

3GPP TSG RAN meeting #93e

RP-212555

E-Meeting, September 13 - 17, 2021

Agenda Item: 9.3.1.5

Source: China Telecom

Title: Moderator's summary for discussion [93e-15-CovEnh-WI]

Document for: Discussion

1 Introduction

This contribution is a summary of email discussion on scope of Rel-17 NR coverage enhancements WI.

2 Email discussion (initial round)

2.1 Issue #1: HD-FDD RedCap UE

RP-211991 proposed to solve the potential conflict issue between Case 5 in HD-FDD RedCap UE and CE 2-step procedure of the available slot based PUSCH repetitions under the AI of CE.

Companies are encouraged to provide views on whether this issue is solved in Rel-17 CovEnh WI.

Feedback Form 1: Whether this issue is solved in Rel-17 CovEnh WI

1 – Motorola Mobility Germany GmbH

Lenovo, Motorola Mobility:

Considering the limited remaining time, we don't agree to resolve this issue in CovEnh WI. Moreover, CovEnh is not specifically catering to a particular UE type and we don't think that we need to specifically deal with particular use-case that is currently being specified in another WI

2 – Qualcomm Incorporated

We think it is an interesting issue raised by CMCC but would require a bit more discussion regarding certain technical issues before trying to reach consensus. In particular, we would have the following concerns that would need to be addressed in our view:

1. Today, when a number of UEs are scheduled together, e.g. as part of an overlay or MU-MIMO scheme, then as long as the same TDRA is sent for the UEs at the same time, they will start and stop their trans-

mission at the same time. The fact that repetition uses common info to decide about slot availability will automatically ensure this, easing the task of the scheduler. With the proposed update, this principle will be broken, so the interpretation of transmission duration will become UE-specific. It should be discussed whether this is desirable or not.

2. Similar issue as above but now for msg3 repetition and PUSCH repetition before RRC configuration. The proposal seems problematic when the UEs HD-FDD vs. FD-FDD capability is unknown (before capability info exchange). It is understood that the gNB may have to treat all RedCap UEs as HD-FDD until UE capability is known but now the capability would also alter the UE's behavior regarding PUSCH repetition that the gNB may not be able to predict.

3 – Samsung Research America

It is a RAN1 discussion, if companies have interest. No need for RAN intervention or for modifying the CovEnh WID.

4 – Guangdong OPPO Mobile Telecom.

OPPO We agree the HD-FDD UE should properly support CE operation.

The issue seems has be solved in previous agreement, for symbols not intended to the uplink transmission then it will not be counted into the available symbols.

5 – vivo Communication Technology

In our view all types of UEs are included in the scope of Rel-17 CE

6 – CATT

This is an interesting scenario when (RedCap) HD-FDD operation encounters (CE) available slot determination in repetition enhancement. In fact, in CE side, similar discussion is on-going (see Issue#2-11 in R1-2108616). In RedCap side, it is still discussing the collision handling rules between SSB and dynamic scheduled UL. The outcome of these discussions will directly affect the direction when we try to address such scenario.

While we agree that solution is needed, it seems better to leave it to RAN1 discussion.

7 – Panasonic Corporation

We agree the need to support HD-FDD RedCap UE with CovEnh operation in Rel-17. The actual solution should be discussed within RAN1.

8 – Nokia Corporation

In our view this could be resolved in RAN1 without a need to revise the WID. We also agree with Lenovo's statement that the Coverage Enhancement WID is general for all UE types, and there is no need to specifically mention certain UE types in the WID.

9 – China Mobile Com. Corporation

Thanks for the views from the group.

To Lenovo,

Thanks for the views. From our side, we do not intend to occupy too much previous time of RAN1 for this issue. The intention is to remind the group there could be conflicts, or more accurate, interactions

between the two agenda due to the limited haviour of the HD-FDD Redcap UEs. The following actions is straightforward. When the open issues of HD-FDD collision handling are solved within Redcap, the CE group could discuss and make decisions based on that. As analyzed in our contribution, most cases share the aligned behaviors between CE and Redcap UEs. Only two cases are still open and only one may need discussions.

