3GPP TSG-RAN WG2 Meeting #119-e R2-22xxxxx

Online, 17-26 August 2022

Source: Session Chair (Apple)

Title: Report from session on NCR

# Status of At-Meeting Email Discussions

This subclause is not an Agenda Item. It contains a running summary of the email discussions assigned to take place during the meeting weeks. This section will be moved to an appendix in the final version of the report.

* [AT119-e][700][NCR] Organisational Sasha – NCR (Apple)

Scope: Organisational discussions and announcements, as needed throughout the meeting weeks

Intended outcome: Well-informed participants

Deadline: Friday 2022-08-26 1000 UTC

* [Pre119-e][701][NCR] Summary for Agenda Item 8.1 – ZTE (rapporteur)

Scope: Summary of agenda item 8.1 on NCR.

Intended outcome: Hopefully agreeable proposals

Deadline: Tuesday 2022-08-23 1430 UTC

* [AT119-e][702][NCR] TP for TR 38.867 with RAN2 agreements on NCR (ZTE)

Scope: RAN2 impacts of the 4 solutions discussed. The discussion to be conducted in two phases:

* Phase 1 – summary of RAN2 impacts in e.g. a table;
* Phase 2 (after RAN3 TPs are available) – RAN2 TPs, using RAN3 TPs as baseline.

Can also discuss proposal 6 from R2-220888 in phase 1 and include it in the TP in phase 2, if agreeable.

Intended outcome: Agreed TP, LS to RAN1

Deadline: Friday 2022-08-26 1000 UTC

**8.1 NR network-controlled repeaters**

*(FS\_NR\_NetConRepeater; leading WG: RAN1; REL-18; WID:* [*RP-221229)*](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Docs/RP-221229).zip)

*Time budget: 0.5 TU*

*Tdoc Limitation: 1 tdocs*

8.1.1 Organizational

*Including LSs and any rapporteur inputs.*

[R2-2208108](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Docs/R2-2208108.zip) Work plan for NR network-controlled repeaters ZTE Corporation (Rapporteur) Work Plan Rel-18 FS\_NR\_netcon\_repeater

* Noted

[R2-2208109](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Docs/R2-2208109.zip) TR 38.867 on network-controlled repeaters management ZTE Corporation (Rapporteur) draft TR Rel-18 38.867 0.1.0 FS\_NR\_netcon\_repeater

8.1.2 General

*Including Identification and authorization of network-controlled repeaters.*

[R2-2208886](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Inbox/R2-2208886.zip) [Pre119-e][701][NCR] Summary of AI 8.1 network-controlled repeaters ZTE (rapporteur)

ZTE: RAN2 and RAN3 discuss the same objectives. RAN3 agreed to capture all the 4 solutions in the TR. RAN3 agreed to rename the solutions as proposed below. RAN3 are discussing LS to SA3 and SA5.

Proposal 1: The NCR-MT performs NCR identification and authorization on behalf of the entire NCR.

Vodafone: OK on the high level.

ZTE: the intention is: we have two parts in NCR node, NCR-MT And NCR-forwarding and the intention is that in this discussion we do not consider NCR-forwarding.

* The NCR-MT performs NCR identification and authorization on behalf of the entire NCR.

Proposal 2: Solution 1 includes:

* + NCR-MT accesses the network as a legacy UE, and CN authenticates the NCR-MT based on Rel-15 procedures;
  + NCR-MT indicates NCR-support via Msg5+capability or UE radio capability;
  + Secure NCR validation by RAN may be considered based on SA3 reply to RAN3 LS.

E///: about the 2nd line, does it mean if we end up with indication in msg5 we will not NCR capabilities; we believe NCR capabilities would need to be defined anyway.

ZTE: the intention is not to preclude NCR capabilities regardless of the option selected.

RAN2 understand that NCR capabilities would need to be defined regardless.

HW: “secure NCR validation” is unclear, should be “NCR authorization”. All solutions should be feasible, but NCR authorization in solution 1 as discussed in RAN1 is optional. Without authorization is solution is not complete.

ZTE: the term “validation” is about the language for the LS to SA3, we believe that RAN3 made the last step optional based on comments from operators who believe the operator deploying NCR can address the security. Also, the network can authorize NCR based on legacy procedures.

Nokia: agree with HW. Our understanding of RAN3 discussions is different, we believe there are potential security issues, which is why the LS to SA3 is sent. As of now we don’t know if the solution is feasible and secure, the current wording does not reflect that.

Vodafone: agree with Nokia. The “validation” part is not clear.

Sony: we think this is not entirely SA3 issue, e.g. how the credentials are transferred is in RAN2 domain.

