3GPP TSG-RAN WG3 Meeting #115-e R3-222424

Online, 21 Feb – 3 Mar 2022

Agenda Item: 10.2.6

Source: Lenovo, Motorola Mobility (moderator)

Title: Summary of Offline Discussion on SON Enhancements for CHO

Document for: Approval

# Introduction

**CB: # SONMDT8\_MobilityEnh**

**- Down select network-based solutions, e.g. for the case that a RLF occurred in CHO target cell after completing handover:**

**Option a-1/a-2/b/c, or combination of at least one of them?**

**- Whether to introduce a new initiating condition for CHO recovery procedure in FAILURE INDICATION message?**

**- Whether the FAILURE INDICATION message may be initiated without RLF report for CHO, if yes, whether to include an explicit CHO recovery cell ID in FAILURE INDICATION message and whether to include an explicit CHO recovery Cell CGI in HANDOVER REPORT message, in case of without RLF Report?**

**- Capture agreements, and provide TPs if agreeable**

(Lenovo - moderator)

Summary of offline disc [R3-222424](https://www.3gpp.org/ftp/tsg_ran/WG3_Iu/TSGR3_115-e/Inbox/Drafts/CB%20%23%20SONMDT8_MobilityEnh)

Phase I：Please provide your inputs before UTC time 10:00 Thursday 24th Feb.

Phase II：TBD.

# For the Chairman’s Notes

The following proposals can be agreed: (after phase 1 discussion)

**Proposal 1: Reuse the existing initiating condition for CHO in FAILURE INDICATION message.**

**Proposal 2:**

* **FAILURE INDICATION is initiated with RLF report rather than without RLF report for MRO purpose for CHO.**
* **An explicit CHO recovery cell ID (i.e., not the one which may be included in UE RLF Report Container) is not needed in FAILURE INDICATION message.**
* **An explicit CHO recovery cell CGI (i.e., not the one which may be included in UE RLF Report Container) is not needed in HANDOVER REPORT message.**

**Proposal 3: Agree the TP for SON BLCR for TS 38.300 in R3-22xxxx revised from R3-222301 to change “CHO Triggering” to “CHO execution”.**

The following issue is to be discussed in the 2nd round:

**For the issue about how the source node gets CHO execution condition(s) and candidate cell list, down select between Option b and Option c:**

* **Option b: Source node sends candidate cell list and CHO execution condition(s) to the target node after receiving Handover Success message, e.g. in SN Status Transfer message, and then the target transmits the info back to the source node in HANDOVER REPORT message.**
* **Option c: Source node stores the CHO related configuration.**

**If Option b is agreed, further check the TP for SON BLCR for TS38.423 to include candidate cell list and CHO execution condition(s) in the SN STATUS TRANSFER and HANDOVER REPORT message.**

**If Option c is agreed, further discuss whether/how to draft an LS to RAN2, e.g., to inform that source node can store CHO related configurations even for the RLF case.**

# Discussion

## CHO execution condition(s) and candidate cell list

RAN3#114bis-e meeting has agreed network-based solution is needed for the source node to get CHO execution condition(s) and candidate cell list e.g. for the case that a RLF occurred in CHO target cell after completing handover, and it is FFS which network-based solution is adopted. As summarized in [1], the on-table options are as below:

Option a: Derive candidate cell list and CHO execution condition(s) based on Mobility Information.

* Option a-1: Source node transmits the Mobility Information to the target node when CHO is completed, i.e. in the SN STATUS TRANSFER message, and the target node sends the Mobility Information back to the source node via HANDOVER REPORT message.
* Option a-2: Source node transmits the Mobility Information to each candidate target node in the HO request message, and the target node sends the Mobility Information back to the source node via HANDOVER REPORT message.
* Option a-3: Including the Mobility Information in the UE RLF-report. RAN3 asks RAN2 to consider feasibility of adding the Mobility Information to the CHO configuration.

Option b: Source node sends candidate cell list and CHO execution condition(s) to the target node after receiving Handover Success message, e.g. in SN Status Transfer message, and then the target transmits the info back to the source node in HANDOVER REPORT message.

