



# Discussion paper

# Generic use of service-level-AA procedure

Sunghoon Kim

CT1 delegate, Qualcomm incorporated



# Outline

- Rel-17 feature summary
- Rel-17 limitation
- Objectives
- Proposals



# Rel-17 Feature summary

- During ID\_UAS stage-3, API based Authentication/Authorization procedure was introduced
  - Service-level AA procedure (SM NAS, TS 24.501) + Nnef service (TS 29.256) + Naf service (TS 29.255)
  - For future-proofness, stage-3 WGs have specified the protocol for generic purpose not limited to ID\_UAS features. Any services requiring Authentication/Authorization procedure with 5GS/EPS, rel-17 mechanism will be used as baseline
    - CT1 has defined Service-Level-AA Container (SLAC) to cope with any vertical services requiring authentication/authorization
    - Nnef service and Naf service carry a transparent payload for authentication/authorization not specific to certain services



NOTE: For details of SLAC encoding and Nnef/Naf API data model, please see Annex

NOTE: UUAA procedure during NAS registration procedure is supported (ID\_UAS specific requirement)



# Rel-17 Overall procedural steps for UUAA

(TS 24.501, 29.256, 29.255) **Miscellaneous details are omitted**

1. Upon app layer request, the UE includes SLAC in the PDU session establishment message with service-level device ID set to CAA-level UAV ID
2. SMF checks UE subscription if it is required for UUAA, and trigger UUAA procedure by invoking Nnef\_auth services (including service-level device ID)
3. UAS-NF(NEF) triggers Naf\_auth services with including the service-level device ID
4. USS(AF) trigger Naf\_auth notification service to UAS-NF(NEF) with including authentication msg
5. UAS-NF(NEF) triggers Nnef\_auth notification services to SMF with including authentication msg
6. SMF sets the service-level AA payload of the SLAC to the received authentication msg, and includes the SLAC in the Service-Level Authentication Command msg
7. UE forwards the received service-level AA payload to the upper layer
8. The upper layer of the UE provides UUAA payload then the UE sets the service-level AA payload of the SLAC to the received UUAA payload and includes the SLAC in the Service-Level Authentication Complete msg
9. SMF forwards the service-level AA payload to UAS-NF(NEF) by invoking Nnef\_auth service (including authentication msg)
10. UAS-NF(NEF) triggers Naf\_auth services with including the authentication msg
11. USS(AF) sends authentication result by invoking Naf\_auth notification service
12. UAS-NF(NEF) triggers Nnef\_auth notification services to SMF with including the authentication result
13. SMF sends PDU session establishment accept message with including SLAC where the service-level-AA result (SLAR field) is set to successful
14. UE forwards the result of service-level AA procedure and proceed NAS procedure

# Rel-17 limitation

## NAS

- UE operation: it is specified that the UE supporting UAS services can include service-level device ID which will trigger service-level AA procedure
- NW operation: it is specified that the SMF checks UE SM subscription data and triggers UUAA procedure, or rejects the request from the UE with cause 'UAS services not allowed'
- SLAC: two types of payload are specified - UUAA and C2 authorization

→ UE and NW operation for AA procedure (trigger, accept, reject) are not specified for generic use cases. No support for services other than UAS services

## Nnef

- Data models are UAS specific
- The scope of TS 29.256 is specific to UAS, but the applicability is not restricted

→ Although 'authmsg' can be used for any services, data model and descriptions are UAS specific

## Naf

- Data models are UAS specific
- The scope of TS 29.255 is specific to UAS, but the applicability is not restricted

→ Although 'authmsg' can be used for any services, data model and descriptions are UAS specific



# Objectives

## Basic assumptions

- Service-level device ID is required for those services
- UE subscription should indicate to perform AA procedure for those services

## CT1: UE and network operation for services requiring AA procedure

- Existing NAS procedure and IE (SLAP and SLAC) can be enhanced to cope with any services requiring AA procedure
  - Successful case, reject case, re-try case
- Further enhancement for the case where multiple services (requiring AA procedure) are available for the UE
  - Related with the issue on CT3/CT4: How to identify the target application function/target services

