**3GPP TSG RAN WG2#123 R2-23xxxxx**

**Toulouse, France, February 21th - 26th August, 2023**

**Source: ZTE Corporation, Sanechips**

**Title: Summary of 7.13.8 Other**

**Agenda item:** **7.13.8**

**Document for:** **Discussion and Decision**

# Introduction

**[Pre123][8xx][R18 SON/MDT] Summary of 7.13.8 Other (ZTE)**

* Summarize the papers in 8.13.8

Comments are welcome no later than Monday 21 August. 2023, 10:00 a.m. Toulouse local time

This document provides the summary of the contributions submitted to agenda item 8.13.8 other identifying essential issues need to be discussed in RAN2 with consideration on RAN3 progress. For fast MCG recovery issue, only topics not covered in the report of post email [Post122][584] in [R2-2308326](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308326.zip)[10], will be summarized.

In subclause 2, companies’ proposals are categorized into different topics, where for each topic an initial analysis and proposals are made. Based on chairman’s guideline that only critical issues are discussed, in this summary only proposals relevant to ffs issues, RAN3 required enhancements (e.g., as indicated in [20]) or topics with supports from multiple companies will be considered in the proposals for online discussion..

# Discussion

## Fast MCG recovery

Relevant proposals:

|  |  |  |
| --- | --- | --- |
| **TDoc** | **Company name** | **Proposals** |
| [1] [R2-2307287](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2307287.zip) | Nokia | Proposal 1: RAN2 to investigate means for T316 optimization.  Proposal 2: The UE logs the elapsed T316 timer value at the moment when it receives the HO command from the MN in the SHR.  Proposal 3: The triggering condition for logging the SHR in the case of the fast MCG recovery can be the start of T316.  Proposal 4: The SHR can include an indication that HO was part of the fast MCG recovery procedure.  Proposal 5: In case the MN instructed the UE to release the connection, the UE does not delete the RLF report and adds the elapsed T316 timer value at the moment when it received the release command from the MN.  Proposal 6: An additional cause value can be added to the RLF report, e.g., RRC release command.  Proposal 7: No new report trigger or parameter is introduced to support the detection of f1. |
| [5] [R2-2307680](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2307680.zip) | NTT DOCOMO | Proposal1: Introduce a new rlf-cause of MCGRecoveryFailure or T316 expiry in in RLF report.  Proposal2: Introduce a new rlf-cause of MCGRecoveryFailureWthSCGDeactivated in in RLF report. |
| [6] [R2-2307711](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2307711.zip) | CATT | Proposal 1: RAN2 to clarify the “SCG deactivation during fast MCG recovery” is not a valid scenario.  Proposal 2: Add the scenario “PSCell change /addition ongoing before fast MCG recovery (when UE detects MCG failure)” to align with RAN3 LS.  Proposal 3: Scenarios involve fast MCG recovery failure are prioritized in R18.  Proposal 4: Add the consecutive failure scenario of “HO command for recovery failure after MCG RLF”.  Proposal 5: UE report only MCG failure related content to the network for the scenarios below:   * T316 expires; * SCG cannot be used without failure, i.e. SCG deactivated, or PSCell addition/change is ongoing.   Proposal 6: For only MCG failure, record the possible content to distinguish with the legacy RLF/HOF in MCG, e.g. to record and report the running time of T316, the SCG unusable cause and the PSCell ID if any.  Proposal 7: Record the consecutive failure information for “HO command for recovery failure after MCG RLF” scenario.  Proposal 8: UE report both MCG and SCG failure related content to the network for the scenarios below:   * SCG failure during fast MCG recovery (i.e., running of T316); * SCG failure before MCG failure.   Proposal 9: For both MCG and SCG failures, record and report the PSCell ID, SCG failure type (at least t310-Expiry, randomAccessProblem, rlc-MaxNumRetx).  Proposal 10: For both MCG and SCG failures, record the relationship between the two failures in RLF report for both MCG and SCG failure case, e.g. indicate which leg failed first, and the time elapsed between the two failures. |
| [9] [R2-2308019](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308019.zip) | Lenovo | Proposal 1: The UE reports both MCG failure related information and SCG failure related information in the RLF report, for the case that SCG failure/deactivation during fast MCG recovery (i.e., running of T316), or, SCG fails or is deactivated before the UE sends the MCGFailureInformation.  Proposal 2: The UE reports fast MCG recovery failure related information (i.e. both MCG failure related information and SCG failure related information) in the RLF report:   * cause of the fast MCG recovery failure, e.g. T316 expiry, SCG failure or SCG deactivation; * failure type of the SCG failure, e.g. t310-Expiry, randomAccessProblem, or rlc-MaxNumRetx, when the cause of the fast MCG recovery failure is SCG failure. |
| [13] [R2-2308424](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308424.zip) | Ericsson | Proposal 1: UE logs a flag indicating which of the link failures, SCG or MCG failure, happened first in the RLF report.  Proposal 2: UE logs the time between the SCG and MCG failures in the RLF report.  Proposal 3: No need to introduce a triggering threshold condition for successful (near failure) MCG recovery scenario.  Proposal 4: UE logs the elapsed time of T316 timer (elapsed time from transmission of MCGFailureInformation to the reception of the response from the network) in the already existing RLF report.  Proposal 5: Upon MCG recovery failure due to SCG failure UE logs any possible SCG failure type (that in legacy may be included in the SCGFailureInformation) as MCG recovery failure cause in the RLF report. |
| [14] [R2-2308490](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308490.zip) | Samsung | Proposal 1: Upon detection of radio link failure, UE logs the following information for fast MCG Recovery Optimization, into RLF Report:   * An indicator to indicate if T316 is (not) configured (i.e. if fast MCG Recovery has been configured) * An indicator to indicate if SCG transmission is (not) suspended * An indicator to indicate if SCG is not deactivated * An indicator to indicate if neither PSCell change nor PSCell addition is ongoing (i.e. timer T304 for the NR PSCell is not running in case of NR-DC or timer T307 of the E-UTRA PSCell is not running)   Proposal 2: UE logs the new information for fast MCG link recovery optimziation, only when AS security has been activated.  Proposal 3: UE logs the elapsed T316 between the transmission of MCGFailureInformation and receiving response from the network or SCG failure.  Proposal 4: Do not introduce a new trigger for T316.  Proposal 5: UE logs the elapsed value of T316 in RLF report. |
| [15] [R2-2308506](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308506.zip) | ZTE | Proposal 4: Include location information in MCG failure information. |
| [17] [R2-2308622](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308622.zip) | Sharp | Proposal 1: further clarify which interpretation is correct for scenario f1, i.e. whether fast MCG recovery is initiated or not in scenario f1.  Proposal 2: RAN 2 considers the consecutive failure scenario for MRO fast MCG recovery: RRCreconfiguration is received during fast MCG recovery but the handover is failed.  Proposal 3: UE does not remove the stored RLF report when handover fails and the handover command is received during the fast MCG recovery.  Proposal 4: UE triggers SHR after successful handover if the handover command is received during fast MCG recovery.  Proposal 5: SHR is used for fast MCG recovery information report for near failure case.  Proposal 6: UE reports fast MCG recovery related information in SHR only when the value of elapsed T316 is above a threshold( when near failure) |
| [18] [R2-2308628](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308628.zip) | Huawei | Proposal 1: RAN2 to introduce the T316 related triggering threshold for the near failure scenario of fast MCG recovery.  Proposal 2: RAN2 to introduce the following triggering conditions regarding SCG near failure for the near failure scenario of fast MCG recovery：   1. the ratio of SCG T310 2. the ratio of SCG T312 3. the number of preamble transmissions towards SCG has reached a threshold 4. the number of SCG RLC retransmission has reached a threshold   Proposal 3: UE reports following time information for fast MCG link recovery optimization:   * Time between MCG failure (or transmitting MCGFailureInformation) and SCG failure for case a and f1 * Time between MCG failure (or transmitting MCGFailureInformation) and SCG deactivation for case f1   Proposal 4: Either SHR or a SHR-like new report is utilized to cover the near failure case, including the trigger cause and SCG measurement results.  Proposal 5: UE indicates which kind of RAR received from MN via SN, e.g., Hanover command or RRCRelease. If it is handover command, UE indicates the failed target Cell ID.  Proposal 6: UE indicates the failed CHO cell in CHO based recovery procedure for MRO analysis of correlating too late CHO with CHO based recovery. |

