**3GPP TSG-CT WG3 Meeting #116eC3-213094**

**E-Meeting, 19th – 28th May 2021**

**Source: NTT, Samsung, Huawei**

**Title: Pseudo-CR on Eees\_SessionWithQoS service description and API spec**

**Spec: 3GPP TS 29.558**

**Agenda item: 17.9**

**Document for: Decision**

**1. Introduction**

Eees\_SessionWithQoS service and its API is specified by SA6 in 3GPP TS 23.558. This contribution proposes the service description and API definition of the Eees\_SessionWithQoS API.

**2. Reason for Change**

Stage 3 aspects of Eees\_SessionWithQoS service API need to be defined aligning to 3GPP TS 23.558.

**3. Conclusions**

<Conclusion part (optional)>

**4. Proposal**

It is proposed to agree the following changes to 3GPP TS 29.558, v0.3.0.

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

# 2 References

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

[x1] 3GPP TS 29.512: "5G System; Session Management Policy Control Service; Stage 3".

[x2] 3GPP TS 29.514: "5G System; Policy Authorization Service; Stage 3".

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

## 5.1 Introduction

*This clause will provide the list of Edge Enabler Server services with their respective service operations.*

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

Table 5.1-1: List of EES Service APIs

|  |  |  |  |
| --- | --- | --- | --- |
| Service Name | Service Operations | Operation Semantics | Consumer(s) |
| Eees\_EASRegistration | Request | Request/Response | EAS |
| Update | Request/Response | EAS |
| Deregister | Request/Response | EAS |
| Eees\_UELocation | Get | Request/Response | EAS |
| Subscribe | Subscribe/Notify | EAS |
| Notify |
| UpdateSubscription |
| Unsubscribe |
| Eees\_UEIdentifier | Get | Request/Response | EAS |
| Eees\_SessionWithQoS | Create | Request/Response | EAS |
| Update | Request/Response | EAS |
| Revoke | Request/Response | EAS |
| Notify | Subscribe/Notify | EAS |

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

Table 5.1-2: API Descriptions

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Service Name** | **Clause** | **Description** | **OpenAPI Specification File** | **apiName** | **Annex** |
|  |  |  |  |  |  |

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

## 5.z Eees\_SessionWithQoS Service

### 5.z.1 Service Description

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

### 5.z.2 Service Operations

#### 5.z.2.1 Introduction

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

Table 5.z.2.1-1: Operations of the Eees\_SessionWithQoS API

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

#### 5.z.2.2 Eees\_SessionWithQoS\_Create

##### 5.z.2.2.1 General

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

##### 5.z.2.2.2 EAS requesting reservation of resources for a data session between AC and EAS with specific QoS using Eees\_SessionWithQoS operation

To request establishment of a data session between AC and EAS with a specific QoS, the EAS shall send a HTTP POST message to the Edge Enabler Server on the "Sessions with QoS" resource as specified in clause 8.z.2.2.3.1. The body of POST message shall include the EAS identifier, only one of the UE’s IP address or the Identifier of the UE or the identifier of the group uniquely identifying a group of UEs, IP flow description, and at least one of requested QoS reference. The body of POST message may include a list of associated events which the EAS subscribes, and if the event list is included, a Notification Destination URI shall also be provided.

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

1. Process the EAS Session with QoS Create request;

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

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

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

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

c. if the request is for a single UE identified by the IP address or the IP address is obtained in step 3b, interact directly with the PCRF (as specified in 3GPP TS 29.214 [29214]) or the PCF (as specified in 3GPP TS 29.512 [29512]), or via the SCEF (as specified in 3GPP TS 29.122 [6]) or the NEF (as specified in 3GPP TS 29.522 [10]) by invoking the AsSessionWithQoS API, to provide the specific QoS information to the PCF.

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

#### 5.z.2.3 Eees\_SessionWithQoS\_Update

##### 5.z.2.3.1 General

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

##### 5.z.2.3.2 EAS updating QoS of a data session between AC and EAS using Eees\_SessionWithQoS\_Update operation

To request modification of the QoS of the data session between AC and EAS, the EAS shall send a HTTP PATCH or PUT message to the EES on resource URI "Individual Session with QoS" resource as specified in clause 8.z.2.3.3.1 for HTTP PATCH message and in clause 8.z.2.3.3.2 for HTTP PUT message.

