

# Discussion on untrusted N3GPP access registration in 5G

## Critical Item OI#1

Nokia, Nokia Shanghai Bell, Samsung, Lenovo, Motorola Mobility, CATT, China Mobile, ZTE, Sandvine, ETRI, Sprint, Brocade, Broadcom, Rogers Communications?, Vodafone?, DT?, Orange?, ITRI?, Interdigital?, Cisco?, CATR?, NEC?, China Unicom?, China Telecom?, LGE?, Huawei?, KT?, KDDI?, Oppo?, NTT DoCoMo?

# Non-3GPP untrusted access registration

## Introduction

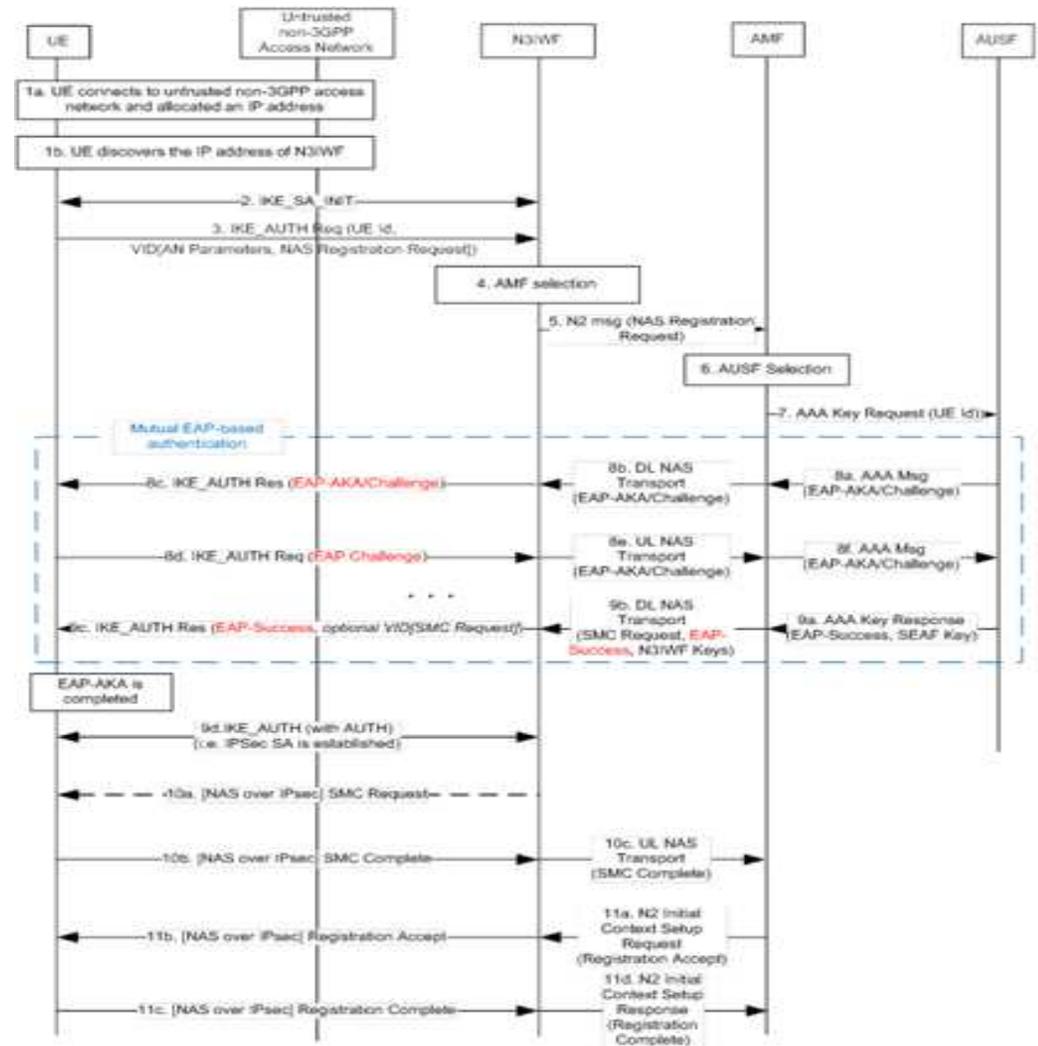
- Two alternatives candidate solutions at SA2
  - NAS-over-IKE solution, promoted by QComm: **S2-175702/S2-175703**, commented by Lenovo in **S2-175686**
  - NAS-over-EAP solution, promoted by Lenovo: **S2-176269**
- Cosigning companies believe that NAS-over-EAP solution is superior and that the NAS-over-IKE solution has significant drawbacks and issues. See slides 3, 5 and 6

# EAP framework and 5G AKA over N2/N3 access

- Observations
  - NAS-over-IKE solution only allows EAP methods for authentication (5G AKA not possible)
  - NAS-over-EAP solution allows any authentication method, and in particular both EAP-AKA' and 5G AKA
- Facts in 3GPP SA3:
  - TS 33.501 currently mandates support for both EAP-AKA' and 5G AKA, and EAP will not disappear because 5G-AKA would be possible on both 3GPP and non-3GPP accesses
- Cosigning companies position is that:
  - Access independence of authentication methods is preferable
  - There is no reason to restrict 5G AKA on non-3GPP access. Artificial restrictions on N3 access method just to keep 5G AKA out should be avoided

