3GPP TSG RAN Rel-18 workshop
Electronic Meeting, June 28 - July 2, 2021
Agenda Item: 4.2
Document for: Discussion

RWS-210269

Evolution of reduced capability for Rel-18

NTT DOCOMO, INC

Background

Rel-17 Reduced Capability NR devices (RedCap)

- UE complexity reduction
  - » Max 20MHz BW for FR1, max 100MHz BW for FR2
  - » 1 or 2 Rx branches and max DL MIMO layers
  - » Optional support of 256QAM (instead of mandatory) for FR1
  - » HD-FDD type A in addition to FD-FDD and TDD

50~70% device cost reduction

- Power saving
  - » eDRX for RRC inactive and idle states
  - » RRM measurement relaxations
  - » Solutions specified in Rel-17 power saving WI are available by default

80~90% and 10~25% gains by eDRX and RRM relaxations

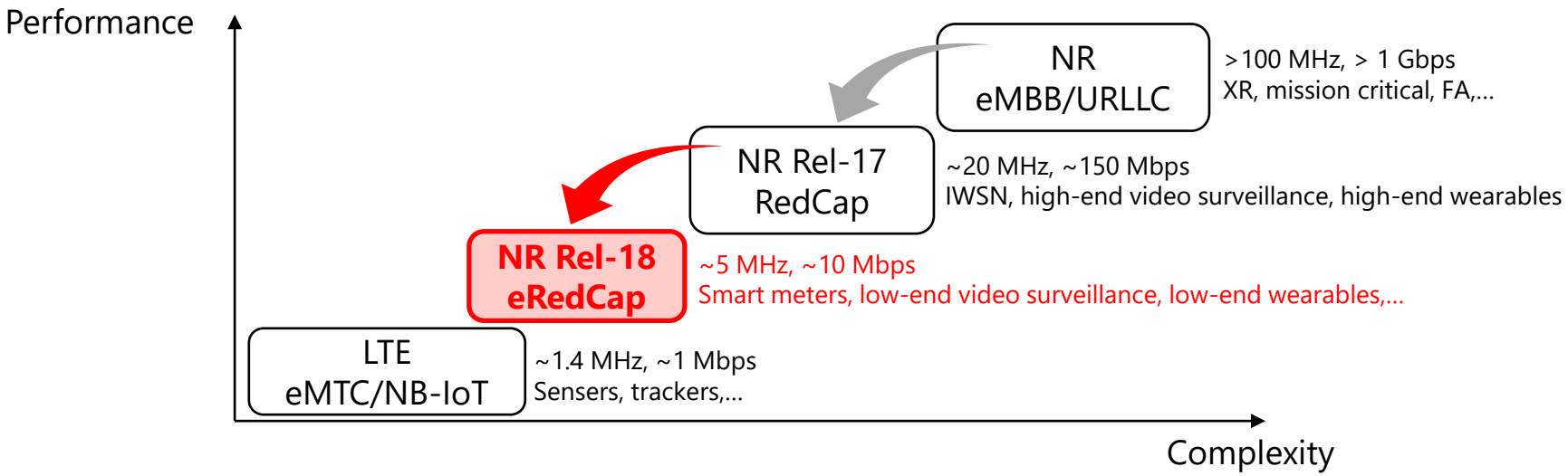
- UL coverage recovery
  - » Solutions specified in Rel-17 CovEnh WI are available by default
- Rel-15 SSB is reused and minimum L1 changes
- Ensure coexistence with non-RedCap UEs

Minimum impact on current NW

→ Rel-17 RedCap will extend NR market to IWSN, video surveillance, wearables, etc., which were not covered by Rel-15/16 eMBB/URLLC UEs

Motivation

- **<u>RedCap evolution (eRedCap)</u>** for further extending NR-IoT market to smart meters, low-end video surveillance, low-end wearables, etc.



- Key directions toward Rel-18 eRedCap
  - ***Further UE complexity reduction***
    - » Room for further BW reduction and reduced peak data rate
  - ***Further power saving***
    - » Based on Rel-17 RedCap outcome
  - ***Minimum impact on current NW***
    - » Ensure coexistence with non-RedCap UEs and Rel-17 RedCap UEs

Proposal

- **Scope for eRedCap WI in Rel-18**
  - ***UE complexity reduction***
    - » ~5MHz BW, ~10Mbps DL data rate @FR1
      - – Further cost reduction is expected while avoiding overlap with LTE eMTC/NB-IoT
  - ***Power saving***
    - » Based on Rel-17 RedCap outcome
      - – Power saving adaptation based on reduced max BW, single BWP operation, etc.
      - – *Applicable both to Rel-17 RedCap UEs and Rel-18 eRedCap UEs*
  - ***Minimum impact on current NW***
    - » Support high UE density based on Rel-17 RedCap outcome
      - – Handling of Initial BWP congestion (RACH/Paging), handling of PDCCH blocking, etc.
      - – *Applicable both to Rel-17 RedCap UEs and Rel-18 eRedCap UEs*
    - » Reuse Rel-15 SSB at least for 15kHz SCS
      - – FFS for 30/60KHz
    - » Potential coverage recovery for same coverage as non-RedCap UEs and Rel-17 RedCap UEs
      - – Note: no coverage enhancement is targeted

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