RAN#76, West Palm Beach, USA
June 5th – 8th 2017
Agenda item: 10.1.2

RP-171168

FeD2D assessment based on architecture impacts

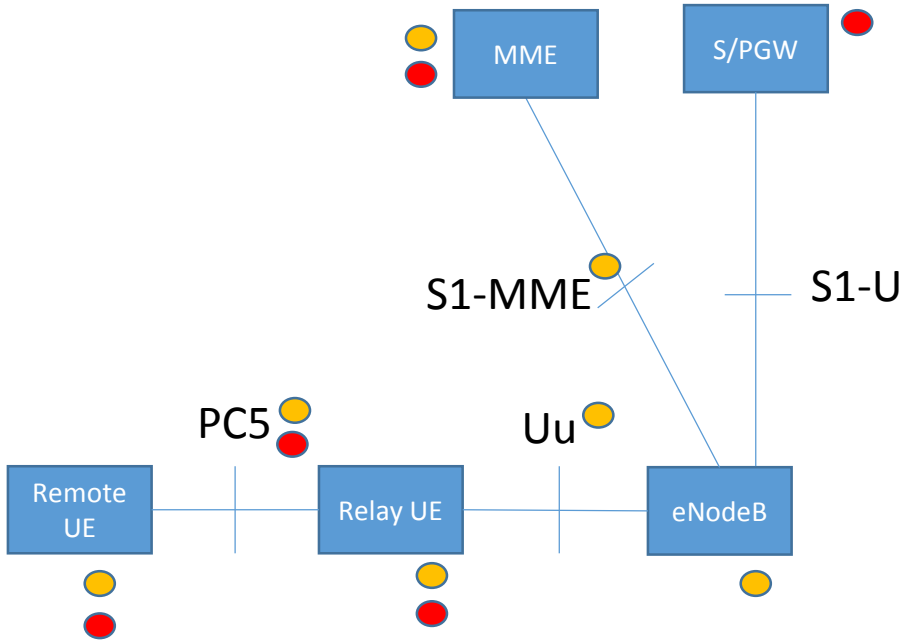
Qualcomm Incorporated, Ericsson

SA2 status

- SA2 FS_REAR is 65% complete and TR 23.733 is sent for info to TSG SA#76
  - The study is to be concluded in Aug SA2#122b meeting
  - Several open issues require interactions with RAN2:
    - QoS Support over PC5 to support LTE-Uu type of bearer based QoS model
    - Support of paging the Remote UE via Relay UE
    - Handover between direct (via eNB) and indirect 3GPP comm (via Relay UE)
  - L3 based Relay architecture (S2-173876) is captured as the baseline for solution evaluations

Architecture impacts

- FS_REAR: L2 vs. L3 impacts
  - Impacted by L3 Relay arch
  - Impacted by L2 Relay arch



- L2 relay architecture requires updates to almost all system nodes and interfaces
  - Needs enhancement to existing Uu
  - Needs updates to all eNBs
  - Needs updates to all MMEs
- L3 relay architecture can limit the impacts to only smaller number of nodes
- In addition, for wearable use cases, most likely, Remote UE needs to comm directly with Relay UE:
  - i.e. L2 Relay arch still needs to support L3 at the same time to be useful in the use case

Conclusion: L2 Relay arch has significant impacts in more nodes in the system

Architecture impacts (cont.)

- FS_REAR: L2 vs. L3 feature analysis (per S2-173876 analysis)

Features	Layer 2 arch	Layer 3 arch
Support of commercial use	Editorial change to 23.303	Editorial change to 23.303
Authentication and authorization via core network	Diff sol.: -- to be defined. • MME based; • ProSe func based	PKMF based (33.303)
Awareness of Remote UE at CN	Remote UE NAS towards MME	Relay UE reports to MME
Charging support	All existing charging schemes	Per SDF based charging.
Session continuity	Supports IP preservation (if HO is properly supported)	IP preservation is not supported
QoS support over PC5	Same enhanced needed in RAN2	Same enhancement needed in RAN2
Privacy of Remote UE traffic	Protected by e2d PDCP	Visible to Relay
Support of non-IP traffic	Only Remote UE needs non-IP	Both Relay and Remote UE needs non-IP

Conclusion: No major feature disparity between L2 and L3 Relay arch

Proposal

- L2 based Relay architecture should not be taken for granted in TSG RAN
  - All L2 based solutions need to be evaluated by SA2 against the existing system, i.e. L3 Relay Arch, for their impacts and benefits
- TSG RAN shall not start normative work until SA2 concluded on the system level analysis/design (i.e. at least for another plenary cycle)