**3GPP TSG-SA5 Meeting #156 *S5-244128rev1***

Maastricht, Netherlands, 19 - 23 August 2024

**Source: CSCN**

**Title:** **pCR TR 28.846 Add business scenarios for satellite resource rental between satellite network operator and terrestrial network operator**

**Document for: Approval**

**Agenda Item: 7.5.1**

# 1 Decision/action requested

***The group is asked to discuss and agree on the proposal.***

# 2 References

[1] 3GPP TS 23.501 V19.4.0 System architecture for the 5G System (5GS)

[2] 3GPP TR 28.844 V10.0.0 Study on charging aspects of satellite in the 5G System (5GS)

[3] S5-241672 Discussion on charging between satellite network operator and terrestrial network operator

[4] S5-241830 New Study on charging aspects of satellite access Phase 3

[5] S5-243007 DP on business scenarios and charging requirements for satellite resource rental between satellite network operator and terrestrial network operator

# 3 Rationale

3.1Business scenario for satellite resource rental.

Satellite network operator can lease satellite resources to a terrestrial network operator, Satellite network operator and terrestrial operator should be able to generate billing information based on different rental arrangements.

3.1.1Satellite Backhaul

In clause 5.43.1 of the TS 23.501, Satellite may be used as part of the backhaul between (R)AN and 5GC.

3.1.2Edge computing via UPF deployed on the satellite

In clause 5.43.2 of the TS 23.501,5GS may support Edge Computing via UPF deployed on satellite, applies to the case where Edge Computing is deployed with UPF and Edge Computing services on-board the satellite. The UPF deployed on satellite can act as UL CL/BP/local PSA UPF or act as PSA UPF.

3.1.3Local switch via UPF deployed on the satellite

In clause 5.43.3 of the TS 32.501,5GS may support Local switch for UE-to-UE communications via UPF deployed on GEO satellite, The UE to UE traffic may be locally routed by UPF(s) deployed on satellite (i.e. through local switch) to the target UE without traversing back to the satellite gateway on the ground. Local switching via UPF(s) deployed on satellite only applies on GEO satellite backhaul case and considers only DNNs and slices for 5G VN.

# 4 Detailed proposal

Business scenarios for satellite resource rental should be written into R19 TR28.846.

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| **1st Change** |

## 5. X Business scenario for satellite resource usage to support 5G satellite backhaul

SSP can lease satellites to MNO to achieve following business scenarios.

Business scenario#1a: Satellite Backhaul. Satellite can be used as part of the backhaul between (R)AN and 5GC,MNO can rent satellite from SSP to achieve satellite backhaul. MNO could be charged by SSP based on the total data volume transferred via the satellite. In this scenario, UPF is not deployed on the satellite.

Business scenario#1b: Edge Computing. For some deployments, UPF may be deployed on satellite, MNO can rent satellite from SSP to achieve edge computing via UPF deployed on the satellite. MNO could be charged by SSP based on usage of satellite per EAS related to EAS deployment (EAS deployment, EAS modification, EAS termination) and infrastructure resource (virtual CPU usage, virtual memory usage, virtual disk usage, data volumes).

Business scenario #1c: Local switching. For some deployments, UPF may be deployed on satellite, MNO can rent satellite from SSP to achieve Local switch for UE-to-UE communications via UPF deployed on the satellite. MNO could be charged by SSP based on usage of satellite for Local switch related to the data volume. Local switching via UPF deployed on satellite only applies on GEO satellite backhaul case and considers only DNNs and slices for 5G VN in this scenario.

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| **End of change** |