

New SID proposal on Enhancement of 5G AM Policy in R18

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The **Access and Mobility Policy** control introduced in 5G encompasses the management of service area restrictions, the management of the RFSP functionalities and UE-AMBR by PCF.

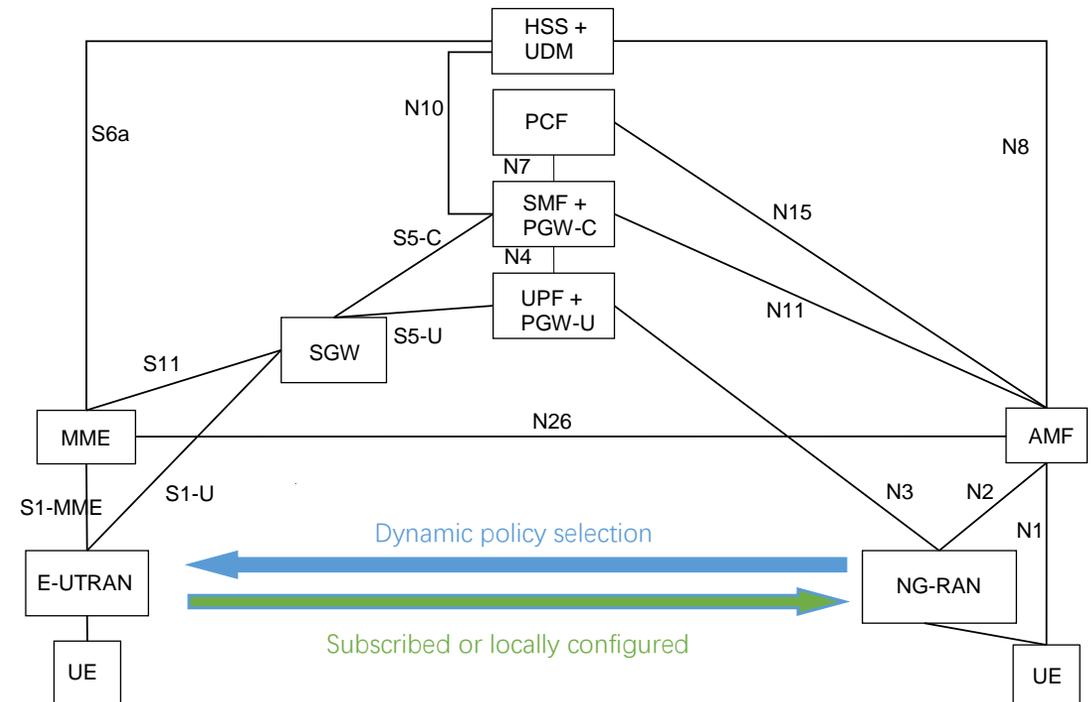
Some potential enhancements for study in AM Policy are identified based on the Rel-17 SA2 issues and Rel-18 SA1 requirements:

- ❑ AM Policy alignment in interworking scenario (4G and 5G)
- ❑ New parameters and provisioning procedure to assist AM policy decision
- ❑ Optimization for PCF binding and discovery
- ❑ Solutions for roaming cases
- ❑ Finer granularity
- ❑ Verification of AM policy
- ❑ New trigger for AM policy

AM Policy is NOT supported in EPC. It may result in **AM parameters conflict** while a UE is in an interworking scenario.

A PING-PONG Issue from RFSP Index conflict:

- While the UE is in 5G, the PCF decide to change the subscription RFSP Index to direct the UE to 4G.
- While the UE is in 4G, the MME select its RFSP Index according to Subscription Data or Local configuration, and direct the UE to 5G.

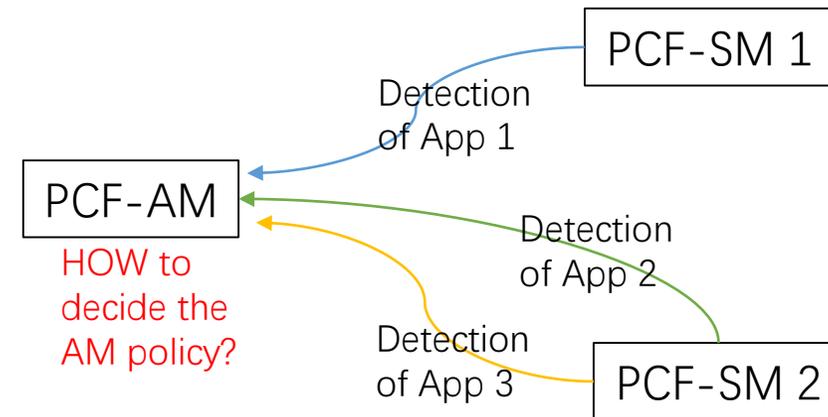


A dynamic mechanism needs to be investigated to support AM policy update for the EPC side.

As conclusion from DCAMP, the PCF serving a UE may receive notification from PCF(s) serving a PDU session that specific application traffic starts/stops and trigger AM policy check and update.

How does PCF-AM handle among different applications' requirements, if

- App1/2/3 are reported activate at the same time, and
- App1/2/3 request conflicted AM policy



The PCF may need information about the priority level between applications while deciding or updating the AM policy. Accordingly, the parameters and provisioning method are needed.

