**3GPP TSG-CT WG3 Meeting #128 *C3-232177***

**Bratislava, Slovakia, 22nd - 26th May, 2023 (revision of C3-232abc)**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **29.591** | **CR** | **0132** | **rev** | **-** | **Current version:** | **18.1.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network |  | Core Network | **X** |

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|  | | | | | | | | | | |
| ***Title:*** | Definition of service description for the new Nnef\_ECSAddress | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, Nokia, Nokia Shanghai Bell, Ericsson | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | EDGE\_Ph2 | | | | |  | ***Date:*** | | | 2023-05-10 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | As indicated in S2-2306217, a new service ECSAddress was added for NEF to support V-SMF subscribe the ECS Address Configuration Information provided by the V-AF. This paper proposes to define the service description for the ECSAddress service. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Define the service description for the ECSAddress service. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | AF deployed in the VPLMN provides the ECS Address Configuration Information to the V-SMF is not supported. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.5(new) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS/TR 23.502 CR 4062 | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | The CR does not impact the OpenAPI file. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**Additional discussion(if needed):**

**Proposed changes:**

\*\*\* 1st Change \*\*\*

## 4.5 ECSAddress Service

### 4.5.1 Service Description

#### 4.5.1.1 Overview

The ECSAddress service, as defined in 3GPP TS 23.502 [3], is provided by the Network Exposure Function (NEF). This service allows the V-SMF to subscribe/unsubscribe the notification of ECS Address Configuration Information from AF in VPLMN, and for the V-NEF to notify the ECS Address Configuration Information to the subscribed V-SMF.

#### 4.5.1.2 Service Architecture

The 5G System Architecture is defined in 3GPP TS 23.501 [2].

The ECSAddress service is part of the Nnef service-based interface exhibited by the Network Exposure Function (NEF).

Known consumer of the ECSAddress service is:

- Session Management Function (SMF)



Figure 4.5.1.2-1: Reference Architecture for the ECSAddress Service; SBI representation



Figure 4.5.1.2-2: Reference Architecture for the ECSAddress Service: reference point representation

#### 4.5.1.3 Network Functions

##### 4.5.1.3.1 Network Exposure Function (NEF)

The Network Exposure Function (NEF) allows the NF service consumer (i.e. SMF) to subscribe to and unsubscribe from the NEF for the ECS Address Configuration Information from the AF.

##### 4.5.1.3.2 NF Service Consumers

The known NF service consumers are as follows:

The Session Management Function (SMF):

- supports (un)subscribing to notifications of ECS Address Configuration Information from the NEF.

- supports receiving the notifications of ECS Address Configuration Information from the NEF.

### 4.5.2 Service Operations

#### 4.5.2.1 Introduction

Service operations defined for the ECSAddress Service are shown in table 4.5.2.1-1.

Table 4.5.2.1-1: ECSAddress Service Operations

|  |  |  |
| --- | --- | --- |
| Service Operation Name | Description | Initiated by |
| ECSAddress\_Subscribe | This service operation is used by an NF service consumer to explicitly subscribe the notification of ECS Address Configuration Information. | NF service consumer |
| ECSAddress\_Unsubscribe | This service operation is used by an NF service consumer to explicitly unsubscribe the notification of ECS Address Configuration Information. | NF service consumer |
| ECSAddress\_Notify | This service operation is used by the NEF to provide ECS Address Configuration Information to the NF service consumer. | NEF |

#### 4.5.2.2 ECSAddress\_Subscribe service operation

##### 4.5.2.2.1 General

This service operation is provided by the NEF for NF consumers to explicitly subscribe the notification of ECS Address Configuration Information.

##### 4.5.2.2.2 Creating a new subscription

Figure 4.5.2.2.2-1 illustrates the creation of a Individual ECS Address Configuration Information Subscription.



Figure 4.5.2.2.2-1: Creation of a subscription

In order to subscribe to ECS Address Configuration Information, the SMF shall send an ECSAddress\_Subscribe request using the HTTP POST method to the NEF with "{apiRoot}/nnef-ecs-addr-cfg-info/<apiVersion>/subscriptions" as request URI as shown in step 1 of figure 4.5.2.2.2-1. The HTTP POST message shall include EcsAddrCfgInfoSub data structure as request body. The EcsAddrCfgInfoSub data structure shall include:

- the notification URI in the "notifUri" attribute;

- the notification correlation identifier in the "notifCorrId" attribute;

and may include:

- the identifications of DNN in "dnns" attribute;

- the identifications of network slice in "snssais" attribute;

- the internal Group Identifier in "internalGroupId" attribute;

- the reporting requirements of the subscription in "immRepInd" attribute;

Upon receipt of the HTTP request from the SMF, the NEF shall interact with the UDR by invoking the Nudr\_DataRepository service as described in 3GPP TS 29.504 [20] to fetch the ECS Address Configuration Information in the application data in the UDR.

After receiving a successful response from the UDR, the NEF shall create a new subscription and assign a subscription identifier for the "Individual ECS Address Configuration Information Subscription" resource. Then the NEF shall send an HTTP "201 Created" response with EcsAddrCfgInfoSub data structure as response body and a Location header field containing the URI of the created individual subscription resource to the NF service consumer.

