**3GPP TSG-SA WG6 Meeting #39 BIS-e S6-201726**

**E-meeting, 12 – 20 October 2020**

**Source: ETRI, Samsung**

**Title: EDGEAPP: Proposal to modify the API service operation names**

**Spec: 3GPP TS 23.558 v1.0.0**

**Agenda item: 7.6**

**Document for: Approval**

**Contact: Seungik Lee <seungiklee@etri.re.kr>; Jong-Hwa Yi <jhyiee@etri.re.kr>**

# 1 Introduction

The APIs specified in TS 23.558 have some ambiguity since they are named of reference points not of service producers. For example, *EDGE3\_EAS\_Discovery* is a service supported by EES, which is hardly figured out from its name.

This paper proposes to modify the existing APIs specified in TS 23.558 in the form of service-based interfaces by exploiting the same convention used in TS 23.502.

In Annex A.2 of TS 23.502, the service and service operation naming is defined as follows:

*- Nnfname\_ServiceName*, where *Nnfname* is the service-based interface where the NF service is invoked. See TS 23.501 [2] clause 4.2.5 for the list of service-based interfaces in the 5GS Architecture.



Figure A.2.2-1: Service Operation Naming and its Methods

An example implementation of NF services in TS 23.502 is as follows:

Table 5.2.8.1-1: NF services provided by the SMF

|  |  |  |  |
| --- | --- | --- | --- |
| Service Name | Service Operations | OperationSemantics | Example Consumer(s) |
| Nsmf\_PDUSession | Create | Request/Response | V-SMF/I-SMF |
|  | Update | Request/Response | V-SMF/I-SMF, H-SMF |
|  | Release | Request/Response | V-SMF/I-SMF |
|  | CreateSMContext | Request/Response | AMF |
|  | UpdateSMContext | Request/Response | AMF |
|  | ReleaseSMContext | Request/Response | AMF |
|  | SMContextStatusNotify | Subscribe/Notify | AMF |
|  | StatusNotify | Subscribe/Notify | V-SMF/I-SMF |
|  | ContextRequest | Request/Response | AMF, I-SMF, SMF |
|  | ContextPush | Request/Response | SMF |
|  | SendMOData | Request/Response | AMF |
| Nsmf\_EventExposure | Subscribe | Subscribe/Notify | NEF, AMF, NWDAF |
|  | Unsubscribe |  | NEF, AMF, NWDAF |
|  | Notify |  | NEF, AMF, NWDAF |
|  | AppRelocationInfo |  | AF |
| Nsmf\_NIDD | Delivery | Request/Response | NEF |

# 2 Discussion

The service operations specified in TS 23.558 can be summarized as follows:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Service operations** | **Consumer** | **Producer** | **Semantics** | **References** | **Given API** |
| Service provisioning | EEC | ECS | R/R | 8.3.2.3 | - |
| Service provisioning subscription | EEC | ECS | S/N | 8.3.2.4.2 | - |
| Service provisioning notification | EEC | ECS | S/N | 8.3.2.4.3 | - |
| Service provisioning subscription update | EEC | ECS | S/N | 8.3.2.4.4 | - |
| Service provisioning unsubscribe | EEC | ECS | S/N | 8.3.2.4.5 | - |
| Edge Enabler Client registration | EEC | EES | R/R | 8.4.2.2.2 | - |
| Edge Enabler Client registration update | EEC | EES | R/R | 8.4.2.2.3 | - |
| Edge Enabler Client de-registration | EEC | EES | R/R | 8.4.2.2.4 | - |
| Edge Application Server registration | EAS | EES | R/R | 8.4.3.2.2 | - |
| Edge Application Server registration update | EAS | EES | R/R | 8.4.3.2.3 | - |
| Edge Application Server de-registration | EAS | EES | R/R | 8.4.3.2.4 | - |
| Edge Enabler Server registration | EES | ECS | R/R | 8.4.4.2.2 | - |
| Edge Enabler Server registration update | EES | ECS | R/R | 8.4.4.2.3 | - |
| Edge Enabler Server de-registration | EES | ECS | R/R | 8.4.4.2.4 | - |
| Edge Application Server discovery | EECEAS | EESEES | R/RR/R | 8.5.28.8.3.2 | *-**EDGE3\_EAS\_Discovery Discover\_EAS* |
| UE location | EAS | EES | R/R | 8.6.2.2.2 | *EDGE3\_UE\_location API Request* |
| UE location subscribe | EAS | EES | S/N | 8.6.2.2.3.2 | *EDGE3\_UE\_location API Subscribe* |
| UE location API notification | EAS | EES | S/N | 8.6.2.2.3.3 | *EDGE3\_UE\_location API Notify* |
| UE location subscription update | EAS | EES | S/N | 8.6.2.2.3.4 | *EDGE3\_UE\_location API Subscription\_Update* |
| UE location unsubscribe | EAS | EES | S/N | 8.6.2.2.3.5 | *EDGE3\_UE\_location API Unsubscribe* |
| User plane path management event subscribe | EAS | EES | S/N | 8.6.3.2.2 | *EDGE3\_User\_plane\_management\_event API Subscribe* |
| User plane path management event notification | EAS | EES | S/N | 8.6.3.2.3 | *EDGE3\_User\_plane\_management\_event API Notify* |
| User plane path management event subscription update | EAS | EES | S/N | 8.6.3.2.4 | *EDGE3\_User\_plane\_management\_event API Update* |
| User plane path management event unsubscribe | EAS | EES | S/N | 8.6.3.2.5 | *EDGE3\_User\_plane\_management\_event API Unsubscribe* |
| Application Client information subscription | EAS | EES | S/N | 8.6.4.2.2 | - |
| Application Client information notification | EAS | EES | S/N | 8.6.4.2.3 | - |
| UE identifier API | EAS | EES | R/R | 8.6.5.2 | *EDGE3\_UE\_Identifier API Request* |
| Session with QoS create | EAS | EES | R/R | 8.6.6.2.2 | *EDGE3\_Session\_with\_QoS API Create* |
| Session with QoS update | EAS | EES | R/R | 8.6.6.2.3 | *EDGE3\_Session\_with\_QoS API Update* |
| Session with QoS revoke | EAS | EES | R/R | 8.6.6.2.4 | *EDGE3\_Session\_with\_QoS API Revoke* |
| Session with QoS event notification | EAS | EES | S/N | 8.6.6.2.5 | *EDGE3\_Session\_with\_QoS API Notify* |
| Retrieve Edge Enabler Server | EES | ECS | R/R | 8.8.3.3 | *-* |