Our intention is to follow the WID making the 2-step procedure fit for all types of UE which will appear in the future.

To Qualcomm

Thanks for the discussion.

For the 1st concerns, we have a similar understanding that if the UEs' behaviors are aligned, it could ease the work of scheduler. But first we cannot prevent the HD-FDD UEs to connect to the network and even the WID of Redcap has emphasized HD-FDD will be one of the possibilities. And for the alignment of the UE's behavior, different repetitions factors and even the dynamic indications of that are supported in Rel-16. gNB should configure or indicate different repetition factors according to the UEs' specific situation. Then the diverse transmission time or durations have already been existed. gNB could group the UEs which have similar limitations first and then scheduling them together.

For the 2nd concern of the Msg 3 repetitions, without RRC config information, HD-FDD UE will execute the Msg 3 repetitions according to the UL grant which is prioritized according to the collision case 2 and case 4. Since there is no RRC configuration information at this time, the consecutive slots in the UL carrier could be considered as the available slots, which is aligned with 2-step procedure. gNB only needs to avoid the scheduling overlapped with SSB, on which the gNB and UEs would have a same understanding.

Thanks OPPO for clarification.

Yes, this agreement could solve the issue. But the agreement is too general and there is still an FFS left for further discussion on the details.

10 – SHARP Corporation

We mostly agree with CMCC's observations that the only issue would be the overlapping with SSB symbols. However, this issue is not only for Rel-17 PUSCH repetition Type A. The similar HD-FDD RedCap UE specific issue happens for e.g., legacy PUCCH repetitions as well, which is not within CovEnh WI scope. In our view, HD-FDD UE behaviors for the legacy ULs overlapping with SSB should be defined first in RedCap WI. Then, whether the similar rule is applicable to the available slot determination for Rel-17 PUSCH repetition Type A or not can be discussed in CovEnh WI.

11 – ZTE Corporation

We agree with above companies that the CE features could apply to all UE types including HD-FDD UEs. Whether/how to accommodate different types of UEs could be further discussed in RAN1.

Regarding Qualcomm's first comment, we think it seems an implementation issue, e.g., gNB may not schedule different UEs for MU-MIMO if the transmission occasions for these UEs are different. Regarding the second comment for Msg3, it may depend on whether different collision handling mechanism is to be defined for HD-FDD and FD-FDD UEs. If it is the same, it seems no problem. In case it is different, gNB may need to avoid such collision or some additional work needs to be done. In short, we prefer to leave the details to WG discussions.

12 – Apple Computer Trading Co. Ltd

In our view, the HD-FDD RedCap collision issue was still discussing under the RedCap WI. The parallel discussion in two WIs should be avoided. It's natural RedCap outcomes will be considered by coverage enhancement WI.

13 – VODAFONE Group Plc

Agree with Apple's views and our understanding is that CovEnh items should be applicable to all UEs, including HD-FDD RedCap thus it seems not necessary to update the WID

14 – MediaTek Inc.

We agree with the need to support CE for HD-FDD RedCap UE. However, we think this issue should be discussed in RAN1 to check the potential specification impacts. If specification impact is confirmed to be small, we support to complete the work; otherwise, it should be deprioritized. It's highly depends on RAN1 discussion. So far we don't see the necessity for RAN to intervene.

15 – Ericsson LM

Since it is still being discussed in RedCap WI how an HD-FDD UE prioritizes the SSB vs. dynamically scheduled PUSCH, and since this does not affect UEs that are not HD-FDD, then it is preferable to decide the collision handling in RedCap WI first. Then because the changes are not likely to be big, we should be able to handle that in the time remaining in the Cov Enh and RedCap WIs.

RP-211991 has the following proposed update on the objectives.

