Mapped HTTP method | Description |
| ACR scenario selection announcement | /acr-selection-announcement | POST | EEC exchanging ACR scenario selection for EAS. |
| ACR scenario selection request | /acr-selection-request | POST | EEC sharing ACR scenario selection for EAS bundle. |
| EAS selection | /eas-selection | POST | EEC requesting for EAS selection. |

#### 6.6.3.2 Operation: ACR scenario selection announcement

##### 6.6.3.2.1 Description

This custom operation allows the EEC to send the EAS information provisioning request to the EES to announce ACR scenario selection.

##### 6.6.3.2.2 Operation Definition

This operation shall support the request data structures, the response data structures and response codes specified in tables 6.6.3.2.2-1 and 6.6.3.2.2-2.

Table 6.6.3.2.2-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| AcrSelAnnounce | M | 1 | Information about the EEC exchanging ACR scenario selection for EAS. |

Table 6.6.3.2.2-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| n/a |  |  | 204 No Content | The ACR selection announcement information request is successfully received and processed. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative target URI located in an alternative EES.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [2]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative target URI located in an alternative EES.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [2]. |
| NOTE: The manadatory HTTP error status codes for the POST method listed in table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

Table 6.6.3.2.2-3: Headers supported by the 307 Response Code on this resource

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

Table 6.6.3.2.2-4: 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. |

#### 6.6.3.3 Operation: ACR scenario selection request

##### 6.6.3.3.1 Description

This custom operation allows the EEC to send the EAS information provisioning request to the EES to request ACR scenario selection.

##### 6.6.3.3.2 Operation Definition

This operation shall support the request data structures and the response data structures and response codes specified in tables 6.6.3.3.2-1 and 6.6.3.3.2-2.

Table 6.6.3.3.2-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| AcrSelReq | M | 1 | Information about the EEC sharing ACR scenario selection for EAS bundle. |

Table 6.6.3.3.2-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| AcrSelResp | M | 1 | 200 OK | The requested ACR selection information is returned successfully. |
| n/a |  |  | 204 No Content | The ACR selection information request is successfully received and processed. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative target URI located in an alternative EES.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [2]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative target URI located in an alternative EES.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [2]. |
| NOTE: The manadatory HTTP error status codes for the POST method listed in table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

Table 6.6.3.3.2-3: 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 6.6.3.3.2-4: 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. |

#### 6.6.3.4 Operation: EAS selection announcement

##### 6.6.3.4.1 Description

This custom operation allows the EEC to send the EAS information provisioning request to the EES for EAS selection announcement.

##### 6.6.3.4.2 Operation Definition

This operation shall support the request data structures and the response data structures and response codes specified in tables 6.5.3.4.2-1 and 6.5.3.4.2-2.

Table 6.6.3.4.2-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| EasSelAnnounce | M | 1 | Information about the EEC requesting for EAS selection. |

Table 6.6.3.4.2-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| EasSelAnnResp | M | 1 | 200 OK | The requested EAS selection announcement information is returned successfully. |
| n/a |  |  | 204 No Content | The EAS selection announcement information 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 EES.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [2]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative target URI located in an alternative EES.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [2]. |
| NOTE: The mandatory HTTP error status codes for the POST method listed in table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

Table 6.6.3.4.2-3: Headers supported by the 307 Response Code on this resource

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

Table 6.6.3.4.2-4: 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. |

### 6.6.4 Notifications

None.

### 6.6.5 Data Model

#### 6.6.5.1 General

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

Table 6.6.5.1-1 specifies the data types defined specifically for the Eees\_EASInformationProvisioning API service.

Table 6.6.5.1-1: Eees\_EASInformationProvisioning API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| AcrSelAnnounce | 6.6.5.2.2 |  |  |
| AcrSelReq | 6.6.5.2.3 |  |  |
| AcrSelResp | 6.6.5.2.5 |  |  |
| EasSelAnnounce | 6.6.5.2.4 |  |  |
| EasSelResp | 6.6.5.2.6 |  |  |

Table 6.6.5.1-2 specifies data types re-used by the Eees\_EASInformationProvisioning API service from other specifications, including a reference to their respective specifications and when needed, a short description of their use within the Eees\_EASInformationProvisioning.

Table 6.6.5.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| ACRScenario | 3GPP TS 29.558 [4] | To represent the selected ACR scenarios in ACR\_SELECTION event. |  |
| Dnai | 3GPP TS 29.571 [5] | Identifies a DNAI. |  |
| EASInstantiationInfo | 3GPP TS 29.558 [4] |  |  |
| EndPoint | 3GPP TS 29.558 [4] | Represents the endpoint information of an EAS. |  |
| LocationArea5G | 3GPP TS 29.122 [3] | Used to define the geographic and topological area served by EAS. |  |

#### 6.6.5.2 Structured data types

##### 6.6.5.2.1 Introduction

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

##### 6.6.5.2.2 Type: AcrSelAnnounce

Table 6.6.5.2.2-1: Definition of type AcrSelAnnounce

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description | Applicability |
| eecId | string | M | 0..1 | Represents a unique identifier of the EEC. |  |
| acId | string | M | 1 | Identity of the AC. |  |
| selEasIds | array(string) | M | 1 | The identifier(s) (e.g., FQDN, URI) of the selected EAS (or the selected EAS(s) for EAS bundles) which is either instantiated or instantiable. |  |
| selAcrScenarios | array(string) | M | 1 | The list of ACR scenarios (or the list of ACR scenarios for EAS bundles) selected by the EEC |  |
| selEasEndPoints | array(EndPoint) | O | 0..1 | The endpoint(s) of the selected EAS (or the selected EAS(s) for EAS bundles) when the selected EAS is instantiated |  |
| dnais | array(Dnai) | O | 0..1 | Represents list of Data network access identifier for each selected EAS identifier |  |
| svcArea | Array(LocationArea5G) | O | 0..1 | Service availability area (geographical and topological) for each selected EAS identifier |  |
| assEesEndPoints | array(EndPoint) | O | 0..1 | EES information which support the EAS bundle within the same DNAI |  |
| casInfo | EndPoint | O | 0..1 | Target cloud application server information provided by the AC. |  |

##### 6.6.5.2.3 Type: AcrSelReq

Table 6.6.5.2.3-1: Definition of type AcrSelReq

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description | Applicability |
| eecId | string | M | 0..1 | Represents a unique identifier of the EEC. |  |
| acId | string | M | 1 | Identity of the AC. |  |
| selEasIds | array(string) | M | 1 | The identifier(s) (e.g., FQDN, URI) of the selected EAS (or the selected EAS(s) for EAS bundles) which is either instantiated or instantiable. |  |
| acProf | ACProfile | O | 1 | Profiles of ACs for which the EEC provides edge enabling services. |  |
| selEasEndPoints | array(EndPoint) | O | 0..1 | The endpoint(s) of the selected EAS (or the selected EAS(s) for EAS bundles) when the selected EAS is instantiated |  |
| dnais | array(Dnai) | O | 0..1 | Represents list of Data network access identifier for each selected EAS identifier |  |
| svcArea | Array(LocationArea5G) | O | 0..1 | Service availability area (geographical and topological) for each selected EAS identifier |  |
| assEesEndPoints | array(EndPoint) | O | 0..1 | EES information which support the EAS bundle within the same DNAI |  |
| eecSvcContinuity | array(ACRScenario) | O | 1..N | Service continuity support; indicates EEC supported ACR scenarios. |  |
| assEesEndPoints | array(EndPoint) | O | 0..1 | EES information which support the EAS bundle within the same DNAI |  |
| casInfo | EndPoint | O | 0..1 | Target cloud application server information provided by the AC. |  |

##### 6.6.5.2.4 Type: EasSelAnnounce

Table 6.6.5.2.4-1: Definition of type EasSelAnnounce

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description | Applicability |
| eecId | string | M | 0..1 | Represents a unique identifier of the EEC. |  |
| acId | string | M | 1 | Identity of the AC. |  |
| selEasIds | array(string) | O | 1 | The identifier(s) (e.g., FQDN, URI) of the selected EAS (or the selected EAS(s) for EAS bundles) which is either instantiated or instantiable. |  |
| selEasEndPoints | array(EndPoint) | O | 0..1 | The endpoint(s) of the selected EAS (or the selected EAS(s) for EAS bundles) when the selected EAS is instantiated |  |
| eess | array(EESInfo) | O | 0..1 | Contains the list of EESs which support the application group identifier for common EAS announcement |  |
| appGrpId | string | M | 0..1 | The application group identifier, identifying a group of UEs using the same application service. |  |
| dnais | array(Dnai) | O | 0..1 | Represents list of Data network access identifier for each selected EAS identifier |  |
| svcArea | Array(LocationArea5G) | O | 0..1 | Service availability area (geographical and topological) for each selected EAS identifier |  |
| assEesEndPoints | array(EndPoint) | O | 0..1 | EES information which support the EAS bundle within the same DNAI |  |
| casInfo | EndPoint | O | 0..1 | Target cloud application server information provided by the AC. |  |

##### 6.6.5.2.5 Type: AcrSelResp

Table 6.6.5.2.5-1: Definition of type AcrSelResp

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description | Applicability |
| aCRScenarioList | array(ACRScenario) | M | 1..N | The list of ACR scenarios selected by the EES. |  |

##### 6.6.5.2.6 Type: EasSelResp

Table 6.6.5.2.6-1: Definition of type EasSelResp

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description | Applicability |
| easInstInfos | array(EASInstantiationInfo) | O | 1..N | The EAS instantiation information |  |

#### 6.6.5.3 Simple data types and enumerations

##### 6.6.5.3.1 Introduction

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

##### 6.6.5.3.2 Simple data types

The simple data types defined in table 6.6.5.3.2-1 shall be supported.

Table 6.6.5.3.2-1: Simple data types

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

### 6.6.6 Error Handling

General error handling is described in clause 7.7 of 3GPP TS 29.558 [4].

### 6.6.7 Feature negotiation

General feature negotiation procedures are defined in clause 7.8 of 3GPP TS 29.558 [4]. Table 6.6.7-1 lists the supported features for the Eees\_EASInformationProvisioning API.

Table 6.6.7-1: Supported Features

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

# 7 Services offered by Edge Configuration Server

## 7.1 Introduction

The table 7.1-1 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 7.1-1: List of ECS Service APIs

|  |  |  |  |
| --- | --- | --- | --- |
| Service Name | Service Operations | Operation Semantics | Consumer(s) |
| Eecs\_ServiceProvisioning | Request | Request/Response | EEC |
| Subscribe | Subscribe/Notify | EEC |
| Notify |
| UpdateSubscription |
| Unsubscribe |

Table 7.1-2 summarizes the corresponding Edge Configuration Server APIs defined in this specification.

Table 7.1-2: API Descriptions

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Service Name | Clause | Description | OpenAPI Specification File | apiName | Annex |
| Eecs\_ServiceProvisioning | 7.2 | Eecs Service Provisioning | TS24558\_Eecs\_ServiceProvisioning.yaml | eecs-serviceprovisioning | B.1 |

## 7.2 Eecs\_ServiceProvisioning Service

### 7.2.1 Service Description

The Eecs\_ServiceProvisioning API, as defined in 3GPP TS 23.558 [2], allows an EEC via the Eecs interface to obtain service provisioning information as a one-time request or to subscribe for reporting from the ECS.

### 7.2.2 Service Operations

#### 7.2.2.1 Introduction

The service operation defined for Eecs\_ServiceProvisioning API is shown in the table 7.2.2.1-1.

Table 7.2.2.1-1: Operations of the Eecs\_ServiceProvisioning API

|  |  |  |
| --- | --- | --- |
| Service operation name | Description | Initiated by |
| Eecs\_ServiceProvisioning\_Request | This service operation is used by the EEC to request for one-time service provisioning information. | EEC |
| Eecs\_ServiceProvisioning\_Subscribe | This service operation is used by the EEC to subscribe to ECS for reporting of service provisioning information. | EEC |
| Eecs\_ServiceProvisioning\_Notify | This service operation is used by the ECS to notify the EEC about the service provisioning information. | ECS |
| Eecs\_ServiceProvisioning\_UpdateSubscription | This service operation is used by the EEC to update its subscription at ECS for reporting of service provisioning information. | EEC |
| Eecs\_ServiceProvisioning\_Unsubscribe | This service operation is used by the EEC to remove its subscription from ECS for reporting of service provisioning information. | EEC |

#### 7.2.2.2 Eecs\_ServiceProvisioning\_Request

##### 7.2.2.2.1 General

This service operation is used by the EEC to request for one-time service provisioning information.

##### 7.2.2.2.2 EEC requesting service provisioning information using Eecs\_ServiceProvisioning\_Request operation

To request for the one-time service provisioning information, the EEC shall send an HTTP POST request (custom operation: "Request") to the ECS with the request URI set to"{apiRoot}/eecs-serviceprovisioning/<apiVersion>/request". And the body including the ECSServProvReq data structure, as specified in clause 8.1.5.2.2.