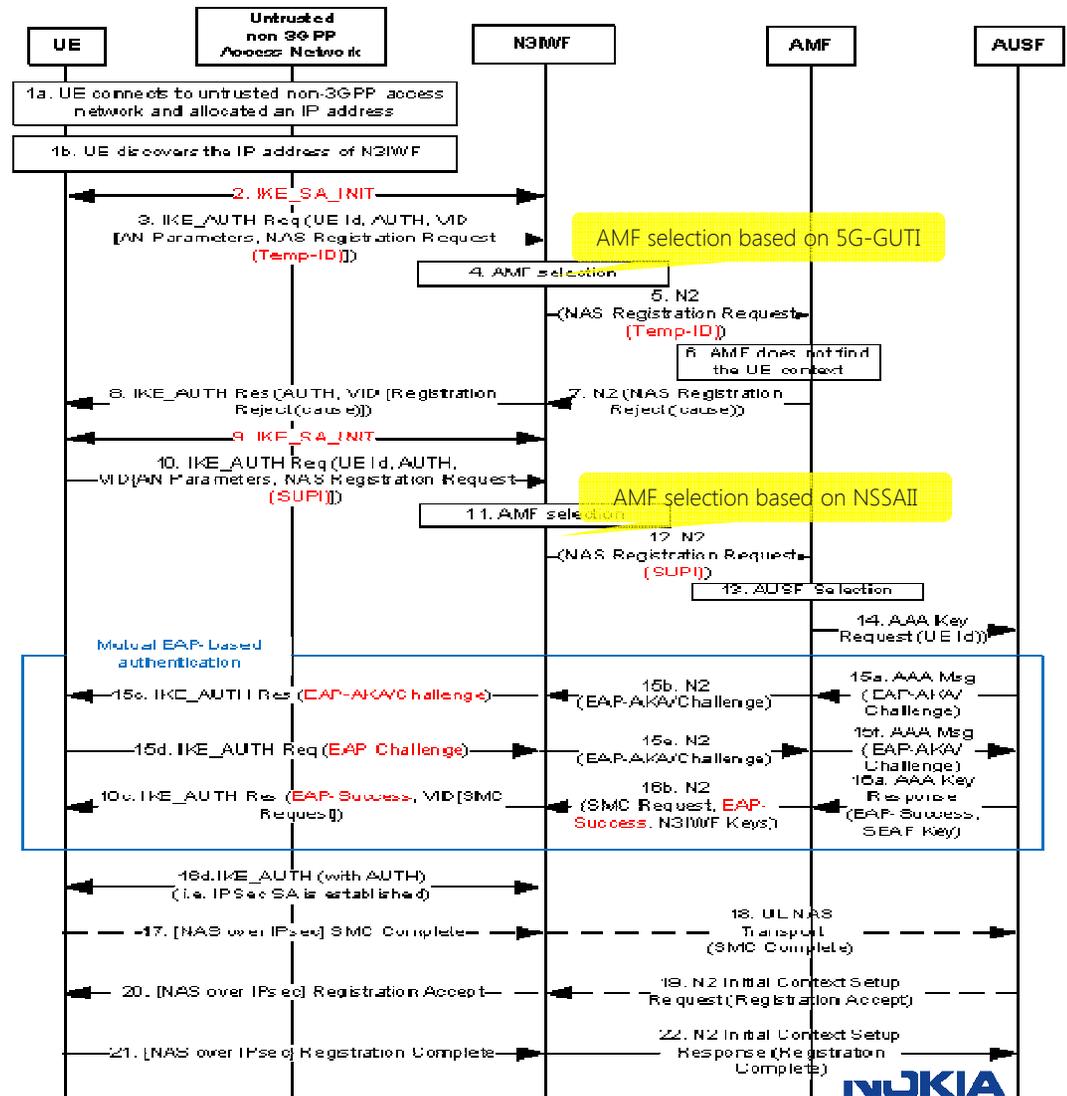
# Non-3GPP untrusted access registration NAS over IKE solution

- Simple case: initial registration
- No additional layer to transport NAS
- No issue
- No issue as well as for re-registration w/o re-authentication



# Non-3GPP untrusted access registration NAS-over-IKE when AMF requests SUPI

- Re-registration (with Temp-ID): case when AMF does not retrieve the UE context
- IKE Auth Request includes "Auth" parameter (means no EAP authentication). In that case, multiple IKE exchanges are not allowed.
- Therefore, NAS-over-IKE solution does not support "nested" NAS request/response within the Registration procedure (Identity Request/Response). Hence a Registration Reject followed by a new registration is required (potentially towards another AMF)
- Not a major issue ... if it is assumed "nested NAS procedures" within Registration procedure to be a rare case
- But need to align 3GPP registration procedure
- Please also note that NASoverEAP solution can also work with the Registration Reject as NASoverIKE solution (QC SA3 argument in S3-172391 not valid)





# Non-3GPP untrusted access registration NAS over EAP solution

- EAP additional layer to transport NAS: simple layer; no implementation issue
- No mix between EAP (EAP-5G) and Higher EAP as they are completely independent
- Allows for any "nested" NAS Identity request/response within Registration
- Guarantees that authentication is performed within a single IKE session
- Avoids two IKE sessions hence two costly Diffie-Hellmann when AMF decides re-authentication.
- Could be reused for Trusted WLAN, and possibly for fixed access
- May support 5G-AKA in the future

