



3GPP TSG RAN Meeting #86
Sitges, Barcelona, 9th-12th December 2019
Document for: discussion
Agenda Item: 9.1.2

RP-192601

Motivation for new SI: Study on enhancement of RAN slicing

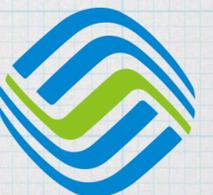
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R15/16 supporting of RAN Slicing

- * Rel-15/16 specifications support end to end slice functionality and can provide the foundation of a common connectivity platform for various services

Feature	R15&16 Support of slice
Initial attachment	Support allowed S-NSSAI configuration
Session setup	Support PDU session setup procedure for allowed S-NSSAI
Cell reselection	By implementation, network can configure dedicated frequency priority according to allowed S-NSSAI of the UE
Handover	Support slice based admission control performed by target gNB
QoS	Support scheduling Slice/DRB according to QoS requirement from CN
KPI monitoring	Support per DRB and per slice KPI monitoring

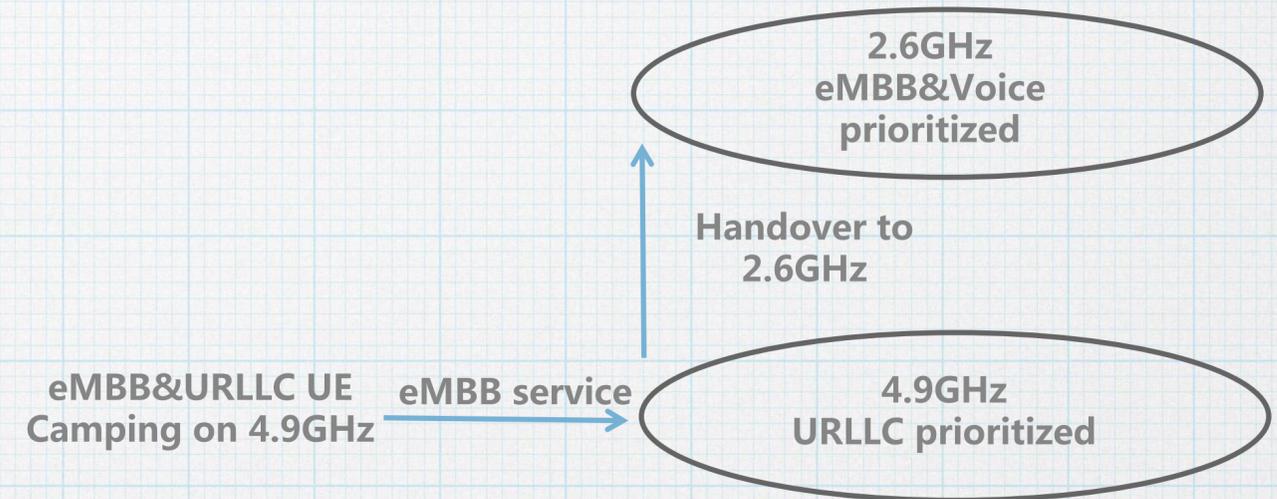
- * More efforts should be made in Rel-17 on enhancement of RAN slicing, to make it a tool that network operators can apply to meet the challenge of opening new source of revenue in addition to the one derived from customer subscription.