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

a) process the EEC service provisioning request information;

b) verify and check if the EEC is authorized to request service provisioning information from ECS;

c) if the EEC is authorized to request service provisioning information from ECS, then the ECS:

1) may obtain the UE's location as specified in clause 5.3 of 3GPP TS 29.122 [3];

2) if AC profile(s) are provided by the EEC, the ECS identifies the EES(s) based on the provided AC profile(s) and the UE location, and if the enNB1 feature is supported, the "userLocation" attribute may be provided in the "locInf" attribute within the EasDiscoveryReq data type;

i) if acSvcContSupp information is included in the AC Profile, the matching EES has to support ACRScenario indicated in the acSvcContSupp information; and

ii) for each AC Profile, if eass information is included in the AC Profile, the ECS identifies the matching EES such that the EES profile matches easId information. ECS may also include EAS instantiation information using "easInstInfos" attribute in eass information;

3) if AC profiles(s) are not provided:

i. if available, the ECS identifies the EES(s) based on the UE-specific service information at the ECS and the UE location; and

ii. ECS identifies the EES(s) by applying the ECSP policy (e.g. based on the UE location);

4) if the EdgeApp\_2 feature is supported:

i. the ECS may identify the EES based on the EEC service continuity support information and EES service continuity support information; and

ii. if the EEC provided the list of desired ECSP identifiers within the "ecspIds" attribute, the ECS shall identify the matching EESs based on the registered ECSP identifier in EES profile and the received list of desired ECSP identifiers; and

iii) if the ECS is provisioned with authentication methods supported by matching EES(s) as specified in clause 6.3 of 3GPP TS 33.558 [7], then the ECS may include the "eesAuthMethods" attribute for each candidate EES(s) as specified in clause 8.1.5.2.9 in the ECSServProvResp and if multiple authentication methods are supported by the EES, then it is left to the EEC implementation to choose any method it supports when it communicates with the EES; and

5) the ECS also determines other information that needs to be provisioned, e.g. identification of the EDN, EDN service area, EES endpoints; and

d) if the ECS is able to determine service provisioning information using the inputs in service provisioning request, UE-specific service information at the ECS or the ECSP's policy, then the ECS returns an HTTP "200 OK" status code response with the response body including the ECSServProvResp data structure which may include the lifetime of the provided EDN configuration information.

If the inputs in service provisioning request do not match any EDN configuration information (i.e. there is no client side error), the ECS sends an HTTP "204 No Content" status code response code.

Otherwise, the ECS shall reject the service provisioning request and respond with an appropriate failure cause.

The EEC may cache the service provisioning information (e.g. EES endpoint). If the lifeTime attribute is included in the service provisioning response, then the EEC may cache and reuse the service provisioning information only for the duration specified by the lifeTime attribute.

The EEC may select one or more EES to perform EAS discovery, for multiple EES(s) case, if instantiable EAS information using "easInstInfos" attribute for an EAS is not available, or the instantiable EAS information using "easInstInfos" attribute is set to instantiated or instantiable.

The EEC may consider the instantiable EAS information using "easInstInfos" attribute and the associated instantiation criteria to mitigate the waste of EDN resources for EAS discovery. The EEC selects one EES, if the EAS instantiation status corresponding to the EASID requested by AC/EEC is instantiable but not yet instantiated (i.e., no instantiated EAS).

NOTE 1: If the EAS instantiation fails based on the selected EES, the EEC retries the EAS discovery request to another EES ((e.g. selecting another one EES based on the instantiable EAS information).

NOTE 2: How EEC maintains the service provisioning information is implementation specific.

#### 7.2.2.3 Eecs\_ServiceProvisioning\_Subscribe

##### 7.2.2.3.1 General

This service operation is used by the EEC to subscribe to ECS, for reporting of service provisioning information when changes to provisioning information occur which are of interest to EEC.

##### 7.2.2.3.2 EEC subscribing to service provisioning information from ECS using Eecs\_ServiceProvisioning\_Subscribe operation

To subscribe to changes to service provisioning information at the ECS, the EEC shall send an HTTP POST message to the ECS on the Service Provisioning Subscriptions resource. The body of the POST message may include Notification Target Address (e.g. URL, provided with in "notificationDestination" attribute), the UE identifier (e.g. GPSI), connectivity information, proposed expiration time, AC Profile information and if the EdgeApp\_2 feature is supported the list of desired ECSP identifiers and indication whether the application triggering is required with in "eecTriggerRequest" attribute, as specified in clause 8.1.2.3.3.1.

If the "eecTriggerRequest" attribute is included then the "notificationDestination" attribute shall not be included.

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

a) process the EEC service provisioning subscription request;

b) verify and check if the EEC is authorized to subscribe for the service provisioning information; and

c) if the EEC is authorized to subscribe for the service provisioning information, then the ECS;

1) may obtain the UE's location as specified in clause 5.3 of 3GPP TS 29.122 [3];

2) shall create a new resource with the Service Provisioning Subscriptions resource as specified in clause 8.1.2.3;

3) if the ECS determines the EES information using the inputs in service provisioning subscription request, UE-specific service information at the ECS or the ECSP policy, then the ECS returns the service provisioning subscription response, which includes the subscription identifier and may include the expiration time, indicating when the subscription will automatically expire. Otherwise, the ECS shall reject the service provisioning subscription request and respond with an appropriate failure cause and

4) if EdgeApp\_2 feature is supported and the EEC required EEC Trigger Request by setting the "eecTriggerRequest" attribute to true, then ECS may send trigger towards the EEC to perform service provisioning.

If the expiration time is provided, then to maintain the subscription, the EEC shall send a Service provisioning subscription update request (as described in clause 7.2.2.5) prior to the expiration time. If a Service provisioning subscription update request is not received prior to the expiration time, the ECS shall treat the EEC as implicitly unsubscribed and remove the corresponding service provisioning subscription resource.

#### 7.2.2.4 Eecs\_ServiceProvisioning\_Notify

##### 7.2.2.4.1 General

This service operation is used by the ECS to notify the EEC about the service provisioning information.

##### 7.2.2.4.2 ECS notifying the service provisioning information to EEC using Eecs\_ServiceProvisioning\_Notify operation

The ECS determines to notify the EEC with the service provisioning information, when an event occurs at the ECS that satisfies trigger conditions for updating service provisioning of a subscribed EEC.

The ECS may obtain the UE's location as specified in clause 5.3 of 3GPP TS 29.122 [3]. If AC profile(s) were provided by the EEC during subscription creation, the ECS identifies the EES(s) based on the provided AC profile(s) and the UE location.

NOTE 1: How the ECS identifies the EES(s) based on the provided AC profile(s) and the UE location is implementation specific.

If AC profiles(s) were not provided, then if available, the ECS identifies the EES(s) based on the UE-specific service information at the ECS and the UE location. The ECS may also identify the EES(s) by applying the ECSP policy (e.g. based only on the UE location). If the EdgeApp\_2 feature is supported and the ECS received the list of desired ECSP identifiers, the ECS identifies the EES(s) based on the registered ECSP identifier in EES profile and the received list of desired ECSP identifiers.

The ECS also determines other information that needs to be provisioned, e.g. identification of the EDN, EDN service area, EES endpoints.

To notify the service provisioning information events, the ECS shall send an HTTP POST message using the Notification Destination URI received in the subscription request, as specified in clause 8.1.4.2.

Upon receiving the HTTP POST message, the EEC shall process the service provisioning information. The EEC may cache the service provisioning information (e.g. EES endpoint). If the lifeTime attribute is included in the service provisioning response, then the EEC may cache and reuse the service provisioning information only for the duration specified by the lifeTime attribute. If the ECS provided information regarding the service continuity support of individual EESs, the EEC may take this information into account when selecting an EES for EEC registration, EAS discovery or T-EAS discovery, respectively.

NOTE 2: How the EEC maintains the service provisioning information is implementation specific.

NOTE 3: If the EEC provided an indication to support application triggering in "eecTriggerRequest" attribute of the Service Provisioning subscription request, then the ECS sends the trigger message towards the EEC by invoking application triggering services or DeviceTrigerring API using 3GPP core network capabilities in order to avoid sending the service provisioning notify.

#### 7.2.2.5 Eecs\_ServiceProvisioning\_UpdateSubscription

##### 7.2.2.5.1 General

This service operation is used by the EEC to update its subscription at the ECS, for reporting of service provisioning information.

##### 7.2.2.5.2 EEC updating service provisioning information subscription at ECS using Eecs\_ServiceProvisioning\_UpdateSubscription operation

To update service provisioning information subscription at the ECS, the EEC shall send an HTTP PATCH message (for partial modification) or HTTP PUT message (for fully replacement) to the ECS on resource URI identifying the Individual Service Provisioning Subscription resource representation, as specified in clause 8.1.2.4.3.3 for an HTTP PATCH message and in clause 8.1.2.4.3.1 for an HTTP PUT message.

The PATCH message includes the parameters (AC Profiles, proposed expiry time, service continuity support or list of connectivity information) that need to be replaced in the existing subscription resource.

The PUT message shall replace all properties of the existing resource with the service provisioning information in the request. The values of the eecId and ueId provided during the subscription creation shall not be changed.

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

a) shall check the update subscription message from the EEC to see if the EEC is authorized to modify the requested subscription resource;

b) if the EEC is authorized to update the service provisioning subscription and the eecId of the requesting EEC and the eecId in the resource match, then the ECS;

1) may obtain the UE's location as specified in clause 5.3 of 3GPP TS 29.122 [3];

2) shall update the resource identified by Resource URI of the service provisioning subscription with the updated information received in the HTTP PATCH or PUT request message;

3) shall return the service provisioning subscription response. The ECS may send "200 OK" response code which includes the subscription identifier and the expiration time, indicating when the subscription will automatically expire. Otherwise, the EES sends "204 No Content" response code.

If the expiration time is provided, the EEC shall send a service provisioning subscription update request prior to the expiration time if the EEC wants to maintain the subscription. If a service provisioning subscription update request is not received prior to the expiration time, the ECS shall treat the EEC as implicitly unsubscribed and remove the corresponding service provisioning subscription resource.

#### 7.2.2.6 Eecs\_ServiceProvisioning\_Unsubscribe

##### 7.2.2.6.1 General

This service operation is used by the EEC to remove its subscription from the ECS for reporting of service provisioning information.

##### 7.2.2.6.2 EEC unsubscribing to service provisioning subscription from ECS using Eecs\_ServiceProvisioning\_Unsubscribe operation

To unsubscribe service provisioning subscription from the ECS, the EEC shall send an HTTP DELETE message to the ECS, on the resource URI identifying the individual service provisioning subscription resource representation as specified in clause 8.1.2.4.3.2. Upon receiving the HTTP DELETE request, the ECS:

a) shall verify and check if the EEC is authorized to unsubscribe the Individual Service Provisioning Subscription resource;

b) if the EEC is authorized to delete the Individual Service Provisioning Subscription resource, then the ECS shall unsubscribe the EEC service provisioning subscription identified by the subscriptionId;

c) shall return the "204 Not Content" message to the EEC, indicating the successful removal of the subscription information.

# 8 Edge Configuration Server API Definitions

## 8.1 Eecs\_ServiceProvisioning API

### 8.1.1 API URI

The Eecs\_ServiceProvisioning service shall use the Eecs\_ServiceProvisioning API.

The request URI used in each HTTP request from the EEC towards the ECS shall have the structure as defined in clause 7.5 of 3GPP TS 29.558 [4] with the following clarifications:

- The {apiRoot} shall be set as described in clause 7.5 of 3GPP TS 29.558 [4].

- The <apiName> shall be "eecs-serviceprovisioning".

- 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



Figure 8.1.2.1-1: Resource URI structure of the Eecs\_ServiceProvisioning 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 |
| Service Provisioning Subscriptions | /subscriptions | POST | Creates a new subscription in ECS in order to be notified of provisioning data changes of interest. |
| Individual Service Provisioning Subscription | /subscriptions/{subscriptionId} | PUT | Updates an existing individual service provisioning subscription identified by the subscriptionId |
| DELETE | Deletes an existing individual service provisioning subscription identified by the subscriptionId. |
| PATCH | Partial update an existing individual service provisioning subscription identified by the subscriptionId. |

#### 8.1.2.3 Resource: Service Provisioning Subscriptions

##### 8.1.2.3.1 Description

This resource represents a collection of service provisioning subscriptions of EECs interested in receiving provisioning data related notifications from ECS.

##### 8.1.2.3.2 Resource Definition

Resource URI: **{apiRoot}/eecs-serviceprovisioning/<apiVersion>/subscriptions**

This resource shall support the resource URI variables defined in 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 of 3GPP TS 29.558 [4] |

##### 8.1.2.3.3 Resource Standard Methods

8.1.2.3.3.1 POST

This method creates a new subscription. 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 POST method on this resource

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

This method shall support the request data structures specified in table 8.1.2.3.3.1-2 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 POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| ECSServProvSubscription | M | 1 | Create a new service provisioning subscription. |

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| ECSServProvSubscription | M | 1 | 201 Created | Individual ECS Service Provisioning Subscription resource created successfully.  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 [3] also apply. | | | | |

Table 8.1.2.3.3.1-4: 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-serviceprovisioning/<apiVersion>/subscriptions/{subscriptionId} |

##### 8.1.2.3.4 Resource Custom Operations

None.

