

NTN in Rel-19

Taipei, 15th – 16th June, 2023

Agenda Item 5

Source: Nokia, Nokia Shanghai Bell

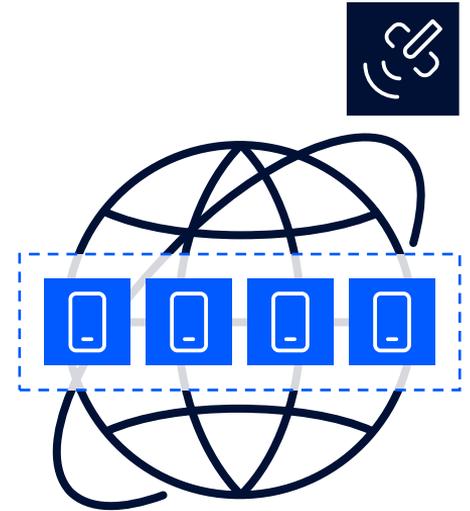
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NTN topics for Rel-19: Overview

It is important to focus on a highest-priority subset of possible topics for NTN in Rel-19. We see the priorities as follows:

1. NTN for RedCap (RAN1/RAN2)
Enabling NTN for all device types
2. Regenerative Architecture (RAN3)
DU on board the satellite
3. DL Coverage Enhancements (RAN1/RAN2)



1. NTN for RedCap

Goal:

- Target global 3GPP-based coverage for all device types
- NTN has so far focused on smartphones or IoT devices, but RedCap devices have not been considered in NTN standardisation. NR NTN specifications may permit implementation on a RedCap device, but there may be cost, complexity and/or performance disincentives to do so.
- Global coverage would clearly benefit RedCap devices.

Proposals:

- Study the impact of applying existing Rel-18 NTN to RedCap devices, including seamless NTN-NTN mobility, and identify any useful potential simplifications from device-cost perspective, e.g. in the following areas:
 - Number of HARQ processes
 - Simultaneous operation with GNSS



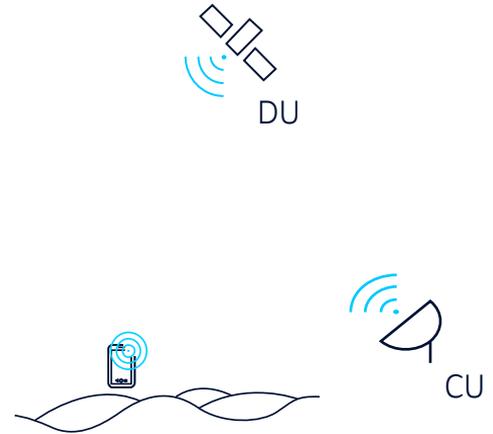
2. Regenerative Architecture

Goals:

- Enable inter-satellite links (ISLs).
- Increase feeder link efficiency due to trunking.
- Support more sparse locations of feeder links.
- Reduce the RTT for improved link efficiency.

Proposals:

- Focus on DU on the satellite, CU on Earth, due to limited ability of satellites to support payload and processing.
- Specify corresponding enhancements to F1 interface, e.g. to support variable latency.



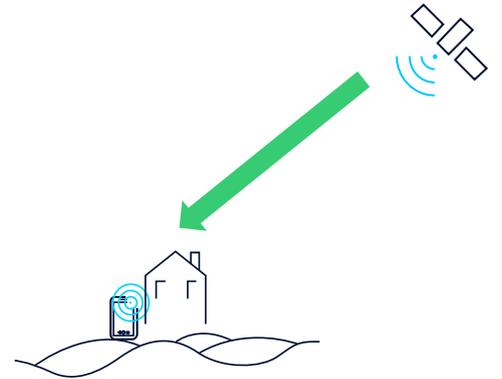
3. Downlink Coverage Enhancements

Goal:

- Enhance coverage of NTN for DL channels in initial access such as Msg2/Msg4 PDSCH and initial access PDCCH
- Enable indoor scenarios, and scenarios with limited satellite output power, e.g. due to power-sharing between beams.
- Enable enhanced coverage for RedCap devices

Proposals:

- Introduce PDSCH and PDCCH enhancements (e.g. repetitions) for the target channels
- Consider both RedCap and handheld UEs
- Target should be agreed in the WID so that WGs can work directly on solutions.



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