### Scenarios

Relevant proposals:

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| --- | --- | --- |
| **TDoc** | **Company name** | **Proposals** |
| [6] [R2-2307711](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2307711.zip) | CATT | Proposal 1: RAN2 to clarify the “SCG deactivation during fast MCG recovery” is not a valid scenario.  Proposal 2: Add the scenario “PSCell change /addition ongoing before fast MCG recovery (when UE detects MCG failure)” to align with RAN3 LS.  Proposal 3: Scenarios involve fast MCG recovery failure are prioritized in R18.  Proposal 4: Add the consecutive failure scenario of “HO command for recovery failure after MCG RLF”.  Proposal 5: UE report only MCG failure related content to the network for the scenarios below:   * T316 expires; * SCG cannot be used without failure, i.e. SCG deactivated, or PSCell addition/change is ongoing. |
| [17] [R2-2308622](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308622.zip) | Sharp | Proposal 1: further clarify which interpretation is correct for scenario f1, i.e. whether fast MCG recovery is initiated or not in scenario f1. |

There are two proposals asking to clarify agreed scenarios, which would help with stage 3 discussion, therefore it is suggested to treat them online. In CATT’s contribution[6], they observe that R3 has revised their agreements and remove SCG deactivation during fast MCG recovery from agreed scenario. This shall be straightforward, therefore it is suggested to discuss below potential agreeable proposal:

**Potential easy agreement**

**Proposal 1: RAN2 confirms the “SCG deactivation during fast MCG recovery” is not a valid scenario, therefore would be considered in fast MCG MRO.**

In Sharp’s contribution, they think there are two understandings on agreed scenario f1(i.e., Case f1: SCG fails or is deactivated yet before the UE sends the MCGFailureInformation ):

* Understanding 1: SCG fails or is deactivated before initiating the MCG Failure Information procedure;
* Understanding 2: SCG fails or is deactivated before the time UE RRC submits the MCGFailureInformation to lower layer for transmission;

And they proposes to clarify which understanding is correct agreed scenario f1..Considering the understanding could affect the discussion on the definition of the time information required for scenario f1, it is suggested to clarify online which of the two understanding is selected for scenario f1.

**Discuss online:**

**Proposal 2: RAN2 discuss which of below two interpretations is correct for scenario f1:**

* **Interpretation 1: SCG fails or is deactivated before initiating the MCG Failure Information procedure;**
* **Interpretation 2: SCG fails or is deactivated before the time UE RRC submits the MCGFailureInformation to lower layer for transmission.**

Furthermore CATT’s contribution[6] also proposes below new scenarios to align with RAN3’s way forward (not yet confirmed) with prioritization on failure cases.

Proposal 2: Add the scenario “PSCell change /addition ongoing before fast MCG recovery (when UE detects MCG failure)” to align with RAN3 LS.

Proposal 3: Scenarios involve fast MCG recovery failure are prioritized in R18.

Proposal 4: Add the consecutive failure scenario of “HO command for recovery failure after MCG RLF”.

Considering the limited time online, and RAN3 has not yet confirmed above scenarios, it is suggested to postpone the discussion until more progress in RAN3. Therefore no proposals will be made.

### On report trigger

Relevant proposals:

|  |  |  |
| --- | --- | --- |
| **TDoc** | **Company name** | **Proposals** |
| [1] [R2-2307287](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2307287.zip) | Nokia | Proposal 7: No new report trigger or parameter is introduced to support the detection of f1. |
| [13] [R2-2308424](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308424.zip) | Ericsson | Proposal 3: No need to introduce a triggering threshold condition for successful (near failure) MCG recovery scenario. |
| [14] [R2-2308490](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308490.zip) | Samsung | Proposal 4: Do not introduce a new trigger for T316. |
| [17] [R2-2308622](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308622.zip) | Sharp | Proposal 6: UE reports fast MCG recovery related information in SHR only when the value of elapsed T316 is above a threshold( when near failure) |
| [18] [R2-2308628](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308628.zip) | Huawei | Proposal 1: RAN2 to introduce the T316 related triggering threshold for the near failure scenario of fast MCG recovery.  Proposal 2: RAN2 to introduce the following triggering conditions regarding SCG near failure for the near failure scenario of fast MCG recovery：   1. the ratio of SCG T310 2. the ratio of SCG T312 3. the number of preamble transmissions towards SCG has reached a threshold 4. the number of SCG RLC retransmission has reached a threshold |

Five companies provides proposal on whether to introduce trigger condition to trigger UE report for fast MCG recovery MRO, among which two companies (Nokia/Ericsson/Samsung) proposed not to introduce new report trigger, while two companies (Huawei/sharp) propose to introduce new trigger for fast MCG recovery MRO. The proposals are relevant to proposal 2 from the report of post email [Post122][584] in [R2-2308326](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308326.zip). Therefore no duplicated proposal will be made. If confirmed that new trigger can be introduced, RAN2 can further discuss the detailed trigger next meeting based on contribution.