#### 8.1.2.4 Resource: Individual Service Provisioning Subscription

##### 8.1.2.4.1 Description

This resource represents the individual service provisioning subscription of an EEC at a given ECS.

##### 8.1.2.4.2 Resource Definition

Resource URI: **{apiRoot}/eecs-serviceprovisioning/<apiVersion>/****subscriptions/{subscriptionId}**

This resource shall support the resource URI variables defined in the table 8.1.2.4.2-1.

Table 8.1.2.4.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5 of 3GPP TS 29.558 [4] |
| subscriptionId | string | Identifies an individual service provisioning subscription. |

##### 8.1.2.4.3 Resource Standard Methods

8.1.2.4.3.1 PUT

This method updates the individual service provisioning subscription information at the ECS by completely replacing the existing subscription data (except eecId, suppFeat, requestTestNotification and websockNotifConfig). This method shall support the URI query parameters specified in the table 8.1.2.4.3.1-1.

Table 8.1.2.4.3.1-1: 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 8.1.2.4.3.1-2 and the response data structures and response codes specified in table 8.1.2.4.3.1-3.

Table 8.1.2.4.3.1-2: Data structures supported by the PUT Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| ECSServProvSubscription | M | 1 | Details of individual service provisioning subscription matching the subscriptionId to be updated at the ECS. |

Table 8.1.2.4.3.1-3: Data structures supported by the PUT Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| ECSServProvSubscription | M | 1 | 200 OK | The individual service provisioning subscription matching the subscriptionId was modified successfully and the updated information is returned in the response. |
| n/a |  |  | 204 No Content | The individual service provisioning subscription matching the subscriptionId was modified successfully. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection, during resource modification. 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 3GPP TS 29.122 [3]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection, during resource modification. 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 3GPP TS 29.122 [3]. |
| NOTE: The mandatory HTTP error status code for the PUT method listed in Table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

Table 8.1.2.4.3.1-4: 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 8.1.2.4.3.1-5: 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. |

8.1.2.4.3.2 DELETE

This method removes the subscription information from the ECS. This method shall support the URI query parameters specified in the table 8.1.2.4.3.2-1.

Table 8.1.2.4.3.2-1: 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 8.1.2.4.3.2-2 and the response data structures and response codes specified in table 8.1.2.4.3.2-3.

Table 8.1.2.4.3.2-2: Data structures supported by the DELETE Request Body on this resource

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

Table 8.1.2.4.3.2-3: 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 service provisioning subscription matching the subscriptionId is deleted. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection, during resource termination. 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 3GPP TS 29.122 [3]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection, during resource termination. 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 3GPP TS 29.122 [3]. |
| NOTE: The mandatory HTTP error status code for the DELETE method listed in Table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

Table 8.1.2.4.3.2-4: 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 8.1.2.4.3.2-5: 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. |

8.1.2.4.3.3 PATCH

This method partially updates the individual service provisioning subscription. This method shall support the URI query parameters specified in the table 8.1.2.4.3.3-1.

Table 8.1.2.4.3.3-1: 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 8.1.2.4.3.3-2 and the response data structures and response codes specified in table 8.1.2.4.3.3-3.

Table 8.1.2.4.3.3-2: Data structures supported by the PATCH Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| ECSServProvSubscriptionPatch | M | 1 | Details of individual service provisioning subscription matching the subscriptionId to be updated at the ECS. |

Table 8.1.2.4.3.3-3: Data structures supported by the PATCH Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| ECSServProvSubscription | M | 1 | 200 OK | The individual service provisioning subscription matching the subscriptionId was modified successfully and the updated information is returned in the response. |
| n/a |  |  | 204 No Content | The individual service provisioning subscription matching the subscriptionId was modified successfully. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection, during resource modification. 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 3GPP TS 29.122 [3]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection, during resource modification. 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 3GPP TS 29.122 [3]. |
| NOTE: The mandatory HTTP error status code for the PATCH method listed in Table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

Table 8.1.2.4.3.3-7: 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 8.1.2.4.3.3-8: 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. |

### 8.1.3 Custom Operations without associated resources

#### 8.1.3.1 Overview

The structure of the custom operation URIs of the Eecs\_ServiceProvisioning API is shown in Figure 8.1.3.1-1.



Figure 8.1.3.1-1: Custom operation URI structure of the Eecs\_ServiceProvisioning API

Table 8.1.3.1-1 provides an overview of the custom operations and applicable HTTP methods defined for the Eecs\_ServiceProvisioning API.

Table 8.1.3.1-1: Custom operations without associated resources

|  |  |  |  |
| --- | --- | --- | --- |
| Operation name | Custom operation URI | Mapped HTTP method | Description |
| Request | /request | POST | Enables an EEC to request service provisioning information to the ECS. |

#### 8.1.3.2 Operation: Request

##### 8.1.3.2.1 Description

The custom operation enables an EEC to request service provisioning information to the ECS.

##### 8.1.3.2.2 Operation Definition

This operation shall support the request data structures and the response data structures and response codes specified in tables 8.1.3.2.2-1 and 8.1.3.2.2-2.

Table 8.1.3.2.2-1: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| ECSServProvReq | M | 1 | Contains the parameters to request service provisioning information. |

Table 8.1.3.2.2-2: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| ECSServProvResp | M | 1 | 200 OK | The requested service provisioning information is returned successfully. |
| n/a |  |  | 204 No Content | The requested service provisioning information does not exist. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection. The response shall include a Location header field containing an alternative target URI located in an alternative ECS.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [3]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection. The response shall include a Location header field containing an alternative target URI located in an alternative ECS.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [3] |
| NOTE: The manadatory HTTP error status code for the HTTP POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

Table 8.1.3.2.2-3: 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 ECS. |

Table 8.1.3.2.2-4: 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 ECS. |

### 8.1.4 Notifications

#### 8.1.4.1 General

Table 8.1.4.1-1: Notifications overview

|  |  |  |  |
| --- | --- | --- | --- |
| Notification | Callback URI | HTTP method or custom operation | Description  (service operation) |
| Service Provisioning Notification | {notificationDestination} | POST | Notifies EEC of the service provisioning information of interest. |

#### 8.1.4.2 Service Provisioning Notification

##### 8.1.4.2.1 Description

Service Provisioning Notification is used by the ECS to notify an EEC with service provisioning information.

##### 8.1.4.2.2 Notification definition

The POST method shall be used by the ECS for sending notifications and the notification destination shall be the callback URI as provided by the EEC during the service provisioning subscription.

Callback URI: **{notificationDestination}**

This method shall support the URI query parameters specified in table 8.1.4.2.2-1.

Table 8.1.4.2.2-1: 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 8.1.4.2.2-2 and the response data structures and response codes specified in table 8.1.4.2.2-3.

Table 8.1.4.2.2-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| ServProvNotification | M | 1 | Notification of service provisioning information. |

Table 8.1.4.2.2-3: 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. |
| 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 EEC where the notification should be sent.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [3]. |
| 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 EEC where the notification should be sent.  Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [3]. |
| NOTE: The mandatory HTTP error status code for the POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. | | | | |

Table 8.1.4.2.2-4: 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 EEC towards which the notification should be redirected. |

Table 8.1.4.2.2-5: 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 EEC towards which the notification should be redirected. |

### 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 of 3GPP TS 29.558 [4] apply to this API.

Table 8.1.5.1-1 specifies the data types defined specifically for the Eecs\_ServiceProvisioning API service.

Table 8.1.5.1-1: Eecs\_ServiceProvisioning API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| ConnectivityInfo | 8.1.5.2.5 |  |  |
| ECSServProvReq | 8.1.5.2.2 |  |  |
| ECSServProvResp | 8.1.5.2.3 |  |  |
| ECSServProvSubscription | 8.1.5.2.4 | Represents the service provisioning subscription. |  |
| ECSServProvSubscriptionPatch | 8.1.5.2.10 |  |  |
| EDNConfigInfo | 8.1.5.2.7 |  |  |
| EDNConInfo | 8.1.5.2.8 |  |  |
| EESInfo | 8.1.5.2.9 |  |  |
| ServProvNotification | 8.1.5.2.6 | Service provisioning information notification from ECS to EEC. |  |

Table 8.1.5.1-2 specifies data types re-used by the Eecs\_ServiceProvisioning API service.

Table 8.1.5.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| ACProfile | clause 6.2.5.2.3 |  |  |
| ACRScenario | 3GPP TS 29.558 [4] |  |  |
| DateTime | 3GPP TS 29.122 [3] |  |  |
| Dnai | 3GPP TS 29.571 [5] |  |  |
| Dnn | 3GPP TS 29.571 [5] |  |  |
| EASBundleInfo | 3GPP TS 29.558 [4] | Represents EAS bundle information. | EdgeApp\_2 |
| EASInstantiationInfo | 3GPP TS 29.558 [4] |  |  |
| EndPoint | 3GPP TS 29.558 [4] |  |  |
| Gpsi | 3GPP TS 29.571 [5] | Used to identify the UE. |  |
| LocationArea5G | 3GPP TS 29.122 [3] |  |  |
| LocationInfo | 3GPP TS 29.122 [3] | The location information related to the UE. |  |
| PlmnIdNid | 3GPP TS 29.571 [5] | Identifies the network: PLMN Identifier or the SNPN Identifier (the PLMN Identifier and the NID). |  |
| Snssai | 3GPP TS 29.571 [5] |  |  |
| SupportedFeatures | 3GPP TS 29.571 [5] | Used to negotiate the applicability of optional features. |  |
| Uri | 3GPP TS 29.122 [3] |  |  |
| WebsockNotifConfig | 3GPP TS 29.122 [3] |  |  |

#### 8.1.5.2 Structured data types

##### 8.1.5.2.1 Introduction

##### 8.1.5.2.2 Type: ECSServProvReq

Table 8.1.5.2.2-1: Definition of type ECSServProvReq

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| eecId | string | M | 0..1 | Represents a unique identifier of the EEC. |  |
| ueId | Gpsi | O | 0..1 | Represents the identifier of the UE. |  |
| acProfs | array(ACProfile) | O | 1..N | Information about services the EEC wants to connect to. |  |
| eecSvcContSupp | array(ACRScenario) | O | 1..N | The ACR scenarios supported by the EEC for service continuity. If this attribute is not present, then the EEC does not support service continuity.  (NOTE) |  |
| connInfo | array(ConnectivityInfo) | O | 0..N | List of connectivity information for the UE. |  |
| locInf | LocationInfo | O | 0..1 | Represents location information of the UE.  If the UserLocation feature is supported, the "userLocation" attribute shall be provided in the LocationInfo data type. |  |
| ecspIds | array(string) | O | 1..N | Indicates to the ECS which EES providers are preferred by the EEC. | EdgeApp\_2 |
| suppFeat | SupportedFeatures | C | 0..1 | Represents a list of Supported features used as described in clause 6.3.7.  Shall be present in the HTTP POST request/response. |  |
| NOTE: If the EEC is requesting service provisioning for T-EES discovery and requires those T-EES that support "EEC excuted ACR via T-EES" scenario, then EEC shall set eecSvcContSupp with only "EEC excuted ACR via T-EES". | | | | | |

##### 8.1.5.2.3 Type: ECSServProvResp

Table 8.1.5.2.3-1: Definition of type ECSServProvResp

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| ednCnfgInfo | array(EDNConfigInfo) | M | 1..N | List of EDN configuration information. |  |

##### 8.1.5.2.4 Type: ECSServProvSubscription

Table 8.1.5.2.4-1: Definition of type ECSServProvSubscription

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| eecId | string | M | 0..1 | Represents a unique identifier of the EEC. |  |
| ueId | Gpsi | O | 0..1 | Represents the identifier of the UE. |  |
| acProfs | array(ACProfile) | O | 1..N | Information about services the EEC wants to connect to. |  |
| expTime | DateTime | O | 0..1 | Indicates the expiration time of the subscription. If the expiration time is not present, then it indicates that the EEC subscription never expires. |  |
| eecSvcContSupp | array(ACRScenario) | O | 1..N | The ACR scenarios supported by the EEC for service continuity. If this attribute is not present, then the EEC does not support service continuity. |  |
| connInfo | array(ConnectivityInfo) | O | 0..N | List of connectivity information for the UE. |  |
| notificationDestination | Uri | O | 0..1 | The notification target address containing the URI where the service provisioning notification should be delivered to. This attribute may be present in HTTP POST message to ECS. (NOTE 1)  (NOTE 2, NOTE 3). |  |
| requestTestNotification | boolean | O | 0..1 | Set to true by Subscriber to request the ECS to send a test notification as defined in clause 7.6 of 3GPP TS 29.558 [4]. 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 of 3GPP TS 29.558 [4]. | Notification\_websocket |
| ecspIds | array(string) | O | 1..N | Indicates to the ECS which EES providers are preferred by the EEC. | EdgeApp\_2 |
| eecTriggerRequest | boolean | O | 0..1 | Indicates to the ECS, whether the application triggering is required by the EEC.  "false" (default): the EEC doesn’t not require triggers.  "true": the EEC requires triggers.  (NOTE 2) | EdgeApp\_2 |
| suppFeat | SupportedFeatures | O | 0..1 | Used to negotiate the supported optional features of the API as described in clause 7.8 of 3GPP TS 29.558 [4].  This attribute shall be provided in the HTTP POST request and in the response of successful resource creation.  This attribute also shall be provided in the HTTP PUT request and in the response of successful resource modification. |  |
| NOTE 1: The notification target address can terminate at the EEC (e.g. in an IoT device) if the deployment supports EEC reachability, or it can terminate at a push notification service. Details of the push notification service are out of scope of this release.  NOTE 2: Either notificationDestination or eecTriggerRequest may be included in the service provisioning subscription request.  NOTE 3: The notificationDestination attribute may contain Notification Target Address URL received from the SNM-C as defined in clause 10. | | | | | |