Another issued identified in DCAMP is, AM-PCF needs to subscribe to BSF for all SM-PCF(s) of PDU Sessions.

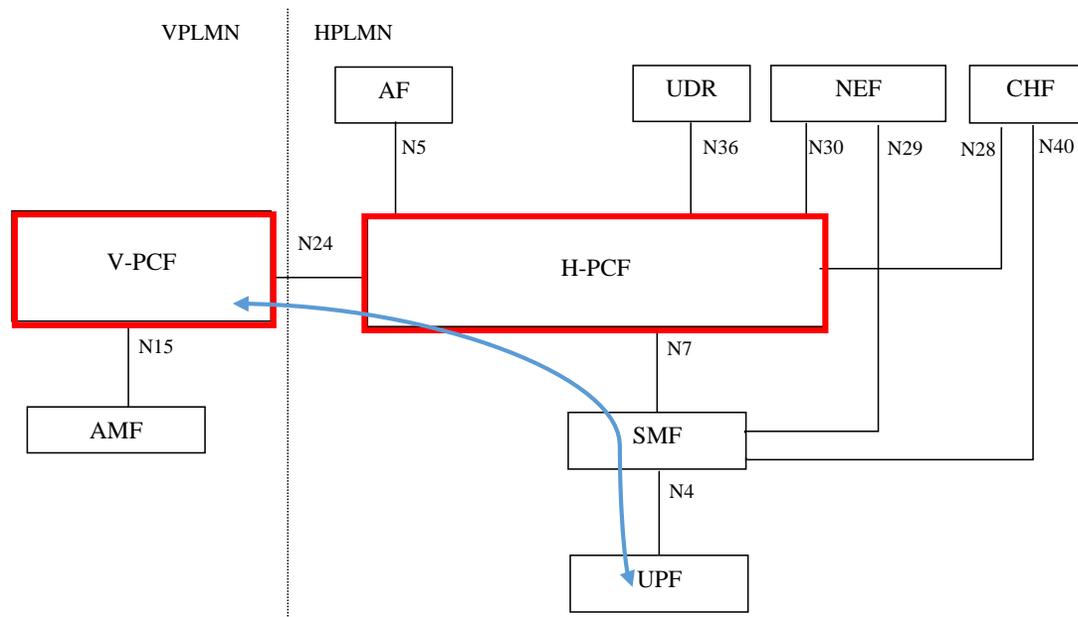
It is NOT possible in a real network, when BSFs are deployed in distributed maner.

- Overwhelming signaling to all BSFs when AM-PCF needs to locate the SM-PCF for a specific PDU session.

***This topic might be updated according to the discussion of 8.21 in SA2#146*

Optimization is needed for PCF binding and discovery mechanism, especially to support the dynamic AM policy starts/stops when related application data transmission starts/stops considering there are multiple distributed BSF(s) deployed.

The DCAMP solution for R17 only applies to non-roaming cases. In HR cases, how V-PCF (AM) to subscribe notification of application detection from user plane via H-PCF (SM) are not discussed.



To receive the detection of application in use from user plane, the V-PCF (AM) needs to subscribe to the H-PCF (SM) where PCRT is reported from SMF and UPF.

Current mechanism do not have interaction between H- and V- PCF that responsible for different policy control.

Overall roaming reference architecture of policy and charging control framework for the 5G System - home routed scenario

New mechanism needs to be investigated for the notification of application detection from H-PCF to V-PCF.

New enhanced requirement comes from studies in SA1/SA2.

For example, in FS_PALS (TS22/844):

*[PR.5.10.6-1] The 5G System shall support a mechanism to enable configuration of a network that provides access to localized services such that **the services can be limited in terms of their spatial extent (in terms of a particular topology, for example a single cell), as specified by a 3rd party.***

In Current definition, Service Area Restrictions consist of a list of allowed TAI(s) or a list of non-allowed TAI(s). Thus the current granularity in SAR may not be enough anymore.

The SA2 work should be aligned with the outcome of the SA1 work in AM policy enhancement for finer granularity, e.g., in SAR.

To support radio resource management in RAN the AMF provides the parameter 'Index to RAT/Frequency Selection Priority' (RFSP Index) to RAN across N2. The RFSP Index is mapped by the RAN to locally defined configuration in order to apply specific RRM strategies, taking into account any available information in RAN.

However, in current mechanism, **the 5GC has no idea whether the delivered RFSP index is enforced by the RAN or not**. The core may need to verify that the frequency/RAT type is selected as the RFSP index and improve future decision.

To investigate whether and how the 5GC can verify the radio resource is assigned as the RFSP Index.

Policy decisions based on spending limits is a function that allows PCF taking session related policy actions related to the status of policy counters that are maintained in the CHF. Some scenarios may have the PCF for a UE make **policy decision based on spending limits** a useful function for AM policy control as well.

***This topic might be updated according to the WID_TEL_18_SLAMUP*

The new triggers for AM policy, e.g., from CHF and the procedure to be used in both non-roaming and roaming scenarios should be investigated.

- Expect to start with other R18 studies depending on SA2 time plan
 - Estimated 4 TUs for study phase
- Sent to TSG for information in June 2022
- Sent to TSG for approval in Sep. 2022

THANK YOU