### RLF report enhancements

It is consensus during post email discussion that at least RLF report can be used for fast MCG recovery optimization, and below are proposals relevant to RLF report enhancements from companies contributions:

|  |  |  |
| --- | --- | --- |
| **TDoc** | **Company name** | **Proposals** |
| [1] [R2-2307287](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2307287.zip) | Nokia | Proposal 5: In case the MN instructed the UE to release the connection, the UE does not delete the RLF report and adds the elapsed T316 timer value at the moment when it received the release command from the MN.  Proposal 6: An additional cause value can be added to the RLF report, e.g., RRC release command. |
| [5] [R2-2307680](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2307680.zip) | NTT DOCOMO | Proposal1: Introduce a new rlf-cause of MCGRecoveryFailure or T316 expiry in in RLF report.  Proposal2: Introduce a new rlf-cause of MCGRecoveryFailureWthSCGDeactivated in in RLF report. |
| [6] [R2-2307711](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2307711.zip) | CATT | Proposal 6: For only MCG failure, record the possible content to distinguish with the legacy RLF/HOF in MCG, e.g. to record and report the running time of T316, the SCG unusable cause and the PSCell ID if any.  Proposal 7: Record the consecutive failure information for “HO command for recovery failure after MCG RLF” scenario.  Proposal 8: UE report both MCG and SCG failure related content to the network for the scenarios below:   * SCG failure during fast MCG recovery (i.e., running of T316); * SCG failure before MCG failure.   Proposal 9: For both MCG and SCG failures, record and report the PSCell ID, SCG failure type (at least t310-Expiry, randomAccessProblem, rlc-MaxNumRetx).  Proposal 10: For both MCG and SCG failures, record the relationship between the two failures in RLF report for both MCG and SCG failure case, e.g. indicate which leg failed first, and the time elapsed between the two failures. |
| [9] [R2-2308019](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308019.zip) | Lenovo | Proposal 1: The UE reports both MCG failure related information and SCG failure related information in the RLF report, for the case that SCG failure/deactivation during fast MCG recovery (i.e., running of T316), or, SCG fails or is deactivated before the UE sends the MCGFailureInformation.  Proposal 2: The UE reports fast MCG recovery failure related information (i.e. both MCG failure related information and SCG failure related information) in the RLF report:   * cause of the fast MCG recovery failure, e.g. T316 expiry, SCG failure or SCG deactivation; * failure type of the SCG failure, e.g. t310-Expiry, randomAccessProblem, or rlc-MaxNumRetx, when the cause of the fast MCG recovery failure is SCG failure. |
| [13] [R2-2308424](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308424.zip) | Ericsson | Proposal 1: UE logs a flag indicating which of the link failures, SCG or MCG failure, happened first in the RLF report.  Proposal 2: UE logs the time between the SCG and MCG failures in the RLF report.  Proposal 4: UE logs the elapsed time of T316 timer (elapsed time from transmission of MCGFailureInformation to the reception of the response from the network) in the already existing RLF report.  Proposal 5: Upon MCG recovery failure due to SCG failure UE logs any possible SCG failure type (that in legacy may be included in the SCGFailureInformation) as MCG recovery failure cause in the RLF report. |
| [14] [R2-2308490](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308490.zip) | Samsung | Proposal 1: Upon detection of radio link failure, UE logs the following information for fast MCG Recovery Optimization, into RLF Report:   * An indicator to indicate if T316 is (not) configured (i.e. if fast MCG Recovery has been configured) * An indicator to indicate if SCG transmission is (not) suspended * An indicator to indicate if SCG is not deactivated * An indicator to indicate if neither PSCell change nor PSCell addition is ongoing (i.e. timer T304 for the NR PSCell is not running in case of NR-DC or timer T307 of the E-UTRA PSCell is not running)   Proposal 2: UE logs the new information for fast MCG link recovery optimziation, only when AS security has been activated.  Proposal 3: UE logs the elapsed T316 between the transmission of MCGFailureInformation and receiving response from the network or SCG failure.  Proposal 5: UE logs the elapsed value of T316 in RLF report. |
| [17] [R2-2308622](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308622.zip) | Sharp | Proposal 3: UE does not remove the stored RLF report when handover fails and the handover command is received during the fast MCG recovery. |
| [18] [R2-2308628](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308628.zip) | Huawei | Proposal 3: UE reports following time information for fast MCG link recovery optimization:   * Time between MCG failure (or transmitting MCGFailureInformation) and SCG failure for case a and f1 * Time between MCG failure (or transmitting MCGFailureInformation) and SCG deactivation for case f1   Proposal 5: UE indicates which kind of RAR received from MN via SN, e.g., Hanover command or RRCRelease. If it is handover command, UE indicates the failed target Cell ID.  Proposal 6: UE indicates the failed CHO cell in CHO based recovery procedure for MRO analysis of correlating too late CHO with CHO based recovery. |

* T316 relevant1

|  |  |
| --- | --- |
| Relevant information | Supporting companies |
| Elapsed time from transmission of MCGFailureInformation to the reception of the response from the network | Nokia: For the case release command is received in response to transmission of MCGFailureInformation  Ericsson/Samsung  [Rapp: Covered in post meeting discussion] |
| The elapse time of T316 to SCG failure | Samsung |
| Running time of T316 | CATT |

It is summarized in post email discussion that UE includes elapsed T316 time from transmission of MCGFailureInformation to the reception of the response from the network (RRC Release or RRCReconfiguration ), therefore no duplicated proposal will be made on this. The remaining discussion point is whether to introduce elapse T316 to SCG failure. Therefore it is proposed to online discuss below proposal:

**Discuss online:**

**Proposal 3:RAN2 discuss whether to include elapse time of T316 to SCG fails in RLF report.**

* Fast MCG Failure type

|  |  |
| --- | --- |
| Information identifying the reason SCG is not available, and PSCell ID if any | CATT |
| New RLF cause for T316 expiry | NTT Docomo/Lenovo |
| new rlf cause of MCGRecoveryFailureWthSCGDeactivated | NTT Docomo/Lenovo |
| new rlf cause SCG failure | Lenovo |

4 companies provide proposals on how to indicate failure cause to fast MCG recovery failure, among which two companies (NTT Docomo/Lenovo) propose to add T316 expiry as new RLF cause, and all four companies indicate cause values to SCG is not available, while the detailed proposals are slightly different.