*\* R/R: Request/Response, S/N: Subscribe/Notify*

Using a similar convention as given in TS 23.502, the service operations of ECS and EES can be re-named as follows:

*- Efename\_APIName*, where *Efename* is the name of the functional entity exposing the API prefixed with 'E' (denoting 'Edge').

**1. ECS services**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **API Name** | **API Operations** | **Operation Semantics** | **Example Consumer(s)** | *References* |
| Eecs\_ServiceProvisioning | Request | Request/Response | EEC | *8.3.2.3* |
| Subscribe | Subscribe/Notify | EEC | *8.3.2.4.2* |
| UpdateSubscription | EEC | *8.3.2.4.4* |
| Unsubscribe | EEC | *8.3.2.4.5* |
| Notify | EEC | *8.3.2.4.3* |
| Eecs\_EESRegistration | Request | Request/Response | EES | *8.4.4.2.2* |
| Update | Request/Response | EES | *8.4.4.2.3* |
| Deregister | Request/Response | EES | *8.4.4.2.4* |
| Retrieve | Request/Response | EES | *8.8.3.3* |

**2. EES services**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **API Name** | **API Operations** | **Operation Semantics** | **Example Consumer(s)** | *References* |
| Eees\_EECRegistration | Request | Request/Response | EEC | *8.4.2.2.2* |
| Update | Request/Response | EEC | *8.4.2.2.3* |
| Deregister | Request/Response | EEC | *8.4.2.2.4* |
| Eees\_EASRegistration | Request | Request/Response | EAS | *8.4.3.2.2* |
| Update | Request/Response | EAS | *8.4.3.2.3* |
| Deregister | Request/Response | EAS | *8.4.3.2.4* |
| Eees\_EASDiscovery | Request | Request/Response | EEC, EAS | *8.5.2**8.8.3.2* |
| Eees\_UELocation | Get | Request/Response | EAS | *8.6.2.2.2* |
| Subscribe | Subscribe/Notify | EAS | *8.6.2.2.3.2* |
| UpdateSubscription | EAS | *8.6.2.2.3.4* |
| Unsubscribe | EAS | *8.6.2.2.3.5* |
| Notify | EAS | *8.6.2.2.3.3* |
| Eees\_UPPathManagementEvent | Subscribe | Subscribe/Notify | EAS | *8.6.3.2.2* |
| UpdateSubscription | EAS | *8.6.3.2.4* |
| Unsubscribe | EAS | *8.6.3.2.5* |
| Notify | EAS | *8.6.3.2.3* |
| Eees\_AppClientInformation | Subscribe | Subscribe/Notify | EAS | *8.6.4.2.2* |
| Notify | EAS | *8.6.4.2.3* |
| Eees\_UEIdentifier | Get | Request/Response | EAS | *8.6.5.2* |
| Eees\_SessionWithQoS | Create | Request/Response | EAS | *8.6.6.2.2* |
| Update | Request/Response | EAS | *8.6.6.2.3* |
| Revoke | Request/Response | EAS | *8.6.6.2.4* |
| Notify | Subscribe/Notify | EAS | *8.6.6.2.5* |
| Eees\_TargetEASDiscovery | Request | Request/Response | EAS | *8.8.3.2* |

# 3 Proposal

It is proposed to modify the text of TS 23.558 v1.0.0 as follows.

