



# View on NTN in Rel-19

3GPP RAN Release 19 Workshop

Taipei, June 15 – 16, 2023

Agenda Item: 4

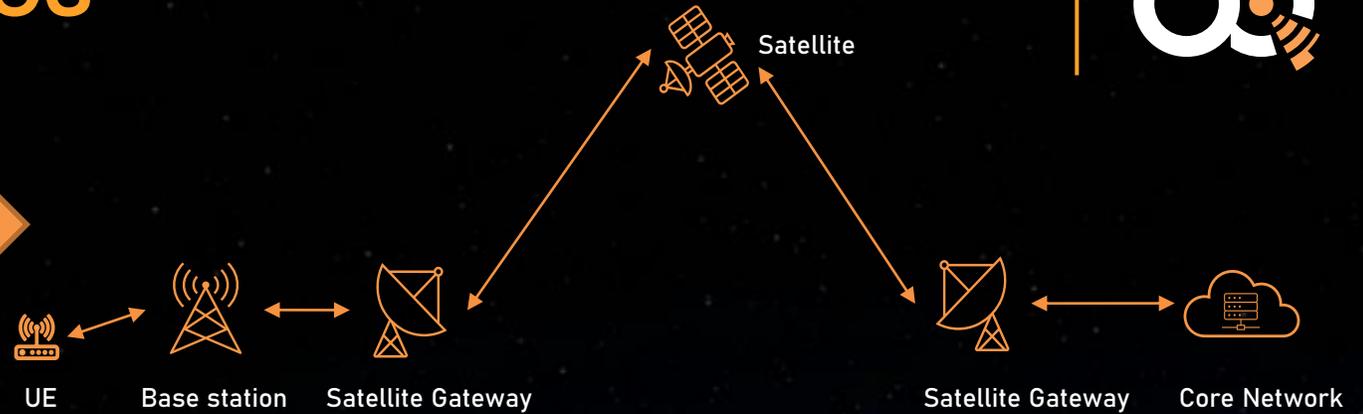
Source: OQ Technology

# NTN DEPLOYMENT SCENARIOS



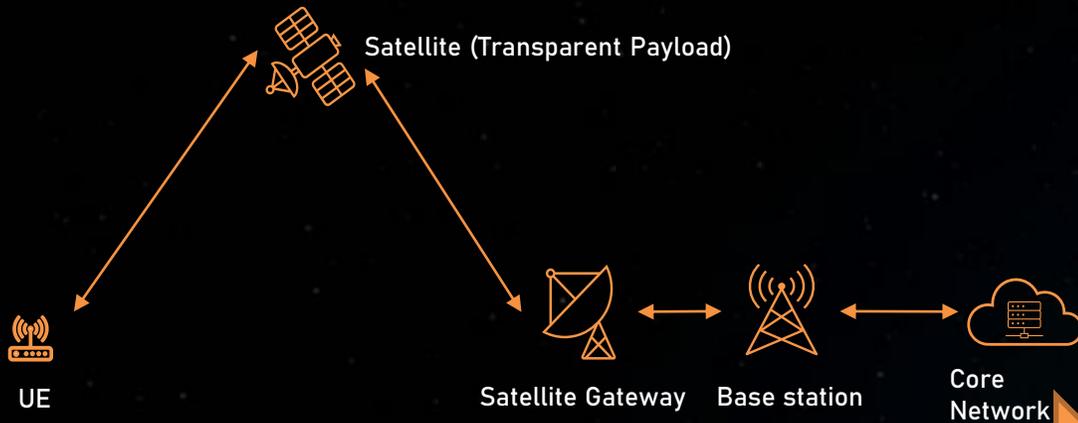
## Classic Backhauling

- Makes deployment & operation expensive;
- Additional Gateway and Base Station deployment at remote sites;
- Limited Coverage;



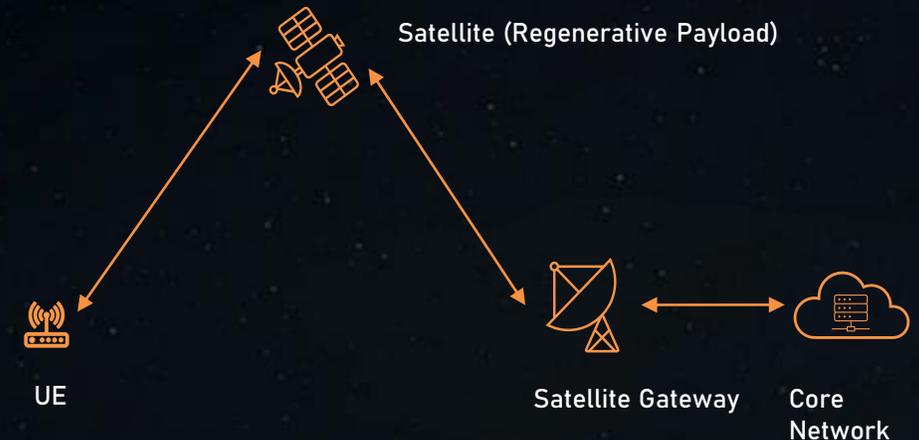
## Transparent Payload (3GPP Release 17)