Based on RAN3’s LS in [20], it is stated below are beneficial to be included:

* the cause of the fast MCG recovery failure containing at least:
  + T316 expiry,
  + SCG failure, and
  + SCG was deactivated or other cases where SCG is not available

Considering both RAN3 request and companies view, below is proposed for online discussion:

**Discuss online:**

**Proposal 4: Include below fast MCG failure causes in RLF report :**

* **T316 expiry,**
* **SCG failure, and**
* **SCG was deactivated or other cases where SCG is not available**
* Information for both MCG and SCG failures

|  |  |
| --- | --- |
| PSCell ID | CATT |
| SCG failure cause: t310-Expiry, randomAccessProblem, rlc-MaxNumRetx | CATT/Lenovo/Ericsson |
| Indication on which failure happens first | CATT/Ericsson |
| Time between two failure | CATT/Ericsson/Huawei |

Additionally there are three companies suggest to include more information as listed in above table on SN when the both MCG and SCG failure during fast MCG recovery. Among above , PSCell ID and SCG failure type of failed SCG is also demanded by RAN3 in [20]. And other information also has support from more than one company, therefore below it is proposed to discuss which of below information is needed to be included in RLF report:

**Discuss online:**

**Proposal 5: RAN2 discuss which of below information is needed to be included in RLF report when SCG failure during fast MCG recovery:**

1. **PSCell ID of failed SN (1)**
2. **SCG failure cause: t310-Expiry, randomAccessProblem, rlc-MaxNumRetx (3)**
3. **Indication on which failure happens first (2)**
4. **Time between two failure (3)**

* Others

As indicated before, only proposals have one than one company support or relevant to RAN3 LS will be proposed for online discussion. Therefore, For now no proposal will be made for below proposals.

|  |  |
| --- | --- |
| An additional cause value can be added to the RLF report, e.g., RRC release command. | Nokia |
| Proposal 5: which kind of RAR received from MN via SN, e.g., Hanover command or RRCRelease. If it is handover command, UE indicates the failed target Cell ID. | Huawei |
| Proposal 6: UE indicates the failed CHO cell in CHO based recovery procedure for MRO analysis of correlating too late CHO with CHO based recovery. | Huawei |
| Proposal 1: Upon detection of radio link failure, UE logs the following information for fast MCG Recovery Optimization, into RLF Report:   * An indicator to indicate if T316 is (not) configured (i.e. if fast MCG Recovery has been configured) * An indicator to indicate if SCG transmission is (not) suspended * An indicator to indicate if SCG is not deactivated * An indicator to indicate if neither PSCell change nor PSCell addition is ongoing (i.e. timer T304 for the NR PSCell is not running in case of NR-DC or timer T307 of the E-UTRA PSCell is not running) | Samsung |

On top of above report content, there is one proposal on RLF report procedure from Samsung, as given below:

Proposal 2: UE logs the new information for fast MCG link recovery optimziation, only when AS security has been activated.

This proposal seems reasonable, therefore it is proposed to agree on it.

**Potential easy agreement**

**Proposal 6: UE logs the new information for fast MCG link recovery optimziation, only when AS security has been activated.**

### Others

**Support of SHR**

On top of RLF report, there are some interests to enhance SHR for fast MCG recovery, where relevant proposals are summarized in below:

|  |  |  |
| --- | --- | --- |
| **TDoc** | **Company name** | **Proposals** |
| [1] [R2-2307287](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2307287.zip) | Nokia | Proposal 1: RAN2 to investigate means for T316 optimization.  Proposal 2: The UE logs the elapsed T316 timer value at the moment when it receives the HO command from the MN in the SHR.  Proposal 3: The triggering condition for logging the SHR in the case of the fast MCG recovery can be the start of T316.  Proposal 4: The SHR can include an indication that HO was part of the fast MCG recovery procedure. |
| [17] [R2-2308622](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308622.zip) | Sharp | Proposal 4: UE triggers SHR after successful handover if the handover command is received during fast MCG recovery.  Proposal 5: SHR is used for fast MCG recovery information report for near failure case. |
| [18] [R2-2308628](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308628.zip) | Huawei | Proposal 4: Either SHR or a SHR-like new report is utilized to cover the near failure case, including the trigger cause and SCG measurement results. |

It is noted this issues are discussed during post email discussion, therefore no duplicated proposals will be made again.

**Others**

|  |  |  |
| --- | --- | --- |
| [15] [R2-2308506](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308506.zip) | ZTE | Proposal 4: Include location information in MCG failure information. |

Only one company propose this enhancements, based on guideline, no proposal will be made for online discussion.

## On CPAC MRO

RAN2 has agreed to investigate RAN3 agreed CPAC MRO scenarios for further enhancements to SCGFailureInformation message. Relevant submitted in this meeting is as below:

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| --- | --- | --- |
| **TDoc** | **Company name** | **Proposals** |
| [1] [R2-2307287](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2307287.zip) | Nokia | **Proposal 8: UE indicates to MN using *SCGFailureInformation* message whether it had stored intra-SN CPC configuration at the time of SCG failure.**  **Proposal 9: RAN2 to discuss possible solutions to aid Target SN to prepare the correct PScells.**  **Proposal 10: The SCGFailureInformation message may be enhanced with an indication regarding target cells that were previously reported to the network but not part of the received CPC configurations.** |
| [3] [R2-2307432](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2307432.zip) | Vivo | **Proposal 1: The following information should be included in *SCGFailureInformation* to support MRO for CPAC:**   * **latest radio measurements of neighbour cell(s);** * **the type of the first triggered CPAC event if multiple events are configured;** * **the time duration between the two triggered CPAC events if multiple events are configured.**   **Proposal 2: The following information is not needed to be included in *SCGFailureInformation*:**   * **explicit indication to differentiate CAPC from conventional SCG failure;** * **explicit indication of CPAC type (i.e., CPA, MN-initiated inter-SN CPC, SN-initiated inter-SN CPC or SN-initiated intra-SN CPC).** |
| [4] [R2-2307679](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2307679.zip) | NTT DOCOMO | **Proposal1: Introduce an explicit indication to differentiate CPAC failure from conventional PSCell change failure.**  **Proposal2: Introduce the following parameters in CPAC failure report.**   * **Candidate PSCell info (including PCI, carrierFreq, measurement result)** * **timeSinceCPACReconfig (The elapsed time between the initiation of CPAC execution and the reception of CPAC config)** |
| [8] [R2-2308018](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308018.zip) | Lenovo | **Proposal 1: The UE reports the time elapsed between the SCG failure in source SCG and the latest CPC configuration is received.**  **Proposal 2: The UE reports the time elapsed between the CPAC execution towards the target PSCell and the corresponding latest CPAC configuration is received for the target PSCell.**  **Proposal 3: The UE reports the time elapsed since the CPAC execution towards the target PSCell until the SCG failure.**  **Proposal 4: The UE reports the type of PSCell addition/change (e.g. CPA/CPC or legacy PSCell addition/change) to differentiate CAPC from conventional SCG failure.**  **Proposal 5: The UE reports the latest configured CPAC configuration including the CPAC execution condition(s) and the list of CPAC candidate PSCells.**  **Proposal 6: The UE reports an indication about whether a measured neighbour cell was configured as a CPAC candidate PSCell or not.**  **Proposal 7: The UE reports the first fulfilled CPAC triggering event and the time elapsed between two CPAC triggering events if both the two CPAC triggering events are fulfilled.** |
| [11] [R2-2308327](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308327.zip) | CMCC | **Proposal 1: The scenario that PCell handover happens after CPA/CPC configuration and before CPA/CPC execution is considered for CPA/CPC optimization.**  **Proposal 2: To support the MRO for scenario in P1, UE reports one indication that before PCell handover, CPA/CPC configuration has received but not executed, or the time difference between the CPA/CPC configuration and PCell handover.**  **Proposal 3: For CPA/CPC failure cases, UE logs following information and measurements:**  **a) Source PSCell info (cell ID, measurement result)**  **b) Target PScell info (cell ID, measurement result)**  **c) Neighbour Cells info (cell ID, measurement result, CPAC Candidate cells flag)**  **d) Success PSCell change/addition cause value (e.g., t304, t310, t312 cause, etc.)**  **f) The time elapsed between the CPAC execution towards the target cell and the corresponding latest CPAC configuration received for the selected target cell**  **Proposal 4: If multiple events are configured for CPA/CPC, UE reports the first triggered CPAC event, and the time duration between the two triggered CPAC events.** |
| [15] [R2-2308506](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308506.zip) | ZTE | **Proposal 1a: For CPAC failure, UE includes below information in SCGFailureInformation**   * **CPA and CPC type information**   **Proposal 1b: spare bits in failureType is used to indicate CPA and CPC failure type.**  **Proposal 2a: For CPAC failure, UE includes below information in SCGFailureInformation:**   * **Time elapsed from CPAC execution to SCG failure**   **Proposal 2b: *timeSCGFailure* is modified to present elapsed time from CPAC execution to SCG failure when *failureType* indicates CPA/CPC failure.**  **Proposal 3: RAN2 confirms below information is included in SCGFailureInformation when multiple events configured for CPA/CPC :**   * **the type of the first triggered CPAC event, and** * **the time duration between the two triggered CPAC events** |
| [16] [R2-2308621](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308621.zip) | Sharp | **Proposal 1: include the following information in SCGFailureInformation for CPAC failure reporting:**   * + **time elapsed between reception of CPAC configuration and the CPAC execution;**   + **indication of whether the PSCell change is a CAPC or not(FFS explicit or implicit);**   + **status of execution conditions (timeBetweenEvents, firstTriggeredEvent) for candidate cells.**   + **The information which node initiates the concerned CPAC**   **Proposal 2: UE include the CPAC information in SCGFailureInformation only when SCG failure is caused by mobility issue.** |
| [18] [R2-2308628](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308628.zip) | Huawei | 1. For CPAC MRO, the time information below is NOT needed to be reported by UE:   **a. The time elapsed between reception of CPAC configuration and the CPAC execution**  **b. The time elapsed between the SCG failure in source SCG and the latest CPC configuration is received.**  **c. The time elapsed between the CPAC execution towards the target PSCell and the corresponding latest CPAC configuration is received for the target PSCell.**  **d. The time elapsed since the CPAC execution towards the target PSCell until the SCG failure.**  **e. timeSinceCPACReconfig**   1. For CPAC MRO, the information is NOT needed by explicit indication from UE:   **a. Information to differentiate CPA and CPC**  **b. Information to differentiate SN or MN initiated CPAC procedure**  Proposal 9a: For CPAC MRO, the triggering event information is needed as indicated in RAN3 LS:  **a. The time elapsed between the two CPAC execution events e.g., A3 and A5**  **b. The first fulfilled event e.g., A3 or A5**  Proposal 9b: For CPAC MRO, the triggering event information is NOT needed:  **c. The latest configured CPAC configuration including the CPAC execution condition(s)**  **d. CPAC execution condition(s) fulfilled**  **e. indication whether UE had stored intra-SN CPC configuration at the time of SCG failure**  **f. an indication regarding target cells that were previously reported to the network but not part of the received CPC configurations**  **g. None**  **Proposal 10a: For CPAC MRO, the following measurements relevant information is needed:**  **c. the latest neighboring cell measurement results**  **Proposal 10b: For CPAC MRO, the below measurements relevant information is NOT needed:**  **a. CPAC candidate PSCells identity**  **b. Candidate PSCell measurement results**  **d. an indication on whether a measured neighbour cell was configured as a CPAC candidate or not**  **e. Source PSCell info (cell ID and measurements)**  **f. Target PSCell ID**  **g. Target PSCell measurements**  **h. None**  **Proposal 11: For CPAC MRO, RAN2 deprioritizes the discussion of the below information:**  **a. the MCG timers such as t310 and t312 values if they are running**  **b. RLF retransmission counter value**  **c. one indication that before PCell handover, CPA/CPC configuration has received but not executed or the time difference between the CPA/CPC configuration and PCell handover**  **d. Success PSCell change/addition cause value (e.g., t304, t310, t312 cause, etc.)**  **e. None** |

Most of proposals focused on the detailed assisting information to be provided, which are listed in below tables together with companies’ view on each candidate information.

* **CPAC configuration relevant**

|  |  |  |
| --- | --- | --- |
| **Proposed content** | **Supporting companies** | **Objecting companies** |
| 1. Indication on whether SN had stored intra-SN CPC configuration at the time of SCG failure. | Nokia | Huawei |
| 1. An indication regarding target cells that were previously reported to the network but not part of the received CPC configurations | Nokia | Huawei |
| 1. the type of the first triggered CPAC event if multiple events are configured | Vivo/lenovo/CMCC/ZTE/sharp/Huawei |  |
| 1. the time duration between the two triggered CPAC events if multiple events are configured | Vivo/lenovo/CMCC/ZTE/sharp/Huawei |  |
| 1. explicit indication to differentiate CAPC from conventional SCG failure | NTT Docomo/lenovo/ZTE | Huawei/Vivo |
| 1. explicit indication of CPAC type (i.e., CPA, MN-initiated inter-SN CPC, SN-initiated inter-SN CPC or SN-initiated intra-SN CPC)   [Rapp: equivalent info to k+r] | - | Vivo |
| 1. The information which node initiates the concerned CPAC | Sharp | Huawei/Vivo |

6 out of 8 companies proposed to include information c and d while there is no objection. Considering this information is also aligned with RAN3’sagreements reached in RAN3#119 meeting below:

|  |
| --- |
| *For MRO for CPC and CPA, if there are multiple events configured for CPA/CPC, the UE reports the first triggered CPAC event, and the time duration between the two triggered CPAC events.* |

Therefore below proposal is proposed to be discussed online,which could be potentially agreed on.

