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# R19 sidelink relay enhancement

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# Latency reduction

- Multipath is introduced to improve the throughput and reliability. However, NW shall wait for UE reporting measurement result before multipath configuration. Also, RRC resume with multipath is not supported.
- **Observation 1: there is delay to configure multipath after IDLE/INACTIVE remote UE enters CONNECTED.**
- There was similar situation for NR-DC. To reduce the latency, EMR (early measurement report) and resume with NR-DC was introduced. Similar solution can be introduced in multipath.
- **Proposal 1: specify the solutions to reduce multipath configuration delay, including,**
  - Early measurement report in multipath
  - Resume with multipath

# Reliability improvement

- RAN2 specified radio channel thresholds condition, so that sidelink relay is enabled at cell edge. During the path switch from direct to indirect, the channel condition of direct path may deteriorate quickly. Remote UE in RRC\_CONNECTED may not be able to receive the path switch command from direct path, which may finally result in RLF.
- **Observation 2: the robustness may be low during direct path to indirect path switch due to direct path channel deteriorating.**
- There was similar situation on Uu. To improve the mobility robustness, CHO (Conditional Handover) was introduced. NW can configure handover command in advance. UE can performs handover upon condition fulfillment. Similar solution can be introduced in path switch.
- **Proposal 2: specify the solutions to improve the path switching robustness, including,**
  - Conditional path switch.

- In sidelink U2N relay, only unicast service can be relayed to remote UE. MBS can't be supported.
- **Observation 3: MBS service relay is not supported in U2N relay.**
- MBS is important to support public safety and mission critical service. U2N relay is also expected to support public safety and mission critical service.
- **Proposal 3: support MBS in sidelink U2N relay.**

## ■ Specify following sidelink relay enhancement

- Delay reduction to multipath enhancement, including
  - Early measurement report
  - Resume with multipath
- Robustness improvement during path switch by conditional path switch
- Support MBS forwarding in sidelink U2N relay