**3GPP TSG-CT WG1 Meeting #134-eC1-221823**

**E-Meeting, 17th – 25th February 2022**

**Source: Samsung**

**Title: Pseudo-CR on Eees\_EASDiscovery API request, subscribe and notify service operations**

**Spec: 3GPP TS 24.558 v1.1.0**

**Agenda item: 17.2.16**

**Document for: Agreement**

**1. Introduction**

This pCR proposes to specify Eees\_EASDiscovery\_Request operation using HTTP POST with custom operation. Further this pCR also specifies Eees\_EASDiscovery\_Subscribe operation.

**2. Reason for Change**

The Eees\_EASDiscovery\_Request operation is defined in clause 8.5.4.2 of 3GPP TS 23.558. It is required to provide service operations details in stage#3.

**HTTP GET method is removed from the API definition** and **custom operation /request-discovery is defined**. Changes are made in the resource structure and Open API specification.

The Eees\_EASDiscovery\_Subscribe operation is defined in clause 8.5.4.3 of 3GPP TS 23.558. It is required to provide service operations details in stage#3.

**3. Proposal**

It is proposed to agree the following changes to 3GPP TS 24.558 v1.1.0.

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

## 5.1 Introduction

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

Table 5.1-1: List of EES Service APIs

|  |  |  |  |
| --- | --- | --- | --- |
| Service Name | Service Operations | Operation Semantics | Consumer(s) |
| Eees\_EECRegistration | Request | Request/Response | EEC |
| Update | Request/Response | EEC |
| Deregister | Request/Response | EEC |
| Eees\_EASDiscovery | Request | Request/Response | EEC |
| Subscribe | Subscribe/Notify | EEC |
| Notify | 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\_EASDiscovery | 6.3 | Eees EAS Discovery | TS24558\_ Eees\_EASDiscovery.yaml | eees-easdiscovery | A.3 |

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

## 5.3 Eees\_EASDiscovery service

### 5.3.1 Service Description

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

- request to receive EAS discovery information;

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

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

- receive notifications from the EES on EAS discovery information.

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

### 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\_Request | 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 Change \* \* \* \*

#### 5.3.2.2 Eees\_EASDiscovery\_Request

##### 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\_Request operation

To request for the one-time EAS discovery information, the EEC shall send an HTTP POST message 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 receiving 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, and 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;

d) if the EEC is authorized to discover the requested EAS(s) from EES and if 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 Change \* \* \* \*

#### 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 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.

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

#### 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 the "eecSvcContinuity" attribute is provided in the subscription request, the EES shall take the indication which ACR scenarios are supported by the AC and the EEC into consideration while identifying the EAS(s).

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 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.

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

#### 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 | POST | Provides EAS information requested by the UE.. |

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

###### 6.3.2.2.3.1 POST

This method creates a new subscription. 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 | Responsecodes | Description |
| EASDiscoverySubscription | M | 1 | 201 Created | Individual EAS Discovery 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. |

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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 Change \* \* \* \*

###### 6.3.2.3.3.1 PUT

This method updates the individual EAS discovery subscription resource by completely replacing the existing subscription data (except subscriptionId). 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 | Responsecodes | Description |
| EASDiscoverySubscription | M | 1 | 200 OK | An individual EAS discovery subscription resource updated successfully, and the EASDiscoverySubscription data shall be included in the response. |
| n/a |  |  | 204 No Content | An individual EAS discovery subscription resource updated successfully. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection, during resource modification/relocation. 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 PUT method listed in Table 5.2.6-1 of 3GPP TS 29.122 [3] also apply. |

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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 Change \* \* \* \*

###### 6.3.2.3.3.2 DELETE

This method terminates an existing individual EAS discovery subscription. 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 | Responsecodes | Description |
| n/a |  |  | 204 No Content | An individual EAS discovery 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. |

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Table 6.3.2.3.3.2-4: Headers supported by the 307 Response Code on this resource

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

###### 6.3.2.3.3.3 PATCH

This method partially updates an existing Individual EAS Discovery Subscription. 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 | Request to partially update an existing Individual EAS Discovery Subscription. |

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| EasDiscoverySubscription | M | 1 | 200 OK | The Individual EAS Discovery Subscription is successfully modified and the updated subscription information is returned in the response. |
| n/a |  |  | 204 No Content | The Individual EAS Discovery Subscription is successfully modified. |
| n/a |  |  | 307 Temporary Redirect | Temporary redirection, during subscription modification. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [3]. |
| n/a |  |  | 308 Permanent Redirect | Permanent redirection, during subscription modification. The response shall include a Location header field containing an alternative URI of the resource located in an alternative EES.Redirection handling is described in clause 5.2.10 of 3GPP TS 29.122 [3]. |
| 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. |

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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 Change \* \* \* \*

#### 6.3.3.1 Overview

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

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

#### 6.3.2.4 Resource: EAS Profiles

##### 6.3.2.4.1 Description

This resource represents EAS information required by the EEC to access edge application servers.

##### 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 |
| apiVersion | string | See clause 6.1 |

##### 6.3.2.4.3 Resource Standard Methods

None.

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##### 6.3.2.4.4 Resource Custom Operations

###### 6.3.2.4.4.1 Overview

Custom operations used for this API 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 to fetch EAS information |

###### 6.3.2.4.4.2 Operation: request-discovery

6.3.2.4.4.2.1 Description

The custom operation allows the EEC to fetch EAS information, as specified in 3GPP TS 23.558 [2] and in 3GPP TS 29.558 [4], from the EES according to a given discovery filter.

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 | EAS discovery request information |

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| EASDiscoveryResp | M | 1 | 200 OK | The requested EAS discovery information was returned successfully. |
| n/a |  |  | 204 No Content | Request processing is successful but no matching EAS 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 Change \* \* \* \*

### 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. 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 6.3.6.3-1.

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 Change \* \* \* \*

## A.3 Eees\_EASDiscovery API

openapi: 3.0.0

info:

 title: Eees\_EASDiscovery

 description: |

 API for EAS Discovery.

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 All rights reserved.

 version: "1.0.0-alpha.2"

externalDocs:

 description: 3GPP TS 24.558 V1.1.0 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'

 callbacks:

 notificationDestination:

 '{request.body#/notificationDestination}':

 post:

 requestBody: # contents of the callback message

 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'

 responses:

 '201':

 description: Individual EAS Discovery Subscription resource created successfully.

 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'

 /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 (An individual EAS discovery subscription resource updated successfully)

 content:

 application/json:

 schema:

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

 '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'

 '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 UE.

 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:

 type: string

 description: Represents a unique identifier of the requestor (i.e. EEC).

 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'

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