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

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

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

2. if authorized, and the resource exists, then the EES shall;

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

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

#### 5.z.2.4 Eees\_SessionWithQoS\_Revoke

##### 5.z.2.4.1 General

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

##### 5.z.2.4.2 EAS revoking QoS of a data session between AC and EAS using Eees\_SessionWithQoS\_Revoke operation

To revoke the data session between AC and EAS with a specific QoS and unsubscribe the user plane event notifications, the EAS shall send a HTTP DELETE message to the EES targeting the Individual Session with QoSresource as specified in clause 8.z.2.3.3.3. Upon receiving the HTTP DELETE request, the EES shall:

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

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

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

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

#### 5.z.2.4 Eees\_SessionWithQoS\_Notify

##### 5.z.2.4.1 General

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

##### 5.z.2.4.2 EAS notifying QoS of a data session between AC and EAS using Eees\_SessionWithQoS\_Notify operation

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

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

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

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

## 8.z Eees\_SessionWithQoS API

### 8.z.1 API URI

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

The request URIs used in HTTP requests from the Edge Application Server towards the Edge Enabler Server shall have the Resource URI structure as defined in clause 7.5 with the following clarifications:

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

- The <apiVersion> shall be "v1".

- The <apiSpecificResourceUriPart> shall be set as described in clause 8.z.2.

### 8.z.2 Resources

#### 8.z.2.1 Overview

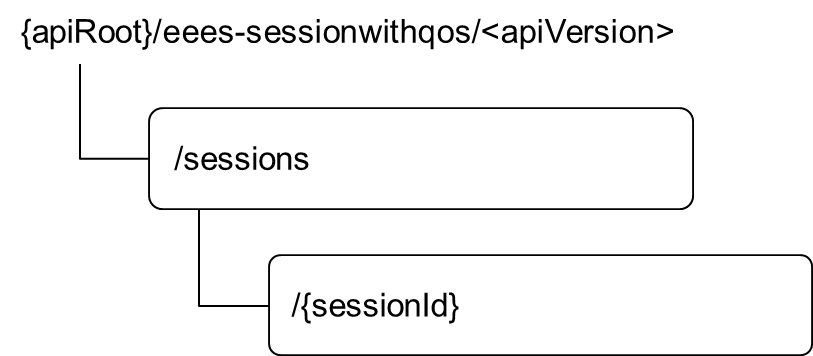


Figure 8.z.2.1-1: Resource URI structure of the Eees\_SessionWithQoS API

Table 8.z.2.1-1 provides an overview of the resources and applicable HTTP methods.

Table 8.z.2.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method or custom operation | Description |
| Sessions with QoS | /sessions | POST | Create a new individual Session with QoS |
| Individual Session with QoS | /sessions/{sessionId} | PUT | Fully replace an existing Individual Session with QoS resource identified by a sessionId. |
| PATCH | Partial update an existing Individual Session with QoS resource identified by a sessionId |
| DELETE | Remove an Individual Session with QoS resource identified by a sessionId. |

Editor’s Note: Details of how the EAS security credentials are submitted in the HTTP GET message is FFS and to be updated based on security aspects defined by SA3.

Editor’s Note: Whether the HTTP GET message is necessary for "Sessions with QoS" and/or "Individual Session with QoS" resources or not is FFS.

#### 8.z.2.2 Resource: Sessions with QoS

##### 8.z.2.2.1 Description

This resource represents session information of all the data sessions with a specific QoS setting at a given Edge Enabler Server.

##### 8.z.2.2.2 Resource Definition

Resource URI: **{apiRoot}/eees-sessionwithqos/<apiVersion>/sessions**

This resource shall support the resource URI variables defined in the table 8.z.2.2.2-1.

Table 8.z.2.2.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5 |
| apiVersion | string | See clause 8.z.1 |

##### 8.z.2.2.3 Resource Standard Methods

###### 8.z.2.2.3.1 POST

This method requests resources for a data session between AC and EAS with a specific QoS and may create the session information subscription at the Edge Enabler Server for receiving the user plane event notification of the session information. This method shall support the URI query parameters specified in table 8.z.2.2.3.2-1.