If the immediate report indication is included in the subscription request, the NEF shall include the currently available ECS Address Configuration Information in "immReports" attribute in the response body.

If errors occur when processing the HTTP POST request or receiving an error code from the UDR, the NEF shall send an HTTP error response as specified in clause 5.3.7.

##### 4.5.2.2.3 Modifying an existing subscription

Figure 4.5.2.2.3-1 illustrates the modification of an existing subscription.



Figure 4.5.2.2.3-1: Modification of an existing subscription

To modify an existing subscription to event notifications, the NF service consumer shall send an HTTP PUT request with: "{apiRoot}/nnef-ecs-addr-cfg-info/<apiVersion>/subscriptions/{subscriptionId}" as request URI, as shown in step 1 of figure 4.5.2.2.3-1, where "{subscriptionId}" is the subscription ID of the existing subscription. The EcsAddrCfgInfoSub data structure is included as request body as described in clause 4.5.2.2.2.

Upon successful reception of an HTTP PUT request with: "{apiRoot}/nnef-ecs-addr-cfg-info/<apiVersion>/subscriptions/{subscriptionId}" as request URI and EcsAddrCfgInfoSub data structure as request body, the NEF shall interact with the UDR by invoking the Nudr\_DataRepository service as described in 3GPP TS 29.504 [20] to fetch the ECS Address Configuration Information in the application data in the UDR.

After receiving a successful response from the UDR, the NEF shall:

- send HTTP "200 OK" response (as shown in figure 4.5.2.2.3-1, step 2a) with a response body containing a representation of the updated subscription in the EcsAddrCfgInfoSub data type; or

- send HTTP "204 No Content" response (as shown in figure 4.5.2.2.3-1, step 2b).

If the immediate report indication is included in the subscription request, the NEF shall include the current available ECS Address Configuration Information in the response body.

If the received HTTP PUT request needs to be redirected, the NEF shall send an HTTP redirect response as specified in clause 6.10.9 of 3GPP TS 29.500 [4].

If errors occur when processing the HTTP PUT request or receiving an error code from the UDR, the NEF shall send an HTTP error response as specified in clause 5.3.7.

#### 4.5.2.3 ECSAddress\_Unsubscribe service operation

##### 4.5.2.3.1 General

This service operation is used by an NF service consumer (i.e. SMF) to explicitly unsubscribe the notification of ECS Address Configuration Information.

The following procedure using the ECSAddress\_Unsubscribe service operation is supported:

- unsubscription from the notification of ECS Address Configuration Information.

##### 4.5.2.3.2 Unsubscription of notification of ECS Address Configuration Information

Figure 4.5.2.3.2-1 illustrates the unsubscription of event notifications from NEF.



Figure 4.5.2.3.2-1: NF service consumer unsubscribes from notifications

In order to delete an existing subscription to ECS Address Configuration Information, the NF service consumer shall send an HTTP DELETE request message with "{apiRoot}/nnef-ecs-addr-cfg-info/<apiVersion>/subscriptions/{subscriptionId}" as request URI, as shown in step 1 of figure 4.5.2.3.2-1, where "{subscriptionId}" is the subscription identifier of the existing subscription resource that is to be deleted.

Upon successful reception of an HTTP DELETE, the NEF shall delete the individual resource and shall respond to the NF service consumer with an HTTP "204 No Content" response message, as shown in step 2 of figure 4.5.2.3.2-1.

If the received HTTP DELETE request needs to be redirected, the NEF shall send an HTTP redirect response as specified in clause 6.10.9 of 3GPP TS 29.500 [4].

If errors occur when processing the HTTP DELETE request, the NEF shall send an HTTP error response as specified in clause 5.3.7.

#### 4.5.2.4 ECSAddress\_Notify service operation

##### 4.5.2.4.1 General

The ECSAddress\_Notify service operation enables the NEF to notify the ECS Address Configuration Information to the NF Consumer.

The following procedure using the ECSAddress\_Notify service operation is supported:

- notification about subscribed ECS Address Configuration Information.

##### 4.5.2.4.2 Notification of changes of ECS Address Configuration Information

Figure 4.5.2.4.2-1 illustrates the notification about ECS Address Configuration Information.



Figure 4.5.2.4.2-1: Notification about ECS Address Configuration Information

If the NEF observes ECS Address Configuration Information that an NF service consumer has subscribed, the NEF shall send an HTTP POST request as shown in step 1 of figure 4.5.2.4.2-1, with the "{notifUri}" as request URI containing the value previously provided by the NF service consumer within the corresponding subscription, and the EcsAddrCfgInfoNotification data structure as request body.

The EcsAddrCfgInfoNotification data structure shall include:

- the notification correlation identifier in the "notifCorrId" attribute;

- ECS Address Configuration Information within the "ecsAddrCfgInfo" attribute.

Upon successful reception of an HTTP POST request with "{notifUri}" as request URI and EcsAddrCfgInfoNotification data structure as request body, the NF service consumer shall send an HTTP "204 No Content" response, as shown in step 2 of figure 4.5.2.4.2-1.

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