- Specification of PUSCH enhancements [RAN1, RAN4]
 - o Specify the following mechanisms for enhancements on PUSCH repetition type A [RAN1]
 - Increasing the maximum number of repetitions up to a number to be determined during the course of the work.
 - The number of repetitions counted on the basis of available UL slots.
 - **Note: the HD-FDD RedCap UE is included.**

Companies are encouraged to provide views on the above proposed update on the objectives in Rel-17 CovEnh WID.

Feedback Form 2: Comments on the proposed update on the objectives

1 – Motorola Mobility Germany GmbH

Lenovo, Motorola Mobility:

No, we don't see the need to include the note. We expect that all UE types are covered in the Rel-17 CovEnh WI

2 – Qualcomm Incorporated

We would like to have some discussion addressing our concerns mentioned under the previous topic before considering updating the WID.

3 – Guangdong OPPO Mobile Telecom.

OPPO We may not need to update specific for this matter. The WID actually not excluded that. May be we do not need to indicate every different UE capability in the WID. Otherwise, we may need to analyze all kinds of UE in regards of CE.

4 – vivo Communication Technology

We think it is covered in CE WI, technical discussion can happen, if special treatment is needed, in WGs

5 – CATT

As we mentioned above, RAN1 will continue discussing this issue under CE topic, with or without any modification to the WID.

6 – Panasonic Corporation

We agree to capture the note. On the other hand, we also think think this is also implicitly assumed even without note.

7 – SHARP Corporation

Share the views from other companies. We don't see the need to explicitly add the note.

8 – ZTE Corporation

No need. We wonder why we only add such note only for one of the CE feature, not for other features. On the other hand, we are ok to make a conclusion for clarity if needed.

9 – HUAWEI TECHNOLOGIES Co. Ltd.

The update on the WID seems not needed. There is a note in Redcap WI already saying that all uplink coverage enhancements solutions will be available to Redcap UEs.

10 – Apple Computer Trading Co. Ltd

It seems common understanding that HD-FDD UE is covered in Coverage enhancement WI. So it's not necessary to update the WID.

11 – VODAFONE Group Plc

Agreed that it is not necessary to add the note as the WID implicitly assumes it is for all UE types

12 – MediaTek Inc.

We also don't see the necessity to explicitly include this note in the WI. Rel-17 CovEnh is expected to include all UE types. It's all about prioritization based on the amount of remaining works and this can be discussed in RAN1.

13 – Ericsson LM

Our understanding is also that any UE type is supported for PUSCH repetition Type A, so we do not see the need to update the WI.

14 – China Mobile Com. Corporation

Thanks for the comments. Yes, the WID do not exclude any type of UE. But on the other hand, not every type UE's behavior will impact the 2-step procedure of the available slot.

According to the replies from companies above, we can accept to highlight this issue in RAN plenary to facilitate the discussion in the WGs, without changing the WID.

A conclusion or clarification would provide a clear guidance to the working group, as below.

Conclusion:

All types (TDD, FD-FDD, HD-FDD) of RedCap and non-Redcap UEs are covered in the Rel-17 CovEnh WI.

2.2 Issue#2: SIP signalling compression

RP-212095 proposed RAN to address SIP signaling coverage issue by e.g., compression approach.

Companies are encouraged to answer the following questions:

1. Whether RAN to address SIP signaling coverage issue by e.g., compression approach?
2. Whether SIP signaling coverage issue is addressed in Rel-17 CovEnh WI?

Feedback Form 3: Answers to the above questions

1 – SoftBank Corp.

1. Yes. This is important for us.
2. Sorry if the intention of the proposal is not so clear, but we think this question is not so important at this moment. The proponents of RP-212095 think SigComp is the most appropriate approach to solve SIP signaling coverage issue, and CT1/SA4 can discuss and decide if it is the case. If the result is unfortunate, RAN can further discuss (after receiving a reply LS) how to / when to solve (i.e. Rel-17 or Rel-18) this issue by using different approach. This is the reason why we just propose to send an LS to CT1/SA4 cc SA2 and don't talk about Rel-17 CovEnh WI. We understand that UDC can be the solution when SIP signaling is not encrypted. For this case, everything can be done under UDC WI, and hence there is no impact to Rel-17 CovEnh WI.

