

Motivations for eProSe R18

2021/8/10

Work already in 5G_ProSe in Rel-17

- ProSe Direct Discovery;
- ProSe Direct Communication including unicast, broadcast and group communication;
- One Hop UE-to-Network Relay;
 - PC5 is based on NR technology and Relay UE is also connected to the 5GS via NG-RAN.
- PC5 or Uu Path Selection policy provisioning;
 - How a UE selects a communication path between PC5 reference point and Uu reference point before it establishes connection with another UE or the network.

Motivations for eProSe in Rel-18 (1/5)

- R17 study phase (in both RAN and SA) has been concluded the feasibility of U2U relay (L2, L3)
- But U2U with RAN impact has been excluded in RAN from normative phase due to the limited capacity
- U2U Relay is mainly motivated for public safety use case, and it needs to be supported in R18 as recommended during SA#91-e meeting.

	SA2		RAN2	
	L2	L3	L2	L3
Discovery	Model A, Model B		Studied	
(re-)selection	Studied (Sol#8, Sol#50)		Studied	
Protocol Stack	Studied (Sol#9)	Studied (Sol#10, Sol#32, Sol#49)	Studied	<i>Up to SA2</i>
QoS	Studied (Sol#31, Concluded)	Studied (Sol#31)	<i>No AS impact</i>	<i>Up to SA2</i>
Security	<i>Up to RAN2 and SA3</i>	Up to SA3	<i>Studied</i>	<i>Up to SA2</i>
Service Continuity	<i>N.A.</i>	<i>N.A.</i>	<i>N.A.</i>	<i>N.A.</i>
CP	Studied (Sol#9)	Studied (Sol#8, Concluded)	Dependent on PC5-S design by SA2	<i>Up to SA2</i>

Motivations for eProSe in Rel-18 (2/5)

- In Rel-17, the L2 U2N relay supports only intra-gNB mobility;
- Inter-gNB mobility support is required.

Motivations for eProSe in Rel-18 (3/5)

- some aspects (e.g. Relay MBMS traffic, the non-3GPP based PC5) which already have been supported in the ProSe in EPS are not supported by the Rel-17 5G_ProSe.
- Some stage 1 requirement
 - In clause 6.9.1 of TS 22.261, There can be one or more relay UE(s) (more than one hop) between the network and the remote UE.
 - In clause 6.3.24 of TS 22.261, The 5G system shall support use of a relay UE that supports multiple access types (e.g. 5G RAT, WLAN access, fixed broadband access).
 - In clause 6.9.2.1 of TS 22.261, The connection between a remote UE and a relay UE shall be able to use 3GPP RAT or non-3GPP RAT and use licensed or unlicensed band.
 - In clause 6.2.3 of TS 22.261, it is stated, "The 5G system shall support service continuity for a remote UE, when the remote UE changes from one relay UE to another and both relay UEs use 3GPP access to the 5G core network."

Motivations for eProSe in Rel-18 (4/5)

- Some stage 1 requirement
 - ✓ In clause 6.9.1 of TS 22.278, it is stated, "The 3GPP system shall enable emergency calls via the Evolved ProSe Relay UE in case that the Evolved ProSe Remote UE supports emergency calls."
 - ✓ In clause 8 of TS 22.268, it is stated that:
 - A remote ePWS-UE and a remote PWS-UE shall be able to support the reception of a Warning Notification that is transmitted from an UE that supports the relay functionality.
 - A remote ePWS-UE and a remote PWS-UE shall be able to automatically suppress duplicated notifications. A duplicate is a repetition of a same notification as determined by unique parameters.
 - A remote ePWS-UE and a remote PWS-UE receiving a Warning Notification transmitted via an UE that supports the relay functionality shall behave in the same fashion as if it received the message directly from a 3GPP network.
 - An UE that supports the relay functionality shall unconditionally forward the Warning Notification broadcast received from the network.

Motivations for eProSe in Rel-18 (5/5)

KI#6: Support Direct Communication path switching between PC5 and Uu which was de-prioritized from Rel-17

- How to enable network-controlled/network-assisted Direct Communication path switching between 5GC Uu path and PC5 path.
- What functional entities and triggers are responsible for Direct Communication path switching and their impact on the corresponding interfaces.
- How service continuity could be preserved during Direct Communication path switching, i.e. Uu to PC5 or PC5 to Uu.
- What are the possible impacts of Direct Communication path switching on QoS handling for ProSe Communication over PC5 path vs. over 5GC Uu path?

Summary - Proposed Objectives for eProSe in Rel-18

- MBS service support for UE-to-Network Relay;
- UE-to-UE relay including one hop and multiple hops;
- Mobility enhancement for U2N relay to cover inter-gNB mobility;
- Multiple Paths for U2N relay and U2U relay.
- Multiple hops for the U2N relay;
- Path Switching support;
- Non-3GPP access PC5 support including Direct Discovery, Direct Communication, relay connected to Non-3GPP access;
- Low power IoT support for UE-to-Network relaying;
- Emergency service support for UE-to-Network relay;
- PWS/ePWS support for UE-to-Network relay;