*1st CHANGE*

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*5th CHANGE*

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*6th CHANGE*

#### 8.6.2.4 APIs

##### 8.6.2.4.1 General

Editor's Note: Merging request and subscribe API operation in a single API operation is FFS.

Table 8.6.2.4.1-1 illustrates the API for UE location.

Table 8.6.2.4.1-1: Eees\_UELocation API

|  |  |  |  |
| --- | --- | --- | --- |
| API Name | API Operations | OperationSemantics | Consumer(s) |
| **Eees\_UELocation** | Get | Request/Response | EAS |
| Subscribe | Subscribe/Notify | EAS |
| Notify |
| UpdateSubscription |
| Unsubscribe |

##### 8.6.2.4.2 Eees\_UELocation\_Get operation

**API operation name:** Eees\_UELocation\_Get

**Description:** The consumer requests one time report of a UE's location.

**Inputs:** See clause 8.6.2.3.1.

**Outputs:** See clause 8.6.2.3.2*.*

See clause 8.6.2.2.2 for details of usage of this operation.

##### 8.6.2.4.3 Eees\_UELocation\_Subscribe operation

**API operation name:** Eees\_UELocation\_Subscribe

**Description:** The consumer subscribes for continuous reporting of a UE's location.

**Inputs:** See clause 8.6.2.3.3.

**Outputs:** See clause 8.6.2.3.4*.*

See clause 8.6.2.2.3.2 for details of usage of this operation.

##### 8.6.2.4.4 Eees\_UELocation\_Notify operation

**API operation name:** Eees\_UELocation\_Notify

**Description:** The consumer is notified with report of the UE's location.

**Inputs:** See clause 8.6.2.3.5.

**Outputs:** None*.*

See clause 8.6.2.2.3.3 for details of usage of this operation.

##### 8.6.2.4.5 Eees\_UELocation\_UpdateSubscription operation

**API operation name:** Eees\_UELocation\_UpdateSubscription

**Description:** The consumer updates an existing subscription for continuous reporting of a UE's location.

**Inputs:** See clause 8.6.2.3.6.

**Outputs:** See clause 8.6.2.3.7*.*

See clause 8.6.2.2.3.4 for details of usage of this operation.

##### 8.6.2.4.6 Eees\_UELocation\_Unsubscribe operation

**API operation name:** Eees\_UELocation\_Unsubscribe

**Description:** The consumer cancels an existing subscription for continuous reporting of a UE's location.

**Inputs:** See clause 8.6.2.3.8.

**Outputs:** See clause 8.6.2.3.9*.*

See clause 8.6.2.2.3.5 for details of usage of this operation.

*7th CHANGE*

#### 8.6.3.4 APIs

##### 8.6.3.4.1 General

Table 8.6.3.4.1-1 illustrates the API for user plane path management event.

Table 8.6.3.4.1-1: Eees\_UPPathManagementEvent API

|  |  |  |  |
| --- | --- | --- | --- |
| API Name | API Operations | OperationSemantics | Consumer(s) |
| **Eees\_UPPathManagementEvent** | Subscribe | Subscribe/Notify | EAS |
| Notify |
| UpdateSubscription |
| Unsubscribe |

##### 8.6.3.4.2 Eees\_UPPathManagementEvent\_Subscribe operation

**API operation name:** Eees\_UPPathManagementEvent\_Subscribe

**Description:** The consumer subscribes to receive a user plane management event.

**Inputs:** See clause 8.6.3.3.1.

**Outputs:** See clause 8.6.3.3.2*.*

See clause 8.6.3.2.2 for details of usage of this operation.

##### 8.6.3.4.3 Eees\_UPPathManagementEvent\_Notify operation

**API operation name:** Eees\_UPPathManagementEvent\_Notify

**Description:** The consumer is notified of an event by the Edge Enabler Server.

**Inputs:** See clause 8.6.3.3.3.

**Outputs:** None*.*

See clause 8.6.3.2.3 for details of usage of this operation.

##### 8.6.3.4.4 Eees\_UPPathManagementEvent\_UpdateSubscription operation

**API operation name:** Eees\_UPPathManagementEvent\_UpdateSubscription

**Description:** The consumer updates an existing subscription for a user plane management event.

**Inputs:** See clause 8.6.2.3.4.

**Outputs:** See clause 8.6.2.3.5*.*

See clause 8.6.3.2.4 for details of usage of this operation.