2 – KT Corp.

1. Yes. This can be beneficial to NR Standalone operator with VoNR support.
2. We believe the intention is to send LS to CT1/SA4 so that SigComp functionality can be mandated

3 – China Mobile Com. Corporation

1. Not sure. UL SIP signalling coverage can be addressed by UDC or SigComp. UDC will be specified in another RAN2 WI. SigComp is invisible for RAN, and the corresponding signalling has already been

specified by CT1. So it seems nothing else need to be done in RAN for Coverage enhancement WI.

2. No need to address SIP signalling coverage issue in RAN Rel-17 CovEnh WI.

4 – Qualcomm Incorporated

1. We think it's premature to conclude that compression is the issue. Need to first explore whether existing tools in the framework have been fully utilized, for e.g. setting SIP timers appropriately. If some performance optimization is desired, it is up to CT1/SA2 to decide how/whether to use SigComp.

2. No specific action was taken in R17 CovEnh WI to address this issue up to now, and we don't suggest to add any.

5 – Samsung Research America

1. From the evaluation during the study phase in Rel-17 CovEnh, SIP signaling coverage was not identified as needing improvement. This proposal (discussed during the SI phase) seems to be about optimizing SIP signaling.

2. It was not agreed to be included in the CovEnh WID.

6 – Guangdong OPPO Mobile Telecom.

OPPO The SIP signaling issue is discussed in the study phase. We have no conclusion for the enhancement on the matter. Some general PUSCH enhancement may already take care of that. We should keeping the approach.

7 – T-Mobile USA Inc.

T-Mobile agrees with Qualcomm's comments

8 – CATT

1. If SIP signaling is not encrypted, it can be compressed by UDC which will be supported in Rel-17 NR UDC WI. So there is no need to further enhance in RAN.

2. See answer to question 1, there is no need to address SIP coverage issue in Rel-17 CovEnh WI.

9 – ZTE Corporation

We agree that compression of SIP signaling is beneficial for the coverage of VoNR service, and acknowledge that UDC is not much helpful in case IPsec is used for SIP signaling. So, we see some benefits to use SigComp in such case. However, whether to support SigComp or not could be further discussed in CT1 (and/or SA4).

10 – ZTE Corporation

For the second question: We think no RAN work is needed to support it in Rel-17. We are fine to indicate other WGs that SigComp could be useful for the case when IPsec is used.

11 – HUAWEI TECHNOLOGIES Co. Ltd.

RAN has approved R17 WI NR UDC and it is expected to be completed at Q1 2022, which can provide compression already. For SIP compression at upper layer, it is out of RAN scope. As this is already out of RAN scope, it seems not suitable that RAN discuss this in coverage enhancements or trigger any LS to CT.

12 – Nokia Corporation

1. We agree with Qualcomm that it is a bit rushed to conclude directly that compression is the solution here, especially considering that the expertise for some of the compression mechanisms is on SA/CT side. Having said that, we are open for approaches to resolve the issue in coordination with relevant SA/CT groups.
2. We don't see it feasible to include a new objective to the Rel-17 WID given the limited time available for the conclusion of the work.

13 – Apple Computer Trading Co. Ltd

1. We agree with Qualcomm that it's premature to conclude that compression is the issue. And for SIP compression, the SipComp should be discussed and decided in SA2/CT1.
2. No need to address SIP signalling coverage issue in RAN Rel-17 CovEnh WI.

14 – Ericsson LM

1. We think that RAN should address SIP signaling coverage by sending the proposed LS.
It was found in the NR coverage enhancement study 38.830 that SIP Invite messages could be one of the bottlenecks for coverage. While there weren't a lot of results for SIP Invite in the study, it is intuitive that a 2 KB message can impact VoNR coverage or setup latency in arduous coverage scenarios, as pointed out in the proposed LS.
2. We don't think this needs to be in the Cov Enh WI, as SoftBank explains.

