**3GPP TSG-SA WG2 Meeting #163S2-24xxxx**

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**Source: Thales(rapporteur)**

**Title: Conclusions on the architecture principles following the NWM discussions.**

**Document for: Approval**

**Agenda Item: 19.1**

**Work Item / Release: FS\_5GSAT\_ARCH\_Ph3 / Rel-19**

*Abstract of the contribution: This contribution proposes conclusions on the architecture principles following the NWM discussions.*

# 1 Discussion

This paper proposes conclusion on the architecture principles to be follow in the normative phase based on the outputs of the 2rounds NWM discussion (see <https://nwm-trial.etsi.org/#/documents/8860>).

Method used is to directly deduce conclusions from observations made, observations being made following choices of the majority (i.e.: the greatest number) of answers.

# 2 Proposal

It is proposed to agree below proposed changes to 23.700-29.

\*\*\* First Change (all new text) \*\*\*

# 8 Conclusions

## 8.X Conclusions on the architecture principles

This chapter proposes conclusion on the architecture principles to be follow in the normative phase based on the outputs of the 2rounds NWM discussion (see <https://nwm-trial.etsi.org/#/documents/8860>).

Method used is to directly deduce conclusions from observations made, observations being made following choices of the majority (i.e.: the greatest number) of answers.

### 8.X.1 Conclusions on the architecture principles for KI#1

It is proposed to agree on the following principals:

For Cat1 solution type as described in §7:

KI1\_Cat1\_P1: Solutions which do not propose an intermediate IWF or proxy that can hide the mobility of eNB/gNB that is on board the satellite, and therefore migration of moving eNB/gNB (disconnecting and reconnecting a moving eNB/gNB leaving an area controlled by the CN) shall be supported.

KI1\_Cat1\_P2: Support of a procedure to handle the N2 and S1 connections in the Core Network when the gNB/eNB leaves an area served by an AMF/MME (e.g. when setting over the horizon) is for RAN3 decision.

KI1\_Cat1\_P3: NB/eNB IP address change (if any) due to soft feeder link switch can be supported using existing procedures.

KI1\_Cat1\_P4: AMF/MME can treat the Mapped Cell IDs as per Rel-17.

For Cat2 solution type as described in §7:

KI1\_Cat2\_P1: Solutions which propose an intermediate IWF or proxy (called Intermediate GW for convenience) between the moving eNB/gNB and CN are to be considered as optional deployment option.

KI1\_Cat2\_P2: The intermediate GW shall play the role of “earth fixed”eNB/gNB towards the CN and the role of AMF/MME/UPF towards eNB/gNB.

KI1\_Cat2\_P3: The Intermediate GW shall use existing N2/N3/S1 interfaces to connect to CN.

KI1\_Cat2\_P4: The intermediate GW shall propagate existing R18 ULI information for NTN.

KI1\_Cat2\_P4: CN S1/N2 handover procedures must not be impacted.

KI1\_Cat2\_P5: If intermediate GW has no impact on specification, SA2 can document it in informative Annex in TS 23.501 [2] and TS 23.401 [5] during the normative phase of the work as a deployment option.

KI1\_Cat2\_P6: If intermediate GW is deployed as implementation choice it shall be transparent for CN side.

Other principals whatever the category:

KI1\_P7: Scenario of hard feeder link switch can be addressed by existing procedures, data buffering in UPF can be discussed during normative phase.

KI1\_P8: There is no need to introduce new RAT type for regenerative payload satellite access.

### 8.X.2 Conclusions on the architecture principles for KI#2

It is proposed to agree on the following principals:

KI2\_P1: Multi-satellites scenario needs to be supported, single satellite scenario being a particular case.

KI2\_P2: Roaming needs to be supported, where the network on the ground could be a visited network.

KI2\_P3: Data bearer to support are MO/MT SMS and CIoT CP. CIoT UP support is nice to have option.

KI2\_P4: No new mechanism is required. R17 / R18 mechanisms can be reused for UE location verification.

KI2\_P5: SA3 feedback is required od security aspects for the different solutions.

KI2\_P6: No specific principles to optimize UE power consumption needs to be considered in this R19 release.

KI2\_P7: There is no strong requirement on time to attach and access services.

KI2\_P8: Legacy UEs (Rel-17 & Rel-18 UEs) cannot be supported without modification.

KI2\_P9: In addition to onboard RAN, objective shall be to minimize the CN functionalities on the satellite payload.

KI2\_P10: No new NFs need to be introduced on CN side to support S&F.

KI2\_P11: MME split is considered in several answers but does not correspond to new NF on CN side.

KI2\_P12: HSS and P-GW need to be on the ground for home routing purpose.

KI2\_P13:SA3 feedback is requested to know if, in addition to the ground HSS, HSS feature can be on-boarded.

KI2\_P14: Full or part of MME need to be on board. Preferably full MME on board and in case of MME split, this split is out of 3GPP scope and shall be left to implementation.

### 8.X.3 Conclusions on the architecture principles for KI#3

It is proposed to agree on the following principals:

KI3\_P1: R19 shall supports UEs served with different interconnected satellites.

KI3\_P2: R19 shall focus on IMS voice and video.

KI3\_P3: The two parties do not need to belong to the same HPLMN, as long as IMS are interconnected and UEs are served with different interconnected satellites

KI3\_P4: P-ANI, user location (access network information) fetched from PCF, N6 breakout point information received from UPF->SMF->PCF can be used to determine possibility of UE-Sat-UE communication.

KI3\_P5: Principals described in Sol#43 of the TR to address change of serving satellite.

KI3\_P6: IMS AGW on board is not mandatory but should be mandated to be onboard for LI purpose.

KI3\_P7: SA3-LI evaluation is required.

KI3\_P8: SA2 shall propose a solution with IMS AGW on board.

KI3\_P9: Satellite ID need to be exchanged between IMS networks

KI3\_P10: UEs end point addresses (N6 termination point, @IP) may also need to be exchanged between IMS networks

KI3\_P11: No deployment constraints (on SMF, PCF, P-CSCF) is preferable.

KI3\_P12: (relative) Majority of answers are in favour of Opt2, where Opt2 is having full feature in this release, with minimum restrictions.

KI3\_P13: Following previous principals, it is proposed to select the architecture principals of the Sol#43 as described in the TR.

\*\*\* End Of Change \*\*\*