**Potential easy agreement**

**Proposal 7: For CPAC MRO, UE logs the below information in SCGFailureInformation:**

* **the type of the first triggered CPAC event if multiple events are configured**
* **the time duration between the two triggered CPAC events if multiple events are configured**

Apart from above information c/d, information e is supported by three companies , which is also part of the information that requested in RAN3’s LS However there are also two companies objecting to includes this information. It is suggested to discuss online on whether such information is needed.

**Discuss online**

**Proposal 8: For CPAC MRO, RAN2 discuss whether to include below information in SCGFailureInformation:**

* **Explicit indication to differentiate CAPC from conventional SCG failure (e.g., CPA, CPC)**

For the rest of information that has only one support and one clear objection, it is suggested not to discuss online. Therefore no proposal will be made.

* **Time information**

|  |  |  |
| --- | --- | --- |
| **Proposed content** | **Supporting companies** | **Objecting companies** |
| 1. The time elapsed between the CPAC execution towards the target PSCell and the corresponding latest CPAC configuration is received for the target PSCell | NTT Docomo/Lenovo/CMCC/sharp | Huawei |
| 1. time elapsed between the SCG failure in source SCG and the latest CPC configuration is received | Lenovo | Huawei |
| 1. the time elapsed since the CPAC execution towards the target PSCell until the SCG failure | Lenovo/ZTE | Huawei |

Above are time relevant information, and each time information can be derived from the other two time information, therefore it is not needed to include all of them. Considering i has least support, it is suggested to focus on discussion on h and j. h has most of support which is used to help NW to know the configuration timing of CPAC is appropriate or not while j is requested by RAN3 in their LS in [20]. There is one company objecting to include both information with the reasoning that all the time information is known by MN and can be derived. Based on the level of support, it is proposed to discuss whether to include information h and j in SCGFailureInformation or not.

**Discuss online**

**Proposal 9: For CPAC MRO, RAN2 discuss which of below time information is included in SCGFailureInformation:**

* **The time elapsed between the CPAC execution towards the target PSCell and the corresponding latest CPAC configuration is received for the target PSCell (4)**
* **The time elapsed since the CPAC execution towards the target PSCell until the SCG failure (2)**
* **None (1)**
* **Cell and measurements relevant**

|  |  |  |
| --- | --- | --- |
| **Proposed content** | **Supporting companies** | **Objecting companies** |
| 1. latest radio measurements of neighbour cell(s) | Vivo/CMCC | Huawei |
| 1. Indication whether neighboring cell is a candidate cells | Lenovo/CMCC | Huawei |
| 1. latest radio measurements of Candidate PSCell | NTT Docomo | Huawei |
| 1. Candidate PSCell id +frequency info | NTT Docomo:yes  Lenovo: plus configuration | Huawei |
| 1. Source PSCell info (cell ID, measurement result) 2. Target PScell info (cell ID, measurement result) | CMCC | Huawei |

Above are cell measurements relevant information proposed..

Among which there are also some support to include latest measurement results of neighboring cell measurements and one indication indicating whether neighboring cell is a candidate cells or not. The reasoning is that such information can be helpful for NW to configure suitable candidate cells among reported neighboring cells.

For information o and p, although there is only one support but it is noted RAN3 has agreed to resuse legacy signalling mechanism for report CPAC information:

*Reusing R17 signalling mechanism to report CPA/CPC failure/ related information over Xn from MN to source SN or last serving SN.*

Based on above legacy fields included in SCGFailureInformation are needed as well for CPAC relevant MRO. At least cell id information has already been included in SCGFailureInformation, which basically comes for free for CPAC. As for the measurements results, it is noted UE will include measResultFreqList (available results for frequencies configured by MCG) and measResultSCG-Failure (available results for NR frequencies configured by SCG) which can include measurements for source and target cell. And the inclusion of such fields shall be subjected to availability and reuse existing fields as specified in current specs.

For information m and n, new fields are needed to carry such information while part of the measurements results can be duplicated with neighboring cell measurements included. Noted discussion on including candidate cell configuration is always difficult especially with limited support. And similar discussion happened in R17 where most of companies consider neighboring cell are more useful for optimization. Therefore, it is suggested to first discuss information k and l, and no proposal will be made for information m and n.

For all above measurements there is one objection with the reasoning that all information can be derived by NW due to immediate report of SCG failure information. With joint consideration on the level of support and the additional specs required , it is proposed RAN2 to discuss online which kind of measurement among (k, l, o and p) are needed in SCGFailureInformation for CPAC MRO.

**Discuss online**

**Proposal 10: For CPAC MRO, RAN2 discuss which of below measurement information is included in SCGFailureInformation:**

* **latest radio measurements of neighbour cell(s) if available, reusing existing fields. (2)**
* **Indication whether neighboring cell is a candidate cells (2)**
* **Source PSCell info (cell ID, measurement result) if available, reusing existing fields. (1)**
* **Target PScell info (cell ID, measurement result) if available, reusing existing fields. (1)**
* **None (1)**
* **Other**

|  |  |  |
| --- | --- | --- |
| **Proposed content** | **Supporting companies** | **Objecting companies** |
| 1. one indication that before PCell handover, CPA/CPC configuration has received but not executed, or the time difference between the CPA/CPC configuration and PCell handover.   [Rapp:for mixed CPAC and HO] | CMCC | Huawei: depriortized |
| 1. Success PSCell change/addition cause value (e.g., t304, t310, t312 cause, etc.)   Rapp:for mixed CPAC and SHR] | CMCC | Huawei:deprioritized |

Above two information are relevant to mixed CPAC with HO or with SPR, and information q is relevant to below proposal on agreeing new scenario:

Proposal 1: The scenario that PCell handover happens after CPA/CPC configuration and before CPA/CPC execution is considered for CPA/CPC optimization.

Regarding above scenario, there is one proposal to deprioritize the discussion on information to for optimization of mixed scenarios. It is noted that RAN3 has no agreed to consider above scenarios, therefore it is proposed not to discuss them before RAN3’s confirmation. Therefore no proposals will be made.

