



# EBI Handling for N3GPP sessions

# Options EBI Handling



Two options are currently being discussed:

## ■ Option-1

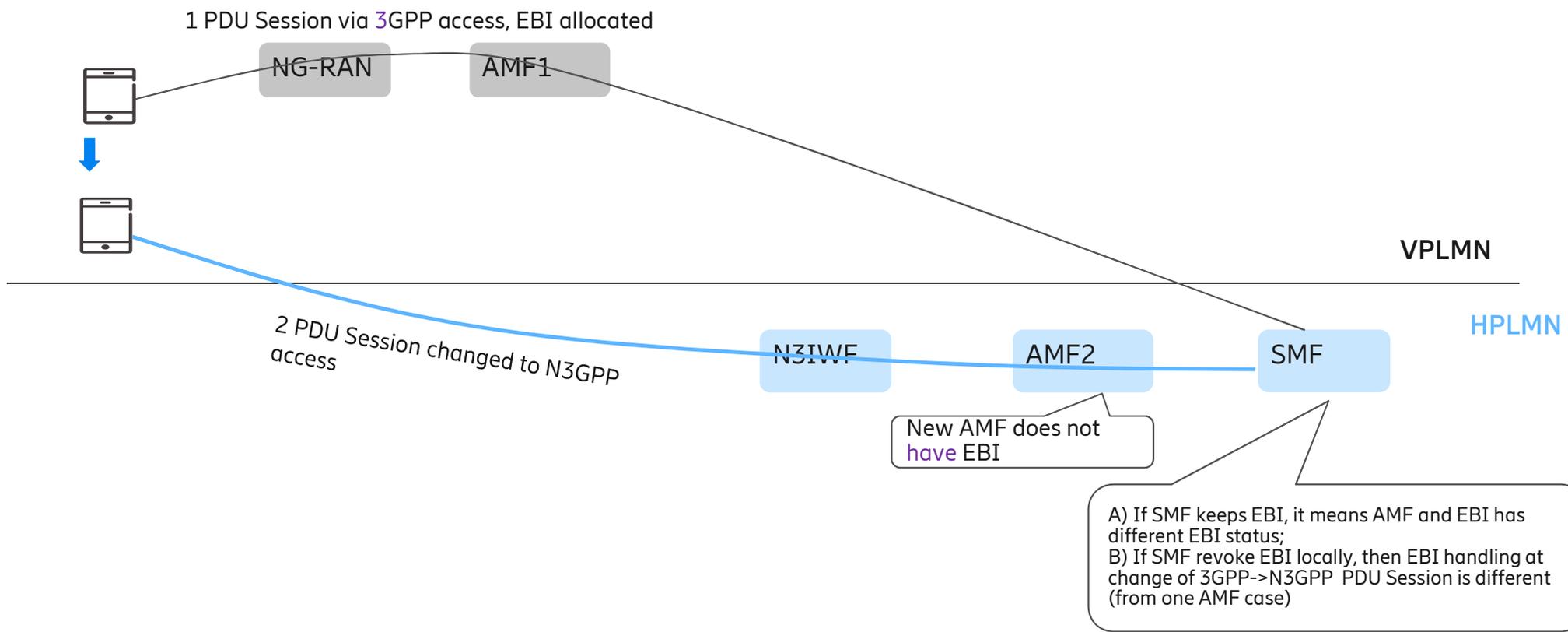
- Allocate EBI only for 3GPP PDU sessions supporting IWK with N26 at PDU Session Establishment (including request type "initial request" and "Existing PDU Session")
- Revoke EBI whenever 3GPP PDU Session supporting IWK with N26 is transferred to N3GPP PDU Session.
- Allocate EBI when a N3GPP PDU session is transferred to 3GPP PDU Session supporting IWK with N26 .

## ■ Option-2

- Allocate EBI only for 3GPP sessions supporting IWK with N26 at PDU session Establishment (including request type "initial request" and "Existing PDU Session")
- Keep EBI allocated when 3GPP PDU Session is transferred to N3GPP PDU Session within 5GC
- Revoke EBI for N3GPP PDU session if any when the 3GPP PDU Session is transferred to EPS over N26 (case 6 next slide)