##### 8.1.5.2.5 Type: ConnectivityInfo

Table 8.1.5.2.5-1: Definition of type ConnectivityInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| plmnId | PlmnIdNid | O | 0..1 | Represents the serving network (a PLMN or an SNPN) identity. For the SNPN the NID together with the PLMN ID identifies the SNPN. |  |
| ssId | string | O | 0..1 | This IE shall be present if the UE is accessing the 5GC via a trusted WLAN access network.  When present, it shall contain the SSID of the access point to which the UE is attached. |  |

##### 8.1.5.2.6 Type: ServProvNotification

Table 8.1.5.2.6-1: Definition of type ServProvNotification

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| subId | string | M | 1 | String identifying the individual service provisioning subscription for which the service provisioning notification is delivered. |  |
| ednCnfgInfo | array(EDNConfigInfo) | M | 1..N | List of EDN configuration information. |  |

##### 8.1.5.2.7 Type: EDNConfigInfo

Table 8.1.5.2.7-1: Definition of type EDNConfigInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| ednConInfo | EDNConInfo | M | 1 | Contains EDN connection information required by the UE to establish connection with the EDN |  |
| eess | array(EESInfo) | M | 1..N | Contains the list of EESs of the EDN |  |
| lifeTime | DateTime | O | 0..1 | Indicates the time duration for which the EDN configuration information is valid and supposed to be cached in the EEC. |  |

##### 8.1.5.2.8 Type: EDNConInfo

Table 8.1.5.2.8-1: Definition of type EDNConInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| dnn | Dnn | O | 0..1 | String representing a Data Network or an APN |  |
| snssai | Snssai | O | 0..1 | Represents network slice information |  |
| ednTopoSrvArea | LocationArea5G | O | 0..1 | The list of geographical and topological areas that the ECS serves. ACs in the UE that are outside the area shall not be served. |  |

##### 8.1.5.2.9 Type: EESInfo

Table 8.1.5.2.9-1: Definition of type EESInfo

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 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 list of application identifiers of the Edge Application Servers registered or expected to be registered with the EES, e.g. FQDN, URI. |  |
| ecspInfo | string | O | 0..1 | String representing the EES Provider (such as ECSP Information) |  |
| svcArea | LocationArea5G | 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. |  |
| dnais | array(Dnai) | O | 1..N | Represents list of Data network access identifier |  |
| eesSvcContSupp | array(ACRScenario) | O | 1..N | The ACR scenarios supported by the EES for service continuity. If this attribute is not present, then the EEC does not support service continuity. |  |
| eecRegConf | boolean | M | 1 | Indicates whether the EEC is required to register on the EES to use edge services or not |  |
| easInstInfos | array(EASInstantiationInfo) | O | 1..N | The EAS instantiation status per EASID (e.g. instantiated, instantiable but not be instantiated yet) | EdgeApp\_2 |
| eesAuthMethods | array(EesAuthMethod) | O | 1..N | Indicates the authentication method supported by the EES to be used by EEC before communicating with the EES as specified in clause 8.1.5.2.11. | EdgeApp\_2 |
| easBundleInfo | array(EASBundleInfo) | O | 1..N | Represents a list of EAS bundles to which the EAS belongs.(NOTE) | EdgeApp\_2 |
| NOTE: In case of ECS Service Provisioning response, the "easBdlReqs" and "mainEasId" attributes shall not be present within the "easBundleInfo" attribute. | | | | | |

##### 8.1.5.2.10 Type: ECSServProvSubscriptionPatch

Table 8.1.5.2.10-1: Definition of type ECSServProvSubscriptionPatch

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| acProfs | array(ACProfile) | O | 1..N | Information about services the EEC wants to connect to. |  |
| expTime | DateTime | O | 0..1 | Indicates the expiration time of the subscription. |  |
| eecSvcContSupp | array(ACRScenario) | O | 1..N | The ACR scenarios supported by the EEC for service continuity. |  |
| connInfo | array(ConnectivityInfo) | O | 0..N | List of connectivity information for the UE. |  |

##### 8.1.5.2.11 Enumeration: EesAuthMethod

The enumeration EesAuthMethod represents the authentication methods supported by the EES. It shall comply with the provisions defined in clause 6.3 of 3GPP TS 33.558 [7].

Table 8.1.5.2.11-1: Enumeration EesAuthMethod

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability |
| TLS\_CLIENT\_SERVER\_CERTIFICATE | Represents authentication through certficates over TLS. |  |
| TLS\_WITH\_AKMA | Represents AKMA based authentication over TLS. |  |
| TLS\_WITH\_GBA | Represent GBA authentication over TLS. |  |
| SERVER\_SIDE\_CERTIFICATE\_BASED | Represents the Server side certificate.  (NOTE) |  |
| NOTE: If only server side certificate-based TLS authentication is performed, it is left to implementation on which information within a service procedure and services will be provided by the EES as specified in clause 6.2 of 3GPP TS 33.558 [7]. | | |

#### 8.1.5.3 Simple data types and enumerations

None.

### 8.1.6 Error Handling

General error handling are described in clause 7.7 of 3GPP TS 29.558 [4].

### 8.1.7 Feature negotiation

General feature negotiation procedures are described in clause 7.8 of 3GPP TS 29.558 [4]. Table 8.1.7-1 lists the supported features for Eecs\_ServiceProvisioning API.

Table 8.1.7-1: Supported Features

|  |  |  |
| --- | --- | --- |
| Feature number | Feature Name | Description |
| 1 | Notification\_test\_event | Testing of notification connection is supported according to clause 7.6 of 3GPP TS 29.558 [4]. |
| 2 | Notification\_websocket | The delivery of notifications over Websocket is supported according to clause 7.6 of 3GPP TS 29.558 [4]. This feature requires that the Notification\_test\_event feature is also supported. |
| 3 | enNB1 | This feature indicates the support of enhancements to this northbound API in Rel-18. |
| 4 | EdgeApp\_2 | This feature indicates support of the enhancements for the Enabling Edge Applications. Within this feature the following enhancements are covered:  - support of enhanced EES service differentiation;  - support of Edge computing in SNPN;  - support of EAS bundle information;  - support of EAS instantiation; and  - the EEC support of application triggering to perform ECS service provisioning. |

# 9 Security

The authentication and authorization between EEC and ECS shall be as specified in 3GPP TS 33.558 [7].

The authentication and authorization between EEC and EES shall be as specified in 3GPP TS 33.558 [7].

The security credentials to be used for verification and authorization of various API requests from EEC shall be as specified in 3GPP TS 33.558 [7].

The EEC, prior to consuming services offered by the EES APIs, may obtain the "access tokens" from the ECS, by invoking the Eecs\_ServiceProvisioning service, as described in 3GPP TS 33.558 [7].

# 10 SEAL services

The EEL can utilize following SEAL services to support EEL services:

a) notification management as specified in 3GPP TS 24.542 [10] to receive notifications; and the EEC shall:

1) initiate the notification channel creation procedures on SNM-C as specified in clause 6.2.2.1 in 3GPP TS 24.542 [10] to obtain the Notification Target Address (e.g. URL) and use it in the subscribe methods shared to EES and ECS;

2) handle the notification messages received from SNM-C as specified in clause 6.2.3 in 3GPP TS 24.542 [10]; and

3) initiate the notification channel deletion procedures on SNM-C as specified in clause 6.2.4.1 in 3GPP TS 24.542 [10].

Annex A (normative):  
Edge Enabler Server OpenAPI specification

# A.1 General

# A.2 Eees\_EECRegistration API

openapi: 3.0.0

info:

title: Eees\_EECRegistration

version: "1.1.0-alpha.4"

description: |

API for EEC registration.

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externalDocs:

description: >

3GPP TS 24.558 V18.3.0 Enabling Edge Applications; Protocol specification.

url: 'https://www.3gpp.org/ftp/Specs/archive/24\_series/24.558/'

security:

- {}

- oAuth2ClientCredentials: []

servers:

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

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in clause 7.5 of 3GPP TS 29.558.

paths:

/registrations:

post:

operationId: CreateEECReg

tags:

- EEC Registrations (Collection)

description: Create a new EEC registration at the EES.

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'201':

description: Created (EEC information is registered successfully at EES).

content:

application/json:

schema:

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

'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'

/registrations/{registrationId}:

put:

operationId: UpdateIndEECReg

tags:

- Individual EEC registration (Document)

description: Update an existing EEC registration a the EES.

parameters:

- name: registrationId

in: path

description: Identifies an individual EEC registration.

required: true

schema:

type: string

requestBody:

description: Parameters to replace the existing registration.

required: true

content:

application/json:

schema:

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

responses:

'200':

description: OK (An individual EEC registration resource updated successfully).

content:

application/json:

schema:

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

'204':

description: >

No Content (An individual EEC registration resource 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:

operationId: DeleteIndEECReg

tags:

- Individual EEC registration (Document)

description: Remove an existing EEC registration at EES.

parameters:

- name: registrationId

in: path

description: Identifies an individual EEC registration.

required: true

schema:

type: string

responses:

'204':

description: >

No Content (An individual EEC registration resource deleted 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'

'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:

operationId: ModifyIndEECReg

tags:

- Individual EEC registration (Document)

description: Partially update an existing EEC registration a the EES.

parameters:

- name: registrationId

in: path

description: Identifies an individual EEC registration.

required: true

schema:

type: string

requestBody:

description: Parameters to replace the existing registration.

required: true

content:

application/merge-patch+json:

schema:

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

responses:

'200':

description: OK (An individual EEC registration resource updated successfully).

content:

application/json:

schema:

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

'204':

description: >

No Content (An individual EEC registration resource 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'

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{tokenUrl}'

scopes: {}

schemas:

EECRegistration:

description: Describes the parameters to perform EEC Registration related operations.

type: object

properties:

eecId:

type: string

description: Represents a unique identifier of the EEC.

ueId:

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

acProfs:

type: array

items:

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

description: Profiles of ACs for which the EEC provides edge enabling services.

expTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

eecSvcContSupp:

type: array

items:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/ACRScenario'

description: Profiles of ACs for which the EEC provides edge enabling services.

eecCntxId:

type: string

description: Identifier of the EEC context obtained from a previous registration.

srcEesId:

type: string

description: Identifier of the EES that provided EEC context ID.

endPt:

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

ueMobilityReq:

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.

easSelReqInd:

type: boolean

description: >

Set to true to indicate the EES support for EAS selection.

Set to false to indicate the EES shall not select the EAS.

The default value when omitted is false.

ueType:

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

discoveredEas:

type: array

items:

$ref: 'TS24558\_Eees\_EASDiscovery.yaml#/components/schemas/DiscoveredEas'

unfulfillAcProfs:

type: array

items:

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

minItems: 1

description: >

A list of ACIDs of the AC Profile(s) sent from EES, for which the requirements

indicated in the AC profile(s) cannot be fulfilled.

unfulfilledAcProfs:

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

not:

required: [ unfulfilledAcProfs, unfulfillAcProfs ]

required:

- eecId

ACProfile:

description: AC information indicating required services and service characteristics.

type: object

properties:

acId:

type: string

description: Identity of the AC.

acType:

type: string

description: The category or type of AC.

prefEcsps:

type: array

items:

type: string

description: Indicates to the ECS which ECSPs are preferred for the AC.

acSchedule:

$ref: 'TS29122\_CpProvisioning.yaml#/components/schemas/ScheduledCommunicationTime'

expAcGeoServArea:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/LocationArea5G'

acSvcContSupp:

type: array

items:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/ACRScenario'

description: The ACR scenarios supported by the AC for service continuity.

simInactTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DurationSec'

eass:

type: array

items:

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

minItems: 1

description: List of EAS information.

easBundleInfo:

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

required:

- acId

EasDetail:

description: EAS details.

type: object

properties:

easId:

type: string

description: Application identifier of the EAS.

expectedSvcKPIs:

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

minimumReqSvcKPIs:

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

required:

- easId

ACServiceKPIs:

description: Describes the KPIs required by the AC in order to receive required services.

type: object

properties:

connBand:

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

reqRate:

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

respTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DurationSec'

avail:

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

reqComp:

type: string

description: The compute resources required by the AC.

reqGrapComp:

type: string

description: The graphical compute resources required by the AC.

reqMem:

type: string

description: The memory resources required by the AC.

reqStrg:

type: string

description: The storage resources required by the AC.