15 – MediaTek Inc.

1. We don't see RAN has the expertise to study coverage enhancements relying on a mechanism that falls entirely outside RAN's remit. Furthermore, the proposal falls short of addressing the indicated problem on the network side. Last, coverage enhancements WI is looking at lower layer solutions to *enhance* coverage.
2. No

RP-212095 proposed RAN to send a LS to CT1, SA4 and cc SA2

- To indicate that 2KB SIP message sizes may impact VoNR coverage or setup latency in arduous coverage scenarios, and
- To check if SigComp functionality can be mandated to reduce SIP message overhead

Companies are encouraged to provide views on the above proposed LS.

Feedback Form 4: Comments on the proposed LS

1 – SoftBank Corp.

Yes. As a proponent, we would like to emphasize the issue is real and want to solve this issue. As described in RP-212095, compression scheme would be the most appropriate approach to solve this issue, and this should be done in application layer because encryption at IP layer is important for our case.

2 – KT Corp.

Yes, we would like to see this supported in the upper layer

3 – China Mobile Com. Corporation

We don't see the need to send the LS and don't think the SigComp functionality can be mandatory.

1. SigComp is out of RAN scope, which should be discussed in CT1. We encourage companies to provide contributions directly to the corresponding WG.
2. SigComp was defined in RFC 3320 which is outside 3GPP scope. And the SigComp related signalling has already been supported by CT1 in TS 24.229. So we don't see any additional functionality need to be done.
3. We also don't think it can be mandatory to support SigComp. Even in Rel-15, RoHC is optional with capability signalling, which is also kind of compression. As we are in Rel-17 now, it's too late to make anything mandatory.

4 – Motorola Mobility Germany GmbH

Lenovo, Motorola Mobility:

We tend to agree with China Mobile and don't see the need to send the LS

5 – Samsung Research America

We also don't see a need for RAN to send an LS to CT1/SA4/SA2. Interested companies can raise this issue directly in CT1/SA4/SA2.

6 – Guangdong OPPO Mobile Telecom.

OPPO The is not sufficient motivation to mandate that compression capability. The UE with that capability may help but not to be attached with other capability.

7 – CATT

We share the same view with CMCC. SigComp is out of RAN scope, it is better to propose companies' contributions in CT1/SA4 directly. We are not sure if we could mandate all UEs to always use SigComp. It is up to CT1/SA4 to make the decision.

8 – Qualcomm Incorporated

We are ok with sending an LS to CT1/SA2 to first check whether other optimizations are possible before investigating compression. No need to recommend to other WGs to change optional/mandatory status as a result of this discussion.

9 – Panasonic Corporation

We support to send LS.

10 – SHARP Corporation

We support to send an LS.

<p>11 – TELECOM ITALIA S.p.A.</p> <p>We support to send an LS</p>
<p>12 – ZTE Corporation</p> <p>We are fine to send LS to related WGs, and leave the decision about whether to support SigComp in respective WGs.</p>
<p>13 – HUAWEI TECHNOLOGIES Co. Ltd.</p> <p>As we replied in the above question, as this is already out of RAN scope, it seems not suitable that RAN discuss this in coverage enhancements or trigger any LS to CT.</p>
<p>14 – Nokia Corporation</p> <p>It is OK to send and LS to exchange information on the issue and ask for feedback from the relevant SA/CT groups. However it would be rushed to request them to mandate a specific solution, especially considering they are the ones with expertise for evaluation of feasibility and complexity of the possible solutions on this topic.</p>
<p>15 – Ericsson LM</p> <p>As we discussed above, and especially given the strong operator interest, we think the LS should be sent. We are fine to do some rewording considering CMCC response on mandate; one suggestion can be as below:</p> <ul style="list-style-type: none"> - To check if SigComp functionality can be supported to reduce SIP message overhead <p>Then it is up to SA4/CT1/SA2 to decide how the feature should work (optional, mandatory etc).</p>
<p>16 – MediaTek Inc.</p> <p>We don't think sending an LS is justified at this stage. 3GPP specifications pertaining to SigComp are readily available. We are not convinced this discussion is a 3GPP matter - GSMA might be more suitable.</p>

3 Email discussion (intermediate round)

3.1 Issue #1: HD-FDD RedCap UE

It seems there is no need to update the objectives in Rel-17 CovEnh WID. The majority think all types of UEs are included in the scope of Rel-17 CovEnh WI while the details can be discussed in RAN1. And the parallel discussion for HD-FDD UE between Rel-17 CovEnh WI and Rel-17 RedCap WI should be avoided. Following conclusion is proposed.

