**SA WG2 Meeting #162S2-2404636**

**Changsha, China, April 15 – 19, 2024**

**Source: Samsung**

**Title: Solution for KI#1.3 and KI#1.4, PDU Session Control for Dual Steer**

**Document for: Approval**

**Agenda Item: 19.13**

**Work Item / Release:** **FS\_MASSS / Rel-19**

*Abstract of the contribution: This contribution proposes a new solution for KI#1.3 and KI#1.4, PDU Session Control for Dual Steer.*

# 1 Discussion

This solution is related with KI#1.3 and KI#1.4.

Key Issue #1.3: Session management aspects for DualSteer

This key issue will study the following potential session management enhancements to support DualSteer:

- Whether and how to enhance session management functions and procedures for DualSteer traffic steering of a new service to a 3GPP access network and/or the DualSteer traffic switching across two 3GPP access networks belonging to the same PLMN (either HPLMN or VPLMN) or two different PLMNs or PLMN and PNI-NPN, which may further include the following:

- Whether and what enhancements are required in PDU Session establishment/modification/release;

- Whether and what enhancements are required for N4 session management between the SMF and UPF, or between SMF+PGW-C and UPF+PGW-U; and

- For session subject to potential switching and/or to traffic steering, whether, when and how the network selects the PSA UPF(s) or UPF+PGW-U to allow routing the traffic across 3GPP access networks towards the same PSA UPF or UPF+PGW-U to support DualSteer.

NOTE: Impact to existing session management functionality related to the move of a service-related data between a 3GPP access network and a non-3GPP access network will be considered as part of this key issue.

Key Issue #1.4: Policy enhancements for DualSteer

This key issue aims to study whether and how to define the policies by the HPLMN to support DualSteer traffic steering and/or DualSteer traffic switching:

- Whether and what policies need to be provided by the HPLMN to guide the DualSteer device to decide to connect to an additional PLMN/PNI-NPN, or an additional 3GPP access network within the same PLMN;

- For DualSteer traffic steering, whether and what policies need to be provided by the HPLMN to guide the DualSteer device to select a 3GPP access network to be used for the new service;

- For DualSteer traffic switching, whether and what policies need to be provided by the HPLMN to guide the DualSteer device for traffic switching between two connected 3GPP access networks;

- Whether and what policies are provided within the network(s) to handle DualSteer traffic steering and/or DualSteer traffic switching;

- Study whether and how the policy enhancements for DualSteer device have impacts on existing UE policies.

NOTE: Impact to existing policy management functionality related to the move of a service-related data between a 3GPP access network and a non-3GPP access network will be considered as part of this key issue.

Considering KI#1.3 and KI#1.4, the network needs to control DS supporting UE (or DS device) whether to transmit data over a 3GPP access network in case the DS supporting UE (or DS device) already transmitting data over another 3GPP access network.

# 2 Proposal

It is proposed to update TR 23.700-54 as follows.

#

\* \* \* \* First change \* \* \* \*

# 6 Solutions

## 6.0 Mapping of Solutions to Key Issues

Table 6.0-1: Mapping of DualSteer Solutions to Key Issues

|  |  |
| --- | --- |
|  | Key Issues for DualSteer |
| Solution# | Key Issue #1.1 | Key Issue #1.2 | Key Issue #1.3 | Key Issue #1.4 |
| #X |  |  | X | X |
|  |  |  |  |  |

Table 6.0-2: Mapping of ATSSS\_Ph4 Solutions to Key Issues

|  |  |
| --- | --- |
|  | Key Issues for ATSSS\_Ph4 |
| Solution# | Key Issue #2.1 | Key Issue #2.2 |
| #2.1 | X |  |
| #2.2 |  | X |
| #2.3 | X |  |
| #2.4 | X |  |
| #2.5 | X |  |
| #2.6 |  | X |
| #2.7 |  | X |
| #2.8 |  | X |

\* \* \* \* Second change \* \* \* \*(all new texts)

### 6.1.X Solution #X: PDU Session Control for DualSteer

#### 6.1.X.1 Description

This solution is targeting for KI#1.3 Session management aspects for DualSteer and KI#1.4 Policy enhancements for DualSteer.

Additionally, we need to consider theWT#1 based on the SID.

Accordingly we can summarize the requirements like the following.