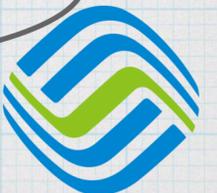
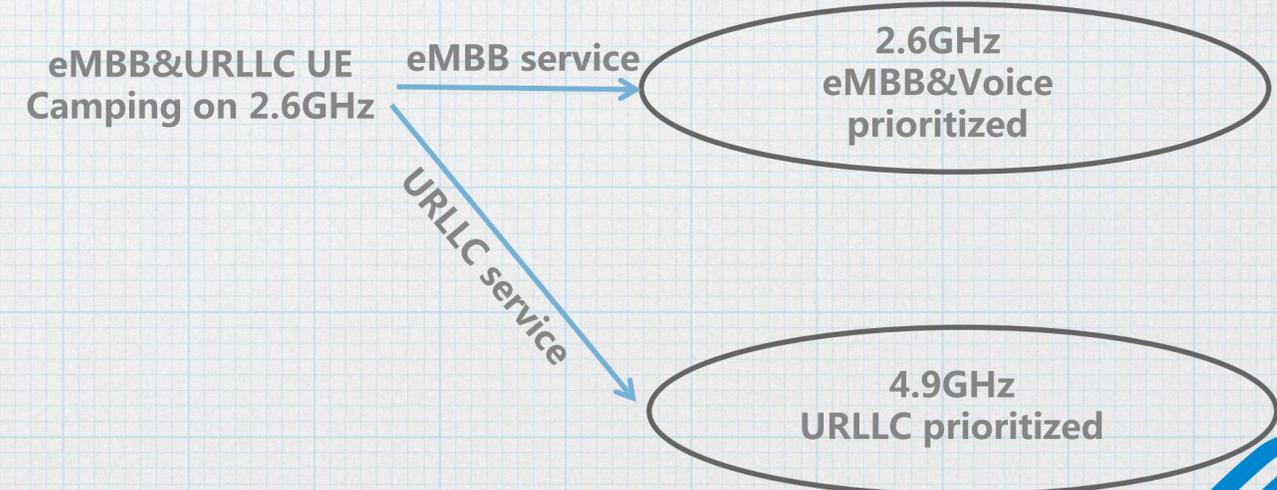
Issue 1: Fast Access to Slice

- * Slice based cell (re)selection: In current spec, UE is unaware of the slice supported by network during intra/inter-freq cell (re)selection.
- * Slice based RACH configuration: Providing isolated RACH resources and/or prioritized RACH for slices.
- * Slice based paging configuration: Paging needs to be enhanced to increase the efficiency of the resource usage.

Existing frequency priority based solution

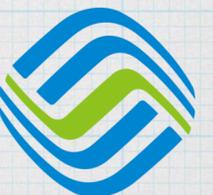


Fast access based solution



Issue 2: Service continuity

- * During handover, target gNB may not support ongoing slice of the UE. Target gNB will reject unsupported slices, which affect service continuity.
- * Study slice re-mapping, fallback, and data forwarding procedures. Coordination with SA2 is needed.
- * Study optimized handling of UEs at cell edge of a slice-related coverage area (avoidance of handover to neighboring cells not supporting the ongoing slice type).



Issue 3: Relaxation on TA

- * In R15, there is a restriction that 'the slice availability does not change within the UE' s registration area'
- * This restriction imposes constrains on RAN slice deployment for operators: all the cells that belonging to one TA should support the same lists of slices.
- * During email discussion, majority companies consider the feasibility to relax that deployment restriction should be discussed in SA working group first.



Issue 4: Coordination with SA2

- * SA2 has already scheduled a new SI SP-190931 [3] on slicing enhancement, so we need to take SA2 output into consideration.
- * If RAN impacts are identified, the corresponding works in RAN for the SA leading SI should be handled in this RAN slicing enhancement SI.



Objectives of SI

- * The study item aims to investigate enhancement on RAN support of network slicing. Detailed objectives of the study item are:
 - * Study mechanisms to enable UE fast access to the cell supporting the intended slice, including [RAN2]
 - * Slice based intra/inter-frequency cell (re)selection
 - * Slice based RACH configuration
 - * Slice based paging
 - * Study necessity and mechanisms to support service continuity, including [RAN2, RAN3]
 - * For intra-RAT handover service interruption, e.g. target gNB doesn't support the UE's ongoing slice, study slice re-mapping, fallback, and data forwarding procedures. Coordination with SA2 is needed.
 - * Optimized handling of UEs at cell edge of a slice-related coverage area (avoidance of handover to neighboring cells not supporting the ongoing slice type).
 - * Study the necessity and impact of relaxing restriction that one TA having the exact same slicing capabilities. Coordination with SA2 is needed. [RAN2, RAN3]
 - * Note: This study item should take SA2 output on slicing enhancement into consideration if RAN impacts are identified.





Thank You