ZTE: we suggest to define NCR validation based on assistance information, after NCR establishes Uu interface it transfers assistance information in RRC after security has been established.

Apple: we are generally fine with the solution description. This solution assumes gNB has been preconfigured with credentials by OAM, so we think SA5 should be involved.

ZTE: this OAM functionality is no different from the typical OAM operation.

Intel: agree with ZTE on OAM, this can be captured in the solution description. Suggest to revise bullet 3rd saying the solution may need to be refined based on SA3 reply.

Samsung: we are broadly OK with the solution description. Our concern is that RAN3 is having the same discussion. Suggest to agree the proposal or to leave it to RAN3.

Chair: shall we capture this solution or leave it to RAN3?

E///: how we proceed with TPs from different WGs?

ZTE: the overall procedure is being discussed in RAN3, RAN2 should focus on Uu interface.

Chair: we wait for RAN3 to endorse their TPs on Wed, and we use them as the baseline.

ZTE: RAN3 may only be available on Thu.

* Capture RAN2 aspects of solution 1 in TR (leave out the 3rd bullet, feasibility is conditional on SA3 reply)

Proposal 3: Solution 2 includes:

* + NCR-MT establishes RRC connection based on legacy Uu procedure, where the RRC connection is not security-protected.
  + NCR-MT indicates NCR-support via Msg5 or UE radio capability;
  + NCR-MT exchanges OAM traffic over RRC (details of OAM traffic is not in RAN2 scope)
  + Secure NCR validation by OAM may be considered based on SA3 reply to RAN3 LS.

Nokia: “NCR validation” should be removed, same comments on feasibility in respect to security as for solution 1.

ZTE: feasibility depends on SA3 feedback.

Sony: can we trust the information in UE capabilities?

ZTE: our proposal is for msg5

QC: security is main issue

E///: same comment on radio capability

RAN2 shall discuss security related to our domain

HW: agree with Sony and E///

HW: we should not capture this solution in the TR due to security concerns, this solution has neither AS nor NAS security

* Capture RAN2 aspects of solution 2 in TR (leave out “Secure NCR…” bullet, feasibility is conditional on SA3 reply)

Proposal 4: Solution 3 includes:

* + NCR-MT accesses the network as a legacy UE, and CN authenticates the NCR-MT based on Rel-15 procedures;
  + NCR-MT indicates NCR-support via Msg5;
  + Secure NCR authorization uses equivalent procedure as IAB authorization (not in RAN2 scope).

Proposal 5: Solution 4 includes:

* + NCR-MT accesses the network as a legacy UE, and CN authenticates the NCR-MT based on Rel-15 procedures;
  + NCR-MT indicates NCR-support via NAS (not in RAN2 scope);
  + Secure NCR authorization uses equivalent procedure as V2X authorization (not in RAN2 scope).
* Capture RAN2 aspects of solutions 3 and 4

Nokia: OK with solution 3

AT&T: we prefer solution 3

CMCC: we do not prefer solution 3 because of impact to CN

Proposal 6: RAN2 understands early identification (via Msg1 or Msg3) is not needed for NCR-MT.

Proposal 7: Whether to introduce explicit “NCR supported” indication in SIB1 can be discussed in normative phase.

Proposal 8: Whether NCR-MT supports both SRB and DRB can be discussed in normative phase.

Proposal 9: RAN2 understands that NCR-MT supports both RRC\_CONNECTED and RRC\_IDLE state, whether to support RRC\_INACTIVE state can be discussed in normative phase.

(to be discussed on Friday)

[R2-2208887](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Inbox/R2-2208887.zip) TP to TR 38.867 about RAN2 (Uu related) part ZTE (rapporteur)

DISCUSSION

ZTE: most comments have been taken into account

HW: we are not proposing implicit indication in capability, capabilities should be discussed in WI

Nokia: solution 1 and 3 are conditional on SA3 confirmation, the note with this language was removed, and the conclusion section does not say that explicitly

Samsung: this is already captured in “conclusions”, the current wording is OK. ZTE agree.

Intel: we think the conclusions part is clear

E///: agree with Nokia, we would like a more clear statement on the feasibility check by SA3

Vodafone: RAN3 already sent the LS to SA3, from which it is very clear SA3 approval for these solutions is needed. ZTE, Samsung, CT, and Intel agree.