TUs required for eProSe in Rel-18

Objectives	TUs for Study	TUs for Normative work
MBS service support for UE-to-Network Relay	1	0.5
UE-to-UE relay	One Hop: 0.5; Multiple Hops: 1	One Hop: 0.5; Multiple Hops: 0.5
Mobility enhancement for U2N relay	0.5	0.5
Multiple Paths for U2N relay and U2U relay	1.5	0.5
Multiple hops for the U2N relay	1	0.5
Path Switching support	2	1
Non-3GPP access PC5 support including Direct Discovery, Direct Communication, relay connected to Non-3GPP access;	2	1
Low power IoT support for UE-to-Network relaying;	2	1
Emergency service support for UE-to-Network relay;	0.5	0.5
PWS/ePWS support for UE-to-Network relay;		
Total	12	6.5

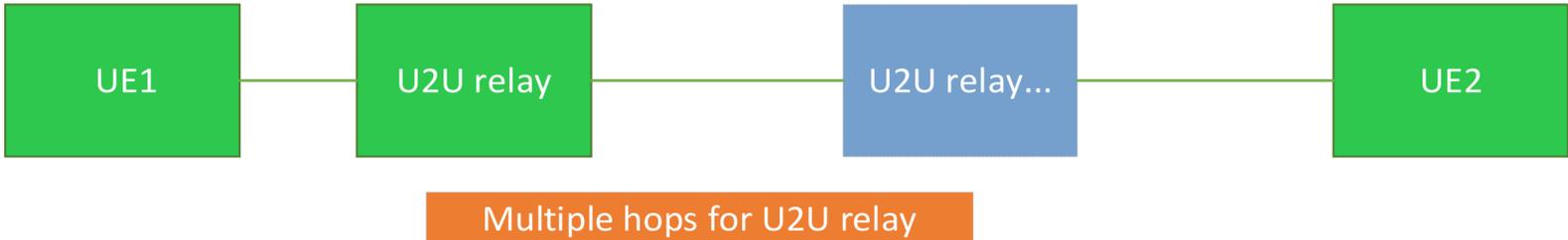
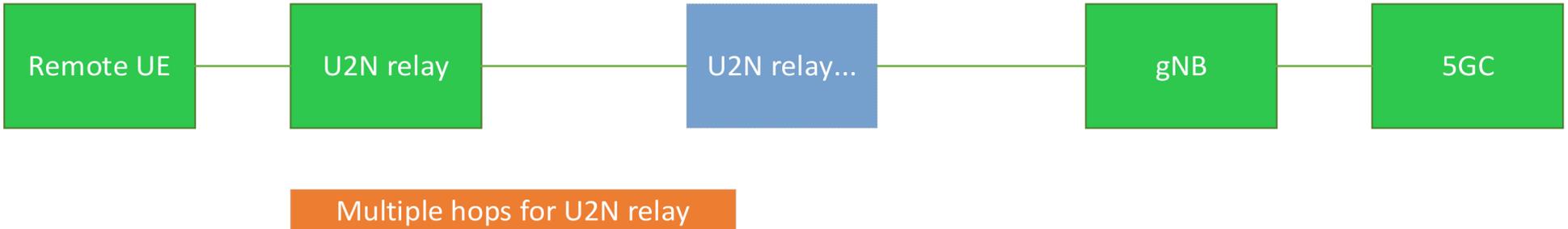
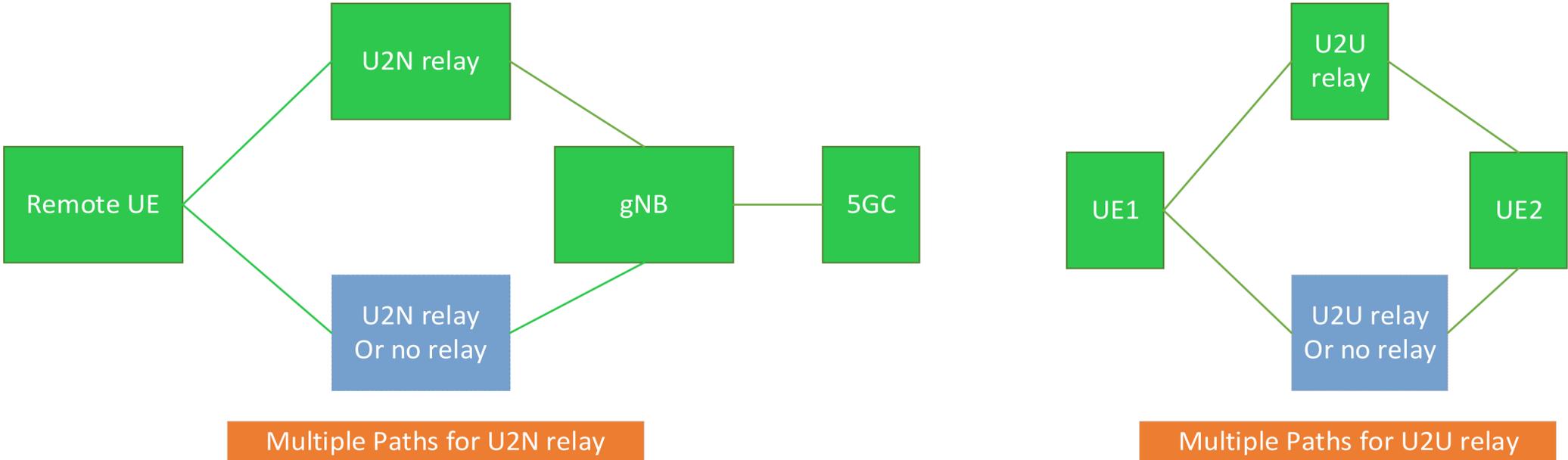
Annex

MBS Service support for U2N relay



Annex

Multiple paths or multiple hops for U2N relay and U2U relay



Thank you

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