Table 8z.2.2.3.1-1: URI query parameters supported by the POST method on this resource

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

This method shall support the request data structures specified in table 8.z.2.2.3.1-2 and the response data structures and response codes specified in table 8.z.2.2.3.1-3.

Table 8.z.2.2.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| SessionWithQoS | M | 1 | Parameters to create a subscription for a session with required QoS for the service requirement. |

Table 8.z.2.2.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| SessionWithQoS | M | 1 | 201 Created | The session is successfully set up with requested QoS, and the session information is provided in the response body.  The URI of the created resource shall be returned in the "Location" HTTP header. |
| NOTE: The manadatory HTTP error status code for the POST method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.z.2.2.3.1-4: Headers supported by the POST method on this resource

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

Table 8.z.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-sessionwithqos/<apiVersion>/sessions/{sessionId} |

Table 8.z.2.2.3.1-6: Links supported by the 200 Response Code on this endpoint

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

##### 8.z.2.2.4 Resource Custom Operations

None.

#### 8.z.2.3 Resource: Individual Session with QoS

##### 8.z.2.3.1 Description

This resource represents an individual session information of the data session with a specific QoS setting at a given Edge Enabler Server.

##### 8.z.2.3.2 Resource Definition

Resource URI: **{apiRoot}/eees-sessionwithqos/<apiVersion>/sessions/{sessionId}**

This resource shall support the resource URI variables defined in the table 8.z.2.3.2-1.

Table 8.z.2.3.2-1: Resource URI variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data Type | Definition |
| apiRoot | string | See clause 7.5 |
| apiVersion | string | See clause 8.z.1 |

##### 8.z.2.3.3 Resource Standard Methods

###### 8.z.2.3.3.1 PATCH

This method partially updates the QoS of the data session between AC and EAS. This method shall support the URI query parameters specified in the table 8.z.2.3.3.1-1.

Table 8.z.2.3.3.1-1: URI query parameters supported by the PATCH method on this resource

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

This method shall support the request data structures specified in table 8.z.2.3.3.1-2 and the response data structures and response codes specified in table 8.z.2.3.3.1-3.

Table 8.z.2.3.3.1-2: Data structures supported by the PATCH Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| SessionWithQoSPatch | M | 1 | Request to partially update the data session between AC and EAS with a specific QoS |

Table 8.z.2.3.3.1-3: Data structures supported by the PATCH Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| SessionWithQoS | M | 1 | 200 OK | The individual Session with QoS is successfully modified and the updated session with QoS context information is returned in the response |
| n/a |  |  | 204 No Content | The individual Session with QoS is successfully modified. |
| NOTE: The manadatory HTTP error status code for the PATCH method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.z.2.3.3.1-4: Headers supported by the PATCH method on this resource

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

Table 8.z.2.3.3.1-5: Headers supported by the PATCH response code on this resource

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

Table 8.z.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 |  |  |  |  |

###### 8.z.2.3.3.2 PUT

This method requests modification of QoS of the data session between AC and EAS and may modify the subscription of the event monitoring by subscribing to new events or removing subscriptions to existing events at the Edge Enabler Server for receiving the user plane event notification of the session information. This method shall support the URI query parameters specified in the table 8.z.2.3.3.2-1.

Table 8.z.2.3.3.2-1: URI query parameters supported by the PUT method on this resource

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

Editor’s Note: Details of how the EAS security credentials are submitted in the HTTP PUT message is FFS and to be updated based on security aspects defined by SA3.

This method shall support the request data structures specified in table 8.z.2.3.3.2-2 and the response data structures and response codes specified in table 8.z.2.3.3.2-3.

Table 8.z.2.3.3.2-2: Data structures supported by the PUT Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| SessionWithQoS | M | 1 | Parameters to create a subscription for a session with required QoS for the service requirement. |

Table 8.z.2.3.3.2-3: Data structures supported by the PUT Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| SessionWithQoS | M | 1 | 200 OK | The individual Session with QoS is successfully modified and the updated session with QoS context information is returned in the response. |
| n/a |  |  | 204 No Content | The individual Session with QoS is successfully modified. |
| NOTE: The manadatory HTTP error status code for the PUT method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.z.2.3.3.2-4: Headers supported by the PUT method on this resource

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

Table 8.z.2.3.3.2-5: Headers supported by the PUT response code on this resource

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

Table 8.z.2.3.3.2-6: Links supported by the 200 Response Code on this endpoint

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

###### 8.z.2.3.3.3 DELETE

This method revokes the data session between AC and EAS with a specific QoS and unsubscribes to the related session with user plane event notification. This method shall support the URI query parameters specified in table 8.z.2.3.3.3-1.

