**3GPP TSG-SA WG6 Meeting #60 S6-24xxxx**

**Changsha, China 15th February – 19th April 2024 (revision of S6-24xxxx)**

Source: Ericsson

Title: application service continuity with satellite consideration

Agenda Item: x.x

Contact: Wenliang Xu; wenliang.xu@ericsson.com

*Abstract: <provide a short description of the content>*

### Case 1: a better EAS is available on ground

### 

UE#1 (in a cruise on the sea) is connected to satellite, and its AC is only having minimum KPIs being satisfied by EAS#1 in satellite EDN. When the cruise is close to port, a ground EDN can provide EAS#2 which will satisfy expected KPIs for the AC in UE#1. Thus, application service continuity is needed from satellite EDN to ground EDN.

### Case 2: user plane node issue on ground



When the user plane node (gNB and/or UPF) on ground has issue, user plane node deployed on satellite is used. But the two-ways delay will cause EAS#2 response time to a level not even possible to satisfy minimum KPIs for the AC in UE#1. In this case, service continuity is needed from ground EDN to satellite EDN.

### Proposed update to existing KI#5 in study (in red)

|  |
| --- |
| 4.5 Key issue #5: Edge on board NGSO Satellite4.5.1 Description NGSO satellites are satellites moving with respect to the earth surface and they can be deployed in MEO (8,000 km – 20,000 km ) or LEO (400 km – 2000 km) orbits. This will reduce the one way latency. To utilize these reduced latencies UPFs as well as gNBs can be deployed on the NGSO. 4.5.2 Open issues This key issue studies how to deploy EAS(s) and EES(s) on NGSO satellite and whether and how the corresponding discovery, service provisioning and service continuity are impacted.​  - How the EES(s) are placed on board the Satellite.  - How the EAS(s) are placed on board the Satellite.  - Whether and how the discovery and the service provisioning are impacted.​  - Whether and how the service continuity procedures are impacted while the UE is only connected with NTN.  - Whether and how the service continuity procedures are impacted while the UE is connected with NTN/TN. |

### Case 3: Service continuity between GEO satellite EDNs



In this case, UE#1 moves from one GEO satellite coverage to another GEO satellite coverage, and application service continuity is needed for UE#1.

### Proposed update to existing KI#2 in study (in red)

|  |
| --- |
| 4.2 Key issue #2: Edge computing on satellite4.2.1 Description UPF and Edge in the backhaul part of a 5GS (i.e. on board a GEO satellite) facilitates reduction of latency and faster service provisioning to end users. TS 23.558 (SA6) defines Architectures for enabling Edge applications including the procedures for EAS discovery. Although TS 23.558 specification is created to cover the most generic EDGEAPP cases– it would be beneficial to study whether the placement of Edge on board satellite requires some enhancements of application enablers. The motivation for this is to explore whether EDGEAPP enhancements could reduce latency in cases when Edge has been placed on board GEO satellite. Besides, the interest is to investigate whether EDGEAPP enhancements could reduce data load in the feeder link (the link between 5GC on the ground and GEO satellites).  NOTE: The focus of this Key Issue is limited to aspects of EDGEAPP in TS23.558. 4.2.2 Open issues Deployment of Edge computing on board GEO satellites might impact the latency of application control and data information exchange. To assess the impacts of using Edge on board GEO satellites it would be benefitial to study the following aspects with the aim to reduce latency and data exchange over satellite feeder link:  1) Investigate different deployment options for EDGEAPP when EASs are deployed on board GEO satellites?  2) When/how could EAS discovery by the EEC in EDGEAPP be optimized?  3) Whether and how could service continuity in EDGEAPP be impacted? |

\* \* \* End of Changes \* \* \* \*