EECRegistrationPatch:

description: Describes the parameters to perform EEC Registration update.

type: object

properties:

acProfs:

type: array

items:

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

description: Profiles of ACs for which the EEC provides edge enabling services.

expTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

ueMobilityReq:

type: boolean

description: Indicates whether UE requires mobility support or not.

easSelReqInd:

type: boolean

description: Indicates whether EES support for EAS selection is required or not.

ueType:

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

UnfulfilledAcProfile:

description: Describes AC Profile ID and reason sent by EES in EEC Register response.

type: object

properties:

acId:

type: string

description: The AC ID of a AC profile.

reason:

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

UnfulfillACProfRsn:

anyOf:

- type: string

enum:

- EAS\_NOT\_AVAILABLE

- REQ\_UNFULFILLED

- 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 reason for unfulfilled AC profile requirements.

Possible values are:

- EAS\_NOT\_AVAILABLE: EAS is not available.

- REQ\_UNFULFILLED: Requirements cannot be fulfilled.

DeviceType:

anyOf:

- type: string

enum:

- CONSTRAINED\_UE

- NORMAL\_UE

- 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 UE type.

Possible values are:

- CONSTRAINED\_UE: Indicates UE is constrained with resources like power, processor etc.

- NORMAL\_UE: Indicates UE is not constrained with resources.

# A.3 Eees\_EASDiscovery API

openapi: 3.0.0

info:

title: Eees\_EASDiscovery

description: |

API for EAS Discovery.

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version: "1.1.0-alpha.4"

externalDocs:

description: >

3GPP TS 24.558 V18.3.0 Enabling Edge Applications; Protocol specification.

url: https://www.3gpp.org/ftp/Specs/archive/24\_series/24.558/

security:

- {}

- oAuth2ClientCredentials: []

servers:

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

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in clause 7.5 of 3GPP TS 29.558.

paths:

/subscriptions:

post:

description: Creates a new individual EAS discovery subscription.

operationId: CreateEASDiscSub

tags:

- EAS Discovery Subscriptions (Collection)

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'201':

description: >

Created. A new Individual EAS Discovery Subscription resource was successfully

created.

content:

application/json:

schema:

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

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:

required: true

content:

application/json:

schema:

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

responses:

'204':

description: No Content (The receipt of the Notification is 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}:

put:

description: >

Updates an existing individual EAS discovery subscription identified by the subscriptionId.

operationId: UpdateIndEASDiscSub

tags:

- Individual EAS Discovery Subscription (Document)

parameters:

- name: subscriptionId

in: path

description: Identifies an individual EAS discovery subscription resource.

required: true

schema:

type: string

requestBody:

description: Parameters to replace the existing subscription.

required: true

content:

application/json:

schema:

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

responses:

'200':

description: >

OK. The individual EAS discovery subscription resource was updated successfully.

content:

application/json:

schema:

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

'204':

description: No Content (updated successfully).

'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:

description: >

Deletes an existing individual EAS discovery subscription identified by the subscriptionId.

operationId: DeleteIndEASDiscSub

tags:

- Individual EAS Discovery Subscription (Document)

parameters:

- name: subscriptionId

in: path

description: Identifies an individual EAS discovery subscription resource.

required: true

schema:

type: string

responses:

'204':

description: >

An individual EAS discovery subscription resource deleted 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'

'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:

description: >

Partial update an existing EAS Discovery Subscription resource identified by a

subscriptionId.

operationId: ModifyIndEASDiscSub

tags:

- Individual EAS Discovery Subscription (Document)

parameters:

- name: subscriptionId

in: path

description: Identifies an individual EAS discovery subscription resource.

required: true

schema:

type: string

requestBody:

description: Parameters to replace the existing subscription.

required: true

content:

application/merge-patch+json:

schema:

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

responses:

'200':

description: >

OK (An individual EAS discovery subscription resource updated successfully).

content:

application/json:

schema:

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

'204':

description: No Content (modified successfully).

'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'

/eas-profiles/request-discovery:

post:

description: >

Provides EAS information requested by the service consumer (i.e. EEC, EAS or EES).

operationId: GetEASDiscInfo

tags:

- EAS Profiles (Collection)

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'200':

description: >

OK (The requested EAS discovery information was returned successfully).

content:

application/json:

schema:

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

'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:

EasDiscoveryReq:

description: EAS discovery request information.

type: object

properties:

requestorId:

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

ueId:

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

easDiscoveryFilter:

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

eecSvcContinuity:

type: array

items:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/ACRScenario'

description: >

Indicates if the EEC supports service continuity or not, also indicates which ACR

scenarios are supported by the EEC.

eesSvcContinuity:

type: array

items:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/ACRScenario'

description: >

Indicates if the EES supports service continuity or not, also indicates which ACR

scenarios are supported by the EES.

easSvcContinuity:

type: array

items:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/ACRScenario'

description: >

Indicates if the EAS supports service continuity or not, also indicates which ACR

scenarios are supported by the EAS.

locInf:

$ref: 'TS29122\_MonitoringEvent.yaml#/components/schemas/LocationInfo'

easTDnai:

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

easSelSupInd:

type: boolean

description: >

Indicates if the EEC requires the EAS selection support from the EES (e.g., for

constrained device). The default value false indicates the EAS selection is not

required from the EES.

suppFeat:

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

easIntTrigSup:

type: boolean

description: >

Indicates to the EES whether the EAS instantiation triggering should be performed for

the current request. The default value false indicates the EAS instantiation triggering

should not be performed. The true value indicate the EAS instantiation triggering should

be performed.

predictExpTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

servingPLMNInfo:

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

svcContinuityPlanInd:

type: boolean

description: >

Indicates to the EES whether the EAS discovery request is triggered as part of service

continuity planning. The default value false indicates this request is not part of

service continuity planning. The true value indicate this request is part of

service continuity planning.

required:

- requestorId

EasDiscoveryResp:

description: EAS discovery response.

type: object

properties:

discoveredEas:

type: array

items:

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

description: List of EAS discovery information.

easInstInfos:

type: object

additionalProperties:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/EASInstantiationInfo'

minProperties: 1

description: >

Contains the EAS instantiation information for each discovered EAS returned within

the discoveredEas attribute.

edgeLoadAnalytics:

type: object

additionalProperties:

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

minProperties: 1

description: >

Contains the statistical analytics data and predictive analytics data for each

discovered application server. The key of the map shall be the EAS ID to which

the provided analytics data within the map value relates.

required:

- discoveredEas

EasDiscoverySubscription:

description: Represents an Individual EAS Discovery Subscription resource.

type: object

properties:

eecId:

type: string

description: Represents a unique identifier of the EEC.

ueId:

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

easEventType:

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

easDiscoveryFilter:

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

easDynInfoFilter:

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

easSvcContinuity:

type: array

items:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/ACRScenario'

description: >

Indicates if the EEC supports service continuity or not, also indicates which ACR

scenarios are supported by the EEC.

expTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

notificationDestination:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

requestTestNotification:

type: boolean

description: >

Set to true by Subscriber 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'

easIntTrigSup:

type: boolean

description: >

Indicates to the EES whether the EAS instantiation triggering should be performed for

the current request. The default value false indicates the EAS instantiation triggering

should not be performed. The true value indicate the EAS instantiation triggering should

be performed.

eecTriggerRequest:

type: boolean

description: >

Indicates to the EES whether the application triggering is required by the EEC.

Default value false indicates the application triggering is not required.

required:

- eecId

- easEventType

EasDiscoveryNotification:

description: Notification of EAS discovery information.

type: object

properties:

subId:

type: string

description: >

Identifier of the individual service provisioning subscription for which the service

provisioning notification is delivered.

eventType:

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

discoveredEas:

type: array

items:

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

minItems: 1

description: List of EAS discovery information.

easInstInfos:

type: object

additionalProperties:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/EASInstantiationInfo'

minProperties: 1

description: >

Contains the EAS instantiation information for each discovered EAS returned within

the "discoveredEas" attribute.

edgeLoadAnalytics:

type: object

additionalProperties:

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

minProperties: 1

description: >

Contains the statistical analytics data and predictive analytics data for each

discovered application server. The key of the map shall be the EAS ID to which

the provided analytics data within the map value relates.

required:

- subId

- eventType

- discoveredEas

EasDiscoveryFilter:

description: Represents the EAS characteristics.

type: object

properties:

acChars:

type: array

items:

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

minItems: 1

description: AC description for which an EAS is needed.

easChars:

type: array

items:

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

minItems: 1

description: Required EAS chararcteristics.

EasCharacteristics:

description: Represents the EAS chararcteristics.

type: object

properties:

easId:

type: string

description: EAS application identifier.

appGrpId:

type: string

description: >

Application group identifier, identifying a group of UEs using the same

application service.

easSyncInd:

type: boolean

description: >

Indicates whether the synchronization between the EASs is required. The

default value false indicates the EAS synchronization is not required.

easProvId:

type: string

description: EAS provider identifier.

stdEasType:

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

easType:

type: string

description: EAS type with the flexible value set.

easSched:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/TimeWindow'

svcArea:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/LocationArea5G'

easSvcContinuity:

type: array

items:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/ACRScenario'

description: >

Indicates if the EEC supports service continuity or not, also indicates which ACR

scenarios are supported by the EEC.

svcPermLevel:

type: string

description: Service permissions level.

svcFeats:

type: array

items:

type: string

minItems: 1

description: Service features.

easBundleInfo:

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

not:

required: [stdEasType, easType]

DiscoveredEas:

description: Represents an EAS discovery information.

type: object

properties:

eas:

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

lifeTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

required:

- eas

EasDynamicInfoFilter:

description: Represents EAS dynamic information changes filter.

type: object

properties:

dynInfoFilter:

type: array

items:

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

minItems: 1

description: List of EAS dynamic information required by the EEC per EAS.

required:

- dynInfoFilter

EasDynamicInfoFilterData:

description: Represents an EAS dynamic information.

type: object

properties:

eecId:

type: string

description: The application identifier of the EAS, e.g. FQDN, URI.

easStatus:

type: boolean

description: Notify if EAS status changed.

easAcIds:

type: boolean

description: Notify if list of AC identifiers changed.

easDesc:

type: boolean

description: Notify if EAS description changed.

easPt:

type: boolean

description: Notify if EAS endpoint changed.

easEndPoint:

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

easFeature:

type: boolean

description: Notify if EAS feature changed.

easSchedule:

type: boolean

description: Notify if EAS schedule changed.

svcArea:

type: boolean

description: Notify if EAS service area changed.

svcKpi:

type: boolean

description: Notify if EAS KPIs changed.

svcCont:

type: boolean

description: Notify if EAS supported ACR changed.

required:

- eecId

ACCharacteristics:

description: Represents EAS dynamic information changes filter.

type: object

properties:

acProf:

$ref: 'TS24558\_Eees\_EECRegistration.yaml#/components/schemas/ACProfile'

required:

- acProf

EASDiscEventIDs:

anyOf:

- type: string

enum:

- EAS\_AVAILABILITY\_CHANGE

- EAS\_DYNAMIC\_INFO\_CHANGE

- 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: >

Possible values are

- EAS\_AVAILABILITY\_CHANGE: Represents the EAS availability change event.

- EAS\_DYNAMIC\_INFO\_CHANGE: Represents the EAS dynamic information change event.

EasDiscoverySubscriptionPatch:

description: Represents an Individual EAS Discovery Subscription resource.

type: object

properties:

easDiscoveryFilter:

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

easDynInfoFilter:

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

easSvcContinuity:

type: array

items:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/ACRScenario'

description: >

Indicates if the EEC supports service continuity or not, also indicates which ACR

scenarios are supported by the EEC.

expTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

easEventType:

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

RequestorId:

description: Represents identifier of the requestor.

type: object

properties:

eesId:

type: string

description: The identifier of the EES (e.g. S-EES).

easId:

type: string

description: The application identifier of the EAS (e.g. S-EAS), e.g. FQDN, URI.

eecId:

type: string

description: The identifier of the EEC.

oneOf:

- required: [eesId]

- required: [easId]

- required: [eecId]

EdgeLoadAnalytic:

description: >

Contains the statistical analytics data and predictive analytics data for each

discovered application server.

type: object

properties:

easId:

type: string

description: The application identifier of the EAS, e.g. FQDN, URI.

predictData:

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

statisticData:

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

required:

- easId

PredictiveData:

description: >

Contains the predictive analytics data for each discovered EAS service status

(e.g. EAS schedule, EAS status) change.

type: object

properties:

scheds:

type: array

items:

$ref: 'TS29122\_CpProvisioning.yaml#/components/schemas/ScheduledCommunicationTime'

minItems: 1

status:

type: string

description: Indicates the EAS status (e.g. Enabled, Disabled etc.).

