

**MEDIATEK**

# Rel-17 Sidelink Enhancement – SL Relay Architecture

**3GPP TSG RAN#85**

**Newport Beach, California, USA**

**16-20 September 2019**

**AI 8.1.2**

# Background

- Relaying is proposed for email discussion towards RAN#86
  - Objective would be a WI with an initial study phase
  - Both UE-to-network and UE-to-UE relaying would be in scope
- Past 3GPP work offers two architectural models for relaying
  - L2: relaying takes place at some L2 sublayer, e.g. PDCP or RLC
    - FeD2D put an adaptation layer between PDCP and RLC, with relaying at PDCP
      - IAB is somewhat similar with BAP located above RLC, and PDCP end-to-end between UE and donor
    - Radio layer termination is split between relay and donor nodes
    - Remote UE has its own bearers at the donor node
  - IP: relaying takes place at the IP layer
    - ProSe UE-to-Network Relay
    - Radio layers of the remote UE all terminate at the relay UE
    - Traffic of the remote UE looks to the donor node like a bearer of the relay UE

# Architecture selection for Rel-17

- The two architectures are quite different from one another
  - Which one to select needs to be determined for Rel-17
- There is precedent for both models on sidelink (FeD2D and ProSe)
- This decision could be part of the study phase
  - However, a short (6-month) study phase could be dominated by duelling architectures
  - This would undercut the ability of the study phase to de-risk other design aspects
- Alternatively, the decision could be taken as part of the email discussion
  - RAN#86 could then approve a WI that indicates which architecture will be adopted
  - There is precedent from FeD2D, where the SID called for a L2 relay architecture

# Architectural tradeoffs

- L2 relaying better distinguishes the remote and relay UEs as seen in the donor node
  - Separate bearers, separate RRC connections/contexts, etc.
  - Terminating PDCP end-to-end allows separate security
- IP relaying has lower RAN impact
  - The donor node sees the remote UE as bearers of the relay UE (no separate context)
  - The relay UE has access to the remote UE's traffic
- These tradeoffs need to be discussed
  - In particular, the importance of security depends on the scenario
  - In ProSe UE-to-Network Relay, it was considered OK for the relay UE to see all traffic (trusted PS UEs)
  - In FeD2D, there was a preference to keep the traffic secure through the relay UE (commercial devices)

# Proposals

- **Proposal 1:** Discuss relaying as a RAN2-led WI with a study phase (email discussion towards RAN#86)
- **Proposal 2:** Scope of the email discussion to include converging on the relaying architecture
- **Proposal 3:** RAN#86 should approve a WI that indicates the relaying architecture to be designed

# Thank You!