- Remote UE Transmit to satellites (Passive Transponders);
- Gateway facilitates satellite connection to the Network;



## Regenerative Payload (3GPP Release 19 & Beyond)

- Remote UE transmit to regenerative Satellites (Fully regenerative/DU-Onboard);
- Minimal core network functionalities can be used onboard to support discontinuous coverage where the feeder link is not available. UPF can be onboarded for supporting MEC use cases;
- Optimized latencies;





## (RAN1/2/3)

### NTN/TN mobility enhancement:

- > Originally addressed in Rel-17
- > Current aim is to improve the service in Rel-19 by reducing signalling overhead, especially pertaining to TN-NTN switching

### Regenerative payloads, to support:

- > Delay sensitive and/or delay tolerant service
- > Reduced user and/or control plane latency
- > (unicast, multicast and broadcast)
- > Edge computing on board.
- > Add dual connectivity [to double check release]

## (RAN1/4)

### Support of higher Tx power IoT-NTN capable UE:

- Define new IoT NTN UE power classes with maximum output power (MOP) up to 31 dBm
- For eMTC IoT NTN UEs (Cat M1), specify support of UE Power class: PC2 (+26dBm); PC1.5 (+29dBm; considering the single Tx mode) and PC1 (+31dBm)
- For NB-IoT NTN UEs (Cat NB1, NB2), specify support for a new UE Power Class with MOP of : +26dBm, +29dBm considering the single Tx mode; and 31dBm;

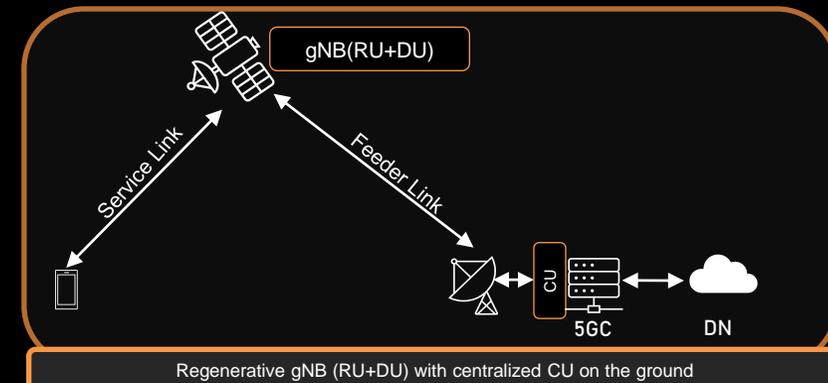
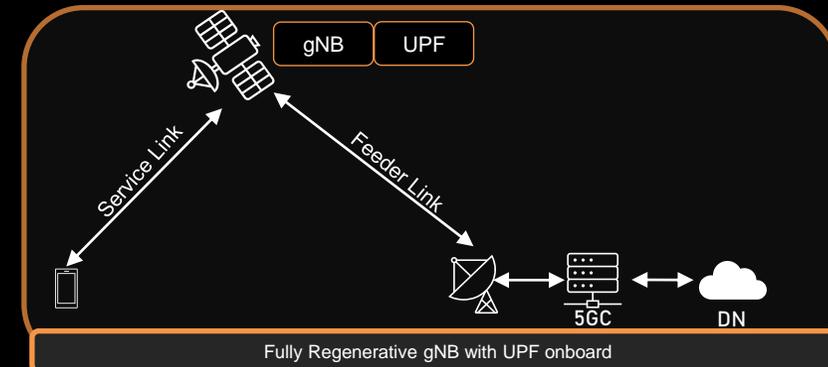
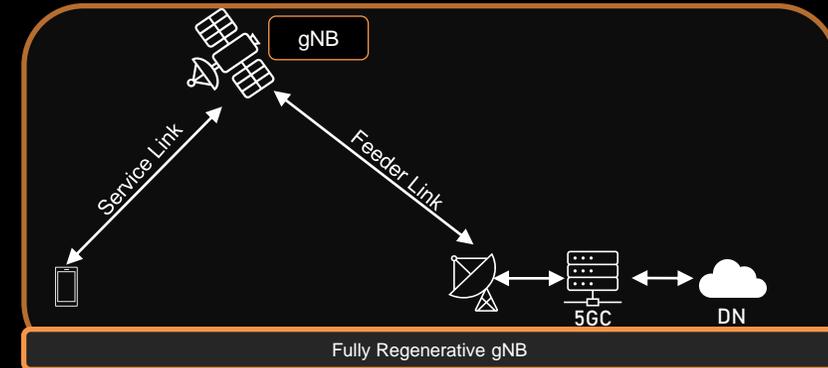
### Regenerative payloads, to support:

- NB-IoT operation in NR in-band
- NB-IoT operation in NR guard band
- NB-IoT standalone operation

# REL-19 NTN PROPOSALS



- Support S&F operation for IoT;
- Study Full eNB/gNB onboard with/without ISL;
- Study the minimum core network functionalities that can be onboarded supporting MEC and UE-SAT-UE communication;
- Study CU/DU Splitting;
- Study on using positioning without GNSS for delay and doppler compensation;





THANK YOU