Option c: Source node stores the CHO related configuration.

In [2], it is observed that Option a-2 and Option c are supported in legacy MRO functionality and they can be applied for CHO, [2] also proposes that Option a-1 should be optimized for CHO.

In [3], it is proposed that Option a-2 or Option a-1 combined with Option c can be supported.

In [4], it is proposed that Option c can be used for CHO since it does not create additional signaling and it is a straightforward implementation, to lower the time the source node keeps the UE context, [4] also proposes a new message from target candidate to source node indicating that RLF Report is on its way.

In [5], Option b is proposed, considering Option b provides precise information to the source node comparing with Option a-1, and it is easy for implementation since the source node does not need to think how to map Candidate Cell list and CHO Execution Conditions together with other mobility information (e.g. UE group, handover trigger) to an container.

Companies’ views are still controversial. To down select, for Option a-1/Option a-2/Option b/Option c, companies are invited to provide their views on which option(s) are acceptable, and which are not. Moderator would like to go with the majority’s votes to make final decision on which network-based solution to be agreed.

**Q1: For Option a-1/Option a-2/Option b/Option c, companies are invited to provide their views on which is acceptable, and which is unacceptable. Multiple acceptable or unacceptable options can be provided, if any.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Company** | **Acceptable opt.** | **Unacceptable opt.** | **Comments** |
| Samsung | Option bOption b + Option c | Option a-1Option a-2Option c only | Option c mandates the source node to store the CHO related configuration even after successful handover. Previously RAN3 has agreed that the source mode may release the UE context after successful handover when RAN3 sent reply LS to RAN2 in R3-212944, it was said:*RAN3 has discussed the UE context handling and retention at the source node after HO, and concluded that it is not mandated that the source node stores the UE context.*That’s why RAN2 start to define some RLF Reporting i.e. include Candidate cell list and CHO execution conditions for HOF failure.For the same issue, we should have the same assumption. Option c can be used in implementation. But we cannot mandate the source which is not in line with the standard.Option a-2 has three drawbacks: 1) the source node has to send the Mobility Information to each candidate. 2) The information may be not up-to-date e.g. the source updated the UE after Handover Request. 3) The source has to consider how to map candidate cell list and CHO execution condition to an index.Comparing Option a-1 and Option b, both needs to add new IE in SN Status Transfer message. The main difference between a-1 and b is whether to include Candidate Cell list and CHO Execution Conditions in an implementation dependent container or add explicit information in Xn message. When Mobility Information was introduced in LTE, it was defined as a container because it includes UE group related information which are highly dependent on implementation. Pls note that Mobility Information cannot represent the exact UE context. It is UE group related information. It is used by the source node to optimize handover trigger for different UE groups between two pair of cells. Candidate cell list and CHO execution conditions are different. They are standard parameters which are already transmitted over air interface. In this case, it is easy to include them explicitly in Xn messages. Option b provides precise information to the source node. The source node can use it to detect whether the failure reason is due to inappropriate candidate cell list or due to improper execution conditions. We doubt option a-1 can achieve this purpose and option a-1 bring complexity for implementation to map Candidate Cell list and CHO Execution Conditions together with other implementation based parameters (e.g. UE group) to a container. |
| Nokia | c |  | No option is “not acceptable”. Option a-2 is a different solution: it helps identify conditions leading to the triggering of the failed CHO preparation, but not the overall UE situation. It may still be used, if the source node encodes e.g. UE ID there.Option a-1/b (these seem to be identical) enables obtaining “full picture” after a failed CHO. We don’t object it, but we don’t think it is desperately needed.Options c and a-2 does not seem to require any changes in the standard, right? |
| Qualcomm | Option b (1st pref)Option a-1 (2nd pref) | Option c only Option a-2 onlyOption c + a-2Option a-3 | Agree with Nokia that Option c and a-2 does not require any changes in standard and are supported by default, but have the following drawbacks:If Option c only is to be accepted, we have to send LS to RAN2 correcting our previous statement and say that network node can store CHO configurations in case of CHO failure case as well and no need of UE based solutionOption a-2 is sub-optimal because Mobility Information needs to be sent to each candidate cell and might need to be updated upon CHO modification |
| CATT | Option b  |  |  |
| Huawei | a-1, a-2, c | b | Opt a-2 and opt c are already supported in legacy.Opt a-1 follows the legacy principle to deliver the Mobility Information for MRO and can reduce the signaling overhead compared with opt b.If we start following b, this will open the door for many similar things of sending any new information between nodes that can be stored in the node instead. |
| Ericsson | c | b | We have to keep in mind that in most cases these information will be received via the RLF Report. The only identified use-case where these information will be deleted by the UE is when a RLF occurred in CHO target cell after completing handover. Therefore, minimum impact is preferred. It is not mandated to keep UE context, but source may do so if it needs to optimize this particular scenario |
| Lenovo | Option a-1/a-2/c |  | For Option a-2, when CHO configuration is modified after HO preparation and before CHO execution, Mobility Information allocated in initial HO preparation phase may be not available, then the source node can transmit the updated Mobility Information to corresponding candidate target node in subsequent HO request message.Option a-2 and/or Option c have no spec impact, they are our first choice.Option a-1 is acceptable by us.If the majority supports Option b, we are compromised to accept it. But we have the same concern as Huawei commented above. |
| ZTE | Option C/option B |  | We prefer minimal impact for this feature. And it is still have time to info RAN2 of RAN3’s decision. |

