**3GPP TSG-CT WG1 Meeting #136-eC1-223926\_r3**

**E-Meeting, 12th – 20th May 2022**

**Source: Huawei, HiSilicon**

**Title: Pseudo-CR on unifying the Eees\_EASDiscovery and Eees\_TargetEASDiscovery APIs**

**Spec: 3GPP TS 24.558 v1.3.0**

**Agenda item: 17.2.16**

**Document for: Agreement**

**1. Introduction**

As per the discussion paper in C3-222307, the Eees\_EASDiscovery and Eees\_TargetEASDiscovery APIs defined in 3GPP TS 23.558 can be unified.

**2. Reason for Change**

In combination with C3-223xyz, this p-CR proposes a solution to unify the Eees\_EASDiscovery and Eees\_TargetEASDiscovery APIs defined in 3GPP TS 23.558 into a single "Eees\_EASDiscovery" API.

**3. Proposal**

It is proposed to agree the following changes to 3GPP TS 24.558 v1.3.0.

\* \* \* \* Start of Changes \* \* \* \*

## 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 |

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 |

\* \* \* \* Next Changes \* \* \* \*

### 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.

\* \* \* \* Next Changes \* \* \* \*

#### 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 |

\* \* \* \* Next Changes \* \* \* \*

#### 5.3.2.2 Eees\_EASDiscovery\_EasDiscRequest

\* \* \* \* Next Changes \* \* \* \*

##### 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;

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.

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; and

e) if the processing of the request was successful, the EES sends an EAS discovery response to the EEC as specified in clause 6.3.2.4.3.1, 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 "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.

\* \* \* \* Next Changes \* \* \* \*

### 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 6.1 with the following clarifications:

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

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

- The <apiVersion> shall be "v1".

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

\* \* \* \* Next Changes \* \* \* \*

#### 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.

\* \* \* \* Next Changes \* \* \* \*

##### 6.3.2.2.1 Description

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

\* \* \* \* Next Changes \* \* \* \*

##### 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 6.1. |

\* \* \* \* Next Changes \* \* \* \*

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} |

\* \* \* \* Next Changes \* \* \* \*

##### 6.3.2.3.1 Description

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

\* \* \* \* Next Changes \* \* \* \*

##### 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 6.1. |
| subscriptionId | string | The identifier of the individual EAS discovery subscription. |

\* \* \* \* Next Changes \* \* \* \*

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. |

\* \* \* \* Next Changes \* \* \* \*

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 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 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. |

\* \* \* \* Next Changes \* \* \* \*

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. |

\* \* \* \* Next Changes \* \* \* \*

##### 6.3.2.4.1 Description

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

\* \* \* \* Next Changes \* \* \* \*

##### 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 6.1 |

\* \* \* \* Next Changes \* \* \* \*

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 |
| RequestDiscovery | eees-easdiscovery/<apiVersion>/eas-profile/request-discovery | POST | Request EAS discovery information |

\* \* \* \* Next Changes \* \* \* \*

6.3.2.4.4.2 Operation: RequestDiscovery

\* \* \* \* Next Changes \* \* \* \*

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.

\* \* \* \* Next Changes \* \* \* \*

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. | | | | |

\* \* \* \* Next Changes \* \* \* \*

### 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.

\* \* \* \* Next Changes \* \* \* \*

#### 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. |

\* \* \* \* Next Changes \* \* \* \*

##### 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 notifications.

##### 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. |

\* \* \* \* Next Changes \* \* \* \*

##### 6.3.5.2.1 Introduction

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

\* \* \* \* Next Changes \* \* \* \*

##### 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 | string | O | 0..1 | Represents the identifier of the UE. |  |
| easDiscoveryFilter | EasDiscoveryFilter | O | 0..1 | Contains EAS characteristics. |  |
| eecSvcContinuity | string | O | 0..1 | Contains service continuity support; indicates EEC supported ACR scenarios. |  |
| eesSvcContinuity | String | O | 0..1 | Contains service continuity support; indicates EES supported ACR scenarios. |  |
| easSvcContinuity | string | O | 0..1 | Contains service continuity support; indicates EAS supported ACR scenarios |  |
| locInf | LocationInfo | O | 0..1 | Represents location information of the UE. |  |
| easTDnais | array(Dnai) | O | 1..N | Contains the target DNAI information which can be associated with potential target-EAS(s). |  |

\* \* \* \* Next Changes \* \* \* \*

##### 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. | | | | | |

\* \* \* \* Next Changes \* \* \* \*

##### 6.3.5.2.13 Type: RequestorId

Table 8.6.5.2.13-1: 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 identifier of the EAS (e.g. S-EAS). |  |
| 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. | | | | | |

\* \* \* \* Next Changes \* \* \* \*

#### 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. |

\* \* \* \* Next Changes \* \* \* \*

## A.3 Eees\_EASDiscovery API

openapi: 3.0.0

info:

title: Eees\_EASDiscovery

description: |

API for EAS Discovery.

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version: "1.0.0-alpha.3"

externalDocs:

description: >

3GPP TS 24.558 V1.2.0 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 6.1 of 3GPP TS 24.558

paths:

/subscriptions:

post:

description: Creates a new individual EAS discovery subscription.

tags:

- EAS Discovery Subscriptions

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.

tags:

- Individual EAS Discovery Subscription

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.

tags:

- Individual EAS Discovery Subscription

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.

tags:

- Individual EAS Discovery Subscription

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/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).

tags:

- EAS Profiles

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: ECS service provisioning 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 EEC supports service continuity or not, also indicates which ACR scenarios are supported by the EEC.

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.

locInf:

$ref: 'TS29122\_MonitoringEvent.yaml#/components/schemas/LocationInfo'

easTDnai:

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

required:

- requestorId

EasDiscoveryResp:

description: ECS discovery response.

type: object

properties:

discoveredEas:

type: array

items:

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

description: List of EAS discovery information.

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 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

- 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.

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 identifier.

easProvId:

type: string

description: EAS provider identifier.

easType:

type: string

description: EAS type.

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.

DiscoveredEas:

description: Represents an EAS discovery information.

type: object

properties:

eass:

type: array

items:

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

minItems: 1

description: Contains the list of EAS matching the discovery request filters

lifeTime:

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

required:

- eass

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: Represents a unique identifier of the EEC.

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.

easFeature:

type: boolean

description: NotiNotify 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:

# description: Describes the AC Profile.

$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'

RequestorId:

description: Represents identifier of the requestor.

type: object

properties:

eesId:

type: string

easId:

type: string

eecId:

type: string

oneOf:

- required: [eesId]

- required: [easId]

- required: [eecId]

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