**3GPP TSG-WG SA2 Meeting #143E e-meeting *S2-2100115r04***

**Elbonia, February 24 – March 09, 2021 (revision of S2-210xxxx)**

**Source: Huawei, HiSilicon, Ericsson**

**Title: General descriptions and reference architectures for Edge Computing**

**Document for: Approval**

**Agenda Item: 8.3**

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

*Abstract: This contribution introduces general descriptions and reference architectures for Edge Computing.*

# 1. Introduction

This proposal describes the general descriptions and reference architectures for Edge Computing.

# 2. Text Proposal

It is proposed to capture the following changes vs. TS 23.548.

\* \* \* \* First change, all new texts \* \* \* \*

## 4.1 General

Editor’s Note: This chapter refers to TS 23.501 chapter 5.13 for an overview of the 3GPP specified functions which are part of 5GC Support to Edge Computing

Edge Computing enables operator and 3rd party services to be hosted close to the UE's access point of attachment, so as to achieve an efficient service delivery through the reduced end-to-end latency and load on the transport network.

5GS supports Edge Hosting Environment (EHE) deployed in the DN beyond the PSA UPF. The UE and/or applications on the UE could be aware of the usage of Edge Computing.

NOTE 1: In the architecture, UE application can be used without modifications, either to access application servers in the existing cloud environment, or to access edge application servers hosted in the EHE deployed in the local DN..

An EHE may be under the control of either the operator or 3rd parties.

The Local access to the DN or the Local DN in which EHE is deployed may have user plane connectivity with the Central DN of same DNN.

NOTE 2: In some specific deployments the above connectivity does not exist.

Edge Computing Enablers as described in clause 5.13 of TS 23.501[2], e.g. Local Routing and Traffic Steering, Session and service continuity, AF influenced traffic routing, are leveraged in this specification.

NOTE 3: Edge Computing for HR roaming scenario is not supported in this release of the specification.

## 4.2 Reference Architectures for Supporting Edge Computing

The reference architectures for supporting Edge Computing are based on the reference architectures specified in clause 4.2 of TS 23.501[2]. The following reference architectures are further depicting the relationship between the 5GS and EHE for non-roaming and LBO roaming scenarios.

Figure 4.2-1 depicts 5GS architecture for non-roaming scenario supporting Edge Computing with UL CL/BP.

NRF

PCF

AF

AMF

SMF

NEF

UE

AN

UPF

(UL CL/ BP)

UPF

(L-PSA)

UPF

(C-PSA)

Local (access to) DN

Central DN

EAS

Nnrf

Npcf

Namf

Nsmf

N1

N2

N3

N4

N4

N4

N9

N6

N6

EASDF

Naf

Nnef

Neasdf

UDM

Nudm

Figure 4.2-1: 5GS providing access to EAS with UL CL/BP for non-roaming scenario

Editor’s Note: The oval representation over each NF should be drawn in the above figure.

NOTE: While the control plane of EASDF is depicted in the figure, the user plane reference point between the EASDF and the UE (i.e. over which the DNS messages are exchanged) is not shown in the figure.

Figure 4.2-2 depicts 5GS architecture for non-roaming scenario supporting Edge Computing without UL CL/BP.

NRF

PCF

AF

AMF

SMF

NEF

UE

AN

UPF

(PSA)

Local (access to) DN

EAS

Nnrf

Npcf

Namf

Nsmf

N1

N2

N3

N4

N6

EASDF

Naf

Nnef

Neasdf

UDM

Nudm

Figure 4.2-25GS providing access to EAS EAS without UL CL/BP for non-roaming scenario

Figure 4.2-3 depicts 5GS architecture for LBO roaming scenario supporting Edge Computing with UL CL/BP.

NRF

PCF

AF

AMF

SMF

NEF

UE

AN

UPF

(UL CL/ BP)

UPF

(L-PSA)

UPF

(C-PSA)

Local (access to) DN

Central DN

EAS

Nnrf

Npcf

Namf

Nsmf

N1

N2

N3

N4

N4

N4

N9

N6

N6

EASDF

Naf

Nnef

Neasdf

PCF

Npcf

UDM

Nudm

VPLMN

HPLMN

Figure 4.2-3: 5GS providing access to EAS with UL CL/BP for LBO roaming scenario

Figure 4.2-4 depicts 5GS architecture for LBO roaming scenario supporting Edge Computing without UL CL/BP.

NRF

PCF

AF

AMF

SMF

NEF

UE

AN

UPF

(PSA)

Local (access to) DN

EAS

Nnrf

Npcf

Namf

Nsmf

N1

N2

N3

N4

N6

EASDF

Naf

Nnef

Neasdf

PCF

Npcf

UDM

Nudm

VPLMN

HPLMN

Figure 4.2-4: 5GS providing access to EAS without UL CL/BP for LBO roaming scenario

NOTE: Only some of the 5GS NFs are shown in the above reference architecture figures. In the above figures, the split between the UPF acting as UL CL/BP and the UPF acting as local PSA is illustrative.

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