Conclusion:

- All types of UEs are included in the scope of Rel-17 CovEnh WI.
- Collision handling between PUSCH and SSB for HD-FDD UE in Rel-17 CovEnh WI depends on the outcome of Rel-17 RedCap WI. The parallel discussion between Rel-17 CovEnh WI and Rel-17

RedCap WI should be avoided.

Companies are encouraged to provide views on the above proposed conclusion.

Feedback Form 5: Comments on the above proposed conclusion

1 – Ericsson LM We support the proposed conclusion.
2 – Qualcomm Incorporated We are ok with the proposed conclusion.
3 – Intel Deutschland GmbH We are fine with the proposed conclusion
4 – Sierra Wireless Support the proposal
5 – vivo Communication Technology we support the proposal
6 – China Mobile Com. Corporation We support the proposal
7 – Guangdong OPPO Mobile Telecom. Fine with the intermediate proposal.
8 – Samsung Research America Fine with the conclusion.
9 – Apple Computer Trading Co. Ltd We are fine with the proposed conclusion.
10 – CATT We are fine to have this conclusion.
11 – MediaTek Inc. OK with the conclusion.

<p>12 – SHARP Corporation</p> <p>We support the proposed conclusion.</p>
<p>13 – Motorola Mobility Germany GmbH</p> <p>We support the proposed conclusion</p>
<p>14 – HUAWEI TECHNOLOGIES Co. Ltd.</p> <p>We are fine with the conclusion in principle. However, we think "All types of UEs" is too general . Since the main point is on Redcap UE, maybe we can just simply say "All types of Redcap UEs"?</p>
<p>15 – ZTE Corporation</p> <p>We support the proposed conclusion.</p>
<p>16 – VODAFONE Group Plc</p> <p>Agreed with moderator's proposal.</p>
<p>17 – Nokia Corporation</p> <p>We support the moderator's proposal.</p>
<p>18 – Panasonic Corporation</p> <p>We are ok with the moderator proposal.</p>

3.2 Issue#2: SIP signalling compression

It seems companies have common understanding that there is no need to address SIP signaling coverage issue in Rel-17 CovEnh WI at present. The key point is whether RAN to send out an LS. Based companies' views, there can be two alternatives.

Alt 1: There is no need to send an LS to CT1, SA4 and SA2. The proponents can raise the SIP signaling coverage issue in the relevant WGs.

Supported by: CMCC, Lenovo, Motorola Mobility, Samsung, CATT, Huawei, MediaTek (7)

Alt 2: RAN to send an LS to CT1, SA4 and cc SA2

- To indicate that 2KB SIP message sizes may impact VoNR coverage or setup latency in arduous coverage scenarios, and
- To check if SigComp functionality can be ~~mandated~~ **supported** to reduce SIP message overhead

Supported by: Softbank, Verizon, Ericsson, KT, DISH network, Panasonic, Sharp, Telecom Italia, ZTE, Qualcomm, Nokia (11)

Given that the majority support Alt 2 and a number of operators support RAN to send LS to address SIP signaling coverage issue. Following proposal is proposed:

Proposal:

RAN to send an LS to CT1, SA4 and cc SA2

- To indicate that 2KB SIP message sizes may impact VoNR coverage or setup latency in arduous coverage scenarios, and
- To check if SigComp functionality can be supported to reduce SIP message overhead

Companies are encouraged to provide views on the above proposal.

