3GPP TSG RAN meeting #102
Edinburgh, December 11-15, 2023
Agenda item: 10.1.2.1

RP-232880

Further IoT NTN enhancement

NEC

© NEC Corporation 2023

Background

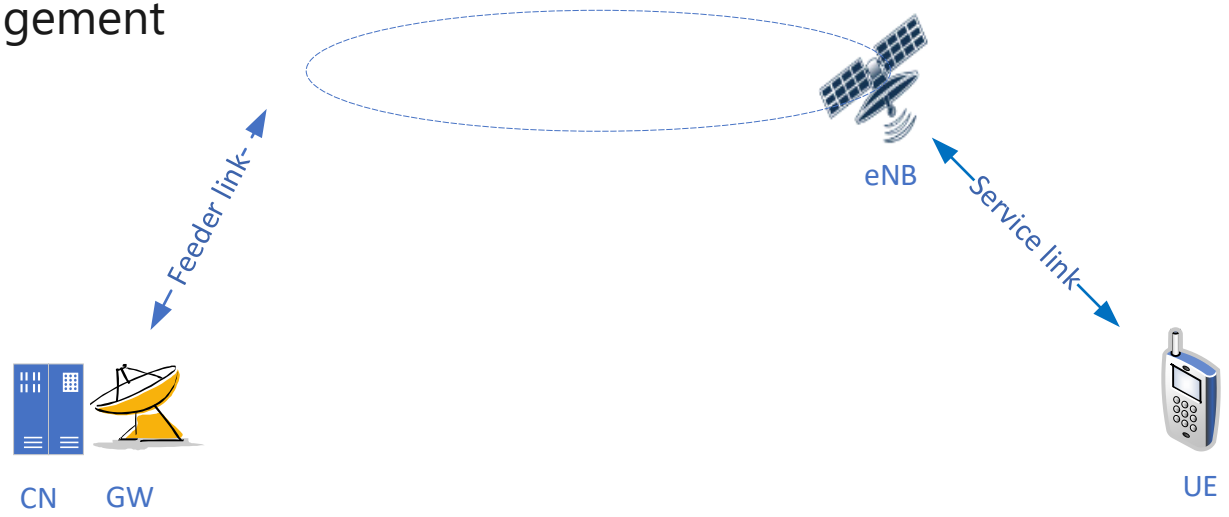
- Based on the output of RAN#101, RP-232621, and the guidance from the RAN Chair, RP-232745, the potential objects for Non-Terrestrial Networks evolution - IoT in Rel-19 are:
  - Store & Forward
  - Capacity enhancements for Uplink
  - Mobility enhancements
  - Some other topics (e.g. Coarse Location Reporting)

© NEC Corporation 2023

Further IoT NTN enhancement in Rel-19 (1/2)

◆ Support store and forward mode

- First, evaluate and make any necessary improvements to support regenerative mode with a fully onboard eNB.
- Next, specify the necessary enhancements to enable cell operation in the store and forward mode, including:
  - Management of Intermittent S1 interface
  - UE access control
  - Data transmission procedure based on the existing procedure with minimum change
  - UE mobility management



© NEC Corporation 2023
\Orchestrating a brighter world NEC

Further IoT NTN enhancement in Rel-19 (2/2)

Capacity enhancement for Uplink

- Motivation: IoT NTN must support a vast number and types of UE devices. However, NB-IoT does not allow multiplexing of multiple UEs in the same tone for single-tone transmissions, thereby reducing capacity in power-limited scenarios. Additionally, UL capacity is constrained by the DL overhead and capacity due to the tight coupling of UL and DL signaling.
- Objective:
  - Study and, if needed, specify enhancements for efficient PUR/EDT support in the IoT NTN scenario
  - Specify enhancements to enable code domain multiplexing for multiple UEs in the IoT NTN scenario.

© NEC Corporation 2023

Objective summary for IoT NTN evolution

- It is proposed to evolve IoT NTN in Rel-19, focusing on the following aspects:
  - Introduction of Store and forward mode
  - Capacity enhancements for Uplink through CDM and PUR/EDT enhancement

© NEC Corporation 2023

\Orchestrating a brighter world

NEC