**3GPP TSG-WG SA2 Meeting #140E e-meeting *S2-200xxxx***

**Elbonia, August 19 – September 1, 2020 (revision of S2-200xxxx)**

**Source: Huawei, HiSilicon**

**Title: Solution for KI#1 of ATSSS about new steering mode**

**Document for: Approval**

**Agenda Item: 8.6**

**Work Item / Release: FS\_ATSSS\_ph2 / Rel-17**

*Abstract: This contribution proposes a new steering mode.*

# 1. Introduction

This contribution proposes a new solution to address KI#1 on Additional Steering Modes. The solution not only considers RTT of each access but also considers the RTT difference between two accesses. As a result, SDFs will be transmitted via two accesses only when the RTT difference for two accesses is acceptable so that asynchronous problem can be alleviated as much as possible.

# 2. Text Proposal

It is proposed to capture the following changes vs. TR 23.700-93.

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

## 6.0 Mapping Solutions to Key Issues

Table 6.0-1: Mapping of Solutions to Key Issues

|  |  |  |
| --- | --- | --- |
| Solutions | Title | Key Issue(s) |
| #1 | QUIC-LL Steering Functionality | 2 |
| #2 | New steering mode – Autonomous steering mode | 1 |
| #3 | New steering mode – Autonomous steering mode with advanced PMF | 1 |
| #4 | New steering mode – Redundant steering mode | 1 |
| #5 | Replacing 3GPP access leg of MA-PDU Session with PDN connection in EPC | 3 |
| #6 | MPQUIC-LL Steering Functionality | 2 |
| #7 | Proposed solution based on MP-QUIC | 2 |
| #8 | Proposed solution based on QUIC | 2 |
| #X | New steering mode – RTT difference based steering mode | 1 |

\* \* \* \* Second change \* \* \* \*

## 6.Y Solution #X: New steering mode – RTT difference based steering mode

### 6.Y.1 Introduction

This solution addresses KI#1 on Additional Steering Modes.

Currently, there are four steering modes defined in Rel-16, which are Active-Standby, Smallest Delay, Load-Balancing and Priority-based steering modes. Among these steering modes, only Smallest Delay steering mode considers the RTT of each access because it selects the access with the smallest RTT. However, only one access will be selected to transmit SDFs in this steering mode, which does not utilize the double bandwidth provided by MA PDU Session. Additionally, although steering modes such as Priority-based and Load-Balancing may use both accesses to transmit SDFs, the RTT of both accesses may be quite different, which can cause asynchronous problems and affect the user experience.

Therefore, a new steering mode considering both RTT and RTT difference between two accesses is proposed, which will try to make use of double bandwidth provided by two accesses and also try to avoid asynchronous problems as well.

### 6.Y.2 High-level Description

This steering mode is named RTT difference based steering mode. In this steering mode, both UE and UPF shall measure the RTT of both accesses and calculate the RTT difference between the two accesses. In addition, a new parameter called RTT difference threshold shall be configured to determine which access(es) will be selected to transmit SDFs. The criteria is described below:

* When the RTT difference between two accesses is larger than the RTT difference threshold, the access with smaller RTT will be used to transmit SDFs as shown in figure 6.Y.2-1.
* When the RTT difference between two accesses is smaller than the RTT difference threshold, both accesses will be selected to transmit SDFs as shown in figure 6.Y.2-2.



Figure 6.Y.2-1: RTT difference based steering mode in scenario 1



Figure 6.Y.2-2: RTT difference based steering mode in scenario 2

NOTE 1: When the SDF is determined to be transmitted via two accesses, the percentage of the SDF traffic that is sent over 3GPP access and over non-3GPP access can be determined based on link status by UPF and UE implementation.

In summary, the SDFs will be transmitted via two accesses when the RTT of both accesses is similar so that the transmission delay difference can be controlled within an acceptable level.

### 6.Y.3 Procedures

Editor's note: this clause describes services and related high-level procedures for the solution.

### 6.Y.4 Impacts on services, entities, interfaces and IETF Protocols

This solution will impact the following entities in 5GS:

* SMF: Supports to select the UPF with support of the new steering mode.
* PCF: Supports to authorize the new steering modes for the SDF.
* UPF: Supports the new steering modes.
* UE: Supports the new steering modes.
* 5G-AN/ NG RAN: No impact.

\* \* \* \* End of changes \* \* \* \*