Table 8.z.2.3.3.3-1: URI query parameters supported by the DELETE method on this resource

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

Editor’s Note: Details of how the EAS security credentials are submitted in the HTTP DELETE message is FFS and to be updated based on security aspects defined by SA3.

This method shall support the request data structures specified in table 8.z.2.3.3.3-2 and the response data structures and response codes specified in table 8.z.2.3.3.3-3.

Table 8.z.2.3.3.3-2: Data structures supported by the DELETE Request Body on this resource

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

Table 8.z.2.3.3.3-3: Data structures supported by the DELETE Response Body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response  codes | Description |
| n/a | M | 1 | 204 No Content | The individual Session with QoS resource matching the sessionId is successfully deleted. |
| NOTE: The manadatory HTTP error status code for the DELETE method listed in Table 5.2.6-1 of 3GPP TS 29.122 [6] also apply. | | | | |

Table 8.z.2.3.3.3-4: Headers supported by the DELETE method on this resource

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

Table 8.z.2.3.3.3-5: Headers supported by the DELETE response code on this resource

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

Table 8.z.2.3.3.3-6: Links supported by the 204 Response Code on this endpoint

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

##### 8.z.2.3.4 Resource Custom Operations

None.

### 8.z.3 Custom Operations without associated resources

None.

### 8.z.4 Notifications

#### 8.z.4.1 General

Table 8.z.4.1-1: Notifications overview

|  |  |  |  |
| --- | --- | --- | --- |
| Notification | Callback URI | HTTP method or custom operation | Description  (service operation) |
| User Plane Event Notification | {notificationDestination} | POST | Notifies the EAS the subscribed user plane event(s). |

#### 8.z.4.2 User Plane Event Notification

##### 8.z.4.2.1 Description

##### 8.z.4.2.2 Notification definition

The POST method shall be used by the EES for the notification and the callback URI shall be the one provided by the EAS during the reservation of resources for a data session between AC and EAS with a specific QoS.

Callback URI: **{notificationDestination}**

This method shall support the URI query parameters specified in table 8.z.4.2.2-1.

Table 8.z.4.2.2-1: URI query parameters supported by the POST method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
|  |  |  |  |  |

This method shall support the request data structures specified in table 8.z.4.2.2-2 and the response data structures and response codes specified in table 8.z.4.2.2-3.

Table 8.z.4.2.2-2: Data structures supported by the POST Request Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| UserPlaneEventNotification | M | 1 | Notification of the user plane event on the data session. |

Table 8.z.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. |

### 8.z.5 Data Model

#### 8.z.5.1 General

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

Table 8.z.5.1-1 specifies the data types defined specifically for the Eees\_SessionWithQoS API service.

Table 8.z.5.1-1: Eees\_SessionWithQoS API specific Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Section defined | Description | Applicability |
| SessionWithQoS | 8.z.5.2.2 |  |  |
| SessionWIthQoSPatch | 8.z.5.2.3 |  |  |
| UserPlaneEventNotification | 8.z.5.2.4 |  |  |

Table 8.z.5.1-2 specifies data types re-used by the Eees\_SessionWithQoS API service.

