**TSG SA Meeting #SP-90E SP-201107r03**

**08 - 14 December 2020, Electronic meeting (revision of SP-200981)**

**Source: Huawei, AT&T, CATT, Charter Communications, China Telecom, China Unicom, Deutsche Telekom, Ericsson, Futurewei, Intel, Interdigital, KDDI, KPN, Telecom Italia, Telefonica, Telia Company, Tencent, Toyota, Verizon, Vodafone, ZTE, Xiaomi**

**Title: New WID on Enhancement of support for Edge Computing in 5G Core network**

**Document for: Approval**

**Agenda Item: 6.4**

3GPP TSG-WG SA2 Meeting #142E e-meeting *S2-2009253*

Elbonia, November 16 – 20, 2020, 2020 (revision of S2-2008632r11)

3GPP™ Work Item Description

Information on Work Items can be found at <http://www.3gpp.org/Work-Items>
See also the [3GPP Working Procedures](http://www.3gpp.org/specifications-groups/working-procedures), article 39 and the TSG Working Methods in [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm)

# Title: Enhancement of support for Edge Computing in 5G Core network

## Acronym: eEDGE\_5GC

## Unique identifier: 900016

 Potential target Release: {Rel-17}.

Note that this field above indicates the proposed Release at the time of submission of the WID to TSG approval. It can later be changed without a need to revise the WID. The updated target Release is indicated in the Work Plan.

## 1 Impacts *{ For Normative work, identify the anticipated impacts. For a Study, identify the scope of the study.}*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Affects:** | UICC apps | ME | AN | CN | Others (specify) |
| **Yes** |  | X |  | X |  |
| **No** | X |  | X |  |  |
| **Don't know** |  |  |  |  | X |

## 2 Classification of the Work Item and linked work items

### 2.1 Primary classification

This work item is a

|  |  |
| --- | --- |
| X | Feature |
|  | Building Block |
|  | *Work Task* |
|  | Study Item |

### 2.2 Parent Work Item

|  |
| --- |
| Parent Work Items  |
| Unique ID | Title |
|  |  |

### 2.3 Other related Work Items and dependencies

*{List here other Work Items which relate to the proposed one, such as preceding SI or a preceding WI (e.g. if further enhancing a feature).}*

|  |
| --- |
| Other related Work Items (if any) |
| Unique ID | Title | Nature of relationship |
| 830032 | Study on enhancement of support for Edge Computing in 5GC | Corresponding study of architecture enhancements and procedures (SA2) |
| 880002 | Study on Security Aspects of Enhancement of Support for Edge Computing in 5GC | Study of the security aspects of Edge Computing (SA3). |
| 870015 | Study on Streaming Architecture extensions For Edge processing | Study of media architecture to support processing of media services with edge computing deployment (SA4). |
| 870029 | Study on enhancements of edge computing management | Study of the management aspects of Edge Computing (SA5). |
| 880030 | Study on charging aspects of Edge Computing | Study of the charging aspects of Edge Computing (SA5). |
| 860006 | Architecture for enabling Edge Applications | Application layer architecture and corresponding mechanisms to enable Edge Computing deployment (SA6). |

## 3 Justification

Edge computing is considered as one key enabler to support the 5G system to provide low latency user experience and huge data volume with high efficiency. With edge computing, operators own and/or 3rd party applications can be hosted close to the user. The UE can access the application via (R)AN and locally deployed UPF, thus fulfilling the expectations on the end to end user experience, and allowing the low latency to edge applications and the heavy traffic to be offloaded from the backbone network to the edge.

The FS\_enh\_EC study item in SA2 reached conclusions on the mechanisms to support EAS (Edge Application Servers) discovery and Edge relocation under different connectivity models, to provision network information to local applications with low latency, and to support of selecting SMF/I-SMF based on DNAI.

The corresponding security, management and charging aspects are under study in SA3, SA4 and SA5. In addition SA6 is specifying an application layer architecture, procedures and information flows for enabling edge applications over 3GPP networks.

## 4 Objective

The objective of this work item is to enhance Edge Computing capabilities in the 5G core network as defined for Rel-15 an Rel-16 in TS 23.501, TS 23.502 and TS 23.503, according to the conclusions of the FS\_enh\_EC study as documented in TR 23.748, in particular:

- The support of EAS discovery in different connectivity models: Including Enhanced NEF service(s) to allow the AF to influence PCF decisions for URSP, DNS based EAS discovery for Distributed Anchor, Session Breakout and Multiple PDU Sessions connectivity models, and Edge Configuration Server based discovery, as described in clauses 9.1.1, 9.1.2, 9.1.3 and 9.1.4 of TR 23.748, respectively.

- The support of Edge relocation in different connectivity models: Including optional enhancements for packet loss reduction, UE and AF based EAS discovery, Edge relocation considering user plane latency, optional enhancements to enable EAS IP address replacement in 5GC, AF request to influence traffic routing and PSA coexistence at edge re-allocation, as described in clauses 9.2.1, 9.2.2, 9.2.3, 9.2.4, 9.2.5, 9.2.6 and 9.2.8 of TR 23.748, respectively.

- The support of selecting SMF/I-SMF based on DNAI as captured in clause 9.3 of TR 23.748.

- The support of network information provisioning to local applications with low latency based on support of local NFs as defined in the clause 9.4 of TR 23.748.

## 5 Expected Output and Time scale

|  |
| --- |
| **New specifications** *{One line per specification. Create/delete lines as needed}* |
| Type  | TS/TR number | Title | For info at TSG#  | For approval at TSG# | Remarks |
| *TS* | *23.xxx* | 5G System Enhancements for Edge Computing  | *TSG#92* | *TSG#92* | *TS will specify the new mechanisms that will be defined as part of this WID. .**Enhancements to existing capabilities or procedures shall be covered via changes to existing TSs (TS 23.501, TS 23.502 or TS 23.503).* |

|  |
| --- |
| **Impacted existing TS/TR** *{One line per specification. Create/delete lines as needed}* |
| TS/TR No. | Description of change  | Target completion plenary# | Remarks |
| *23.501* | Updates to 5G System architecture to support enhanced Edge Computing deployments | TSG#92 |  |
| *23.502* | Updates to 5G System procedures to support enhanced Edge Computing deployments | TSG#92 |  |
| *23.503* | Updates to 5G System Policy Control to support enhanced Edge Computing deployments | TSG#92 |  |

## 6 Work item Rapporteur(s)

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## 7 Work item leadership

SA2

## 8 Aspects that involve other WGs

Security aspects are considered by SA3.

Media layer aspects are considered by SA4.

Management and charging aspects are considered by SA5.

Application layer aspects are considered by SA6.

## 9 Supporting Individual Members

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| --- |
| Supporting IM name |
| Alibaba |
| Apple |
| AT&T |
| Broadpeak |
| CAICT |
| CATT |
| Charter Communications |
| China Mobile |
| China Telecom |
| China Unicom |
| Convida Wireless |
| Deutsche Telekom |
| Ericsson |
| Futurewei |
| Hisilicon |
| Huawei |
| Intel |
| Interdigital |
| Lenovo |
| LG Electronics |
| KDDI |
| KPN |
| Matrixx |
| Mediatek |
| Motorola Mobility |
| Nokia |
| Nokia Shanghai Bell |
| NTT Docomo |
| OPPO |
| Orange |
| Samsung |
| Sony |
| Spreadtrum |
| T-Mobile USA |
| Telecom Italia |
| Telefonica |
| Telia Company |
| Tencent |
| Toyota |
| Verizon |
| vivo |
| Vodafone |
| Xiaomi |
| ZTE |