

**3GPP TSG RAN Rel-18 workshop**  
**Electronic Meeting, June 28 - July 2, 2021**

**RWS-210060**

**Agenda Item: 4.2**  
**Source: Spreadtrum Communications**  
**Title: R18 Personal IoT network considerations**  
**Document for: Discussion and decision**



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# Justification

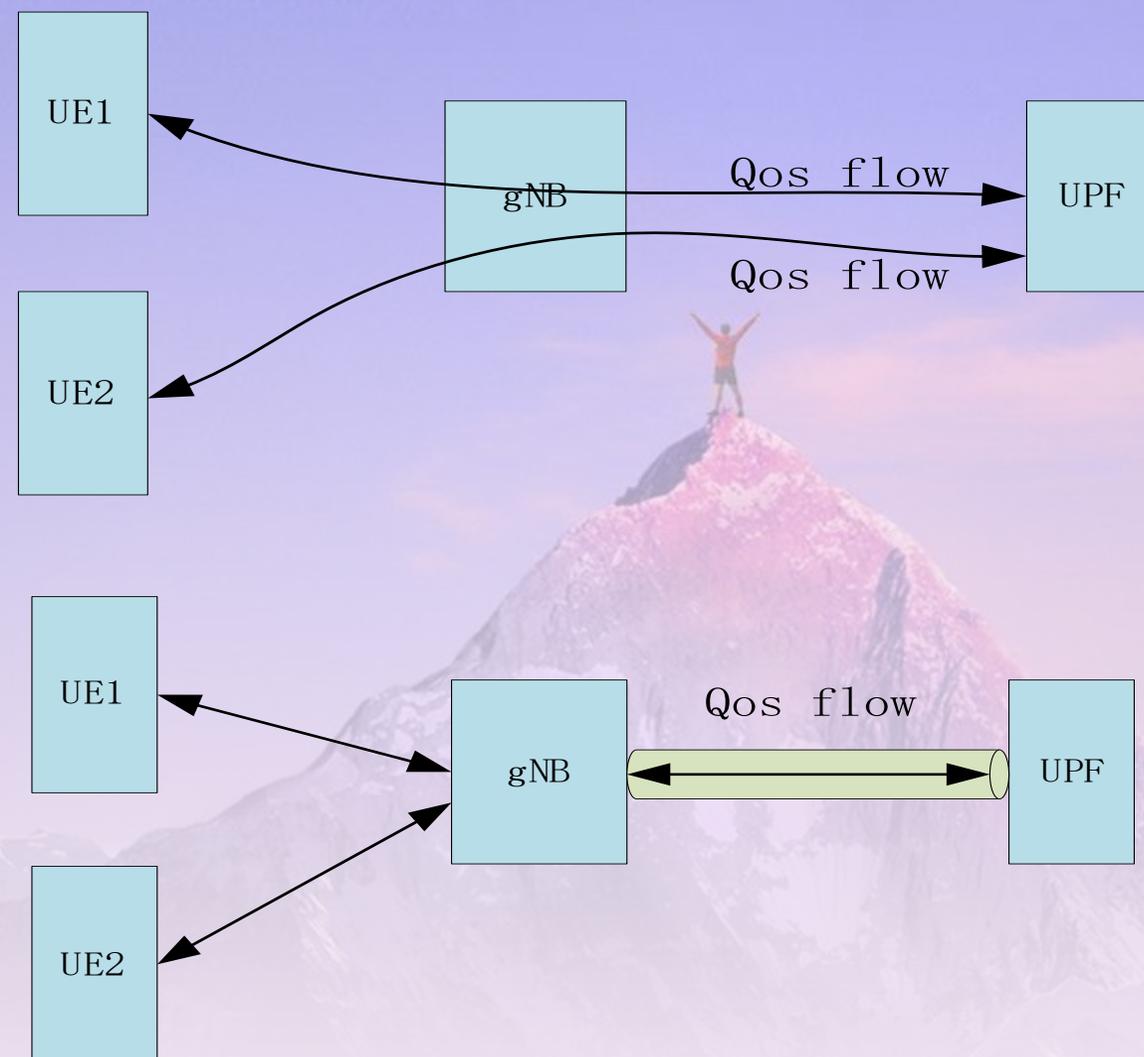
- A user can have many electronic devices, such as smart phone, TV, earbuds, speaker, watch, and AR glasses (defined as PIN Elements in SA1 [1]). The different PIN Elements of one user can share the same media, such as voice, video, audio. The media could be generated locally in the PIN network or from application server.
- The User can switch the PIN Element to display the media without interruption. On other hand, the media may be shared by different PIN Elements simultaneously.
- To meet the requirements of the service sharing within PIN network, the 5G network needs to specify some related procedures and introduce some enhancements to guarantee the user experience.



Media sharing between devices of a same User

# Use case

- Use case1: UPF based switch/duplicate architecture
  - UE1 and UE2 locate in same or different gNB.
  - UPF acts as the UP anchor.
- Use case2 : gNB based switch/duplicate architecture
  - UE1 and UE2 locate in same gNB.
  - gNB acts as the UP anchor.



# Main topics

- Device discovery procedure

A user is listening music via the smart phone. When he goes out of home, he will continue listening the music via the earbuds and watch without carrying the smart phone. Before the service switching from smart phone to watch, the target PIN device (watch) needs to be discovered by the old device (phone). The device discovery procedure for target PIN device needs to be specified in RAN.

- Negotiation between PIN devices

When multiple candidate PIN devices are discovered, the source device needs to select one device for the service switching or sharing. The negotiation between the source device and candidate target device is needed for the service establishment. Otherwise, the service establishment in the target device may fail and will reduce the user experience. The Source device can determine the target device based on the negotiation results.

# Main topics

- CP procedure for service sharing

For the new service establishment in the target service, CP procedure including the paging, UAC and RRC setup procedure needs to be specified. For the service switching case, the RRC release in source device needs to be specified.

Furthermore, as the source device and target device belongs to a same end user, and the negotiation is performed between the devices, therefore, some potential enhancements for paging/UAC can also be considered.

- UP procedure service sharing

In order to improve the user experience, the smooth switching is necessary when media is shared among the PIN devices. For the gNB based switch/duplicate architecture, the lossless switching mechanism needs to be studied in RAN.

For the case that the media is shared by different PIN Elements simultaneously. The NGU UP tunnel can be shared for multiple UEs if they are served by a same gNB.

# Objective

The study item aims at:

- Specify device discovery procedure [RAN2]
- Specify negotiation procedure between the devices for service sharing. [RAN2]
- Study CP procedure for service sharing [RAN2,RAN3]
  - Specify the paging, UAC and RRC setup procedure, including some potential enhancements considering the assistance information acquired in discovery or negotiation procedures.
  - Specify service release procedure for source device.
- Study UP procedure for service sharing [RAN2,RAN3]
  - Lossless switching mechanism for service switching among multiple devices.
  - NGU UP tunnel sharing for multiple UEs locate in a same gNB.

# Thank you

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