**Moderator summary:**

**The votes for Acceptable (A) and Not Acceptable (NA) options are as below:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Company** | **Opt. a-1****(3A vs 1NA)** | **Opt. a-2****(2A vs 2NA)** | **Opt. b****(5A vs 2NA)** | **Opt. c****(5A vs 2NA)** |
| Samsung | NA | NA | A | NA if Opt. c only; A if combined with Opt. b |
| Nokia |  |  |  | A |
| Qualcomm | A (2nd) | NA | A (1st) | NA |
| CATT |  |  | A |  |
| Huawei | A | A | NA | A |
| Ericsson |  |  | NA | A |
| Lenovo | A | A | A if majority supports | A |
| ZTE |  |  | A | A |

**Based on the votes, Option b and Option c have the most supporters, we can down select between Option b and Option c in the second round of discussion. If Option c is agreed, we would discuss how to draft an LS to RAN2 to inform of RAN3’s final decision e.g. source node can store CHO related configurations even for the RLF case, RAN2 may revisit whether UE based solution is needed,** **but it depends on RAN2.**

## FAILURE INDICATION message and HANDOVER REPORT message

### initiating condition in FAILURE INDICATION message

[2] proposes to extend the existing initiating condition “RRC Setup” to be “RRC Setup or Reconfiguration” for CHO Recovery procedure, as [2] states that even CHO Recovery procedure is part of the Reestablishment procedure, *RRCReconfigurationComplete* message is sent instead of *RRCRestablishmentRequest* message, it cannot be considered as the RRC Reestablishment initiated reporting.

[6] proposes to enhance Failure Indication to include a new initiating condition for CHO recovery procedure, as they don’t support reusing original RRC Reestablishment initiating condition or reusing original RRC Setup initiating condition.

[3] [4] and [5] propose that introducing new initiating condition for CHO recovery procedure in FAILURE INDICATION message is not needed. [4] also proposes there is no need to change initiating conditions for CHO recovery.

In general, there are two camps, one camp supports changing the existing initiating condition or introducing a new initiating condition [2] [6], and the other supports totally reusing the existing initiating condition [3-5].

From moderator point of view, CHO recovery behavior is a part of RRC re-establishment procedure as captured in RAN2 specification even handover may be executed if the selected cell is a CHO candidate cell, network can distinguish CHO recovery from legacy RRC re-establishment based on received CHO specific information in the RLF report (e.g., when reusing “RRC Reestab Reporting with RLF Report” as the initiating condition for CHO). There is no problem to reuse the existing initiating condition, and the benefit of introducing a new initiating condition seems not significant.