Table 8.z.5.1-2: Re-used Data Types

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Reference | Comments | Applicability |
| Gpsi | 3GPP TS 29.571 [8] | Used to identify the UE in the query parameter, for which location information is queried. |  |
| Ipv4Addr | 3GPP TS 29.122 [6] | Identifying the IPv4 address of the UE. |  |
| Ipv6Addr | 3GPP TS 29.122 [6] | Identifying the IPv6 address of the UE. |  |
| UserPlaneEvent | 3GPP TS 29.122 [6] | Indicates the event reported by the EES. |  |
| SponsorInformation | 3GPP TS 29.122 [6] | Indicates a sponsor information |  |
| QosMonitoringInformation | 3GPP TS 29.122 [6] | Indicates the Qos Monitoring information |  |
| DurationSecRm | 3GPP TS 29.571 [8] | This data type is defined in the same way as the "DurationSec" data type, but with the OpenAPI "nullable: true" property. |  |
| SupportedFeatures | 3GPP TS 29.571 [8] | Used to negotiate the applicability of optional features. |  |
| TestNotification | 3GPP TS 29.122 [6] | This type represents a notification that can be sent to test whether a chosen notification mechanism works |  |
| Uri | 3GPP TS 29.122 [6] |  |  |
| WebsockNotifConfig | 3GPP TS 29.122 [6] | This type represents configuration for the delivery of notifications over Websockets. |  |
| Dnn | 3GPP TS 29.571 [8] | Identifies a DNN. |  |
| GroupId | 3GPP TS 29.571 [8] | Used to present the internal group identifier in location subscription. |  |
| ExternalGroupId | 3GPP TS 29.571 [8] | Used to present the external group identifier in location subscription. |  |
| Snssai | 3GPP TS 29.571 [8] | Identifies a S-NSSAI |  |
| FlowDescription | 3GPP TS 29.514 [x2] | Identifies an IP flow description. |  |
| BitRateRm | 3GPP TS 29.571 [11] | This data type is defined in the same way as the "BitRate" data type, but with the OpenAPI "nullable: true" property. |  |
| AccumulatedUsage | 3GPP TS 29.122 [6] | Contains the applicable information corresponding to the event. |  |
| QosMonitoringReport | 3GPP TS 29.122 [6] | Contains the QoS Monitoring Reporting information. |  |
| UserPlaneEventReport | 3GPP TS 29.122 [6] |  |  |

#### 8.z.5.2 Structured data types

##### 8.z.5.2.1 Introduction

##### 8.z.5.2.2 Type: SessinoWithQoS

Table 8.z.5.2.2-1: Definition of type SessionWIthQoS

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| easId | string | M | 1 | Identifier of the EAS subscribing for location information report. |  |
| ueIpv4Addr | Ipv4Addr | O | 0..1 | IPv4 address of the UE. (NOTE 1) |  |
| ueIpv6Addr | Ipv6Addr | O | 0..1 | IPv6 address of the UE. (NOTE 1) |  |
| ipDomain | string | O | 0..1 | Identifies the IP domain. The attribute may only be provided if the ueIpv4Addr attribute is present. |  |
| ueId | Gpsi | O | 0..1 | Identifier of the UE for which the location information reporting is subscribed for. (NOTE 1) |  |
| intGrpId | GroupId | O | 0..1 | The internal group identifier, identifying the group of UEs for which the location information reporting is subscribed for. (NOTE 1) |  |
| extGrpId | ExternalGroupId | O | 0..1 | The external group identifier, identifying the group of UEs for which the location information reporting is subscribed for. (NOTE 1) |  |
| ipFlows | array(FlowDescription) | M | 1..N | Contains the flow description for the Uplink and/or Downlink IP flows. |  |
| qosReference | string | O | 0..1 | Identifies a pre-defined QoS information (NOTE 2) |  |
| altQoSReferences | array(string) | O | 0..N | Identifies an ordered list of pre-defined QoS information. The lower the index of the array for a given entry, the higher the priority. |  |
| events | array(UserPlaneEvent) | M | 1..N | Indicates the events subscribed by the EAS. |  |
| sponsorInformation | SponsorInformation | O | 0..1 | Describes the sponsor information. |  |
| qosMonInfo | QosMonitoringInformation | O | 0..1 | Qos Monitoring information. It can be present when the event "QOS\_MONITORING" is subscribed. |  |
| notificationDestination | Uri | C | 0..1 | URI where the event notification shall be delivered to.  This attribute shall be present if the "events" attribute is included. |  |
| dnn | Dnn | O | 0..1 | Dnn of the PDU session, a full DNN with both the Network Identifier and Operator Identifier, or a DNN with the Network Identifier only. |  |
| snssai | Snssai | O | 0..1 | S-NSSAI of the PDU session. |  |
| maxbrUl | BitRate | O | 0..1 | Indicates the (requested) maximum bandwidth in uplink. (NOTE 2) |  |
| maxbrDl | BitRate | O | 0..1 | Indicates the (requested) maximum bandwidth in downlink. (NOTE 2) |  |
| disUeNotif | boolean | O | 0..1 | Indicates to disable QoS flow parameters signalling to the UE when the SMF is notified by the NG-RAN of changes in the fulfilled QoS situation when it is included and set to "true". The fulfilled situation is either the QoS profile or an Alternative QoS Profile. The default value "false" shall apply, if the attribute is not present and has not been supplied previously. |  |
| requestTestNotification | boolean | O | 0..1 | Set to true by Subscriber to request the EES to send a test notification as defined in 3GPP TS 29.122 [6]. Set to false or omitted otherwise. | Notification\_test\_event |
| websockNotifConfig | WebsockNotifConfig | O | 0..1 | Configuration parameters to set up notification delivery over Websocket protocol as defined in 3GPP TS 29.122 [6]. | Notification\_websocket |
| NOTE 1: Only one of UE IP address (ipv4Addr or ipv6Addr), UE Identifier (ueId), Internal group identifier (intGrpId), or External group identifier (extGrpId) shall be included..  NOTE 2: Only one of requested QoS (qosReference) or Requested bandwidth (maxbuUl and/or maxbtDl) shall be included. | | | | | |