## CT3/CT4

- Adding new data model for generic purpose
- How to discover target network function e.g., target NEF or target AF for the requested service
- Further enhancement for the case where multiple services (requiring AA procedure) available for the UE



# Why stage-3 led work item?

- Rel-17 ID\_UAS stage-3 work has accepted stage-2 requirement on specifying generic container, procedure, and API for AA procedure
- No architecture impact or end-to-end procedure changes are needed
- Enhancement of existing stage-3 tools (IE, procedures, APIs) should be enough to support the feature for any services
- The scope is not ID\_UAS specific but general support for any services, new Stage-3 work item is appropriate approach (it is not about feature enhancement of ID\_UAS)
- CT3 CT4 may need new API (new spec) as current TS scope and description are ID\_UAS specific
  - Can be addressed by extending the scope of the specs
  - Alternatively, new specs can be created for Rel-18, with a pointer added in the Rel-17 of the existing specs saying their contents for Rel-18 have been transferred to the new specs (as done for TSN in CT1, where TS 24.519 only goes up to Rel-16 and was replaced by TS 24.539 in Rel-17).



# Summary

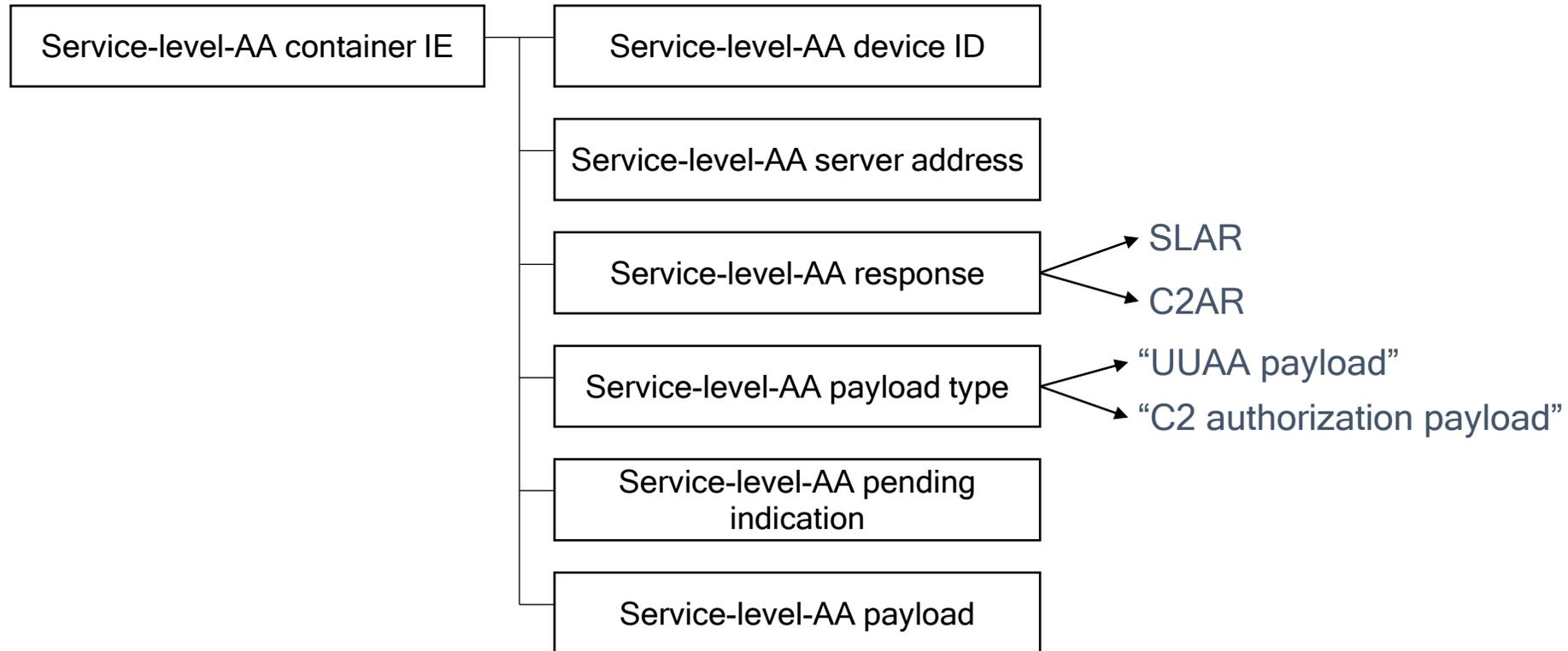
- Motivation: In rel-17, Stage-3 WGs have specified new AA procedure and protocol for generic purpose not limited to ID\_UAS features, but it is not specified how to use it for services other than ID\_UAS. Any services requiring Authentication/Authorization procedure with 5GS/EPS, rel-17 mechanism should be used as baseline
- Proposal: CT wide Work Item for generic use of service-level-AA procedure is proposed in **C1-224769**