**Q2-1: Companies are invited to provide their views on whether agree to reuse the existing initiating condition for CHO recovery procedure in FAILURE INDICATION message, i.e., neither extend the existing initiating condition nor introduce a new initiating condition.**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Samsung | Yes | Reusing the existing initiating condition has no technical problem.  |
| Nokia | Yes | Fine to reuse existing conditions. |
| Qualcomm | Yes |  |
| CATT |  | We believe it is up to Q3. If FAILURE INDICATION without RLF Report is initiated, a new initiating is needed. Otherwise, it is not needed. |
| Huawei | Modify existing | Main argument is that the current spec is ambiguous since it does not cover the case of incoming successful HO (incl CHO). The CHO recovery case can be in the re-establishment case (with RLF report) as moderator suggest. |
| Ericsson | Yes | The benefits of changing or introducing new initiating conditions are unclear |
| Lenovo | Yes | For successful CHO recovery case, it is also a part of RRC re-establishment procedure as captured in RAN2 specification, even it is a successful handover towards the selected CHO candidate cell.Reusing the existing initiating condition would not cause any confusion or issue. |
| ZTE | Yes | We don’t see issue to reuse current conditions. |

**Moderator summary: (6/8) companies agree to reuse existing conditions, (1/8) company thinks it depends on Q3 e.g. existing conditions can be reused if FAILURE INDICATION with RLF Report is initiated, (1/8) company supports modifying existing condition.**

**Based on Q3, we can find that most companies support FAILURE INDICATION initiated without RLF report for CHO is not useful. To go with the majority view, moderator would propose to reuse the existing initiating condition for CHO recovery procedure in FAILURE INDICATION message.**

**Proposal 1: Reuse the existing initiating condition for CHO in FAILURE INDICATION message.**

If companies do not agree to directly reuse the existing initiating condition, please provide your preference on how the FAILURE INDICATION message can be used for CHO recovery procedure, e.g., to extend the existing initiating condition “RRC Setup” to be “RRC Setup or Reconfiguration” as the TP provided in [2], or to introduce a new initiating condition as the TP provided in [6], or other solutions.

**Q2-2: If answer to Q2-1 is “No”, companies are invited to provide their views on how the FAILURE INDICATION message can be used for CHO recovery procedure (e.g. as TP in [2], or TP in [6], or other** **solutions).**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| CATT | If FAILURE INDICATION without RLF Report is initiated, a new initiating condition as in TP [6] is proposed. |
| Huawei | TP in [2]. See discussion above |

### whether to support FAILURE INDICATION initiated without RLF report

[2] states that only in case that the reception node receives RLF report, it can trigger the FAILURE INDICATION message. Since for CHO recovery success without RLF Report, the reception node receiving RRCReconfigurationComplete message can’t differ the CHO recovery case from the CHO execution case, the reception node cannot trigger the FAILURE INDICATION message to the source node.

[3] proposes to support FAILURE INDICATION initiated with RLF report for MRO purpose for CHO, considering that FAILURE INDICATION initiated without RLF report can’t work well for some cases.

[5] states that FAILURE INDICATION initiated without RLF report for CHO is not useful. For example, for CHO recovery success without RLF Report, the RAN node receiving recovery cannot know which cell is the failure cell without RLF Report, the receiving RAN node can send FAILURE INDICATION to the source node but not to the last serving node, but the source node cannot detect the failure type without failure cell id.

However, [6] proposes FAILURE INDICATION shall be initiated without RLF report for CHO but network may not perform legacy MRO failure type analysis, since network is not aware whether CHO failure has occurred, whether it is CHO execution or CHO recovery when only RRC Reconfig complete message is received.

As most companies point out that FAILURE INDICATION initiated with RLF report works well for MRO for CHO, and without RLF report network may not perform MRO as legacy, we’d better to support that FAILURE INDICATION is initiated with RLF report. Companies are invited to provide their views on whether to support FAILURE INDICATION initiated with RLF report rather than without RLF report for MRO purpose for CHO.

