**3GPP TSG-WG SA2 Meeting #141E e-meeting *S2-2007765r03***

**Elbonia, October 12 – 23, 2020 *(revision of S2-xxxxx)***

**Source: Nokia, Nokia Shanghai Bell**

**Title: KI #2: Solution #55 Evaluation and conclusion**

**Document for: Discussion/Approval**

**Agenda Item: 8.3**

**Work Item / Release: FS\_enh\_EC / Rel-17**

*Abstract: This paper updates and provides evaluation and conclusion of solution #55*

# Discussion

As shown in “Architectural Assumptions” section figure 4.1-1 and figure 4.1-2 of TR 23.748 v1.0.0, Edge Computing deployments include Edge Application Servers and/or corresponding Application Functions located at the Edge Data Network, thus implying multiple AF instances i.e. a local AF(s) and also AF located in the core. In such deployment scenarios: as part of initial PDU session establishment, an AF located in the core network is selected, however, due to UE mobility and corresponding relocation to Edge DNAI, a new local AF serving Edge Applications are selected.

Some of the technical requirements and corresponding solutions are captured in TR 23.748 V1.0.0, for example solution#55. Other solutions in TR 23.748 v1.0.0 also highlighted specific situations due to multiple AFs, for example solution#28 added note: It is assumed to find out AF based on the pre-configuration or the information received through step 4 and step 5, in case of multiple AFs.

# Proposal

It is proposed to update below in the TR 23.748.

**\* \* \* \* Start of first change \* \* \* \***

## 6.55 Solution #55: Multiple AFs

### 6.55.1 Description

This solution addresses scenarios where there are Edge or local Application Function located in the Edge Data Network, and also one or more Edge Application Server (EAS).

In such scenarios: as part of initial PDU session establishment, an AF located in the core network is selected, however, due to UE mobility and corresponding relocation to Edge DNAI, a new local AF serving Edge Applications needs to be selected. There are a few additional details that needs to be addressed in such multiple AF deployments, such as: how to relocate AF, how SMF provides to new AF required notification of user plane management events such as PSA relocation, etc.

### 6.55.2 Procedures

Detail procedure involving multiple AF scenarios are provided in the below figure 6.55.2-1.



Figure 6.55.2-1: Procedures to AF Relocation

0. AF1 is interacting with SMF/5GC e.g. as part of initial PDU Session establishment procedure.

1. AF1 decides to relocate to local AF i.e. to AF2 which serves local EAS located in the target DNAI. There could be multiple triggers for AF1 to relocate AF e.g. decision to relocate to local /another Edge Application Server due to change in DNAI, EAS load balancing, etc.

2. AF1 initiates context transfer procedure with AF2, this is to provide to AF2 information such as: application status, UE ID, PDU session Information (e.g. the UE (IP) address, the current DNAI serving the UE, N6 traffic routing information), etc.

3: AF2, based on the information received from AF1, sends to NEF, Nnef\_TrafficInfluence\_update request, and includes Notification Correlation ID, UE ID, PDU session information, as received from AF1.

Editor's Note: Whether the AF2 can reuse the SBI information of AF1 to continue invoking NEF service is FFS.

4: NEF stores the AF2 requested information in the UDR (Data Set = Application Data; Data Subset = AF traffic influence request information, Data Key = AF Transaction Internal ID, S-NSSAI and DNN or SUPI).

5: NEF acknowledges to AF2 by sending Nnef\_TrafficInfluence\_update response message

6. UDR notifies to PCF with Nudr\_DM\_Notify of the changed subscription.

7. PCF determines that existing PDU Sessions are potentially impacted by the AF2 request, and so it updates the SMF with corresponding new PCC rule(s) by invoking Npcf\_SMPolicyControl\_UpdateNotify service operation.

8. Based on the updated PCC rules received from PCF, SMF may decide to reconfigure user plane e.g. change in DNAI, PSA relocation and so on.

9-10. SMF sends Nsmf\_EventExposure\_Notify indicating the changes in the user plane management information to AF2 either directly or via NEF.

### 6.55.3 Impacts on services, entities and interfaces

SMF:

- Receives indication of AF migration to the target AF via PCF.

Editor's Note: The usage of the indication and how it is recieved are FFS.

AF:

- Context transfer between AFs e.g. application status, and 5G core related information e.g. UE ID, PDU session Information, etc.

- determination of the target AF for the received target DNAI.

- Updates to procedure on AF requests to influence traffic routing.

**\* \* \* \* End of Change \* \* \* \***