- DS supporting UE (or DS device) can register two 3GPP access networks

- Network operator may want to control PDU Session for this DS Supporting UE (or DS device)

- Allowing data transmission over a 3GPP access network

- Allowing simultaneous data transmission over the two networks

The network needs to control DS supporting UE (or DS device) whether to transmit data over a 3GPP access network in case the DS supporting UE (or DS device) already transmitting data over another 3GPP access network.

The network marks that the first 3GPP access the DS supporting UE (or DS device) register as a primary 3GPP access network. Then the network may provide the UE policy via primary 3GPP access network for the DS supporting UE (or DS device) through Registration procedure so that a PDU session is established over the primary 3GPP access as the UE policy

Then, after the DS supporting UE (or DS device) register another 3GPP access network (e.g., secondary 3GPP access network) and get the UE policy for secondary 3GPP access network, the DS supporting UE (or DS device) shouldnot activate User Plane or transmit data over the 3GPP access network (e.g., secondary 3GPP access network) for the same DNN/S-NSSAI of PDU Session over the first access network, ifnetwork does not allow PDU Session Establishment request for the 3GPP access network (e.g., secondary 3GPP access) from the DS supporting UE (or DS device).

Editor's note: Whether or how to deactivate/activate the user plane for the secondary 3GPP access network is FFS.

#### 6.1.X.2 Procedures

The procedures are described in Figure 6.1.X.2-1.



Figure 6.1.X.2-1: Procedure for PDU Session Control for DualSteer

1. DS supporting UE (or DS device) receives UE Policy from the network. It includes information on transmission over single 3GPP access is allowed, or both 3GPP access allowed and the URSP rules that include preference information to select the 3GPP access to send the application traffic. Based on the received UE policy DS supporting UE (or DS device) updates its stored UE Policy. If the transmission over single 3GPP access is allowed, the UE can send the PDU session establishment request to 3GPP access only if the UE (or DS device) does not have matched PDU session for the registered 3GPP access(es).

Editor's note: How to organise the different SM policies in detail (e.g. simultaneous transmission, steering, switching) is FFS.

2. DS supporting UE (or DS device) sends PDU Session Establishment Request to SMF via over the 3GPP access network according to the URSP rule and AMF. It includes DNN/S-NSSAI information.

3. SMF registers (SUPI, SMF ID, PDU session ID, Access Type, RAT type, PLMN ID).

4. SMF sends PDU Session Establishment Response to DS supporting UE (or DS device).

5. DS supporting UE (or DS device) transmits data over the 3GPP access network via the PDU session established via step 2 through 3.

6. DS supporting UE (or DS device) sends PDU Session Establishment Request to SMF via over another 3GPP access network (i.e. secondary 3GPP access network) and AMF. It includes the same DNN/S-NSSAI information as in step 2. This could be the case when the UE policy delivered to the DS supporting UE (or DS device) in step 1 is outdated.

7. Based on the subscription data retrieved from the UDM, SMF checks if the DS supporting UE (or DS device) has the PDU session on the same DNN/S-NSSAI received from the UE over the other 3GPP access if the transmission over single 3GPP access is allowed. If so, SMF decides to reject the PDU Session Establishment Request.

Editor's note: possible use of other than DNN/S-NSSAI to decide whether to allow the PDU Session or not is FFS.

8. SMF sends PDU Session Establishment Response (Accept or Reject) to DS supporting UE (or DS device).

#### 6.1.X.3 Impacts on services, entities and interfaces

UDM:

- UDM stores DS Information including primary 3GPP access network when a PDU Session is established. Notifies SMF whether the DS supporting UE (or DS device) has PDU session over primary 3GPP access.

SMF:

- SMF checks UDM information if the request is allowed. If it is allowed, SMF registers (SUPI, SMF ID, PDU session ID, Access Type, RAT type, PLMN ID). SMF decides whether to accept or reject the PDU Session Establishment Request based on the Policy.

DS supporting UE (or DS device):

- DS supporting UE (or DS device) does not activate User Plane or transmit data over the 3GPP access network (e.g., secondary 3GPP access network) when its received UE policy allows transmission over single 3GPP access.

PCF:

- PCF provides DS supporting UE (or DS device) policy on whether to transmit data over a 3GPP access network in case the DS supporting UE (or DS device) already transmitting data over another 3GPP access network.

\* \* \* \* End of change \* \* \* \*