**Q3: Companies are invited to provide their views on whether to support FAILURE INDICATION initiated with RLF report rather than without RLF report for MRO purpose for CHO.**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Samsung | FAILURE INDICATION initiated without RLF report for CHO is not useful | For Reestablishment without RLF Report, the failure cell PCI, C-RNTI and shortMAI-C are included in RRCReestablishment Request message. The RAN node receiving RRCReestablishmentRequest can send FAILURE INDICATION message to the failure node (the last serving node) using those information in the RRCReestablishment Request message. For CHO recovery success without RLF Report, the RAN node receiving recovery cannot know which cell is the failure cell without RLF Report. So the RAN node cannot send FAILURE INDICATION to the last serving node. The RAN node can send FAILURE INDICATION to the source node. But without failure cell id, the source node cannot detect the failure type. Therefore FAILURE INDICATION initiated without RLF report for CHO is not useful. |
| Nokia | Same as Samsung |  |
| Qualcomm | Same as Samsung |  |
| CATT |  | Considering RLF Report may be not retrieved by network, successful accessed cell CGI shall be provided to source node which can be used to optimize CHO candidate cell list. So, we propose to initiate **FAILURE INDICATION** without RLF Report. |
| Huawei | Same as Samsung | Without RLF report, the reception node cannot know whether this is a CHO recovery or normal CHO execution. The reception node cannot know whether there was an RLF before the UE performs CHO with it. |
| Ericsson | Same as Samsung | It is unclear what are the possible optimizations that the source node could do without RLF report |
| Lenovo | Yes | Network may not perform precise MRO if FAILURE INDICATION is initiated without RLF report, for example, as Samsung commented, network can’t distinguish CHO recovery from CHO execution when receiving the legacy RRCReconfigurationComplete message. |
| ZTE | Same as Samsung | Without RLF report, the receiving Node can not optimize without detail information from RLF report.  |

**Moderator summary: (7/8) companies agree FAILURE INDICATION initiated without RLF report for CHO is not useful, but (1/8) company proposes to initiate FAILURE INDICATION without RLF Report.**

**To go with the majority view, moderator would like to propose that FAILURE INDICATION is initiated with RLF report rather than without RLF report for MRO purpose for CHO.**

**Proposal 2a: FAILURE INDICATION is initiated with RLF report rather than without RLF report for MRO purpose for CHO.**

### CHO recovery cell ID in FAILURE INDICATION message

This section is relevant to Q3.

[2] [3] [4] and [5] proposes that explicit CHO recovery cell ID is not needed in FAILURE INDICATION message since RLF report is included in the FAILURE INDICATION message for CHO.

However, [6] proposes to include an explicit CHO accessed cell ID in FAILURE INDICATION message if FAILURE INDICATION message is triggered by a RRC Reestablishment attempt without RLF Report.

In Q3, most companies support FAILURE INDICATION is initiated with RLF report, if it is agreed, an explicit CHO recovery cell ID is not needed in FAILURE INDICATION message.

**Q4: Companies are invited to provide their views on whether to agree that an explicit CHO recovery cell ID is not needed in FAILURE INDICATION message.**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Samsung | Yes | Since FAILURE INDICATION initiated without RLF report for CHO is not useful, FAILURE INDICATION will include RLF Report.CHO recovery cell ID is included in RLF report. So **the last serving node** can get it from RLF report. |
| Nokia | Yes | Same as Samsung |
| Qualcomm | Yes |  |
| CATT |  | It is up to Q3. If FAILURE INDICATION without RLF Report is initiated, an explicit CHO recovery cell ID is needed, otherwise, it is not needed as RLF Report includes CHO recovery cell ID. |
| Huawei | Yes | According to the discussion in Q3, The FAILURE INDICATION message is triggered only in case that the RLF report is reported from the UE. It is reasonable for the reception node to forward the RLF report to the failure node. So, the explicit CHO recovery cell CGI is duplicated and not needed. |
| Ericsson | Yes | It is unclear what are the possible optimizations that the source node could do Recovery Cell ID only. And if RLF Report is present, then this information is already there |
| Lenovo | Yes | Duplicated CHO recovery cell ID is not needed, since UE RLF Report Container is included in the FAILURE INDICATION message. |
| ZTE | Yes | Same as Samsung |