StatisticalData:

description: >

Contains the statistical analytics data (e.g. number of times the client received

expected performance from the EAS).

type: object

properties:

numRecPerf:

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

# A.4 Eees\_ACREvents API

openapi: 3.0.0

info:

title: Eees\_ACREvents

version: "1.1.0-alpha.2"

description: |

API for ACR events subscription and notification.

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externalDocs:

description: >

3GPP TS 24.558 V18.3.0 Enabling Edge Applications; Protocol specification.

url: 'https://www.3gpp.org/ftp/Specs/archive/24\_series/24.558/'

security:

- {}

- oAuth2ClientCredentials: []

servers:

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

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in clause 7.5 of 3GPP TS 29.558

paths:

/subscriptions:

post:

description: Creates a new individual ACR events subscription.

operationId: CreateACREventsSubscripton

tags:

- ACR events subscription (Collection)

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'201':

description: Individual ACR events subscription resource created successfully.

content:

application/json:

schema:

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

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/ACRInfoNotification'

responses:

'204':

description: No Content (The receipt of the Notification is 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}:

put:

description: >

Updates an existing individual ACR events subscription identified by the subscriptionId.

operationId: UpdateACREventsSubscription

tags:

- Individual ACR Events Subscription

parameters:

- name: subscriptionId

in: path

description: Identifies an individual ACR Events subscription resource.

required: true

schema:

type: string

requestBody:

description: Parameters to replace the existing subscription.

required: true

content:

application/json:

schema:

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

responses:

'200':

description: >

OK (An individual ACR Events subscription resource updated successfully).

content:

application/json:

schema:

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

'204':

description: No Content (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:

description: >

Deletes an existing individual ACR events subscription identified by the subscriptionId.

operationId: DeleteACREventsSubscription

tags:

- Individual ACR Events Subscription

parameters:

- name: subscriptionId

in: path

description: Identifies an individual ACR Events subscription resource.

required: true

schema:

type: string

responses:

'204':

description: An individual ACR Events subscription resource deleted 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'

'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:

description: >

Partially modifies an existing individual ACR events subscription identified by

the subscriptionId.

operationId: ModifyACREventsSubscription

tags:

- Individual ACR Events Subscription

parameters:

- name: subscriptionId

in: path

description: Identifies an individual ACR Events subscription resource.

required: true

schema:

type: string

requestBody:

description: Parameters to replace the existing subscription.

required: true

content:

application/merge-patch+json:

schema:

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

responses:

'200':

description: >

OK (An individual ACR Events subscription resource updated successfully).

content:

application/json:

schema:

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

'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'

components:

securitySchemes:

oAuth2ClientCredentials:

type: oauth2

flows:

clientCredentials:

tokenUrl: '{tokenUrl}'

scopes: {}

schemas:

ACREventsSubscription:

description: ACE Events subscription request.

type: object

properties:

eecId:

type: string

description: Represents a unique identifier of the EEC.

ueId:

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

expTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

easIds:

type: array

items:

type: string

minItems: 1

description: The list of application identifiers of the EASs.

acIds:

type: array

items:

type: string

description: List of AC identities.

eventIds:

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

notificationDestination:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

requestTestNotification:

type: boolean

description: >

Set to true by Subscriber to request the ECS 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:

- eecId

- easIds

- eventIds

- notificationDestination

ACRInfoNotification:

description: Notification of ACR events information.

type: object

properties:

subId:

type: string

description: >

String identifying the Individual ACR events subscription for which the ACT

Information notification is delivered.

easId:

type: string

description: Application identifier of the EAS.

acId:

type: string

description: Identity of the AC.

eventId:

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

trgtInfo:

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

acrStatus:

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

eecCtxtReloc:

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

required:

- subId

- easId

- eventId

TargetInfo:

description: Details of the selected T-EAS and the T-EES.

type: object

properties:

trgetEASInfo:

$ref: 'TS24558\_Eees\_EASDiscovery.yaml#/components/schemas/DiscoveredEas'

trgetEESInfo:

$ref: 'TS24558\_Eecs\_ServiceProvisioning.yaml#/components/schemas/EDNConfigInfo'

ACREventsSubscriptionPatch:

description: An individual ACR events subscription resource to be updated.

type: object

properties:

expTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

easIds:

type: array

items:

type: string

minItems: 1

description: The list of application identifiers of the EASs.

eventIds:

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

notificationDestination:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

ACREventIDs:

anyOf:

- type: string

enum:

- TARGET\_INFORMATION

- ACR\_COMPLETE

- 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 events.

Possible values are:

- TARGET\_INFORMATION: Represents the target information event.

- ACR\_COMPLETE: Represents the ACR complete event.

EecCtxtRelocStatus:

description: Indicates the registration id and expiry time of the registration.

type: object

properties:

implReg:

$ref: 'TS29558\_Eees\_EECContextRelocation.yaml#/components/schemas/ImplicitRegDetails'

ACRCompleteEventInfo:

description: Indicates the completed ACR result and target EAS endpoint info.

type: object

properties:

acrRes:

type: boolean

description: Indicates whether the ACR is successful or failure.

tEasEndpoint:

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

failReason:

type: string

description: Indicates the cause information for the failure.

required:

- acrRes

- tEasEndpoint

# A.5 Eees\_AppContextRelocation API

openapi: 3.0.0

info:

title: Eees Application Context Relocation Service

version: "1.1.0-alpha.3"

description: |

Eees Application Context Relocation Service.

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externalDocs:

description: >

3GPP TS 24.558 V18.3.0; Enabling Edge Applications; Protocol specification; Stage 3.

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

servers:

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

variables:

apiRoot:

default: https://example.com

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

security:

- {}

- oAuth2ClientCredentials:

- eees-appctxtreloc

paths:

/determine:

post:

summary: Request ACR determination.

operationId: Determine

tags:

- Determine ACR

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'204':

description: No Content.

'307':

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

'308':

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

'400':

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

'401':

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

'403':

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

'404':

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

'411':

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

'413':

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

'415':

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

'429':

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

'500':

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

'503':

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

default:

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

/initiate:

post:

summary: Request the initiation of ACR.

operationId: Initiate

tags:

- Initiate ACR

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'204':

description: No Content.

'307':

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

'308':

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

'400':

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

'401':

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

'403':

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

'404':

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

'411':

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

'413':

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

'415':

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

'429':

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

'500':

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

'503':

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

default:

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

/declare:

post:

summary: Informs about the selected target EAS and provides the associated information.

operationId: Declare

tags:

- Declare selected target EAS

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'204':

description: >

No Content. The selected target EAS information is 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: '{nrfApiRoot}/oauth2/token'

scopes:

eees-appctxtreloc: Access to the Eees\_AppContextRelocation API

schemas:

AcrDetermReq:

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

type: object

properties:

requestorId:

type: string

ueId:

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

acId:

type: string

easId:

type: string

sEasEndpoint:

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

expectedLocArea:

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

required:

- requestorId

- sEasEndpoint

AcrInitReq:

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

type: object

properties:

requestorId:

type: string

ueId:

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

acId:

type: string

easId:

type: string

tEasEndpoint:

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

sEasEndpoint:

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

prevTEasEndpoint:

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

routeReq:

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

simInactTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DurationSec'

easNotifInd:

type: boolean

default: false

prevEasNotifInd:

type: boolean

default: false

eecCtxtReloc:

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

predictExpTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

expectedLocArea:

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

required:

- requestorId

- tEasEndpoint

- easNotifInd

AcrDecReq:

description: >

Represents the parameters to inform about the selected target EAS and provide the

associated information.

type: object

properties:

ueId:

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

acId:

type: string

tEasId:

type: string

tEasEndpoint:

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

expectedLocArea:

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

required:

- ueId

- tEasId

- tEasEndpoint

EecCtxtReloc:

description: Represents EEC Context relocation information.

type: object

properties:

eecCtxtId:

type: string

sEesId:

type: string

sEecEndpoint:

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

tEesId:

type: string

tEecEndpoint:

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

required:

- eecCtxtId

ExpectedLocationArea:

description: >

Represents the expected location or service are of UE.

type: object

properties:

locInfo:

$ref: 'TS29122\_MonitoringEvent.yaml#/components/schemas/LocationInfo'

svcArea:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/LocationArea5G'

Annex B (normative):  
Edge Configuration Server OpenAPI specification

# B.1 Eecs\_ServiceProvisioning

openapi: 3.0.0

info:

title: Eecs\_ServiceProvisioning

version: "1.1.0-alpha.4"

description: |

API for ECS Service Provisioning.

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externalDocs:

description: 3GPP TS 24.558 V18.3.0 Enabling Edge Applications; Protocol specification.

url: https://www.3gpp.org/ftp/Specs/archive/24\_series/24.558/

security:

- {}

- oAuth2ClientCredentials: []

servers:

- url: '{apiRoot}/eecs-serviceprovisioning/v1'

variables:

apiRoot:

default: https://example.com

description: apiRoot as defined in clause 7.5 of 3GPP TS 29.558

paths:

/subscriptions:

post:

description: >

Creates a new subscription in ECS in order to be notified of provisioning data

changes of interest.

operationId: CreateServProvSub

tags:

- Service Provisioning Subscriptions (Collection)

requestBody:

required: true

content:

application/json:

schema:

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

callbacks:

notificationDestination:

'{request.body#/notificationDestination}':

post:

requestBody: # contents of the callback message

required: true

content:

application/json:

schema:

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

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'

responses:

'201':

description: >

Individual ECS Service Provisioning Subscription resource created successfully.

content:

application/json:

schema:

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

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'

/subscriptions/{subscriptionId}:

put:

description: >

Updates an existing individual service provisioning subscription identified

by the subscriptionId.

operationId: UpdateIndServProvSub

tags:

- Individual Service Provisioning Subscription (Document)

parameters:

- name: subscriptionId

in: path

description: Identifies an individual service provisioning subscription.

required: true

schema:

type: string

requestBody:

description: Parameters to replace the existing subscription.

required: true

content:

application/json:

schema:

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

responses:

'200':

description: >

OK (The individual service provisioning subscription matching the subscriptionId

was modified successfully).

content:

application/json:

schema:

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

'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:

description: >

Deletes an existing individual service provisioning subscription identified by

the subscriptionId.

operationId: DeleteIndServProvSub

tags:

- Individual Service Provisioning Subscription (Document)

parameters:

- name: subscriptionId

in: path

description: Identifies an individual service provisioning subscription.

required: true

schema:

type: string

responses:

'204':

description: >

The individual service provisioning subscription matching the subscriptionId 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'

patch:

description: >

Partially updates an existing individual service provisioning subscription identified

by the subscriptionId.

operationId: ModifyIndServProvSub

tags:

- Individual Service Provisioning Subscription (Document)

parameters:

- name: subscriptionId

in: path

description: Identifies an individual service provisioning subscription.

required: true

schema:

type: string

requestBody:

description: Parameters to replace the existing subscription.

required: true

content:

application/merge-patch+json:

schema:

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

responses:

'200':

description: >

OK (The individual service provisioning subscription matching the subscriptionId

was modified successfully).

content:

application/json:

schema:

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

'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'

/request:

post:

summary: Request service provisioning information.

operationId: RequestServProv

tags:

- Request Service Provisioning

requestBody:

required: true

content:

application/json:

schema:

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

responses:

'200':

description: >

OK (The requested service provisioning information was returned successfully).

content:

application/json:

schema:

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

'204':

description: >

No Content (The requested service provisioning information does not exist).

'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:

ECSServProvReq:

description: ECS service provisioning request information.

type: object

properties:

eecId:

type: string

description: Represents a unique identifier of the EEC.

ueId:

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

acProfs:

type: array

items:

$ref: 'TS24558\_Eees\_EECRegistration.yaml#/components/schemas/ACProfile'

description: Information about services the EEC wants to connect to.

eecSvcContSupp:

type: array

items:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/ACRScenario'

description: >

Indicates if the EEC supports service continuity or not, also indicates which

ACR scenarios are supported by the EEC.

connInfo:

type: array

items:

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

description: List of connectivity information for the UE.

locInf:

$ref: 'TS29122\_MonitoringEvent.yaml#/components/schemas/LocationInfo'

ecspIds:

type: array

items:

type: string

minItems: 1

description: Indicates to the ECS which EES providers are preferred by the EEC.

suppFeat:

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

required:

- eecId

ECSServProvResp:

description: ECS service provisioning response information.

type: object

properties:

ednCnfgInfo:

type: array

items:

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

minItems: 1

description: List of EDN configuration information.

required:

- ednCnfgInfo

ECSServProvSubscription:

description: Represents an individual service provisioning subscription resource.

type: object

properties:

eecId:

type: string

description: Represents a unique identifier of the EEC.

ueId:

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

acProfs:

type: array

items:

$ref: 'TS24558\_Eees\_EECRegistration.yaml#/components/schemas/ACProfile'

description: Information about services the EEC wants to connect to.

expTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

eecSvcContSupp:

type: array

items:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/ACRScenario'

description: >

Indicates if the EEC supports service continuity or not, also indicates which

ACR scenarios are supported by the EEC.

connInfo:

type: array

items:

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

description: List of connectivity information for the UE.

notificationDestination:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/Uri'

requestTestNotification:

type: boolean

description: >

Set to true by Subscriber to request the ECS to send a test notification. Set to

false or omitted otherwise.

websockNotifConfig:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/WebsockNotifConfig'

ecspIds:

type: array

items:

type: string

minItems: 1

description: Indicates to the ECS which EES providers are preferred by the EEC.

eecTriggerRequest:

type: boolean

description: >

Indicates to the ECS, whether the application triggering is required by the EEC.