Feedback Form 6: Comments on the above proposal

1 – T-Mobile USA Inc.

T-Mobile USA doesn't see a need to include point 1 in the LS, T-Mobile hasn't identified SIP message size as a problem for VoLTE nor have we seen any problem with SIP message size for VoNR.

It's pretty clear from the previous comments that SIGCOMP is supported, so I'm wondering what action RAN would undertake when CT confirms that it's supported?

The LS should simply ask if SIGCOMP Is supported, full stop.

2 – Ericsson LM

We support the proposal.

There is confusion currently whether 3gpp supports SigComp or if there is any restriction. We think an LS will trigger SA4/CT1 to look into SigComp and work on lifting restrictions, if any. Regarding comments that the LS is not necessary, while CT1 & SA4 can address higher layer compression mechanisms that can potentially improve coverage, they do not have the L1 expertise to establish coverage limitations. Hence some co-operation may be needed between RAN WG and CT1/SA4. Therefore, we feel it is useful for RAN to initiate the LS, and to ask CT1 & SA4 if higher compression can be enabled and also allow SA4/CT1 to ask any questions specific to RAN WG for coverage limitations caused by SIP Signaling.

3 – Qualcomm Incorporated

We agree with sending the LS.

We agree with the comments made by T-Mobile USA.

4 – SoftBank Corp.

We agree with sending the LS, and the proposal looks good. We fully support the statement by Ericsson: the first bullet is important information in this LS, which gives new information to other WGs and potentially GSMA.

5 – vivo Communication Technology

We support sending LS, it is also good to let CT1/SA4 aware of the potential issues in RAN.

6 – Guangdong OPPO Mobile Telecom.

OPPO Sending the LS asking SigComp is supported or not would be sufficient. CT1 and SA4 can make the decision.

7 – Samsung Research America

We agree with above comments of not considering the first sentence - there is no consensus in RAN that the issue exists.

It can be asked “whether CT/SA supports any functionality to reduce SIP message overhead” but it is still unclear what would be the follow up RAN action to an answer by CT/SA.

8 – TELECOM ITALIA S.p.A.

We support the moderator’s proposal. Simply asking is SIP compression is supported does not provide any background for the reasons behind the request

9 – CATT

If we only want to know SigComp is supported or not, the LS is not needed. Please refer to TS24.229, there are many descriptions about SigComp. According to 24.229, the UE should support SigComp, but whether to use it is UE implement issue. E.g. in section 8.1.2 (Compression of SIP requests and responses transmitted to the P-CSCF), there is a useful note:

NOTE 1: Compression of SIP messages is an implementation option. However, compression is strongly recommended.

10 – MediaTek Inc.

Once again, we see no need for an LS. There is no issue in 3GPP Specifications - all is readily specified and has been for ages. This is not a 3GPP matter. If anything, it is a GSMA matter.

11 – MediaTek Inc.

Add-on: we would also like to understand *where* the ”LS” is that is being discussed. The proposal above is obviously not an LS nor a draft LS. Is there a revised TDoc somewhere, and if so, where is it?

12 – SHARP Corporation

We support the moderator’s proposal.

13 – China Mobile Com. Corporation

As we commented in the initial round, TS 24.229 has already defined the compression/decompression procedures of SigComp at UE and P-CSCF. However, from the companies’ comments, I still don’t understand why there is confusion on whether 3GPP support SigComp, or if there is any problem with TS 24.229 to support SigComp.

So, we still think the LS is not needed.

14 – HUAWEI TECHNOLOGIES Co. Ltd.

We agree with the comments from other companies on the first bullet, there is no this kind of conclusion from RAN and thus not appropriate to include it in any LS. On the second bullet, the follow up RAN action is not clear either. Therefore we still don't see need to send LS from RAN.

15 – ZTE Corporation

We are fine with the proposal. It's also ok for us to add one note to clarify that no further RAN action is expected if this can address some of the concerns from other companies.