**Moderator summary: (7/8) companies agree an explicit CHO recovery cell ID is not needed in FAILURE INDICATION message, (1/8) company thinks it depends on Q3 e.g. an explicit CHO recovery cell ID is not needed if FAILURE INDICATION with RLF Report is initiated.**

**Based on Q3, we can find that most companies support FAILURE INDICATION is initiated with RLF report for CHO. Moderator would like to propose that an explicit CHO recovery cell ID is not needed in FAILURE INDICATION message.**

**Proposal 2b: An explicit CHO recovery cell ID (i.e., not the one which may be included in UE RLF Report Container) is not needed in FAILURE INDICATION message.**

### CHO recovery cell CGI in HANDOVER REPORT message

This section is relevant to Q3.

[2] [3] and [5] proposes that explicit CHO recovery cell CGI is not needed in HANDOVER REPORT message since RLF report is included in the HANDOVER REPORT message for CHO.

However, [6] proposes to include an explicit CHO accessed cell ID in HANDOVER REPORT message if FAILURE INDICATION message is triggered by a RRC Reestablishment attempt without RLF Report.

In Q3, most companies support FAILURE INDICATION is initiated with RLF report, if it is agreed, an explicit CHO recovery cell CGI is not needed in HANDOVER REPORT message.

**Q5: Companies are invited to provide their views on whether to agree that an explicit CHO recovery cell CGI is not needed in HANDOVER REPORT message.**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Samsung | Yes | Since FAILURE INDICATION initiated without RLF report for CHO is not useful, FAILURE INDICATION will include RLF Report.CHO recovery cell ID is included in RLF report. So **the source node** can get it from RLF report. |
| Nokia | Yes | Same as Samsung |
| Qualcomm | Yes |  |
| CATT | Yes | Considering the following cases:1. CHO failure->CHO recovery success->RLF occurs->RRC Reestablishment attempt (without RLF Report)2. CHO execution->CHO success->RLF occurs->RRC Reestablishment attempt (without RLF Report)For above case 1 and case 2, when RLF occurs shortly after successful CHO or CHO recovery, if receiving FAILURE INDICATION message triggered by a RRC Reestablishment attempt (without RLF Report), HANDOVER REPORT message shall be initiated to source NG-RAN which shall include an explicit CHO recovery cell CGI. |
| Huawei | Yes | According to the discussion in Q3 and Q4, for this case the RLF report is always reported from the UE. The FAILURE INDICATION message includes the RLF report to the failure node. For intra-NR case, it is reasonable for the failure node to forward the RLF report to the source node in the HO REPORT message. So, the explicit CHO recovery cell CGI is duplicated and not needed. |
| Ericsson | Yes | It is unclear what are the possible optimizations that the source node could do Recovery Cell ID only |
| Lenovo | Yes | Duplicated CHO recovery cell CGI is not needed, since UE RLF Report Container is included in the HANDOVER REPORT message. |
| ZTE | Yes | Same as Samsung |

**Moderator summary: (7/8) companies agree an explicit CHO recovery cell CGI is not needed in HANDOVER REPORT message, (1/8) company thinks it is needed if FAILURE INDICATION without RLF Report is initiated.**

**Based on Q3, we can find that most companies support FAILURE INDICATION is initiated with RLF report for CHO. Moderator would like to propose that an explicit CHO recovery cell CGI is not needed in HANDOVER REPORT message.**

**Proposal 2c: An explicit CHO recovery cell CGI (i.e., not the one which may be included in UE RLF Report Container) is not needed in HANDOVER REPORT message.**

## MRO detection mechanism in Stage 2

[5] proposes to add description in stage 2 that the source node needs to differentiate inappropriate candidate cell configuration from improper CHO Execution Condition configuration, and the changes are as below [5]:

*In case of Too Early Handover or Handover to Wrong Cell, the NG-RAN node receiving the failure indication may inform the NG-RAN node controlling the cell where the mobility configuration caused the failure by means of the Handover Report procedure over Xn or the Uplink RAN Configuration Transfer procedure over NG. This may include the RLF report. In case of Handover to Wrong Cell for CHO, the NG-RAN node receiving HANDOVER REPORT message further differentiates whether the failure is brought by inappropriate candidate cell configuration or improper CHO execution condition. If the first re-establishment attempt cell/the cell UE attempts to re-connect is not in the candidate cell list configured to the UE, the root cause of the failure is inappropriate candidate cell configuration. Otherwise, the failure is due to improper CHO execution condition.*

**Q6-1: Companies are invited to provide their views on whether to add above description in stage 2 to capture that the source node needs to differentiate inappropriate candidate cell configuration from improper CHO Execution Condition configuration.**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Samsung | Yes | The detection mechanism has been captured in stage 2. It should cover all scenarios for completeness. These two cases are specific for CHO. Stage 2 text are needed. |
| Nokia | No | The proposed text seems to describe implementation that has no impact on the further MRO steps. |
| Qualcomm | Not yet | We also are yet to finalize whether CHO execution conditions are part of MRO for CHO (either via a network based or UE based solution), so need to add this yet |
| CATT | No | According to current MRO failure type detection, to wrong cell failure type may include reestablishment to candidate cell and reestablishment to other cells(not source, target and candidate cell). When source node performs MRO analysis, it can differentiate these two types and make optimization accordingly. So, we believe it belong to implementation and shall not be captured in spec. |
| Huawei | No | This is implementation. |
| Ericsson | No | Further analysis and corrective actions are up to implementation |
| Lenovo | No | The behavior of the source node when receiving the HANDOVER REPORT message is up to network implementation, detailed description in stage 2 is not necessary. |
| ZTE | No | No need to add the description in stage2. |

**Moderator summary: (7/8) companies think the above stage 2 description is not needed since it is implementation, (1/8) company wants to have it.**

**To go with the majority view, moderator would suggest not adding description in stage 2 to capture that the source node needs to differentiate inappropriate candidate cell configuration from improper CHO Execution Condition configuration.**

[5] also thinks it is not clear whether “CHO triggering” in current stage 2 description means the UE receiving RRCReconfiguration message for CHO or CHO execution, so it proposes to change “CHO Triggering” to “CHO execution”. The changes are as below [5]:

*The "UE reported timer" above indicates the time elapsed since the last handover initialisation until connection failure or the time elapsed since the CHO execution until connection failure.*

**Q6-2: Companies are invited to provide their views on whether to** **change “CHO Triggering” to “CHO execution” in stage 2.**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Samsung | Yes | For legacy handover, handover initialization or handover triggering means the UE receiving RRCReconfiguration message for handover. For CHO, it is not clear whether “CHO triggering” means the same or it means CHO execution. Better to make this point clear. |
| Nokia | Yes |  |
| Qualcomm | Yes |  |
| CATT | Yes |  |
| Huawei | Yes |  |
| Ericsson | Yes |  |
| Lenovo | Yes | Actually "UE reported timer" indicates the time elapsed since the CHO execution until connection failure. |
| ZTE | Yes |  |

**Moderator summary: All companies agree to change “CHO Triggering” to “CHO execution”. Moderator would propose to capture this change in stage 2.**

**Proposal 3: Agree the TP for SON BLCR for TS 38.300 in R3-22xxxx revised from R3-222301 to change “CHO Triggering” to “CHO execution”.**

# References

1. R3-221294, Summary of Offline Discussion on SON Enhancements for CHO, Lenovo, Motorola Mobility
2. R3-221834, (TP for SON BLCR for 38.423) Mobility enhancements, Huawei
3. R3-221977, SON Enhancements for CHO, Lenovo, Motorola Mobility, ZTE
4. R3-222073, MRO for CHO and DAPS, Ericsson
5. R3-222301, TP for TS 38.300: SON enhancements for CHO, Samsung, Verizon Wireless
6. R3-222009, (TP on SON for 38.423) Discussion on MRO for mobility Enhancement, CATT