Default value false indicates the application triggering is not required.

suppFeat:

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

required:

- eecId

ServProvNotification:

description: Represents notification information of a service provisioning Event.

type: object

properties:

subId:

type: string

description: >

Identifier of the individual service provisioning subscription for which the service

provisioning notification is delivered.

ednCnfgInfo:

type: array

items:

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

minItems: 1

description: List of EDN configuration information.

required:

- subId

- ednCnfgInfo

ConnectivityInfo:

description: Represents the connectivity information for the UE.

type: object

properties:

plmnId:

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

ssId:

type: string

description: Identifies the SSID of the access point to which the UE is attached.

EDNConfigInfo:

description: Represents the EDN configuration information.

type: object

properties:

ednConInfo:

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

eess:

type: array

items:

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

minItems: 1

description: Contains the list of EESs of the EDN.

lifeTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

required:

- ednConInfo

- eess

EDNConInfo:

description: Represents an EDN connection information.

type: object

properties:

dnn:

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

snssai:

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

ednTopoSrvArea:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/LocationArea5G'

EESInfo:

description: Represents EES information.

type: object

properties:

eesId:

type: string

description: Identity of the EES.

endPt:

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

easIds:

type: array

items:

type: string

description: >

Application identities of the Edge Application Servers registered

with the EES.

ecspInfo:

type: string

description: Represents an ECSP Information.

svcArea:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/LocationArea5G'

dnais:

type: array

items:

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

description: Represents list of Data network access identifiers.

eesSvcContSupp:

type: array

items:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/ACRScenario'

description: >

Indicates if the EES supports service continuity or not, also indicates which ACR

scenarios are supported by the EES.

eecRegConf:

type: boolean

description: >

Indicates whether the EEC is required to register on the EES to use edge services

or not.

easInstInfos:

type: array

items:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/EASInstantiationInfo'

minItems: 1

description: >

The EAS instantiation status per EASID (e.g. instantiated, instantiable but not be

instantiated yet).

eesAuthMethods:

type: array

items:

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

minItems: 1

description: >

Indicates the authentication methods supported by the EES.

easBundleInfo:

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

required:

- eesId

- eecRegConf

EesAuthMethod:

anyOf:

- type: string

enum:

- TLS\_CLIENT\_SERVER\_CERTIFICATE

- TLS\_WITH\_AKMA

- TLS\_WITH\_GBA

- SERVER\_SIDE\_CERTIFICATE\_BASED

- 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 Authentication methods supported by EES.

Possible values are:

- TLS\_CLIENT\_SERVER\_CERTIFICATE: Represents TLS with client server certificate

authentication.

- TLS\_WITH\_AKMA: Represents TLS with AKMA authentication.

- TLS\_WITH\_GBA: Represents TLS with GBA authentication.

- SERVER\_SIDE\_CERTIFICATE\_BASED: Represents server side certification only.

ECSServProvSubscriptionPatch:

description: >

Represents modifications to an individual service provisioning subscription resource.

type: object

properties:

acProfs:

type: array

items:

$ref: 'TS24558\_Eees\_EECRegistration.yaml#/components/schemas/ACProfile'

description: Information about services the EEC wants to connect to.

expTime:

$ref: 'TS29122\_CommonData.yaml#/components/schemas/DateTime'

eecSvcContSupp:

type: array

items:

$ref: 'TS29558\_Eecs\_EESRegistration.yaml#/components/schemas/ACRScenario'

description: >

Indicates which ACR scenarios are supported by the EEC.

connInfo:

type: array

items:

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

description: List of connectivity information for the UE.

Annex C (informative):  
Protocol options considered for EDGE-4 reference point

CT1 considered two possible protocol options for the EDGE-4 reference point: an API-based option and an NAS signalling-based option. CT1 decided to have only the API-based option in this release of the specification.