## MHI for SCG Activation/Deactivation

Relevant proposals are listed in below table:

|  |  |  |
| --- | --- | --- |
| **TDoc** | **Company name** | **Proposals** |
| [7] [R2-2307712](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2307712.zip) | CATT | **Proposal 1: RAN2 considers MHI enhancement for SCG deactivation/activation.** |
| [12] [R2-2308328](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308328.zip) | CMCC, Ericsson, CATT | **Proposal: Include in MHI the information of SCG activation/deactivation, e.g., the time of SCG activation, or percentage of time that SCG activation.** |

There are three companies (including one operator) proposed to consider enhance MHI to address SCG deactivation/activation impact. Considering this information is useful for NW to know the active time of camped SN and optimize configuration of SN, and the required optimization is quite straightforward. It is proposed to discuss online.

**Discuss online**

**Proposal 11: RAN2 discuss whether to include in MHI the information of SCG activation/deactivation, e.g., the time of SCG activation, or percentage of time that SCG activation.**

## UE capability

|  |  |  |
| --- | --- | --- |
| **TDoc** | **Company name** | **Proposals** |
| [14] [R2-2308490](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308490.zip) | Samsung | **Proposal 6: Introduce a new UE capability for** **SON/MDT enhancements for fast MCG link recovery.** |
| [19] [R2-2308630](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308630.zip) | Huawei | **Proposal 1: It is proposed to use table 1 as a starting point to discuss UE capabilities for R18 SONMDT features.** |

Two companies provide proposals on UE capabilities discussion. Huawei;s contribution. Huawei has provide a good analysis on UE capabilities, which also covers proposal from Samsung but with slightly different view. It is suggested to continue offline to collect companies’ views based on the table summarized below.

**Discuss online**

**Proposal 12: RAN2 continue offline to collect companies’ views on UE capabilities based on the table summarized below:**

**Table 1: Summary on UE capabilities for R18 SONMDT features**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Features** | **UE capability** | **Definition** | **Mandatory/ Optional** | **Diff** | **Note** |
| MRO for MR-DC SCG failure |  |  |  |  | RAN2 has not identified impacts due to this feature |
| MRO for voice fallback | 1 bit | Whether the UE supports an explicit indication in RLF-report when mobility from NR fails and due to voice fallback. | Optional without signalling | No |  |
| CPAC |  |  |  |  | RAN2 has not identified impacts due to this feature |
| SPR | 1 bit | Whether the UE supports the storage and delivery of Successful Handover Report for PSCell addition/change upon request from the network. | Optional with signalling | No |  |
| Inter-RAT SHR | 1 bit | Whether the UE supports the storage and delivery of Successful Handover Report for Handover from NR to E-UTRA, upon request from the network. | Optional with signalling | No |  |
| NPN | Defined per feature | Whether the UE supports the inclusion of NPN ID in SON/MDT procedures, upon request from the network. | For SON:  Per feature, optional without signalling  Logged MDT:  Optional with signalling | No |  |
| RACH report | 1 bit | Whether the UE supports the storage and delivery of RACH partitioning related information via RACH report procedure, upon request from the network. | Optional with signalling | No |  |
| 1 bit | (for LTE) Whether the UE supports NR RACH report in LTE, upon request from the network. | Optional with signalling |  |  |
| Fast MCG recovery | 1 bit | Whether the UE supports RLF-Report for Fast MCG recovery. | Optional without signalling | No |  |
| NR-U | Defined per feature | Whether the UE supports to report NR-U related information in SON, upon request from the network. | Per feature, optional with/without signalling | No |  |
| MDT override | 1 bit | (for LTE) Whether the UE supports the override protection of the signalling based logged measurements configured in E-UTRA when going to NR. | Optional with signalling | No |  |

## Others

Topics that are no discussed before are included here

|  |  |  |
| --- | --- | --- |
| [2] [R2-2307288](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2307288.zip) | Nokia | **Proposal 1: RAN2 agrees that an irregular (TOO LATE handover) cell change loses the trigger point to start the timer for the RLF variable “*TimeConnFailure*”.**  **Proposal 2: RAN2 discusses the solution options to get the important RLF information needed for MRO also in cases where the preceding cell change was irregular and problematic.** |

This scenario has not been discussed before and there are only company support, no proposal will be made for on line discussion per current guideline.

# Conclusion

Based on analysis in section 2, following proposals are made for further discussion, and some proposals are only discussed under certain conditions.

## Fast MCG recovery

**Potential easy agreement**

**Proposal 1: RAN2 confirms the “SCG deactivation during fast MCG recovery” is not a valid scenario, therefore would be considered in fast MCG MRO.**

**Proposal 8: UE logs the new information for fast MCG link recovery optimziation, only when AS security has been activated.**

**Discuss online:**

**Proposal 3:RAN2 discuss whether to include elapse time of T316 to SCG fails in RLF report.**

**Proposal 4: Include below fast MCG failure causes in RLF report:**

* **T316 expiry,**
* **SCG failure, and**
* **SCG was deactivated or other cases where SCG is not available**

**Proposal 5: RAN2 discuss which of below information is needed to be included in RLF report when SCG failure during fast MCG recovery:**

1. **PSCell ID of failed SN (1)**
2. **SCG failure cause: t310-Expiry, randomAccessProblem, rlc-MaxNumRetx (3)**
3. **Indication on which failure happens first (2)**
4. **Time between two failure (3)**

## CPAC MRO

**Potential easy agreement**

**Proposal 7: For CPAC MRO, UE logs the below information in SCGFailureInformation:**

* **the type of the first triggered CPAC event if multiple events are configured**
* **the time duration between the two triggered CPAC events if multiple events are configured**

**Discuss online**

**Proposal 8: For CPAC MRO, RAN2 discuss whether to include below information in SCGFailureInformation:**

* **Explicit indication to differentiate CAPC from conventional SCG failure (e.g., CPA, CPC)**

**Proposal 9: For CPAC MRO, RAN2 discuss which of below time information is included in SCGFailureInformation:**

* **The time elapsed between the CPAC execution towards the target PSCell and the corresponding latest CPAC configuration is received for the target PSCell (4)**
* **The time elapsed since the CPAC execution towards the target PSCell until the SCG failure (2)**
* **None (1)**

**Proposal 10: For CPAC MRO, RAN2 discuss which of below measurement information is included in SCGFailureInformation:**

* **latest radio measurements of neighbour cell(s) if available, reusing existing fields. (2)**
* **Indication whether neighboring cell is a candidate cells (2)**
* **Source PSCell info (cell ID, measurement result) if available, reusing existing fields. (1)**
* **Target PScell info (cell ID, measurement result) if available, reusing existing fields. (1)**
* **None (1)**

## MHI for SCG Activation/Deactivation

**Discuss online**

**Proposal 11: RAN2 discuss whether to include in MHI the information of SCG activation/deactivation, e.g., the time of SCG activation, or percentage of time that SCG activation.**