16 – Nokia Corporation

We are fine with sending the LS, and it is better if the LS includes some background related to coverage issues discussed in RAN, otherwise it will be more difficult for CT/SA to provide an answer. However, perhaps the question to be asked should be more aligned with Samsung's proposal above, i.e. ask for information on any existing functionality for handling SIP message overhead.

17 – Panasonic Corporation

We are ok with the moderator proposal.

4 Email discussion (final round)

4.1 Issue #2: SIP signalling compression

There are still concerns on sending LS and it seems difficult to achieve consensus. Moderator suggests to make the following conclusion.

Conclusion:

- There is no consensus in RAN whether or not SIP signaling can be the coverage bottleneck.
- There is no consensus to send an LS to CT1/SA4 on the applicability of SigComp.

Feedback Form 7: Comments on the proposed conclusion**1 – Qualcomm Incorporated**

We agree with the first point.

We still prefer to send an LS, which can be simplified to ask only for information about the state of support of SigComp, without making any recommendation.

2 – CATT

We fully agree with moderator's proposed conclusion. For the LS, if companies still don't think it is clear for SigComp even refers to TS24.229, companies can check with their CT1/SA4 delegates internally or submit contributions to CT1/SA4 directly. Again, we don't think an LS is needed.

3 – Guangdong OPPO Mobile Telecom.

That is the way we have to go with as there did not even have sufficient study and common results for the SIP coverage issue. Thus, this stage we can not converge in RAN level. The LS is not needed, too. CT1/SA4 can initialize their study by themselves.

4 – Intel Deutschland GmbH

We are fine with the moderator's proposed conclusions. If needed, CT1/SA4 can investigate the issue even without the LS.

5 – Ericsson LM

While we understand that SigComp is supported by CT1, this was done a long time ago (as also mentioned by other companies), we think it needs to be assessed/confirmed by concerned WG (SA4, CT1, SA2) if it is still applicable for 5GC/VoNR, and we also understand the situation is different in GSM. If companies assume that SigComp can provide coverage gain, and so RAN needs to do nothing, this may not be the case. One way forward would be to study SIP signaling coverage in cases where it is encrypted (and so compression has to be done on higher layers). Therefore, we would propose the following **updates** to the proposed conclusion:

- There is no **complete study** in RAN whether or not SIP signaling can be the coverage bottleneck.
- There is no consensus **in this RAN plenary meeting** to send an LS to CT1/SA4 on the applicability of SigComp.
- **It can be discussed for Rel-18 whether the coverage of encrypted VoNR SIP signaling can be studied.**

6 – VODAFONE Group Plc

We are supportive of sending the LS as the signalling overhead can be reduced. If no consensus during this meeting, as Intel commented it could still be investigated by CT1/SA4 anyway without the LS

7 – MediaTek Inc.

We agree with the conclusion from the moderator

8 – SoftBank Corp.

Thanks moderator for leading this discussion.

We have the same understanding with Ericsson regarding the CT/SA/GSM situation, and this the reason why we brought up this proposal in this meeting. We think sending an LS without any background information (and without common understanding in RAN) would not help, or it will just make everyone confused. Therefore, we should not send any LS at least in this meeting.

It seems that the moderator's proposal is the right direction in this meeting. In the meantime, we would ask everyone if the modified proposal by Ericsson is acceptable.

5 Conclusion

Endorsed Conclusion:

- All types of UEs are included in the scope of Rel-17 CovEnh WI.
- Collision handling between PUSCH and SSB for HD-FDD UE in Rel-17 CovEnh WI depends on the outcome of Rel-17 RedCap WI. The parallel discussion between Rel-17 CovEnh WI and Rel-17 RedCap WI should be avoided.

6 Reference

[1] 3GPP RP-211991, “Discussion on the HD-FDD type UE in NR coverage enhancements”, CMCC, RAN#93e, September 13 – 17, 2021.

[2] 3GPP RP-212095, “Handling of SIP signaling coverage issue identified in Coverage Enhancement SI/WI”, SoftBank, Verizon, Ericsson, RAN#93e, September 13 – 17, 2021.