Annex D(informative):  
Change history

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Change history** | | | | | | | |
| **Date** | **Meeting** | **TDoc** | **CR** | **Rev** | **Cat** | **Subject/Comment** | **New version** |
| 2021-01 | CT1#128e | C1-211421 |  |  |  | TS skeleton for Enabling Edge Applications; Protocol specification | 0.0.0 |
|  |  |  |  |  |  | Implementing agreed pCRs in CT1#128-e (C1-211423) | 0.1.0 |
| 2021-04 | CT1#129-e |  |  |  |  | Implementing agreed pCRs in CT1#129-e (C1-212155, C1-212454, C1-212464, C1-212546, C1-212547) | 0.2.0 |
| 2021-06 | CT1#130-e |  |  |  |  | Implementing agreed pCRs in CT1#130-e (C1-213293, C1-213701, C1-213702, C1-213705, C1-213708, C1-213759 C1-213838, C1-213900, C1-213901) | 0.3.0 |
| 2021-09 | CT1#131-e | [C1-214500](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_131e/Docs/C1-214500.zip) |  |  |  | OpenAPI specification for Eees\_EECRegistration API | 0.4.0 |
| 2021-09 | CT1#131-e | [C1-214502](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_131e/Docs/C1-214502.zip) |  |  |  | Notify operation for Eees\_ACREvents API | 0.4.0 |
| 2021-09 | CT1#131-e | [C1-214503](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_131e/Docs/C1-214503.zip) |  |  |  | Update subscription operation for Eees\_ACREvents API | 0.4.0 |
| 2021-09 | CT1#131-e | [C1-214504](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_131e/Docs/C1-214504.zip) |  |  |  | Unsubscribe operation for Eees\_ACREvents API | 0.4.0 |
| 2021-09 | CT1#131-e | [C1-214505](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_131e/Docs/C1-214505.zip) |  |  |  | Eees\_EECRegistration\_Request Service Operation | 0.4.0 |
| 2021-09 | CT1#131-e | [C1-214506](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_131e/Docs/C1-214506.zip) |  |  |  | Eees\_EECRegistration\_Update Service Operation | 0.4.0 |
| 2021-09 | CT1#131-e | [C1-214593](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_131e/Docs/C1-214593.zip) |  |  |  | Data model and Notification for Eees\_ACREvents API | 0.4.0 |
| 2021-09 | CT1#131-e | [C1-215059](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_131e/Docs/C1-215059.zip) |  |  |  | General on EAS Discovery API Definition | 0.4.0 |
| 2021-09 | CT1#131-e | [C1-215176](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_131e/Docs/C1-215176.zip) |  |  |  | Pseudo-CR on Support of redirection for the Eees\_ACREvents API | 0.4.0 |
| 2021-10 | CT1#132-e | [C1-216089](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_132e/Docs/C1-216089.zip) |  |  |  | Eees\_AppContextRelocation API | 0.5.0 |
| 2021-10 | CT1#133-e | [C1-217109](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_133e/Docs/C1-217109zip) |  |  |  | Service description and request operation for Eees\_EASDiscovery service | 0.6.0 |
| 2021-10 | CT1#133-e | [C1-217151](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_133e/Docs/C1-21C1-217151.zip) |  |  |  | Service offered by ECS and service provisioning API | 0.6.0 |
| 2021-10 | CT1#133-e | [C1-217366](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_133e/Docs/C1-217366.zip) |  |  |  | Pseudo-CR on EEC registration abnormal case | 0.6.0 |
| 2021-12 | CT#94e |  |  |  |  | Version 1.0.0 created for CT Plenary for information | 1.0.0 |
| 2022-01 | CT1#133e-Bis | [C1-220725](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_133e-bis/Docs/C1-220725.zip) |  |  |  | Eees\_EASDiscovery\_UpdateSubscription operation for Eees\_EASDiscovery API | 1.1.0 |
| 2022-01 | CT1#133e-Bis | [C1-220727](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_133e-bis/Docs/C1-220727.zip) |  |  |  | EAS Discovery data model fixes | 1.1.0 |
| 2022-01 | CT1#133e-Bis | [C1-220729](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_133e-bis/Docs/C1-220729.zip) |  |  |  | Clarification for Eecs\_ServiceProvisioning\_Request operation | 1.1.0 |
| 2022-01 | CT1#133e-Bis | [C1-220730](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_133e-bis/Docs/C1-220730.zip) |  |  |  | EAS Discovery partial update with HTTP PATCH | 1.1.0 |
| 2022-01 | CT1#133e-Bis | [C1-220732](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_133e-bis/Docs/C1-220732.zip) |  |  |  | EEC Registration partial update with HTTP PATCH | 1.1.0 |
| 2022-01 | CT1#133e-Bis | [C1-220733](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_133e-bis/Docs/C1-220733.zip) |  |  |  | Service provisioning information subscription - Partial update with HTTP PATCH | 1.1.0 |
| 2022-01 | CT1#133e-Bis | [C1-220735](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_133e-bis/Docs/C1-220735.zip) |  |  |  | ACR information subscription partial update with HTTP PATCH | 1.1.0 |
| 2022-01 | CT1#133e-Bis | [C1-220736](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_133e-bis/Docs/C1-220736.zip) |  |  |  | Definitions of terms | 1.1.0 |
| 2022-01 | CT1#133e-Bis | [C1-220838](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_133e-bis/Docs/C1-220838.zip) |  |  |  | Eees\_EASDiscovery\_Unsubscribe operation for Eees\_EASDiscovery API | 1.1.0 |
| 2022-02 | CT1#134-e | [C1-221598](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_134e/Docs/C1-221598.zip) |  |  |  | Corrections in specification | 1.2.0 |
| 2022-02 | CT1#134-e | [C1-221619](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_134e/Docs/C1-221619.zip) |  |  |  | Update list of EES Service APIs | 1.2.0 |
| 2022-02 | CT1#134-e | [C1-221622](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_134e/Docs/C1-221622.zip) |  |  |  | Removing Editor Notes for EDNConfigInfo | 1.2.0 |
| 2022-02 | CT1#134-e | [C1-221812](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_134e/Docs/C1-221812.zip) |  |  |  | Resolution of editor's note under clause 6.3.5.2.4 | 1.2.0 |
| 2022-02 | CT1#134-e | [C1-221830](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_134e/Docs/C1-221830.zip) |  |  |  | Resolving EN on EEC Context Transfer | 1.2.0 |
| 2022-02 | CT1#134-e | [C1-222047](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_134e/Docs/C1-222047.zip) |  |  |  | Removing Editor Notes in Eees\_EECRegistration\_Update and Eecs\_ServiceProvisioning\_Request | 1.2.0 |
| 2022-02 | CT1#134-e | [C1-222094](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_134e/Docs/C1-222094.zip) |  |  |  | Pseudo CR on updating the design of the Eecs\_ServiceProvisioning\_Request service operation | 1.2.0 |
| 2022-02 | CT1#134-e | [C1-222099](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_134e/Docs/C1-222099.zip) |  |  |  | Pseudo-CR on Eees\_EASDiscovery API request, subscribe and notify service operations | 1.2.0 |
| 2022-04 | CT1#135-e | [C1-222821](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_135e/Docs/C1-222821.zip) |  |  |  | Pseudo-CR to update list of EES Service APIs | 1.3.0 |
| 2022-04 | CT1#135-e | [C1-222827](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_135e/Docs/C1-222827.zip) |  |  |  | Pseudo-CR to add reference in EEC Registration Open API | 1.3.0 |
| 2022-04 | CT1#135-e | [C1-222831](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_135e/Docs/C1-222831.zip) |  |  |  | Pseudo-CR to add reference in ECS Service Provisioning Open API | 1.3.0 |
| 2022-04 | CT1#135-e | [C1-222836](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_135e/Docs/C1-222836.zip) |  |  |  | Pseudo-CR to update Ecs Service Provisioning API description | 1.3.0 |
| 2022-04 | CT1#135-e | [C1-222862](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_135e/Docs/C1-222862.zip) |  |  |  | Pseudo CR on resolution of editor's note under clause 8.1.3.2 | 1.3.0 |
| 2022-04 | CT1#135-e | [C1-223026](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_135e/Docs/C1-223026.zip) |  |  |  | Pseudo CR on resolution of editor's note under clause 8.1.4.2.2 | 1.3.0 |
| 2022-04 | CT1#135-e | [C1-223166](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_135e/Docs/C1-223166.zip) |  |  |  | Pseudo-CR on removing Editor Notes specific to security | 1.3.0 |
| 2022-04 | CT1#135-e | [C1-223171](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_135e/Docs/C1-223171.zip) |  |  |  | Pseudo-CR to detail easEventType in EasDiscoverySubscriptionPatch | 1.3.0 |
| 2022-04 | CT1#135-e | [C1-223187](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_135e/Docs/C1-223187.zip) |  |  |  | Service description and Subscribe operation for Eees\_ACREvents API | 1.3.0 |
| 2022-04 | CT1#135-e | [C1-223191](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_135e/Docs/C1-223191.zip) |  |  |  | Open API specification for Eees\_ACREvents API | 1.3.0 |
| 2022-04 | CT1#135-e | [C1-223210](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_135e/Docs/C1-223210.zip) |  |  |  | removing templates from the specification | 1.3.0 |
| 2022-04 | CT1#135-e | [C1-223216](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_135e/Docs/C1-223216.zip) |  |  |  | Unifying the Eees\_AppContextRelocation and the and Eees\_SelectedTargetEAS APIs; compromised solution | 1.3.0 |
| 2022-05 | CT1#136-e | [C1-223567](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_136e/Docs/C1-223567.zip) |  |  |  | Pseudo-CR Checking ACR Scenario Support During a Registration and a Registration Update | 1.4.0 |
| 2022-05 | CT1#136-e | [C1-223715](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_136e/Docs/C1-223715.zip) |  |  |  | Pseudo CR on adding missing TS 29.522 | 1.4.0 |
| 2022-05 | CT1#136-e | [C1-223722](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_136e/Docs/C1-223722.zip) |  |  |  | Pseudo CR on editorial corrections | 1.4.0 |
| 2022-05 | CT1#136-e | [C1-223727](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_136e/Docs/C1-223727.zip) |  |  |  | Pseudo CR on ACR Information Notification | 1.4.0 |
| 2022-05 | CT1#136-e | [C1-223792](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_136e/Docs/C1-223792.zip) |  |  |  | Pseudo-CR on correcting the ACREventsSubscriptionPatch data type | 1.4.0 |
| 2022-05 | CT1#136-e | [C1-223794](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_136e/Docs/C1-223794.zip) |  |  |  | Pseudo-CR on correcting formatting issues | 1.4.0 |
| 2022-05 | CT1#136-e | [C1-223899](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_136e/Docs/C1-223899.zip) |  |  |  | Pseudo-CR on removing the apiVersion placeholder from the resource URI variables table | 1.4.0 |
| 2022-05 | CT1#136-e | [C1-223981](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_136e/Docs/C1-223981.zip) |  |  |  | Pseudo CR on correction to scope | 1.4.0 |
| 2022-05 | CT1#136-e | [C1-223982](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_136e/Docs/C1-223982.zip) |  |  |  | Pseudo CR on ACR Information Subscription | 1.4.0 |
| 2022-05 | CT1#136-e | [C1-223983](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_136e/Docs/C1-223983.zip) |  |  |  | Pseudo CR on correction to the Eees\_AppContextRelocation service | 1.4.0 |
| 2022-05 | CT1#136-e | [C1-224076](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_136e/Docs/C1-224076.zip) |  |  |  | Pseudo-CR on unifying the Eees\_EASDiscovery and Eees\_TargetEASDiscovery APIs | 1.4.0 |
| 2022-05 | CT1#136-e | [C1-224141](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_136e/Docs/C1-224141.zip) |  |  |  | specification cleanup | 1.4.0 |
| 2022-05 | CT1#136-e | [C1-224174](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_136e/Docs/C1-224174.zip) |  |  |  | Removal of content of Annex B | 1.4.0 |
| 2022-05 | CT1#136-e | [C1-224187](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_136e/Docs/C1-224187.zip) |  |  |  | Pseudo-CR to update ACR request | 1.4.0 |
| 2022-05 | CT1#136-e | [C1-224189](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_136e/Docs/C1-224189.zip) |  |  |  | Pseudo-CR to remove Editor's notes | 1.4.0 |
| 2022-05 | CT1#136-e | [C1-224190](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_136e/Docs/C1-224190.zip) |  |  |  | Pseudo-CR to update ACR information notification | 1.4.0 |
| 2022-05 | CT1#136-e | [C1-224191](https://www.3gpp.org/ftp/tsg_ct/WG1_mm-cc-sm_ex-CN1/TSGC1_136e/Docs/C1-224191.zip) |  |  |  | Pseudo-CR to provide partial EEC REGISTER Update failure status | 1.4.0 |
| 2022-06 | CT#96 | CP-221192 |  |  |  | Version 2.0.0 created for CT Plenary for approval | 2.0.0 |
| 2022-06 | CT#96 |  |  |  |  | Version 17.0.0 created after CT#96 | 17.0.0 |
| 2022-09 | CT1#137-e | C1-225152 | 0010 | 1 | F | Correction to the ACR request message | 17.1.0 |
| 2022-09 | CT1#137-e | C1-225224 | 0005 | 1 | F | EDGE-4 and the overview | 17.1.0 |
| 2022-09 | CT1#137-e | C1-225270 | 0006 | 1 | F | ACR information subscription field missing in YAML file | 17.1.0 |
| 2022-09 | CT1#137-e | C1-225272 | 0007 | 1 | F | Correction to the Definition of type DiscoveredEas | 17.1.0 |
| 2022-09 | CT1#137-e | C1-225372 | 0002 | 1 | F | Unique identification in ACR procedures | 17.1.0 |
| 2022-09 | CT1#137-e | C1-225441 | 0009 | 2 | F | Correction to the "easId” | 17.1.0 |
| 2022-11 | CT1#138-e | C1-226013 | 0012 | 2 | F | Addition of the common principles of the ECS API (EDGE-4) | 17.2.0 |
| 2022-11 | CT1#138-e | C1-226014 | 0013 | 2 | F | Correction on Eecs\_ServiceProvisioning API data model description | 17.2.0 |
| 2022-11 | CT1#138-e | C1-226161 | 0011 | 1 | F | Update ACRInfoNotification type | 17.2.0 |
| 2022-11 | CT1#138-e | C1-226170 | 0014 | 1 | F | Update redundant table numbering | 17.2.0 |
| 2022-11 | CT1#139 | C1-226700 | 0004 | 3 | F | Add security info in service provisioning response | 17.2.0 |
| 2023-03 | CT1#140 | C1-230821 | 0024 | 1 | F | Corrections to the definition of the EAS type | 17.3.0 |
| 2023-03 | CT1#140 | C1-231231 | 0025 |  | F | Update of info and externalDocs fields | 17.3.0 |
| 2023-03 | CT1#140 | C1-231018 | 0016 | 2 | B | Support of simultaneous EAS connectivity information in ACR | 18.0.0 |
| 2023-03 | CT1#140 | C1-231019 | 0017 | 3 | B | Eees\_EASDiscovery API: request for EAS selection support | 18.0.0 |
| 2023-03 | CT1#140 | C1-230867 | 0018 | 1 | B | Updates on location reporting | 18.0.0 |
| 2023-03 | CT1#140 | C1-231018 | 0026 |  | F | Update of info and externalDocs fields | 18.0.0 |
| 2023-05 | CT1#141-e | C1-232801 | 0027 | 1 | B | Support of Edge computing in SNPN | 18.1.0 |
| 2023-05 | CT1#141-e | C1-232802 | 0028 | 1 | B | Enhanced EES service differentiation | 18.1.0 |
| 2023-05 | CT1#141-e | C1-232465 | 0038 |  | F | Eees\_ACREvents API: ACREventIDs description field | 18.1.0 |
| 2023-05 | CT1#141-e | C1-232803 | 0036 | 1 | F | Eees\_EECRegistration: "operationId" and "tags" fields | 18.1.0 |
| 2023-05 | CT1#141-e | C1-232804: | 0037 | 1 | F | Eees\_EASDiscovery API: "operationId" fields and formatting of description fields | 18.1.0 |
| 2023-05 | CT1#141-e | C1-232805: | 0039 | 1 | F | Eecs\_ServiceProvisioning API: "operationId" fields | 18.1.0 |
| 2023-05 | CT1#141-e | C1-232806 | 0040 | 1 | F | Eees\_EECRegistration API: enumeration definition | 18.1.0 |
| 2023-05 | CT1#142 | C1-233659 | 0044 |  | A | JSON object in the HTTP PATCH request | 18.1.0 |
| 2023-05 | CT1#142 | C1-233770 | 0046 | 1 | A | List of unfulfilled AC information | 18.1.0 |
| 2023-05 | CT1#142 | C1-233772 | 0048 | 1 | A | Eees\_EASDiscovery API: alignments with the OpenAPI file | 18.1.0 |
| 2023-05 | CT1#142 | C1-233929 | 0034 | 3 | B | EEC sharing UE Mobility requirement | 18.1.0 |
| 2023-05 | CT1#142 | C1-234206 | 0029 | 4 | B | EAS instantiation status via EAS discovery by EES | 18.1.0 |
| 2023-06 | CT#100 | CP-231347 | 0030 | 3 | B | EAS instantiation status via service provisioning by ECS | 18.1.0 |
| 2023-06 | CT#100 | CP-231339 | 0031 | 2 | B | EAS bundle information | 18.1.0 |
| 2023-06 | CT#100 | CP-231340 | 0033 | 4 | B | Enhancements to the ACR management event | 18.1.0 |
| 2023-06 | CT#100 | CP-231332 | 0050 |  | F | YAML files missed in the previous version are included | 18.1.1 |
| 2023-09 | CT#101 | C1-235227 | 0051 |  | F | Referencing data types and descriptions of EdgeApp\_2 feature | 18.2.0 |
| 2023-09 | CT#101 | C1-236080 | 0052 | 1 | B | Support of EAS synchronization | 18.2.0 |
| 2023-09 | CT#101 | C1-236081 | 0053 | 1 | B | Obtaining edge load analytics information | 18.2.0 |
| 2023-09 | CT#101 | C1-236083 | 0054 | 1 | B | EEC sharing constrained UE indication | 18.2.0 |
| 2023-09 | CT#101 | C1-236084 | 0055 | 1 | B | EEC Trigger to support EAS Discovery | 18.2.0 |
| 2023-09 | CT#101 | C1-236085 | 0056 | 1 | B | EEC Trigger to support Service Provisioning | 18.2.0 |
| 2023-09 | CT#102 | CP-233297 | 0064 |  | F | Update of info and externalDocs fields | 18.2.0 |
| 2023-12 | CT#102 | CP-233152 | 0065 |  | F | Update table with API specific data types and descriptions of EdgeApp\_2 feature | 18.3.0 |
| 2023-12 | CT#102 | CP-233152 | 0066 |  | F | Handling of desired ECSP identifier(s) | 18.3.0 |
| 2023-12 | CT#102 | CP-233152 | 0069 | 2 | B | Eees\_EASInformationProvisioning API definition | 18.3.0 |
| 2023-12 | CT#102 | CP-233152 | 0058 | 1 | F | ECS Service Provisioning for selecting T-EES supporting service continuity. | 18.3.0 |
| 2023-12 | CT#102 | CP-233152 | 0059 | 1 | B | EAS discovery request triggered for service continuity planning | 18.3.0 |
| 2023-12 | CT#102 | CP-233152 | 0061 | 1 | B | EAS discovery in edge node sharing | 18.3.0 |
| 2023-12 | CT#102 | CP-233152 | 0062 | 1 | F | Update EAS Discovery procedure for handling instantiation-in-progress status and traffic influence. | 18.3.0 |
| 2023-12 | CT#102 | CP-233152 | 0063 | 1 | B | Sharing EAS selection indication in EEC Register request. | 18.3.0 |
| 2023-12 | CT#102 | CP-233152 | 0067 | 1 | B | Support of Eees\_UEIdentifier API | 18.3.0 |
| 2023-12 | CT#102 | CP-233152 | 0060 | 2 | B | SEAL Notification Management usage in EEL | 18.3.0 |
| 2023-12 | CT#102 | CP-233152 | 0079 |  | F | Replacing references to clause 6.1 | 18.3.0 |
| 2023-12 | CT#102 | CP-233152 | 0080 |  | F | Eecs\_ServiceProvisioning API: supported ACR scenarios | 18.3.0 |
| 2023-12 | CT#102 | CP-233152 | 0081 |  | F | Description of the expTime attribute | 18.3.0 |
| 2023-12 | CT#102 | CP-233152 | 0073 | 1 | F | Sharing EEC triggers in Notification procedures | 18.3.0 |
| 2023-12 | CT#102 | CP-233152 | 0075 | 1 | F | EAS instantiation alignment in EAS Discovery procedure | 18.3.0 |
| 2023-12 | CT#102 | CP-233152 | 0078 | 1 | B | EES monitoring the UE mobility for service continuity planning | 18.3.0 |
| 2023-12 | CT#102 | CP-233315 | 0072 | 4 | B | Handling EAS Bundle in EAS Discovery service | 18.3.0 |
| 2023-12 | CT#102 | CP-233316 | 0071 | 4 | B | Handling EAS Bundle in ECS Service Provisioning | 18.3.0 |
| 2023-12 | CT#102 | CP-233152 | 0077 | 2 | B | Update ECS Service Provisioning response with EES authentication method. | 18.3.0 |
| 2023-12 | CT#102 | CP-233189 | 0082 |  | F | Update of info and externalDocs fields | 18.3.0 |