# Annex

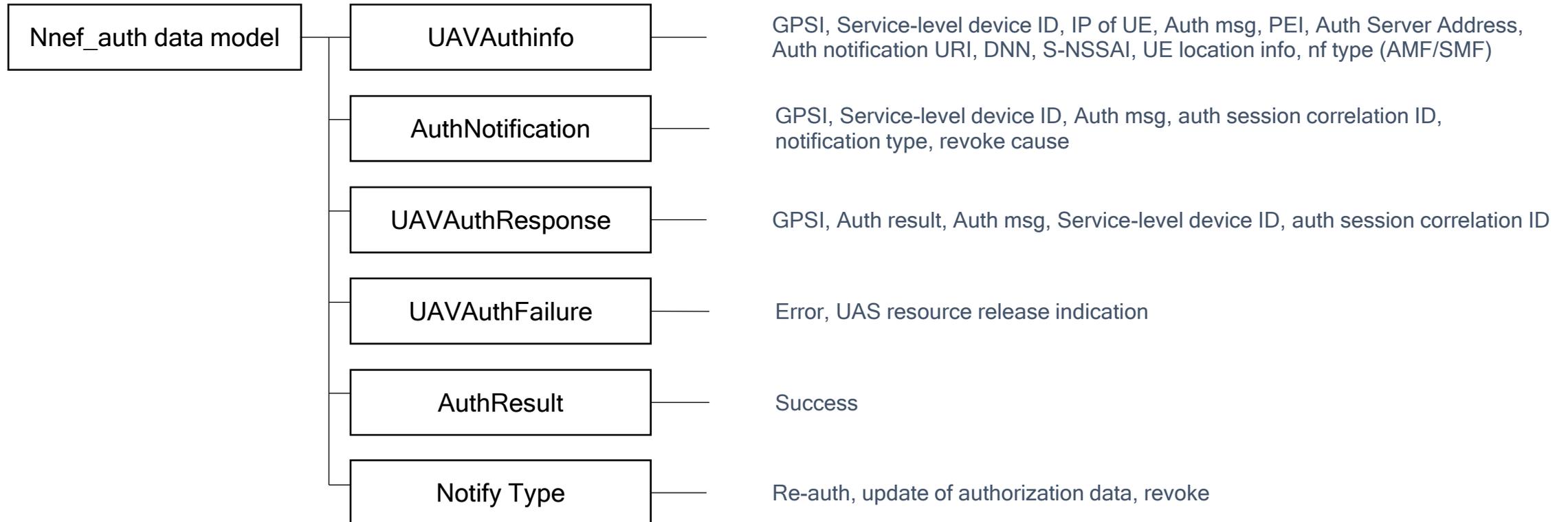


# Encoding of SLAC





# Nnef\_Auth data model





# Naf\_Auth data model

