

The vivo logo is displayed in white lowercase letters in the top left corner of the slide. The background of the entire slide is a dark blue, abstract, fiber-optic-like pattern with glowing points and lines.

3GPP TSG RAN#104

RP-241041

Shanghai, China, June 17-20, 2024

Discussion on Rel-19 XR WID

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Document for: Discussion & Decision

Agenda Item: 9.3.2.3

Contents

- Background
- Network exposure/RAN awareness
- Proposed WID update

Background

WID Scope in RP-240791

- Study and if justified, specify aspects related to multi-modality (intra-UE) (with coordination with SA2/SA4 as needed by LS request). Aim to facilitate efficient and effective support for XR application with Multiple QoS flows with multi-modal inter-dependencies, meeting multi-modal QoS requirements, e.g. synchronization and/or coordination. Efficiency enhancements are expected to be visible in terms of capacity or power consumption. [RAN2].
- NOTE: Check in RAN#105 (check also other WG involvement if needed).
- Specify enhancements to enable transmission/reception in gaps/restrictions that are caused by RRM measurements (from inter-frequency RRM measurement gaps, or intra-frequency measurements, or other scheduling restrictions etc). [RAN1, RAN2, RAN4]
 - Specify the corresponding measurement gap and scheduling restriction to enable the identified enhancements with RRM performance impact taken into consideration, work being triggered by LS. [RAN4]
- Specify Enhancements for Scheduling, as follows:
 - For the UL, Study and if justified, Specify enhancements using delay/deadline information, for support of UL scheduling to enable high XR capacity while meeting delay requirements/avoiding too late PDUs. [RAN2].
 - Note: LCP implementation complexity need to be taken into account when evaluating solutions.
- NOTE: LCP implementation complexity need to be taken into account when evaluating solutions.
- NOTE: Check in RAN#105
- Specify the following user plane enhancements [RAN2]
 - RLC re-transmission related enhancements for operation of RLC Acknowledged Mode (AM) with small packet delay budget.
- Specify Core requirements related to the above objectives as necessary [RAN4]
- Extend Release 18 standalone mechanism to support NR-NR dual connectivity as follows [RAN3]
 - PDU set based handling
 - ECN marking
 - Burst Arrival Time reporting, if needed
 - PSI Discard coordination, if needed
 - Note: No RAN2 impact from above items

Note: Whether / to what extent network exposure / RAN awareness / e.g. RAN involved rate control, possibly additional info for DL scheduling, parallel with SA2 work, shall be covered in this WI is TBD.

Discussion

Network exposure/RAN awareness

- The above note for TBD part was added in RAN#102 meeting. It was discussed in RAN#103 meeting.
- In Rel-18, network exposure on per-QoS flow/DRB congestion information was discussed in RAN2/RAN3. It was agreed that it is feasible for RAN to estimate the congestion information in both DL/UL without UE impacts.
- During the discussion in RAN#103 meeting, the main argument from the opponent is what is the motivation for “additional” solution than the current solution over L4S. But we understand:
 - ✓ Current solution over L4S can only provide per-flow congestion information, which may not truly reflect the network congestion or channel condition information.
 - ✓ Current solution over L4S may introduce unexpected latency for the codec adaptation, while XR application has restrict requirements on latency.
- Thus, it is better to study and specify network exposure / RAN awareness based solution to further improve the accuracy and latency performance for codec adaptation, e.g. based on network UL congestion information, channel condition, etc.

Conclusion

Potential WID update for Rel-19 XR enhancements

- Proposal: Update the WID for Rel-19 XR enhancement to include the network exposure/RAN awareness.
 - The detailed update is shown as below.

- Study and if justified, specify aspects related to multi-modality (intra-UE) (with coordination with SA2/SA4 as needed by LS request). Aim to facilitate efficient and effective support for XR application with Multiple QoS flows with multi-modal inter-dependencies, meeting multi-modal QoS requirements, e.g. synchronization and/or coordination. Efficiency enhancements are expected to be visible in terms of capacity or power consumption. [RAN2].
- NOTE: Check in RAN#105 (check also other WG involvement if needed).
- Specify enhancements to enable transmission/reception in gaps/restrictions that are caused by RRM measurements (from inter-frequency RRM measurement gaps, or intra-frequency measurements, or other scheduling restrictions etc). [RAN1, RAN2, RAN4]
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- Specify Core requirements related to the above objectives as necessary [RAN4]
- Extend Release 18 standalone mechanism to support NR-NR dual connectivity as follows [RAN3]
 - PDU set based handling
 - ECN marking
 - Burst Arrival Time reporting, if needed
 - PSI Discard coordination, if needed
 - Note: No RAN2 impact from above items
- Study and if justified, specify the signaling for network exposure/RAN awareness for codec adaptation, e.g. based on network UL congestion information, channel condition, etc. [RAN2]

~~Note: Whether / to what extent network exposure / RAN awareness / e.g. RAN involved rate control, possibly additional info for DL scheduling, parallel with SA2 work, shall be covered in this WI is TBD.~~

THANK YOU.

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