* Add “implicitly or explicitly” after “NCR indicator” in solution 1 and 3
* “From security point of view, the feasibility of NCR validation procedure in solution 1 and the feasibility of solution 2 will be further evaluated in potential WI phase based on SA3 feedback -> “From security point of view, the feasibility of NCR validation procedure in solution 1 and the feasibility of solution 2 will be decided by SA3 in potential WI”
* In solution 1, step 12 in the figure replace UAI with “RRC message”
* In specifications impact table, Uu impact of solution 2, add “further details on procedures impacts due to not having NAS are FFS and will be discussed in a potential WI”
* Revised in R2-2208888, with these changes it is agreed unseen

Intel: solution 1 in step 12 prefer not to call out UAI in the figure, on specification impact of solution 2 there is no NAS so we think it is essential to capture AS layer impact to support transfer of upper layer information. How to support AS procedures without NAS.

ZTE: do you want to introduce a new RRC message?

Intel: we haven’t discussed this

E///: agree with Intel, one of the examples would be how to do NAS registration without NAS

[R2-2208889](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Inbox/R2-2208889.zip) (draft) LS on the progress of NCR identification and authorization

* Replace the attachment, remove “draft”, fix “next meetings”, remove “RAN2 has discussed the NCR identification and authorization in SI phase. “, final in R2-2208890
* Revised in R2-2208890, with these changes it is agreed unseen
* The SI is completed from RAN2 perspective

[R2-2207123](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Docs/R2-2207123.zip) Identification and Authorization of Network-Controlled Repeater Intel Corporation discussion Rel-18 FS\_NR\_netcon\_repeater

[R2-2207205](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Docs/R2-2207205.zip) Identification and authorization of Network Controlled Repeater Nokia, Nokia Shanghai Bell discussion Rel-18

[R2-2207285](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Docs/R2-2207285.zip) RAN2 Aspects of Network-Controlled Repeater Qualcomm Inc. discussion Rel-18 FS\_NR\_netcon\_repeater

[R2-2207291](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Docs/R2-2207291.zip) Overview of network-controlled repeaters NEC Telecom MODUS Ltd. discussion

[R2-2207413](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Docs/R2-2207413.zip) Discussion on functionality for NCR-MT Fujitsu discussion Rel-18 FS\_NR\_netcon\_repeater

[R2-2207459](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Docs/R2-2207459.zip) Discussion on identification and authorization of NCR Apple discussion Rel-18 DUMMY Late

[R2-2207485](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Docs/R2-2207485.zip) General consideration on NCR management Huawei, HiSilicon discussion Rel-18 FS\_NR\_netcon\_repeater

[R2-2207517](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Docs/R2-2207517.zip) Identification and Authorization of Network-controlled Repeater CATT discussion Rel-18 FS\_NR\_netcon\_repeater

[R2-2207691](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Docs/R2-2207691.zip) Network-controlled repeaters - key issues Samsung R&D Institute UK discussion

[R2-2207717](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Docs/R2-2207717.zip) Discussion on identification and authorization for network-controlled repeaters Lenovo discussion Rel-18

[R2-2207825](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Docs/R2-2207825.zip) Considerations on NCR authorization and fwd link config Sony discussion Rel-18 DUMMY Late

[R2-2208034](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Docs/R2-2208034.zip) Identification and authorization of NCRs: capabilities and attributes management Philips International B.V. discussion Rel-18 FS\_NR\_netcon\_repeater

[R2-2208110](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Docs/R2-2208110.zip) Considertion on NCR identification and authorization ZTE Corporation, Sanechips discussion Rel-18 FS\_NR\_netcon\_repeater

[R2-2208198](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Docs/R2-2208198.zip) Discussion on RAN2 topics for NCR Ericsson discussion Rel-18 FS\_NR\_netcon\_repeater

[R2-2208293](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Docs/R2-2208293.zip) Initial consideration on Network-controlled repeaters Kyocera discussion Rel-18

[R2-2208390](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Docs/R2-2208390.zip) Identification and authorization of network-controlled repeaters MediaTek Beijing Inc. discussion Rel-18

[R2-2208416](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Docs/R2-2208416.zip) Multi-frequency support to enable control links for NR network-controlled repeaters AT&T discussion Rel-18

[R2-2208447](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Docs/R2-2208447.zip) Discussion on the network-controlled repeater management CMCC discussion Rel-18 FS\_NR\_netcon\_repeater

[R2-2208458](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Docs/R2-2208458.zip) Discussion on NCR Related Procedures vivo discussion

[R2-2208628](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Docs/R2-2208628.zip) Discussion on identification and authorization of Network-controlled Repeaters China Telecom discussion

[R2-2208658](file:///Users/sasha.sirotkin/Documents/meetings/TSGR2_119-e/Docs/R2-2208658.zip) Initial discussion on Network Control Repeater Rakuten Mobile, Inc discussion Rel-18