## UE capability

**Discuss online**

**Proposal 12: RAN2 continue offline to collect companies’ views on UE capabilities based on the table summarized below:**

**Table 1: Summary on UE capabilities for R18 SONMDT features**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Features** | **UE capability** | **Definition** | **Mandatory/ Optional** | **Diff** | **Note** |
| MRO for MR-DC SCG failure |  |  |  |  | RAN2 has not identified impacts due to this feature |
| MRO for voice fallback | 1 bit | Whether the UE supports an explicit indication in RLF-report when mobility from NR fails and due to voice fallback. | Optional without signalling | No |  |
| CPAC |  |  |  |  | RAN2 has not identified impacts due to this feature |
| SPR | 1 bit | Whether the UE supports the storage and delivery of Successful Handover Report for PSCell addition/change upon request from the network. | Optional with signalling | No |  |
| Inter-RAT SHR | 1 bit | Whether the UE supports the storage and delivery of Successful Handover Report for Handover from NR to E-UTRA, upon request from the network. | Optional with signalling | No |  |
| NPN | Defined per feature | Whether the UE supports the inclusion of NPN ID in SON/MDT procedures, upon request from the network. | For SON:  Per feature, optional without signalling  Logged MDT:  Optional with signalling | No |  |
| RACH report | 1 bit | Whether the UE supports the storage and delivery of RACH partitioning related information via RACH report procedure, upon request from the network. | Optional with signalling | No |  |
| 1 bit | (for LTE) Whether the UE supports NR RACH report in LTE, upon request from the network. | Optional with signalling |  |  |
| Fast MCG recovery | 1 bit | Whether the UE supports RLF-Report for Fast MCG recovery. | Optional without signalling | No |  |
| NR-U | Defined per feature | Whether the UE supports to report NR-U related information in SON, upon request from the network. | Per feature, optional with/without signalling | No |  |
| MDT override | 1 bit | (for LTE) Whether the UE supports the override protection of the signalling based logged measurements configured in E-UTRA when going to NR. | Optional with signalling | No |  |

# Reference

1. [R2-2307287](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2307287.zip) MRO enhancements for Fast MCG recovery and for MR-DC CPAC Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_ENDC\_SON\_MDT\_enh2-Core
2. [R2-2307288](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2307288.zip) Improvement of handling of timeConnFailure Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_ENDC\_SON\_MDT\_enh2-Core
3. [R2-2307432](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2307432.zip) Discussion on MRO for CPAC vivo discussion Rel-18 NR\_ENDC\_SON\_MDT\_enh-Core
4. [R2-2307679](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2307679.zip) Discussion on CPAC failure report NTT DOCOMO, INC. discussion Rel-18
5. [R2-2307680](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2307680.zip) Discussion on fast MCG recovery failure NTT DOCOMO, INC. discussion Rel-18
6. [R2-2307711](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2307711.zip) Discussion on Fast MCG recovery MRO Enhancement CATT discussion Rel-18 NR\_ENDC\_SON\_MDT\_enh2-Core
7. [R2-2307712](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2307712.zip) Discussion on MHI Enhancement for SCG Deactivation/Activation CATT discussion Rel-18 NR\_ENDC\_SON\_MDT\_enh2-Core
8. [R2-2308018](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308018.zip) SON enhancements for CPAC Lenovo discussion Rel-18
9. [R2-2308019](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308019.zip) MRO for fast MCG link recovery Lenovo discussion Rel-18
10. [R2-2308326](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308326.zip) Summary of [Post122][584][R18 SON/MDT] Open issues on fast MCG recovery CMCC discussion Rel-18 NR\_ENDC\_SON\_MDT\_enh2-Core
11. [R2-2308327](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308327.zip) SON MDT enhancement for MR-DC CPAC CMCC discussion Rel-18 NR\_ENDC\_SON\_MDT\_enh2-Core
12. [R2-2308328](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308328.zip) MHI Enhancement for SCG Activation/Deactivation CMCC, Ericsson, CATT discussion Rel-18 NR\_ENDC\_SON\_MDT\_enh2-Core
13. [R2-2308424](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308424.zip) Discussion on Fast MCG recovery and SCG failure optimization Ericsson discussion NR\_ENDC\_SON\_MDT\_enh2-Core
14. [R2-2308490](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308490.zip) Fast MCG Link Recovery Optimization Samsung discussion
15. [R2-2308506](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308506.zip) Consideration on other SON issues ZTE Corporation, Sanechips discussion Rel-18 NR\_ENDC\_SON\_MDT\_enh2-Core
16. [R2-2308621](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308621.zip) Discussion on MRO for CPAC SHARP Corporation discussion
17. [R2-2308622](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308622.zip) MRO for fast MCG recovery SHARP Corporation discussion
18. [R2-2308628](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308628.zip) Discussion on Fast MCG recovery and CPAC Huawei, HiSilicon discussion Rel-18 NR\_ENDC\_SON\_MDT\_enh2-Core
19. [R2-2308630](file://D://3GPP Sync\\RAN2\\TSGR2_123\\Docs\\R2-2308630.zip) Discussion on UE capability Huawei, HiSilicon discussion Rel-18 NR\_ENDC\_SON\_MDT\_enh2-Core
20. R3-230992 LS on MRO for CPC and CPA and fast MCG recovery RAN3

# Annex: RAN2 Agreements

* **Agreements on fast MCG recovery**

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| ***RAN2#120 Agreements***  1 For fast MCG recovery MRO, prioritize NR-DC scenario. if time allows, study whether the same solution can be extended for others DC scenarios.  2 Consider at least below scenarios for fast MCG recovery MRO:  a. T316 expiry  b. SCG failure/deactivation during fast MCG recovery (i.e., running of T316). The “upon fast MCG recovery case” is FFS.  3 RLF report is enhanced to support fast MCG recovery MRO.  4 Fast MCG recovery failure cause shall be included for fast MCG recovery optimization. FFS details  ***RAN2#123 agreements***  1 RAN2 confirms scenario of near failure fast MCG recovery.  2 RAN2 confirms scenario f1, i.e., SCG fails or is deactivated before the UE sends the MCGFailureInformation. FFS RAN2 impact. |

* **Agreements on CPAC MRO**

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| ***RAN2#120 agreements***  => Deprioritize NE-DC / EN-DC scenarios for SCG failure information report.  1 RAN2 confirms the CPA/CPC scenarios agreed by RAN3 and discuss corresponding UE impacts.  2 SCGFailureInformation is enhanced to support CPAC MRO (i.e, no need to introduce new reports/message).  FFS: For CPAC MRO, information to differentiate CAPC from conventional SCG failure is needed (ffs by implicit or explicit indication). |