3GPP TSG-WG SA2 Meeting #143E e-meeting *S2-210xxxx*

**Elbonia, February 24 – March 09, 2021**

**Source: Huawei, HiSilicon,**

**Title: EAS Rediscovery**

**Document for: Agreement**

**Agenda Item: 8.3**

**Work Item / Release: eEDGE\_5GC /Rel-17**

***Abstract of the contribution:*** *This contribution describes EAS re-discovery rediscovery (UE based), and aspects and assumptions based on applicable clause 9.2.2 in the TR.*

# Discussion

According to conclusion in clause 9.2.2 in TR 23.748, the EAS rediscovery can be classified into two cases:

For the distributed anchor connectivity model, there is consensus that the UE removes the old EAS information associated with the released PDU session and reselects a new EAS after UE receives a new IP address.

For the Session breakout connectivity model, there are 2 NOTEs that includes issues need further decision in normative phase:

NOTE 1: For session breakout using BP, the old EAS information associated with the old IPv6 prefix in UE should not be used when UE reselects a new EAS if the EAS rediscovery is indicated. Whether the indication can be indicated in the RA message is determined in normative phase.

NOTE 6: The usage of optional associated impact field should be re-evaluated in normative work.

For NOTE 1, the question is on whether the related information, e.g. impact field, is added in the RA message or notified by the SMF via NAS. To be consistent with the UL-CL case, it is proposed to send this IE to UE via NAS for session breakout using BP as well as for session breakout using ULCL. Also changing RA to support the indication will causes extra work, especially it involves external SDO (IETF). Hence, it is suggested not to use RA to indicate the EAS re-discovery.

For NOTE 6, it need some more time to understand its value. In our view, the benefit of the impact field is clear. Without the associated impact field, the UE can not identify which AS need be re-discovered. Thus even for EAS(s) that are not deployed at local DN, UE may trigger the DNS query again for rediscovery. The associated impact field help UE to identify which EAS(s) are impacted, and reduce unnecessary EAS re-discovery. Hence, it is suggested that the associated impact field is included as an optional field sent to UE together with the EAS rediscovery indication.

There are some discussion early on which case to send the EAS re-discovery indication to the UE for session breakout connectivity model. When the ULCL/BP and L-PSA have been inserted, changed, or removed, since the connected Edge Hosting Environment changes, the EAS may need to be rediscovered. In this case, based on the DNS Suffix and/or FQDN(s) supported by a local DN identified by the impacted DNAI(s), the SMF determines whether the EAS re-discovery is needed. If needed, the SMF sends EAS re-discovery indication to UE.

# Proposal

It is proposed to add the following solution to TS 23.548:

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

### 6.2.2 EAS (re-)discovery over Distributed Anchor connectivity model

#### 6.2.2.1 General

#### 6.2.2.2 EAS discovery procedure

Editor’s Note: This clause describes the procedure for Edge AS Discovery over Distributed Anchor connectivity model according to the recommendations in the conclusions in the TR clause 9.1.2 (parts about Sol 2/4/5/10).

#### 6.2.2.3 EAS re-discovery procedure at Edge relocation

Editor’s Note: This clause also describes rediscovery (UE based), and aspects and assumptions based on applicable clause 9.2.2 in the TR

For PDU Session with distributed anchor connectivity, after PDU Session re-establishment, the UE rediscovers the EAS(s):

- For SSC mode 2, the UE removes the old EAS information (i.e. EAS IP address corresponding to an EAS FQDN) associated with the released PDU Session and reselects new EAS(s) via the new PDU Session.

- For SSC mode 3 with multiple PDU Sessions, the UE removes the old EAS information associated with the PDU Session to be released and reselects new EAS(s) via the new PDU Session.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 2nd Change \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

### 6.2.3 EAS (re-)discovery over Session Breakout connectivity model

#### 6.2.3.1 General

#### 6.2.3.2 EAS discovery procedure

Editor’s Note: This clause describes the procedure for Edge AS Discovery over *Session Breakout* connectivity model according to the recommendations in the conclusions in the TR clause 9.1.4.

#### 6.2.3.3 EAS re-discovery procedure at Edge relocation

For PDU Session with Session Breakout connectivity, the UE may need to rediscover the EAS after the insertion/change/removal of an L-PSA. To trigger the rediscovery procedure, the SMF provides EAS rediscovery indication and its optional associated impact field within NAS message to UE. The impact field includes information of DNS Suffix (i.e. domain name), FQDNs or IP address ranges of the local DN, which is used to identify the impacted DNS records. Based on the received EAS rediscovery indication and its associated impact field, when a new connection to EAS need to be established, the UE re-discovers the new EAS via a new DNS query.

This procedure applies to both session breakout using ULCL and session breakout using BP.



Figure 6.2.3.3-1: EAS re-discovery procedure at Edge relocation

1. The UE may have cached EAS information (i.e. EAS IP address corresponding to an EAS FQDN) locally, e.g. during the previous connection with the EAS. During mobility of the UE, the SMF triggers L-PSA insertion, change or removal.

2. The SMF sends PDU Session Modification Command (EAS rediscovery indication, [impact field]) to UE. The EAS rediscovery indication may be also associated with an impact field, which includes information of DNS Suffix (i.e. domain name), FQDNs or IP address ranges of the local DN. The impact field is used to identify which EAS(s) need to be rediscovered. If the impact field is not included, it means all EAS(s) associated with this PDU Session need to be rediscovered.

The SMF is provisioned with the DNS Suffix and/or FQDN(s) supported by a local DN identified by DNAI via AF influence on traffic routing procedure as defined in TS 23.502[X] clause 4.3.6. The IP ranges of each DNAI can be configured at the SMF locally. The SMF uses this information to determine the DNS Suffix, FQDNs or IP ranges that is included in the impact field associated with the EAS rediscovery indication.

3. The UE sends PDU Session Modification Complete to SMF.

For the following connection with the EAS(s) for which the EAS rediscovery need be executed per the received EAS rediscovery indication and impact field, the UE does not use the old EAS information stored locally. Instead it triggers EAS discovery procedure to get new EAS information as described in clause 6.2.3.2.

The UE either remove or replace (i.e. with the new DNS record) the DNS records stored locally.

NOTE 1: The active connection(s) between the UE and the EAS(s) are not impacted.

NOTE 2: The EAS rediscovery indication does not impact the UE Application Layer DNS caching. If connectivity is available to the source EAS, then the application can select a new EAS after the cached EAS information is removed by the applications or cache timer expires.

NOTE 3: This EAS rediscovery indication is not required to be applied to the EAS where the EAS address to the UE is not required to be changed even after UE mobility.

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