3GPP TSG RAN meeting #94e
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A.I. 8A.2

RP-213052

Views on Rel-18 XR

Qualcomm

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Rel-18 Preparation Email Discussion Outcome (Oct 2021)

Proposed objectives for the Study Item on XR-awareness in RAN (RAN2):

- Study and identify the XR traffic (both UL and DL) characteristics, QoS metrics, and application layer attributes beneficial for the gNB to be aware of, e.g. [the QoS flow association, frame-level QoS, ADU-based QoS, XR specific QoS].
  Cooperation is needed with the corresponding study work of SA2 (S2-2109360)

Proposed objectives on XR-specific Power Saving (RAN1, RAN2):

- Study XR specific power saving techniques to accommodate XR service characteristics (periodicity, jitter, latency, reliability, etc...):
  - C-DRX enhancement;
  - PDCCH monitoring enhancement.
  - [Further candidate techniques can be added here, if consensus is found to add it]

Proposed objectives on XR-specific capacity considerations (RAN1, RAN2):

- Study mechanisms that provide more efficient resource allocation and scheduling for XR services:
  - Enhancement to SPS and CG;
  - Enhancement for dynamic grants.
  - [Further candidate techniques can be added here, if consensus is found to add it]

Rel-18 XR SID Scope

- Rel-18 preparation email discussion has been done in Oct 2021.
- The outcome for XR discussion from the email discussion seems to be stable.
- But after that, in RAN1#107-e, Rel-17 XR SI has been finished approving the draft TR capturing the evaluation results of capacity, power, coverage and mobility.
- The potential Rel-18 XR SID scope could be further refined to better reflect the views from Rel-17 XR SI in RAN1.

Rel-18 XR SID Scope Justification

Enhancements of SPS & CG for Power

- Periodic nature XR traffic motivates considering the use of SPS & CG.
- However, high bit rate and low latency requirement in XR indicates that further enhancements in SPS & CG are necessary.
- CG & SPS enhancements are already covered in capacity part.
- The similar SPS & CG enhancements can be done for power as well.
- There is high chance that the same technique could benefit both capacity and power.

RAN-centric mechanism, e.g., UE staggering

- Unlike other services, XR has very tight performance requirements, which requires multiple CN and RAN entities be cooperate.
- Network being aware of RAN configuration of UEs across multiple cells could provide further optimize service.
- For example, XR DL traffic arrival of multiple UEs across different cells could coordinated/staggered according to their CDRX configurations (start offsets) to mitigate inter-cell interference.
- This will benefit both capacity and power.

Rel-18 XR SID Scope

Proposal

- **XR-awareness in RAN (RAN2):**
  - Study and identify the XR traffic (both UL and DL) characteristics, QoS metrics, and application layer attributes beneficial for the gNB to be aware of, e.g. ~~[~~the QoS flow association, frame-level QoS, ADU-based QoS, XR specific QoS, Deadline-based Latency and Delay budget~~]~~.
  - Study how this information aids XR-specific traffic handling
  - Study the gains of potential XR-specific RAN-centric mechanisms, e.g., staggering of the UEs to improve capacity and power.
- **XR-specific Power Saving (RAN1, RAN2)**
  - Study XR specific power saving techniques to accommodate XR service characteristics (periodicity, jitter, latency, reliability, etc...)
    - C-DRX enhancement
    - PDCCH monitoring enhancement
    - Enhancements to SPS & CG
- **XR-specific capacity considerations (RAN1, RAN2)**
  - Study mechanisms that provide more efficient resource allocation and scheduling for XR services:
    - Enhancement to SPS and CG
    - Enhancement for dynamic grants and HARQ ACK feedback
    - Outer coding/Network coding

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