# Option 2 Impact in handover, where target access is in a different PLMN, and new AMF is needed (Home routed)



# Impact on different procedures in TS 23.502

Affected clauses		Option-1 (EBI revoked at change of 3GPP PDU Session->N3GPP PDU Session)	Option-2 (EBI NOT revoked at change of 3GPP PDU Session->N3GPP PDU Session)	Case #
4.2.3.2 UE Triggered Service Request (List Of Allowed PDU Sessions transfer N3GPP to 3GPP access)		SMF request to allocate EBI-	A) If EBI already exists (for N3GPP), no new EBI allocation is needed; B) If EBI did not exist (for N3GPP), SMF request to allocate EBI (additional signaling also needed)	Case-1
4.9.2.1 Handover of a PDU Session procedure from <b>untrusted non-3GPP to 3GPP access</b> (non-roaming and roaming with local breakout)		SMF request to allocate EBI	A) If EBI already exists (for N3GPP), no new EBI allocation is needed; B) If EBI did not exist (for N3GPP), SMF request to allocate EBI (additional signaling also needed)	Case-2
4.9.2.3 Handover of a PDU Session procedure from untrusted <b>non-3GPP to 3GPP access</b> (home routed roaming)	4.9.2.3.1 The target AMF is in the PLMN of the N3IWF	SMF request to allocate EBI	Due to different AMFs, the new AMF (for 3GPP) does not have EBI info, and the SMF needs to request EBI from the new AMF (additional signaling needed anyway), and different logic in SMF is needed as follows: A) If EBI still exists (for N3GPP) in SMF, this EBI needs to be removed; B) If EBI didn't exist (for N3GPP) in SMF, nothing is required.	Case-3
	4.9.2.3.2 The target AMF is <b>not</b> in the PLMN of the N3IWF (i.e. N3IWF in HPLMN)			
4.9.2.2 Handover of a PDU Session procedure <b>from 3GPP to untrusted non-3GPP access</b> (non-roaming and roaming with local breakout)		AMF and SMF revoke EBI (at network initiated (partial) PDU Session Release of the 3GPP session)	EBI if any (previously for 3GPP) is NOT revoked (when change to N3GPP), special logic is needed during network initiated (partial) PDU Session release of the 3GPP session	Case-4
4.9.2.4 Handover of a PDU Session procedure from <b>3GPP to untrusted non-3GPP access</b> (home routed roaming)	4.9.2.4.1 The selected N3IWF is in the registered PLMN	AMF and SMF revoke EBI (at network initiated (partial) PDU Session Release of the 3GPP session)	Due to different AMFs, the new AMF (for N3GPP) does not have EBI info: A) If SMF keeps the EBI (previously allocated for 3GPP) -> <b>Inconsistent EBI status for the PDU Session</b> (i.e. AMF has no EBI, but SMF has) B) If SMF revokes the EBI locally -> <b>different logic from Case-4</b> at change of 3GPP PDU Session to N3GPP PDU session	Case-5
	4.9.2.4.2 The UE is roaming and the selected N3IWF is in the home PLMN			
4.11.1.2.1 5GS to EPS handover using N26 interface		No update needed	A) If same AMF serves both 3GPP and N3GPP PDU Sessions, the AMF needs to revoke the EBI if any associated with N3GPP PDU Session in 5GC (additional signaling), if the N3GPP session stayed in 5GC. B) If different AMFs are involved, <b>there may be an issue</b> as the two AMFs are not coordinated	Case-6
4.11.1.3.2 5GS to EPS Idle mode mobility using N26 interface		No update needed	Same as Case-6	Case-7
4.11.4.1 Handover from EPC/ePDG to 5GS		SMF request to allocate EBI	Same as Option-1	Case-8

# Summary



Network behavior Procedures	(AMF and) SMF behavior		Comment
	Option-1 (EBI revoked at change of 3GPP PDU Session->N3GPP PDU Session)	Option-2 (EBI NOT revoked at change of 3GPP PDU Session->N3GPP PDU Session)	
PDU Session establishment supporting EPS IWK with N26	SMF request to allocate EBI		
PDU Session establishment supporting EPS IWK without N26	EBI is not allocated		Included for completeness
PDU Session establishment via N3GPP access supporting EPS IWK	SMF <b>does not</b> request to allocate EBI		
3GPP PDU Session->N3GPP PDU	Revoke EBI if any (in AMF and SMF)	Keep EBI allocated even in N3GPP	
N3GPP PDU Session->3GPP PDU	SMF request to allocate EBI	SMF request to allocate if EBI didn't exist in N3GPP.	
5GS->EPS IWK with N26	No additional handling	AMF need to revoke EBI if associated with N3GPP PDU Session	

# Comparison and Proposal



Options Aspects	Option-1 (EBI revoked at change of 3GPP PDU Session->N3GPP PDU Session)	Option-2 (EBI NOT revoked at change of 3GPP PDU Session->N3GPP PDU Session)	Comment
Same logic?	Yes	No, different logic is needed for different cases, refer to Case-1 ~Case-7 on previous slide	
Consistent EBI allocation status in AMF and SMF?	Yes	Maybe not, refer to Case-5 on previous slide	
Additional Signaling?	Yes, if SMF need to request EBI allocation at N3GPP->3GPP change	Additional signaling may also be needed in some scenarios, e.g. Case-1, Case-2, Case-3 and Case-5.	
Update to the specification	Straightforward, thanks to the consistent/simple logic	Different logic need to be captured in different procedures	

**[Observation-1]** In Option-2, different logic is to be described for 6 (out of 8) affected clauses, while in Option-1, the same logic applies.

**[Observation-2]** In Option-2, inconsistent EBI status may happen in AMF and SMF.

**[Observation-3]** In Option-2, at 5GS to EPS mobility, the AMF needs to revoke the EBI if any associated with N3GPP PDU Session, which implies additional signaling.

**[Proposal-1]** It's proposed to go for a simpler logic, i.e. Option-1.