Editor’s Note: Support of Frequency of reporting is FFS.

##### 8.z.5.2.3 Type: SessionWithQoSPatch

Table 8.z.5.2.3-1: Definition of type SessionWIthQoSPatch

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| ipFlows | array(FlowDescription) | M | 1..N | Contains the flow description for the Uplink and/or Downlink IP flows. |  |
| qosReference | string | O | 0..1 | Identifies a pre-defined QoS information. |  |
| altQoSReferences | array(string) | O | 0..N | Identifies an ordered list of pre-defined QoS information. The lower the index of the array for a given entry, the higher the priority. |  |
| events | array(UserPlaneEvent) | M | 1..N | Indicates the event subscribed by the EAS. |  |
| sponsorInformation | SponsorInformation | O | 0..1 | Describes the sponsor information such as who is sponsoring the traffic. |  |
| qosMonInfo | QosMonitoringInformationRm | O | 0..1 | Qos Monitoring information. It can be present when the event "QOS\_MONITORING" is subscribed. |  |
| notificationDestination | Uri | O | 0..1 | URI where the monitoring event notification should be delivered to. |  |
| maxbrUl | BitRateRm | O | 0..1 | Indicates the (requested) maximum bandwidth in uplink. |  |
| maxbrDl | BitRateRm | O | 0..1 | Indicates the (requested) maximum bandwidth in downlink. |  |
| disUeNotif | boolean | O | 0..1 | Indicates to disable QoS flow parameters signalling to the UE when the SMF is notified by the NG-RAN of changes in the fulfilled QoS situation when it is included and set to "true". The fulfilled situation is either the QoS profile or an Alternative QoS Profile. The default value "false" shall apply, if the attribute is not present and has not been supplied previously. |  |

##### 8.z.5.2.4 Type: UserPlaneEventNotification

Table 8.z.5.2.4-1: Definition of type UserPlaneEventNotifiation

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attribute name | Data type | P | Cardinality | Description | Applicability |
| sessionId | string | M | 1 | String identifying the individual data session information for which the QoS event notification is delivered. |  |
| eventReports | array(UserPlaneEventReport) | M | 1..N | List of notifications that include the QoS event information of the data session. |  |

#### 8.z.5.3 Simple data types and enumerations

None.

### 8.z.6 Error Handling

General error responses are defined in clause 7.7.

### 8.z.7 Feature negotiation

General feature negotiation procedures are defined in clause 7.8. Table 8.z.7-1 lists the supported features for Eees\_SessionWithQoS API.

Table 8.z.7-1: Supported Features

|  |  |  |
| --- | --- | --- |
| Feature number | Feature Name | Description |
| 1 | Notification\_test\_event | Testing of notification connection is supported according to clause 7.6. |
| 2 | Notification\_websocket | The delivery of notifications over Websocket is supported according to clause 7.6. This feature requires that the Notification\_test\_event feature is also supported. |

Editor’s Note: The supported features at the Eees\_SessionWithQoS API to distinguish the applicability of EPC/5GC related capability is FFS.

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