##### 8.6.3.4.5 Eees\_UPPathManagementEvent\_Unsubscribe operation

**API operation name:** Eees\_UPPathManagementEvent\_Unsubscribe

**Description:** The consumer unsubscribes for the previously subscribed events.

**Inputs:** See clause 8.6.3.3.6.

**Outputs:** See clause 8.6.3.3.7*.*

See clause 8.6.3.2.5 for details of usage of this operation.

*8th CHANGE*

#### 8.6.4.4 APIs

##### 8.6.4.4.1 General

Table 8.6.4.4.1-1 illustrates the API for application client information exposure.

Table 8.6.4.4.1-1: Eees\_AppClientInformation API

|  |  |  |  |
| --- | --- | --- | --- |
| API Name | API Operations | OperationSemantics | Consumer(s) |
| Eees\_AppClientInformation | Subscribe | Subscribe/Notify | EAS |
| Notify |

*9th CHANGE*

#### 8.6.5.4 APIs

##### 8.6.5.4.1 General

Table 8.6.5.4.1-1 illustrates the APIs for UE Identifier.

Table 8.6.5.4.1-1: Eees\_UE\_Identifier API

|  |  |  |  |
| --- | --- | --- | --- |
| API Name | API Operations | OperationSemantics | Consumer(s) |
| **Eees\_UEIdentifier** | Get | Request/Response | EAS |

##### 8.6.5.4.2 Eees\_UEIdentifier\_Get operation

**API operation name:** Eees\_UEIdentifier\_Get

**Description:** The consumer requests identifier of a UE.

**Inputs:** See clause 8.6.5.3.1.

**Outputs:** See clause 8.6.5.3.2*.*

See clause 8.6.5.2 for details of usage of this operation.

*10th CHANGE*

#### 8.6.6.4 APIs

##### 8.6.6.4.1 General

Table 8.6.6.4.1-1 illustrates the API for Session with QoS.

Table 8.6.6.4.1-1: Eees\_SessionWithQoS API

|  |  |  |  |
| --- | --- | --- | --- |
| API Name | API Operations | OperationSemantics | Consumer(s) |
| **Eees\_SessionWithQoS** | Create | Request/Response | EAS |
| Update |
| Revoke |
| Notify | Subscribe/Notify (NOTE) | EAS |
| NOTE: The Subscribe operation is embedded in the Request operation of the Create and Update API operation. |

##### 8.6.6.4.2 Eees\_SessionWithQoS\_Create operation

**API operation name:** Eees\_SessionWithQoS\_Create

**Description:** The consumer requests a data session with the UE with a specific QoS and may also subscribe to certain event notifications related to the user plane traffic.

**Inputs:** See clause 8.6.6.3.1.

**Outputs:** See clause 8.6.6.3.2*.*

See clause 8.6.6.2.2 for details of usage of this operation.

##### 8.6.6.4.3 Eees\_SessionWithQoS\_Update operation

**API operation name:** Eees\_SessionWithQoS\_Update

**Description:** The consumer requests a modification of the QoS of the data session with the UE and may also update event notifications related to the user plane traffic.

**Inputs:** See clause 8.6.6.3.3.

**Outputs:** See clause 8.6.6.3.4*.*

See clause 8.6.6.2.3 for details of usage of this operation.

##### 8.6.6.4.4 Eees\_SessionWithQoS\_Revoke operation

**API operation name:** Eees\_SessionWithQoS\_Revoke

**Description:** The consumer requests a revoke of the data session with QoS with the UE and unsubscribes to all related event notifications.

**Inputs:** See clause 8.6.6.3.5.

**Outputs:** See clause 8.6.6.3.6*.*

See clause 8.6.6.2.4 for details of usage of this operation.

##### 8.6.6.4.5 Eees\_SessionWithQoS\_Notify operation

**API operation name:** Eees\_SessionWithQoS\_Notify

**Description:** The consumer is notified by the Edge Enabler Server of an event related to the user plane traffic.

**Inputs:** See clause 8.6.6.3.7.

**Outputs:** None*.*

See clause 8.6.6.2.5 for details of usage of this operation.

*11th CHANGE*

### 8.8.5 APIs

#### 8.8.5.1 General

Table 8.8.5.1-1 illustrates the API for fetch target Edge Application Server.

Table 8.8.5.1-1: Eees\_TargetEASDiscovery API

|  |  |  |  |
| --- | --- | --- | --- |
| API Name | API Operations | OperationSemantics | Consumer(s) |
| **Eees\_TargetEASDiscovery** | Request | Request/Response | EAS |

#### 8.8.5.2 Eees\_TargetEASDiscovery\_Request operation

**API operation name:** Eees\_TargetEASDiscovery\_Request

**Description:** The consumer requests for the target Edge Application Server information from the Edge Enabler Server.

**Inputs:** See clause 8.8.4.1.

**Outputs:** See clause 8.8.4.2*.*

See clause 8.8.3.2 for details of usage of this operation.

*END OF CHANGES*